PART NO. DF-17

DUAL FLOW® PCV VALVE

US PATENT NO. 9,376,945

SHOP MANUAL

REVISION 9.1

MADE IN U. S. A.

VISIT OUR WEBSITE

For additional support, visit **www.mewagner.com** for how-to tuning videos.

MAINTENANCE

Unlike a stock PCV valve, your Dual Flow PCV Valve is a precision instrument. As such, it should be inspected periodically and cleaned if necessary.

M/E Wagner recommends checking that both the IDLE ball and CRUISE ball are freely moving at every oil change. If oil or sludge buildup impedes the motion of either ball, the Dual Flow PCV Valve must be disassembled and cleaned immediately. ***M/E Wagner is not liable for any damage resulting from improper airflow or loss of backfire protection due to an improperly maintained valve.***

WHAT IS A PCV VALVE?

The purpose of a PCV (Positive Crankcase Ventilation) system is to ventilate the engine's crankcase under a variety of driving conditions. Moisture and unburned hydrocarbons (called blowby) from the combustion process can contaminate the oil, and must be properly evacuated for the long term health of the engine. Also, unburned hydrocarbons from the crankcase can be a significant source of emissions if vented to the atmosphere. The PCV valve recirculates these harmful gases and burns them in the engine, improving crankcase and oil cleanliness while reducing emissions.

The PCV valve controls the flow rate of these blowby gases through the engine. Typically a PCV valve flows a small amount of air at idle, and an increased amount of air under cruising conditions. This accommodates the increased amount of blowby gases produced when the engine is under a load.

PCV SYSTEM GENERAL RECOMMENDATIONS

PCV Valve Mounting – The PCV Valve is typically installed in the valve cover on most applications. It is also possible to mount the PCV valve in the lifter valley on some V-8 applications.

The PCV valve can also be mounted inline, which is typical on some newer applications. In this method a PCV hose is connected to the inlet <u>and</u> outlet of the valve (a separate inline adaptor is available from M/E Wagner). The PCV hose draws crankcase vapors from the same sources listed above.

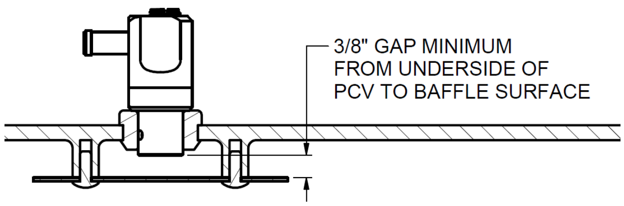
Fresh Air Inlet – The PCV system ***<u>must</u>*** have a free flowing source of fresh air to the crankcase. The fresh air inlet must be filtered.

On V-8 applications where the PCV valve is mounted in the valve cover, a breather or fresh air inlet hose is typically installed on the opposite valve cover. If a fresh air inlet hose is used, 3/4" inside diameter minimum is recommended. 1" inside diameter minimum is recommended for big block V8 applications.

PCV systems where the PCV valve is mounted in a central location such as the lifter valley typically use a breather or fresh air inlet on one or both valve covers. Alternately, some early applications may use a vented cap on the oil fill tube for this purpose.

Proper Baffling – The PCV Valve's mounting location must be properly baffled to prevent excessive oil consumption. See www.mewagner.com for more information on baffle recommendations. ****If excessive oil consumption is detected, the PCV valve's location and baffling should be examined first.***

A minimum of a 3/8" gap is required from the underside of the PCV valve to the baffle surface. Inadequate clearance can lead to excessive oil consumption. Spacer o-rings are provided if the valve needs to be spaced upward to achieve this gap.



DUAL FLOW PCV OVERVIEW

Stock style PCV valves have remained unchanged for over 50 years. A typical stock style PCV valve has one airflow channel; the airflow through this channel is controlled by a spring actuated piston. The flow rate at idle, the flow rate under cruising conditions, and the vacuum level where the valve transitions between these modes are controlled by the spring's stiffness and piston's geometry. These parameters are not adjustable by the user for tuning purposes.

Dual Flow PCV Technology puts the user in control of all aspects of the PCV system's performance. M/E Wagner is the first manufacturer to split PCV airflow into two separate circuits, an IDLE and CRUISE circuit. This patented technology allows the user to adjust the PCV system's flow rates, as well as the vacuum level where the valve transitions from IDLE to CRUISE mode.

HOW IT WORKS

- The Dual Flow PCV Valve can be in IDLE or CRUISE mode, depending on driving conditions.
- IDLE mode has a low flow rate.
- CRUISE mode has an increased flow rate.
- The IDLE flow rate is controlled by the IDLE screw.
- The CRUISE flow rate is controlled by a combination of the user set IDLE flow rate, and internal porting in the valve (porting is precision machined and is not user adjustable).
- The vacuum level where the valve switches from IDLE to CRUISE mode is controlled by the CRUISE screw (in Dual Flow mode)

TUNING METHOD OVERVIEW

Tuning recommendations are offered as a starting point, however the user may need to experiment to find what works best for a particular engine.

The Dual Flow PCV Valve can operate in Dual Flow mode or Fixed Orifice Mode. Two springs are supplied to accommodate various ranges of vacuum when operating in Dual Flow mode.

Dual Flow Mode utilizes both the IDLE and CRUISE circuits. This mode flows a reduced amount of air under idle conditions and an increased amount of air under cruising conditions. The valve switches between flowing air through only one circuit (IDLE) and two circuits (both IDLE and CRUISE) depending on operating conditions.

Two springs are available for use in Dual Flow mode. The high vacuum or low vacuum spring is selected based on the engine's manifold vacuum level at idle. See "Selecting a Tuning Method" for more details. In the event that the springs need to be identified, the following length chart may be used. Note that the low vacuum spring is a weaker spring (due to smaller wire diameter) even though its uncompressed length is longer than that of the high vacuum spring.

Spring	Length	Wire Dia.
High Vacuum (10"+ Hg.)	1.50"	0.018"
Low Vacuum (7"-10" Hg.)	1.75"	0.016"

Fixed Orifice Mode does not turn the cruise circuit on or off depending on engine load. In this mode, one or both circuits of the valve are locked on regardless of the engine's operating conditions. This tuning mode is used on applications with very low or unstable idle vacuum signals, and it makes the orifice size that the air flows through constant (or "fixed") at all times. In this mode, the flow rate of the valve at idle is intentionally increased. The flow rate under cruising conditions will still increase in fixed orifice mode, since engines with very weak idle vacuum signals will tend to make increased vacuum under moderate loads and speeds. This increase in vacuum will provide more pull to move more air through the valve's porting during cruising conditions. Fixed orifice mode is also useful when idle vacuum signals are unstable, which might cause chatter in the piston of a conventional PCV valve. Full backfire protection is maintained when using fixed orifice mode.

SELECTING A TUNING METHOD

1. Connect a vacuum gauge to a **manifold vacuum source**. *Note that the vacuum tuning port on the DF-17 PCV valve is **not** an acceptable measurement point for this reading. A manifold vacuum source on the engine must be used.*
2. Warm up the engine. The Dual Flow PCV valve does not need to be installed at this point. These steps are a preliminary check of the engine's manifold vacuum level to select a tuning mode only.
3. With the engine at idle (in *PARK* for automatics), observe the idle vacuum level.
4. Using the chart below, determine which tuning mode and which spring (if applicable) will be used. The spring may need to be changed or removed, see the following section for details.

Manifold vacuum at idle:	Tuning mode:	Cruise circuit spring:
Greater than 10" Hg	Dual Flow	High Vacuum
Between 7" and 10" Hg	Dual Flow	Low Vacuum
Less than 7" Hg, or if vacuum is unsteady or choppy when viewed with a vacuum gauge	Fixed Orifice Standard Flow*	N/A – Remove spring
	Fixed Orifice High Flow*	High vacuum

*See Fixed Orifice Tuning Mode section for more details on standard vs. high flow

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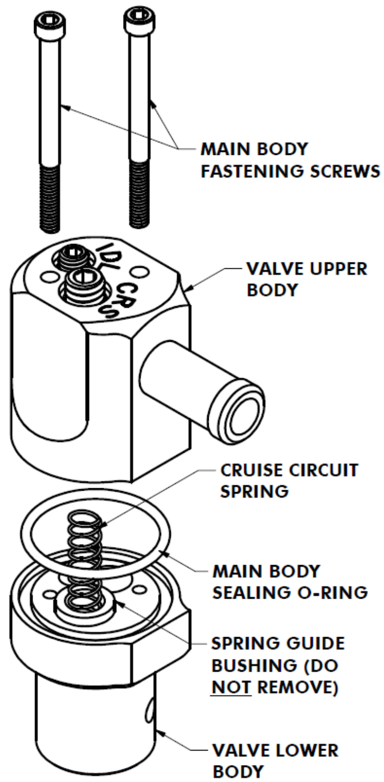
CHANGING OR REMOVING THE CRUISE CIRCUIT SPRING

Based on the table in "Selecting a Tuning Method", it may be necessary to change or remove the cruise circuit spring. ***Valves are shipped from M/E Wagner in Dual Flow mode with the high vacuum spring installed unless noted otherwise.*** If it is necessary to change or remove the spring, use the following steps:

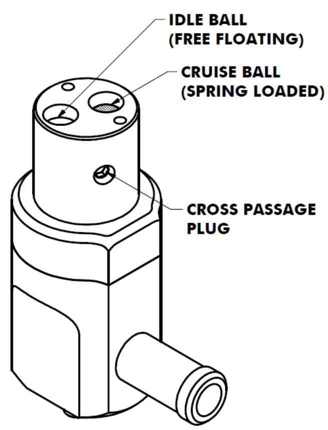


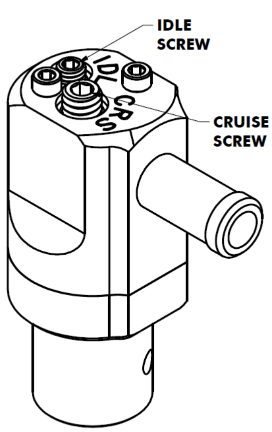
1. **Disassemble valve:** Using the allen wrench supplied in the kit, remove the (2) main body fastening screws. This will permit the upper and lower body to be separated.

2. **Change or remove the CRUISE circuit spring:** After removing the upper body, remove or replace the existing CRUISE circuit spring. Do not remove the bronze spring guide bushing or cruise circuit ball if removing the spring.

3. **Reassemble valve:** Be sure to reinstall the main body sealing o-ring and reassemble the upper and lower valve body. Reinstall the (2) main body screws and hand tighten.

DUAL FLOW MODE INSTRUCTIONS





Dual Flow Mode utilizes both the IDLE and CRUISE circuits as shown in the previous image. See Tuning Method Overview for more details regarding Dual Flow Mode functionality.

TUNING IN DUAL FLOW MODE

1. **Set CRUISE circuit transition for initial tuning:** The CRUISE screw controls the vacuum level where the valve transitions from IDLE mode to increased flow CRUISE mode. Turn the CRUISE screw clockwise until it is flush with the top of the valve. Back out the CRUISE screw counterclockwise 10 turns, or ½" above flush (valve is set this way when shipped from M/E Wagner). This disables the CRUISE circuit for initial tuning.

2. **Set IDLE flow rate:** The IDLE screw controls the flow rate of the valve in IDLE mode. The IDLE flow rate also influences the valve's flow rate in CRUISE mode (CRUISE modes adds a preset amount of flow to the IDLE flow rate via CNC machined internal porting).

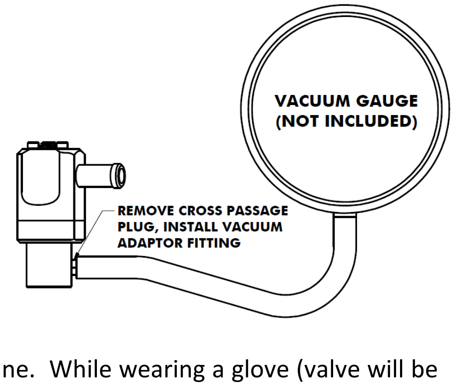
Turn the IDLE screw clockwise until lightly seated, then use the **manifold vacuum** reading previously determined in "Selecting a Tuning Method" and the table below to determine the number of IDLE screw turns out (counterclockwise) from lightly seated that should be used as a starting point for your engine.

Example: *A 302 cubic inch engine with 15 inches of manifold vacuum at idle should set the IDLE circuit screw to 1 turn CCW from lightly seated.*

		DUAL FLOW MODE IDLE circuit screw setting* vs. manifold vacuum (in. Hg) at idle		
		7"-10"	10"-14"	14"+
ENGINE SIZE CU. IN.	Less than 200	1 turn	1/2 turn	1/4 turn
	200-280	1-1/2 turns	3/4 turn	1/2 turn
	280-360	2 turns	1-1/2 turns	1 turn
	360+	4 turns	2 turns	1-1/2 turns
****Maximum setting 4 turns***		***Use Low Vac. Spring***	***Use High Vacuum Spring***	

CAUTION: User assumes all responsibility when determining flow rates. Proper PCV baffling is required. An inline air-oil separator may be required. Oil consumption and spark plug fouling must be carefully monitored.

3. **Install Valve:** Connect PCV valve to manifold vacuum fitting intended for PCV usage using 3/8" inside diameter PCV hose. Install valve to valve cover.



4. **Warm up engine.**

5. **Connect vacuum gauge to PCV valve for CRUISE circuit tuning:** Shut off engine. While wearing a glove (valve will be hot) remove the valve from the valve cover and use the included allen wrench to remove the CROSS PASSAGE PLUG. Thread the VACUUM ADAPTOR FITTING hand tight into the cross passage port.

Connect a vacuum line from the fitting to a vacuum gauge. Reinstall the valve to the valve cover. Valve will not insert into valve cover fully with vacuum adaptor fitting attached, and may need to be held in place during tuning with the CRUISE screw allen wrench.

6. **Set CRUISE circuit transition level:** Idle engine. Slowly turn the CRUISE SCREW clockwise until valve transitions from IDLE to CRUISE mode, indicated by vacuum tuning port reading moving off of nearly zero (to typically between 2" and 7" Hg, varies with manifold vacuum level and idle flow rate). Now turn the CRUISE SCREW counterclockwise slowly until the valve transitions back to IDLE mode shown by the vacuum reading dropping back to a steady reading of zero (or nearly zero, depending on the vacuum gauge used). ***Turn the CRUISE SCREW counterclockwise an additional (3/4) turn from this point to obtain the final setting.***

Important notes regarding this tuning step:

- ***The actual vacuum level measured at the cross passage port is not critical.*** This step is intended to ensure the valve transitions from idle mode to cruise mode by observing a ***change*** in the vacuum readings. Engines with lower manifold vacuum readings will see less of a change when the valve enters CRUISE mode.
- Some engines may require the CRUISE screw to be nearly flush with the top of the valve before the vacuum transition occurs.
- The vacuum reading from the DF-17 tuning port will not match typical manifold or ported vacuum readings. It is a measurement of an internal circuit of the valve.

7. **Verify CRUISE transition level:** Rev engine quickly and aggressively. Vacuum gauge needle should briefly jump off of zero (valve enters CRUISE mode briefly) during rev. Vacuum reading must return to zero or nearly zero (valve returns to IDLE mode) when engine idles. If vacuum reading does not return to zero, back off the CRUISE screw in additional 1/8 turn increments and re-test.

8. **Remove vacuum gauge and fitting:** Shut off engine. Remove vacuum gauge and vacuum adaptor fitting. ***Reinstall cross passage plug.*** Install valve fully in valve cover and reconnect PCV line.

9. **Road test:** Drive the vehicle and determine if any adjustments to the IDLE flow rate need to be made. See "Airflow Recommendations" for more details.

10. **Change IDLE flow:** If it is determined that changes are needed to the IDLE flow rate, repeat steps 1-9 while making changes to the IDLE flow baseline based on the Airflow Recommendations section on the following page.

Note: At times you may find that idle manifold vacuum levels may change when PCV flow rates are altered. Check manifold vacuum at idle after PCV tuning to ensure the correct spring is being used.

FIXED ORIFICE MODE OVERVIEW

Fixed orifice mode uses one or both circuits of the valve which are locked on regardless of the engine's operating conditions (see Tuning Method Overview for more details). This mode is useful when idle vacuum signals are weak or unstable at idle.

Two fixed orifice tuning modes are available depending on the flow rate desired. ***M/E Wagner recommends starting in Standard Flow mode for all fixed orifice applications.*** In this mode, only the IDLE circuit will flow air at all times. Through tuning and testing, the user may elect to increase fixed orifice flow rates beyond those recommended as starting points. If the user reaches the maximum flow rate setting in Standard Mode (4 turns out on the IDLE screw) and more flow is still desired, High Flow fixed orifice mode can then be used.

In High Flow fixed orifice mode, both the IDLE and CRUISE circuits will flow air at all times. The addition of the CRUISE circuit in High Flow fixed orifice mode enables higher total airflow.

In both fixed orifice modes, full backfire protection is maintained. See the following sections for details on tuning with each mode.

Fixed orifice tuning mode:	Cruise circuit spring:	Tuning mode notes:
Standard Flow (IDLE circuit flows, CRUISE circuit disabled)	N/A – Remove spring	***Use this mode as a starting point for all fixed orifice applications***. The majority of fixed orifice applications will continue to use this mode after tuning is complete.
High Flow (Both IDLE and CRUISE circuits flow at all times)	High vacuum spring with cruise screw flush with top of valve	Based on tuning results in Standard Flow mode, if the maximum flow setting is reached (4 turns) and more flow is desired, High Flow mode may be used.

TUNING IN FIXED ORIFICE MODE (STANDARD FLOW)

1. **Remove CRUISE circuit spring:** Reference the previous section "Changing or Removing the Cruise Circuit Spring" for instructions on how to remove the spring. This will disable the CRUISE circuit completely, directing all airflow through the IDLE circuit. Do not remove the bronze spring guide bushing.

2. **Set CRUISE screw:** The CRUISE screw is no longer used, however it must still be installed to the valve. Turn the CRUISE screw until it is approximately flush with the top of the valve. Exact positioning is not critical in this mode.

3. **Set IDLE screw:** Since the CRUISE circuit no longer adds an additional amount of airflow during cruising conditions, M/E Wagner recommends using increased idle flow rates beyond those used in Dual Flow mode with higher vacuum applications. The following IDLE circuit settings (number of turns counterclockwise from lightly seated) are recommended as a starting point to ensure the crankcase is properly ventilated, however your engine may require

more airflow. Carburetor or injection tuning may be necessary in conjunction with this adjustment.

	FIXED ORIFICE MODE Engine Size, Cubic Inches			
	Less than 200	200-280	280-360	360+
IDLE circuit screw setting*	1 turn	1-1/2 turns	2 turns	4 turns

(Maximum setting 4 turns)

CAUTION: User assumes all responsibility when determining flow rates. Proper PCV baffling is required. An inline air-oil separator may be required. Oil consumption and spark plug fouling must be carefully monitored.

4. **Install Valve:** Install valve to valve cover. Connect PCV line to manifold vacuum source intended for PCV usage.

5. **Road test:** Drive the vehicle and determine if any adjustments to the IDLE screw flow rate need to be made. See Airflow Recommendations section for more details. If necessary, adjust the airflow and repeat road testing.

TUNING IN FIXED ORIFICE MODE (HIGH FLOW)

If the maximum flow rate setting is reached in Standard Flow fixed orifice mode (4 turns out on the IDLE screw) and more flow is still desired, High Flow fixed orifice mode can be used to continue to increase the flow rate.

1. Install CRUISE circuit high vacuum spring: Reference the previous section "Changing or Removing the Cruise Circuit Spring" for instructions on how to install the high vacuum cruise circuit spring.

2. Set the CRUISE circuit adjustment screw: Turn the CRUISE circuit adjustment screw in until it is ***flush with the top of the valve***. This will lock the CRUISE circuit on so that it flows air at all times in addition to the flow already present through the IDLE circuit.

3. **Set IDLE screw:** Since both the IDLE and CRUISE circuits are now flowing air, it will be necessary to change the IDLE screw setting when changing from Standard Flow to High Flow fixed orifice mode. An IDLE screw setting of 4 turns out in Standard Flow mode yields the same airflow as an IDLE screw setting of 3/4 turn out in High Flow mode. Tuning can proceed to higher flow rates from this starting point. See the Fixed Orifice Mode Tuning Progression table in the Airflow Recommendations section for more details.

4. **Install valve and road test:** Install valve, road test, and repeat flow adjustments as recommended in the following section.

AIRFLOW RECOMMENDATIONS

After road testing the following guidelines may be used to optimize the PCV valve's flow rate. Also see the following Frequently Asked Questions section for additional tuning assistance.

Adjustment of airflow through the PCV system should aim to balance proper crankcase ventilation with oil consumption and tuning issues. From a crankcase ventilation perspective, more PCV flow is generally better. More PCV flow will minimize crankcase pressure, evacuate blowby more effectively and draw more fresh air through the crankcase, however there are tradeoffs to having too much PCV flow. Excessive PCV flow can lead to oil consumption through the PCV system, although this issue is often a combination of airflow and baffle design (see M/E Wagner's website for more baffle design information). Excessive PCV flow can also lead to tuning issues, not limited to carburetor and fuel injection tuning problems, spark plug fouling and lean conditions.

In summary, ***M/E Wagner recommends using the minimum amount of airflow that will properly ventilate the crankcase.*** If none of the issues present in the Inadequate PCV Flow column below are observed, then the flow rate is adequate. M/E Wagner conducted a large amount of flow testing to determine the settings listed in this manual, and ***in most cases the flow rate starting points listed in previous sections will be adequate***.

Inadequate PCV Flow	Excessive PCV Flow
▪ Oil quickly becomes dirty ▪ Oil smell inside vehicle while driving ▪ Oil residue on firewall or valve covers ▪ Oil in base of air cleaner (on vehicles with closed PCV systems) ▪ Oil leaks due to excessive crankcase pressure (Note – oil leaks may have other causes unrelated to the PCV)	▪ Carburetor or fuel injection tuning difficulties ▪ Unresponsive idle mixture screws on carburetor ▪ Lean conditions during operation ▪ Oil consumption through the PCV system (also check baffling) ▪ Spark plug fouling due to oil consumption (also check baffling)

In the event that the user wishes to alter the flow rate from the starting points previously indicated, the following tuning progressions are recommended. It is important to note that the IDLE screw requires more turns to achieve the same incremental increase in airflow the farther out it is adjusted. The tables below outline tuning steps which represent a consistent increase in flow rate for every tuning step. For example, in Dual Flow mode, increasing from 3/4 turn to 1 turn on the IDLE screw will result in an increase in airflow. The next step (if needed) would be to change to 1-1/2 turns, which would result in the same airflow increase that occurred when changing from 3/4 to 1 turn.

FOR ALL TUNING MODES - CAUTION: User assumes all responsibility when determining flow rates. Proper PCV baffling is required. An inline air-oil separator may be required. Oil consumption and spark plug fouling must be carefully monitored.

DUAL FLOW MODE Tuning Progression

Tuning Step	IDLE screw setting (turns from seated)
1 (minimum flow)	1/4
2	1/2
3	3/4
4	1
5	1-1/2
6	2
7 (maximum flow)	4

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FIXED ORIFICE MODE Tuning Progression

Tuning Step	IDLE screw setting (turns from seated): Fixed orifice, Standard Flow (no spring)	IDLE screw setting (turns from seated): Fixed orifice, High Flow (high vacuum spring installed)
1 (minimum flow)	1/4	
2	1/2	
3	3/4	
4	1	
5	1-1/2	
6	2	
7	4 ⟵ SAME FLOW ⟶	3/4
8		1
9		1-1/2
10		2
11 (maximum flow)		4

Note for all tuning modes and flow rates: It is recommended that carburetor users re-tune idle mixture screws in conjunction with altering PCV flow rates. Self-learning EFI systems may require time to adjust to PCV flow changes.

TROUBLESHOOTING AND FREQUENTLY ASKED QUESTIONS

M/E Wagner is available for technical support to assist you with your tuning application. ***To provide you with the most efficient support, we ask that you read the Frequently Asked Questions section in its entirety before calling.*** We have compiled the answers to the most commonly asked questions here.

If you do require technical support, **we ask that you gather the following information before calling.**

1. Are you using Fixed Orifice or Dual Flow mode?
2. If using Dual Flow Mode, what spring are you using?
3. What IDLE screw settings are you using?
4. How much manifold vacuum does your engine have at idle?

DUAL FLOW MODE VACUUM GAUGE TUNING

Problem: My vacuum gauge is not responding as expected when I tune the CRUISE circuit using Dual Flow mode. **TRY THESE BASIC SOLUTIONS FIRST** before progressing into more specific troubleshooting!
Solution 1: Ensure you have removed the cross passage plug before installing the vacuum adaptor fitting to the Dual Flow PCV Valve.
Solution 2: Make sure you run the CRUISE screw through its entire range of travel. Start 10 turns out from flush (1/2" above flush), and turn slowly until the screw is flush with the top of the valve.
Solution 3: Make sure both the IDLE and CRUISE balls can move freely in their bores. Ensure that debris has not been picked up that may impede motion. Disassemble and clean if necessary.
Solution 4: Make sure there are not any other sources trying to evacuate vapors from the crankcase (i.e. a second PCV valve, vacuum pump, etc.)

Problem: My vacuum gauge is not responding as expected when I turn the CRUISE screw (Dual Flow Mode, step 6), **it is stuck on 3"+ Hg and will not return to 0" Hg.**
Solution 1: The installed spring may be too heavy for your manifold vacuum level. If you are using the high vacuum spring, try switching to the low vacuum spring. If you are already using the low vacuum spring try using fixed orifice mode.
Solution 2: Ensure the crankcase has an adequate fresh air source.
Solution 3: Ensure that the PCV valve and fresh air breather neck have a minimum of 3/8" clearance to the top of baffle surfaces.

Problem: I successfully tuned the CRUISE screw using a vacuum gauge (Dual Flow Mode, step 6), but when I rev the engine to verify the CRUISE transition level (step 7) **the vacuum gauge will not jump off of 0" Hg.**
Solution 1: You may not be revving the engine aggressively enough. A very quick, aggressive rev of snapping the throttle to 1/2 to 3/4 open that makes the RPM rise briefly is better than a slower, gradual rev that makes the RPM rise excessively. *The goal is to make manifold vacuum drop to verify the CRUISE circuit will come online.*
Solution 2: Try *turning in* the CRUISE screw 1/8 turn at a time and repeating this tuning step.

IF THE SOLUTIONS ABOVE DO NOT SOLVE YOUR DUAL FLOW MODE VACUUM GAUGE TUNING RELATED ISSUES, CONSULT THE FLOWCHART ON THE LAST PAGE OF THIS MANUAL.

GENERAL TUNING ISSUES

Problem: My vacuum signal is very low or unsteady, and it causes the CRUISE ball to flutter.
Solution: If you are using the high vacuum spring, try switching to the low vacuum spring. If you are already using the low vacuum spring try using fixed orifice mode.

Problem: My Dual Flow PCV Valve responds to tuning normally, but I still have excessive crankcase pressure buildup under full throttle.
Solution: Make the fresh air inlet source to the crankcase less restrictive, i.e. change to 1" inside diameter minimum line from the valve cover to air cleaner, or try a less restrictive fresh air breather configuration.

Problem: When I back off the CRUISE screw 10 turns, the CRUISE ball is still forced against the seat and does not have any free play.
Solution: When using the low vacuum spring, this is normal due to the increased length of the spring.

Problem: My automatic transmission vehicle surges or has idle speed inconsistencies when I put it in Drive after tuning the Dual Flow PCV Valve per the instructions in the manual.
Solution: Some vehicles may experience a large vacuum drop when put into Drive. Try backing off the CRUISE screw adjustment an additional 1/8 turn at a time to compensate for this.

Problem: My Dual Flow PCV valve was shipped to me with the CRUISE screw adjusted very high above the top of the valve.
Solution: This is normal. 10 turns out (1/2" above flush) is the default setting to ensure the CRUISE circuit is off for initial tuning.

Problem: My self tuning EFI system isn't running as well after my Dual Flow PCV valve installation.
Solution: It may take some time for your EFI system to adjust to your PCV valve's new flow rate. Try additional drive time first before making further changes.

OIL CONSUMPTION TROUBLESHOOTING

Question: Should I run an air-oil separator with in my PCV system?
Answer: If possible, yes. Running an air-oil separator reduces the amount of oil vapor recirculated through your engine, and also provides an excellent method for evaluating how much oil is being pulled through the PCV system.

Question: Can you recommend an air-oil separator part number?
Answer: We have used Moroso part no. 85474 on several vehicles.

Question: Where should I put an air-oil separator in my system?
Answer: Between the PCV Valve and manifold vacuum source.

Question: How much oil consumption is normal with a properly baffled PCV system?
Answer: Based on projecting consumption data over an established inspection interval, our test vehicles would go over 5,000 miles before consuming a quart of oil through the PCV system.

Question: I am consuming excessive oil through the PCV system. Can you offer some baffle recommendations?
Answer: The following guidelines should be used for baffling:

- Maintain at least 3/8" of clearance from the underside of the PCV valve to the top surface of the baffle
- Maintain at least 3/8" of clearance from the neck of the fresh air breather to the top surface of the baffle
- Maintain at least 3/8" of clearance from the baffle to the underside of the valve cover. More clearance is desirable if possible.
- See the Baffle Study on our website for more information
- PVC Reinforced Braided Vinyl Tubing can be used as a diagnostic tool. It is clear with a reinforcing braid, and can be purchased at your local hardware store. It provides visibility and allows you to see oil movement through PCV lines while the engine is running.

PCV SYSTEM CONFIGURATION

Question: Is there a preferred way to mount my DF-17 valve with inline adaptor installed?
Answer: Although it may be mounted in any position ranging from vertical to horizontal, vertical installation is preferred. It should not be mounted upside down or any angle past horizontal.

Question: Can I put a T in my PCV line running from your PCV valve to the carburetor and run from the T to my brake booster?
Answer: No. You will disturb PCV airflow, and you should not run blow by vapors to your brake booster.

Question: What is an acceptable manifold vacuum source where I should run the vacuum line from my Dual Flow PCV valve?
Answer: Most carburetors have a 3/8" fitting in the baseplate for a PCV valve. Check your carburetor shop manual for recommendations. It is also acceptable to run to a fitting in a carburetor spacer. If a fitting is not provided some spacer manufacturers have a specific location where they recommend you drill and tap to install a PCV fitting. EFI applications should use a port intended for PCV usage by the EFI manufacturer.

Question: Can I run my PCV vacuum line to a fitting on an intake runner?
Answer: No, this is not recommended. Ideally the PCV flow should be equally distributed to all cylinders equally. Feeding to one intake running will not accomplish this.

Question: I have a multi carb setup on my engine, can I run my PCV line to one carb?
Answer 1: If you have a (3) 2-barrel setup you can run your PCV line to the center carb base.
Answer 2: If you have a (2) 4-barrel setup with progressive linkage (idle and cruise on one carb) you can run to the carb used for normal driving.
Answer 3: If you have a (2) 4-barrel setup with straight linkage, splitting the PCV flow to both carbs is recommended.

Question: I'm using a roots blower, can I run a Dual Flow PCV Valve?
Answer: Yes. Most customers will connect the PCV valve above the blower. In this configuration the PCV line will never be under positive pressure, even under boost conditions.

Question: I'm running a centrifugal blower / turbocharger / blow through carburetor. Can I run a Dual Flow PCV Valve?
Answer: Yes. In this application the PCV line will be under positive pressure under boost conditions. We reverse flow test every Dual Flow PCV Valve to 20 PSI as part of our QC process. Our experience has shown that the Dual Flow's design has better backfire protection than any stock valve tested due to its check ball design. The user however should determine if any additional backflow check valves are needed. Our experience has shown us that some industrial check valves have good backflow resistance but are restrictive to PCV flow.

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