INSTALLATION INSTRUCTIONS

SUBJECT: TRANSMISSION COOLER AND LINE KIT FOR 1994-2002 DODGE RAM 2500/3500

FITMENT: 1994–2002 Dodge Ram with 5.9L 12V or 24V Cummins and 47RE or 47RH Automatic Transmission

KIT P/N: FPE-TC-CUMM-9402

ESTIMATED INSTALLATION TIME: 1.5 - 2 Hours

TOOLS REQUIRED: 10 mm socket, 18 mm socket, flathead screwdriver, 7/8” wrench, 3/4” wrench, 13/16” wrench, 15/16” wrench, ½” quick disconnect tool

KIT CONTENTS:

Item	Description	Qty
1	Transmission cooler	1
2	Transmission line (90 deg/0 deg)	1
3	Transmission line (90 deg/90 deg)	1
4	Transmission temperature sensor adapter block	1
5	-8AN to ¼ NPT male fitting	2
6	-8AN to -10ORB straight fitting	1
7	-8AN to ¾”-16 male fitting	1
8	90 degree -8AN to -8ORB fitting	2
9	Rubber Cap	2
10	M8x1.25x20 hex bolt	2
11	M8x1 locknut	4
12	M6x1 screw	1
13	P-clamp	2
14	Zip ties	8
15	Thread sealant	1

IMPORTANT NOTES:

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:

- Use of this product may void or nullify the vehicle’s factory warranty.
- 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.

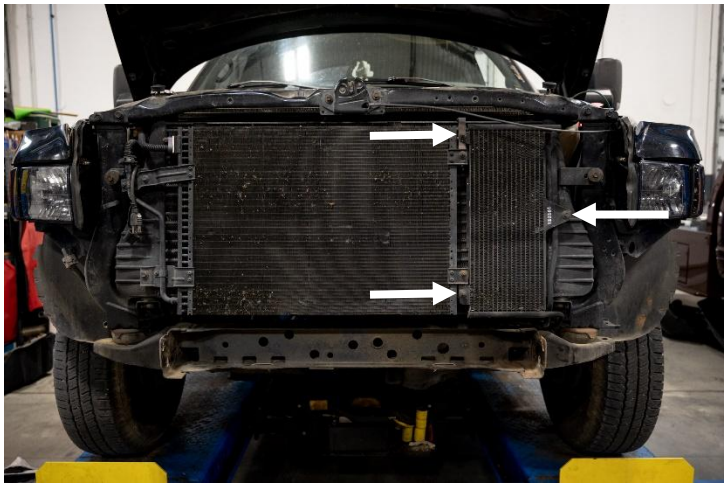
PROCEDURE:

STEP 1: Park the vehicle on a flat and level surface. Disconnect the batteries.

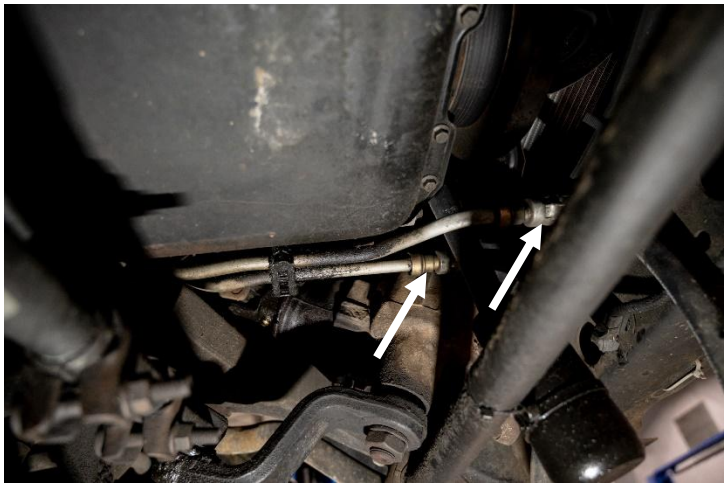
STEP 2 (OPTIONAL): Remove the front bumper using an 18mm socket or wrench. Remove the six nuts and bolts retaining the bumper to the frame.

NOTE: Removal of the bumper is optional. For the purpose of visualization, the bumper has been removed for the installation in this document.

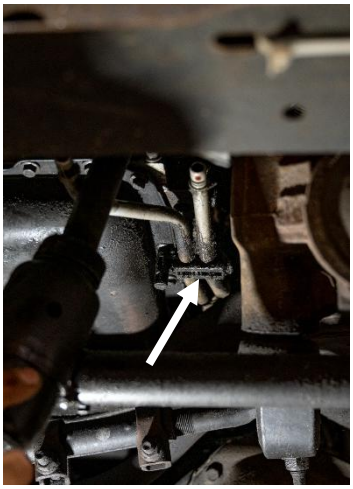
STEP 3: Using a 10mm socket or wrench, remove the three nuts retaining the transmission cooler to the radiator assembly. Retain these nuts as they will be used to install the new transmission cooler.

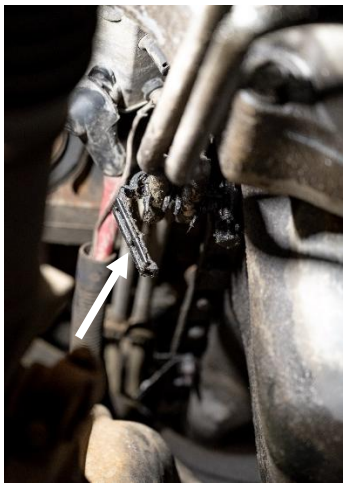


STEP 4: Locate the two quick connect fittings just behind the frame support and on the passenger side of the steering box. Using a ½" quick disconnect tool, disconnect the two transmission lines from the transmission cooler. Drain the transmission fluid in the lines and transmission cooler into a clean pail. Remove the transmission cooler assembly.



STEP 5: Remove the transmission lines from the two retaining clips. The first clip is located just behind where the quick disconnects were removed and the second clip is along the driver's side of the transmission. To disengage the clips, pry open the bottom of the clips using a screwdriver or pry bar.





STEP 6: Locate the transmission heat exchanger on the rear passenger side of the engine block. Remove both lines using a 7/8" wrench.

STEP 7: Allow the transmission heat exchanger to drain into a clean pail. Once the fluid is completely drained, install the two rubber caps (item #9) onto the two ports on the heat exchanger.

STEP 8: Disconnect the lines from the transmission. Use a ¾" wrench to remove the lines and a 15/16" wrench as a backup to prevent damage to the fittings in the transmission housing. If you have a truck with the 47RH transmission, disconnect the external transmission temperature sensor.

NOTE: Transmission fluid will spill out of the front port on the transmission. This is normal.

STEP 9: Remove the transmission lines from the vehicle.

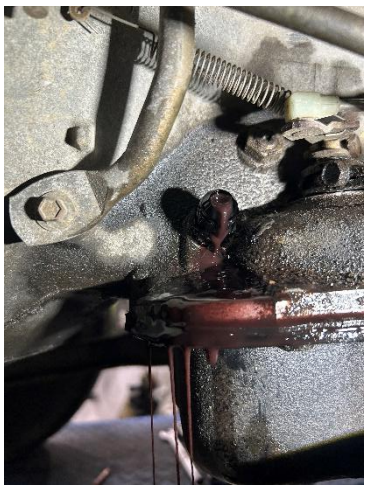
NOTE: You may have to bend the lines for them to be removed.

STEP 10: Use a 15/16" wrench to remove the two fittings from the transmission housing.

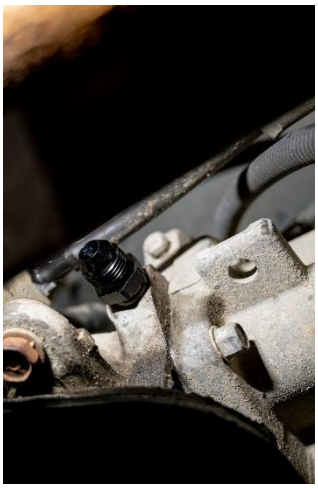
STEP 11: Place a bead of thread sealant around both of the -8AN to ¼ NPT fittings (item #5) as shown at right. Install the fittings into the transmission ports using a 13/16" wrench. Tighten to 22 ft-lbs. DO NOT OVERTIGHTEN THESE FITTINGS.

Front Transmission Port

Rear Transmission Port



Front Transmission Port



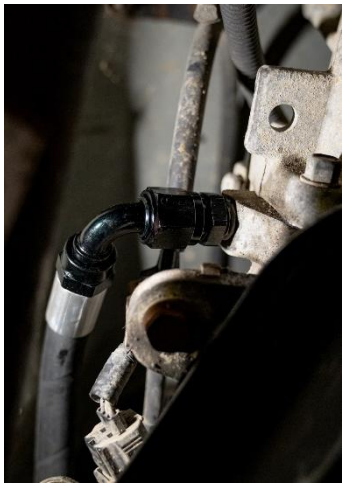
Rear Transmission Port

STEP 12a (47RH TRUCKS ONLY): Install the fittings into the temperature sensor adapter block as shown at right.

STEP 12b (47RH TRUCKS ONLY): Install the temperature sensor adapter block as shown at right. Tighten the -8AN straight fitting to 270-350 in-lbs using a 7/8” wrench. Use a 13/16” backup wrench on the fitting in the transmission to prevent overtightening.

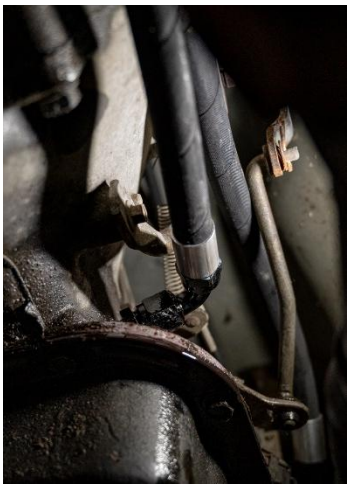
STEP 13: Connect the new transmission lines to the transmission, but do not tighten the fittings. The hose with two 90-degree fittings will connect to the rear port on the transmission. The hose with one 90-degree fitting and one straight fitting will connect to the front port on the transmission using the 90-degree fitting.

Front Transmission Port



Rear Transmission Port

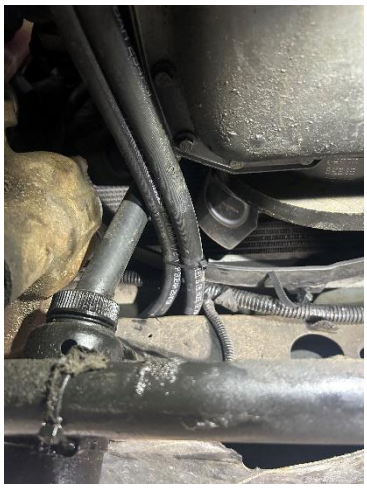
STEP 14: Route the transmission lines from the transmission to the front of the vehicle (between frame and radiator) as shown at right. Use the included p-clamps with the M8 bolts and locknuts (item #10 and #11) to retain the lines. Evenly space the zip ties between the p-clamps.



From Transmission Ports

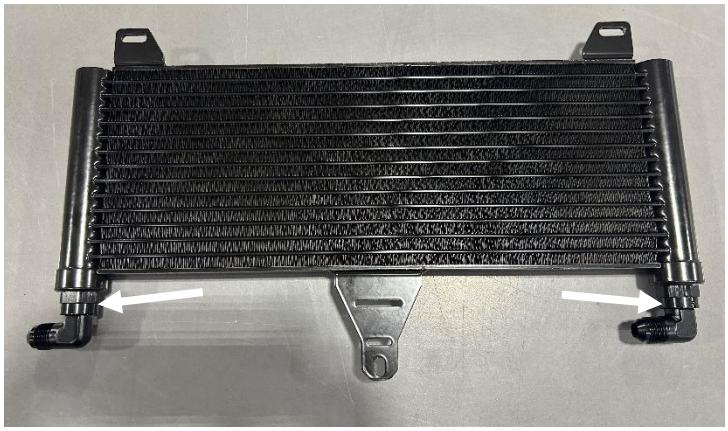
P-clamp on rear of oil pan

P-clamp on front of oil pan

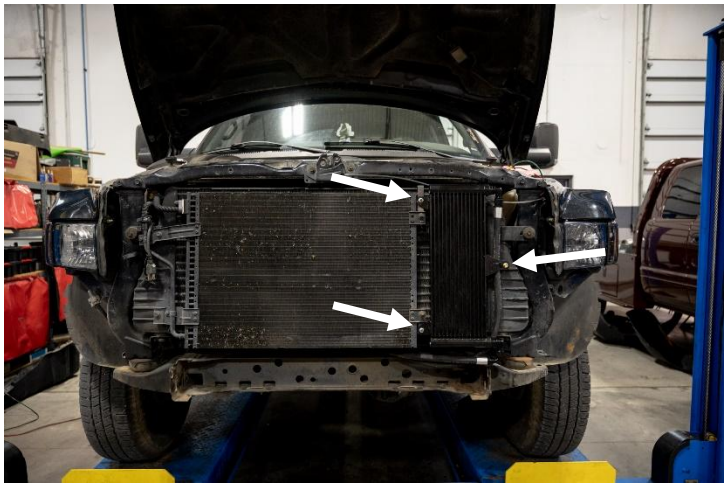


Lines routed under radiator and above frame support

STEP 15: Remove the red caps from the new Fleece Performance transmission cooler and install the 90-degree -8 to O-ring fittings (item #8) into the cooler. Tighten the fittings to 22 ft-lbs.

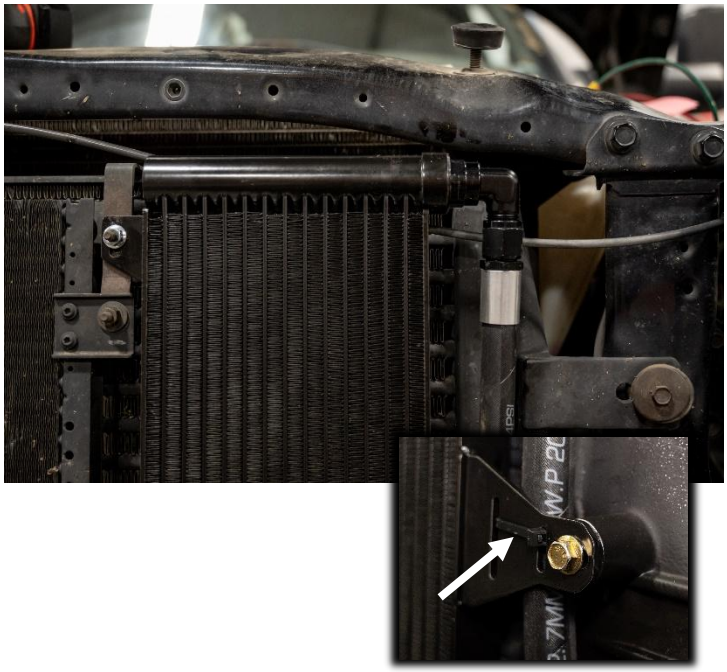


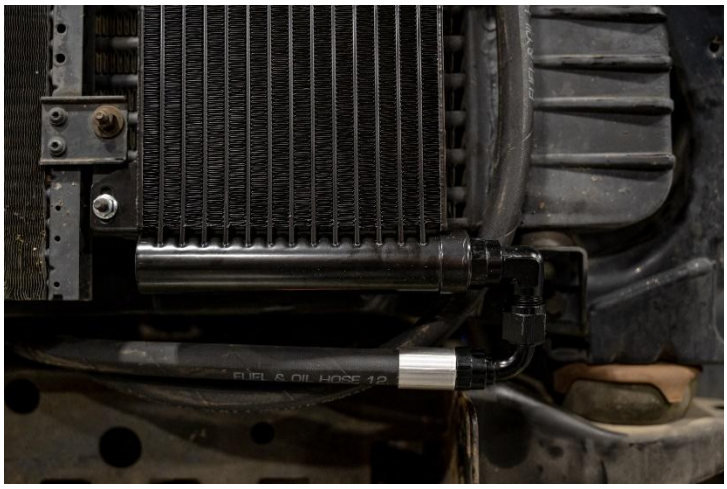
STEP 16: Install the transmission cooler using a 10mm socket or wrench with two of the included locknuts (item #10) and the one M6 screw (item #11).



NOTE: The mounting tabs on the transmission cooler should be oriented such that the forward-facing side of the cooler is flush with the mounts for the A/C condenser.

STEP 17: Connect the transmission line with the straight fitting to the upper port on the transmission cooler. Do not tighten the fitting. Install a zip tie around the line and secure it to the middle support as shown at right.





STEP 18: Connect the transmission line with the 90-degree fitting to the lower port of the transmission cooler. Do not tighten the fitting.

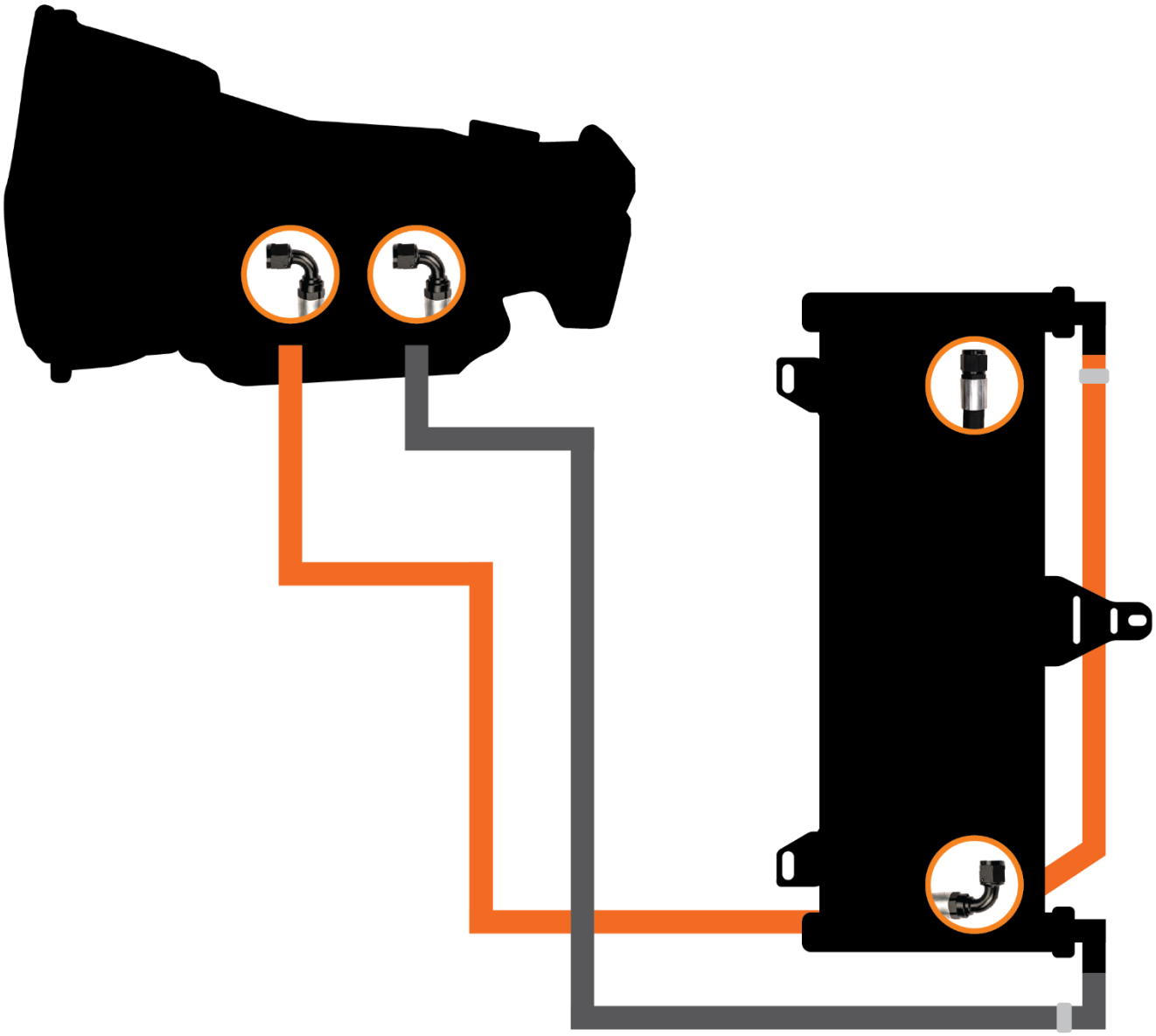
STEP 19: Inspect the routings of the transmission lines and verify that the lines are secured.

STEP 20: Tighten all four transmission line fittings and torque them to 270-350 in-lbs using a 7/8” wrench. Use a 13/16” backup wrench on the fittings installed into the transmission housing to prevent damage from overtightening.

STEP 21: If the front bumper of the vehicle was removed, reinstall the bumper using an 18mm socket or wrench.

STEP 22: Check and confirm that the transmission fluid level is within specification. Add new or clean transmission fluid as necessary with the OEM’s approved transmission fluid.

STEP 23: Start the vehicle and confirm that no leaks are present.



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 fitting 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.