

# Closed Crankcase Ventilation (CCV)

Installation Instructions for CCV4500, CCV6000, **CCV8000**, and CCV12000 Series Filters

Instruction Part Number 55021 Rev D



## Overview:

Contaminated crankcase emissions are a serious problem for diesel engine owners and the environment. These emissions are a result of gas escaping past piston rings due to high cylinder pressures into the crankcase. In the crankcase, gases are contaminated with oil mist, water, etc. These contaminated emissions escape through the engine breather into the engine compartment and engine intake system.

Racor CCV Systems offer an effective solution to reduce contaminated crankcase emissions. CCV systems remove crankcase emissions, providing protection for the engine and the environment.



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- Keeps engine compartments and components clean
- Prevents clogging of engine intakes, turbochargers, and intercoolers
- Improves reliability and maintainability of diesel engines.
- More efficient than other products available on the market
- Reduces environmental pollution from crankcase emissions
- Reduces smoke and odor in the immediate environment



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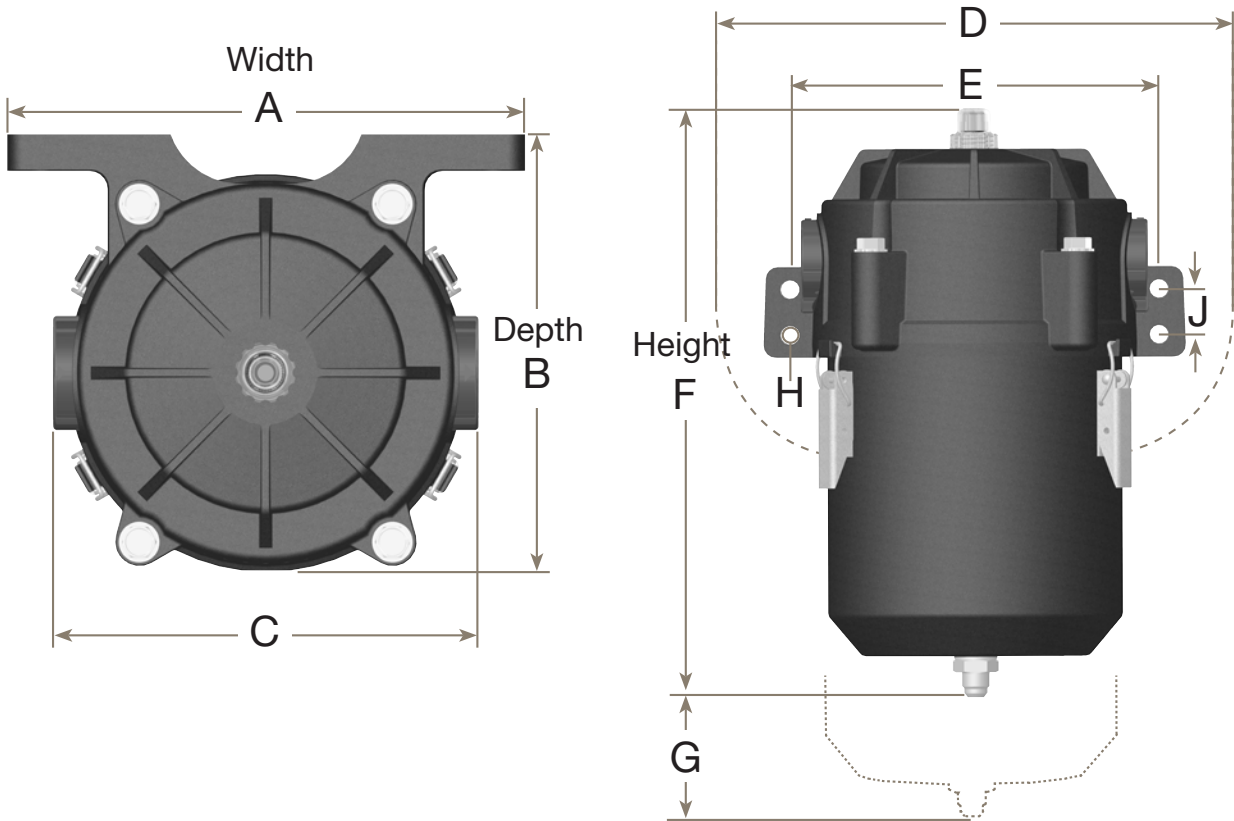
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# Mounting Details

## CCV Dimensions



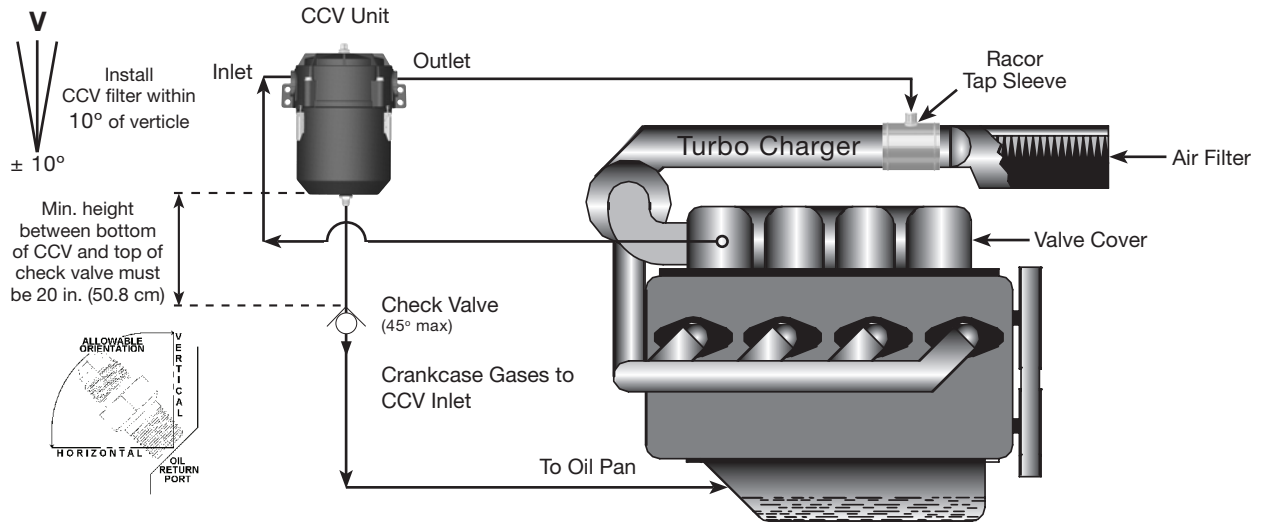
Dimension	4500 Series		6000 Series		8000 Series		12000 Series	
	IN	CM	IN	CM	IN	CM	IN	CM
<b>A</b>	7.2	18.3	8.6	21.8	10.6	26.9	10.6	26.9
<b>B</b>	5.6	14.2	7.3	18.5	9.3	23.6	9.3	23.6
<b>C</b>	5.6	14.2	7.1	18.0	9.1	23.1	9.1	23.1
<b>D</b>	7.5	19.1	11.3	28.7	13.3	33.8	13.3	33.8
<b>E</b>	6.0	15.2	7.5	19.1	9.5	24.1	9.5	24.1
<b>F</b>	9.3	23.6	12.0	30.5	13.9	35.3	18.0	45.7
<b>G<sup>1</sup></b>	2.3	5.8	4.0	10.2	5.0	12.7	6.0	15.2
<b>H</b>	0.43	1.09	0.37	0.94	0.43	1.09	0.43	1.09
<b>J<sup>2</sup></b>	N/A	N/A	0.93	2.4	1.06	2.7	1.06	2.7

<sup>1</sup> Dimension "G" is the minimum filter removal clearance - allow more room if possible for ease of service.

<sup>2</sup> Dimension "J" is not applicable on CCV4500 assemblies because there are only two (2) mounting holes. All other units have four (4) mounting holes.

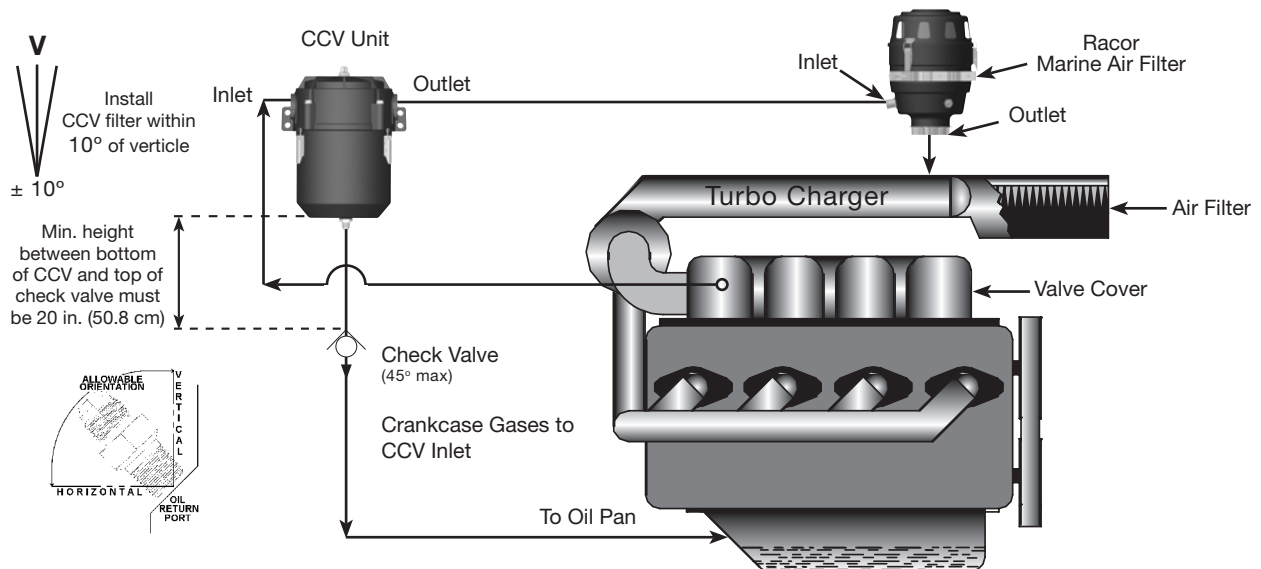
# Installation Diagram

## Industrial/Mobile Power Applications



Note: Check valve installs into engine block on most applications.

## Marine Applications



Note: Check valve installs into engine block on most applications.

# Installation Guidelines

- CCV is available as left-hand or right-hand inlet to facilitate plumbing.
- CCV must be mounted upright ( $\pm 10^\circ$ ) and may be engine mounted or remote mounted.
- Ensure enough clearance underneath for servicing filter. Minimum clearance is:  
CCV4500 - 2.25"  
CCV6000 - 4.00"  
CCV8000 - 5.00"  
CCV12000 - 11.00"
- Avoid mounting locations in areas of extreme temperatures (exhaust manifold).
- Avoid low spots or valleys in hoses to prevent restriction. Keep hoses clear of hot spots.
- CCV must be mounted level with or higher than engine. This allows oil to flow to oil pan.
- Locate an unused dipstick boss or other access to crankcase. Install drain check valve as low as possible into crankcase, preferably above oil level. *Note: Check valve must be oriented between vertical and horizontal ( $\pm 45^\circ$ ).*

*CAUTION: Drilling into block or oil pan is not recommended. Consult with engine manufacturer for proper hookup of drain valve.*

- Connect drain hose from sump fitting to drain check valve with hose and fittings provided.
- *CONTINUOUS DUTY APPLICATIONS* - If using

a marine air filter; vertical distance (in inches) from assembly sump drain fitting to drain check valve must be equal to or greater than the max. marine air filter inlet restriction (in inches of water). If not, then accumulated oil in sump will not return to oil pan properly.

*Example: Air filter inlet restriction is 6.0 in inches water. Vertical distance from sump drain fitting to drain check valve should be min. of 6.0 in.*

- *INTERMITTENT DUTY APPLICATIONS* - The sump capacity will allow for 24 hours of operation and will drain at idle or shutdown.

## Filter Replacement

The only routine maintenance for the CCV system is replacement of the filter media. Typical service life of filters for diesel application is **750 hours**. Some variations in this occur, depending on load profile, engine wear condition, flow and aerosol mass concentration of crankcase emissions, soot concentration, etc.

The CCV is equipped with the red filter service indicator. If the filter becomes plugged prior to normal service interval, increased pressure against regulator valve lifts the diaphragm, causing the filter service indicator to appear. Indicating the need to change the filter. Change the filter and re-set the indicator by unscrewing the clear plastic cover and pushing indicator button down. Replace cover.

*CAUTION: Shut down engine before servicing. If not possible, avoid moving parts, engine hot spots, and electrical connections. Wear safety glasses and hearing protectors. Note: vacuum in filter canister during engine operation may make it difficult to separate.*

- Release latches which hold canister to filter head assembly.
- Drop canister down to expose filter. *Note: A light amount of oil may be seen in bottom. Use caution to avoid spillage.*
- Remove filter by pulling down, dispose properly, according to local regulations. Be sure o-ring on top of filter cap and o-ring on bottom of head assembly are removed.
- Install new o-ring on bottom of head assembly.

- Be sure new o-ring is on top of new filter cap; push filter up in place, locating top end cap into hole in bottom center of head assembly.
- Replace canister. Align latches in canister with catches on filter head assembly. Clamp and snap latches closed. Servicing is complete.
- Visually check system for signs of excessive rubbing or any leaks. Correct as necessary.



# Hose and Fitting Kits

SELECT A FITTING/HOSE KIT:  
Fitting/Hose Kits come with both fittings and enough hose for inlet and outlet sides of the Racor CCV assembly. Racor CCV assemblies

require fittings available only from Racor. In order to determine the correct application, you need to know the quantity and the outside diameter of engine breather(s)/

hose connection. Fitting/Hose Kits are available in various sizes and configurations.

## CCV4500 Series Assemblies

Part No.	Description
CCV55024	(1) 3/4" fitting, (1) 1" fitting, (1) 3/4" ID x 4 foot long hose, (1) 1" ID x 4 foot long hose, (4) clamps and (4) ties
CCV55025	(2) 1" fittings, (1) 1" ID x 8 foot long hose, (4) clamps and (4) ties
CCV55037	(1) 1-1/4" fitting, (1) 1" fitting, (1) 1-1/4" ID x 4 foot long hose, (1) 1" ID x 4 foot long hose, (4) clamps and (4) ties
CCV55038	(1) 3/4" fitting, (1) 1" fitting, (1) 3/4" ID x 6 foot long hose, (1) 3/4" Tee fitting, (1) 1" ID x 4 foot long hose, (8) clamps and (8) ties

## CCV6000 Series Assemblies

Part No.	Description
CCV55046	(2) 1-1/4" fittings, (1) 1-1/4" ID x 8 foot long hose, (4) clamps and (4) ties
CCV55047	(2) 1-1/4" fittings, (1) 1-1/4" Tee fitting, (1) 1-1/4" ID x 10 foot long hose, (8) clamps and (8) ties
CCV55048	(2) 1-1/4" fittings, (1) 1-1/2" ID x 4 foot long hose, (1) bushing reducer, (1) 1-1/4" ID x 4 foot long hose, (4) clamps and (4) ties
CCV55049	(2) 1-1/4" fittings, (1) 1-1/2" ID x 5 foot long hose w/2" cuff, (1) bushing reducer, (1) 1-1/4" ID x 4 foot long hose, (4) clamps and (4) ties

## CCV8000 and CV12000 Series Assemblies

Part No.	Description
CCV55067	(2) 1-1/2" fittings, (1) 1-1/2" ID x 10 foot long hose, (1) bushing reducer, (4) clamps and (4) ties
CCV55068	(2) 1-1/2" fittings, (1) 1-1/2" Tee fitting, (1) 1-1/2" ID x 12 foot long hose, (2) bushing reducers, (8) clamps and (8) ties
CCV55069	(2) 1-1/2" fittings, (1) 1-1/2" ID x 5 foot long hose w/2" cuff, (1) bushing reducer, (1) 1-1/2" ID x 5 foot long hose, (4) clamps and (4) ties

## Hump Hose Fitting Kits



	CCV55540	CCV55113	CCV55114	CCV55115
Hose Diameter	3/4"	1"	1 1/4"	1 1/2"

# Hose and Fitting Installation

Determine flow direction of CCV Assembly.

1. Install fitting into outlet port, torque to 50 in. lbs.
2. Install remaining fitting into inlet port, torque to 50 in. lbs.
3. Select appropriate hose from kit and secure to CCV inlet fitting with clamp provided.
4. Locate engine breather connection and cut inlet hose to required length.

**CAUTION!** When cutting hose, exercise extreme caution. Hose is wire reinforced and protruding sharp edge can result in bodily injury!

5. Secure hose to engine breather connection with clamp provided. *Note: If engine breather connection is smaller than hose ID, use appropriate size rubber bushing on breather.*
6. Select appropriate hose from kit and secure to CCV outlet fitting with clamp provided.
7. Locate air intake connector fitting barb and cut hose to required length.
8. Secure hose to air intake connector barb with clamp provided.
9. Secure hose(s) to convenient location, away from engine hot

spots, with ties provided. *Note: Avoid low spots or valleys in hoses to prevent flow restriction.*

## Attaching Multiple Breathers -

- a. Use tee fitting provided to branch to both breathers.
- b. Extra hose has been provided to accommodate installation of multiple breathers.
- c. Verify inlet and outlet distance before cutting any hose.

## Air Intake Connectors

**Tap Sleeve** - for Industrial/Mobile Power Applications: Tap sleeves provide for connection of Racor CCV outlet to engine's air intake. Determine inside diameter of hose between turbocharger and air filter. This will determine outside diameter of tap sleeve required for installation.



Part No.	Size
CCV30100	3" x 1"
CCV40100	4" x 1"
CCV50125	5" x 1-1/4"
CCV60125	6" x 1-1/4"

## Marine Air Filter Assembly

To determine correct marine air filter application, marine air filter rating (AFR) is required. Choose correct marine air filter application per guideline:

4 cycle engines AFR = HP x 2.0  
2 cycle engines AFR = HP x 2.5

Examples:

2 cycle - twin turbo  
826 HP x 2.5 = 1032.5 AFR per turbo; select (2) AFM501012

4 cycle - single turbo  
660 HP x 2.0 = 1320.0 AFR; select (1) AFM601212

*Note: Customer provides hose connection to turbocharger.*

Max Flow Rate	
Marine Air Filter	AFR
AFM408512	800 CFM
AFM501012	1200 CFM
AFM601212	1600 CFM



Marine Air Filter	Replacement Filter Part No.	Outlet Dia.	Length	Hose Barb	Dia.
AF M408512	AF M8040	4"	12"	1"	8.5"
AF M501012	AF M8050	5"	12"	1"	10"
AF M601212	AF M8060	6"	12"	1.25"	12"

Note: AF M601212 includes 1-1/4" x 1-1/2" Bushing (connects to 1-1/2" I.D. Hose)

# 90° Hose Adapters



<b>Part No.</b>	CCV55547-02
<b>Use with Model</b>	CV4500
1 3/16"-12 UN	



<b>Part No.</b>	CCV55121
<b>Use with Model</b>	CV6000
1 5/8"-12 x 1 1/4" H.B.	



<b>Part No.</b>	CCV55547-10
<b>Use with Model</b>	CV8000
1 7/8"-12 UN	

# Accessories

## Hose Barbs

CV Assembly	Hose Barb Part No.	Size
<b>CCV4500</b>	CCV55251	0.75"
<b>CCV4500</b>	CCV55250	1"
<b>CCV4500</b>	CCV55280	1.25"
<b>CCV6000</b>	CCV55089	0.75"
<b>CCV6000</b>	CCV55268	1.25"
<b>CCV6000</b>	CCV55121	1.25" (90°)
<b>CCV6000</b>	CCV55267	1.5"
<b>CCV8000/CCV12001</b>	CCV55218	1.5"



## CCV Conversion Kit

Part Number:

CCV55613-08  
(High Density)

CCV55613-10  
(Ultra Density)

The CCV55613-08 and CCV55613-10 allow the CCV8001 to be converted to a CCV12001. The CCV12001 series offers 60%

additional media. The CCV12001 series is great for applications where extra capacity is desired and immediate engine accessibility is not available. It allows for increased efficiency and longer service intervals. Kit includes element, wear spacer, o-rings, and CCV12001 bowl.





## Heavy-Duty Wear Spacers

These Heavy-Duty Spacers are an optional accessory for engine applications/ installations that have excessive vibration. Excessive vibration causes abnormal wear on the CCV assembly and could compromise integrity. The spacer is placed in the CCV canister, below the filter,

protecting the assembly from vibration and wear by cradling the filter.

CCV Unit	Spacer No.
CCV4500	CCV55390
CCV6000	CCV55385
CCV8000	CCV55374
CCV12000	CCV55374



## Electronic Remote Filter Gauge

The CCV55615-01 Lightbox Kit is designed to inform the user that the filter being monitored has become restricted.

During normal vehicle operation, the green light stays illuminated indicating the filter is performing properly. The red light illuminates when the filter becomes restricted and stays on until the engine is shut down. The light box is reset when the engine is shut down and the red light will not illuminate until filter restriction is again seen in the system.

- **Constant monitoring of filter condition while engine is on**
- **12Vdc operating supply voltage**
- **Operating temperature: -40°F to +257°F (-40°C to +125°C)**
- **5 amp max current draw**
- **Filter switch threads are 3/8"-24 straight thread**
- **Rugged construction**
- **Filter switch closure at 8 inches of water**

- **Green and red light illumination to show filter condition**



## Remote Filter Gauge

Part Number:  
CCV55012

This Filter Minder was designed to inform the user that the filter being monitored has become restricted.

Included in Kit:  
Gauge and Bracket (shown),  
1/8"-27 NPT fitting, 40 micron filter,  
and 10 foot of 1/4" OD EPDM hose.



# Heater Kits

Closed Crankcase Ventilation (CCV) Systems are used to prevent emissions from contaminating internal surfaces of the engine air induction system and prevent engine room environments from being coated with oily residue. Both functions maintain engine performance and improve operating environment over the life of the engine. In cold weather applications, gases and vapors processed by the CCV system are affected by ambient conditions. The canister is cooled to ambient temperature and oil mist and water vapor particles traveling through the CCV system will then coalesce against the cold interior surfaces of the CCV

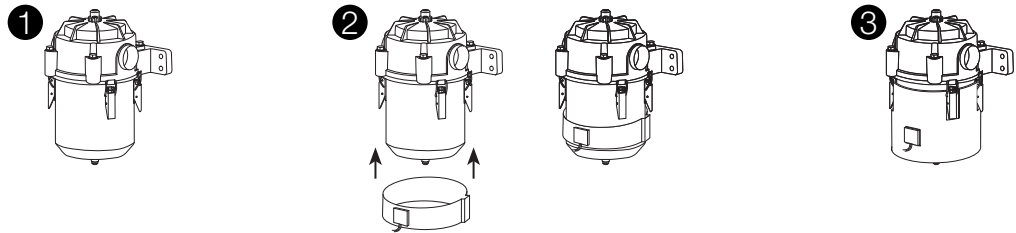
canister. This process introduces microscopic particles of oil and water to each other. When they mix, an emulsification of the two liquids occurs. This emulsification turns the two particles into a creamy jelly-like substance. The mixture slowly builds up as cold air continually cools the canister and the process repeats itself. The emulsified oil-water mixture collect to a point where element life is compromised and crankcase pressure will rise. These heater kits prevent this build-up and ensure filter life by warming the canister surfaces. The temperature of the canister is raised near to that of the crankcase gases entering the

CCV assembly. If the canister surfaces are as warm as the crankcase gases, then the oil and water mixture will not coalesce on the interior walls. Since no oil or water coalesces, no emulsification occurs.



## Installation Diagram

CCV4500  
CCV6000  
CCV8000  
CCV12000



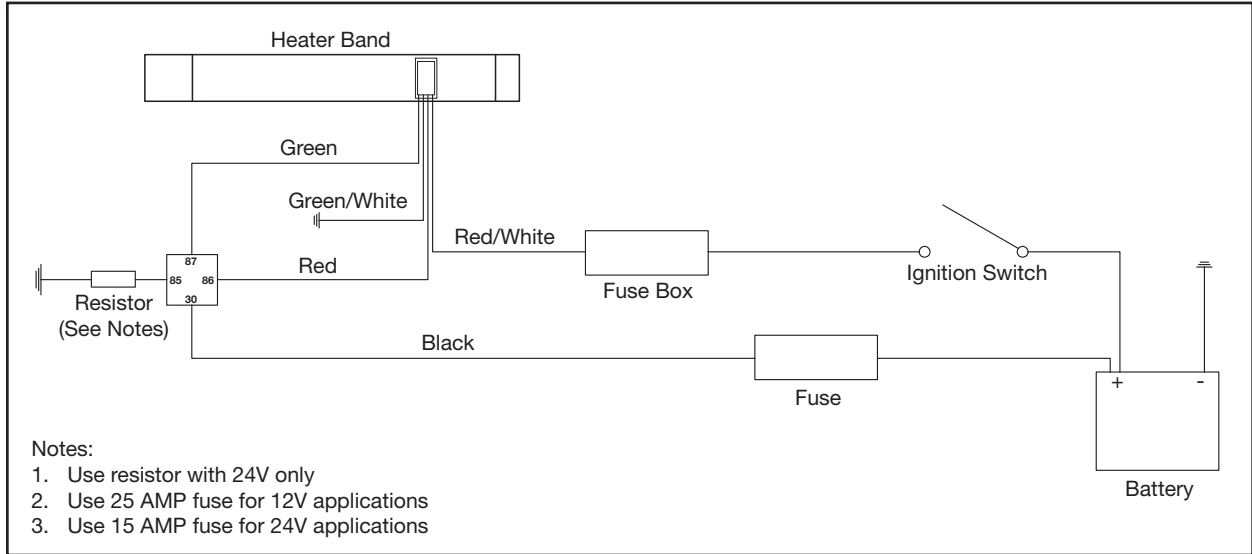
## Installation Guidelines

1. Clean exterior of CCV canister thoroughly. Adhesive is used to bond insulating sleeve to canister. Oily film present on canister surfaces will affect adhesion.
2. Wrap heater band around CCV assembly and secure Velcro closure to fasten to canister. Align plug with center of CCV product label.
3. Slide insulation sleeve over heater band. Secure sleeve to CCV assembly with adhesive strips located on top of sleeve.
4. For AC models - Connect power cord to appropriate power source with 15 amp circuit.
5. For DC models - See Wiring Diagram on next page for proper installation.
6. Allow enough slack in power cord for element removal (servicing). When routing power cord, avoid rubbing areas and hot surfaces.

*Note: These heaters are thermostatically controlled and*

*will turn ON when the canister falls below 156°F (69°C) and will turn OFF when the canister reaches 174°F (79°C). It will take approximately 4 minutes for heater to warm CCV canister to maximum temperature.*

## Wiring Diagram



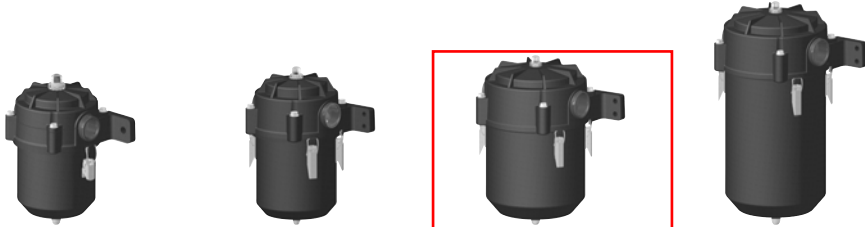
## Replacement Kits

CCV Assembly	120V AC Heater Kit	12V DC Heater Kit	24V DC Heater Kit	Wattage
CCV4500	CCV55461	CCV55461-12	CCV55461-24	100
CCV6000	CCV55462	CCV55462-12	CCV55462-24	150
CCV8000	CCV55463	CCV55463-12	CCV55463-24	200
CCV12000	CCV55642	CCV55642-12	CCV55642-24	200

Note: Kits include heater band and insulation sleeve only. CCV assembly sold separately.



# CCV Specifications



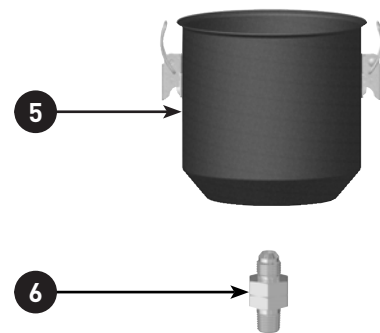
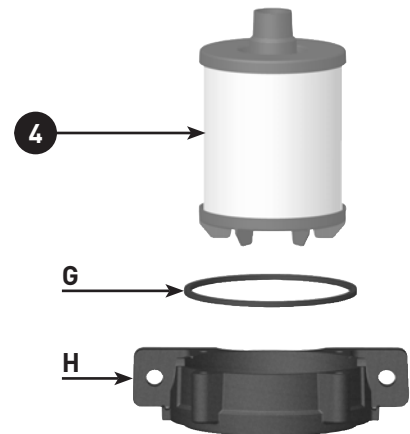
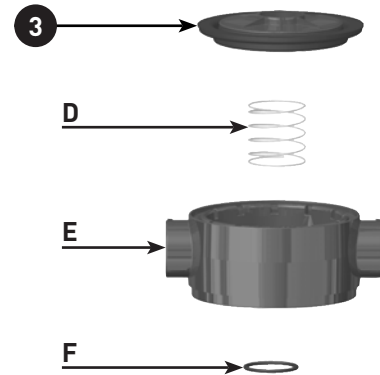
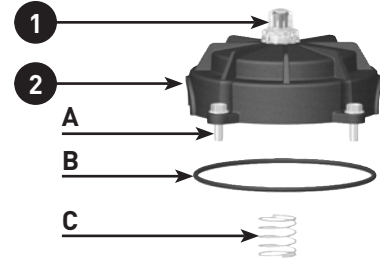
	CCV4500	CCV6000	CCV8000	CCV12000
<b>Max. Flow Rate</b>	10 CFM (283 LM)	20 CFM (566 LM)	40 CFM (1133 LM)	50 CFM (1416 LM)
<b>Max. Engine Rating</b>	400 HP (298 KW)	800 HP (597 KW)	1600 HP (1193 KW)	2000 HP (1491 KW)
<b>Inlet/Outlet Port Size</b>	1 3/16"-12 SAE	1 5/8"-12 SAE	1 7/8"-12 SAE	1 7/8"-12 SAE
<b>Weight</b>	3.3 lbs (1.5 kg)	5.0 lbs (2.3 kg)	8.7 lbs (3.9 kg)	9.3 lbs (4.2 kg)
<b>Low Density Filter Replacement</b>	CCV55248-04	N/A	N/A	N/A
<b>High Density Filter Replacement</b>	CCV55248-08	CCV55274-08	CCV55222-08	CCV55222-12-08
<b>Ultra Density Filter Replacement</b>	CCV55248-10	CCV55274-10	CCV55222-10	CCV55222-12-10
<b>Housing Material</b>	Die cast head, glass-filled nylon and black powder epoxy-coated steel bowl.	Die cast head, glass-filled nylon and black powder epoxy-coated steel bowl.	Die cast head, glass-filled nylon and black powder epoxy-coated steel bowl.	Die cast head, glass-filled nylon and black powder epoxy-coated steel bowl.
<b>Crankcase Pressure Regulator</b>	Integral	Integral	Integral	Integral
<b>Bypass/Change Indicator</b>	Integral or Remote	Integral or Remote	Integral or Remote	Integral or Remote
<b>Engine BlockCheck Valve Return Fitting</b>	1/4" NPT	1/4" NPT	3/8" NPT	3/8" NPT
<b>Swivel Fitting (Qty.)</b>	#6 JIC (2 pcs.)	#6 JIC (2 pcs.)	#8 JIC (2 pcs.)	#8 JIC (2 pcs.)
<b>Oil Drain Hose I.D.</b>	0.375 in. (0.95 cm)	0.375 in. (0.95 cm)	0.5 in. (1.27 cm)	0.5 in. (1.27 cm)

Units can be manifolded to handle higher flow rates.



# CCV4500 Replacement Parts

Part No.	Description
1. <b>CCV55081</b>	Bypass Indicator Kit
2. <b>CCV55246L</b>	Head Assembly (Left Side Inlet)
<b>CCV55246R</b>	Head Assembly (Right Side Inlet)
3. <b>CCV55247</b>	Diaphragm Kit
4. <b>CCV55248-08</b>	Filter Replacement - High Density
<b>CCV55248-10</b>	Filter Replacement - Ultra Density
5. <b>CCV55249</b>	Can Assembly
6. <b>CCV55279</b>	1/4" MNPT Drain/Check Valve Kit



## Hose and Fitting Kits

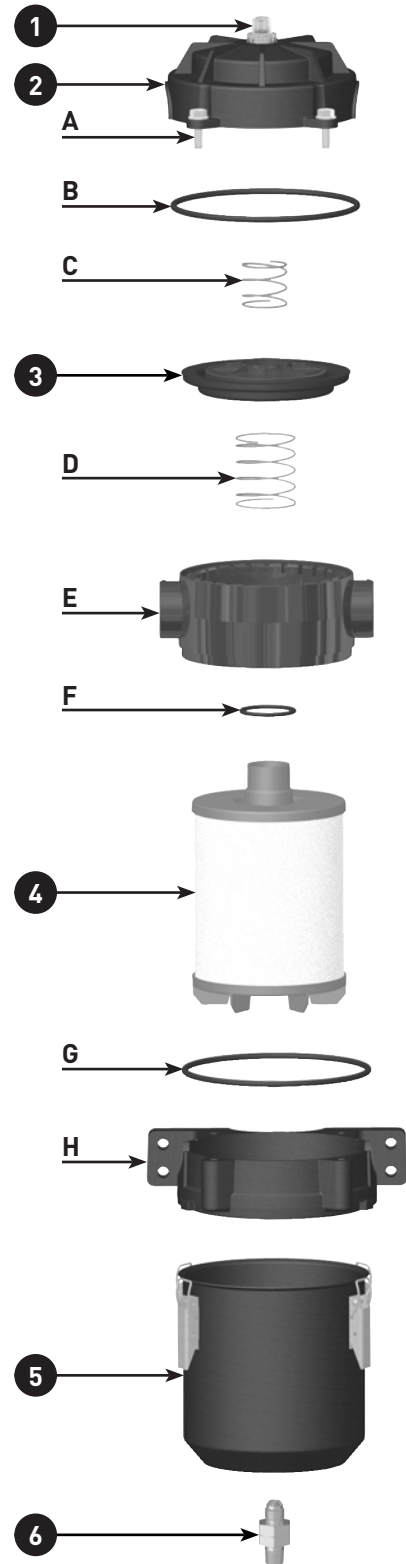
Part No.	Description
<b>CCV55024</b>	(1) 3/4" fitting, (1) 1" fitting, (1) 3/4" ID x 4' hose, (1) 1" ID x 4' hose, (4) clamps, (4) ties
<b>CCV55025</b>	(2) 1" fittings, (1) 1" ID x 8' hose, (4) clamps, (4) ties
<b>CCV55037</b>	(1) 1 1/4" fitting, (1) 1" fitting, (1) 1 1/4" ID x 4' hose, (1) 1" ID x 4' hose, (4) clamps, (4) ties
<b>CCV55038</b>	(1) 3/4" fitting, (1) 1" fitting, (1) 3/4" ID x 6' hose, (1) 3/4" Tee fitting, (1) 1" ID x 4' hose, (8) clamps, (8) ties

## Inlet/Outlet Fitting Kits

Part No.	Description
<b>CCV55250</b>	1" OD Hose Barb to 1 3/16" SAE fitting
<b>CCV55251</b>	3/4" OD Hose Barb to 1 3/16" SAE fitting
<b>CCV55280</b>	1 1/4" OD Hose Barb to 1 3/16" SAE fitting

# CCV6000 Replacement Parts

Part No.	Description
1. <b>CCV55081</b>	Bypass Indicator Kit
2. <b>CCV55272L</b>	Head Assembly (Left Side Inlet) <i>(Kit includes 1, 3, A, B, C, D, E, and H)</i>
<b>CCV55272R</b>	Head Assembly (Right Side Inlet) <i>(Kit includes 1, 3, A, B, C, D, E, and H)</i>
3. <b>CCV55273</b>	Diaphragm Kit
4. <b>CCV55274-08</b>	Filter Replacement - High Density <i>(Kit includes F and G)</i>
<b>CCV55274-10</b>	Filter Replacement - Ultra Density <i>(Kit includes F and G)</i>
5. <b>CCV55275</b>	Can Assembly <i>(Kit includes G)</i>
6. <b>CCV55279</b>	1/4" MNPT Drain/Check Valve Kit



## Hose and Fitting Kits

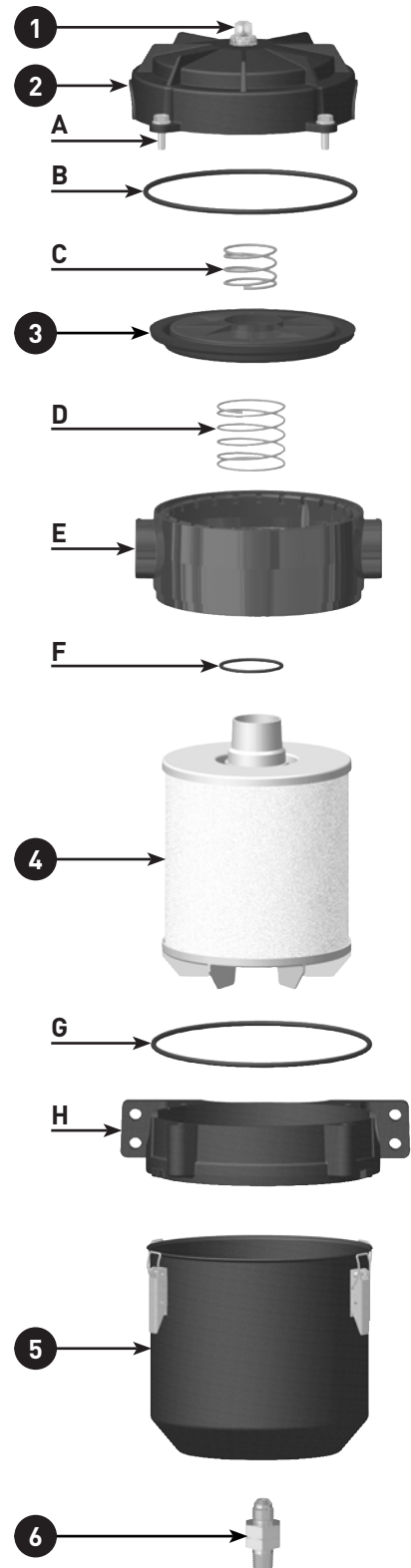
Part No.	Description
<b>CCV55046</b>	(2) 1 1/4" fitting, (1) 1 1/4" ID x 8' hose, (4) clamps, (4) ties
<b>CCV55047</b>	(2) 1 1/4" fitting, (1) 1 1/4" Tee fitting, 1 1/4" ID x 10' hose, (8) clamps, (8) ties
<b>CCV55048</b>	(2) 1 1/4" fitting, (1) 1 1/2" ID x 4' hose, (1) bushing reducer, (1) 1 1/4" ID x 4' hose, (4) clamps, (4) ties
<b>CCV55049</b>	(2) 1 1/4" fitting, (1) 1 1/2" ID x 5' hose w/2" cuff, (1) bushing reducer, (1) 1 1/4" ID x 4' hose, (4) clamps, (4) ties

## Inlet/Outlet Fitting Kit

Part No.	Description
<b>CCV55267</b>	1 1/2" OD Hose Barb to 1 5/8" SAE fitting

# CCV8000 Replacement Parts

Part No.	Description
1. <b>CCV55081</b>	Bypass Indicator Kit
2. <b>CCV55220L</b>	Head Assembly (Left Side Inlet) <i>(Kit includes 1, 3, A, B, C, D, E, and H)</i>
<b>CCV55220R</b>	Head Assembly (Right Side Inlet) <i>(Kit includes 1, 3, A, B, C, D, E, and H)</i>
3. <b>CCV55221</b>	Diaphragm Kit
4. <b>CCV55222-08</b>	Filter Replacement - High Density <i>(Kit includes F and G)</i>
<b>CCV55222-08</b>	Filter Replacement - Ultra Density <i>(Kit includes F and G)</i>
5. <b>CCV55223</b>	Can Assembly <i>(Kit includes G)</i>
6. <b>CCV55080</b>	3/8" MNPT Drain/Check Valve Kit



## Hose and Fitting Kits

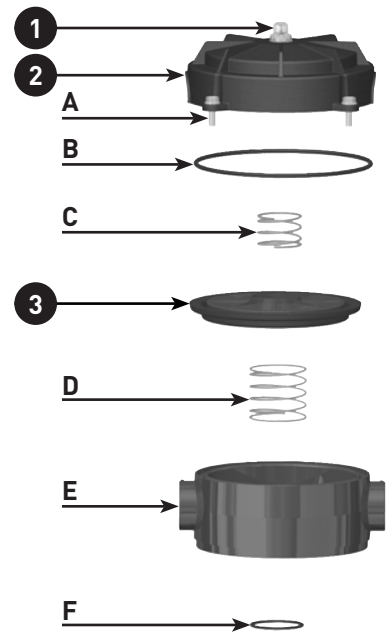
Part No.	Description
<b>CCV55067</b>	(2) 1 1/2" fittings, (1) 1 1/2" ID x 10' hose, (1) bushing reducer, (4) clamps, (4) ties
<b>CCV55068</b>	(2) 1 1/2" fittings, (1) 1 1/2" Tee fitting, 1 1/2" ID x 12' hose, (2) bushing reducers, (8) clamps, (8) ties
<b>CCV55069</b>	(2) 1 1/2" fittings, (1) 1 1/2" ID x 5' hose w/2" cuff, (1) bushing reducer, (1) 1 1/2" ID x 5' hose, (4) clamps, (4) ties

## Inlet/Outlet Fitting Kit

Part No.	Description
<b>CCV55218</b>	1 1/2" OD Hose Barb to 1 7/8" SAE fitting

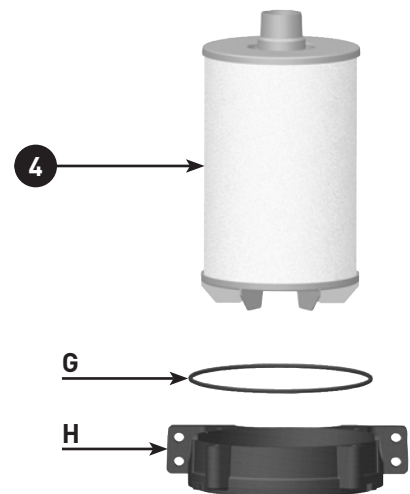
# CCV12000 Replacement Parts

Part No.	Description
1. <b>CCV55015</b>	Bypass Indicator Kit
2. <b>CCV55200L</b> <b>CCV55200R</b>	Head Assembly (Left Side Inlet) <i>(Kit includes 1, 3, A, B, C, D, E, and H)</i> Head Assembly (Right Side Inlet) <i>(Kit includes 1, 3, A, B, C, D, E, and H)</i>
3. <b>CCV55221</b>	Diaphragm Kit
4. <b>CCV55222-12</b> <b>CCV55222-12-10</b>	Filter Replacement - High Density <i>(Kit includes F and G)</i> Filter Replacement - Ultra Density <i>(Kit includes F and G)</i>
5. <b>CCV55570</b>	Can Assembly <i>(Kit includes G)</i>
6. <b>CCV55080</b>	3/8" MNPT Drain/Check Valve Kit



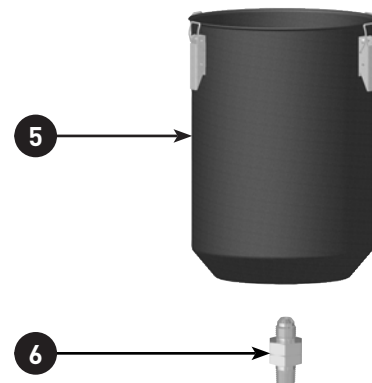
## Hose and Fitting Kits

Part No.	Description
<b>CCV55067</b>	(2) 1 1/2" fittings, (1) 1 1/2" ID x 10' hose, (1) bushing reducer, (4) clamps, (4) ties
<b>CCV55068</b>	(2) 1 1/2" fittings, (1) 1 1/2" Tee fitting, 1 1/2" ID x 12' hose, (2) bushing reducers, (8) clamps, (8) ties
<b>CCV55069</b>	(2) 1 1/2" fittings, (1) 1 1/2" ID x 5' hose w/2" cuff, (1) bushing reducer, (1) 1 1/2" ID x 5' hose, (4) clamps, (4) ties



## Inlet/Outlet Fitting Kit

Part No.	Description
<b>CCV55218</b>	1 1/2" OD Hose Barb to 1 7/8" SAE fitting





# CCV Engine Applications

Caterpillar - Industrial/Mobile Power Applications

ENGINE MODEL NO.	QTY.	P/N	DESCRIPTION
<b>3208 (2 breathers)</b>	1	CCV4500-08L (or R)	Filter Unit
	1	CCV55038	Fitting/Hose Kit
	1	CCV40100	Tap Sleeve
<b>3054, 3056</b> <i>Verify breather outlet and turbo inlet outside diameter sizes</i>	1	CCV4500-08L (or R)	Filter Unit
	1	CCV55024	Fitting/Hose Kit
	1	AF M408512	Marine Air Filter
<b>3116, 3304, 3306, 3126</b>	1	CCV4500-08L (or R)	Filter Unit
	1	CCV55037	Fitting/Hose Kit
	1	CCV40100	Tap Sleeve
<b>3406, D343</b>	1	CCV6000-08L (or R)	Filter Unit
	1	CCV55046	Fitting/Hose Kit
	1	CCV60125	Tap Sleeve
<b>3408, 3176</b>	1	CCV6000-08L (or R)	Filter Unit
	1	CCV55047	Fitting/Hose Kit
	1	CCV60125	Tap Sleeve
<b>3412 (2 breathers)</b>	1	CCV6000-08L	Filter Unit
	1	CCV6000-08R	Filter Unit
	2	CCV55046	Fitting/Hose Kit
<b>3412 (High Output, 4 breathers)</b> <i>Customer to provide connection to air intake</i>	1	CCV6000-08L	Filter Unit
	1	CCV6000-08R	Filter Unit
	2	CCV55047	Fitting/Hose Kit
<b>3508 - Single Turbo</b> <i>Customer to provide connection to air intake</i>	1	CCV8000-08L (or R)	Filter Unit
	1	CCV55069	Fitting/Hose Kit
<b>3508 - Twin Turbo: D379, D398, D399</b> <i>Customer to provide connection to air intake</i>	1	CCV6000-08L	Filter Unit
	1	CCV6000-08R	Filter Unit
	2	CCV55049	Fitting/Hose Kit
<b>3512, 3516, D398, D399</b> <i>Customer to provide connection to air intake</i>	1	CCV8000-08L	Filter Unit
	1	CCV8000-08R	Filter Unit
	2	CCV55069	Fitting/Hose Kit
<b>3606</b> <i>Customer to provide connection to air intake</i>	3	CCV8000-08L (or R)	Filter Unit
	3	CCV55069	Fitting/Hose Kit
<b>3612, 3616</b> <i>Customer to provide connection to air intake</i>	2	CCV8000-08L	Filter Unit
	2	CCV8000-08R	Filter Unit
	4	CCV55069	Fitting/Hose Kit

**Note:** Most engines come with elephant-ear air cleaners. Air intake configurations vary considerably and customer should verify outside diameter size of turbo inlet and ability to use tap sleeves or marine air filters. If not, customer can weld a fitting to the clean side of filter element on the back of the housing. Always verify outside diameter size of breathers for hose applications.

# CCV Engine Applications

## Caterpillar - Marine Applications

ENGINE MODEL NO.	QTY.	P/N	DESCRIPTION
<b>3208 (2 breathers)</b>	1	CCV4500-08L (or R)	Filter Unit
	1	CCV55038	Fitting/Hose Kit
	1	AF M408512	Marine Air Filter
<b>3208 (High Output)</b> <i>Connect to CAT fitting on air intake</i>	1	CCV6000-08L (or R)	Filter Unit
	1	CCV55049	Fitting/Hose Kit
<b>3054, 3056</b> <i>Verify breather outlet and turbo inlet outside diameter sizes</i>	1	CCV4500-08L (or R)	Filter Unit
	1	CCV55024	Fitting/Hose Kit
	1	AF M408512	Marine Air Filter
<b>3116, 3304, 3306, 3126</b>	1	CCV4500-08L (or R)	Filter Unit
	1	CCV55037	Fitting/Hose Kit
	1	AF M408512	Marine Air Filter
<b>3406, D343, 3176, 3196</b>	1	CCV6000-08L (or R)	Filter Unit
	1	CCV55046	Fitting/Hose Kit
	1	AF M601212	Marine Air Filter
<b>3408 - Single Turbo</b>	1	CCV6000-08L (or R)	Filter Unit
	1	CCV55047	Fitting/Hose Kit
	1	AF M601212	Marine Air Filter
<b>3408 - Twin Turbo, 3412 (2 breathers)</b>	1	CCV6000-08L	Filter Unit
	1	CCV6000-08R	Filter Unit
	2	CCV55046	Fitting/Hose Kit
	2	AF M501212	Marine Air Filter
<b>3412 (High Output, 4 Breathers)</b>	1	CCV6000-08L	Filter Unit
	1	CCV6000-08R	Filter Unit
	2	CCV55047	Fitting/Hose Kit
	2	AF M501212	Marine Air Filter
<b>3508, D379, D398, D399</b> <i>Customer to provide connection to air intake</i>	1	CCV6000-08L	Filter Unit
	1	CCV6000-08R	Filter Unit
	2	CCV55049	Fitting/Hose Kit
<b>3512, 3516, 3606, D398, D399</b> <i>Customer to provide connection to air intake</i>	1	CCV8000-08L	Filter Unit
	1	CCV8000-08R	Filter Unit
	2	CCV55069	Fitting/Hose Kit
<b>3606</b> <i>Customer to provide connection to air intake</i>	3	CCV8000-08L (or R)	Filter Unit
	3	CCV55069	Fitting/Hose Kit
<b>3612, 3616</b> <i>Customer to provide connection to air intake</i>	2	CCV8000-08L	Filter Unit
	2	CCV8000-08R	Filter Unit
	4	CCV55069	Fitting/Hose Kit

## Cummins - Industrial/Mobile Power Applications

ENGINE MODEL NO.	QTY.	P/N	DESCRIPTION
<b>3A1.7, 4A2.1, 4B3.9, 4BT3.9, 6B5.9, 6BT5.9, 6BTA5.9, 6C8.3, 6CT8.3, 6CTA8.3, L10, V504, VT504, VT555, VTA555</b>	1	CCV4500-08L	Filter Unit
	1	CCV55024	Fitting/Hose Kit
	1	CCV30100 (3") or CCV40100 (4")	Tap Sleeve (Turbo)
<b>KT19, KTA19, M11, N14</b>	1	CCV6000-08L	Filter Unit
	1	CCV55046	Fitting/Hose Kit
	1	CCV50125	Tap Sleeve
<b>V-903, VT-903, NTA-855, VTA-903</b>	1	CCV6000-08L	Filter Unit
	1	CCV55047	Fitting/Hose Kit
	1	CCV50125	Tap Sleeve
<b>VTA28, KTA38, KTA50, KTTA50</b>	1	CCV6000-08L	Filter Unit
	1	CCV6000-08R	Filter Unit
	1	CCV55046	Fitting/Hose Kit
	1	CCV60125	Tap Sleeve

Note: Most engines, customer provides bushings for hose kit installation to engine breathers.  
New 3/4" breather barb available from Cummins.

## Cummins - Marine Applications

ENGINE MODEL NO.	QTY.	P/N	DESCRIPTION
<b>3A1.7, 4A2.1, 4B3.9, 4BT3.9, 6B5.9, 6BT5.9, 6BTA5.9, 6C8.3, 6CT8.3, 6CTA8.3, V504, VT504, VT555, VTA555</b>	1	CCV4500-08L	Filter Unit
	1	CCV55024	Fitting/Hose Kit
	1	AF M408512	Marine Air Filter
<b>KT19, KTA19, M11, N14</b>	1	CCV6000-08L	Filter Unit
	1	CCV55046	Fitting/Hose Kit
	1	AF M601212	Marine Air Filter
<b>V-903, VT-903, NTA-855, VTA-903</b>	1	CCV6000-08L	Filter Unit
	1	CCV55047	Fitting/Hose Kit
	1	AF M501012	Marine Air Filter
<b>VTA28, KTA38,</b>	1	CCV6000-08L	Filter Unit
	1	CCV6000-08R	Filter Unit
	1	CCV55046	Fitting/Hose Kit
	1	AF M501012	Marine Air Filter
<b>KTA50, KTTA50 (Emergency/Intermittent Duty)</b>	1	CCV6000-08L	Filter Unit
	1	CCV6000-08R	Filter Unit
	2	CCV55046	Fitting/Hose Kit
	2	AF M601212	Marine Air Filter
<b>KTA50, KTTA50 (Continuous Duty Engines)</b>	1	CCV8000-08L	Filter Unit
	1	CCV8000-08R	Filter Unit
	2	CCV55067	Fitting/Hose Kit
	2	CCV60125	Tap sleeves
	or		
	2	AF M601212	Marine Air Filter

# CCV Engine Applications

Detroit Diesel - Industrial/Mobile Power Applications

ENGINE MODEL NO.	QTY.	P/N	DESCRIPTION
<b>3-53, 4-53, 3-71*, Series 50</b>	1	CCV4500-08L (or R)	Filter Unit
	1	CCV55037	Fitting/Hose Kit
	1	CCV40100	Tap Sleeve
<b>8.2 Liter</b>	1	CCV4500-08L (or R)	Filter Unit
	1	CCV55038	Fitting/Hose Kit
	1	CCV40100	Tap Sleeve
<b>4-71, 6-71, 6V71, 8V71*, 6V92, 6V53, 8V92 up to 20 CFM</b>	1	CCV6000-08L (or R)	Filter Unit
	1	CCV55047	Fitting/Hose Kit
	1	CCV50125	Tap Sleeve
<b>Series 60/ 11.2, 12.7 Liter</b>	1	CCV6000-08L (or R)	Filter Unit
	1	CCV55046	Fitting/Hose Kit
	1	CCV50125	Tap Sleeve
<b>8V92, 12V71*</b>	1	CCV6000-08L	Filter Unit
	1	CCV6000-08R	Filter Unit
	2	CCV55046	Fitting/Hose Kit
	2	CCV50125	Tap Sleeve
<b>12V92, 16V92</b>	1	CCV6000-08L	Filter Unit
	1	CCV6000-08R	Filter Unit
	2	CCV55047	Fitting/Hose Kit
	2	CCV50125	Tap Sleeve
<b>12V149, 16V149 with 3 rocker cover breathers</b>	1	CCV8000-08L	Filter Unit
	1	CCV8000-08R	Filter Unit
	1	CCV55067	Fitting/Hose Kit
	1	CCV55068	Fitting/Hose Kit
	2	CCV60125	Tap Sleeve
<b>16V149, 20V149 High h/p engines with 4 rocker cover breathers</b>	1	CCV8000-08L	Filter Unit
	1	CCV8000-08R	Filter Unit
	2	CCV55068	Fitting/Hose Kit
	2	CCV60125	Tap Sleeve

\*In all applications, please verify turbo inlet outside diameter size for correct application of tap sleeve.

## Detroit Diesel - Marine Applications

ENGINE MODEL NO.	QTY.	P/N	DESCRIPTION
<b>3-53, 4-53, 3-71*, Series 50</b>	1	CCV4500-08L (or R)	Filter Unit
	1	CCV55037	Fitting/Hose Kit
	1	AF M408512	Marine Air Filter
<b>3.2 Liter</b>	1	CCV4500-08L (or R)	Filter Unit
	1	CCV55038	Fitting/Hose Kit
	1	AF M408512	Marine Air Filter
<b>4-71, 6-71, 6V71, 8V71*, 6V92, 6V53, 8V92 up to 600 hp (single turbo)</b>	1	CCV6000-08L (or R)	Filter Unit
	1	CCV55047	Fitting/Hose Kit
	1	AF M601212	Marine Air Filter
	* twin turbo use (2) AF M501012, Marine Air Filters		
<b>Series 60/ 11.2, 12.7 Liter</b>	1	CCV6000-08L (or R)	Filter Unit
	1	CCV55046	Fitting/Hose Kit
	1	AF M501012	Marine Air Filter
<b>8V92, 12V71*</b>	1	CCV6000-08L	Filter Unit
	1	CCV6000-08R	Filter Unit
	2	CCV55046	Fitting/Hose Kit
	2	AF M501012	Marine Air Filter
<b>12V92, 16V92</b>	1	CCV6000-08L	Filter Unit
	1	CCV6000-08R	Filter Unit
	2	CCV55047	Fitting/Hose Kit
	2	AF M601212	Marine Air Filter
<b>12V149, 16V149 with 3 rocker cover breathers</b>	1	CCV8000-08L	Filter Unit
	1	CCV8000-08R	Filter Unit
	1	CCV55067	Fitting/Hose Kit
	1	CCV55068	Fitting/Hose Kit
	2	AF M601212	Marine Air Filter
<b>16V149, 20V149 High h/p engines with 4 rocker cover breathers</b>	1	CCV8000-08L	Filter Unit
	1	CCV8000-08R	Filter Unit
	2	CCV55068	Fitting/Hose Kit
	4	AF M601212	Marine Air Filter

\*In all applications, please verify turbo inlet outside diameter size for correct application of tap sleeve.

# CCV Engine Applications

## Hercules - Industrial/Mobile Power Applications

ENGINE MODEL NO.	QTY.	P/N	DESCRIPTION
<b>G1600, 62300</b>	1	CCV4500-08L (or R)	Filter Unit
	1	CCV55024	Fitting/Hose Kit
	1	CCV40100	Tap Sleeve
<b>G3400, G4800, D2300 Series, D3400 Series, D4800 Series</b>	1	CCV4500-08L (or R)	Filter Unit
	1	CCV55025	Fitting/Hose Kit
	1	CCV40100	Tap Sleeve

## Volvo - Industrial/Mobile Power Applications

ENGINE MODEL NO.	QTY.	P/N	DESCRIPTION
<b>All engine models with P/N 876069-0 breather cartridge</b>	1	CCV4500-08L (or R)	Filter Unit
	1	CCV55037	Fitting/Hose Kit
	1	CCV40100	Tap Sleeve

## Volvo - Marine Applications

ENGINE MODEL NO.	QTY.	P/N	DESCRIPTION
<b>All engine models with P/N 876069-0 breather cartridge less than 400 hp</b>	1	CCV4500-08L (or R)	Filter Unit
	1	CCV55037	Fitting/Hose Kit
	1	AF M408512	Marine Air Filter
<b>All engine models with P/N 876069-0 breather cartridge over 400 hp</b>	1	CCV6000-08L (or R)	Filter Unit
	1	CCV55046	Fitting/Hose Kit
	1	AF M501012	Marine Air Filter

## John Deere - Industrial/Mobile Power Applications

ENGINE MODEL NO.	QTY.	P/N	DESCRIPTION
<i>Series 300/400, 4039T, 4045T, 6059T, 6059D, 6359A, 6068D, 6068T, 6076T, 6076A, 6076H</i>	1	CCV4500-08R	Filter Unit
	1	CCV55024	Fitting/Hose Kit
	1	CCV40100	Tap Sleeve
<i>Series 500, 6619A</i>	1	CCV4500-08R	Filter Unit
	1	CCV55025	Fitting/Hose Kit
	1	CCV40100	Tap Sleeve

## John Deere - Marine Applications

ENGINE MODEL NO.	QTY.	P/N	DESCRIPTION
<i>Series 300/400, 4039T, 4045T, 6059T, 6059D, 6359A, 6068D, 6068T, 6076T, 6076A, 6076H</i>	1	CCV4500-08R	Filter Unit
	1	CCV55024	Fitting/Hose Kit
	1	AF M408512	Marine Air Filter
<i>Series 500, 6619A</i>	1	CCV4500-08R	Filter Unit
	1	CCV55045	Fitting/Hose Kit
	1	AF M408512	Marine Air Filter

## Mack - Industrial/Mobile Power Applications

ENGINE MODEL NO.	QTY.	P/N	DESCRIPTION
<i>E6, E7, 37G, E9</i>	1	CCV6000-08L (or R)	Filter Unit
	1	CCV55048	Fitting/Hose Kit
	1	CCV50125	Tap Sleeve

## Mack - Marine Applications

ENGINE MODEL NO.	QTY.	P/N	DESCRIPTION
<i>E6, E7, 37G, E9 (up to 600 hp)</i>	1	CCV6000-08L (or R)	Filter Unit
	1	CCV55048	Fitting/Hose Kit
	1	AF M501012 (Note: over 600 hp use AF M601212)	Marine Air Filter
<i>E6, E7, 37G, E9 (over 700 hp)</i>	1	CCV8000-08L (or R)	Filter Unit
	1	CCV55067	Fitting/Hose Kit
	1	AF M601212	Marine Air Filter

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