

LPE Air-Oil Separator Instructions (Various Applications)



PN: L200010000

Parts List

Lingenfelter Air Oil Separator (L200010000)

#	Description	Part number
1	Air/oil separator	L200010000

Tools & Materials Required

- Ratchet
- Extension
- Metric socket set
- Drill or rotary tool
- Drill bit set
- Rags
- 25mm (1") oil safe hose
- 12.5mm (0.5") oil safe hose

Optional Items

Description	Part number
Air/oil separator bracket (for C5 Corvette)	L200160197
Air/oil separator bracket (for C6 Corvette)	L200170105
Air/oil separator transition fitting, 1.0" to 0.42" OD	L960060000
Air/oil separator replacement filter	L200020000
Check valve	L200030000
(needed if the return line returns the oil to locations above the oil pan level)	

Check Valve
(PN: L200030000)



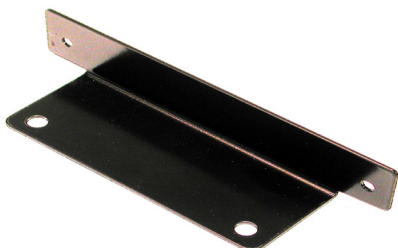
Replacement Filter
(PN: L200020000)



Transition Fitting
(PN: L960060000)



C6 bracket (PN: L200170105)



C5 bracket (PN: L200160197)



Read the entire instruction manual before beginning installation.

LPE offers two (2) different brackets that were designed to fit the C5 and C6 corvette; however, these brackets can be used with any vehicle in which they are necessary for fitment or clearance. See pages 8-9 for CAD drawings of these brackets.

Not all applications require the use of a mounting bracket as the oil air separator has a built in adjustable mounting bracket.

Theory of Operation

Combustion gases enter the crankcase through the gap between the piston rings and the cylinder walls. This combustion gas is often referred to as blow-by gas, or just as blow-by. Many factors impact the quantity of blow-by gas generated but, with other variables remaining relatively constant, the amount of blow-by gas generally increases as engine power output increases. To avoid pressure build up in the crankcase, this blow-by gas has to be allowed to exit the engine via crankcase ventilation.

For emissions reasons the blow-by gas can't be merely blown into the atmosphere. Instead the blow-by gas must be redirected into the engine's air intake system after the air cleaner. This is often referred to as a closed crankcase ventilation (CCV) system. Systems that vent to atmosphere are sometimes referred to as open crankcase ventilation (OCV) systems.

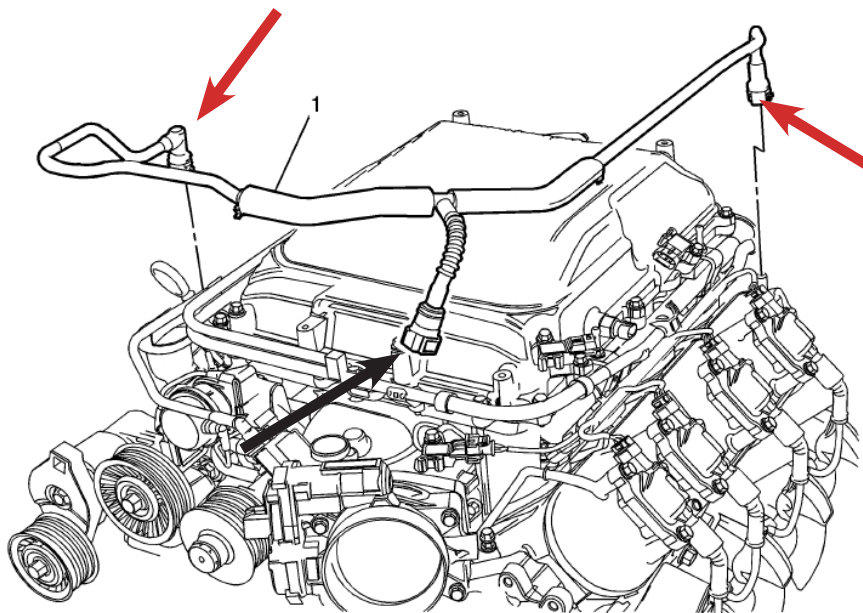
Due to the movement of the crankshaft, connecting rods, pistons and other engine components the blow-by gas gets enriched with engine oil and other contaminants. Some of this oil is in very small sub micron droplets (aerosol) form. This trapped material must be removed from the blow-by gas before returning the blow-by gas to the engine inlet or before venting it to atmosphere. Removing the oil from the blow-by gas is made far more difficult due to the fact that a significant portion of the oil is in aerosol form.

In closed CCV systems on conventional gasoline engines poor combustion, compromised engine performance, fouling of the spark plugs, and other related problems can occur if the oil and other contaminants are not removed from the blow-by gas. In both conventional gasoline and diesel engines alike the oil can cause oily deposits on the intake components, damage to turbochargers, and damage to charge air coolers.

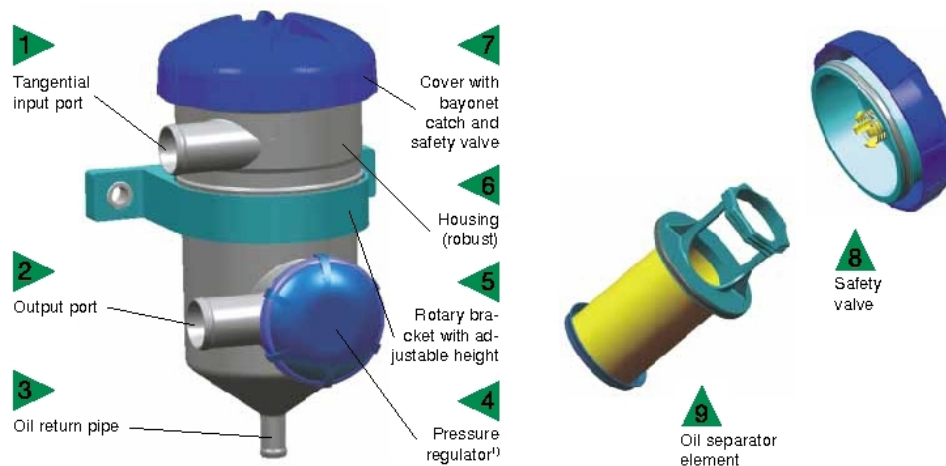
The Lingenfelter oil air separator is designed to remove the oil and other contaminants from the blow-by gas and then allow the oil to gravity drain back to the engine. Typical oil drain back locations include engine block ports, oil pan fitting, dipstick tube, dry sump tank and oil filler neck.

Specifications and features:

- Blow-by flow rates of up to 200 liter/minute (7 SCFM)
- Multiple units can be used in parallel for higher blow-by flow rate applications
- Can be used with both open (OCV) and closed crankcase ventilation (CCV) systems
- Designed to return oil to the engine – eliminates having to drain an oil catch can
- Compact design
- OEM type materials and construction
- Replaceable filter element
- Built in bracket with 12 positions of rotation
- Vertical installation position
- 25 mm (1") crankcase vent fittings, inlet and outlet
- 12.5 mm (0.5") oil return fitting
- Optional oil return check valve



The illustration shown is an OEM setup showing the crankcase ventilation setup. The red arrows show what connection placements are routed to the inlet tube on the oil air separator. The black arrow shows where the OEM air inlet connector connects to the OEM crankcase ventilation setup. This location is where the air outlet tube on the oil air separator is routed to.





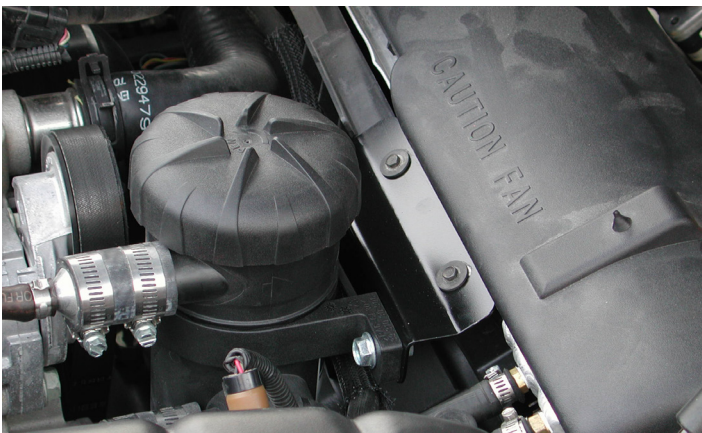
1. Open the hood of your vehicle. If you have been driving the vehicle, allow a few hours for the vehicle to cool down before performing this installation. See pages 10-13 for example hose routing diagrams.



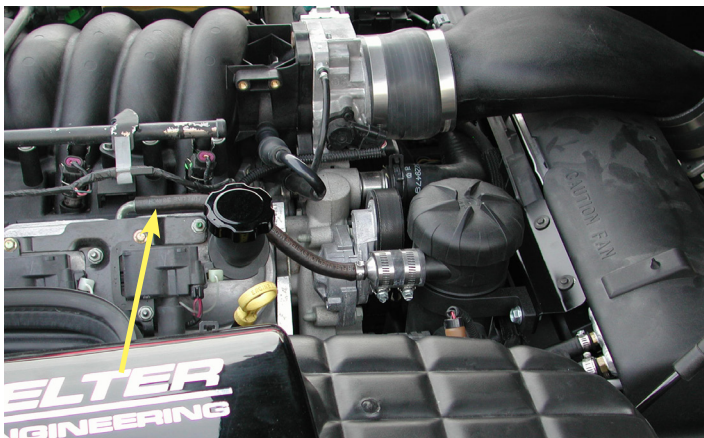
2. Locate a place in your engine bay where there is a place to drill two (2) holes and where there will be enough space to mount the air-oil separator unit and bracket. If the oil return will occur above the oil level, you will need to install a check valve (part # L200030000). LPE also offers different brackets that can be used to properly fit your separator. The adjacent illustration is an example of a twin air/oil separator configuration in a 1300 hp twin turbo Corvette.



3. Using a marker or center punch, place the separator in the desired location and mark the two holes that need to be drilled out. Make sure there is hood clearance in the location before drilling.

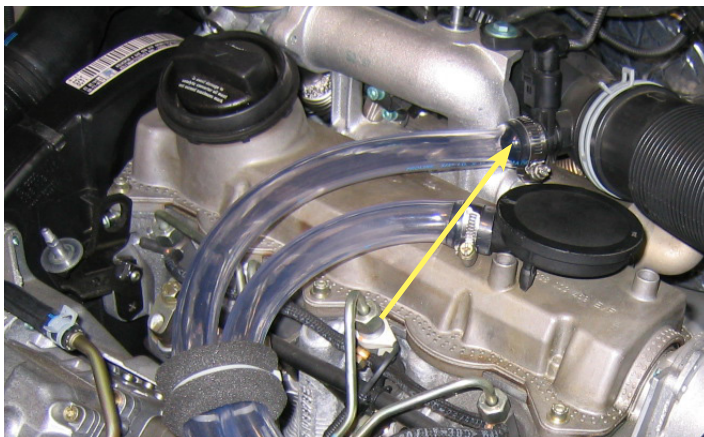


4. Using a drill and a 5/16" (8mm) drill bit, drill the two (2) holes out and mount the separator in a way that will allow access to all of the ports. The top port will go to the cylinder head valve cover, the middle port will go to your intake duct or tube, and the bottom port needs to act as a return line back to the oil sump. LPE currently has two brackets available (C5 & C6 Corvette - refer to pages 8 & 9 for detailed drawings). M8 fasteners should be used to secure the air-oil separator. The bracket can be rotated and can also be moved up or down on the body of the separator (4 positions).

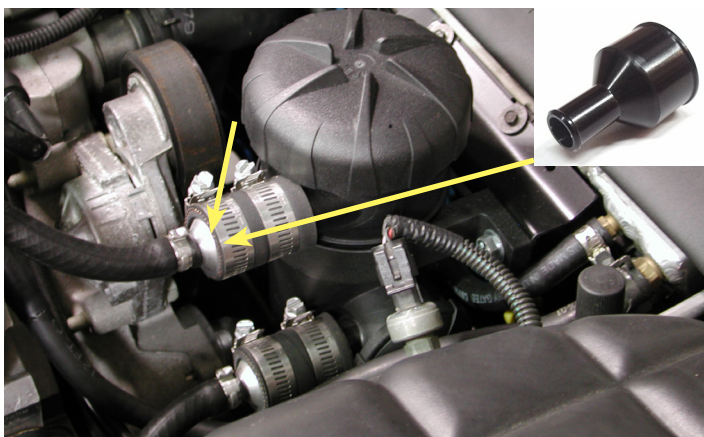


5. Route the hose in the top of the separator (1" input port) to the valve cover PCV fitting.

NOTE: Be sure to use hose that is compatible with under-hood temperatures, as well as with oil and other automotive fluids.



6. Route the middle hose (1" outlet port) on the separator to your intake duct.

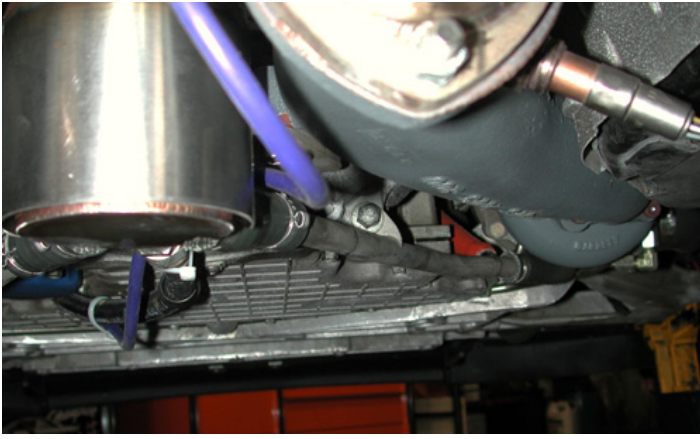


7. If you are installing this on a motor with a PCV fitting less than 3/8" diameter, you may need transition fittings (part # L960060000).

Note: LPE recommends not using transition fittings unless no other packaging option exists as it impacts the performance of the oil separator.



8. Clamp all hoses with hose clamps.



9. Run the hose from the bottom of the separator oil return pipe fitting to the oil sump. Some fabrication may be required in order to install the fitting or bung for a return line that runs into the oil sump. If possible, select a location that is below the oil level in the pan or sump tank.



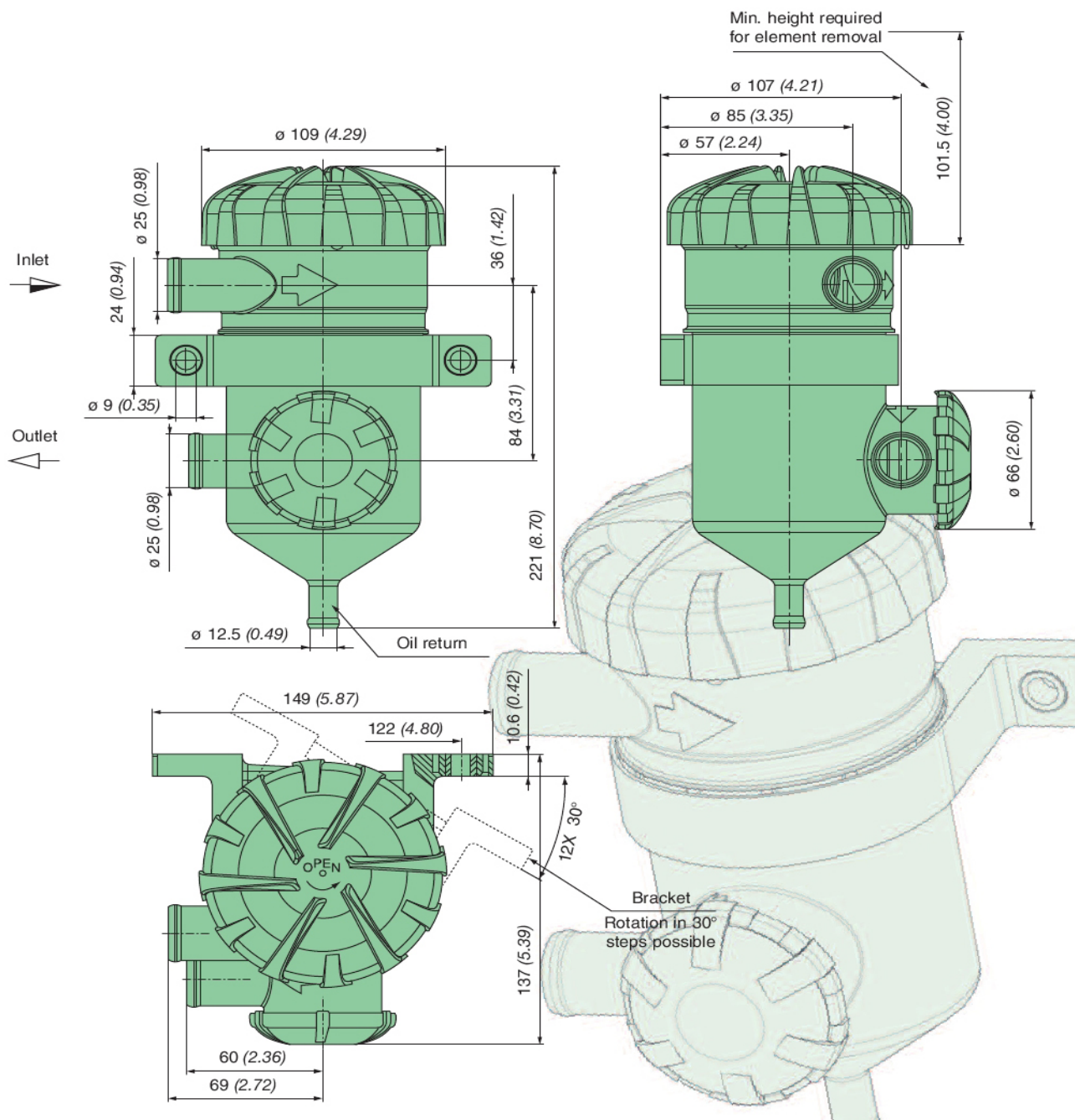
10. If you are running a turbo system that has an oil return line with a scavenge pump, you may also T into your turbo return line. Be careful as some turbos are very sensitive to back pressure. Ensure that no back pressure is being made or install a fitting or bung on your oil pan instead.



11. If your return line returns the oil to a location that is above the oil pan level, make sure to install an in-line check valve (part # L200030000). This check valve is one-directional, so make sure to install the valve in the correct direction. The oil should flow into the valve through the barbed end and out of the valve through the straight end, as shown by the black arrows in the adjacent illustration.

12. Start your vehicle and check for any oil leaks. Your installation is now complete.

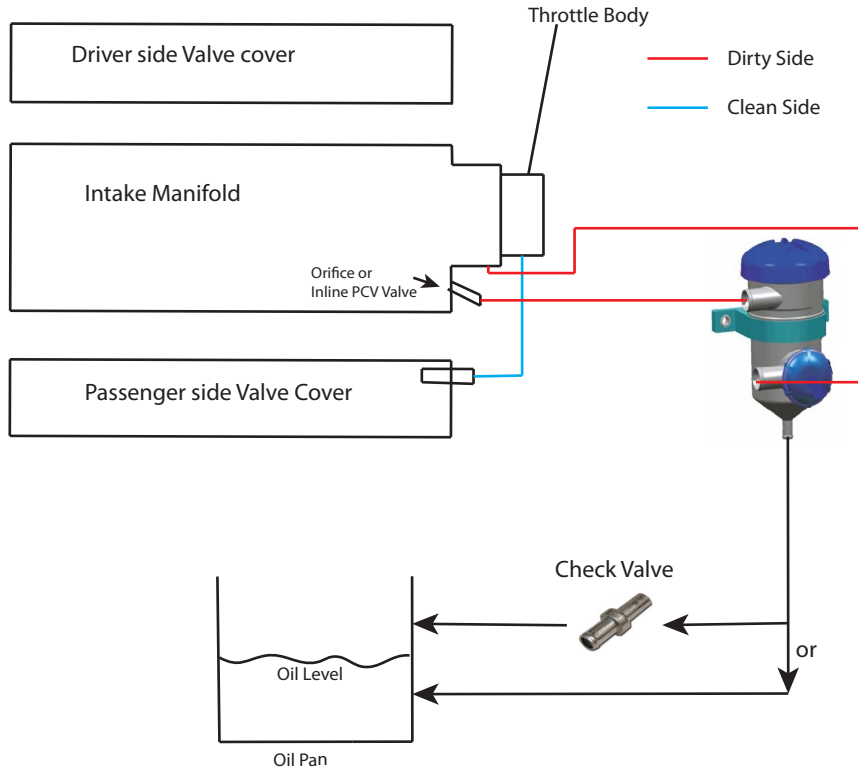
ProVent® 200 – Specifications



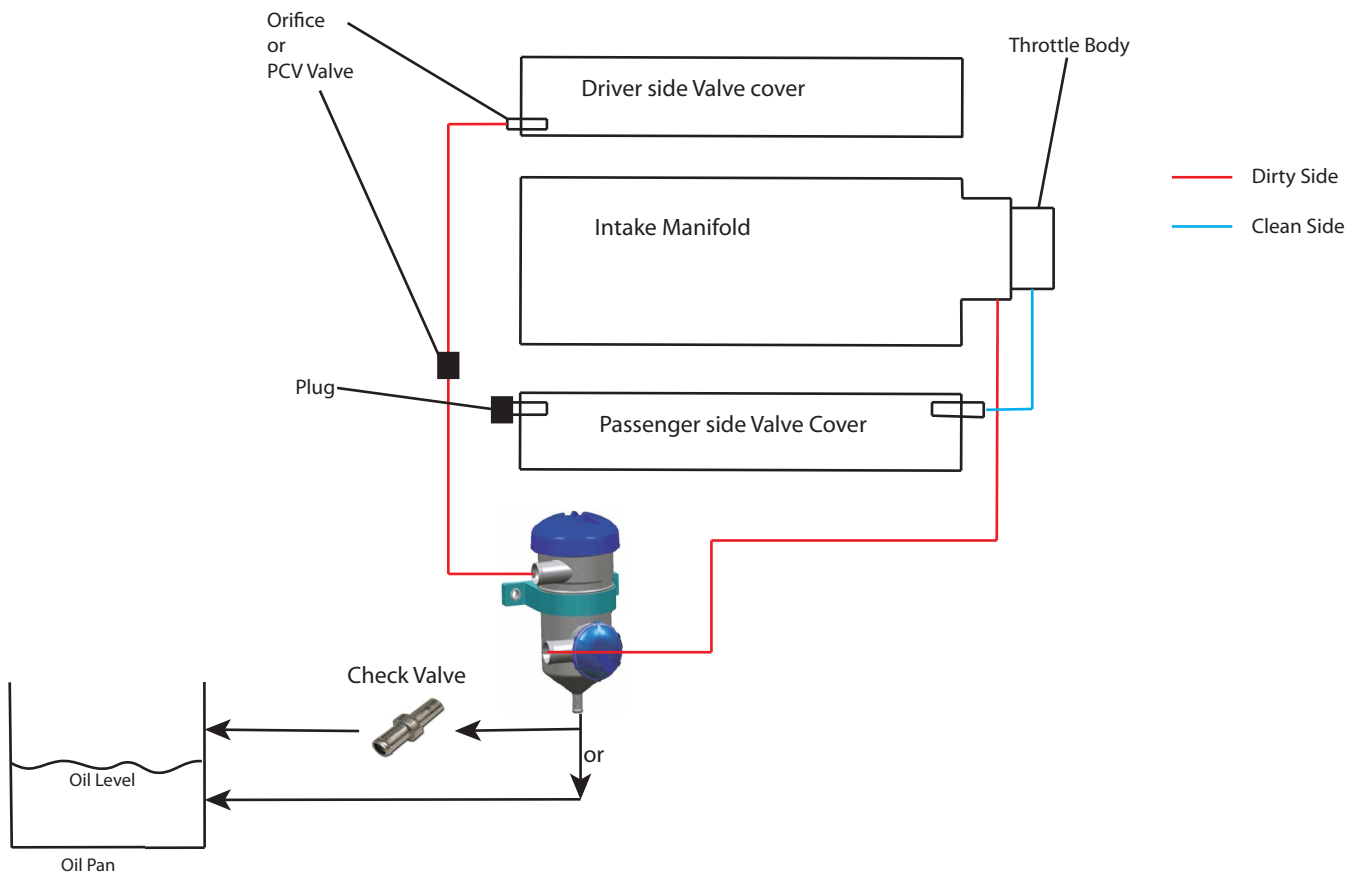
Standard value for use of ProVent®	single unit *	up to 250 kW
Blow-by flow rate		max. 200 l/min
Installation position		vertical
Allowed tilt position of vertical axis		45° in all directions
Positioning	Inlet Outlet	12 positions, further positions on request
Ambient temperature		-35 °C to 120 °C, for a short time to 140 °C
Screw mounting to engine block		2 x M8
Material	Housing Cover Bracket	PA GF
Resistant against		diesel fuel, engine oil, lube oil, cleaning agents

* Use of two ProVent® of the same type in parallel possible

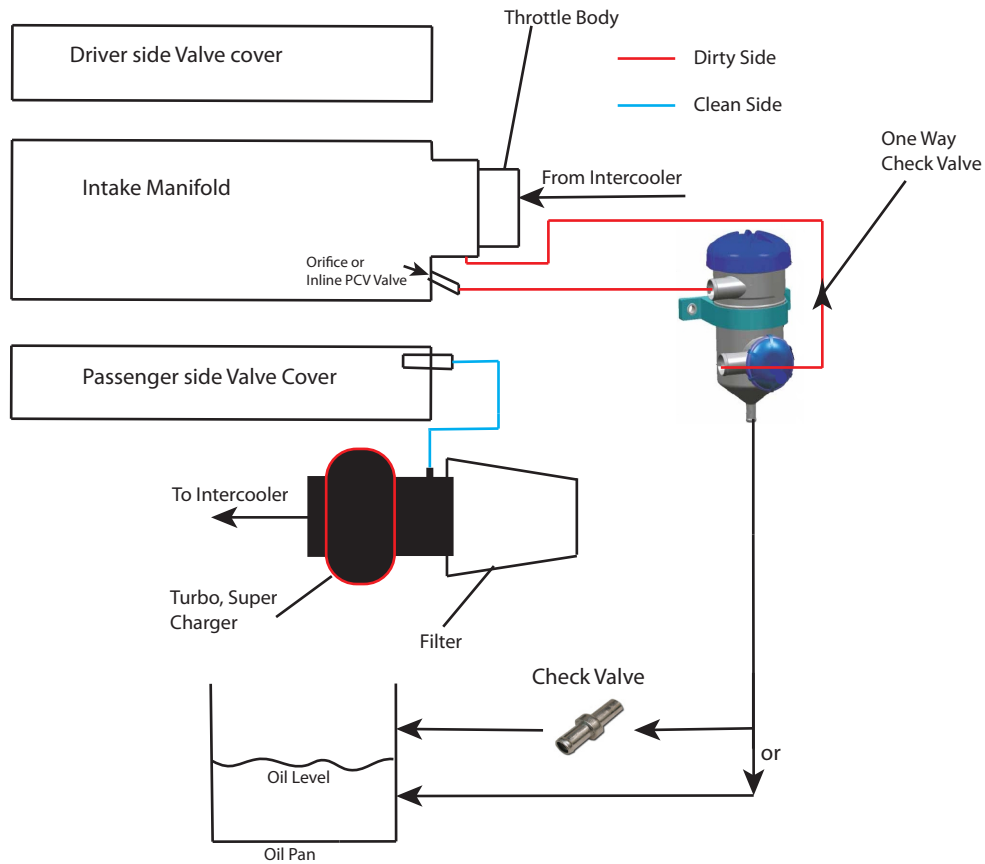
Single Oil/Air Separator PCV Routing LS6, LS2, LS3 Valley Tray



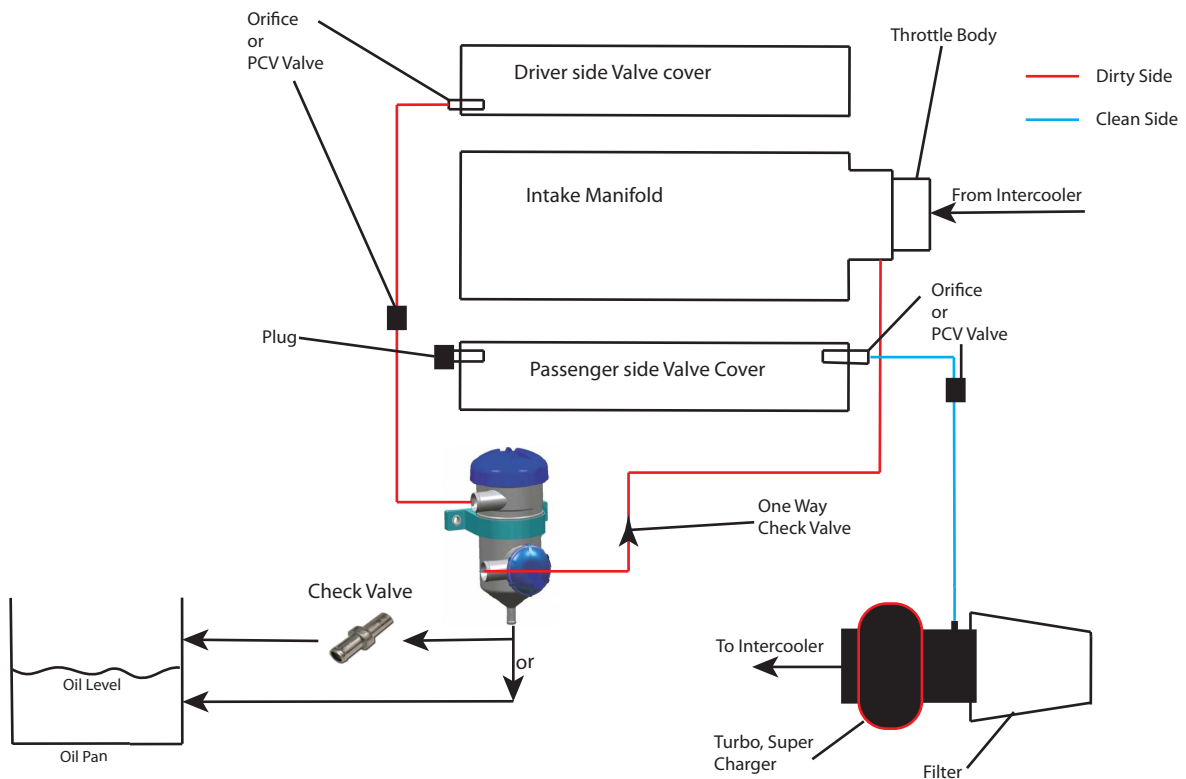
Single Oil/Air Separator PCV Routing LS1 Valley Pan, External PCV Valve



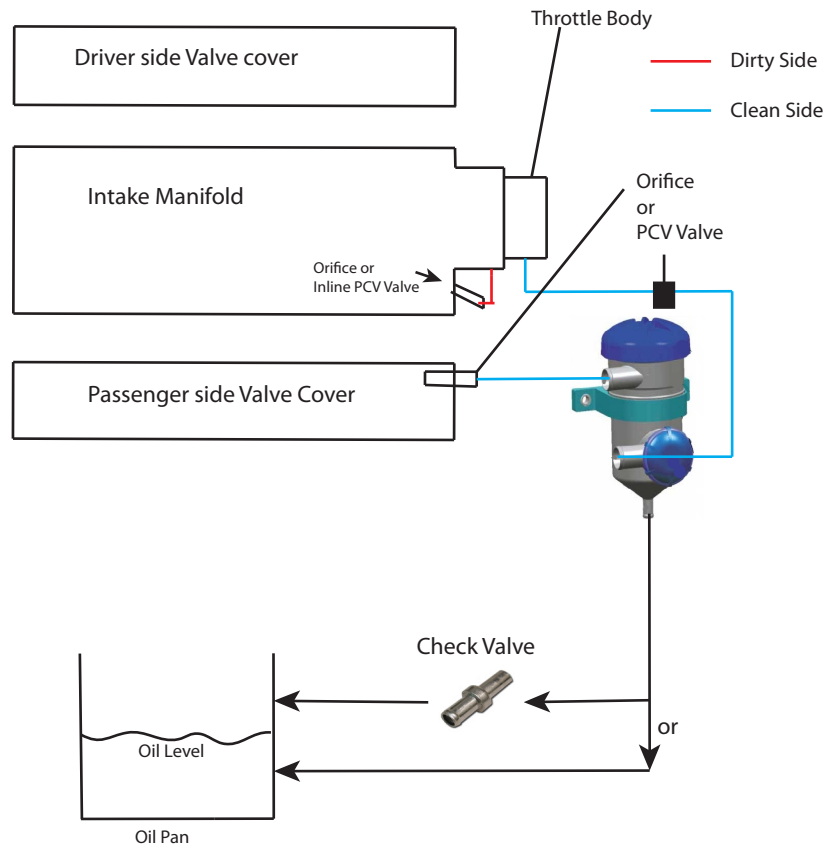
Single Oil/Air Separator PCV Routing LS6, LS2, LS3 Valley Tray - Turbo



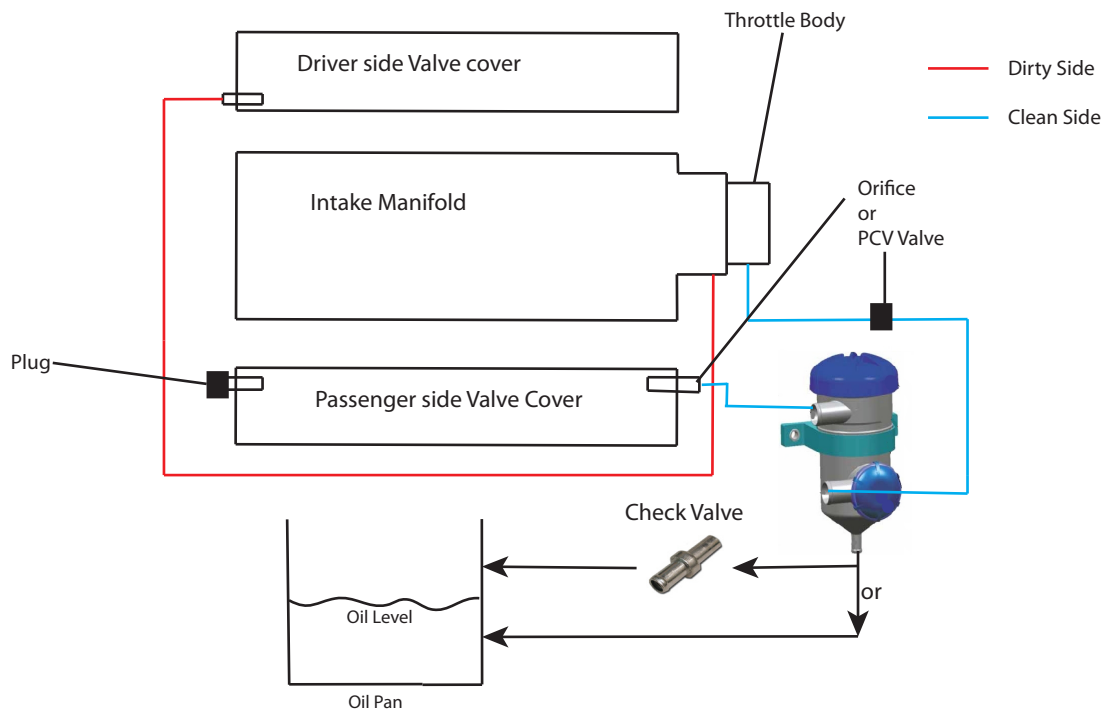
Single Oil/Air Separator PCV Routing LS1 Valley Pan, External PCV Valve - Turbo



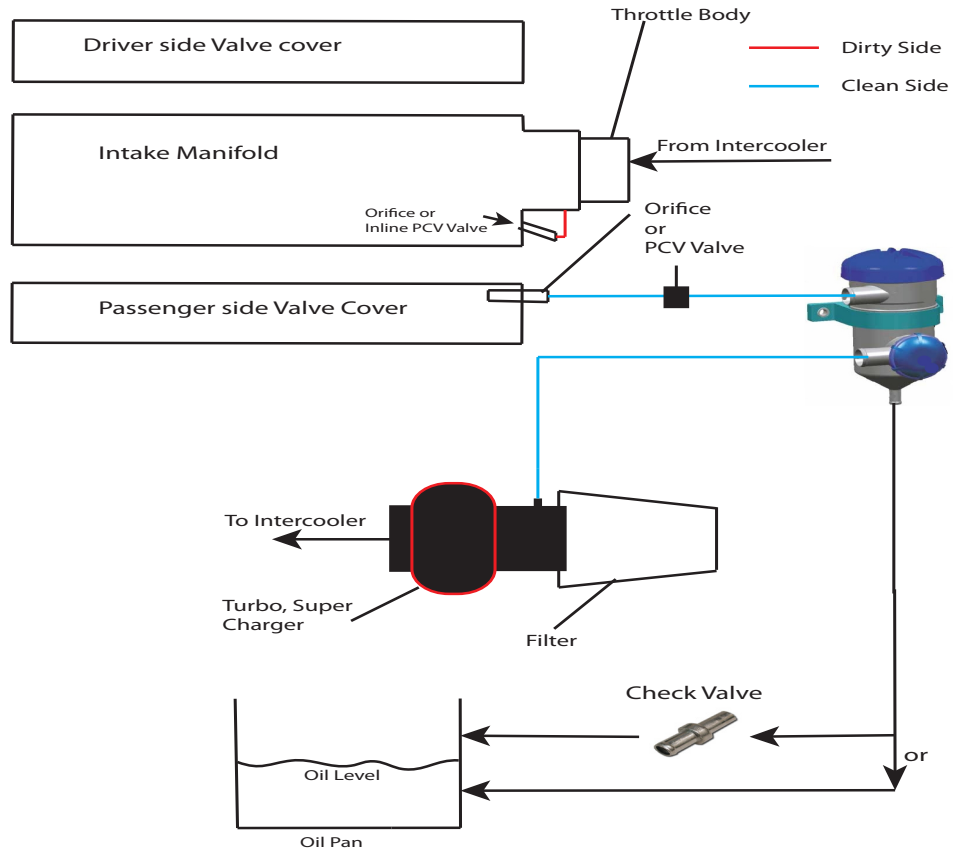
Single Oil/Air Separator PCV Routing LS6, LS2, LS3 Valley Tray



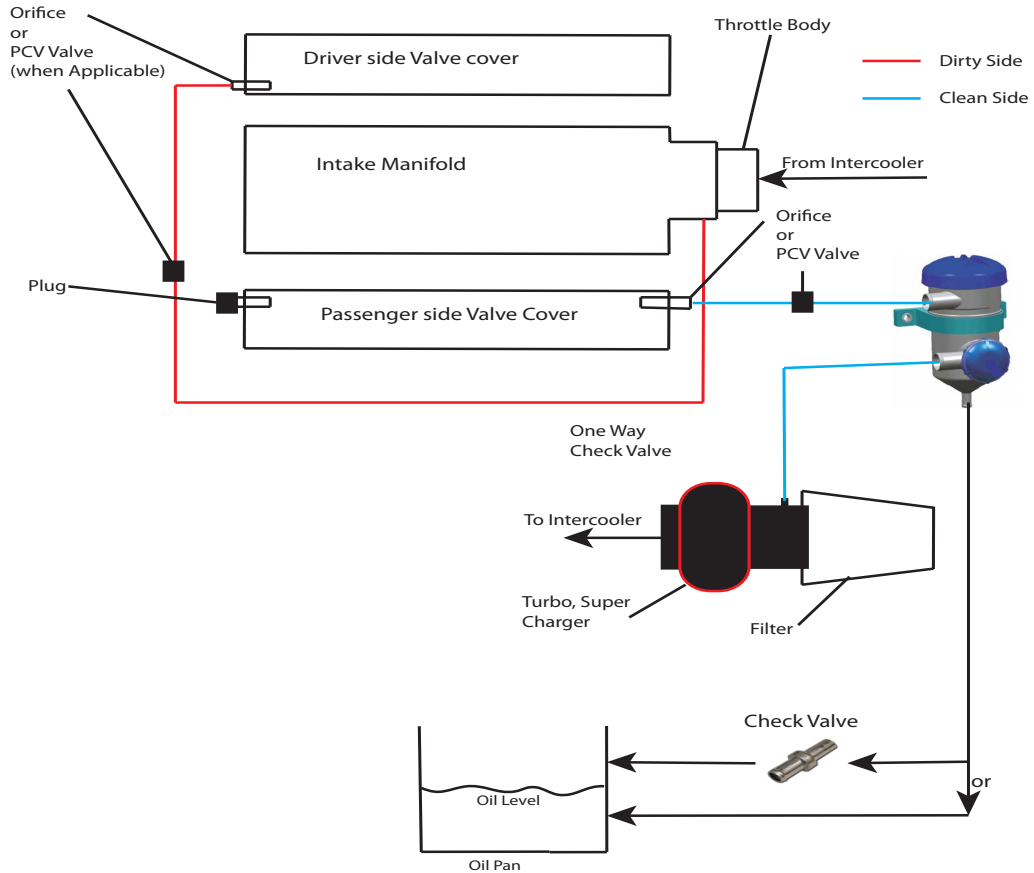
Single Oil/Air Separator PCV Routing LS1 Valley Pan, External PCV Valve



Single Oil/Air Separator PCV Routing LS6, LS2, LS3 Valley Tray - Turbo



Single Oil/Air Separator PCV Routing LS1 Valley Pan, External PCV Valve - Turbo



- For additional product installation information and technical support, contact LPE or your LPE products distributor. You can also find technical support and usage discussions regarding this product and many other LPE products in our Internet forums.
- Do you have pictures and a description of how you installed this LPE product on your vehicle? If so, you can share them with LPE and our customers on the LPE internet forums or by emailing us directly.

<http://www.lingenfelter.com/LPEforumfiles>



Lingenfelter Performance Engineering
1557 Winchester Road
Decatur, IN 46733
(260) 724-2552
(260) 724-8761 fax
www.lingenfelter.com