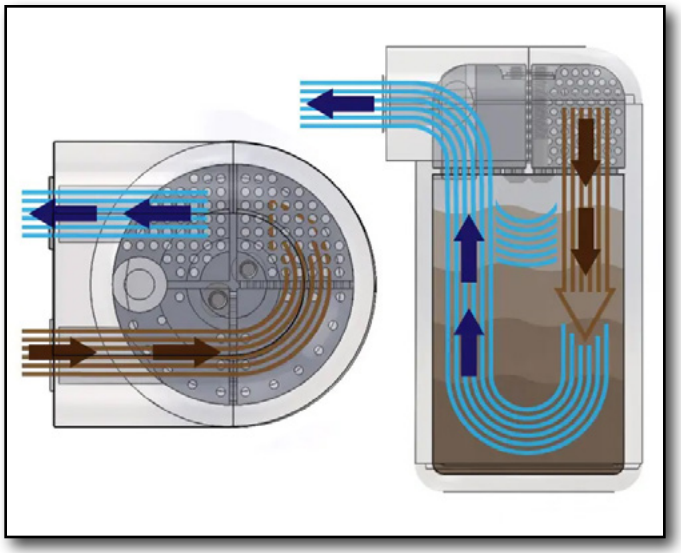
BMW F3x N20
Catch Can & Drain System
Installation Guide



INTRODUCTION

Our Catch Can System offers the following features:

- Constructed of strong and lightweight 6061-T6 billet aluminum
- Black anodized for corrosion resistance
- In-house designed and engineered
- Easy installation thanks to a chassis specific mounting bracket
- All mounting hardware included
- Vehicle specific silicone feed and return hoses
- Includes a dipstick to check content level
- An optional drain system can be added for easy evacuation of collected oil from below the vehicle (sold separately)
- Fully serviceable

Excess oil coating the inside of the intake from the crank vent system on your BMW will lead to excessive deposits and carbon build up on the back of the intake valves, resulting in power loss and poor driveability. Stop the problem from developing and prevent expensive repairs by installing our Turner Motorsport catch can system. Our systems are designed specifically for your N20-powered F3x, so installation is simple.

Thank you for purchasing our Catch Can Kit, we appreciate your business!

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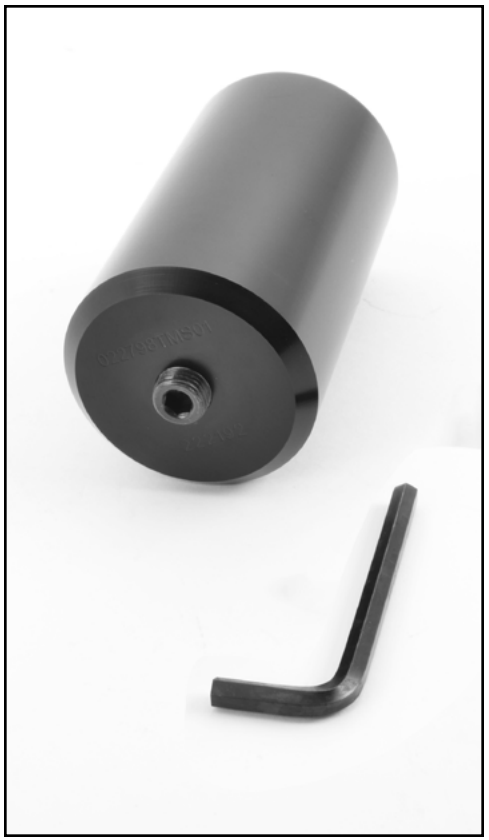
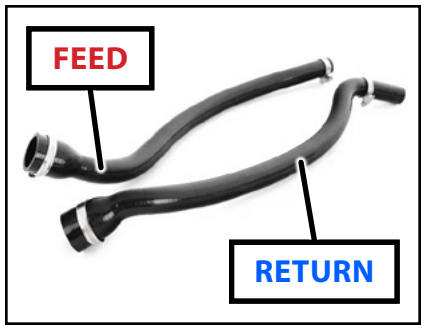
KIT CONTENTS



Catch Can Reservoir **(QTY 1)**
(Includes a ¼" Allen Key for drain installation)

Baffled Separator **(QTY 1)**
2.5mm Allen Key **(QTY 1)**
Dipstick **(QTY 1)**

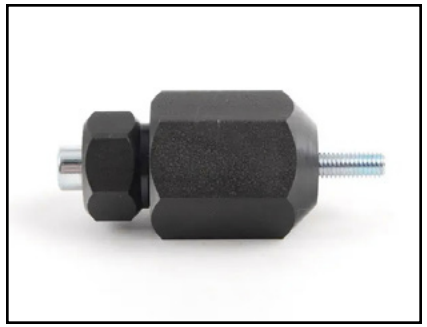


F3x N20 Silicone Hose Set
(QTY 1)

-10AN ORB X ¾" Hose Fitting
(QTY 2)

F3x N20 Bracket **(QTY 1)**

M5 Riv Nut **(QTY 2)**
M5x16mm Screw **(QTY 2)**



M5 Riv Nut Tool
(QTY 1)

INSTALLATION NOTES

- **RH** refers to the ***passenger side*** of the vehicle.
- **LH** refers to the ***driver side*** of the vehicle.
- Always use the proper torque specifications.
- If applicable to this installation, torque specifications will be listed throughout the document and at the end as well.
- Please read all of these instructions and familiarize yourself with the complete process **BEFORE** you begin.

GENERAL PREPARATION AND SAFETY INFORMATION

Turner Motorsport cares about your health and safety, please read the following safety information. This information pertains to automotive service in general, and while it may not pertain to every job you do, please remember and share these important safety tips.

- Park your car in a safe, well lit, level area.
- Shut the engine off and remove the key from the ignition switch.
- Make sure any remote start devices are properly disabled.
- **ALWAYS** wear safety glasses.
- Make sure the parking brake is applied until the vehicle is safely lifted and supported.
- Whether lifting a vehicle using an automotive lift or a hydraulic jack, be sure and utilize the factory specified lift points.
- Lifting a vehicle in an incorrect location can cause damage to the suspension/running gear.
- **ALWAYS** support the vehicle with jack stands.
- **ALWAYS** read and follow all safety information and warnings for the equipment you are using.

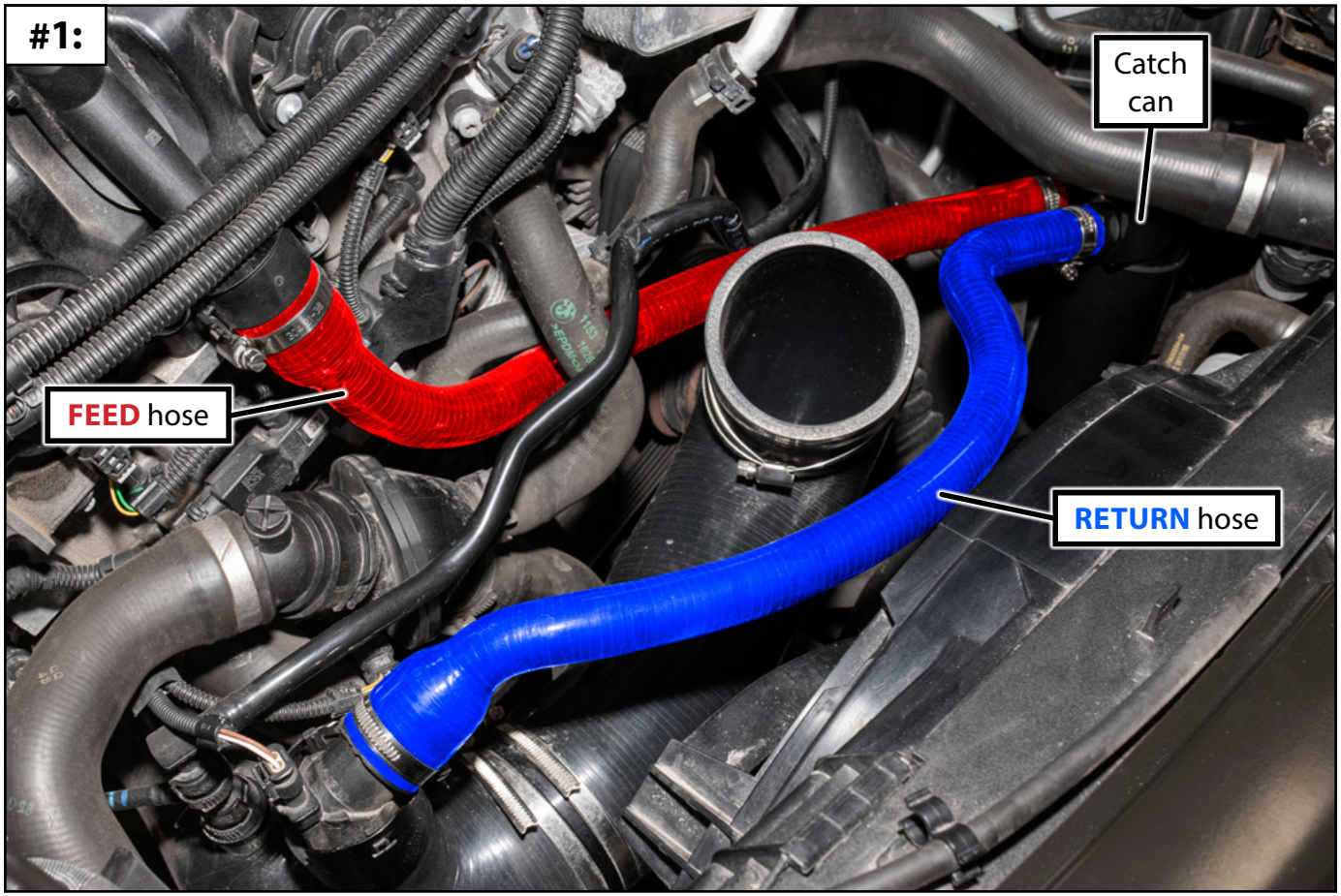
NEVER get underneath a vehicle that is supported only by a jack, and ALWAYS make sure that the vehicle is securely supported on jack stands.

INSTALLING THE CATCH CAN SYSTEM

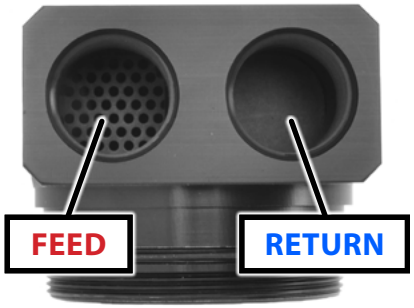
Here is an overview of the catch can hose routing on an N20 engine (**photo #1 below**). The catch can will be mounted on the LH (driver's) side just behind the headlight. We will be removing the crankcase vent tube from the front of the engine and installing our catch can hoses in its place.

Take a look at the photo below and familiarize yourself with the locations of all components and hose routing. It's important to note that the catch can system needs to be setup in **STANDARD FLOW**. Be sure to confirm that your catch can is set up for standard flow **BEFORE** connecting the hoses (**see photo #2 below**).

#1:



#2:



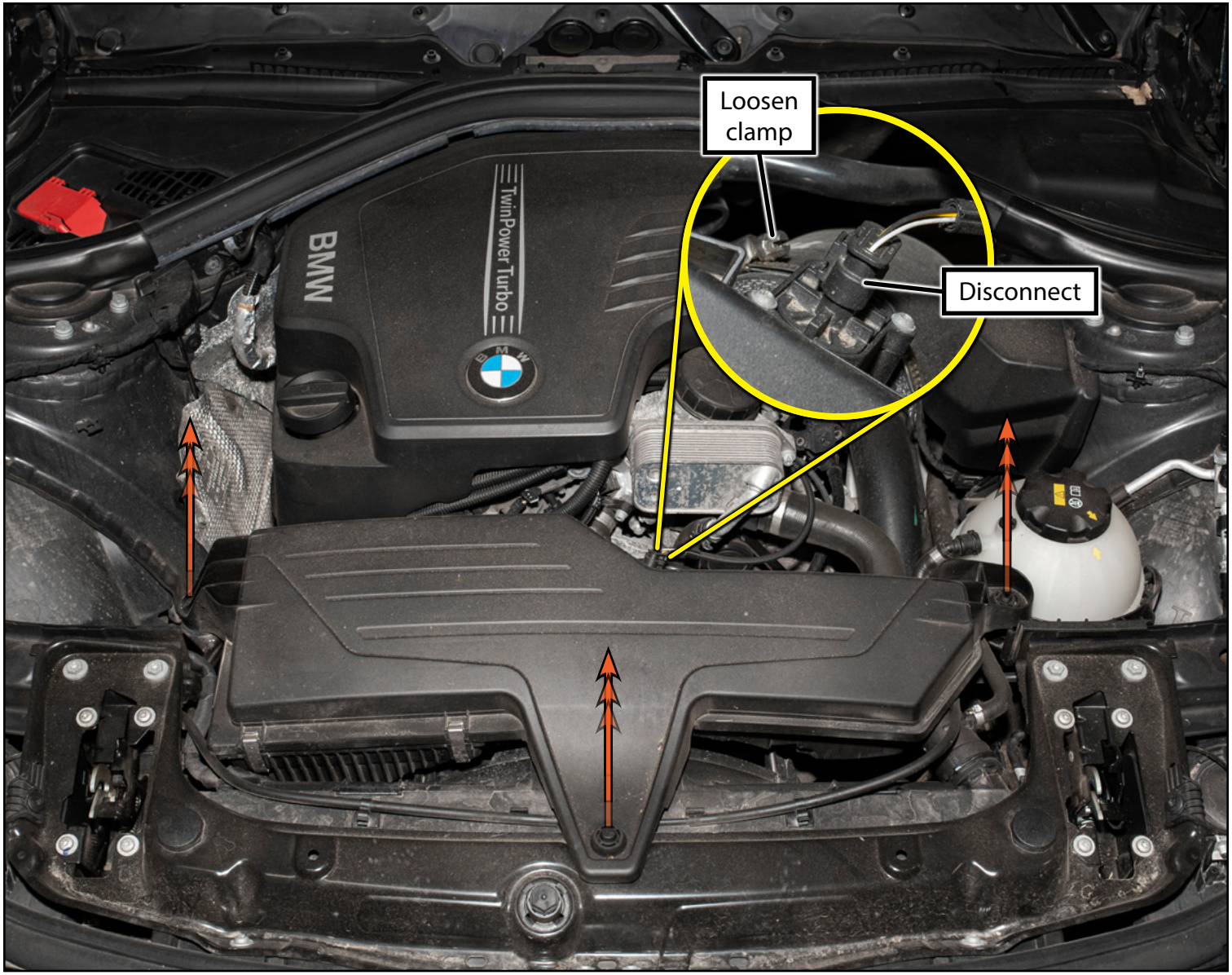
STANDARD Flow Shown Above

INSTALLING THE CATCH CAN SYSTEM

Step 1:

Disconnect the MAF sensor connector on the back side of the air box, then loosen the hose clamp located just below it (**YELLOW** inset photo).

Pull upward on the air box at each of the three mounting grommets (arrows) to release them, release the intake coupler below it (the hose clamp we just loosened), then remove the air box from the vehicle.



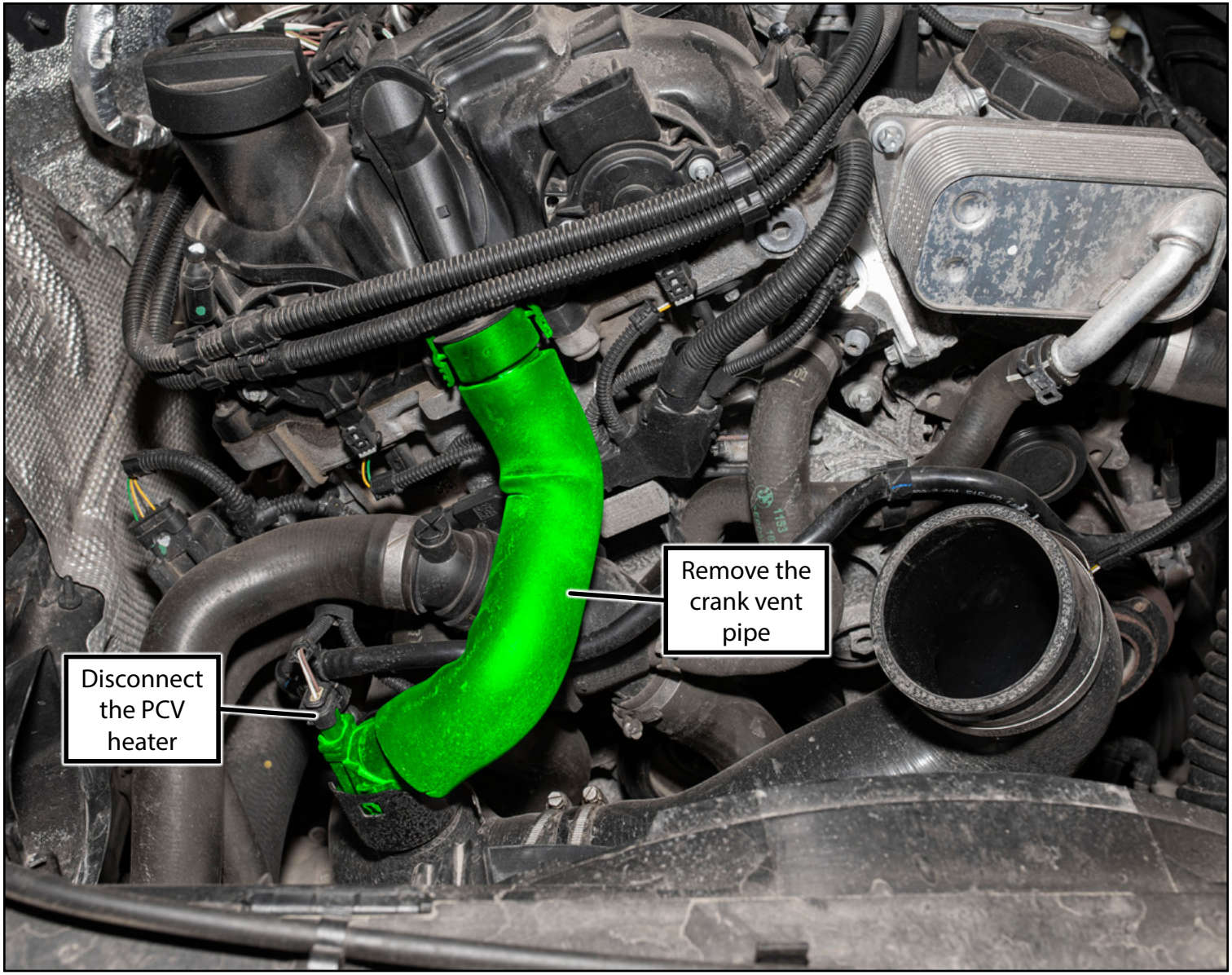
INSTALLING THE CATCH CAN SYSTEM

Step 2:

Locate the crank vent pipe which runs from the valve cover to the turbo inlet pipe in front of the engine (highlighted in **GREEN** in the photo on the right).

Disconnect the PCV heater located on the bottom of the crank vent pipe.

Squeeze the tabs inward on each crank vent pipe fitting to release them, then pull them out. Remove the crank vent pipe from the engine.



INSTALLING THE CATCH CAN SYSTEM

Step 3:

Now you'll have to separate the fittings from the crank vent pipe, they're needed to install the system. To do this you'll need to do the following:

1. Roll back the insulation wrap on both ends of the pipe (**photo #1**).
2. Carefully cut into the pipe at each fitting using a sharp razor blade (**photo #2**).
3. Pull the fittings out (**photo #3**).

#1:

#2:

#3:

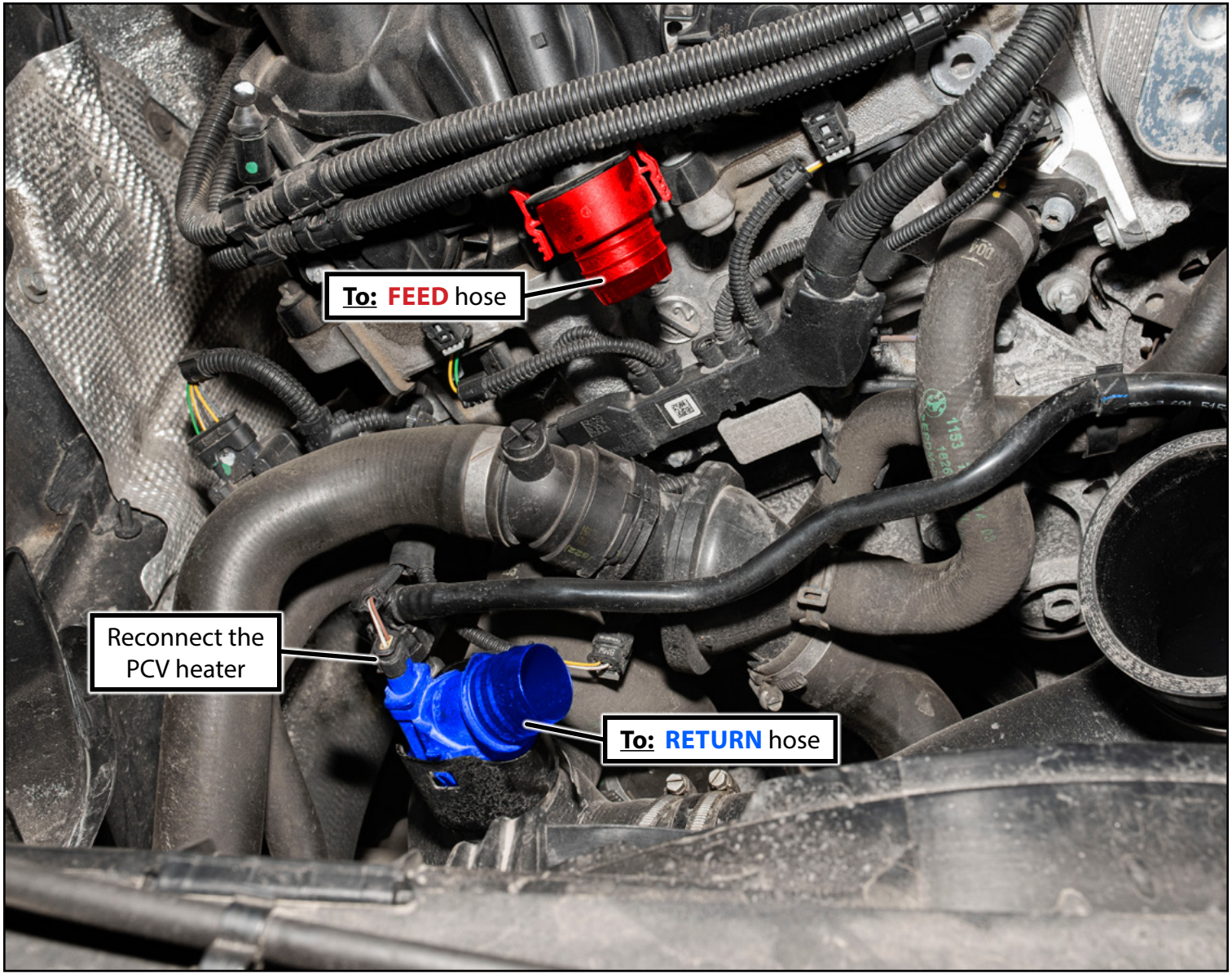
INSTALLING THE CATCH CAN SYSTEM

Step 4:

Reinstall the straight fitting (highlighted in **RED**) onto the valve cover. This will be connected to the catch can **FEED** hose.

Reinstall the angled fitting (highlighted in **BLUE**) onto the turbo inlet pipe. This will be connected to the catch can **RETURN** hose.

Reconnect the PCV heater in the angled fitting.



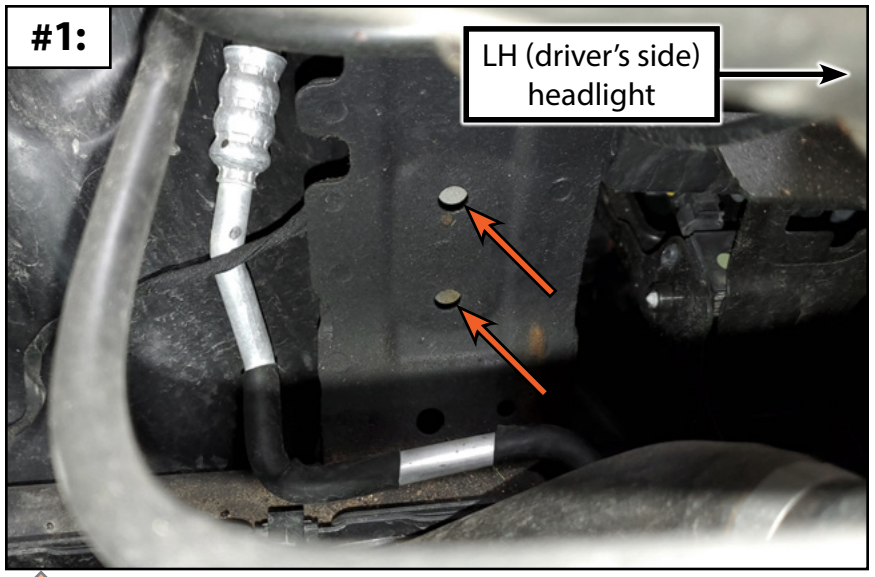
INSTALLING THE CATCH CAN SYSTEM

Step 5:

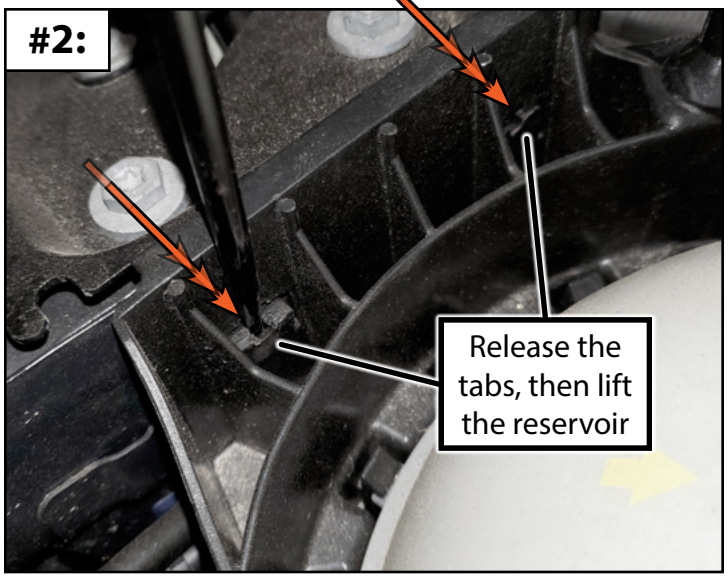
Our mounting bracket utilizes two holes (arrows in **photo #1**) in the chassis located below and behind the LH (driver's side) headlight. This is where we will be installing the supplied riv-nuts.

OPTIONAL: If you have small hands and a lot of patience you can reach these holes without removing anything else, but if you release the coolant expansion tank (**photo #2**), disconnect the coolant level sensor (**photo #3**), and swing the expansion tank out of your way you'll gain a lot of extra room to work!

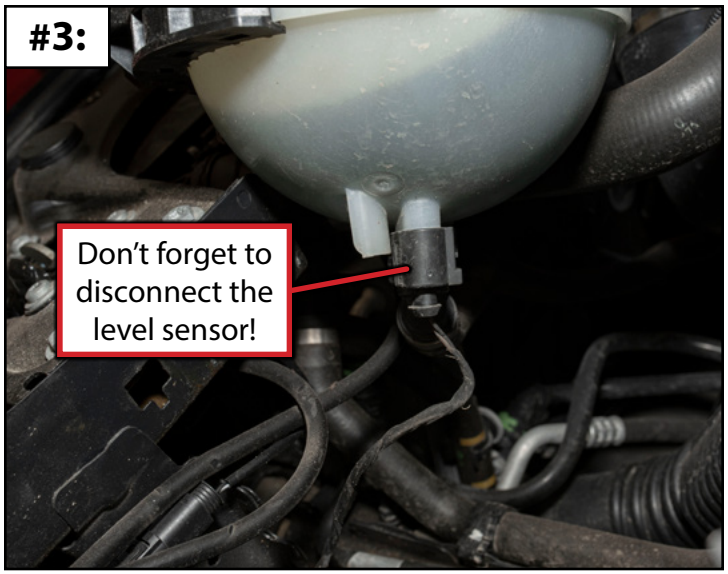
#1:



#2:



#3:

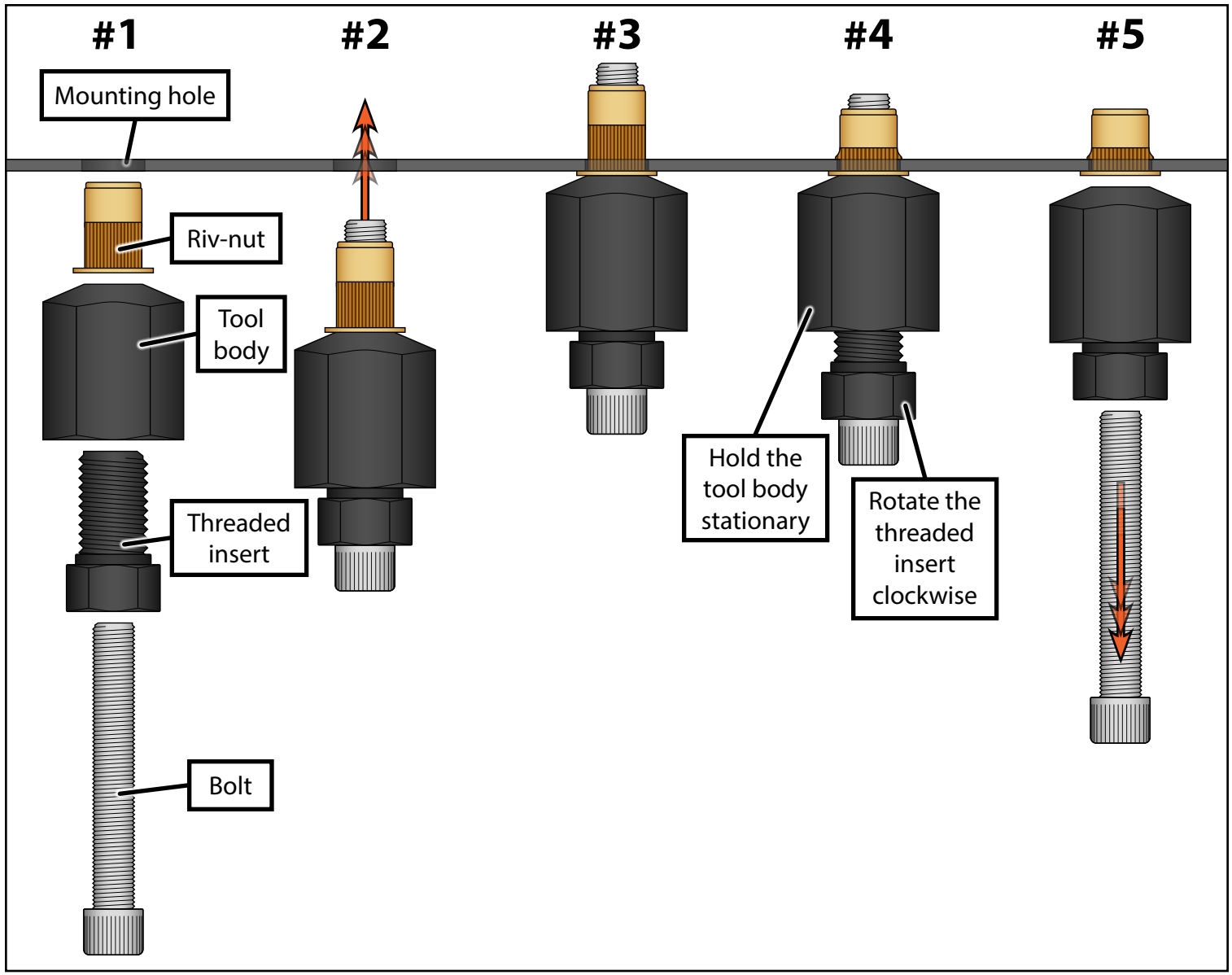


INSTALLING THE CATCH CAN SYSTEM

Step 6:

Install the supplied riv-nuts into the mounting holes from step 5 using the supplied tool:

#1 Assemble the riv-nut onto the tool by hand.
#2 Insert the entire assembly into the mounting hole.
#3 Be sure to hold the riv-nut in place to keep it straight so it doesn't install crooked.
#4 Hold the tool body stationary with a wrench while you rotate the bolt clockwise to expand the riv-nut.
#5 Torque the bolt to 15 Nm (11 Ft-lbs), then remove it and repeat this procedure to install the other riv-nut.



INSTALLING THE CATCH CAN SYSTEM

Step 7:

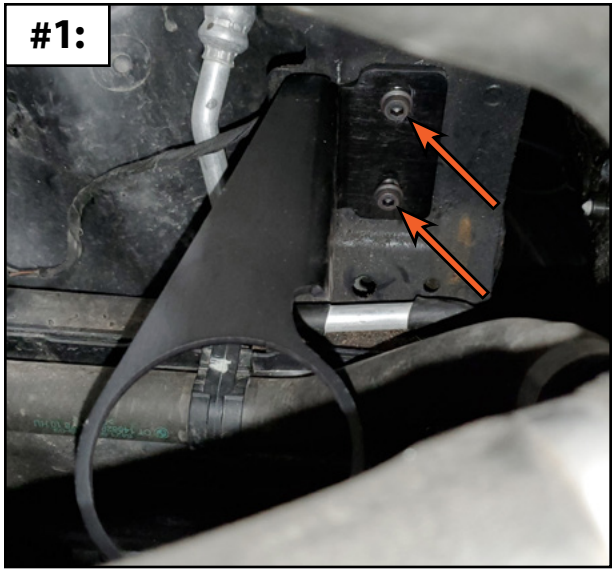
Use the two provided M5 bolts to secure the catch can bracket in place (arrows in **photo #1**).

Confirm that the catch can separator is setup for **STANDARD** flow (**photo #2**).

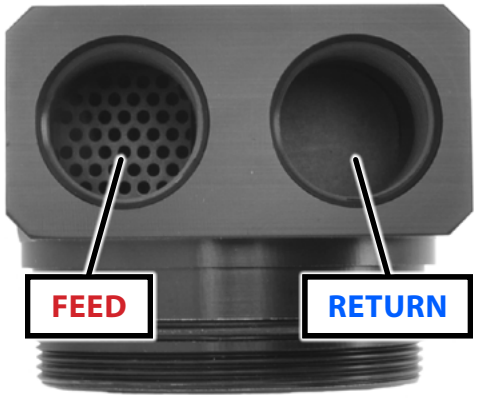
Thread the hose fittings into the catch can separator and tighten them until snug. Install the catch can into the bracket (**photo #3**) by doing the following:

- Unthread the reservoir and dipstick.
- Remove the o-ring from the catch can separator.
- Place the separator into the bracket.
- Lubricate the o-ring with clean engine oil, then install it into the groove in the separator.
- Thread the reservoir onto the separator to lock the catch can into the bracket.

#1:

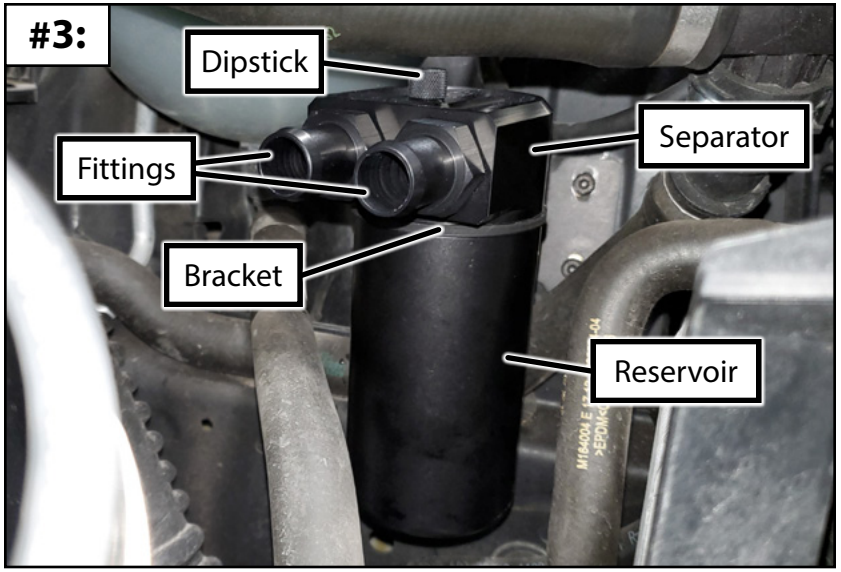


#2:



STANDARD Flow Shown Above

#3:



If your catch can is not set up for **STANDARD FLOW**, please click HERE to jump ahead for instructions on reversing the flow of your catch can.

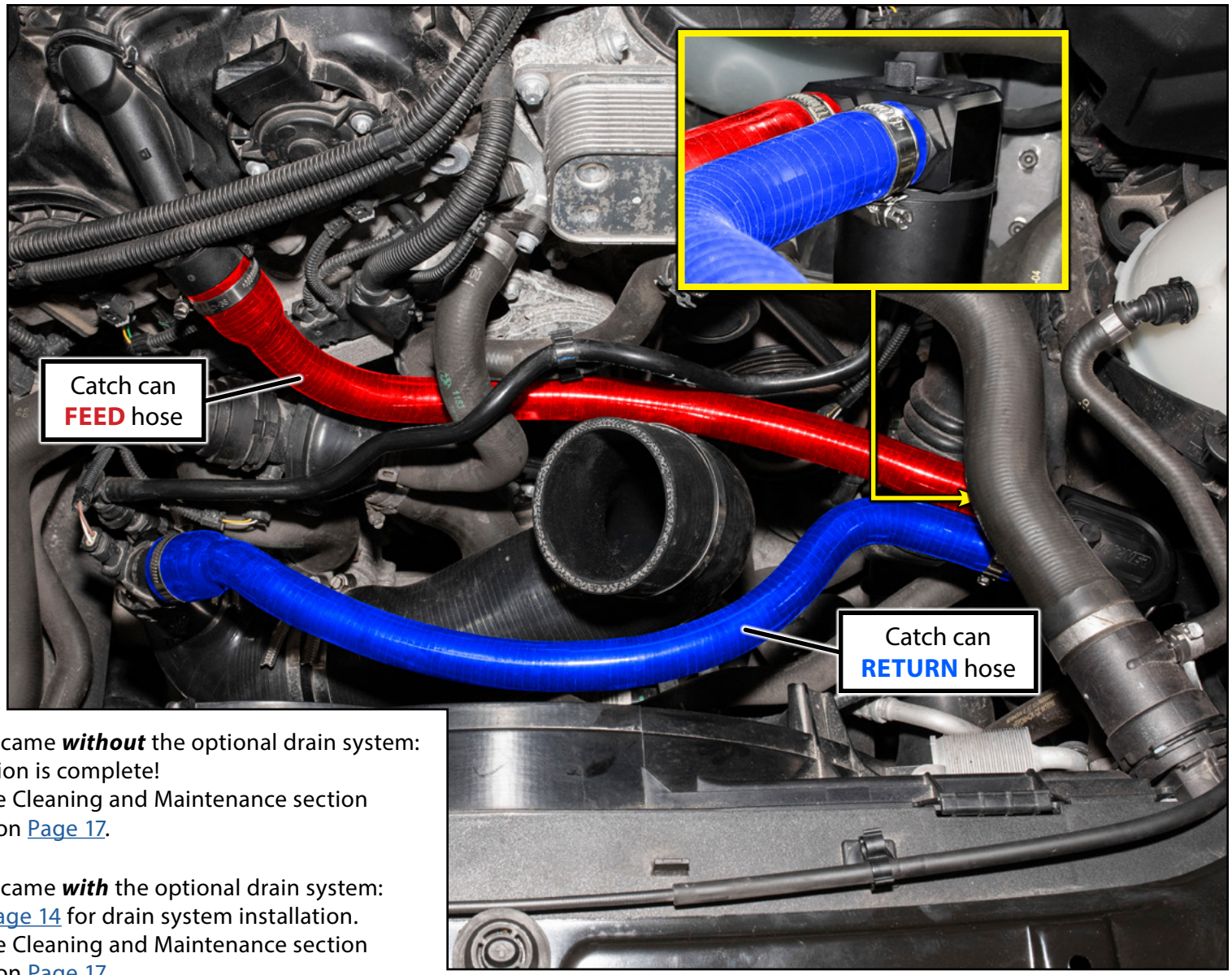
INSTALLING THE CATCH CAN SYSTEM

Step 8:

Install both of the catch can hoses onto the crank vent hose fittings and tighten the clamps until they are snug.

- The **FEED** hose connects to the straight fitting on the valve cover.
- The **RETURN** hose connects to the angled fitting on the turbo inlet pipe.

Reinstall the coolant expansion tank (if you chose to remove it earlier). Reinstall the air box.



If your Catch Can Kit came ***without*** the optional drain system:

- Your installation is complete!
- Reference the Cleaning and Maintenance section which starts on Page 17.

If your Catch Can Kit came ***with*** the optional drain system:

- Proceed to Page 14 for drain system installation.
- Reference the Cleaning and Maintenance section which starts on Page 17.

CATCH CAN DRAIN SYSTEM COMPONENTS

36″ Section of ¼″ ID Hose **(QTY 1)**

¼″ Shut Off Valve **(QTY 1)**
⅜″ Clamps **(QTY 2)**

7⁄32″ to ⅝″ Clamp **(QTY 1)**

¼″ Hose x ¼″ Male NPT Brass Hose Barb
(QTY 1)

¼″ Hose x ¼″ Male NPT 90° Brass Hose Barb
(QTY 1)

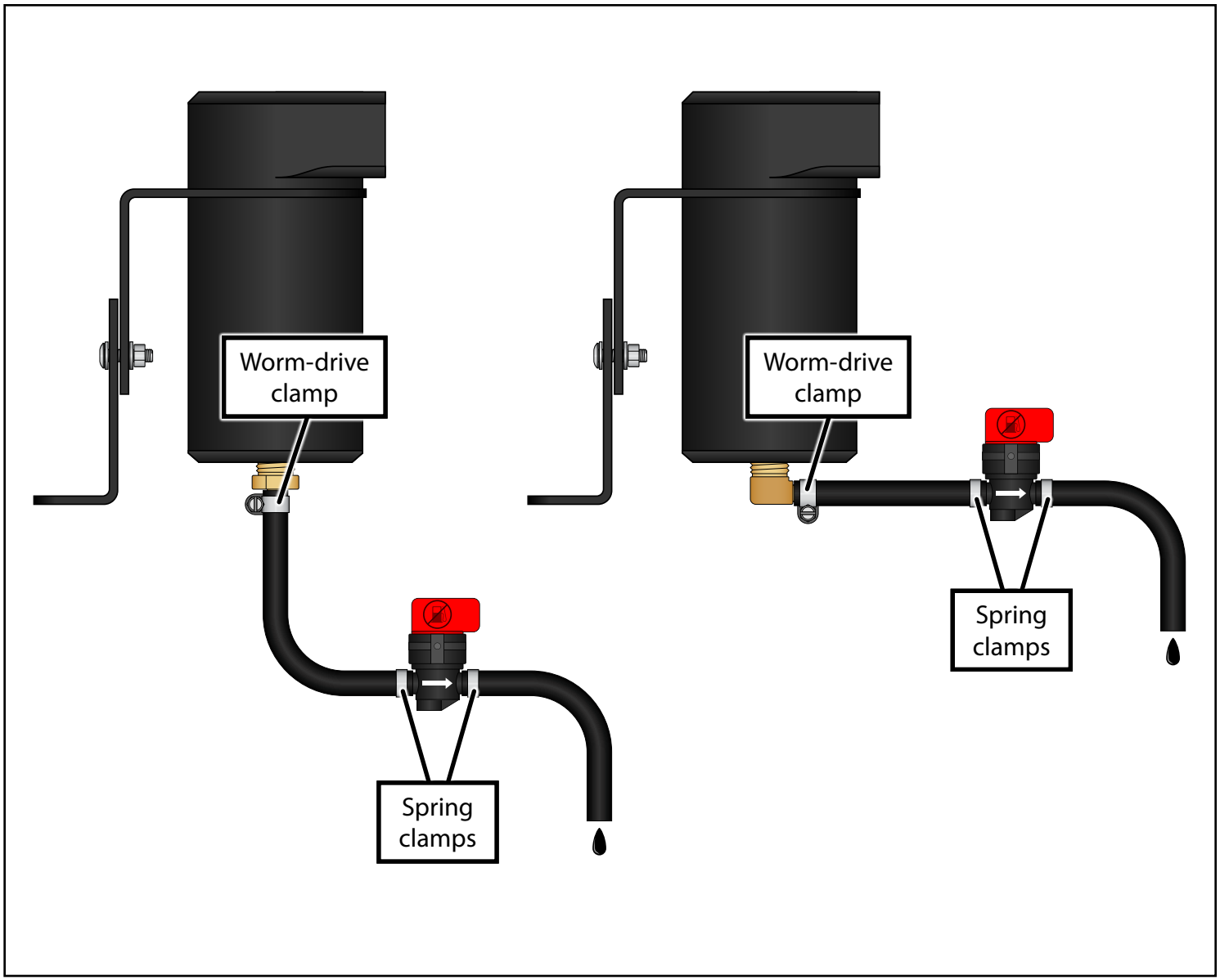
CATCH CAN DRAIN SYSTEM INSTALLATION GUIDELINES

Step 1:

Let's take a moment and look at the catch can drain system, the diagram on the right shows two different system configurations.

This system has been designed with flexibility in mind, YOU get to choose where you want the drain valve to be located in the vehicle. You want the valve mounted up high so you can drain the system from under the hood? No problem! You want to route the hose down to the bottom side near the oil pan for easy access during oil changes? You got it!

Reference the diagram on the right and familiarize yourself with the overall system layout, then proceed to the next page.



CATCH CAN DRAIN SYSTEM INSTALLATION GUIDELINES

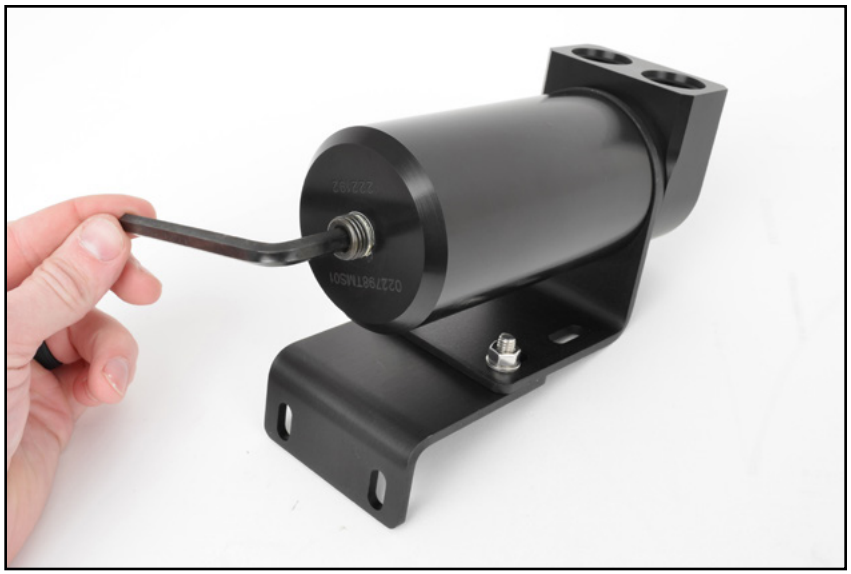
Step 2:

All of our catch cans feature a ¼" NPT black zinc plated brass plug in the bottom of the can, you can easily remove this plug with the included ¼" hex (Allen) key.

You will need to select one of the two ¼" NPT to ¼" brass hose barb fittings; one is straight, while the other has a 90° bend. Select the fitting which allows you to route the drain hose to wherever you want to access it from in the vehicle.

Apply thread sealant to the threads on one of the two ¼" NPT to ¼" brass hose barb fittings, then install the new fitting in place of the plug we removed earlier.

Route the hose to your desired location, securing it along the way, then attach the drain valve and tighten all of the clamps.



NOTE

Use an appropriately sized wrench to turn the hose barb fitting into the catch can, stop once it is snug.

Your catch can drain installation is complete!

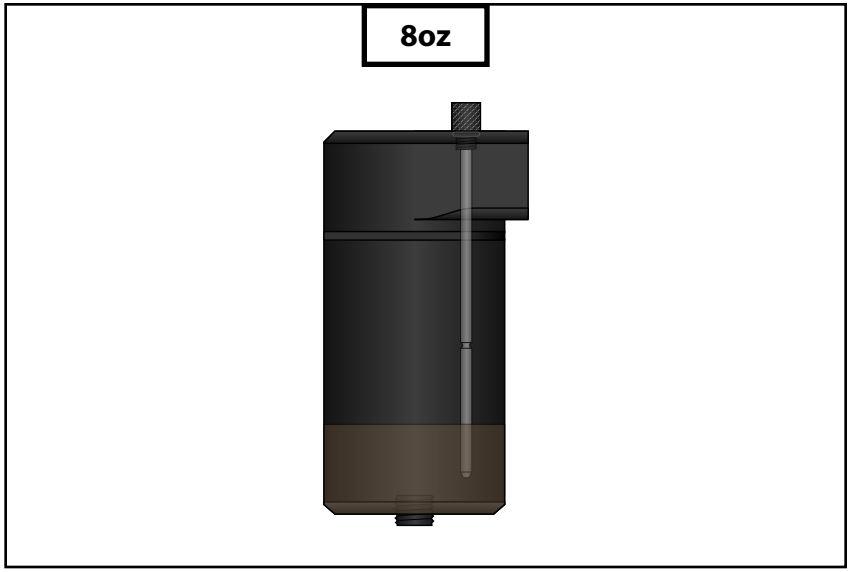
CLEANING AND MAINTENANCE

Step 1:

We recommend that you check the level of the waste in your catch can on a regular basis. Start with once a week until you determine the amount of time it takes your car to fill the reservoir.

All of our F3x N20 catch can systems use an 8oz reservoir. As you can see in the illustration on the right, the dipstick will not reach all the way to the bottom. When you begin to see waste register on the dipstick you will already a small amount of buildup in the bottom.

It's a good idea to empty and clean the reservoir when the waste registers approximately 2" up on the dipstick.

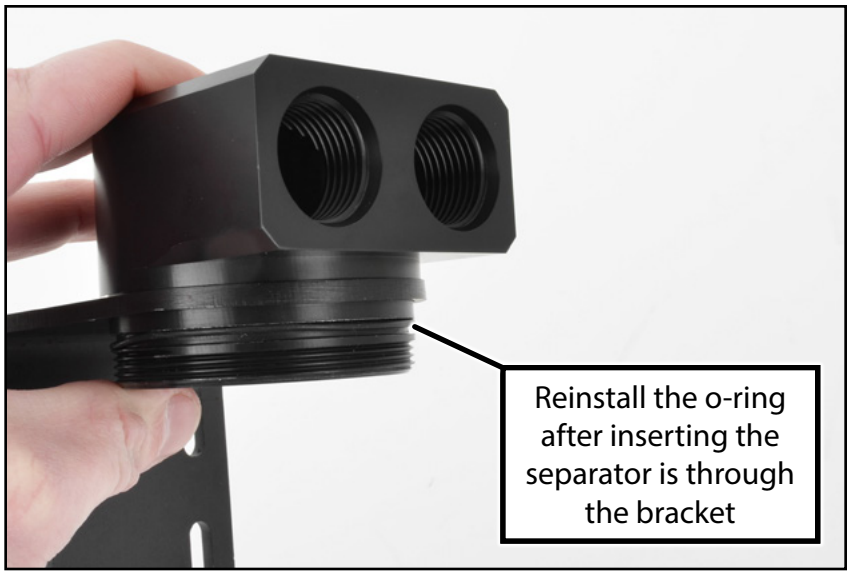


Step 2:

About twice a year, we recommend that you remove the separator for cleaning. To remove it, remove the hoses and the reservoir. Remember to remove the o-ring seal, then lift the separator out of the bracket.

NOTE

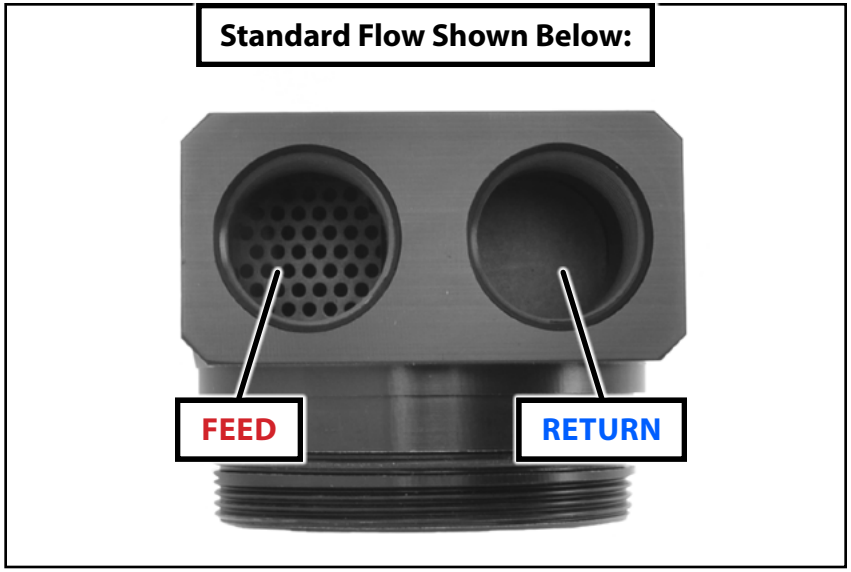
If the o-ring seal needs to be replaced, it is available as a replacement part on our website: T#388889.



CLEANING AND MAINTENANCE

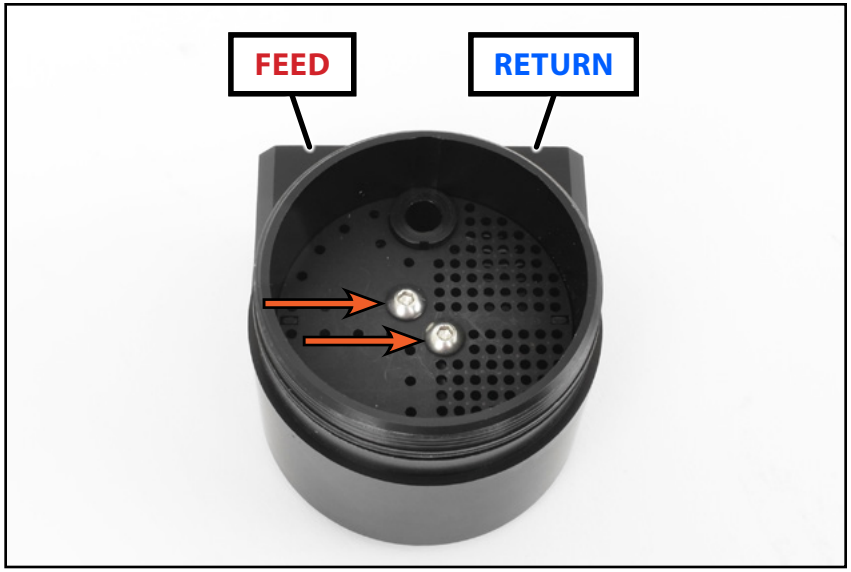
Step 3:

Once you have removed the separator, note the orientation of the baffle inside. The feed side of the separator has a number of small holes in it, the return side looks like a flat plate.



Step 4:

Using the 2.5mm Allen wrench included with the kit, remove the two baffle plate screws.



CLEANING AND MAINTENANCE

Step 5:

Lift the baffle plate out of the separator housing.

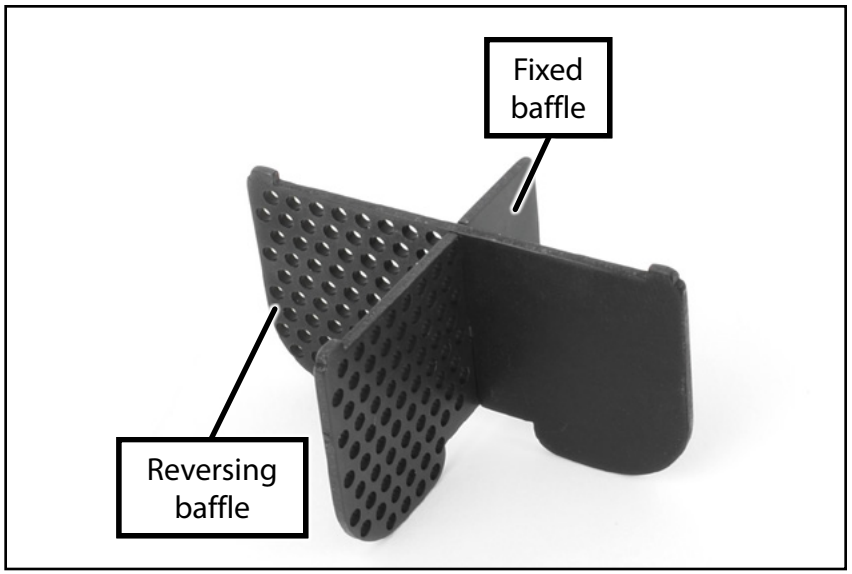
Step 6:

Lift the remaining baffles out of the separator housing.

CLEANING AND MAINTENANCE

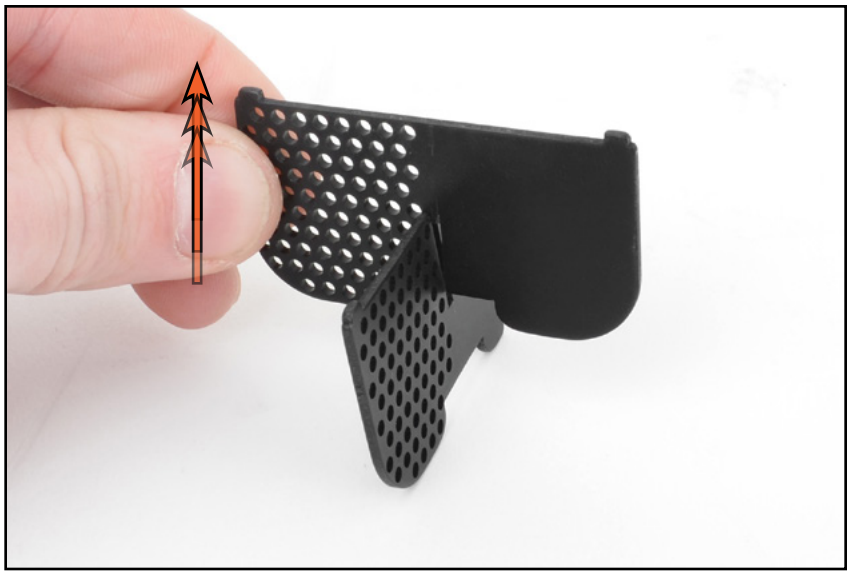
Step 7:

Note the positions of the fixed baffle and the reversing baffle.



Step 8:

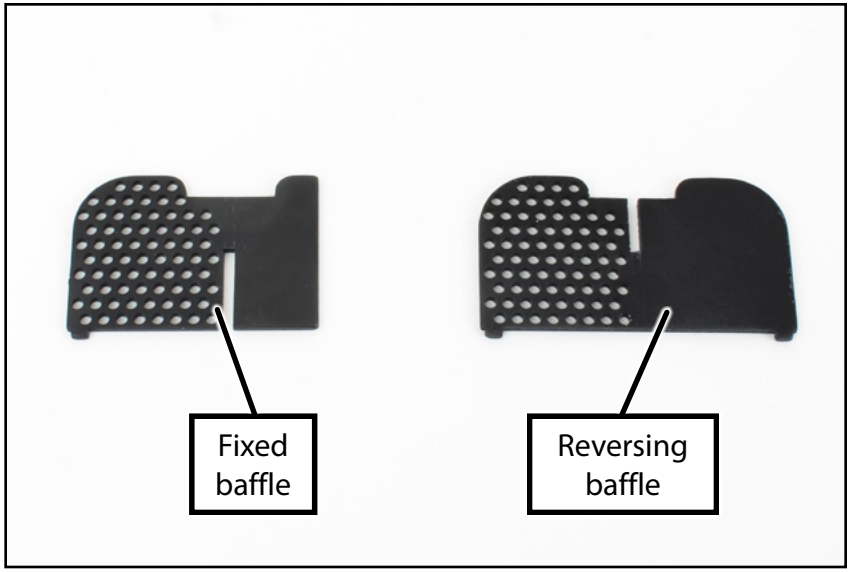
Slide the two baffles apart.



CLEANING AND MAINTENANCE

Step 9:

Clean the separator baffles, housing, and reservoir, using any mild cleanser or solvent. Note in the picture on the right that the fixed baffle is shorter than the reversing baffle.

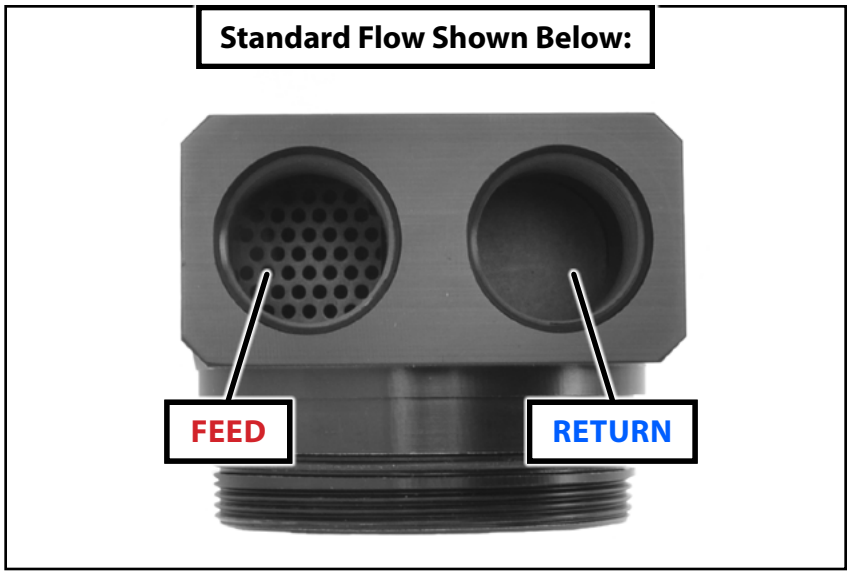


NOTE

Any mild cleanser or solvent can be used to clean the catch can, however we recommend that you test all cleansers on an inconspicuous area inside the reservoir to check for discoloration before you clean the outside surfaces.

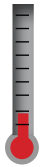
Step 10:

Reassemble the baffles into the separator housing and make sure that the baffles have not been reversed and the feed and return sides are positioned correctly. Reference step 4 in this section to make sure it is properly installed.



CLEANING AND MAINTENANCE - COLD WEATHER

COLD TEMPERATURE WARNING



In cold temperatures, the crank vent system will generate a much greater amount of moisture which can present a risk of freezing.

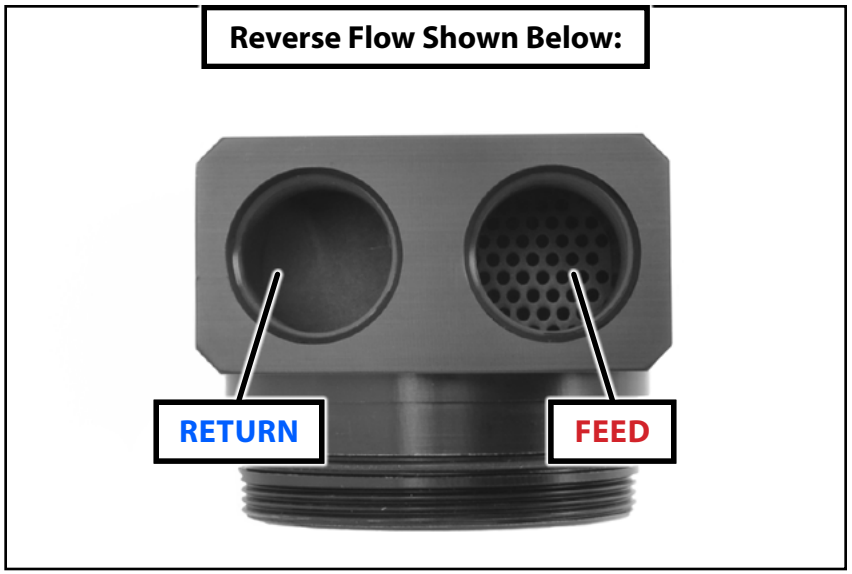
When the temperature outside approaches freezing, your catch can should be cleaned on a weekly basis to prevent freeze up of the crank vent system and damage to engine seals.

When the temperature drops below freezing, we recommend reinstalling your original crank vent system components to prevent freeze up of the crank vent system and damage to engine seals.

REVERSING THE FLOW OF THE CATCH CAN

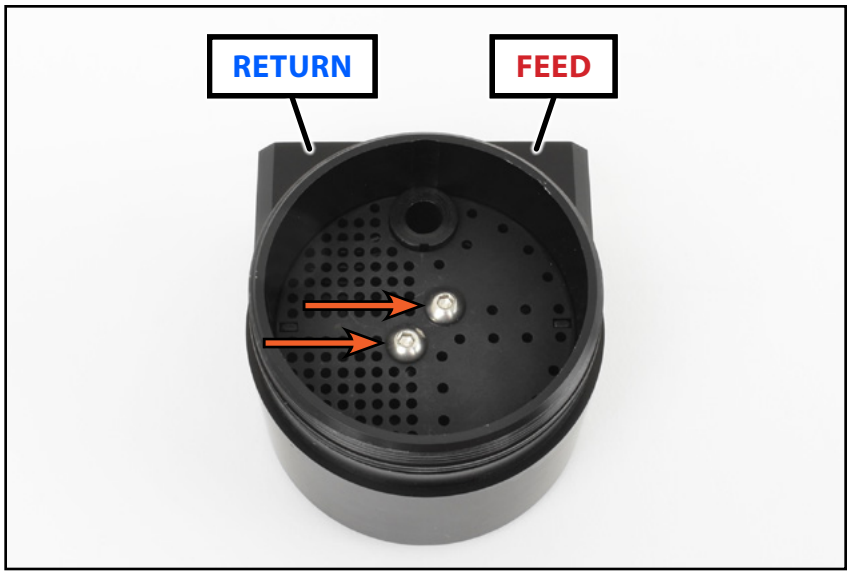
Step 1:

You can reverse the flow of your catch can in order to create the best mounting location and hose routing for your application. To begin, look into the separator and identify where the feed and return sides are oriented from when the catch can was originally assembled. The feed side of the separator has a number of small holes in it, the return side looks like a flat plate.



Step 2:

Using the 2.5mm Allen wrench included with the separator, remove the two baffle plate screws (arrows).



REVERSING THE FLOW OF THE CATCH CAN

Step 3:

Lift the baffle plate out of the separator housing.

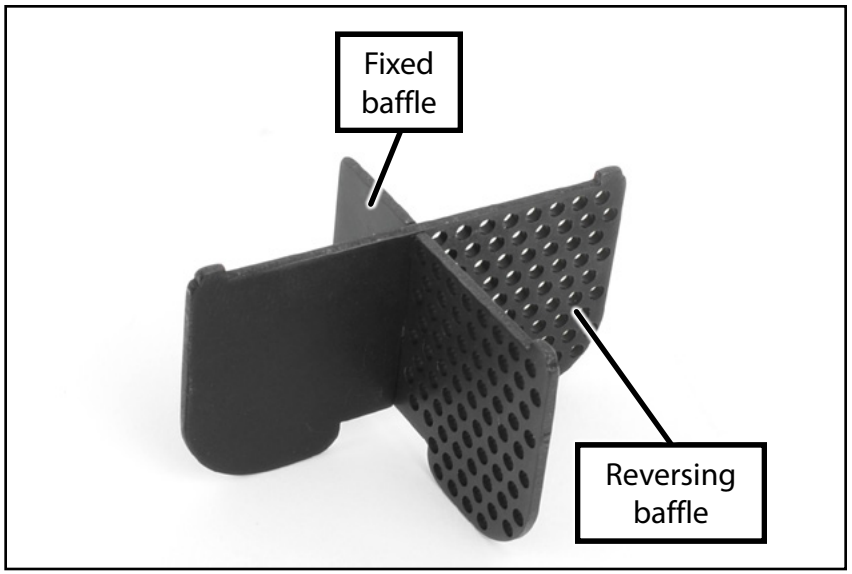
Step 4:

Lift the remaining baffles out of the separator housing. Note the position of the inlet screen on the reversing baffle (arrow).

REVERSING THE FLOW OF THE CATCH CAN

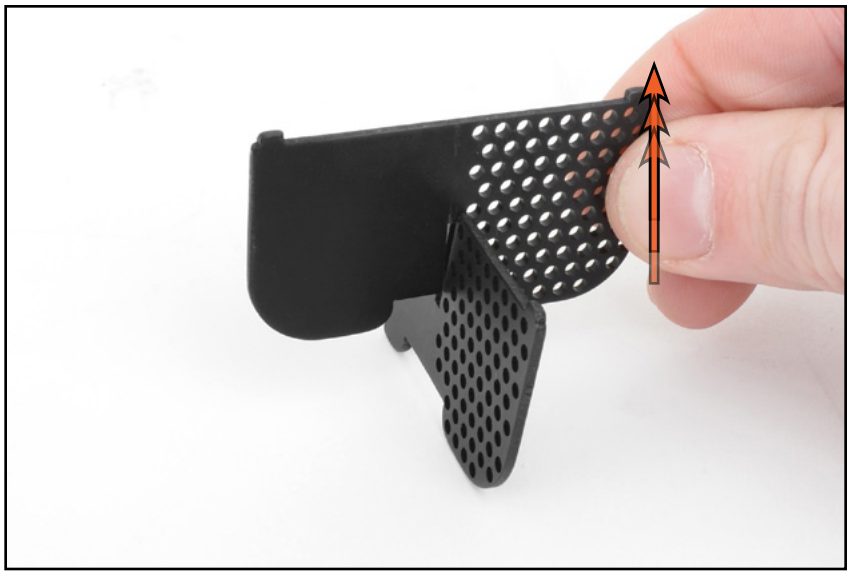
Step 5:

Note the positions of the fixed baffle and the reversing baffle.



Step 6:

Slide the two baffles apart.



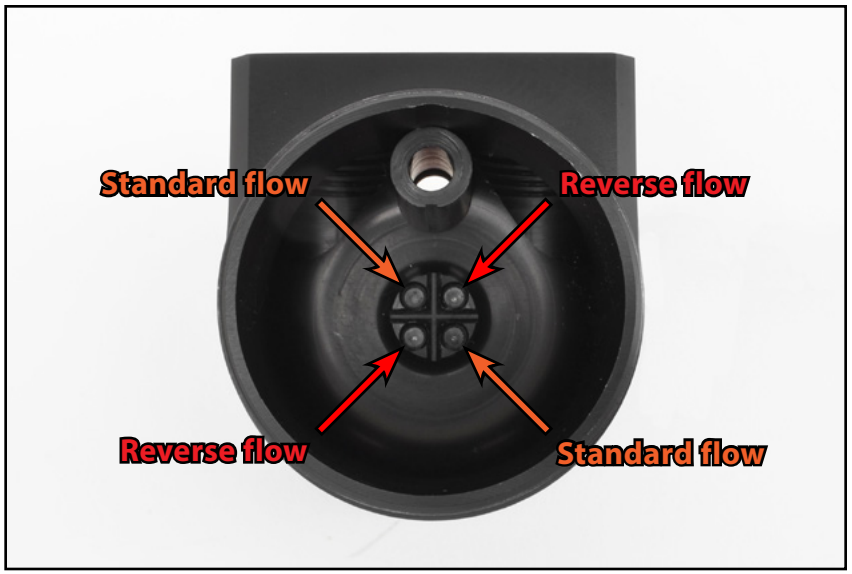
REVERSING THE FLOW OF THE CATCH CAN

Step 7:

Flip the reversing baffle and slide it back onto the fixed baffle.

Step 8:

Inspect the inside of the separator housing. You will see that there are two sets of threaded holes for the baffle plate screws. When you reverse the flow, you will use the opposite holes when reinstalling the baffle plate screws.



REVERSING THE FLOW OF THE CATCH CAN

Step 9:

Reinstall the baffles into the separator housing. Note that the inlet screen on the reversing baffle should now be located on the opposite side.

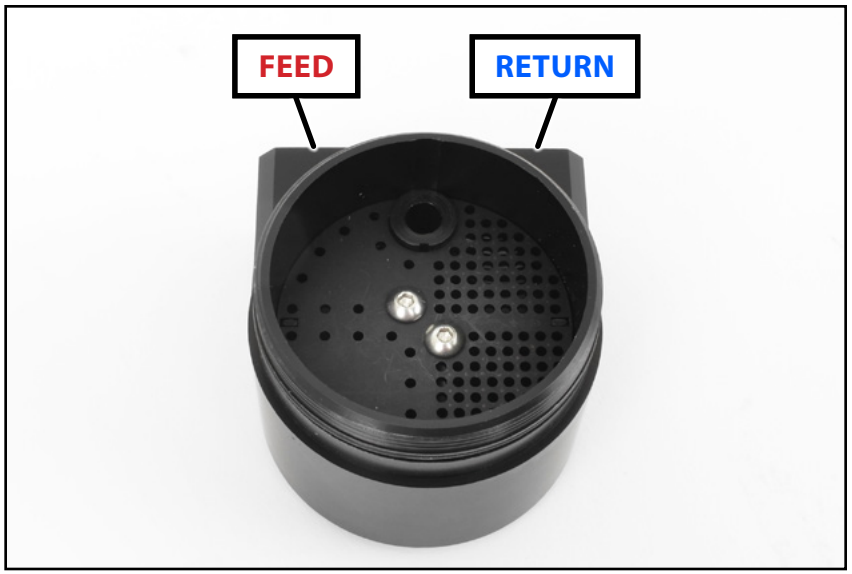
Step 10:

Flip the baffle plate so it is opposite of the removal position and place it back into the separator housing.

REVERSING THE FLOW OF THE CATCH CAN

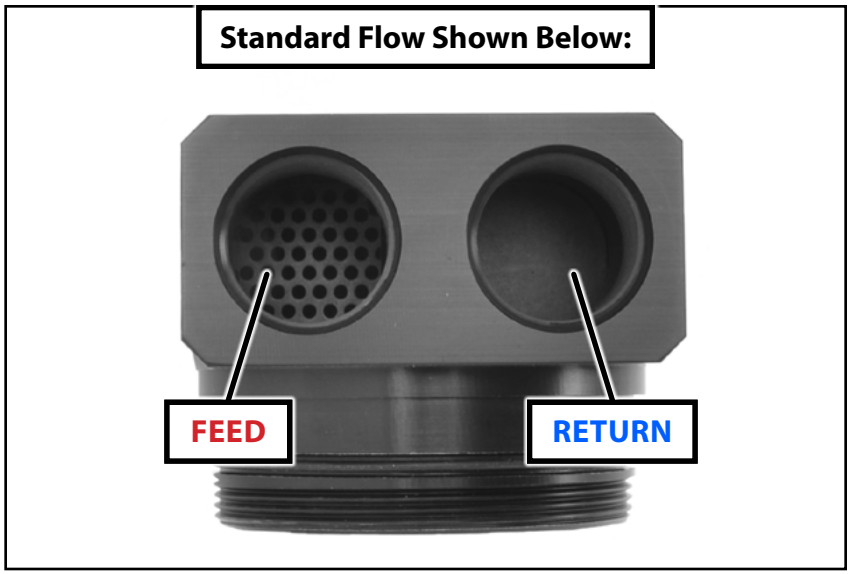
Step 11:

Reinstall the baffle plate screws utilizing the opposite holes in the separator housing. Compare the new baffle plate position with step 2 in this section to make sure it is properly installed for standard flow.



Step 12:

Your standard flow separator will now have the feed side and return side located as shown in the photo.



If you need to return to the installation steps please click HERE.

Your Catch Can System installation is complete!

These instructions are provided as a courtesy by Turner Motorsport

Proper service and repair procedures are vital to the safe, reliable operation of all motor vehicles as well as the personal safety of those performing the repairs. Standard safety procedures and precautions (including use of safety goggles and proper tools and equipment) should be followed at all times to eliminate the possibility of personal injury or improper service which could damage the vehicle or compromise its safety.