

Proposed PCV Language

(9) Positive Crankcase Ventilation (PCV) System Monitoring

(9.1) Requirement:

(9.1.1) On all 2004 and subsequent model year vehicles, manufacturers shall monitor the PCV system on vehicles so-equipped for system integrity. “PCV system” is defined as any form of crankcase ventilation system that is intended to contain or transport crankcase vapors, regardless of whether it utilizes positive pressure. “PCV valve” is defined as any form of valve or orifice used to restrict or control crankcase vapor flow. Further, any additional external PCV system tubing or hoses used to equalize crankcase pressure or to provide a ventilation path between various areas of the engine or between the engine and the intake air system (e.g., between the crankcase and valve cover, between the crankcase and the fresh air intake system on normally aspirated engines with dry sump lubrication systems) are considered part of the PCV system. “between the crankcase and the PCV valve” in section (e)(9.2.2) and considered part of the “PCV system” in section (e)(9.2.3), and subject to the malfunction criteria in sections (e)(9.2.2) and (e)(9.2.3) below. A manufacturer may use an alternate phase-in schedule in lieu of meeting the requirements of section (e)(9) on all 2004 model year vehicles if the alternate phase-in schedule provides for equivalent compliance volume (as defined in section (c)) to the phase-in schedule specified in title 13, CCR section 1968.1(b)(10.1). Vehicles not subject to crankcase emission control requirements shall be exempt from monitoring of the PCV system.

(9.2) Malfunction Criteria:

~~(9.2.1) For the purposes of section (e)(9), “PCV system” is defined as any form of crankcase ventilation system, regardless of whether it utilizes positive pressure. “PCV valve” is defined as any form of valve or orifice used to restrict or control crankcase vapor flow. Further, any additional external PCV system tubing or hoses used to equalize crankcase pressure or to provide a ventilation path between various areas of the engine (e.g., between the crankcase and valve cover, between the crankcase and the fresh air intake system on normally aspirated engines with dry sump lubrication systems) are considered part of the PCV system. “between the crankcase and the PCV valve” in section (e)(9.2.2) and considered part of the “PCV system” in section (e)(9.2.3), and subject to the malfunction criteria in sections (e)(9.2.2) and (e)(9.2.3) below.~~ (9.2.12) For vehicles not included in the phase-in specified in section (e)(9.2.23), the following criteria apply for PCV system monitoring:

(A) Except as provided below, the OBD II system shall detect a malfunction of the PCV system when a disconnection of the system occurs between the crankcase and the PCV valve or between the PCV valve and the intake manifold.

(B) If the PCV system is designed such that the PCV valve is fastened directly to the crankcase in a manner which makes it significantly more difficult to remove the valve from the crankcase rather than disconnect the line between the valve and the intake manifold (taking aging effects into consideration), the Executive Officer shall exempt the manufacturer from detection of disconnection between the crankcase and the PCV valve.

(C) Subject to Executive Officer approval, system designs that utilize tubing between the PCV valve and the crankcase shall also be exempted from the portion of the monitoring requirement for detection of disconnection between the crankcase and the PCV valve. The manufacturer shall file a request and submit data and/or engineering evaluation in support of the request. The Executive Officer shall approve the request upon determining that the connections between the valve and the crankcase are: (i) resistant to deterioration or accidental disconnection, (ii) significantly more difficult to disconnect than the line between the valve and the intake manifold, and (iii) not subject to disconnection per manufacturer's repair procedures for non-PCV system repair work.

(D) Manufacturers are not required to detect disconnections between the PCV valve and the intake manifold or any PCV system hose if said disconnection (1) causes the vehicle to stall immediately during idle operation; or (2) is unlikely to occur due to a PCV system design that is integral to the induction system (e.g., machined passages rather than tubing or hoses); or (3) results in a rapid loss of oil or other overt indication of a PCV system malfunction such that the vehicle operator is certain to respond and have the vehicle repaired..

(E) For turbocharged/supercharged engines with PCV systems utilizing hoses, tubes or lines between the crankcase and air intake system that are intended to evacuate the crankcase under boosted operation, the OBD II system shall detect a disconnection that occurs between the crankcase and the intake air system. A manufacturer may request Executive Officer approval to be exempt from monitoring this hose, tube, or line. The Executive Officer shall approve the request upon determining that the manufacturer has submitted data and/or an engineering evaluation which demonstrate that boosted operation does not occur on the US06 cycle or the connections between this hose, tube, or line and the crankcase or the intake manifold are: (i) resistant to deterioration or accidental disconnection, (ii) significantly more difficult to disconnect than the line between the PCV valve (if equipped) and the air intake system, and (iii) not subject to disconnection per manufacturer's repair procedures for non-PCV system repair work.

(9.2.23) For 20 percent of 2023 model year vehicles, 50 percent of 2024 model year vehicles, and 100 percent of 2025 model year vehicles, the following criteria apply for PCV system monitoring:

(A) Except as provided below, the OBD II system shall detect a PCV system malfunction when any hose, tube, or line that is intended to may contains or transports crankcase vapors has a disconnection or break in the line contains a leak equal to or greater than the smallest internal cross-sectional area of that hose, tube, or line. For the purposes of section (e)(9.2.23), "hose, tube, or line" includes any fittings that are used for connection such as nipples or barbs that the hoses must be placed over for proper attachment. ~~Additionally, PCV system hoses, tubes, or lines that do not transport crankcase vapors but when disconnected or contains a leak equal to or greater than the smallest internal cross-sectional area of that hose, tube, or line can result in crankcase vapors escaping into the atmosphere (e.g., dedicated fresh air lines) must also detect a PCV system malfunction when the hose, tube, or line contains a leak equal to or greater than the smallest internal cross-sectional area of that hose, tube, or line.~~

(B) Manufacturers are not required to detect disconnections or breaksleaks of any PCV system hose, tube, or line if said disconnection or breakleak (1) causes the vehicle to stall immediately during idle operation; or (2) is unlikely to occur due to a PCV system design that is integral to the

induction system (e.g., machined passages rather than tubing or hoses); or (3) results in a rapid loss of oil or other overt indication of a PCV system malfunction such that the vehicle operator is certain to respond and have the vehicle repaired. If the PCV system is designed such that the PCV valve is fastened directly to the crankcase in a manner which makes it significantly more difficult to remove the valve from the crankcase rather than disconnect the line between the valve and the intake manifold (taking aging effects into consideration), the Executive Officer shall exempt the manufacturer from detection of disconnection between the crankcase and the PCV valve.

(C) For engines that utilize hose, tubes or lines that is intended to contain but do not transport vapors, (e.g. with dry sump lubrication systems a hose that equalizes crankcase pressure between engine banks) that cannot meet the requirements of sections (e)(9.2.32)(A) and (e)(9.2.32)(B) for any PCV system hose, tube, or line, a manufacturer may request Executive Officer approval to be exempt from monitoring the affected hose, tube, or line. The Executive Officer shall approve the request upon determining that the manufacturer has submitted data and/or an engineering evaluation which demonstrate that monitoring of the PCV system hose, tube, or line cannot be achieved when employing proven monitoring technology (i.e., a technology that provides for compliance with these requirements on other engines) and provided the connections are: (i) resistant to deterioration or accidental disconnection and (ii) not subject to disconnection per manufacturer's repair procedures for non-PCV system repair work. ~~the PCV system design meets the requirements of section (e)(9.2.2).~~ Alternatively, the Executive Officer shall approve the request upon determining that the manufacturer has submitted data and/or an engineering evaluation which demonstrates that crankcase vapors are contained within the crankcase on the US06 cycle with the hose, tube, or line disconnected.

(D) For ~~forced induction~~ turbocharged/supercharged engines with PCV systems utilizing hoses, tubes or lines between the crankcase and fresh air intake system that are intended to ~~transport~~ evacuate the crankcase vapors under boosted operation ~~and/or supply fresh air to the crankcase~~, a manufacturer may request Executive Officer approval to be exempt from monitoring this hose, tube, or line. The Executive Officer shall approve the request upon determining that the manufacturer has submitted data and/or an engineering evaluation which demonstrate that boosted operation does not occur on the US06 cycle.

(9.3) Monitoring Conditions: Manufacturers shall define the monitoring conditions for malfunctions identified in section (e)(9.2) in accordance with sections (d)(3.1) and (d)(3.2) (i.e., minimum ratio requirements).

(9.4) MIL Illumination and Fault Code Storage: General requirements for MIL illumination and fault code storage are set forth in section (d)(2). The stored fault code need not specifically identify the PCV system (e.g., a fault code for idle speed control or fuel system monitoring can be stored) if the manufacturer demonstrates that additional monitoring hardware would be necessary to make this identification, and provided the manufacturer's diagnostic and repair procedures for the detected malfunction include directions to check the integrity of the PCV system.

Proposed Diesel CV Changes

(10.2.3) For all 2025 and subsequent model year vehicles, the following criteria apply for CV system monitoring:

(A) Except as provided below, the OBD II system shall detect a CV system malfunction ~~when~~ any hose, tube, or line that transports crankcase vapors ~~has a disconnection or break in the line when the system contains a leak~~ equal to or greater than the smallest internal cross-sectional area of that hose, tube, or line. For the purposes of section (f)(10.2.3), “external hose, tubing, or line” includes any fittings that are used for connection such as nipples or barbs that the hoses must be placed over for proper attachment.

(B) Manufacturers are not required to detect disconnections or ~~breaksleaks~~ of any CV system hose, tube, or line if said disconnection or ~~breakleak~~ (1) causes the vehicle to stall immediately during idle operation; or (2) is unlikely to occur due to a CV system design that is integral to the induction system (e.g., machined passages rather than tubing or hoses); or (3) results in a rapid loss of oil or other overt indication of a CV system malfunction such that the vehicle operator is certain to respond and have the vehicle repaired.

(C) For engines that that cannot meet the requirements of sections (f)(10.2.3)(A) and (f)(9.2.3)(B) for any PCV system hose, tube, or line, a manufacturer may request Executive Officer approval to be exempt from monitoring the affected hose, tube, or line. The Executive Officer shall approve the request upon determining that the manufacturer has submitted data and/or an engineering evaluation which demonstrate that monitoring of the PCV system hose, tube, or line cannot be achieved when employing proven monitoring technology (i.e., a technology that provides for compliance with these requirements on other engines) and provided the connections are: (i) resistant to deterioration or accidental disconnection and (ii) not subject to disconnection per manufacturer’s repair procedures for non-PCV system repair work. Alternatively, the Executive Officer shall approve the request upon determining that the manufacturer has submitted data and/or an engineering evaluation which demonstrates that crankcase vapors are contained within the crankcase on the US06 cycle with the hose, tube, or line disconnected.