Instructions on how to modify a catch can to use a ¾" hose from the crankcase to the catch can.

By schnabba, originally posted on **http://www.tdiclub.com/**

Most of the smaller catch cans utilize a 3/8" elbow for 3/8" hose. In this article, I will show you how to modify the catch can to accept a ¾" hose. If you don't use a catch can and simply use the "elephant hose" modification – all you need to do is to complete Part 4 of the article.

For those of you who don't know, the "elephant hose" modification is simply a long hose that will go from your rocker arm cover outlet, routed down through the engine compartment, and will terminate on the underside of the car. Some people have this end on the bottom plastic tray so that the little oil that gets out can be cleaned up, others will just vent it down so that what little oil gets out will drip on the ground. Others have attached catch mechanisms at that point, ranging from filters to old gym socks. I am not advocating the use or non-use of such a method, it's only here for your information.

The downside to the elephant hose method is that it can be messy. The positive side is that it is very simple, very inexpensive, and you don't get that oil smell at idle that some people with catch cans experience. It is always easy to try the elephant hose before other methods, because of the ease of performing the modification, and the low cost associated with it.

Contents:

Part 1: Preparation

Parts needed: You will need the following parts (all were purchased here in town at Advance Auto, except for the PVC pipe – I got that at "Home Despot"). Grommets are found with the PVC valves, so are the elbows. The caps are found near the radiator caps and coolant).

For modifying existing CCV on car (elephant hose people only need these!)

- ¾" radiator hose (enough to go from the rocker arm cover to your catch can, or enough to route down through the engine compartment)
- ¾" 90degree elbow (Help #47043, or GM/Dorman 495-031 equivalent)
- ¾" grommet (help #42052, or GM/Dorman 495-012 equivalent)
- 1 worm drive clamp (sized for ¾" hose)
- ¾" bypass cap (help #02254, or Dorman 495-101 equivalent)

For modifying inlet elbow at catch can

- ¾" 90degree elbow (Help #47043, or GM/Dorman 495-031 equivalent)
- ¾" grommet (help #42321, or GM/Dorman 495-054 equivalent)
- 1 worm drive clamp (sized for ¾" hose)
- Your existing catch can

For modifying catch can filter outlet on top of catch can

- ¾" PVC pipe – outer diameter should be 1". Available at home depot. About $1.50 for an 8" section (smallest I could buy).
- Valve Cover breather grommet (various ones available – Spectre, Mr. Gasket, etc). For push in breather caps with 1" diameter).

Tools needed:

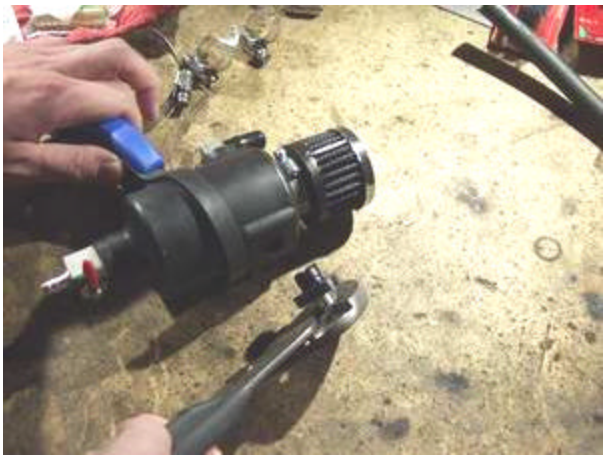
NOTE: for the elephant hose modification, you only need a screwdriver)

- 7/8" hole saw and a drill (1" hole saw is preferable) – for elbow inlet modification
- 1 1/8" hole saw - for the top filter modification
- half round coarse file (only needed if you use the 7/8" hole saw, or to smooth the edges of the holes cut. Also needed for the top filter outlet modification).
- Pliers
- Screwdriver (for clamps)
- Drill and drill bits (for modifying the PVC pipe, if you are going to complete that section).
- Tubing cutters / hacksaw (for cutting PVC if doing the air filter modification part)

Part 2: Modify existing catch can

1. Open the PCV elbow (#47043) and the grommet package (#42321).

2. Using the pliers, pull one of the existing elbows out. You will have to twist / wiggle the elbow to get it to come out. We will be removing the elbow, and the grommet that is there now. (See pictures below).



3. We will now use the 7/8” hole saw to cut a hole for the new grommet. NOTE: 7/8” is too small, but it’s all I had – so I used a half round file to enlarge the hole just a bit for the grommet to fit. A 1” hole saw would be perfect.

4. **Thoroughly clean out the inside of the catch can**. You may want to remove the bottom petcock and grommet (they remove exactly like the side elbow grommets). Rinse out the inside of the can to get all the plastic chaff out of there. I used WD-40. Anything that won’t damage the plastic will do.

5. Now, we fit the grommet (help #42321) into the hole we have just created. This grommet has a longer narrow portion than some other grommets and so it fits nicely with the thicker walls of these catch cans. In addition, it has a square outer appearance that just “looks cool, man!”

6. Now, put a little grease on the elbow to keep it from binding when you install it, and then just press it in until it seats.

7. Here is the finished product – the elbow should rotate freely with only a medium amount of resistance. The grommet will keep it from leaking, and you can move the elbow around as you need.

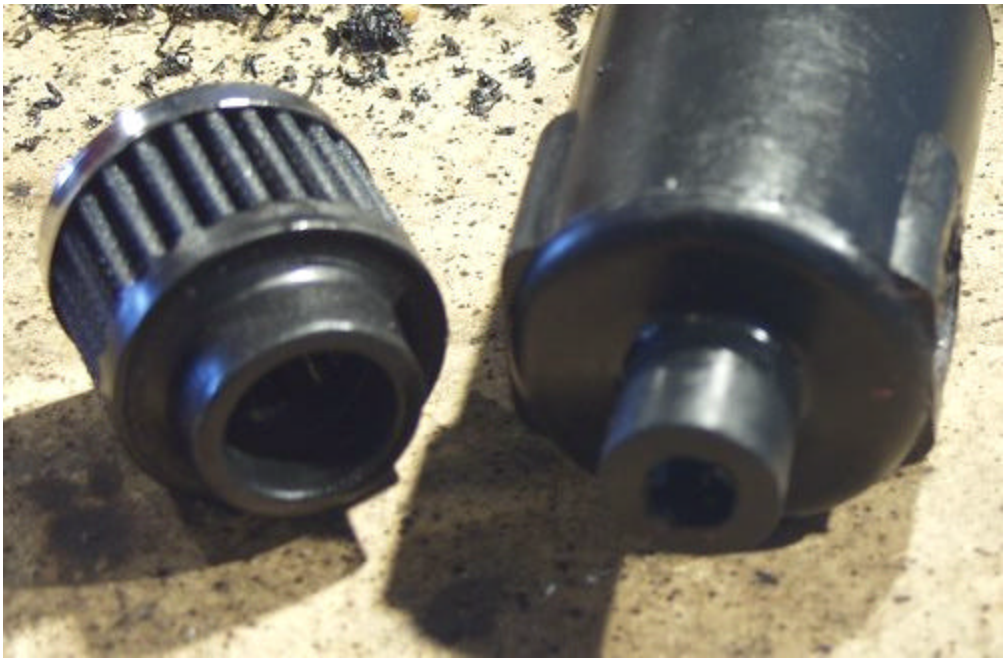
8. Check your work. Remove the top filter; open the drain valve at the bottom and sight down the length of the catch can. Check for obstructions out the bottom valve. You should be able to see straight through if you hold it up to the light. Any debris from drilling might make it drain slow, or not at all.

9. Close up showing the elbow and grommet installed on the catch can.

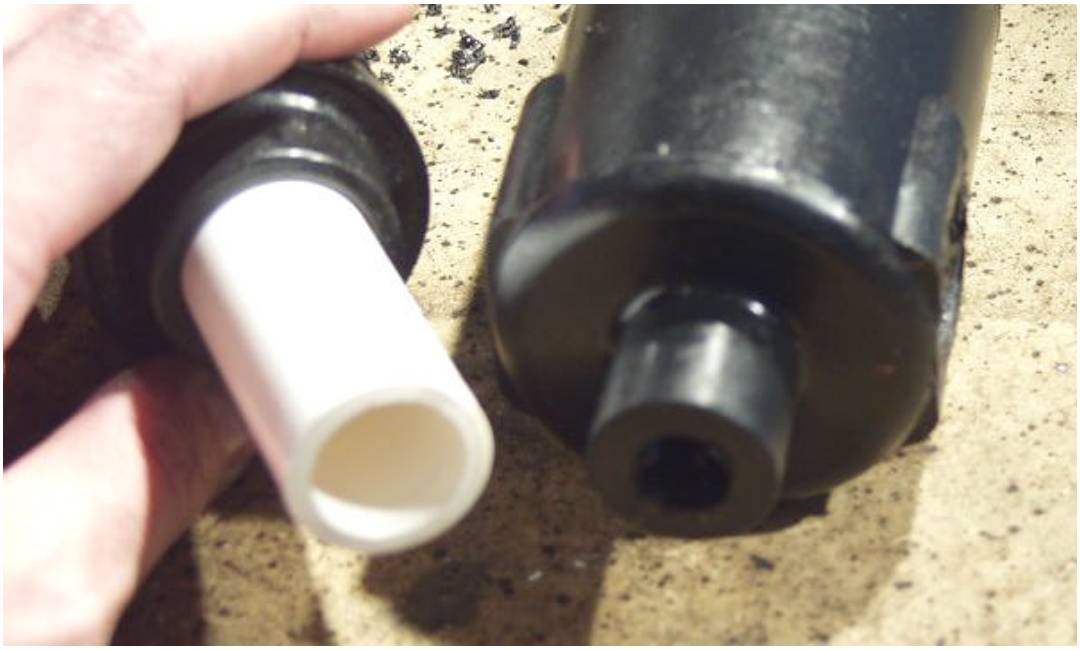
Part 3: modify top of catch can for larger filter outlet

Here, I wanted to make the outlet larger. You have a nice large filter, but this itty-bitty outlet hole. The walls are strong enough on the outlet to drill it out a bit larger, but I wanted something different.

1. Here is the top of the catch can – the inlet for the filter is nice and big, but the outlet on the catch can is rather small.



2. I wanted to use some kind of tubing – here is a piece of ¾" PVC in the filter – see how much larger an inner diameter it has. Make sure you check the sizing of the PVC – I was only able to get it in 8' sections – but it's only $1.50 for that length.



3. Now, all we have to do is drill out a hole and get a grommet that will fit the tubing. I chose a common valve cover breather cap grommet. These are available in the cheesy chrome accessory section of your local auto parts store. They are also available online at places like Summit Racing Equipment, JEGs, etc. Make sure you tell the cashier "this is a mad tight grommet yo".

NOTE: I tried using the baffled grommets, but they are restrictive and the amount of air coming out makes them whistle like a sick bird. Amusing for about 5 minutes. I was able to use these – the top of the grommet is like a normal grommet, the bottom is extended and has built in baffles. I cut off the baffled part. I would recommend plain old press in style valve cover breather grommets.

4. Now, we cut the top off of the breather can. This makes the drilling easier in a bit. Cut as close as you can to the top of the catch can – the hole saw will like you better for it. I cheated and used a nice reciprocating saw. These are also fun for cutting off exhaust pipes.

5. The size of the hole to cut is tricky. The inner diameter of a valve cover breather cap grommet is 1”. The hole in a normal valve cover these are designed to go into is 1.22”. I chose a 1 1/8” hole saw to cut the initial hole. Make sure you size the hole saw to the grommet – hold them up to each other to make sure you are not going to cut a gaping hole that the grommet won’t fit into. I also had to do a bit of filing with the half round file to get the hole a bit larger, as the 1 1/8” saw was a bit small. The 1 3/8” one looked a bit big, but might have worked. It is safer to cut smaller, and then file out the hole to fit. This plastic will file very easily and quickly (so don’t over do it!). The reciprocating saw left some marks on the top – just sand down any really rough spots (I just used the file). Don’t worry about them – with the grommet and breather filter in place, you won’t notice them.

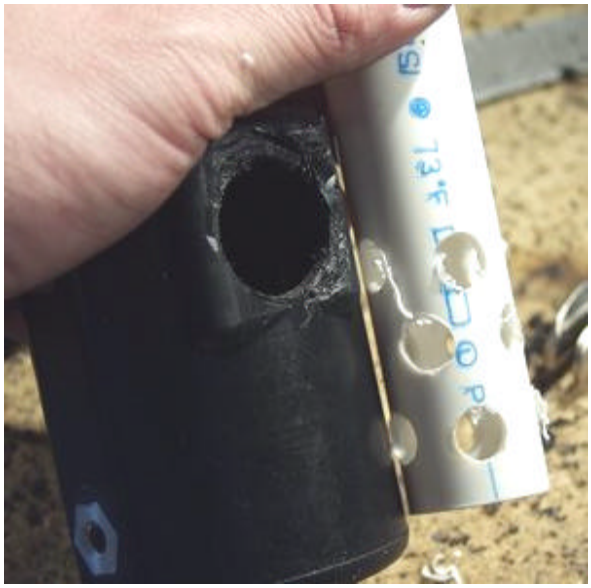

6. Insert the grommet in the top of the catch can in the hole you just made.


7. Then, insert a short piece of the PVC pipe to check for fitment. You may have to make several adjustments with the file to enlarge the hole. The PVC should fit snugly (when the PVC is not in place, the grommet may appear loose).


8. Now, we want to get a working piece of PVC. There are several options here for sizing. Using my method, the PVC should bottom out in the can, and stick up through the grommet only enough to fit on the air breather. The picture below is the tube WITHOUT the grommet, which adds about ¼" installed height to the filter. NOTE: this method is going to require drilling lots of holes in the PVC pipe.


An ALTERNATE method is to get a short piece that sticks just past the grommet on the inside, and just past the neck of the filter. This method should use a VERY tight fit for the PVC into the grommet so the tube does not fall into the catch can. A worm drive clamp can also keep that from happening, or just tightening the clamp on the filter down so that the piece of pipe comes out with the filter.

9. Next, we “get funky wit da drill, yo!” We start drilling holes in an alternating pattern. This helps break up airflow out of the top of the can, and we need a LOT of holes, not for flow, but if we get lazy and don’t drain this thing ever, you want to make sure there is enough airflow out of the top with a moderate fluid level in the catch can. You can use large holes, small holes, or a mixture. I started with larger holes, 3/8” I think, in an alternating pattern with plenty of space. I came back with a ¼” bit and drilled out some of the spaces between the larger holes. Measure it occasionally to make sure you don’t get overly “drill happy” and get holes where the grommet is going to seal. It isn’t oil tight at the bottom when inserted, but I drilled some smaller holes at the bottom anyway. Clean all the chaff from the PVC pipe. Use sandpaper, the half round file, whatever, to remove any excess plastic from the pipe. Don’t want it to clog up your drain valve later.



10. Now, we seat the grommet and seat the new modified tube into the catch can. Use of a little grease / oil will keep the PVC tube from binding. It should seat with enough space at the top to install the air filter. (NOTE: I have modified both sides of the catch can for ¾" hose in case I want to move it later and need to plumb the other side).

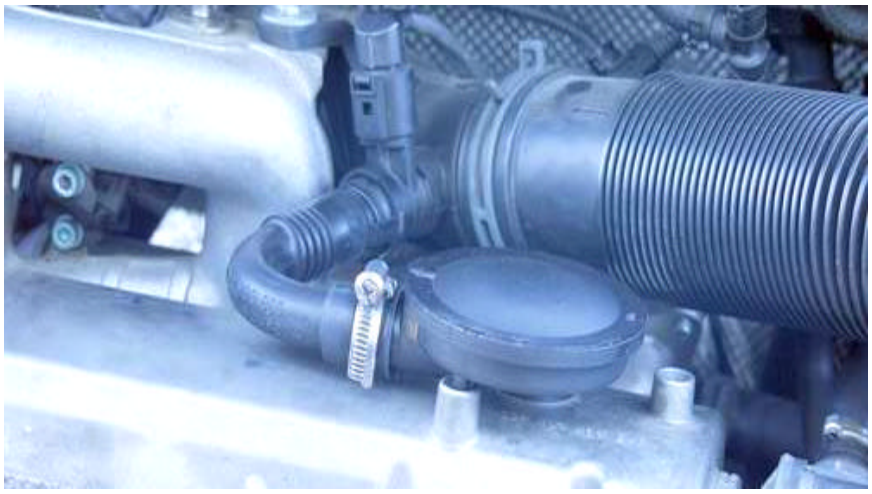



11. The finished top filter modification. Looks like the catch can should have come this way. Larger opening out the top will allow the air to slow down and cool inside the can, hopefully condensing any vapors there instead of inside the filter.

Part 4: modify existing CCV system

NOTE: Elephant hose modification starts here, and ends in step 6 of this section.

1. First, we remove the oil/air separator, and the hose that is attached to it. The hose on the air intake side is a simple clamp that you squeeze with your fingers, and pull to remove.



2. Once the hose from the oil/air separator is loose, pull the oil/air separator off the valve cover (this is the round hockey puck looking thing). Remove the grommet. Install the new grommet (help #42052).

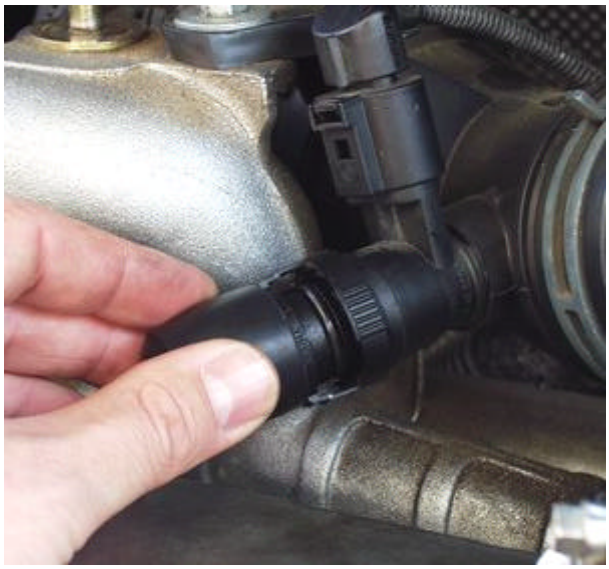
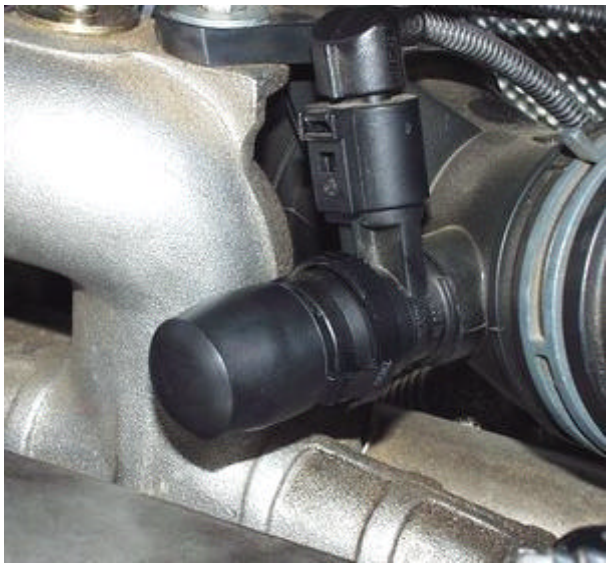

3. OK – here is where we use the modification that Denis at Fred's TDICLUB suggested. Take a pair of pliers – needle nose will work – and pull the quick disconnect from the hose.




4. Then, we take the ¾” cap, and place it on the end of this quick disconnect.


5. Take this completed assembly, and attach it at the original location. Thank you Denis for this easy and clean (“mad tight”) installation (told you I would make you famous).



6. Press the elbow into the grommet on the valve cover, then attach the ¾" radiator hose using a worm drive clamp. If you are doing a basic "elephant hose" modification, get enough hose to route through the engine compartment and under the car. It's about $1 per foot. Secure the hose away from any moving parts, such as the drive axles or the shifter mechanism. **Elephant Hose people are done**.

7. For a catch can – attach the length of hose to fit from the valve cover to the catch can. Use whatever length hose you need to do this. The ¾" radiator hose is about $1.00 US a foot.

Part 5: Mounting location of catch can

I figured a good place to mount the catch can is on the stock air box. It was a nice open area, VERY close to the opening on the valve cover, and I can get to the petcock to drain the catch can this way.

NOTE: This is potentially risky, as you are drilling on the stock air box, and it is on the MAF side of the air filter. MAKE SURE you clean up ALL the plastic from drilling the holes, or better yet, take the top of the air box out of the car to do this. A piece of duct tape on the back side of this while drilling will catch most of the little plastic "chaff" that tends to fall inside the air box. I take no responsibility for those of you who want to go hacking up your car. **Do so at your own risk.**

If you want to do this MAKE SURE you use little **grommets**! This will keep the bolts from backing out, and it will keep the installation airtight. Washers on BOTH sides of the grommet are a must. The grommet will also dampen vibration. DO NOT USE worn or cracked grommets. DO NOT CUT the grommets (I did so for demonstration purposes only). You are close to the MAF area of the intake. This part should be your finest work!

These small grommets are available in the "help" brand package of grommets. It is the general assortment, and will have several of these in there. You can also find them at Lowe's or Home Depot, but the Help brand assortment comes with 5-6 of these, and they come in useful all the time. I am not sure what size, but the inner diameter of the grommet should be the same size as the shank of the bolt you are using.

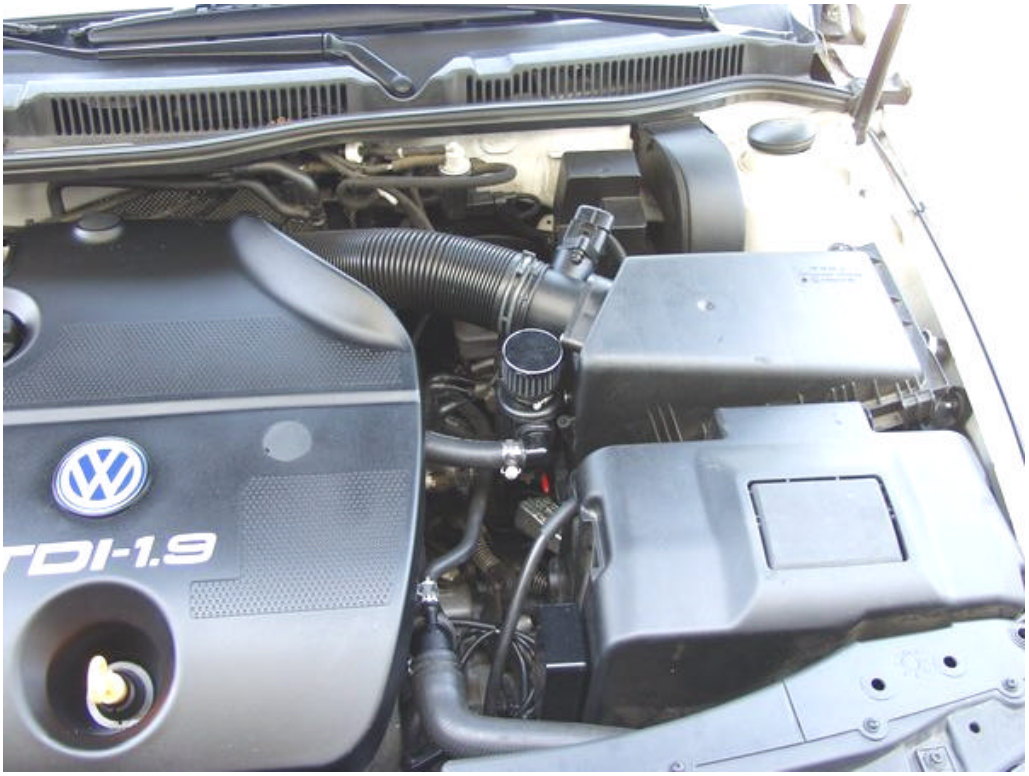
1. Drill out the holes in the air box using a 3/8" drill bit. Yes, it's large, but in the picture below you will see a cutaway of a grommet, the bolt, and the drill bit (DO NOT CUT YOURS!). Notice that the bit is about the same size as the inner raised section of the grommet, yet smaller than the outer diameter. IT MUST BE LARGER than the inner diameter of the hole!

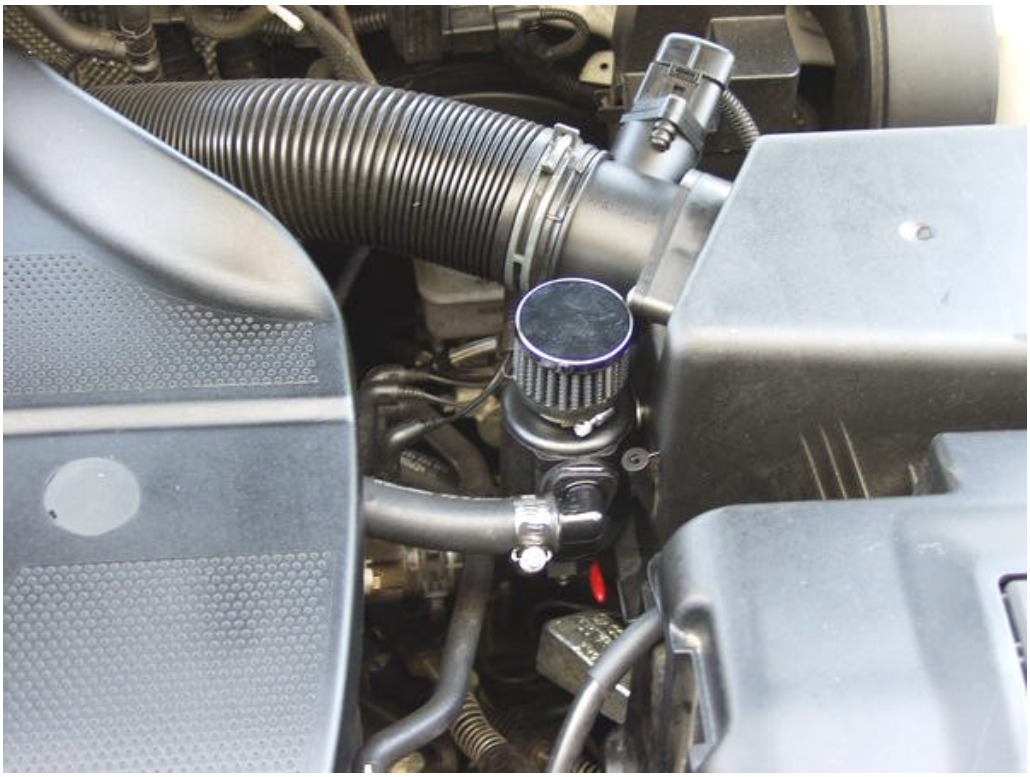
2. Now, you will need a slightly longer bolt. Here is the bolt that comes with the catch can, and two washers and the grommet. Note the longer bolt below it. This is a coarse SAE size bolt. Very common. Not sure what size, because I have a drawer full of them in the garage. You can get them at most hardware stores. Take one of your bolts with you to size the inner diameter of the grommet. If unsure, ask for assistance at Lowe's or Home Depot

3. BEFORE DRILLING – hold the catch can up against the air box to make sure it is not in the way of anything. Once you find where you want to put it, drill the holes, 3/8" and then install the grommets. Check both sides to make sure the grommets are seated, not pinched, etc. It will look like this when done. Use the bracket that comes with the catch can as a template for how far apart the holes should be.

The finished product!

A nice, clean, smooth installation! Looks almost OEM. Get you some of those VW clamps, and people won't even notice it. I rotated the little petcock at the bottom 90 degrees so that I could reach it easier.





The parts I show above seem to work the best, and are VERY inexpensive. The grommets and elbows are $2 each, the hose is $1 a foot, the plugs are $2 for a pack of 2, and the clamps are $0.30 each. This ENTIRE project, if you have the tools already, should not cost you more than $12.50. If you do the top filter modification, the valve cover breather grommets can be around $5 in price; so going to this extreme will be a judgment call. I think it's worth the money to modify a catch can that will BREATHE!