INSTALLATION INSTRUCTIONS

SUBJECT: TRANSMISSION COOLER AND LINE KIT FOR 2013-2018 RAM 2500/3500

FITMENT: 2013–2018 Dodge Ram with 6.7L Cummins and 68 RFE Automatic Transmission

KIT P/N: FPE-TC-CUMM-1318

ESTIMATED INSTALLATION TIME: 4 Hours

TOOLS REQUIRED: Flat head screwdriver or trim tool, 8mm socket or wrench, 10mm socket or wrench, 12mm socket or wrench, 13mm socket or wrench, 7/8” wrench, 1” socket or wrench.

KIT CONTENTS:

Item	Description	Qty
1	Transmission cooler	1
2	-8AN to ¾”-16 fittings	6
3	P-clamp	3
4	Zip Ties	4
5	Transmission cooler line (92” hose cut)	1
6	Transmission cooler line (76” hose cut)	1
7	Transmission cooler line (71” hose cut)	1
8	Transmission cooler line (10.5” hose cut)	1

IMPORTANT NOTES:

- This kit is designed to work on vehicles equipped with a transmission heat exchanger and vehicles without a transmission heat exchanger. Some parts of this kit may not be utilized in your application. Refer to the guide on page two of this document to determine if a transmission heat exchanger is present on your vehicle.
- It is critical that you **DO NOT** over-torque AN fittings, as damage can occur. Please refer to the last two pages of this document for the torque specifications required for this application.

WARNINGS:

- User assumes sole responsibility for the safe & proper use of the vehicle at all times.
- The purchaser and end user releases, indemnifies, discharges, and holds harmless Fleece Performance Engineering, Inc. from any and all claims, damages, causes of action, injuries, or expenses resulting from or relating to the use or installation of this product that is in violation of the terms and conditions on this page, the product disclaimer, and/or the product installation instructions. Fleece Performance Engineering, Inc. will not be liable for any direct, indirect, consequential, exemplary, punitive, statutory, or incidental damages or fines cause by the use or installation of this product.

Installation Guidelines

IDENTIFYING A FACTORY HEAT EXCHANGER:

This kit is designed to work on vehicles with and without a factory transmission heat exchanger. To determine if your vehicle is equipped with a factory installed transmission heat exchanger (HX), look at the rear, passenger side of the radiator. Vehicles equipped with a transmission heat exchanger will have two lines coming out of the rear of the radiator. The lower line will route forward toward the transmission cooler and the other will route down and back toward the transmission. If these lines and connections are not present on your vehicle, you do not have a transmission heat exchanger.

NOTE: This document will cover the installation procedure for both vehicles with and without a factory installed transmission heat exchanger. As such, some steps in this document are split to reflect the different procedures involved for each application.

TRANSMISSION LINE IDENTIFICATION:

Your kit will come with four transmission cooler lines. The lines are shown at right.

Purple sticker: These two lines are to be installed on vehicles with a factory transmission heat exchanger.

Orange sticker: This line is to be installed on vehicles without a factory transmission heat exchanger.

No sticker: This line is to be installed on all vehicles with or without a factory transmission heat exchanger.

Refer to the hose cut lengths outlined on pages 9 and 12 for more specific line identification information.

PROCEDURE:

STEP 1: Disconnect the batteries on the vehicle.

STEP 2: Disconnect the Mass Airflow (MAF) and Barometric Pressure (Baro) sensors near the rear outlet of the airbox.

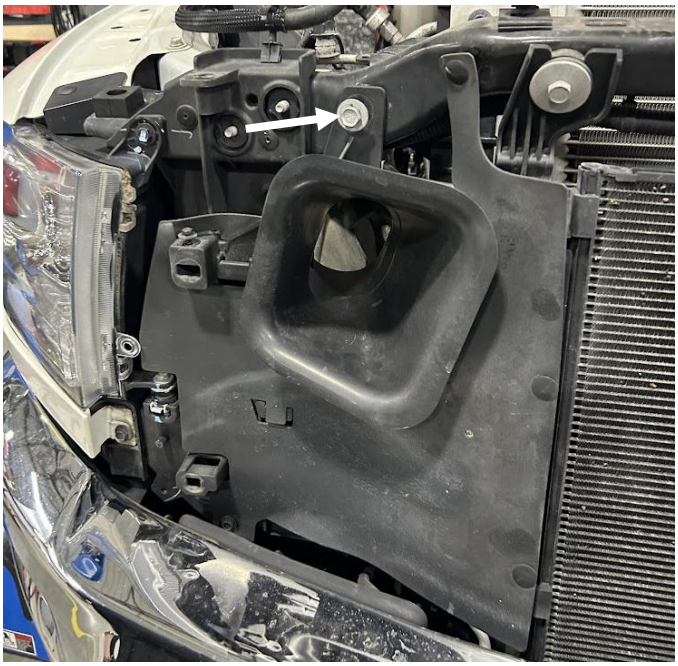
STEP 3: Loosen the two hose clamps retaining the intake tube to the airbox and turbocharger using an 8mm socket or wrench. Remove the intake tube.

STEP 4: Remove the bolt retaining the airbox assembly using a 13mm socket or wrench. Lift the airbox out of the engine bay and disconnect the active air connector on the lower driver's side of the box. Set the airbox assembly aside.

STEP 5: Remove the four plastic fir trees retaining the upper air dam to the core support using a trim tool. Remove the air dam and set aside.

STEP 6: Using a 10mm socket or wrench, remove the four bolts retaining the grille to the core support. Loosen the two lower retaining bolts (located below the outer two bolts on the top) using an 8mm socket or wrench. Remove the grille and set aside.

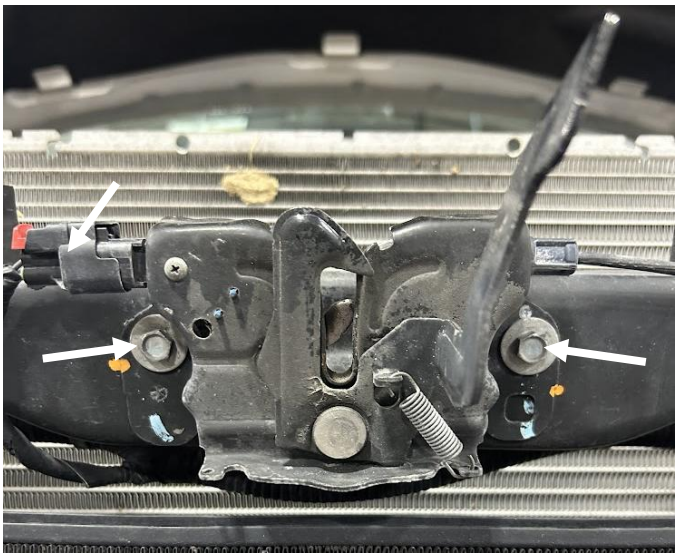
STEP 7: Remove the bolt retaining the ram air duct using a 13mm socket or wrench.



STEP 8: Using a trim tool, remove the plastic fir tree retainers on the rubber air dam. Remove the air dam and set aside.

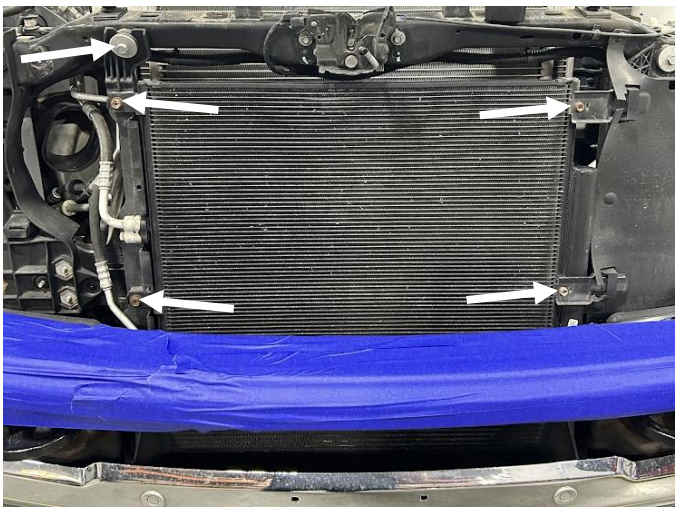
STEP 9: Disconnect the harness connector from the hood latch assembly. Remove the two bolts retaining the hood latch assembly to the core support using a 10mm socket or wrench.

NOTE: Use a paint pen to mark the location of the hood latch before loosening the bolts. This will ensure that the latch is installed in the same position



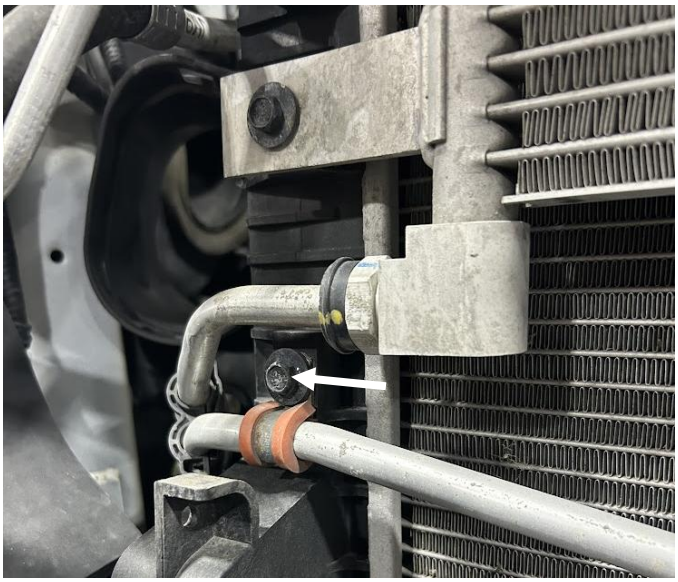
STEP 10: Using a 10mm socket or wrench, remove the two bolts retaining the driver's side of the A/C condenser. Using a 12mm socket or wrench, remove the two bolts retaining the passenger side of the A/C condenser. Using a 13mm socket or wrench, remove the one bolt retaining the passenger side condenser support. Remove the support and set it aside. Lay the condenser onto the bumper.

NOTE: A layer of painter's tape can be used to protect the bumper as shown at right.



STEP 11: Remove the four bolts retaining the power steering cooler using a 10mm socket or wrench. The power steering cooler can be left hanging below the mount to make room for removal of the transmission cooler assembly.

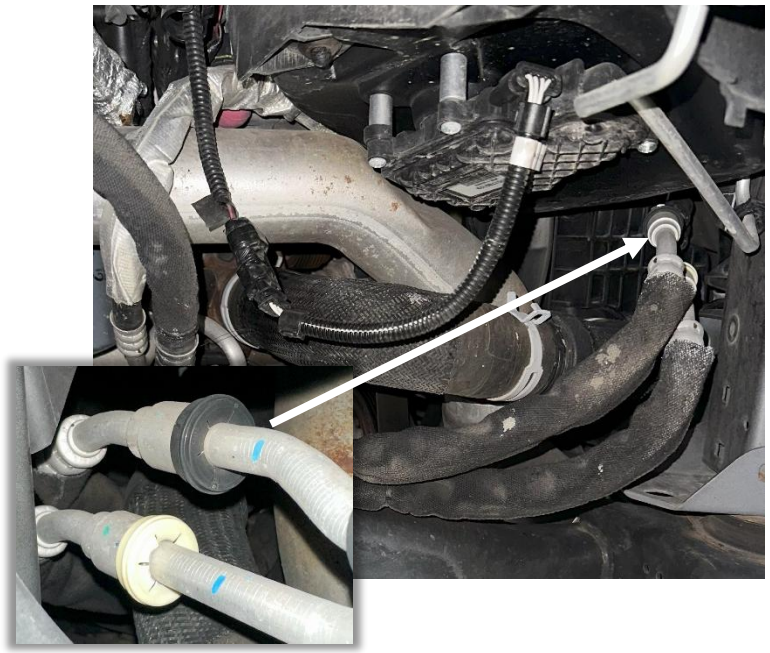
STEP 12: Remove the P-clamp retaining the OE transmission cooler line routed to the driver's side of the cooler using a 10mm socket or wrench.



STEP 13: Remove the passenger side fender liner. Using an 8mm socket or wrench and a trim tool, remove the eight bolts and three fir tree retainers. Set the fender liner aside.

NOTE: Refer to the information and images on page 2 of this document to identify whether your vehicle is or is not fitted with a factory transmission heat exchanger (HX). The following steps may be split between vehicles with and without a factory heat exchanger if applicable.

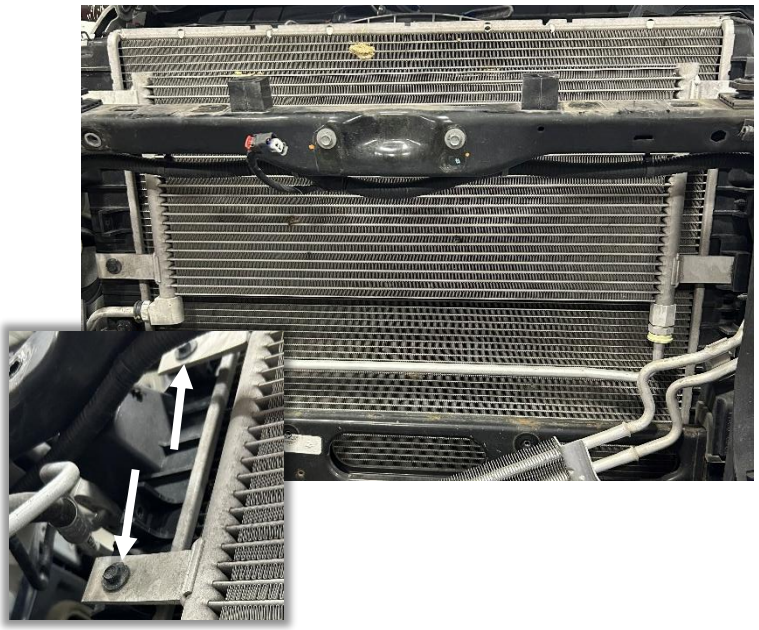
STEP 14:



Vehicles without HX – Locate the transmission cooler line disconnects near the rear passenger side of the radiator. Remove the plastic cover over the quick connects. Using a flathead screwdriver or pick, remove the metal retainer clips from both connectors. Place a clean bucket or rag underneath the connection to catch any spilled transmission fluid.

Vehicles with HX – Locate the transmission line connection near the passenger side of the radiator. Remove the plastic cover and remove the metal retaining clip with a flathead screwdriver or pick. Locate the transmission line connections on the rear of the radiator. Remove the plastic covers over the connectors and remove the metal retaining clip. Disconnect the lines. Use a clean bucket or rag to catch any spilled transmission fluid.

STEP 15: Remove the two bolts retaining the passenger side of the OE transmission cooler assembly using a 10mm socket or wrench. Set the bolts aside as they will be reused. Pull the cooler toward the passenger side to remove the inserted mounts on the driver's side. Remove the transmission cooler and attached lines from the vehicle.



STEP 16: Locate the plastic retainer shown at right just inside the passenger fender well and pry the retainer open using a flathead screwdriver or pry tool. Remove the lines from the retainer. Using a 13mm socket or wrench, remove the bolt retaining the clamp to the frame rail a shown at right.

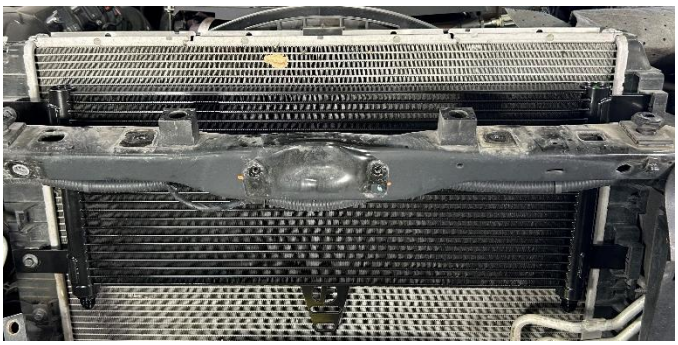
STEP 17: Remove the two bolts retaining the transmission lines shown at right using a 13mm socket or wrench.

STEP 18: Remove the metal retaining clips from both transmission lines on the passenger side of the transmission case using a flathead screwdriver or pick. Place a clean bucket or pail under the transmission to catch any spilled transmission fluid. Disconnect the transmission lines from the transmission.

STEP 19: Remove the OE transmission cooler lines from the vehicle. Bending of the lines may be required to clear the engine and frame rail.

STEP 20: Remove the two OE fittings from the two ports on the transmission using a 1" wrench or socket. Install two of the included -8AN to ¾-16 adapters into the transmission using a 7/8" socket or wrench. Torque the fittings to 22 ft-lb.

STEP 21 (ONLY FOR VEHICLES WITH HX): Remove the OE fittings from the heat exchanger on the radiator. Remove one fitting using a 1" wrench or socket and install the included -8AN to ¾-16 adapter. Using a 7/8" wrench, torque the fitting to 22 ft-lb. Repeat this process for the second fitting on the heat exchanger.



STEP 22: Remove the plugs from the new Fleece Performance transmission cooler. Install the included -8AN to ¾-16 adapters into the two ports using a 7/8" socket or wrench. Torque the fittings to 22 ft-lb.

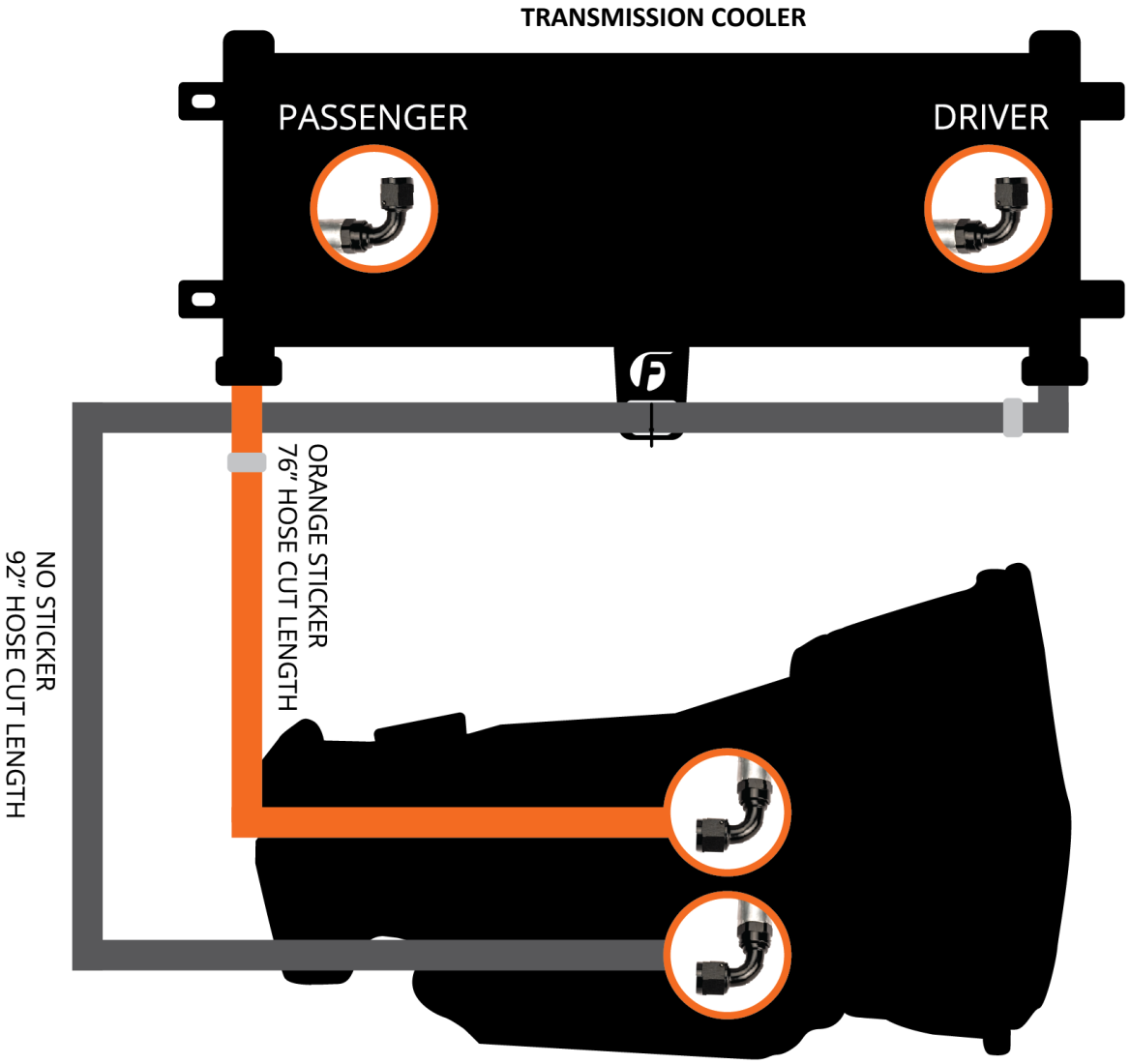
STEP 23: Install the new Fleece Performance transmission cooler by sliding the driver's side tabs into the OE mounts. Using a 10mm socket or wrench, install the two mounting bolts to retain the transmission cooler. Torque the bolts to 18 ft-lb.

STEP 24: Route the new Fleece Performance transmission cooler lines. The routing procedures will be broken down between vehicles with and without a factory transmission heat exchanger.

VEHICLES WITHOUT HX: Proceed to page 9.

VEHICLES WITH HX: Proceed to page 12

TRANSMISSION COOLER LINE ROUTINGS FOR VEHICLES <u>WITHOUT</u> A FACTORY HEAT EXCHANGER



ROUTING INSTRUCTIONS FOR VEHICLES WITHOUT HX

Locate the correct lines for your application.

76” hose cut length (orange sticker): Upper transmission port to passenger side of transmission cooler.

92” hose cut length (longest line in kit): Lower transmission port to driver’s side of transmission cooler.

Install the heat wrap onto the lines and slide the heat wrap towards the center of both of the transmission lines.

Connect the lines onto the adapter fittings installed into the transmission. The shorter of the two hoses (76”) will connect to the upper port on the transmission. The longer of the two hoses (92”) will connect to the lower port on the transmission.

Thread the connections on by hand until snug, but do not tighten.

Route the lines under the exhaust pipe, then forward along the frame rail.

Install one of the included double hose clamps onto the frame rail where the original clamp was removed in step 17. Ensure that the heat wrap is positioned in front of the clamp and underneath the turbocharger. Using a 13mm socket or wrench, install the retaining bolt, but do not fully tighten.

ROUTING INSTRUCTIONS FOR VEHICLES WITHOUT HX (CONTINUED)

Continue routing the transmission lines forward and along the passenger side frame rail. Install the second double hose clamp in the location shown and reuse the factory clamp bolt removed in step 16. Install the bolt using a 13mm socket or wrench, but do not tighten.

Route the transmission lines around the coolant tube as shown at right and through the opening near the passenger side of the radiator.

Route the lines as shown at right. Connect the end of the shorter line (76”) to the passenger side port on the Fleece Performance transmission cooler assembly.

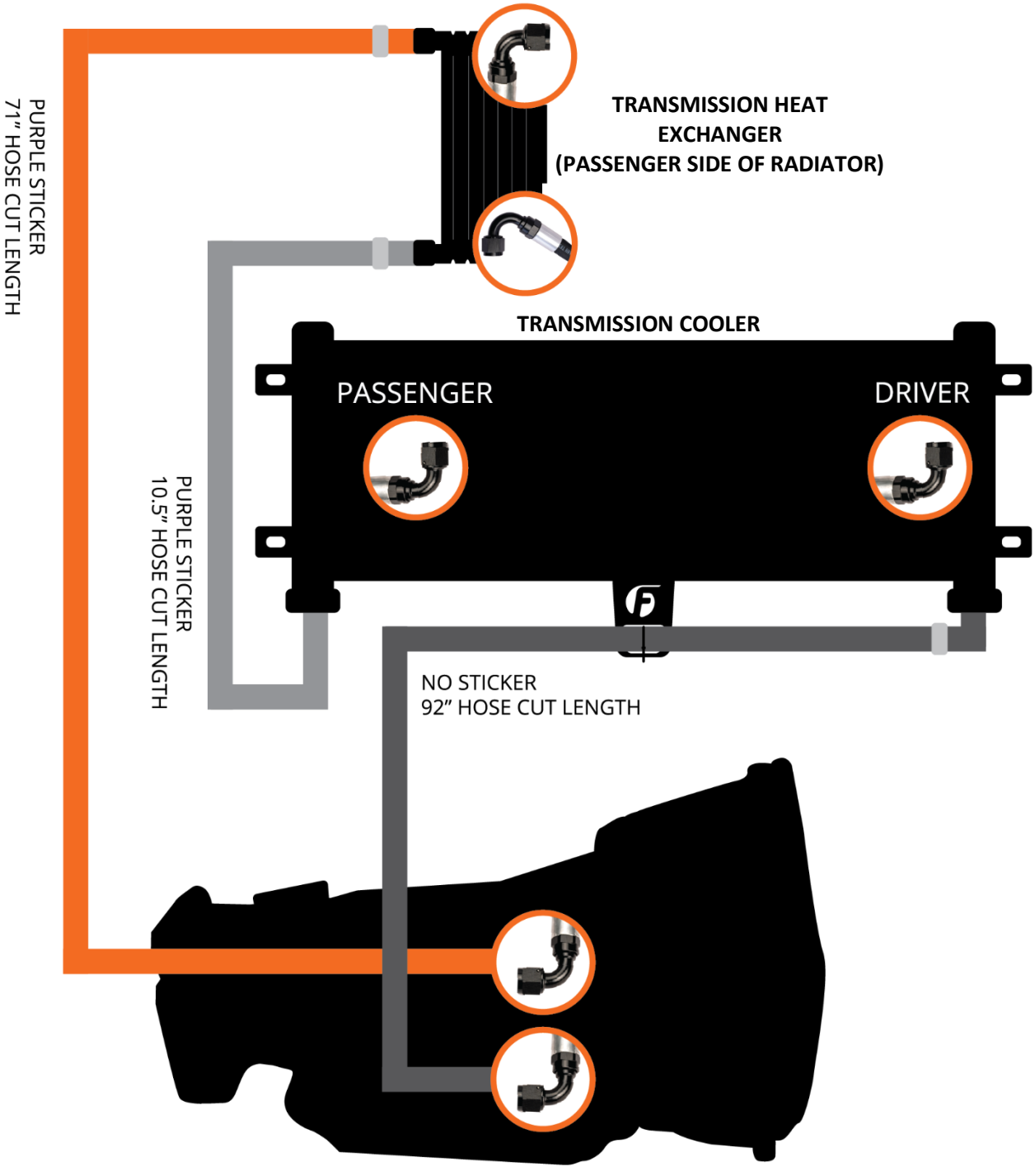
Connect the end of the long line (92”) to the driver’s side port of the Fleece Performance transmission cooler assembly. Use a zip tie to retain the line to the mount under the center of the cooler.

Using a 7/8” wrench and a second 7/8” wrench on the adapter fitting, tighten the transmission line fittings on the transmission cooler to 310 in-lb. Repeat the tightening process for the fittings on the transmission. Refer to the guide on page 18 for additional torque methods

NOTE: Use a backup wrench on the adapter fittings in the transmission and transmission cooler to prevent overtightening of the fittings.

Ensure both lines are routed together and use zip ties to retain the lines together. Tighten the bolts retaining both hose clamps.

TRANSMISSION COOLER LINE ROUTINGS FOR VEHICLES WITH A FACTORY HEAT EXCHANGER



TRANSMISSION (68RFE)

ROUTING INSTRUCTIONS FOR VEHICLES WITH HX

Locate the correct lines for your application.

71” hose cut length (longest with purple sticker): Upper transmission port to upper port on heat exchanger.

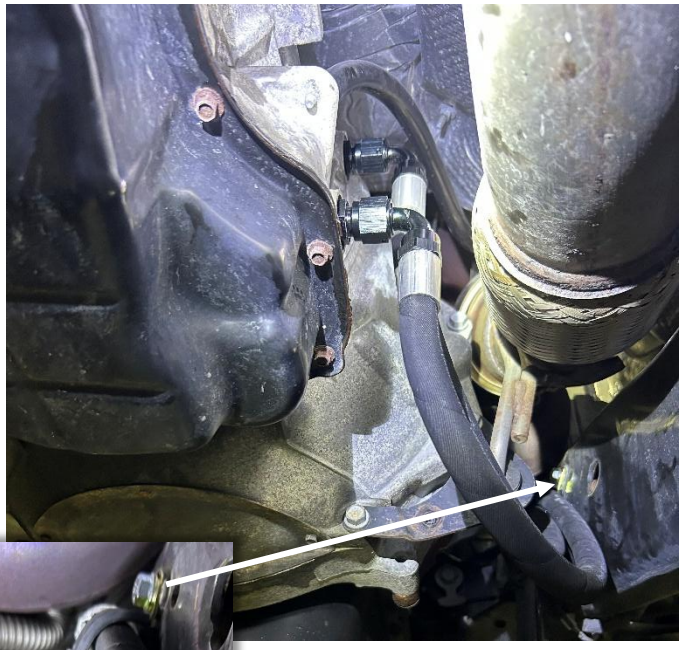
92” hose cut length (longest line in kit): Lower transmission port to driver’s side of transmission cooler.

10.5” hose cut length (shortest with purple sticker): Lower port on heat exchanger to passenger side of transmission cooler.

Install the heat wrap onto the lines and slide the heat wrap towards the center of both of the transmission lines.

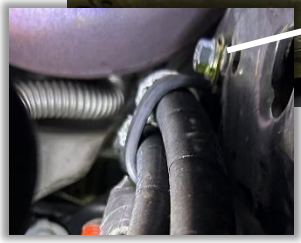
Connect the lines onto the adapter fittings installed into the transmission. The medium length line will connect to the upper port on the transmission. The long line will connect to the lower port on the transmission.

Thread the connections on by hand until snug, but do not tighten.



Route the lines under the exhaust pipe, then forward along the frame rail.

Install one of the included double hose clamps onto the frame rail where the original clamp was removed in step 17. Ensure that the heat wrap is positioned in front of the clamp and underneath the turbocharger. Using a 13mm socket or wrench, install the retaining bolt, but do not fully tighten.



ROUTING INSTRUCTIONS FOR VEHICLES WITH HX (CONTINUED)

Continue routing the transmission lines forward and along the passenger side frame rail. Install the second double hose clamp in the location shown and reuse the factory clamp bolt removed in step 16. Install the bolt using a 13mm socket or wrench, but do not tighten.

Route the transmission lines around the coolant tube as shown at right. The long line (92” hose cut length) will pass through the opening on the passenger side of the radiator. The medium length line (71” hose cut length) will connect to the upper port on the heat exchanger located on the upper rear side of the radiator assembly. Connect the fitting to the adapter on the heat exchanger and thread on until hand tight.

Connect the 120-degree fitting on the short line (10.5” hose cut length) to the lower port on the heat exchanger. Thread the fitting onto the adapter until hand tight. Route the rest of the hose through the space to the passenger side of the radiator.

ROUTING INSTRUCTIONS FOR VEHICLES WITH HX (CONTINUED)

Route the lines as shown at right. Connect the 90-degree end of the shortest line (FPE-35910) to the passenger side port on the Fleece Performance transmission cooler assembly.

Connect the end of the long line (FPE-35911) to the driver's side port of the Fleece Performance transmission cooler assembly. Use a zip tie to retain the line to the mount under the center of the cooler.

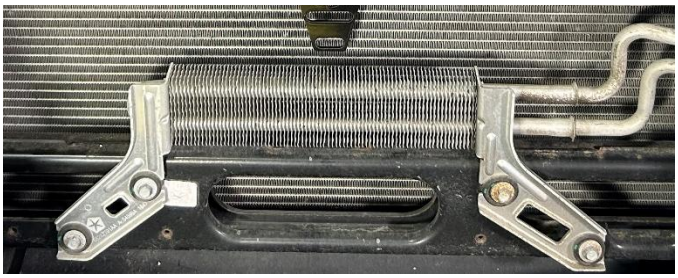
Using a 7/8" wrench and a second 7/8" wrench on the adapter fitting, tighten the transmission line fittings on the transmission cooler to 310 in-lb. Repeat the tightening process for the fittings on the transmission heat exchanger and transmission. Refer to the guide on page 18 for additional torque methods.

NOTE: Use a backup wrench on the adapter fittings in the transmission, transmission heat exchanger, and transmission cooler to prevent overtightening of the fittings.

Ensure all lines are routed properly and use zip ties to retain lines together between the transmission and heat exchanger and from the heat exchanger to the transmission cooler. Tighten the bolts retaining both hose clamps.

STEP 25: Install the fender liner back onto the vehicle. Install the eight bolts using an 8mm socket or wrench. Install the three fir tree retainers.

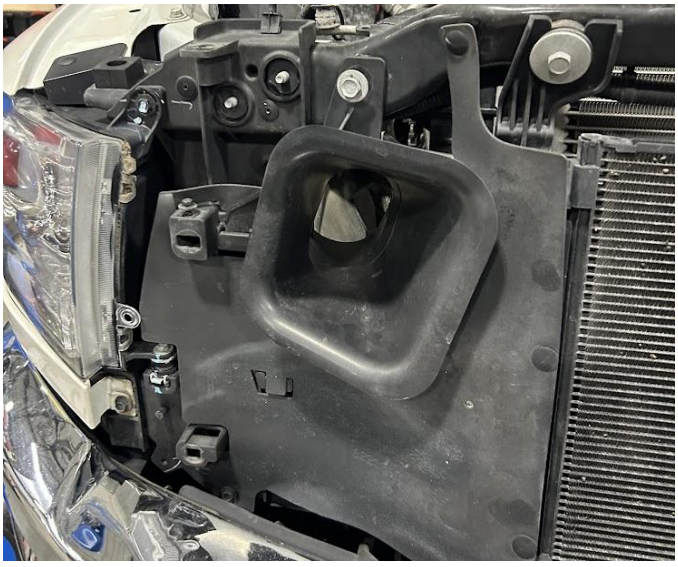
STEP 26: Install the four bolts to retain the power steering cooler using a 10mm socket or wrench.



STEP 27: Install the A/C condenser support bracket and install the bracket bolt using a 13mm socket or wrench. Using a 12mm socket or wrench, install the two bolts retaining the condenser to the passenger side bracket. Install the two bolts retaining the driver's side brackets using a 12mm socket or wrench.

STEP 28: Install the hood latch assembly using a 10mm socket or wrench. Connect the harness connector to the sensor on the latch.

NOTE: Ensure that the hood latch is properly aligned to the marks made in step 9.



STEP 29: Install the air dams using the fir tree retainers. Install the ram air duct using a 13mm socket or wrench.

STEP 30: Install the grille onto the front of the vehicle. Tighten the two bolts loosened in step 6 using an 8mm socket or wrench. Install the four bolts retaining the top of the grille to the core support using a 10mm socket or wrench.

STEP 31: Install the upper air dam by clipping the fir tree retainers back into their mounts.

STEP 32: Connect the active air connector on the underside of the airbox. Install the airbox into the engine bay. Install the retaining bolt using a 13mm socket or wrench.

STEP 33: Install the intake tube to the rear of the airbox and intake of the turbocharger. Connect the CCV tube. Tighten the hose clamps using an 8mm socket or wrench.

STEP 34: Connect the MAF and Barometric pressure sensors. Connect the battery terminals.

STEP 35: Start the vehicle. Check the transmission fluid level and add fluid as necessary. Check for leaks.

Installation Guidelines for AN Fittings

IMPORTANT NOTES:

DO NOT overtighten AN fittings. Damage can occur, resulting in leaks. Always follow recommended torque specs and torquing procedures as given by the manufacturer.

When connecting an AN fitting to an AN adapter, be sure to use a supporting wrench to keep the adapter from overtightening.

Torque Specs for Aluminum AN Fittings

AN (Army-Navy) Fitting Thread Size Chart				
AN Size	Hose Size	Thread Size	Minimum Torque (in-lbs)	Maximum Torque (in-lbs)
-3	3/16”	3/8-24 SAE	70	105
-4	1/4”	7/16-20 SAE	100	140
-6	3/8”	9/16-18 SAE	150	195
-8	1/2”	3/4-16 SAE	270	350
-10	5/8”	7/8-14 SAE	360	430
-12	3/4”	1-1/16 SAE	460	550
-16	1”	1-5/16 SAE	700	840
-20	1-1/4”	1-5/8 SAE	850	1020

ALTERNATIVE METHOD FOR TORQUING ALUMINUM AN FITTINGS:

If a torque wrench cannot be used in your application, you can also properly torque your AN fittings using the flats method.

1. Tighten the nut until it becomes snug, and the fitting is seated.
2. Use a marker to draw a line between the nut and its connection (see image below)
3. Using two wrenches (one for the nut and the other for the connection), tighten the nut to the amount shown in the chart.

AN Fitting Size	# of Hex Flats Rotations
-4	1 ½ to 1 ¾
-6	1 to 1 ½
-8	1 ¼ to 1 ¾
-10	1 ¼ to 1 ¾
-12	1 to 1 ½
-16	¾ to 1
-20	½ to ¾

Note: Do not exceed the number of hex flat rotations outlined, as damage to the fitting can occur.