

COOLINGMIST CMGS-FS 135/335 I SETUP GUIDE.



This instruction book is designed to be a guide to enhance your installation. There are some things that may vary from your actual setup. You may have a different tank, different intercooler or something different on your vehicle. In many cases you can deviate from this document. Call tech support if you have any questions regarding setup.



This is a **“GUIDE”** that you can use to install the **CMGS-FS** kit on your **135/335 I**. Its important to note that there are differences from vehicle to vehicle so there are going to be cases you will need to fill in the blanks or make some decisions out side the scope of this document. We do our best to give you the most accurate data possible. You must take all risks when installing this or any accessory on your vehicle

Coolingmist will not be responsible for any damage done to your vehicle due to improper setup or faulty component. Always use common sense and check your setup and test your system so you know what is doing.

CONTENTS:

Prep your tank.....	2-4
Install your filter, valve and flow sensor.....	4
Route the fluid hose and wiring.....	5
Route the boost hose and wiring.....	6
Injector install.....	7
Electrical Diagram.....	8
Parts description.....	9-10
Configuring your failsafe.....	11

TANK SETUP and LOW LEVEL FLUID SWITCH.....2

You have several choices of tanks. You can choose a coolingmist tank which range from a 1 gallon wall mount tank or our 1.5 Gallon All in One trunkmount tank. You can use a 3rd party tank or your stock tank or your IC Sprayer tank.

TANK OPTIONS:

Figure A shows our 1 gallon tank. This can be mounted in the trunk compartment along the wall. The ideal location is to mount so that the pump is lower than the tank or atleast the tank is not below the pump. We supply a fitting that you tap into the bottom of the tank. It's a 1/8th NPT.. The low level float switch also gets installed into the bottom of this tank with a 7/16 drill bit.

The trunkmount tank (**Figure C**) ships with hardware such as straps and brackets and screws. In **Figure B** you can see the pump assembled. Both the quick connect fittings go in the ports. Use a 1 inch section of the clear hose for the input tube.

See page 4A for setting up the pickup tube!

The low level float switch installs in the recessed area of the bottom of the tank. The next page talks about the 1 gallon tank float switch install, but the concept is the same.

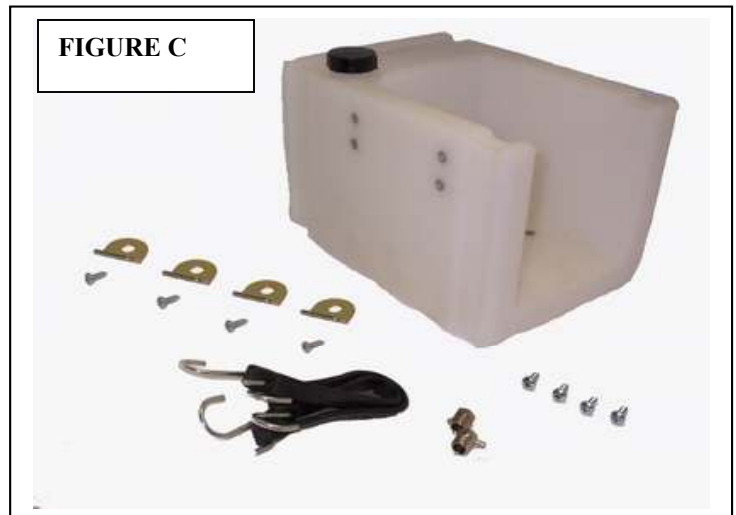
FIGURE A



FIGURE B



FIGURE C



Regardless of what tank you use, the concept will be similar. We will demonstrate on our 1 gallon tank. The trunkmount tank has an indented circle on the bottom directly below where the cap is. This is where you install the float switch.

Install the pickup fitting

In **Figure A** we tap the bottom of the tank for the pickup fitting just use a 11/32 drill bit and tap 1/8th NPT. When you are done it will look like **figure B**. No Teflon tape or sealant is needed unless you made the hole too big or did not tap correct. **NOTE: you may find you need to tap the side of the tank depending on where you are installing the tank. For our 135 I, we tapped the side of the tank about 1/2 inch from the bottom.**

Install the float switch

In **figure c** we drill a hole slightly larger than the float switch stem. Remove the nut and put the first oring on the inside stem just like **figure D**.

To route the float switch to the hole we just drilled we need to prepare the float switch. Take a 1 foot section of the nylon hose and put the wires inside it just like **figure E**.

Route the plastic hose from the top of the tank into the hole just like **figure F**. Turn the tank on its side and pull the hose through. Just like in **Figure G**. Now put the oring on the step like in **Figure H** and finally put the nut back on like in **Figure I**.

Don't forget to test your system for leaks! If the tank leaks at the float switch, make sure the nut is tight. If it still leaks you can seal it with epoxy.



FIGURE A

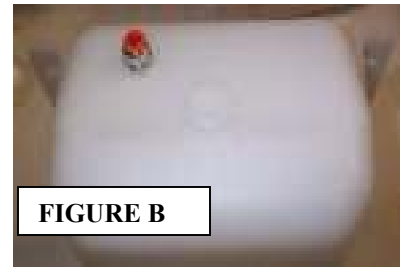


FIGURE B



FIGURE C

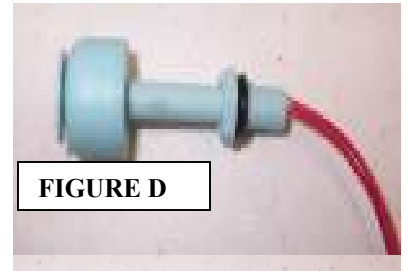


FIGURE D

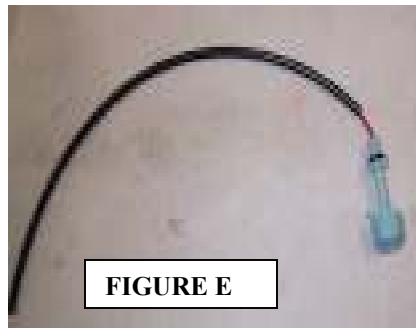


FIGURE E



FIGURE F



FIGURE G



FIGURE H



FIGURE I

INSTALL YOUR PUMP/TANK:

FIGURE A

In this picture we are using the drivers side of the trunk. The pump will mount to the wall using the provided sheet metal screws. Also, if you notice there is a factory strap on the 135 I, the strap goes around the pump and then the pump is bolted to the wall. Depending on what tank you use you will have different fittings. Using this tank the fittings are installed as below (prior to installing the pump)

FIGURE D



NOTE: There are arrows on the pump indication point of flow. The arrows always point toward the injector. **Please see the next page before you assemble the pump and then return to this one**

FIGURE B, C and D

Figure B shows the trunkmount tank all strapped in. Anchor plates are provided. Secure those with the pan handle screws that are provided. **Figure D** shows the trunkmount tank assembled. Notice how the pickup for the water is directly below the inlet for the pump? Not shown in the picture but there are 4 screws provided to allow you to mount the pump to the tank.

Figure C Shows the pump/tank installed for the 1 gallon option.

FLOW SENSOR INSTALL (ALL TANKS)

The flow sensor should be installed in the trunk as close to the pump as possible. You can see in figure C how we installed it. The filter, valve and flow sensor should all point toward the injector. The closer to the pump you install these, the faster the response time of the flow sensor will be.

FIGURE A



FIGURE B

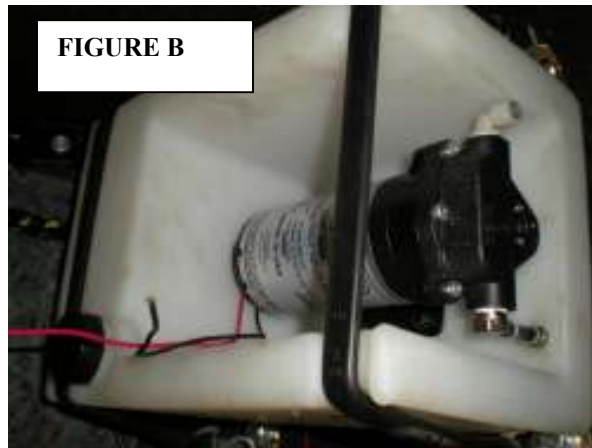
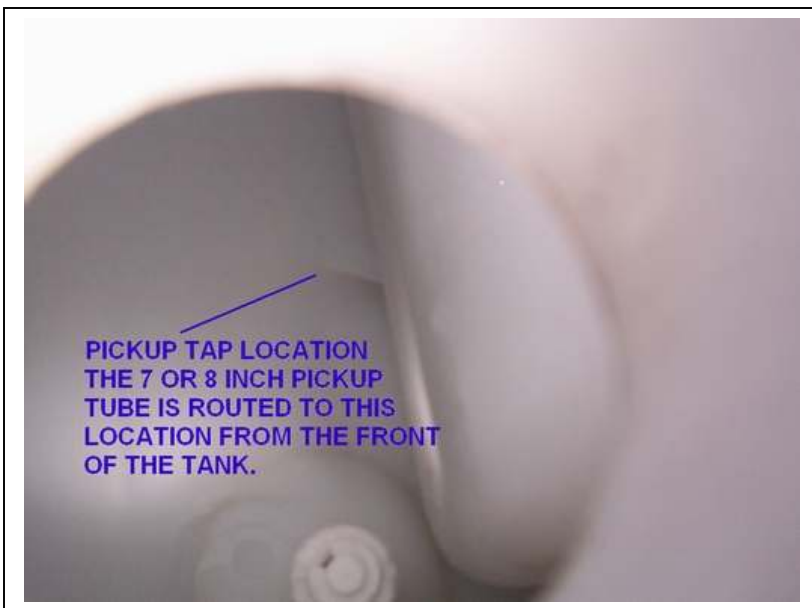


FIGURE C: Pump, Tank and flow sensor installed.



Do not install the flow sensor under carpet, under the dash, under the hood or any location other than in the trunk of your bmw. Failure to listen to this advice will cause the flow sensor to over heat and quit working. Please note: your checkvalve now has the filter installed inside it, so no external filter is needed.

After you install the barb fitting into the tank with the drill, remove the fitting by reversing the drill and cut a 7 inch section of hose and insert into the bottom of the fitting just as shown. No glue or tape is required. Now install the fitting by inserting the hose in the tank and tightening the fitting by hand. Once its hand tighten you can use a wrench to completely tighten. This hose is a pickup tap that keeps the system from drawing in air and allows you to use almost the entire tank before filling up. You must install the fitting as below so it goes all the way across the tank. Failure to do this will cause the system to draw air in. The plastic hose will fit in the fitting just like below without any glue. It will stay in place.



HOSE AND WIRING:

FIGURES A and B:

Route the hose/wiring from the trunk through the back seat. In Figure A you will see we fold the seat down and wiring is routed between the crevice. In **Figure B** we pulled up on the bottom seat (with the top seat down). You can then take the hose and the wiring and move them to the right and slide them under the seat. The picture only shows the hose because we routed the wiring first. The Pump +, Pump - and ONE low level signal wire needs to be routed from the trunk. In addition, the 3 flow sensor wires (white, black and red) All 6 of these wires will connect to the CMGS. The other low level fluid switch wire can either connect to the battery ground OR you can route it with the other 6 wires and connect to the 22 gauge black wire off the CMGS. The black pump wire will connect to the 16 gauge green CMGS wire and the red pump wire will connect to the NON fused red CMGS wire eventually.



FIGURES C AND D:

In **figure C** we have routed the hose and wiring UNDER the door sill. You do NOT need to remove the door sill. Just gently pull back on it and push the hose and wiring under it. We left the wiring and hose exposed just prior to the sill so you can see where we routed it easier. **Figure D** shows you the finished result. Just push the hose and wiring under the crevice. There is plenty of room and makes it very

To Summarize what we have done, we have extended the pump + and pump - wires as well as one of the low level float wires (you can do both if you prefer). We then routed the hose under the seat and tucked the hose/wiring under the door sill. At this point we have routed the hose/wiring all the way to the front kick panel.

FIGURES E AND F

In **Figure E** you can see how the hose and wire is routed under and Figure F is where the routing ends. Notice the red wire and white fluid line in **Figure F**? This will be routed to the gauge and meet the wiring that you will need to bring in from the engine bay..



BOOST SOURCE:

Figure A shows the boost source. Using the included black tubing and the included brass tee, connect the boost source exactly as shown in Figure A. The Tee gets placed between the DVS before it splits off to a Y.

ROUTE THE BOOST LINE AND WIRING

The next step is to route wiring from the engine bay into the cabin along with the boost line we just installed. The wires that need to be routed are:

Boost Line	(black plastic tubing)
Water Line	(white nylon tubing)

Figure B Shows the boost line and the 2 wires (or 6 if you routed extra wiring for future enhancements) being routed in a loom along the inside fender.

Figure C shows an overview of the area that you will be routing the hose through. You must take the cover off the BMW. There is a small bolt and 2 clips to remove.

Figure D shows how we routed the wires and the boost line into the cabin. You must pierce the firewall boot in order to get these into the cabin. This is the only difficult part of the install.

Figure E shows the panel under the steering column. You can remove the two screws and open this about 5-6 inches. Its not necessary to completely remove. You can route the hose through the firewall boot (you need to pierce the boot first). Have a friend with a flash light reach in and pull the hose and wiring through the hole. Its possible to do this yourself but much faster if you have someone help.

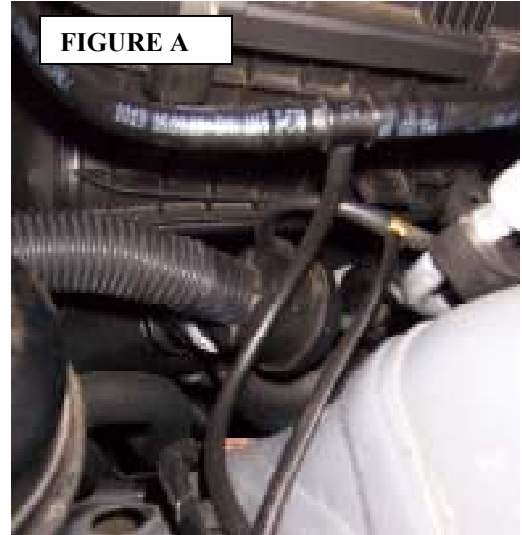


FIGURE A



FIGURE B



FIGURE C

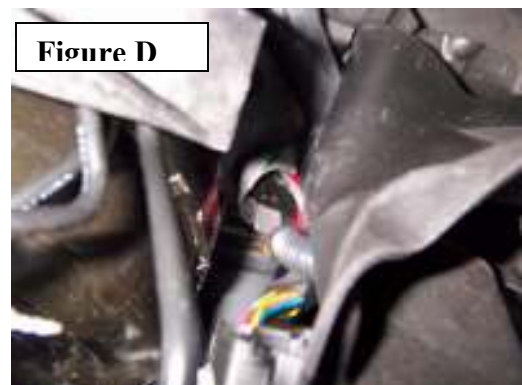


Figure D



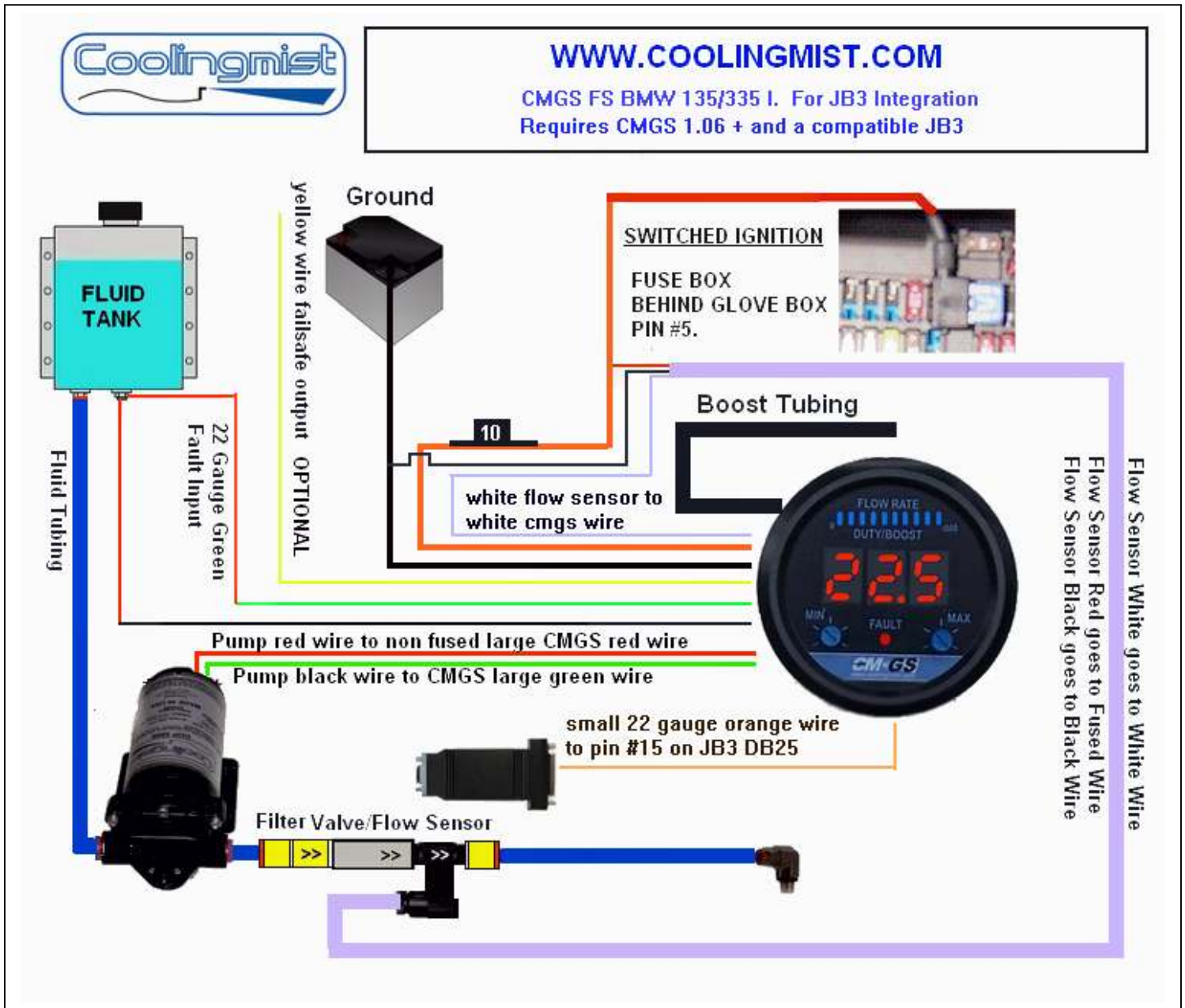
FIGURE E

INJECTOR INSTALLATION:

Figure A shows the injector installed in the pipe, Figure B shows the injector from the inside. You must tighten the threaded washer on the inside using a wrench.

Figure C shows the injector actually installed in the 135 I. Please note the white hose was used for the fluid line. We have wire loom over the hose so it looks black.

**FIGURE A****FIGURE B****FIGURE C****FIGURE E**



The switched ignition can be tapped at the 12 V acc if you want to remove the center console. As an alternative, you can get an “add a fuse” from your autoparts store and connect the CMGS FUSED power to pin 5 on the factory fuse box as pictured in the diagram. You can get your power from any switched ignition source, but NEVER from the battery.

FIGURE A

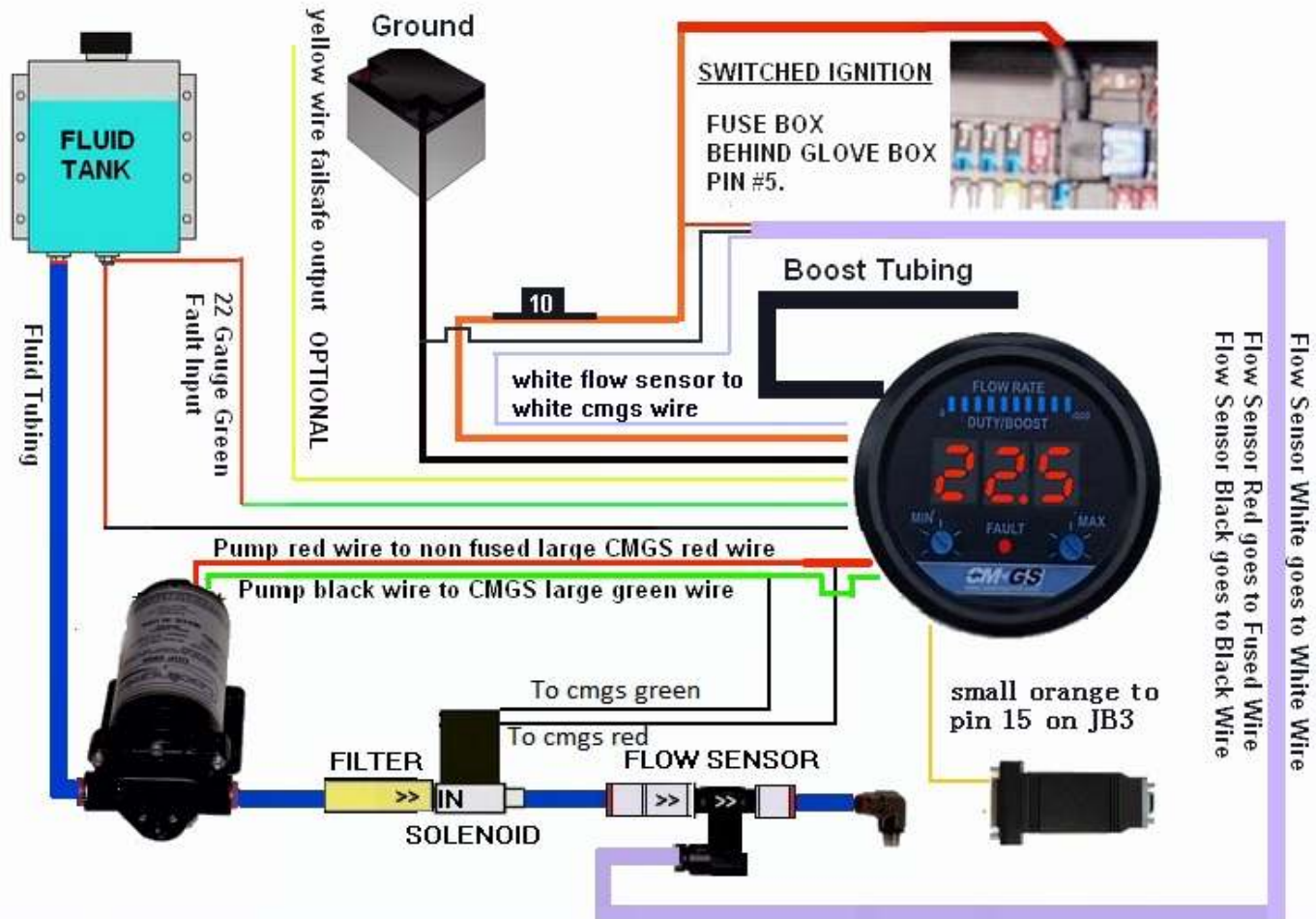
Figure A shows how we installed the CMGS. We ordered a gauge pod from a speed shop for under \$20. using a single zip tie we were able to secure the CMGS so its very tight. Its almost invisible so it will not be obvious. The vent does not need to be removed. Just route the zip tie under the vent slots and up trough the base of the gauge pod and tighten. All of the wires that you routed to the location under the dash earlier will now need connect to the gauge. You can see in the diagram exactly how it all connects.





WWW.COOLINGMIST.COM

CMGS FS BMW 135/335 I. For JB3 Integration
Requires CMGS 1.06 + and a compatible JB3



SOLENOID VERSION

filter must be prior to solenoid. JB3 version must be 2.0 +. CMGS Failsafe must be enabled and map switching for Jb3 (orange wire) must be set up.

NOTE: you should not set the MIN dutycycle on the pump lower than 25 if you use the solenoid. 25 is the default.

Figure A. Flow sensor and checkvalve are assembled here. You must put Teflon tape on the flow sensor threads. Do NOT allow Teflon tape to get into the flow sensor or it will give false readings. Its difficult to see in the picture but the flow sensor has an arrow. **The arrow on the filter, checkvalve AND flow sensor MUST point toward the injector.** *Installing the flow sensor backwards will damage the flow sensor.* The black plastic body on the **flow sensor** can be assembled to the right or the left at the factory. Regardless of how that is represented in the diagram you **MUST** look at the flow sensor arrow. Hand tighten the checkvalve and turn an additional ¼ turn. If it leaks, turn one ¼ turn more. The filter is installed before the checkvalve and the checkvalve is connected to the inlet of the flow sensor. This must be installed **EXACTLY** as you see in figure A. the flow sensor should be installed close to the pump in the trunk.

Figure A: Filter, Checkvalve, Flow Sensor. Arrows all pointing toward injector. Filter is PRE-Checkvalve. The checkvalve is prior to the Flow Sensor.



FIGURE B

The **injector assembly** is shown to the right. The lock washer gets installed on the injector once its in the intercooler tubing. The orange clip is quick connect fitting. Insert the hose into the clip. To remove the hose push in on the clip and pull out on the hose. You may need to press in on the clip with a screw driver or adjustable wrench to build enough pressure.

FIGURE B



FIGURE C:

Included in the kit is the wire you need to complete the install. This includes:

- 5 feet 16 gauge black wire for CMGS ground
- 15 feet 16 gauge red wire. 5 feet for CMGS power and 10 feet for pump red wire to CMGS red wire (non fused)
- 10 feet 16 gauge green wire for pump ground to CMGS 16 gauge green wire.
- 5 feet 22 gauge green wire for the float switch input
- 5 feet 22 gauge white wire for flow sensor signal wire.
- 8 feet 22 gauge black wire 5 feet for flow sensor ground wire and 3 feet for the float switch ground

FIGURE C



The flow sensor power wire is spliced into the CMGS power wire and the flow sensor ground wire is spliced into the CMGS Ground Wire.

FIGURE A

The **4 screws** you see on the top of **figure A** are what we call pan handle screws. They are used to mount the tank to the wall of the trunk and also to mount the straps on the trunkmount tank version. The **sheetmetal screws** on the bottom of **Figure A** are used to mount the pump to the wall as well.



FIGURE B

Figure B is our **nylon hose**. You are provided with 15 feet of this hose. It will be used for the methanol/water fluid and for the input side of the pump.

FIGURE B

FIGURE C



FIGURE C and D

Figure C You will receive 5 feet of our **poly hose**. This is used for boost only. One end will plug into our CMGS boost line and the other end plugs into our tee. (**Figure D**) The tee will connect to your boost line in the engine bay.

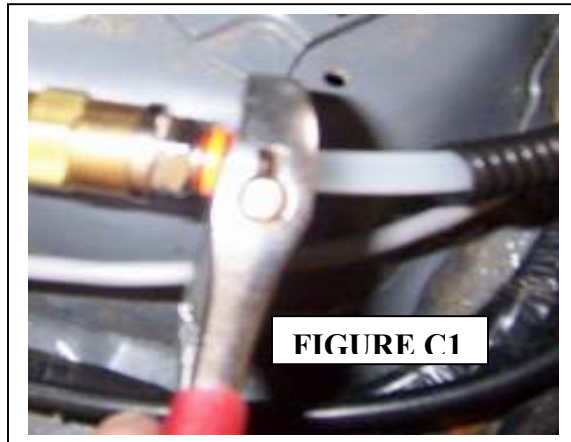


FIGURE C1 TECH TIP!

Removing the tubing from our fittings is easy. If there is pressure in the line you will have to loosen the fittings first. To remove the tubing just take an adjustable wrench as in figure C1 and close the wrench on the tubing (loosely). Pull on the hose and the wrench will put pressure on the orange clin and the hose will come off.

FIGURE E

Our low level fluid switch. Details are provided earlier on how to install.

FIGURE D

FIGURE E



FIGURE F

The **high pressure pump** is set at 200 PSI, but if necessary can be adjusted to 250 PSI. Turn the hex key 1/4 turn clockwise to make it higher pressure. If you have the 1 gallon tank your pump will have built in fittings. If you have the 1.5 gallon trunkmount tank you will have fittings to allow you to mount to the tank.

FIGURE F



OTHER PARTS:

There are other parts such as zip ties and so forth. The CMGS gauge is pictured on the cover of this document and the various tanks are featured in one of the setups as well.

CONFIGURING YOUR CMGS BEYOND THE BASICS

The CMGS FS and VC2 FS are by default setup to inject based on boost, display boost and flow rate with no failsafe. If this is what you want, do not proceed further. Your CMGS is already setup by default. If you want to inject based on voltage or boost and voltage or if you want to display something other than boost or want to activate the failsafe you will need to understand how CMGS FS works. Before anything can happen we must get CMGS into configuration mode. To do this set the MIN and MAX both the 1 and the CMGS will count down from 5. Once at zero the screen will come back and the fault light will blink steady. This is configuration mode.

Across the top of the CMGS you have 10 flow bars. During injection the flow bars light up telling you how much you are flowing. These same bars are used during configuration mode to indicate what parameter you are on. In figure A, all 10 bars are lit up. In Figure B, 3 bars are lit up. These would be 2 different parameters. There are 18 different parameters that you can set and each parameter can have 2 to 7 different options. **We have highlighted in yellow the ones you need to change for JB3 flow mapping. Watch this video before you begin, as it will show you how to program the unit. <http://www.coolingmist.com/videos.aspx?videoid=15#video>**

Now we know the number of flow bars that are lit will tell us what parameter we are on, we must know how to change the value and advance to the next parameter. When you first get into configuration mode the first led will be lit up. You are ready to either change this parameter or move to the next. We will discuss what each parameter is in the next section. To move to the next parameter you would turn the MAX dial until the 2nd LED is lit up. If you wanted to change that parameter you would turn the MIN knob clockwise until the 3 digit display shows the value you want. Its very important not to accidentally copy the value you just set onto the next parameter. When you advance to the next parameter you have 1 second from the time you turn to the next parameter until the value shows up on the screen. If you are not going to change that parameter you must move to the next one before the screen comes back. If you do not, you will copy your previous value over. This is only a factor when you have changed the previous value. You may have noticed that there are 18 parameters but only 10 bars. How to change the other 8? Its simple. When you advance past #10, the flow bars will wrap around and the fault led will blink rapidly. So the 2nd time around when the first bar is lit, that is parameter #11 and so forth. Once you have finished changing any params, to save your changes set the MAX all the way to the right and set the min all the way to the right. You have saved your changes and exited config mode. If you ever need to reset the CMGS/VC2 back to its default setting, just set the MIN to 30, MAX to 30, turn power off and then turn power back on and wait 10 seconds.

To get a visual idea of how this all works see us at www.coolingmist.com/videos.aspx. We have dozens of videos showing most of these features being setup. We strongly recommend you view them if you have any questions about this. **NOTE: to get your CMGS version #, at startup the version number will flash for about 10 seconds.**

On the next page we will discuss each parameter, what they do and what the values are. Its up to you to decide if you need the functionality of any of these params. **DO NOT JUST CHANGE A PARAM BECAUSE IT SEEMS COOL, ONLY CHANGE IT IF YOU HAVE A REASON TO.**



TIP: To check your values after you program the unit, go back into confi mode and keep the MIN setting all the way to the left. The first param value will show on the screen. Write that down then move the MAX knob clockwise onto the next led to get the next value and so forth. Write each value down. From there you can compare to the chart to make sure everything is good exit config mode by turning max to 30 and min to 30..

CMGS FS and VC2 FS version 1.07 configuration chart. Values in red show changes in version 1.07 compared to version 1.06..

PARAM (# LEDES lit up)	PARAM FUNCTION	VALUES (DEFAULT IN BOLD)	NOTES:
1	Display Mode	000 Boost Display 001 Dutycycle Dsplay 002 Voltage Display 003 Flow Display	Displays 0.1 to 30.0 PSI of boost Display pump DC % from 0 to 100 Displays the voltage 0.1 to 5.0 or the multiplied calculation if setup Displays flow in CC/M * 100
2	Control Mode	000 Boost Only Injection 001 0-5 Volt only Injection 002 Combined Mode (boost and 0-5V)	Only considers boost for injection Only considers voltage for injection Looks at boost and voltage. Can do boost injection with voltage threshold or do a user defined map between the boost and voltage. System will not turn on until MIN boost, MAX boost, MIN voltage and MAX voltage are reached.
3	Minimum Dutycycle	0 to 100 %. 25% default	This is the minimum % the controller sends the pump during initial turn on.
4	Maximum Dutycycle	0 to 100% 100% default	This is the maximum % the controller sends to the pump at full boost or signal. For example if you set this to 75%, the system will scale your MIN dutycycle at the initial turn on and when you are at full flow you will only see 75%. If you need to lower the flow rate, this is the ideal way to do it.
5	5 Volt Multiplier	0 to 100. 1 is default	If you are injecting based on voltage or combined mode or displaying voltage you can set the multiplier. For example, if you are integrating throttle position or displaying throttle position and 5 volts =100% throttle, you set the multiplier to 20. Your display will show 0 to 100% instead of 1 to 5.
6	Flow Input Pulse Liter	150 to 450 220 is default	If your flow sensor is in the trunk you should adjust this number to around 270 for an average vehicle. The further away from the engine the larger the number should be.
7	Flow Bar Configuration	000: Each bar=50 CC/M 001: Each bar=100 CC/M 002: Each bar=200 CC/M	For lower flow rates the default of 50CC per bar (500 CC total) is ideal. This is display purpose only.
8	Flow Bar Dimmer	1-4	4 is the brightest, 1 is the most dim.
9	5 Volt MIN Set Point	0.0 to 5.0 V. 1 is default (only avail in combined mode)	If you have combined mode chosen you will get this option. This is the minimum voltage for turn on.
10	5 Volt MAX Set Point	0.0 to 5.0 V 5.0 is the default (only available in combined mode)	This is the Max voltage for injection (COMBINED MODE ONLY)
PARAM #	FUNCTION	VALUES	NOTES
11	5 V Input Weight Pct	0 to 100% 50% default (only avail in combined mode)	If you set this value to 0, the system will inject based on only boost, but only when

<p><u>Please note:</u> <u>Param 11 is new in 1.07. V 1.06 does not have this parameter.</u> <u>From this point the sequence is different in 1.06.</u></p>			<p>you are above your 5 V min voltage setting. If you set the value to 100, the system will inject based on only Voltage but will use the min boost setting as the boost threshold. The closer you are to 100, the more control you give to the voltage. For example, set it to 50 and boost and voltage have equal weight. Any change in boost or voltage will change the map equally. Set the value to 75 and voltage has 3 times the weight at boost meaning change in boost will not change the flow as much as change in voltage will.</p>
<p>12 This is a new param in 1.07. Sequence changes</p>	<p>5 V Output Mode (Orange wire)</p>	<p>000- 5V Output is scaled to the Flow Rate Input value. (100ml = 0.1V)</p>	<p>Outputs .1 volts for every 100 CC/M of flow. At 2.5 volts you are at 2500 CC/M. Some tuning boxes for the BMW 135I/335I use this output from this. The more CMGS flows the more boost your BMW will safely get.</p>
<p>This param "001" was automatic in 1.06.</p>		<p>001 – 5V Output puts out 5V when the Flow Rate Input satisfies the Fail Safe Flow Rate Min and Max settings.</p>	<p>Outputs 5V when the system is flowing and you are flowing. Newer versions of the JB3 use this function to advance boost to the BMW 135/335I but only when flowing correctly within your setup parameters.</p>
		<p>002 – 5V Output puts out 5V when the Flow Rate Input satisfies the Fail Safe Flow Rate Min and Max settings and the Duty Cycle, Boost, or Voltage exceeds the Min Threshold as configured.</p>	<p>Is exactly the same as 001, except it will look at your boost threshold, voltage or dutycycle threshold as well.</p>
		<p>003 – 5V Output is scaled to the Boost Input value (0 PSI, 0.0V – 30 PSI, 5.0V)</p>	<p>0V=0 boost. 5V=30 psi orange wire</p>
<p>13 If you have 1.06, this is param #11</p>	<p>Failsafe Enable</p>	<p>000- Fail Safe feature is disabled</p>	<p>If failsafe is disabled, all values below are disabled as well. There are default values for each of these, but they are only active if the failsafe is enabled.</p>
		<p>001 – Fail Safe feature is enabled using Duty Cycle</p>	<p>If you are injecting n combined mode, dutycycle is the best way to use the failsafe.</p>
		<p>002 – Fail Safe feature is enabled using Boost</p>	<p>This is the most common setting.</p>
		<p>003 – Fail Safe feature is enabled using 5V Input</p>	
<p>14 for V1.06 this is param #12</p>	<p>Failsafe Min Threshold</p>	<p>The Fail Safe Min Threshold value is displayed based on the Fail Safe enable. If Fail Safe is enabled for Duty Cycle the Fail Safe Min Threshold range is 0 – 100% with 60 % as the default. When enabled for Boost, the range is 0 – 30 and default is 12 psi. If enabled for the 5V Input the range is displayed using the current 5V Multiplier configuration setting and 3 v is the default. When the Fail Safe Feature is disabled this configuration setting is not displayed.</p>	<p>The threshold is critical. If you the aux output (yellow wire) setup for "000", "001" or "003" the system looks at your threshold before it will trigger the failsafe. For example, If you set the threshold to 12 PSI, until you reach 12 PSI or beyond the system could care less what your flow rate is. You should set this threshold early enough so that it will catch any flow problem early.</p>
<p>15 for V1.06 this is param # 13</p>	<p>Flow Min Threshold</p>	<p>10 to 200. default 17 (170 ML/M)</p>	<p>From 100 CC/M to 2000 CC/M. Value of 10 = 100, value of 150=1500, etc. If you set this value too high your failsafe can trip before you reach that flow rate. Make sure the value you set is realistic based on your controller settings and jet size.</p>
<p>LED #</p>	<p>PARAM NAME</p>	<p>VALUE</p>	<p>NOTES</p>

16 For V1.06 this is param #14	Flow Max Threshold	0 to 200 default 0	This is optional. This value allows the cmgs to know if your hose bursts or you have an over flow problem. If you don't set this you would never know if you have an over flow.
17 For V1.06 this is param #14	Failsafe Response Time	A pause can be programmed from 0 to 2 seconds. Values are valid from 0 to 200. Pauses before failsafe output wire is triggered . Defaults to 10	The pump takes time to get up to speed and the lines take time to fill with fluid. The further your flow sensor from the pump the longer this needs to be. This is the amount of time for the system to pause prior to tripping the failsafe. If you get a "001" flashing on your CMGS you may need to set this delay. You want this delay as short as possible.
18 For V1.06 this is param #15	Failsafe Aux Output <i>(these settings give or take away a ground to the yellow wire. Use a relay if you want voltage)</i>	000 – Aux Output Normally Open (Aux Output is normally off and activates when fail safe is triggered).	This is great to be used with any device you need to turn on when there is a flow problem. The Subaru WRX/STI uses this feature. The yellow wire connects to the green test connector and its setup with "000". Test connector is grounded when a problem occurs causing boost/timing to retard.
		001 – Aux Output Normally Closed (Aux Output is normally active and deactivates when the Fail Safe is triggered).	This setting can be used for example if you have a boost controller that you always want on until there is a problem and you wan to deactivate it. Can be used for a number of situations. Always has a ground unless you are within your flow window and a problem occurs.
		002 – Aux Output Normally Closed (Aux Output is normally active only when the Flow Rate Input exceeds the Flow Rate Min setting and is less than the Flow Rate Max setting when set. Aux Output deactivates when the previous condition is not satisfied).	This differs from 001 because it does not give the ground output until you are within your flow rate min and flow rate max. It does not care about your threshold of boost, voltage or dutycycle. Looks at min/max flow only.
		003– Aux Output Normally Closed (Aux Output is normally active only when the Flow Rate Input exceeds the Flow Rate Min setting and is less than the Flow Rate Max setting when set, and the Duty Cycle, Boost, or Voltage Min Threshold is exceeded. Aux Output deactivates when the previous conditions are not satisfied).	Same as 002, except it factors in your dutycycle, boost or voltage threshold. If it is not met, it will not give the ground signal even if its within the flow range.
19 For V1.06 this is param #17	Bar Graph Configuration	000-Display Flow Rate (default)	By default the 10 flow bars will show your flow rate (50 cc/m, 100 cc/m or 200 cc/m per bar) when you are injecting. You can however make this display pump dutycycle with each bar equaling 10 % dutycycle. Why would you do this? Lets see you set the display mode to 003 so the 3 digit display shows flow instead of boost, you may not want the bars to show flow as well.
		001-Display Dutycycle	See above ☺