

Final Regulation Order

Amendments to Section 1968.2, Title 13, California Code of Regulations

[Note: This version of the Final Regulation Order also complies with Government Code section 11346.2 subdivision (a)(3), and 11346.8, subdivision (c). The existing, original regulatory language currently adopted into the California Code of Regulations is shown in "normal type." The final amendments are shown in underline to indicate additions and ~~striketrough~~ to indicate deletions from the existing regulatory text. The final amendments are being presented in two versions. For ease of readability, and to review the final amendments in an Accessible format that can toggle between amendments in strikeout/underline and a "clean" version with amendments incorporated into the regulatory text, please refer to the Word version of this Final Regulation Order.]

Chapter 1. Motor Vehicle Pollution Control Devices

Section 1968.2. Malfunction and Diagnostic System Requirements - 2004 and Subsequent Model Year Passenger Cars, Light Duty Trucks, and Medium Duty Vehicles and Engines.

Final Regulation Order

Amend section 1968.2, title 13, California Code of Regulation (CCR), to read as follows:

§ 1968.2 Malfunction and Diagnostic System Requirements - 2004 and Subsequent Model Year Passenger Cars, Light Duty Trucks, and Medium Duty Vehicles and Engines.

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(c) *Definitions.*

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"Low Emission Vehicle IV" application refers to a vehicle or engine certified in California to the exhaust emission standards defined in title 13, CCR section 1961.4. References to vehicle emission categories preceded by "LEV IV" refer to Low Emission Vehicle IV applications certified to that specific vehicle emission category defined in title 13, CCR section 1961.4 (e.g., "LEV IV SULEV15 vehicles" refer to Low Emission Vehicle IV applications certified to the Low Emission Vehicle IV SULEV15 vehicle emission category).

"Malfunction" means any deterioration or failure of a component or system that causes the performance to be outside of the applicable limits in sections (e) and (f).

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(d) *General Requirements.*

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(3) *Monitoring Conditions.*

Section (d)(3) sets forth the general monitoring requirements while sections (e) and (f) set forth the specific monitoring requirements as well as identify which of the following general monitoring requirements in section (d)(3) are applicable for each monitored component or system identified in sections (e) and (f).

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(3.2) As specifically provided for in sections (e) and (f), manufacturers shall define monitoring conditions in accordance with the criteria in sections (d)(3.2.1) through (3.2.3). The requirements of section (d)(3.2) shall be phased in as follows: 30 percent of all 2005 model year vehicles, 60 percent of all 2006 model year vehicles, and 100 percent of all 2007 and subsequent model year vehicles. Manufacturers may use an alternate phase-in schedule in lieu of the required phase-in schedule if the alternate phase-in schedule provides for equivalent compliance volume as defined in section (c) with the exception that 100 percent of 2007 and subsequent model year vehicles shall comply with the requirements. Small volume manufacturers shall meet the requirements on 100 percent of 2007 and subsequent model year vehicles but shall not be required to meet the specific phase-in requirements

for the 2005 and 2006 model years.

(3.2.1) Manufacturers shall define monitoring conditions that, in addition to meeting the criteria in section (d)(3.1), ensure that the monitor yields an in-use performance ratio (as defined in section (d)(4)) that meets or exceeds the minimum acceptable in-use monitor performance ratio on in-use vehicles. For purposes of this regulation, except as provided below in section (d)(3.2.1)(~~DG~~), the minimum acceptable in-use monitor performance ratio is:

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(~~DG~~) For interim years:

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~~(vi) for 2016 through 2018 model year medium-duty vehicles certified to an engine dynamometer tailpipe emission standard and 2019 through 2021 model year passenger cars, light-duty trucks, and medium-duty vehicles certified to a chassis dynamometer tailpipe emission standard, 0.100 (vi) for diesel PM filter filtering performance monitors (section (f)(9.2.1)) and missing substrate monitors (section (f)(9.2.5)) not using the denominator criteria in section (d)(4.3.2)(G):~~

a. for passenger cars, light-duty trucks, and MDPVs certified to a chassis dynamometer tailpipe emission standard:

1. for the 2019 through 2021 model years, 0.100

2. for the 2022 through 2025 model years, 0.150

3. for the 2026 through 2028 model years meeting Option 1 for the PM threshold in Table 3 at the beginning of section (f), 0.336

4. for the 2026 through 2028 model years meeting Option 2 for the PM threshold in Table 3 at the beginning of section (f), 0.150

b. for medium-duty vehicles (except MDPVs) certified to a chassis dynamometer tailpipe emission standard:

1. for the 2019 through 2021 model years, 0.100

2. for the 2022 through 2025 model years, 0.150

c. for medium-duty vehicles (including MDPVs) certified to an engine dynamometer tailpipe emission standard:

1. for the 2016 through 2018 model years, 0.100

2. for the 2019 through 2025 model years, 0.300

3. for the 2026 through 2028 model years meeting Option 1 in section (f)(9.2.1)(A)(ii)e.1., 0.336

4. for the 2026 through 2028 models years meeting Option 2 in section (f)(9.2.1)(A)(ii)e.2., 0.150

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(e) *Monitoring Requirements for Gasoline/Spark-Ignited Engines.*

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(11) *Cold Start Emission Reduction Strategy Monitoring*

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(11.2) *Malfunction Criteria:*

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(11.2.3) Cold start catalyst heating monitor: For 20 percent of 2026, 50 percent of 2027, and 100 percent of 2028 and subsequent model year vehicles utilizing catalyst heating through combustion inefficiency during idle in park or neutral at cold start, except as provided for in section (e)(11.2.3)(C), the OBD II system shall monitor the commanded (or delivered, if feasible) extra cold start exhaust heat energy directed to the catalyst during idle in park or neutral. The monitor shall begin when the engine starts and the conditions of the CSERS monitoring conditions (as defined in section (c)) are met, and shall continue no longer than 30 seconds after engine start. Monitoring is not required if the idle operation in park or neutral during the first 30 seconds after engine start is less than 10 seconds.

(A) The OBD II system shall detect a malfunction of the extra cold start exhaust heat energy delivery to the catalyst when any of the following occurs:

(i) The heat energy delivery fails to achieve at least 20 percent of the additional element commanded by the cold start strategy (e.g., if an additional 20 degrees of spark retard are requested to provide additional heat to the catalyst during nominal cold starts on a properly functioning vehicle, the monitor must detect a malfunction if the strategy fails to command at least 4 degrees of additional spark retard). The additional element commanded by the cold start strategy shall be determined by comparing the commanded value of the element in a properly functioning vehicle during cold start with the commanded value of the element in a properly functioning fully warmed-up vehicle. A fully warmed-up vehicle shall be defined by driving the vehicle until the engine coolant and/or block temperature achieves the targeted regulated temperature for at least 2 minutes prior to shutting the engine off and then restarting the engine within 60 seconds of shut off.

- (ii) The malfunction causes a vehicle's emissions to be equal to or above any of the applicable emission thresholds set forth in Table 1 in the beginning of section (e).
- (B) For purposes of meeting the requirements in section (e)(11.2.3)(A) above, the OBD II system must monitor the commanded (or delivered, if feasible) extra cold start exhaust heat energy directed to the catalyst during idle conditions (e.g., increasing airflow, increasing fuel flow, applying torque reserve or retarding spark timing, altering variable valve timing) by one of the methods defined below:
 - (i) Increased airflow into the engine: the monitor shall compare the measured or modeled airflow amount, averaged over the monitoring window, to the airflow amount required for proper heating of the catalyst, averaged over the same monitoring window.
 - (ii) Final commanded torque reserve/spark retard: the monitor shall compare the final commanded torque reserve/spark retard, averaged over the monitoring window, to the nominal torque reserve/spark retard required for proper heating of the catalyst over the same monitoring window.
 - (iii) Catalyst temperature: the monitor shall compare the increase in the measured or modeled catalyst temperature, averaged over the monitoring window, to the expected increase in catalyst temperature over the same monitoring window.
- (C) Vehicles are exempt from the cold start catalyst heating monitoring requirements in section (e)(11.2.3)(A) if:
 - (i) Disabling the CSERS would not cause the vehicle to exceed the full useful life emission standards through the demonstration of a cold start FTP test cycle with the CSERS fully disabled (i.e., with the system configured to the fully warmed-up values as if the vehicle was shut off after the engine coolant and/or block temperature achieve the targeted regulated temperature for at least 2 minutes and immediately restarted within 60 seconds), or
 - (ii) The vehicle does not use increased air, increased fuel flow, and/or combustion efficiency degradation to accelerate aftertreatment heating to reduce cold start emissions (e.g., catalyst is only electrically-heated).
- (D) For purposes of meeting the monitoring exemption criterion in section (e)(11.2.3)(C)(i) on vehicles that utilize both electrically heated catalysts monitored in accordance with section (e)(2) and accelerated catalyst heating based on engine operating conditions, the manufacturer is not required to disable the electrically heated catalyst during the testing but may not increase electric heating beyond the levels of a properly functioning emission control system.

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(14) *Direct Ozone Reduction (DOR) System Monitoring*

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(14.2) Malfunction Criteria:

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(14.2.2) For Low Emission Vehicle III applications: and Low Emission Vehicle IV applications:

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(17) *Exceptions to Monitoring Requirements*

(17.1) Except as provided in sections (e)(17.1.1) through (17.1.3), (e)(17.1.4)(B), and (e)(17.1.5) below, upon request of a manufacturer or upon the best engineering judgment of the ARB, the Executive Officer may revise the emission threshold for a malfunction on any diagnostic required in section (e) if the most reliable monitoring method developed requires a higher threshold to prevent false indications of a malfunction.

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(17.1.5) For Low Emission III SULEV20 vehicles, in lieu of the NMOG+NO_x emission threshold set forth in Table 1 in the beginning of section (e), manufacturers may use a malfunction criterion of 3.25 times the applicable NMOG+NO_x standard for the first three model years a vehicle is certified, but no later than the 2025 model year. For example, for SULEV20 vehicles first certified to the SULEV20 standard in the 2024 model year, the manufacturer may use the 3.25 multiplier for the 2024 and 2025 model years and shall use the NMOG+NO_x emission threshold set forth in Table 1 in the beginning of section (e) for the 2026 and subsequent model years.

(17.1.6) For Low Emission Vehicle IV applications:

(A) Alternate malfunction criteria: The manufacturer shall use the following malfunction criteria (with the NMOG+NO_x and CO multipliers to be used with the applicable standard (e.g., 2.0 times the NMOG+NO_x standard)):

(i) For vehicles certified to the LEV IV ULEV125, LEV IV ULEV70, LEV IV ULEV50, LEV IV SULEV30, LEV IV SULEV20, LEV IV ULEV200, LEV IV SULEV170, LEV IV SULEV150, LEV IV ULEV400, LEV IV ULEV270, LEV IV SULEV230, or LEV IV SULEV200 emission category, except as provided for LEV IV SULEV20 vehicles in sections (e)(17.1.6)(A)(v) and (vi), the manufacturer shall use the malfunction criteria described for the same vehicle emission category for Low Emission Vehicle III applications in Table 1 in the beginning of section (e) (e.g., a Low Emission Vehicle IV vehicle certified to the LEV IV ULEV50 category shall use the same malfunction criteria as the Low Emission Vehicle III

vehicle certified to the ULEV50 category in Table 1, a Low Emission Vehicle IV vehicle certified to the LEV IV SULEV170 category shall use the same malfunction criteria as the Low Emission Vehicle III chassis certified medium-duty vehicles (except MDPVs) in Table 1).

- (ii) For passenger cars, light-duty trucks, and chassis-certified MDPVs not covered under section (e)(17.1.6)(A)(i) above, except as provided for LEV IV SULEV15 vehicles in section (e)(17.1.6)(A)(vii):

Table 1-A

<u>Vehicle Emission Category</u>	<u>Monitor Thresholds (Except Catalyst)</u>			<u>Catalyst Monitor Thresholds</u>
	<u>NMOG+NOx Multiplier</u>	<u>CO Multiplier</u>	<u>PM Threshold (mg/mi)</u>	<u>NMOG+NOx Multiplier</u>
<u>LEV IV ULEV60</u>	<u>2.00</u>	<u>1.50</u>	<u>17.50</u>	<u>2.00</u>
<u>LEV IV ULEV40</u>	<u>2.25</u>	<u>1.50</u>	<u>17.50</u>	<u>2.25</u>
<u>LEV IV SULEV25</u>	<u>2.80</u>	<u>2.50</u>	<u>17.50</u>	<u>2.80</u>
<u>LEV IV SULEV15</u>	<u>3.33</u>	<u>2.50</u>	<u>17.50</u>	<u>3.33</u>

- (iii) For chassis certified medium-duty vehicles with a GVWR of less than or equal to 10,000 lbs. not covered under section (e)(17.1.6)(A)(i) above:

Table 1-B

<u>Vehicle Emission Category</u>	<u>Monitor Thresholds (Except Catalyst)</u>			<u>Catalyst Monitor Thresholds</u>
	<u>NMOG+NOx Multiplier</u>	<u>CO Multiplier</u>	<u>PM Threshold (mg/mi)</u>	<u>NMOG+NOx Multiplier</u>
<u>LEV IV SULEV125</u>	<u>1.75</u>	<u>1.50</u>	<u>17.50</u>	<u>2.00</u>
<u>LEV IV SULEV100</u>	<u>1.75</u>	<u>1.50</u>	<u>17.50</u>	<u>2.00</u>

<u>LEV IV SULEV85</u>	<u>2.00</u>	<u>1.50</u>	<u>17.50</u>	<u>2.50</u>
<u>LEV IV SULEV75</u>	<u>2.00</u>	<u>1.50</u>	<u>17.50</u>	<u>2.50</u>

(iv) For chassis certified medium-duty vehicles with a GVWR between 10,000 and 14,000 lbs. not covered under section (e)(17.1.6)(A)(i) above:

Table 1-C

<u>Vehicle Emission Category</u>	<u>Monitor Thresholds (Except Catalyst)</u>			<u>Catalyst Monitor Thresholds</u>
	<u>NMOG+NOx Multiplier</u>	<u>CO Multiplier</u>	<u>PM Threshold (mg/mi)</u>	<u>NMOG+NOx Multiplier</u>
<u>LEV IV SULEV175</u>	<u>1.50</u>	<u>1.50</u>	<u>17.50</u>	<u>1.75</u>
<u>LEV IV SULEV150</u>	<u>1.75</u>	<u>1.50</u>	<u>17.50</u>	<u>2.00</u>
<u>LEV IV SULEV125</u>	<u>2.00</u>	<u>1.50</u>	<u>17.50</u>	<u>2.25</u>
<u>LEV IV SULEV100</u>	<u>2.00</u>	<u>1.50</u>	<u>17.50</u>	<u>2.50</u>

(v) For LEV IV SULEV20 vehicles that were not certified to the Low Emission Vehicle III SULEV20 standards in a previous model year, in lieu of the NMOG+NOx emission thresholds set forth in section (e)(17.1.6)(A)(i), manufacturers may use a malfunction criterion of 3.25 times the applicable NMOG+NOx standard for the first three model years a vehicle is certified, but no later than the 2030 model year. For example, for LEV IV SULEV20 vehicles first certified to the LEV IV SULEV20 standard in the 2029 model year, the manufacturer may use the 3.25 multiplier for the 2029 and 2030 model years and shall use the NMOG+NOx emission threshold set forth in section (e)(17.1.6)(A)(i) for the 2031 and subsequent model years.

(vi) For LEV IV SULEV20 vehicles that were first certified to the Low Emission Vehicle III SULEV20 standards in the 2024 or 2025 model year, in lieu of the NMOG+NOx emission thresholds set forth in section (e)(17.1.6)(A)(i), the manufacturer may use a malfunction

criterion of 3.25 times the applicable NMOG+NO_x standard for the following vehicles:

- a. 2025 and 2026 model year LEV IV SULEV20 vehicles that were first certified to the Low Emission Vehicle III SULEV20 standard in the 2024 model year, and
- b. 2026 and 2027 model year LEV IV SULEV20 vehicles that were first certified to the Low Emission Vehicle III SULEV20 standard in the 2025 model year.

(vii) For LEV IV SULEV15 vehicles, in lieu of the NMOG+NO_x emission thresholds set forth in section (e)(17.1.6)(A)(ii), manufacturers may use a malfunction criterion of 4.33 times the applicable NMOG+NO_x standard for the first three model years a vehicle is certified, but no later than the 2030 model year. For example, for LEV IV SULEV15 vehicles first certified to the LEV IV SULEV15 standard in the 2029 model year, the manufacturer may use the 4.33 multiplier for the 2029 and 2030 model years and shall use the NMOG+NO_x emission threshold set forth in section (e)(17.1.6)(A)(ii) for the 2031 and subsequent model years.

(B) Alternate malfunction criteria for engine cooling system thermostat monitor: For the thermostat monitor malfunction criteria specified under section (e)(10.2.1)(A)(ii) where fuel, spark timing, and/or other coolant temperature-based modifications to the engine control strategies would not cause an emissions increase of 50 percent or more of the applicable standards, the manufacturer shall base the "applicable standards" on the standards to which the vehicle is certified except as provided below:

- (i) For passenger cars, light-duty trucks, and chassis-certified MDPVs certified to the LEV IV SULEV15 category, the manufacturer shall base the "applicable standards" on the LEV IV SULEV20 standards.
- (ii) For chassis certified medium-duty vehicles with a GVWR of less than or equal to 10,000 lbs. and certified to the LEV IV SULEV125, LEV IV SULEV100, LEV IV SULEV85, or LEV IV SULEV75 category, the manufacturer shall base the "applicable standards" on the LEV IV SULEV150 standards.
- (iii) For chassis certified medium-duty vehicles with a GVWR between 10,000 and 14,000 lbs. and certified to the LEV IV SULEV175, LEV IV SULEV150, LEV IV SULEV125, or LEV IV SULEV100 category, the manufacturer shall base the "applicable standards" on the LEV IV SULEV200 standards.

(C) Alternate test-out criteria: For the test-out criteria (i.e., criteria used to determine if the specific component or function is exempt from the monitoring requirements) specified in sections (e)(11.2.3)(C) and (e)(15.1.2), when determining if no malfunction can cause emissions to exceed the standards or increase by the maximum allowed percentage of the standards, the manufacturer shall use the full useful life FTP exhaust emission standards to which the vehicle is certified except as provided below:

(i) For passenger cars, light-duty trucks, and chassis-certified MDPVs certified to the LEV IV SULEV15 category, the manufacturer shall use the LEV IV SULEV20 standards.

(ii) For chassis certified medium-duty vehicles with a GVWR of less than or equal to 10,000 lbs. and certified to the LEV IV SULEV125, LEV IV SULEV100, LEV IV SULEV85, or LEV IV SULEV75 category, the manufacturer shall use the LEV IV SULEV150 standards.

(iii) For chassis certified medium-duty vehicles with a GVWR between 10,000 and 14,000 lbs. and certified to the LEV IV SULEV175, LEV IV SULEV150, LEV IV SULEV125, or LEV IV SULEV100 category, the manufacturer shall use the LEV IV SULEV200 standards.

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(f) *Monitoring Requirements for Diesel/Compression-Ignition Engines.*

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Table 3

LEV-III OBD II Diesel PM Filter Filtering Performance Monitor Threshold					
Exhaust Standards		PM Filter Filtering Performance Monitor Threshold			
Vehicle Type	Vehicle Emission Category	NMOG+ NOx Mult. ¹	CO Mult. ¹	PM Mult.	PM THD (mg/mi)
Passenger Cars, Light-Duty Trucks, and Chassis Certified MDPVs	LEV160	1.50	1.50	N/A	17.50 <u>Up to and including the 2025 model year: 17.50</u> Option 1 ⁵ : 2026-2028MY: 17.50 2029+MY: 10.00 Option 2 ⁵ : 2026+MY: 10.00
	ULEV125				
	ULEV70	2.00			
	ULEV50				
	SULEV30	2.50	2.50		
SULEV20 ⁴					
2016MY-2018MY Chassis Certified MDVs (except MDPVs)	All MDV Emission Categories	N/A	N/A	1.75 ²	17.50 ³
2019+MY Chassis Certified MDVs (except MDPVs) <u>8,500-10,000 lbs. GVWR</u>	All MDV Emission Categories	1.50	1.50	1.50 ²	<u>Up to and including the 2028MY: 17.50³</u> <u>2029+MY: 14.00</u>
<u>2019+MY Chassis Certified MDVs (except MDPVs) 10,001-14,000 lbs. GVWR</u>	<u>All MDV Emission Categories</u>	<u>1.50</u>	<u>1.50</u>	<u>1.50²</u>	<u>17.50³</u>

1. Applies to 2019 and subsequent model years
2. Applies to vehicles not included in the phase-in of the PM standards set forth in title 13, CCR section 1961.2(a)(2)(B)2 and (a)(2)(D)3.
3. Applies to vehicles included in the phase-in of the PM standards set forth in title 13, CCR section 1961.2(a)(2)(B)2 and (a)(2)(D)3.
4. Manufacturer shall use the 2.50 times NMOG+NOx multiplier for vehicles not using the provisions of section (f)(17.1.7)
5. All vehicles within a specific test group shall meet the same Option (either Option 1 or Option 2). A test group that is carried over to a subsequent model year(s) may use one Option one year, then use the other Option another year. In order for a test group to qualify for the provisions of sections (h)(2.2.1) and (k)(7.3), the PM filter filtering performance monitor must detect a malfunction before emissions exceed the PM threshold under Option 2 (e.g., the PM filter filtering performance monitor may not have a deficiency for not being able to detect a malfunction before emissions exceed the PM threshold under Option 2) and must meet the minimum acceptable ratio in section (d)(3.2.1)(G)(vi).

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(9) *Particulate Matter (PM) Filter Monitoring*

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(9.2) Malfunction Criteria:

(9.2.1) Filtering Performance:

- (A) The OBD II system shall detect a malfunction prior to a decrease in the filtering capability of the PM filter that would cause a vehicle's emissions to exceed:

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- (ii) For medium-duty vehicles (including MDPVs) certified to an engine dynamometer tailpipe emission standard:

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- e. For 2026 and subsequent model year vehicles, the applicable NOx standard by more than 0.2 g/bhp-hr (e.g., cause NOx emissions to exceed 0.4 g/bhp-hr if the exhaust emission standard is 0.2 g/bhp-hr) as measured from an applicable cycle emission test, or the PM thresholds (as measured from an applicable cycle emission test cycle) from either Option 1 or Option 2 as described below:

1. Option 1: 0.03 g/bhp-hr PM for 2026 through 2028 model year vehicles, and 0.02 g/bhp-hr PM for 2029 and subsequent model year vehicles; or
2. Option 2: 0.02 g/bhp-hr PM for 2026 and subsequent model year vehicles.

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(14) *Air Conditioning (A/C) System Component Monitoring*

- (14.1) Requirement: On all 2019 and subsequent model year Low Emission Vehicle III applications and Low Emission Vehicle IV applications, if a vehicle incorporates an engine control strategy that is altered when the A/C system

is on, the OBD II system shall monitor all electronic air conditioning system components for malfunctions that cause the system to fail to invoke the alternate control while the A/C system is on or cause the system to invoke the alternate control while the A/C system is off. Additionally, the OBD II system shall monitor for malfunction all electronic air conditioning system components that are used as part of the diagnostic strategy for any other monitored system or component. As applicable, the A/C system shall also be subject to the comprehensive component monitoring requirements in section (f)(15.2.3)(B).

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(17) *Exceptions to Monitoring Requirements*

(17.1) Except as provided in sections (f)(17.1.1) through (17.1.4) below, upon request of a manufacturer or upon the best engineering judgment of the ARB, the Executive Officer may revise the emission threshold for a malfunction on any diagnostic required in section (f) for medium-duty vehicles if the most reliable monitoring method developed requires a higher threshold to prevent false indications of a malfunction. Additionally, upon the request of a manufacturer or upon the best engineering judgment of the ARB, the Executive Officer may revise the emission threshold for a malfunction on any diagnostic required in section (f) for passenger cars, light-duty trucks, and MDPVs certified to a chassis dynamometer tailpipe emission standard if the Executive Officer determines that (1) the most reliable monitoring method developed requires a higher threshold to prevent false indications of a malfunction; (2) a higher threshold is needed under section (e)(17.1) for a corresponding diagnostic in section (e) (e.g., EGR system, misfire, exhaust gas sensor, aftertreatment) for light-duty vehicles; and (3) the threshold for the diagnostic on the diesel vehicle is less than or equal to the threshold required for the corresponding diagnostic on the gasoline vehicle. Additionally, except as specified in section (f)(9.2.1)(A)(iii), for 2007 through 2013 model year light-duty vehicles and 2007 through 2015 model year medium-duty vehicles, the Executive Officer may revise the PM filter malfunction criteria of section (f)(9.2.1) to exclude detection of specific failure modes (e.g., combined failure of partially melted and partially cracked substrates) if the most reliable monitoring method developed requires the exclusion of specific failure modes to prevent false indications of a malfunction.

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(17.1.7) For Low Emission Vehicle III SULEV20 vehicles, in lieu of the NMOG+NOx emission threshold set forth in Tables 2 and 3 in the beginning of section (f), manufacturers may use a malfunction criterion of 3.25 times the applicable NMOG+NOx standard for the first three model

years a vehicle is certified, but no later than the 2025 model year. For example, for SULEV20 vehicles first certified to the SULEV20 standard in the 2024 model year, the manufacturer may use the 3.25 multiplier for the 2024 and 2025 model years and shall use the NMOG+NO_x emission threshold set forth in Tables 2 and 3 in the beginning of section (f) for the 2026 and subsequent model years.

(17.1.8) For Low Emission Vehicle IV applications:

(A) Alternate malfunction criteria: The manufacturer shall use the following malfunction criteria (with the multipliers to be used with the applicable standard (e.g., 2.0 times the NMOG+NO_x standard)):

- (i) For vehicles certified to the LEV IV ULEV125, LEV IV ULEV70, LEV IV ULEV50, LEV IV SULEV30, LEV IV SULEV20, LEV IV ULEV250, LEV IV ULEV200, LEV IV SULEV170, LEV IV SULEV150, LEV IV ULEV400, LEV IV ULEV270, LEV IV SULEV230, or LEV IV SULEV200 emission category, except as provided for LEV IV SULEV20 vehicles in sections (f)(17.1.8)(A)(v) and (vi), the manufacturer shall use the malfunction criteria described for the same vehicle emission category for Low Emission Vehicle III applications in Tables 2 and 3 in the beginning of section (f) (e.g., a Low Emission Vehicle IV vehicle certified to the LEV IV ULEV50 category shall use the same malfunction criteria as the Low Emission Vehicle III vehicle certified to the ULEV50 category in Tables 2 and 3, a Low Emission Vehicle IV vehicle certified to the LEV IV SULEV170 category shall use the same malfunction criteria as the Low Emission Vehicle III 2019+ model year chassis certified medium-duty vehicles (except MDPVs) in Tables 2 and 3).
- (ii) For passenger cars, light-duty trucks, and chassis-certified MDPVs not covered under section (f)(17.1.8)(A)(i) above, except as provided for LEV IV SULEV15 vehicles in section (f)(17.1.8)(A)(vii):

Table 2-A

<u>Vehicle Emission Category</u>	<u>Monitor Threshold¹</u>			<u>Aftertreatment Monitor and Exhaust Gas Sensor Threshold² Multiplier</u>		
	<u>NMOG+NO_x Multiplier</u>	<u>CO Multiplier</u>	<u>PM</u>	<u>NMOG+NO_x</u>	<u>CO</u>	<u>PM</u>
<u>LEV IV ULEV60</u>	<u>2.00</u>	<u>1.50</u>	<u>2.00 multiplier³ or Table 3 threshold⁴</u>	<u>2.00</u>	<u>1.50</u>	<u>2.00</u>
<u>LEV IV ULEV40</u>	<u>2.25</u>	<u>1.50</u>	<u>2.00 multiplier³ or Table 3 threshold⁴</u>	<u>2.25</u>	<u>1.50</u>	<u>2.00</u>
<u>LEV IV SULEV25</u>	<u>2.80</u>	<u>2.50</u>	<u>2.00 multiplier³ or Table 3 threshold⁴</u>	<u>2.80</u>	<u>2.50</u>	<u>2.00</u>
<u>LEV IV SULEV15</u>	<u>3.33</u>	<u>2.50</u>	<u>2.00 multiplier³ or Table 3 threshold⁴</u>	<u>3.33</u>	<u>2.50</u>	<u>2.00</u>

1. Applies to (f)(3.2.5), (f)(4), (f)(6), (f)(7), (f)(9.2.1), (f)(9.2.2), (f)(9.2.4)(B), (f)(12)-(f)(14)

2. Applies to (f)(1), (f)(2), (f)(5), (f)(8), and (f)(9.2.4)(A)

3. 2.00 multiplier applies to (f)(3.2.5), (f)(4), (f)(6), (f)(7), (f)(9.2.2), (f)(9.2.4)(B), (f)(12), and (f)(13)

4. For (f)(9.2.1), the PM thresholds for passenger cars, light-duty trucks, and chassis certified MDPVs in Table 3 at the beginning of section (f) apply

(iii) For chassis certified medium-duty vehicles with a GVWR of less than or equal to 10,000 lbs. not covered under section (f)(17.1.8)(A)(i) above:

Table 2-B

<u>Vehicle Emission Category</u>	<u>Monitor Threshold¹</u>			<u>Aftertreatment Monitor and Exhaust Gas Sensor Threshold² Multiplier</u>		
	<u>NMOG+NO_x Multiplier</u>	<u>CO Multiplier</u>	<u>PM</u>	<u>NMOG+NO_x</u>	<u>CO</u>	<u>PM</u>
<u>LEV IV SULEV125</u>	<u>1.80</u>	<u>1.50</u>	<u>2.00 multiplier³ or Table 3 threshold⁴</u>	<u>2.10</u>	<u>1.50</u>	<u>2.00</u>
<u>LEV IV SULEV100</u>	<u>2.25</u>	<u>1.50</u>	<u>2.00 multiplier³ or Table 3 threshold⁴</u>	<u>2.63</u>	<u>1.50</u>	<u>2.00</u>
<u>LEV IV SULEV85</u>	<u>2.65</u>	<u>1.50</u>	<u>2.00 multiplier³ or Table 3 threshold⁴</u>	<u>3.09</u>	<u>1.50</u>	<u>2.00</u>
<u>LEV IV SULEV75</u>	<u>3.00</u>	<u>1.50</u>	<u>2.00 multiplier³ or Table 3 threshold⁴</u>	<u>3.50</u>	<u>1.50</u>	<u>2.00</u>

1. Applies to (f)(3.2.5), (f)(4), (f)(6), (f)(7), (f)(9.2.1), (f)(9.2.2), (f)(9.2.4)(B), (f)(12)-(f)(14)

2. Applies to (f)(1), (f)(2), (f)(5), (f)(8), and (f)(9.2.4)(A)

3. 2.00 multiplier applies to (f)(3.2.5), (f)(4), (f)(6), (f)(7), (f)(9.2.2), (f)(9.2.4)(B), (f)(12), and (f)(13)

4. For (f)(9.2.1), the PM thresholds for 2019+MY chassis certified MDVs (except MDPVs) 8,500-10,000 lbs. GVWR in Table 3 at the beginning of section (f) apply

(iv) For chassis certified medium-duty vehicles with a GVWR between 10,000 and 14,000 lbs. not covered under section (f)(17.1.8)(A)(i) above:

Table 2-C

<u>Vehicle Emission Category</u>	<u>Monitor Threshold¹</u>			<u>Aftertreatment Monitor and Exhaust Gas Sensor Threshold² Multiplier</u>		
	<u>NMOG+NO_x Multiplier</u>	<u>CO Multiplier</u>	<u>PM</u>	<u>NMOG+NO_x</u>	<u>CO</u>	<u>PM</u>
<u>LEV IV SULEV175</u>	<u>1.71</u>	<u>1.50</u>	<u>2.00 multiplier³ or 17.50 mg/mi⁴</u>	<u>2.00</u>	<u>1.50</u>	<u>2.00</u>
<u>LEV IV SULEV150</u>	<u>2.00</u>	<u>1.50</u>	<u>2.00 multiplier³ or 17.50 mg/mi⁴</u>	<u>2.33</u>	<u>1.50</u>	<u>2.00</u>
<u>LEV IV SULEV125</u>	<u>2.40</u>	<u>1.50</u>	<u>2.00 multiplier³ or 17.50 mg/mi⁴</u>	<u>2.80</u>	<u>1.50</u>	<u>2.00</u>
<u>LEV IV SULEV100</u>	<u>3.00</u>	<u>1.50</u>	<u>2.00 multiplier³ or 17.50 mg/mi⁴</u>	<u>3.50</u>	<u>1.50</u>	<u>2.00</u>

1. Applies to (f)(3.2.5), (f)(4), (f)(6), (f)(7), (f)(9.2.1), (f)(9.2.2), (f)(9.2.4)(B), (f)(12)-(f)(14)

2. Applies to (f)(1), (f)(2), (f)(5), (f)(8), and (f)(9.2.4)(A)

3. 2.00 multiplier applies to (f)(3.2.5), (f)(4), (f)(6), (f)(7), (f)(9.2.2), (f)(9.2.4)(B), (f)(12), and (f)(13)

4. 17.50 mg/mi applies to (f)(9.2.1)

(v) For LEV IV SULEV20 vehicles that were not certified to the Low Emission Vehicle III SULEV20 standards in a previous model year, in lieu of the NMOG+NO_x emission thresholds set forth in section (f)(17.1.8)(A)(i), manufacturers may use a malfunction criterion of 3.25 times the applicable NMOG+NO_x standard for the first three model years a vehicle is certified, but no later than the 2030 model year. For example, for LEV IV SULEV20 vehicles first certified to the LEV IV SULEV20 standard in the 2029 model year, the manufacturer may use the 3.25 multiplier for the 2029 and 2030 model years and shall use the NMOG+NO_x emission threshold set forth in section (f)(17.1.8)(A)(i) for the 2031 and subsequent model years.

- (vi) For LEV IV SULEV20 vehicles that were first certified to the Low Emission Vehicle III SULEV20 standards in the 2024 or 2025 model year, in lieu of the NMOG+NO_x emission thresholds set forth in section (f)(17.1.8)(A)(i), the manufacturer may use a malfunction criterion of 3.25 times the applicable NMOG+NO_x standard for the following vehicles:
- a. 2025 and 2026 model year LEV IV SULEV20 vehicles that were first certified to the Low Emission Vehicle III SULEV20 standard in the 2024 model year, and
 - b. 2026 and 2027 model year LEV IV SULEV20 vehicles that were first certified to the Low Emission Vehicle III SULEV20 standard in the 2025 model year.
- (vii) For LEV IV SULEV15 vehicles, in lieu of the NMOG+NO_x emission thresholds set forth in section (f)(17.1.8)(A)(ii), manufacturers may use a malfunction criterion of 4.33 times the applicable NMOG+NO_x standard for the first three model years a vehicle is certified, but no later than the 2030 model year. For example, for LEV IV SULEV15 vehicles first certified to the LEV IV SULEV15 standard in the 2029 model year, the manufacturer may use the 4.33 multiplier for the 2029 and 2030 model years and shall use the NMOG+NO_x emission threshold set forth in section (f)(17.1.8)(A)(ii) for the 2031 and subsequent model years.
- (B) Alternate malfunction criteria for engine cooling system thermostat monitor: For the thermostat monitor malfunction criteria specified under section (f)(11.2.1)(A)(ii) where fuel, spark timing, and/or other coolant temperature-based modifications to the engine control strategies would not cause an emissions increase of 50 percent or more of the applicable standards, the manufacturer shall base the "applicable standards" on the standards to which the vehicle is certified except as provided below:
- (i) For passenger cars, light-duty trucks, and chassis-certified MDPVs certified to the LEV IV SULEV15 category, the manufacturer shall base the "applicable standards" on the LEV IV SULEV20 standards.
 - (ii) For chassis certified medium-duty vehicles with a GVWR of less than or equal to 10,000 lbs. and certified to the LEV IV SULEV125, LEV IV SULEV100, LEV IV SULEV85, or LEV IV SULEV75 category, the manufacturer shall base the "applicable standards" on the LEV IV SULEV150 standards.

(iii) For chassis certified medium-duty vehicles with a GVWR between 10,000 and 14,000 lbs. and certified to the LEV IV SULEV175, LEV IV SULEV150, LEV IV SULEV125, or LEV IV SULEV100 category, the manufacturer shall base the “applicable standards” on the LEV IV SULEV200 standards.

(C) Alternate test-out criteria:

For the test-out criteria (i.e., criteria used to determine if the specific component or function is exempt from the monitoring requirements) specified in sections (f)(1.2.3)(B), (f)(1.2.3)(D), (f)(6.2.6)(C), (f)(9.2.4)(A), (f)(9.2.4)(B), (f)(15.1.2), and (f)(15.2.2)(F)(ii), when determining if no malfunction can cause emissions to exceed the standards or increase by the maximum allowed percentage of the standards, the manufacturer shall use the full useful life FTP exhaust emission standards to which the vehicle is certified except as provided below:

(i) For passenger cars, light-duty trucks, and chassis-certified MDPVs certified to the LEV IV SULEV15 category, the manufacturer shall use the LEV IV SULEV20 standards.

(ii) For chassis certified medium-duty vehicles with a GVWR of less than or equal to 10,000 lbs. and certified to the LEV IV SULEV125, LEV IV SULEV100, LEV IV SULEV85, or LEV IV SULEV75 category, the manufacturer shall use the LEV IV SULEV150 standards.

(iii) For chassis certified medium-duty vehicles with a GVWR between 10,000 and 14,000 lbs. and certified to the LEV IV SULEV175, LEV IV SULEV150, LEV IV SULEV125, or LEV IV SULEV100 category, the manufacturer shall use the LEV IV SULEV200 standards.

* * * *

(h) Monitoring System Demonstration Requirements For Certification

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(2) Selection of Test Vehicles:

* * * *

(2.2) A manufacturer certifying one to five test groups in a model year shall provide emission test data from a test vehicle from one test group. A manufacturer certifying six to fifteen test groups in a model year shall provide emission test data from test vehicles from two test groups. A manufacturer certifying sixteen or more test groups in a model year shall provide emission test data from test vehicles from three test groups. The Executive Officer may waive the requirement for submittal of data from one or more of the test groups if data have been previously submitted for all of the test groups.

(2.2.1) If the manufacturer is certifying a 2026 through 2028 model year test group(s) with a PM filter filtering performance monitor meeting Option 2 in Table 3 at the beginning of section (f) or in section (f)(9.2.1)(A)(ii)e.2., and the PM filter monitor is not granted a deficiency for not meeting Option 2 or the minimum acceptable ratio in section (d)(3.2.1)(G)(vi), the manufacturer may implement one of the following options, but may not implement both options simultaneously on the same test group:

(A) Option A: When determining the number of test vehicles to test under section (h) for one of the following two model years, for each test group meeting Option 2 in the current model year, the manufacturer may exclude one test group from the total number of test groups being certified for one of the following two model years as long as the resulting total number of test groups is at least one. For example, a manufacturer certifying a test group that meets Option 2 in the 2027 model year may exclude one test group from the total count of test groups being certified in either the 2028 model year or the 2029 model year with the exception that at least one vehicle must be tested under section (h) for the 2028 and 2029 model years. A manufacturer certifying only one test group in one of the following two model years may not use this Option A for that model year.

(B) Option B: The manufacturer may use the provisions under section (k)(7.3.2).

* * * *

(6) *Evaluation Protocol:*

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(6.4) If the MIL does not illuminate when the systems or components are set at their limit(s), the criteria limit or the OBD II system is not acceptable.

* * * *

(6.4.2) Except as provided for in section (h)(6.4.1), in testing the catalyst (i.e., components monitored under (e)(1), (f)(2) or (f)(8)) or PM filter system, if the MIL first illuminates after emissions exceed the applicable emission threshold malfunction criteria specified in sections (e) and (f), the tested vehicle shall be retested with a less deteriorated catalyst or PM filter system (i.e., more of the applicable engine out pollutants are converted or trapped). Adjustment and testing of the catalyst or PM filter system's performance may be repeated until successful results are obtained. For the OBD II system to be approved, either of the following conditions must be satisfied by the test results:

* * * *

(B) The manufacturer demonstrates that the MIL illuminates within acceptable upper and lower limits of the malfunction criteria specified in sections (e)

and (f) for MIL illumination. The demonstration shall be deemed appropriate when the test results show:

- (i) The MIL is illuminated and emissions exceed the emission threshold malfunction criteria specified in sections (e) and (f) by 25 percent or less of the applicable standard (e.g., emissions are less than 2.0 times the applicable standard for an emission threshold malfunction criterion of 1.75 times the standard); and) except as provided in section (h)(6.4.2)(B)(iii).
- (ii) The MIL is not illuminated and emissions are below the emission threshold malfunction criteria specified in sections (e) and (f) by no more than 25 percent of the applicable standard (e.g., emissions are between 1.5 and 1.75 times the applicable standard for an emission threshold malfunction criterion of 1.75 times the standard) except as provided in section (h)(6.4.2)(B)(iii).
- (iii) For Low Emission Vehicle IV applications, the "applicable standard" mentioned in sections (h)(6.4.2)(B)(i) and (h)(6.4.2)(B)(ii) shall be based on the standards to which the vehicle is certified except as provided below:
 - a. For passenger cars, light-duty trucks, and chassis-certified MDPVs certified to the LEV IV SULEV15 category, the manufacturer shall base the "applicable standard" on the LEV IV SULEV20 standards.
 - b. For chassis certified medium-duty vehicles with a GVWR of less than or equal to 10,000 lbs. and certified to the LEV IV SULEV125, LEV IV SULEV100, LEV IV SULEV85, or LEV IV SULEV75 category, the manufacturer shall base the "applicable standard" on the LEV IV SULEV150 standards.
 - c. For chassis certified medium-duty vehicles with a GVWR between 10,000 and 14,000 lbs. and certified to the LEV IV SULEV175, LEV IV SULEV150, LEV IV SULEV125, or LEV IV SULEV100 category, the manufacturer shall base the "applicable standard" on the LEV IV SULEV200 standards.

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(k) *Deficiencies.*

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(7) Exceptions to Fines Requirements.

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(7.2) For 2013 through 2014 model year light-duty and medium-duty diesel vehicles that utilize PM sensors for PM filter filtering performance

monitoring (section (f)(9.2.1)(A)), in cases where the deficiency is for a monitor required to detect malfunctions of the PM filter filtering performance (section (f)(9.2.1)(A)), the PM sensor (section (f)(5.2.2)), or the PM sensor heater (section (f)(5.2.4)), the deficiency shall be exempt from the specified fines of section (k)(3) and the deficiency shall not be included in the count of deficiencies used in (k)(2) to determine the number of deficiencies subject to fines.

(7.3) If the manufacturer is certifying a 2026 through 2028 model year test group(s) with a PM filter filtering performance monitor meeting Option 2 in Table 3 at the beginning of section (f) or in section (f)(9.2.1)(A)(ii)e.2., and the PM filter monitor is not granted a deficiency for not meeting Option 2 or the minimum acceptable ratio in section (d)(3.2.1)(G)(vi), the manufacturer may implement one of the following options, but may not implement both options simultaneously on the same test group:

(7.3.1) Option A: The manufacturer may use the provisions under section (h)(2.2.1)(A).

(7.3.2) Option B: For the test group meeting Option 2 on 2026 through 2028 model year vehicles, a deficiency may be exempted from the specified fines of section (k)(3) and excluded from the count of deficiencies used in section (k)(2) to determine the number of deficiencies subject to fines. For example, a test group meeting Option 2 in the 2027 model year may be granted a deficiency that is exempt from the specific fines and excluded from the count of deficiencies for the 2027 model year.

* * * *

NOTE: Authority cited: Sections 38501, ~~38505~~, 38510, 39010, 39600, 39601, 39602.5, 43000.5, 43013, 43018, 43100, 43101, 43104, 43105, 43105.5 and 43106, Health and Safety Code; and Engine Manufacturers Association v. California Air Resources Board (2014) 231 Cal.App.4th 1022. Reference: Sections 38501, 38505, 38510, 39002, 39003, 39010, 39018, 39021.5, 39024, 39024.5, 39027, 39027.3, 39028, 39029, 39031, 39032, 39032.5, 39033, 39035, 39037.05, 39037.5, 39038, 39039, 39040, 39042, 39042.5, 39046, 39047, 39053, 39054, 39058, 39059, 39060, 39515, 39600, 39601, 39602.5, 43000, 43000.5, 43004, 43006, 43013, 43016, 43018, 43100, 43101, 43102, 43104, 43105, 43105.5, 43106, 43150, 43151, 43152, 43153, 43154, 43155, 43156, 43204, 43211 and 43212, Health and Safety Code.