



CCDET I

Student Guide

Clean Truck Check

Formerly Heavy-Duty Inspection & Maintenance (HD I/M)

Student Guide
July 2023



Transportation
Workforce
Institute



CCDET I

Course Outline

Clean Truck Check

Formerly Heavy-Duty Inspection & Maintenance (HD I/M)

Course Outline
July 2023



Transportation
Workforce
Institute

Table of Contents

Course Overview	2
I. Learning Objectives	2
II. Course Agenda	3
III. Course Information	5

Course Overview

This 6-hour course covers the requirements of the California Air Resources Board's **Clean Truck Check** regulation, formerly known as **Heavy-Duty Inspection and Maintenance (HD I/M)**. CARB's **Clean Truck Check** curriculum and certification exam are available for free online.

This **CCDET I: Clean Truck Check** course was developed for those who prefer in-person instruction and who would like hands-on instruction in performing the **SAE J1667 Snap Acceleration Smoke Test** and **Onboard Diagnostic Testing**. **The CCDET I version of Clean Truck check is not free. This in-person class costs \$175** and is administered by the California Council on Diesel Education and Technology (CCDET), not directly by CARB.

It is important to note that CARB remains the only credentialing entity for Clean Truck Check. Participants who complete this CCDET I course must still take and pass CARB's online exam to become Credentialed Testers under the regulation.

The CCDET I: Clean Truck Check course includes the environmental and health impacts of particulate matter, emission regulations for all heavy-duty commercial vehicles operated in California, using OBD devices, and hands-on instruction in both conducting emissions test using an OBD device and performing the SAE J1667 Snap-Acceleration Test procedure using a smoke meter.

I. Learning Objectives

Upon completion of the course, participants will be able to:

1. Identify health and environmental effects of pollution and particulate matter.
2. Identify smoke test regulations, requirements, and standards.
3. Correctly perform an emissions test using the OBD equipment provided.
4. Correctly conduct a visual inspection and complete the CARB Visual Inspection Form
5. Correctly perform the SAE Snap-Acceleration Test using equipment provided.

II. Course Agenda

The following tables provide the agenda for this 6-hour course. There will be a short break approximately every two hours. There will be one meal break after approximately four hours.

DAY 1 Schedule

Housekeeping

Introduction

- Housekeeping tasks
- Course overview and objectives
- Student Materials
- Restrooms
- Breaks

Classroom Instruction

- **Overview**
 - Review of Course Agenda
 - Overview of changes
 - Effective Date
 - Required Training
 - Available CCDET Courses
 - Requirements for Credentialed Testers
- **What is CTC?**
 - Basic requirements
 - Why do we need CTC?
 - Environmental and health impacts
- **Timelines and Administrative Topics**
 - Rollout Schedule
 - Owner Requirements
 - Notice to Submit to Testing
 - Fees
 - Database
 - CARB Resources
- **People, Entities, and Vehicles Subject to the Regulation**
 - Owner requirements to remain compliant
 - Who is subject to requirements?
 - Vehicle requirements
- **Roadside or Field Testing**
 - Driver Responsibilities
- **Periodic Testing**
 - Testing Frequency & Deadlines
- **What is OBD?**
- **Fail Procedures**
- **Non-OBD Emissions Testing**
 - Inspection Checklist Form
 - SAE J1667 Smoke Testing

California Council on Diesel Education and Technology

Course Outline: CCDET I: Clean Truck Check formerly HD I/M

Hands-on Lab

Hands-on Snap-Acceleration Test Procedures

- Shop Safety
- Inspection Checklist
- OBD Meter Test
- SAE J1667 Smoke Meter Test

Assessment

Assessment

- CARB Clean Truck Check Online Exam
- May be conducted on computer, tablet device, or mobile device
- Certificates and Credentialed Tester ID's are issued by CARB via email

III. Course Information

COURSE NAME:	CCDET I: Clean Truck Check (CTC)
APPROVED:	TBD
CLASS TIME:	6 Hours
PREREQUISITES:	None
TRAINING LOCATION:	
MAXIMUM CLASS SIZE:	20 Participants
TARGET AUDIENCE:	Technicians, Owners, and Managers responsible for Opacity Testing
CERTIFICATE(S):	Issued by CARB upon completion of CARB's online examination

TRAINING AIDS AND EQUIPMENT:

- | | |
|---|--|
| <input checked="" type="checkbox"/> Smart Board and/or Projector | <input checked="" type="checkbox"/> Set of maintenance tools |
| <input checked="" type="checkbox"/> Computer | <input checked="" type="checkbox"/> PowerPoint Presentation |
| <input checked="" type="checkbox"/> Whiteboard | <input checked="" type="checkbox"/> OBD Device |
| <input checked="" type="checkbox"/> Personal safety equipment | <input checked="" type="checkbox"/> Opacity Meter |
| <input checked="" type="checkbox"/> Maintenance reference documentation | |
| <input checked="" type="checkbox"/> Vehicle Keys | |

HANDOUTS:

- ☒ Exercise Handouts
- ☒ Participant Handouts

PARTICIPANT EVALUATION METHODS:

- Online examination on CARB's website

HANDOUTS

SAE J1667 Snap-Acceleration Procedure Summary

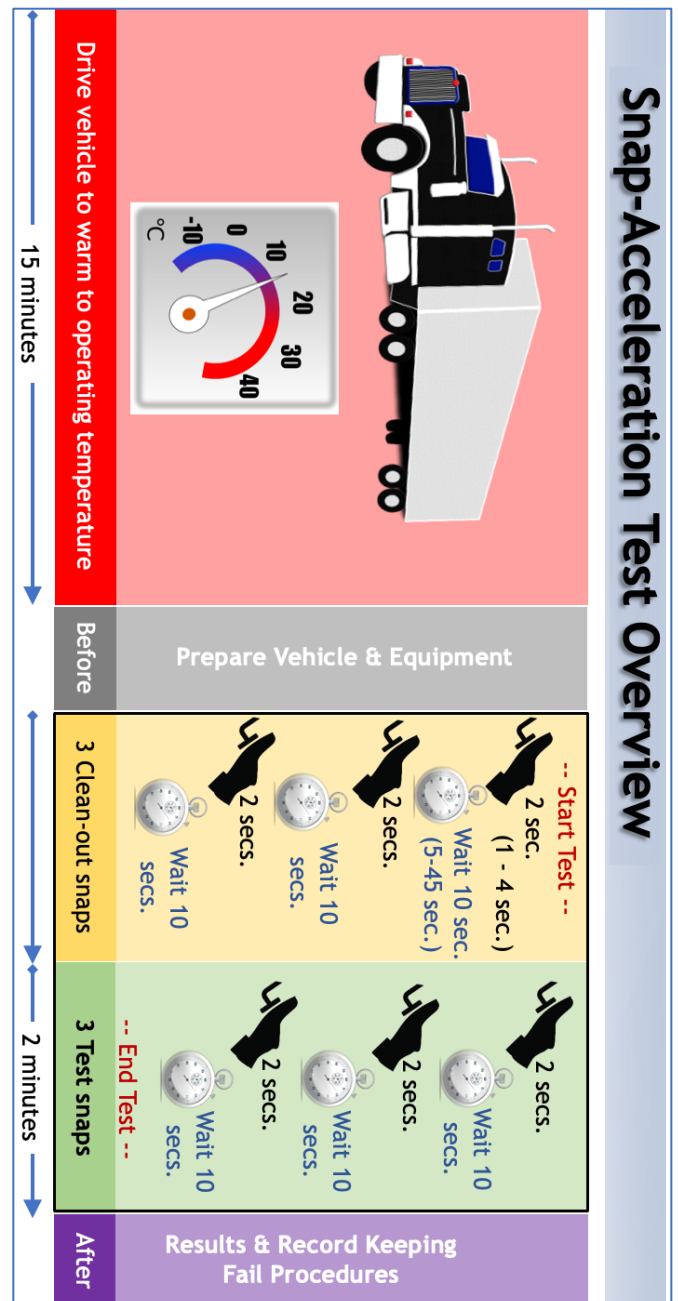
Vehicle Preparation & Safety Check	
Transmission	Manual: Neutral Automatic: Park
Wheels	Chocked or immobilized
Air Conditioning	Off
Engine Brake	Released
Anything altering normal acceleration	Deactivated
Throttle / Governor	Functioning normally
Exhaust Leaks	Fixed / None
Cautions:	
• Blue Smoke	Unburned hydrocarbons (oil)
• White Smoke	Water vapor (possible coolant leak)
• Black Smoke	Rich mixture / Unburned fuel

Ambient Air Test Conditions	
Altitude	1,500 ft above sea level see Appendix B
Air Temperature	Below 38°F or above 86°F see Appendix B
Wind	Avoid or Use wind-sheltered area
Dry Air Density	0.0567 to 0.0771 lbm/ft ³ see Appendix B
Humidity	Avoid fog, rain, & snow

Smokemeter Calibration	
Warm-up	Warm meter & stabilize per manufacturer
Zero	No blockage of light beam & Adjust to 0.0% ± 1.0% Opacity
Full Scale	Completely block out light & Adjust to 100% ± 1.0% Opacity
Span (if required; K readout meters)	Use known neutral density filter & adjust to ±0.10 m ⁻¹

Test Validation Criteria	
Zero Shift	± 2.0% Opacity or ±0.10 m ⁻¹ smoke density (K)
Range of Test Snaps	5% Opacity difference max. or 0.50 m ⁻¹ (K) max.

Smokemeter Installation	
If Results in Units of Opacity	Get engine power rating from Emissions Control Label (ECL) or manufacturer literature
Full Flow End-of-Line Meters	
• Light Beam Axis	Perpendicular to exhaust flow
• Light Beam Distance	As close as possible 2.76 in maximum
Sampling Meters	
• Insert	Upstream facing exhaust flow
• Distance from pipe wall	0.197 in (5 mm) Minimum
Tachometer	Useful. Calibrate to manufacturer specs.



Opacity Test Record Keeping for PSIP (On-road) & Cargo Handling Equipment (CHE)

Maintain Records	Meter	Opacity Test
✓ 2 Years	✓ Brand & Model	✓ Test Date
✓ Present upon CARB audit	✓ Date of Calibration <ul style="list-style-type: none">To manufacturer specificationsEvery 6 mo. recommended	✓ Test Results (3 readings) <ul style="list-style-type: none">Test printout or copy/scan for audits
Vehicle	Meter Operator	✓ Pass or Fail*
✓ Opacity standard for tested vehicle	✓ Operator Name & Tester ID Number	Test Failure Records
✓ VIN	✓ If a test contractor: Name & address of contractor company	✓ Post Repair Test Date
✓ Engine Year		✓ Post repair opacity levels
✓ Engine Make		✓ Repair info specified in Section: <ul style="list-style-type: none">On-road: 2186(a), Title 13, CCRCHE: 2479(i)(1)(D), Title 13, CCR
✓ Engine Model		

Post Repair Record Keeping Requirements

Repair Performed at a Repair Facility	Repair Performed In-house
✓ Name, address, & phone of the facility	✓ An itemized receipt for the parts used in the repair
✓ Name of mechanic	✓ A statement identifying the date and nature of the repairs made
✓ Date of the repair	
✓ Description of components, replacements, repairs, &/or adjustments	
✓ Itemized list of replaced components, including description, part num., & cost	

OBD Report Example: Pass

California Air Resources Board

Heavy-Duty Vehicle Inspection Report

Test Date/Time: 6/28/2023
1:11:09 PM

Report ID: 4226

Vehicle Information

VIN:	XXXXXXXXXXXXXXXXXX	License:	XXXXXX
User VIN:	XXXXXXXXXXXXXXXXXX	Make:	Freightliner
Fuel Type:		Model Year:	2016

Tester Information

Tester Name: Joe Tester
Comment: Tester can enter notes here

Overall Test Result

OBD Test Result: **PASS**

Congratulations! Your vehicle passed the inspection. Thank you for keeping your vehicle well maintained and helping achieve clean air quality for all Californians. Please keep this email for your records.

CARB's Clean Truck Check team can be reached at hdim@arb.ca.gov.

OBD Data File

eVIN:	XXXXXXXXXXXXXXXXXX
User VIN:	XXXXXXXXXXXXXXXXXX
License Plate:	XXXXXX
Time Scan:	6/28/2023 1:11:09 PM
Time Submitted:	6/28/2023 1:13:12 PM
Tester Name:	(joe.testers@testworld.com);IK200306)

Location:
Comment: No MIL light
Encrypted File: rac_35af8952b21efe3d0d2a2a06951cf43b96eb2455_638235798972041334.gpg
Decrypted File: hdim_abefe15d62384ab5.xml

Malfunction Indicator Lamp(MIL) Status

MIL On?: No

Diagnostic Trouble Codes(DTC) in DM1 and DM12

SPN	SPN Name	FMI	FMI Name	PGN	PGN Name
-----	----------	-----	----------	-----	----------

No DTC

Communication Information

Communication Protocol: SAE J1939
Scan Tool Name: Silver Snap-Tool
Scan Tool Version : 7.52.42.52668
Baudrate: 250 kbps
Interface: Leaf Light v2, S/N: 11335, CAN 1

OBD Report Example: Result cannot be determined

California Air Resources Board

Heavy-Duty Vehicle Inspection Report

Test Date/Time: 6/28/2023
1:29:55 PM

Report ID: 4228

Vehicle Information

VIN:	XXXXXXXXXXXXXXXXXX	License:	XXXXXX
User VIN:	XXXXXXXXXXXXXXXXXX	Make:	Freightliner
Fuel Type:		Model Year:	2013

Tester Information

Tester Name: Joe Tester
Comment: Tester can enter notes here

Overall Test Result

OBD Test Result: **TEST RESULT COULD NOT BE DETERMINED**

The test result could not be determined. Check the scan tool's connection settings and make sure there are no additional devices connected to the vehicle's OBD port during the test. Please complete the test again.

CARB's Clean Truck Check team can be reached at hdim@arb.ca.gov.

OBD Data File

eVIN:
User VIN: XXXXXXXXXXXXXXXX
License Plate: XXXXXXXX
Time Scan: 6/28/2023 1:29:55 PM
Time Submitted: 6/28/2023 1:33:12 PM
Tester Name: (joe.testers@testworld.com;IK200306)
Location:

Comment:	No MIL Light
Encrypted File:	rac_1a072022c3b5bac021c3a122fe0bcd8df441e95b_638235811468737233.gpg
Decrypted File:	hdim_1815aca93f06925d.xml

Malfunction Indicator Lamp(MIL) Status

MIL On?:	No
----------	----

Diagnostic Trouble Codes(DTC) in DM1 and DM12

SPN	SPN Name	FMI	FMI Name	PGN	PGN Name
-----	----------	-----	----------	-----	----------

No DTC

Communication Information

Communication Protocol:	SAE J1939
Scan Tool Name:	Silver Snap-Tool
Scan Tool Version :	7.52.42.52668
Baudrate:	250 kbps
Interface:	Leaf Light v2, S/N: 11335, CAN 1

OBD Report Example: Fail

California Air Resources Board

Heavy-Duty Vehicle Inspection Report

Test Date/Time: 6/28/2023

Report ID: 4238

2:58:56 PM

Vehicle Information

VIN:	XXXXXXXXXXXXXXXXXX	License:	XXXXXX
User VIN:	XXXXXXXXXXXXXXXXXX	Make:	Volvo
Fuel Type:	Diesel	Model Year:	2015

Tester Information

Tester Name: Joe Tester

Comment: Tester can input a comment

Overall Test Result

OBD Test Result: **FAIL**

Your vehicle failed the inspection. Please obtain any needed repairs and retest the vehicle. Repairing your vehicle will help California reduce emissions from mobile sources and achieve clean air quality for all Californians.

Fault Codes

P04DB -	Crankcase Ventilation System Disconnected
P225E -	NOx Sensor Performance - Signal Biased/Stuck High Bank 1 Sensor 2
U0001 -	High Speed CAN Communication Bus

CARB's Clean Truck Check team can be reached at hdim@arb.ca.gov.

OBD Data File

eVIN:	XXXXXXXXXXXXXXXXXX
User VIN:	XXXXXXXXXXXXXXXXXX

License Plate:	XXXXXX
Time Scan:	6/28/2023 2:58:56 PM
Time Submitted:	6/28/2023 2:59:12 PM
Tester Name:	(joe.testers@testworld.com ;IK200306)
Location:	
Comment:	
Encrypted File:	rac_8dd8eace2fd5df5cb06c9ca91ffa0b64e55d7a9d_638235863457836715.gpg
Decrypted File:	hdim_5f62a46dd5f84ad9.xml

Malfunction Indicator Lamp(MIL) Status	
MIL On?:	Yes

Diagnostic Trouble Codes(DTC) in Mode 3 and 7			
PCode	PCode Name	Mode	Mode Name
Module 10 : ECM-EngineControl			
P04DB	Crankcase Ventilation System Disconnected	3	Emission-related diagnostic trouble codes
P04DB	Crankcase Ventilation System Disconnected	7	Emission-related diagnostic trouble codes detected during current or last completed driving cycle
P225E	NOx Sensor Performance - Signal Biased/Stuck High Bank 1 Sensor 2	3	Emission-related diagnostic trouble codes
P225E	NOx Sensor Performance - Signal Biased/Stuck High Bank 1 Sensor 2	7	Emission-related diagnostic trouble codes detected during current or last completed driving cycle
U0001	High Speed CAN Communication Bus	3	Emission-related diagnostic trouble codes
U0001	High Speed CAN Communication Bus	7	Emission-related diagnostic trouble codes detected during current or last completed driving cycle

Communication Information	
Communication Protocol:	SAE J1979
Scan Tool Name:	Silver Snap-Tool
Scan Tool Version :	7.52.42.52668
Baudrate:	500 kbps
Interface:	Leaf Light v2, S/N: 11335, CAN 1



**HEAVY-DUTY INSPECTION AND MAINTAINENCE PROGRAM:
VEHICLE EMISSIONS CONTROL EQUIPMENT INSPECTION FORM
(Visual Inspection Form)**

To the HD I/M Tester: Fill in requested information legibly and completely. Please refer to the separate INSTRUCTIONS for information on completing this form.

Registered Vehicle Owner Name* _____

Vehicle/Fleet Contact Name _____

Vehicle/Fleet Contact Email Address _____

Vehicle/Fleet Contact Phone # _____

*For vehicles owned by the federal government and not registered in any state or local jurisdiction, please record the department/agency of the U.S. government to which the vehicles are assigned or is responsible for the maintenance of the vehicles and include the applicable contact information.

Vehicle Identification # (VIN) _____

License Plate # _____

Engine Family Name** _____

Engine Manufacturer** _____

Engine Make** _____

Engine Model Year** _____

**Enter information from the emission control label (ECL) located on the engine.

HD I/M Tester Name _____

Tester ID # _____

Tester Email Address _____

Tester/Contact Phone # _____

Date of Inspection _____

Vehicle Emissions Control Equipment Checklist

Y=Yes NP=Not Present NL=Not Legible N/A=Not Applicable
P=Proper Configuration M=Missing MO=Modified D=Defective DI=Disconnected

Emission Control Label Is it present and legible?		Selective Catalytic Reduction System (SCR-U, SCR-N)	
Fuel Injection System (IDI = Indirect Diesel Injection, DDI = Direct Diesel Injection)		Three-Way/Oxidizing Catalyst (TWC/OC)	
Exhaust Gas Recirculation (EGR)		Sensors and Switches (e.g., HO2S/O2S)	
Super/Turbo Charger and Charge Air Cooler (SC/TC, CAC)		Diesel Particulate Filter (DPF, PTOX)	
Engine/Powertrain Control Module (ECM/PCM)		Verified Diesel Emission Control Strategy (VDECS)***	
Additional Information****			

***Complete next section on VDECS before entering designation for a VDECS in this checklist.

****Use this section to record other emissions control components identified on the ECL but not shown on this checklist, and/or other pertinent information. Please write legibly.

Verified Diesel Emission Control Strategies (VDECS): record the information below for any vehicle equipped with a 2006 or older model year on-road engine.

Is the vehicle equipped with a VDECS (circle Yes or No)? **Yes or No** (if No, skip this section and move on to signing and submitting the form as instructed below).

VDECS Manufacturer Name (Label #1) _____

VDECS Manufacturer Name (Label #2) _____

Diesel Emission Control Strategy Family Name (Label #1) _____

Diesel Emission Control Strategy Family Name (Label #2) _____

Product Serial Number (Label #1) _____

Product Serial Number (Label #2) _____

Submit this form to CARB via email at: HDVehicleenforcement@arb.ca.gov. Refer to INSTRUCTIONS for complete information necessary to correctly submit this form.

Printed Name (HD I/M Tester)

Signature (HD I/M Tester)

By signing and submitting this form to CARB, you are attesting that you have fully and accurately performed the Vehicle Emissions Control Equipment Inspection in accordance with the requirements of the HD I/M Regulation.

POWERPOINT SLIDES

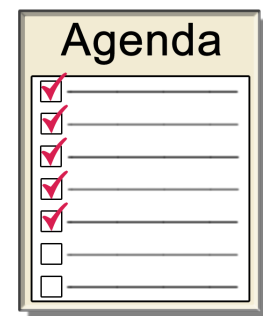
CCDET I: Clean Truck Check



1

Course Overview

1. **Intro & Overview**
 - Tester Requirements
 - Clean Truck Check Overview
2. **Why is this necessary?**
 - Environmental and Health Impacts
3. **Timelines & Administrative Topics**
4. **People, Entities, & Vehicles Subject to Clean Truck Check**
5. **Roadside & Field Testing**
 - Periodic Testing
 - OBD & SAE J1667
6. **Assessment**
7. **Hands-on**



2

2

Available CCDET Courses

- ▶ **CCDET I:** Clean Truck Check
- ▶ **CCDET III:** Opacity Testing for Cargo Handling Equipment
- ▶ **CCDET IV:** Smoke Testing Commercial Harbor Craft

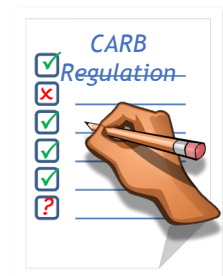
<http://ccdet.org/class-schedule/>

3

Overview of Changes to the Regulation

Watch for these changes as we cover the material:

- ▶ Clean Truck Check replaces HDVIP / PSIP
 - HDVIP sunset January 1, 2023, PSIP continues until Clean Truck Check periodic testing begins (No earlier than Jan 1, 2024; projected July, 2024)
- ▶ Tester Certification is 2 yrs. PSIP Cert was 4 Years
- ▶ Certification Test from CARB website ONLY
- ▶ Applied to *all vehicles operated in CA*, not just those registered here (some exceptions)
- ▶ OBD test required for 2013 and newer engines
- ▶ 2012 and older engines still checked via SAE J1667



4

What's the effective date of the new regulation?



- Different aspects will be phased-in
- Phase 3: No earlier than January 2024

5

5

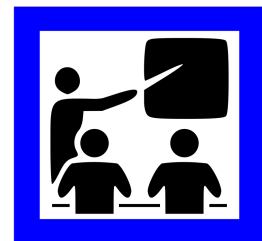
Required Training

- ▶ Must Complete **CARB-approved** training & **pass CARB Certification Exam to become a Credentialed Tester**

- CARB online Clean Truck Check - **Online (Free)**
- CCDET 1: Clean Truck Check - **In-person (\$175)**

- ▶ CCDET 1: Clean Truck Check includes **hands-on** training on conducting the **SAE J1667 Smoke Opacity Test**

- In-person training recommended for initial certification in J1667 (but not required)
- CARB online training assumes some familiarity with diesel engines and emissions control technologies



6

6

Who can Perform Clean Truck Check Compliance Tests?

Administering the Test:

- ▶ Must be performed by a **credentialed Clean Truck Check Tester**
 - **Exception:** OBD test submitted via a telematics service provider using a CARB-certified OBD test device and live CARB connections

Credentialed Testers may be:

- ▶ Vehicle owners
- ▶ Fleet employees
- ▶ Private for-hire Testers



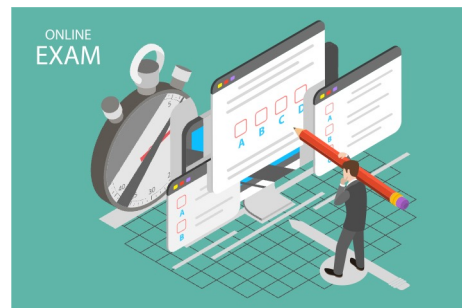
7

7

How to become a credentialed Clean Truck Check Tester

Requirements:

1. **Complete Clean Truck Check Training**
 - Free online training from CARB Website
 - Option: \$175 in-person training with hands-on: **CCDET I: Clean Truck Check**
2. **Pass the Clean Truck Check Exam on CARB Website**
 - *Regardless of where you take your approved training, you must **pass the test on the CARB website** to be certified*



8

Credentials Expiration:

- ▶ **Certification valid for 2 years** from date you pass the exam

8

Submitting Compliance Test Results: Overview

- ▶ Only credentialed Clean Truck Check Testers may conduct tests
- ▶ **OBD submissions** electronically uploaded to Clean Truck Check database
- ▶ **Non-OBD Submissions** are emailed



9

9

Responsibility to Ensure Accuracy

- ▶ All involved in compliance testing are responsible for ensuring accuracy
 - ▶ CARB may revoke a Tester's credentials (including associated entities) for violating any provision of the Clean Truck Check Regulation
 - ▶ Penalties and additional enforcement may vary by severity of the action



10

10

Testing Allowed in 2023+ by Tester Certification

Tester & Type of Test	Tester Received Certification from...			
	Old Training		Current Training (2023+)	
	CARB Online Training (Pre 2023)	CCDET I (Pre 2023)	CCDET I: Clean Truck Check + CARB HD I/M Exam	CARB Clean Truck Check (HD I/M)
Fleet EE's performing J1667	Yes	Yes	Yes	Yes
For-profit testers performing J1667*	No	Yes	Yes	Yes
Fleet EE's performing PSIP OBD*	No	No	Yes	Yes
For-profit Tester performing J1667 & Clean Truck Check OBD	No	No	Yes	Yes
All HD I/M High Emitter Opacity & OBD	No	No	Yes	Yes

* Testing under PSIP regulation is still permitted until Clean Truck Check periodic testing is implemented in Phase 3 (No earlier than Jan 1, 2024; Current estimate July 2024).

11

11

What is Clean Truck Check?

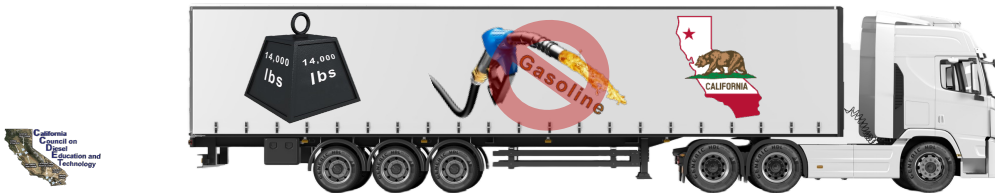
Clean Truck Check

12

12

Clean Truck Check Description

- ▶ Applies to all non-gasoline heavy-duty vehicles with a GVWR greater than 14,000 pounds **operating in California, regardless of where registered or based**
 - Must pass emission compliance inspections to operate in CA
 - Includes remote monitoring of emissions & roadside vehicle inspections
 - Requires periodic testing & inspection of emissions control systems
 - Non-compliant vehicles must be repaired



13

13

Why do we need Clean Truck Check?

Environmental & Health Impacts of Diesel Particulate Matter

14

14

Why these programs are needed

Before



After



15

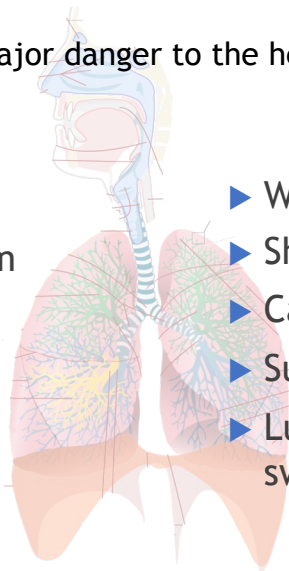
15

Particle Pollution

Air pollution remains a major danger to the health of both children and adults

Contributes to:

- ▶ Premature Death
- ▶ Developmental harm
- ▶ Reproductive harm
- ▶ Asthma attack
- ▶ Lung Cancer
- ▶ Wheezing and coughing
- ▶ Shortness of breath
- ▶ Cardiovascular harm
- ▶ Susceptibility to infections
- ▶ Lung tissue redness, & swelling



16

16

What's the solution?

- ▶ Properly maintained and repaired engines
- ▶ Properly functioning after treatment systems
 - Diesel Particulate Filters (DPFs)
 - Verified Diesel Emissions Control (VDEC)
 - Selective Catalytic Reduction (SCR)



17

17

Benefits of Properly Maintained Engines

- ▶ Reduced emissions help mitigate the health problems previously listed
- ▶ Improved fuel economy
- ▶ Improved engine reliability & longevity
- ▶ Extended engine life
- ▶ Reduced emergency downtime
- ▶ No Citations
- ▶ Enhanced public image



18

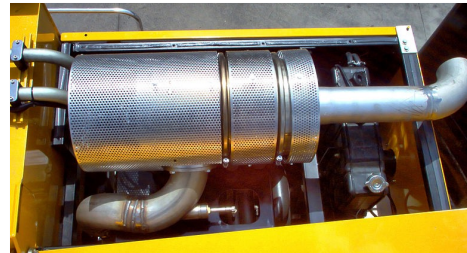
18

Benefits of After Treatment Systems (DPF & SCR)

- ▶ DPFs filter approximately 99% of the soot produced
- ▶ SCR reduces 99% of NOx

With a DPF in place:

- ▶ There should be **no visible smoke**.
 - If **visible smoke is present**, there are engine, DPF, or other system issues that should be evaluated



19

19

Effect of Proper Maintenance & Repair on Emissions

Engine	Initial Opacity %	Final Opacity %	Diff. %	Repairs
2011 Cummins	11.30	4.54	-6.76	DPF, Injector Doser, DPF cleaning
2011 Cummins	5.30	1.29	-4.01	Outlet NOx sensor
2013 Cummins	5.74	0.00	-5.74	Intake NOx sensor, Engine Harness
2013 Cummins	6.4	0.00	-6.4	Short w/coolant temperature sensor, Thermostat
2010 Navistar	9.69	0.00	-9.69	Injector Doser assembly, Clean DPF
2011 Cummins	12.3	0.00	-12.3	Injector Doser, Intake NOx sensor, Clean DPF

Source: Final Report Heavy-duty On-Road Vehicle Inspection and Maintenance Program

- <https://ww3.arb.ca.gov/research/apr/past/15rd022.pdf>



20

20

Timelines and Administrative Topics

Rollout
Database
Administrative Responsibilities

21

21

CARB Rollout and Timetable

Implementation **no earlier** than dates specified:



High-Emitter Screening

Implemented



Reporting & Compliance Fee

Implemented



July 1, 2024: Periodic Testing
(No earlier than)



22

22

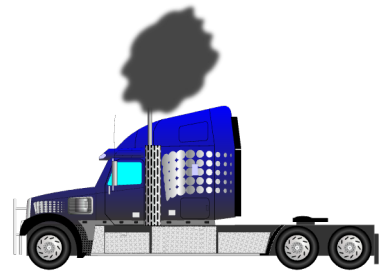
Vehicle Owner Requirements



Jan 1, 2023:
High-Emitter Screening

Implemented

- ▶ CARB Deploys remote roadside emissions monitoring devices (REMD) throughout CA
- ▶ Vehicles identified as potential high emitters:
 - Receive an **NST** from CARB
(**Notice to Submit to Testing**)
 - Required to undergo vehicle testing



23

23

Notice to Submit to Testing (NST)

- Must submit a passing vehicle compliance test to CARB within 30 days
- Failing to submit within 30 days is considered noncompliance with Clean Truck Check & may result in enforcement action



24

24

Referee Services

Referee:

- ▶ An individual or entity authorized by CARB to provide independent evaluations of vehicles, and services to accommodate vehicles with inspection incompatibilities or compliance issues



25

25

Referee Services

May be directed by *Executive Officer* due to:

- ▶ Law Enforcement requests
- ▶ OBD data doesn't match vehicle profile
- ▶ Executive Officer issues NST
- ▶ Suspected tampering
- ▶ Failed to submit testing data
- ▶ Unresolved citation
- ▶ Required for auditing, program validation, or demonstration of compliance
- ▶ Vehicle condition makes typical inspection difficult
- ▶ CARB requires verification of a submitted repair invoice, work order, or other compliance documentation



26

26

CCDET I: Clean Truck Check

Referee Services

Vehicle Owner shall complete a referee inspection when:

- ▶ Vehicle owner disputes inspection result
- ▶ Nonstandard configuration:
 - Engine change
 - Alternative fuel retrofit
- ▶ Vehicle converted to motor home
- ▶ Owner requests compliance time extension



27

27

Owner Reporting and Compliance Fees

Upon deployment of the Clean Truck Check database:

- ▶ Report fleet & vehicle information
- ▶ Pay a \$30/vehicle annual fee
- ▶ Create an account in the Clean Truck Check database
- ▶ Identify vehicles in fleet



Clean Truck Check Database:

- ▶ Will pull vehicle information from other CARB databases to minimize duplicate reporting work
- ▶ \$30/vehicle annual fee paid through a vehicle owner's account page



28

28

Owner Reporting and Compliance Fee Timing

- ▶ Fee not effective until the Clean Truck Check database is complete
 - No sooner than 7/1/2023
 - Minimum of 90 days notice



Database Portal:

- ▶ <https://cleantruckcheck.arb.ca.gov/>
- ▶ [CARB tutorial for navigating the Clean Truck Check](#) database
 - **Passcode:** xx^2ng2k

For Updates:

- ▶ Check [CARB Clean Truck Check](#) or [Truckstop](#) web pages

29

29

Owner Reporting and Compliance Fee Timing



Full URL's for Clean Truck Check Websites:

Website	Full URL
CARB Clean Truck Check	https://ww2.arb.ca.gov/our-work/programs/heavy-duty-inspection-and-maintenance-program
CARB Truck Stop	https://ww2.arb.ca.gov/sites/default/files/truckstop/hdim/hdim.html
Portal	https://cleantruckcheck.arb.ca.gov/

30

Useful CARB Clean Truck Check Websites

Scan these QR Codes to open desired CARB site:

Clean Truck Check
Main Site



CARB
Truck Stop Site



Reporting
Database Portal



31

31

People, Entities, & Vehicles Subject to the Regulation

Owner Requirements

People and Entities

Vehicles

32

32

Vehicle Owner Requirements

To be compliant with Clean Truck Check:

- ▶ No outstanding enforcement actions on vehicle
- ▶ Annual compliance fee paid
- ▶ Owner & vehicle info reported
- ▶ Compliant with periodic emission testing
- ▶ PSIP applies until Clean Truck Check Phase 3 is implemented (No earlier than Jan 1, 2024)



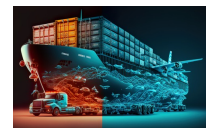
33

33

Who is subject to Clean Truck Check requirements?

The people who:

- ▶ **Own** them
- ▶ **Drive** them
- ▶ **Test** them
- ▶ **Contract to Haul** with them
- ▶ **Transfer cargo** to them
- ▶ **Make meters & OBD devices** for them



34

34

CCDET I: Clean Truck Check

In other words...

All below using vehicles subject to Clean Truck Check:

- ▶ Owners & Drivers of Heavy-Duty non-gasoline commercial vehicles
- ▶ Testers performing compliance tests
- ▶ Freight Contractors & Brokers
- ▶ OBD Test Device Vendors

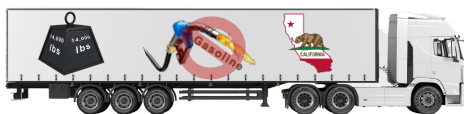
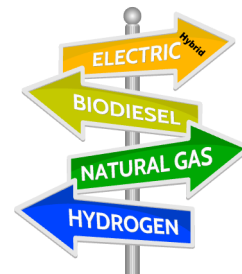


35

35

Vehicles Subject to Clean Truck Check

- ▶ Applies to all non-gasoline heavy-duty vehicles with a GVWR greater than 14,000 pounds **operating** in California, regardless of where registered or based including:
 - Diesel, alternative fuel, & hybrid vehicles
 - California registered
 - Out-of-State (OOS)
 - Out-of-Country (OOC)

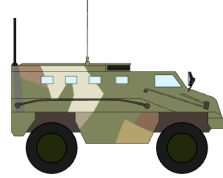


36

36

Vehicles **Excluded** from Clean Truck Check

- ▶ Zero-emission heavy-duty
- ▶ Emergency
- ▶ Tactical Military
- ▶ Recreational Use Motor homes (OOS & OOC)
- ▶ Natural Gas engines certified Low NOx (first 4 years)
- ▶ Historical Vehicle License Plate (permanent)
- ▶ CARB-issued Experimental Permit (rare)
- ▶ OOS under Governors Emergency Declaration (30 Days to comply with HD I/M)
- ▶ Heavy Duty Gasoline Vehicles already covered by BAR Smog Check Program



37

37

Roadside or Field Testing

Driver Responsibilities

38

38

Driver Responsibilities in Roadside Inspections

Driver shall:

- ▶ Drive to inspection site upon direction from Inspector
- ▶ Present driver's license, vehicle registration, & other related documentation
- ▶ Open vehicle door &/or hood to permit inspection of the vehicle

Failure to comply:

- ▶ Considered a violation
- ▶ May result in penalties and enforcement action



39

39

Periodic Testing

Rules, Requirements, and
Timelines

40

40

CCDET I: Clean Truck Check

Periodic Testing Requirements

- ▶ Semiannual (2x per year) starting in 2024
 - No earlier than Jan 1, 2024
- ▶ Annual for California-registered motor homes and agricultural vehicles
- ▶ Three years after Clean Truck Check periodic inspections begin, testing increases to 4x per year for OBD-equipped vehicles
- ▶ California-registered motor homes and agricultural vehicles remain at annual inspection frequencies
- ▶ PSIP sunsets when Clean Truck Check Phase 3 begins











































Jan 1, 2024: Periodic Testing
(No Earlier than)



41

41

Clean Truck Check Testing & Reporting Frequency (*No earlier than...*)

2024	2025	2026	2027	2028	2029	2030
 OBD	 OBD	 OBD	 OBD	 OBD	 OBD	 OBD
 OBD	 OBD	 OBD	 OBD	 OBD	 OBD	 OBD
			 OBD	 OBD	 OBD	 OBD
			 OBD	 OBD	 OBD	 OBD
			 OBD	 OBD	 OBD	 OBD
 CA-Registered	 CA-Registered	 CA-Registered	 CA-Registered	 CA-Registered	 CA-Registered	 CA-Registered
 CA-Registered *	 CA-Registered *	 CA-Registered *	 CA-Registered *	 CA-Registered *	 CA-Registered *	 CA-Registered *

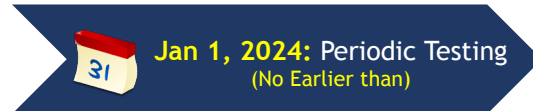
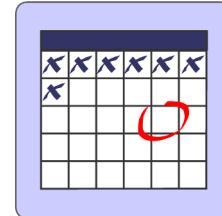
42

Periodic Testing Deadlines: *CA-Registered Vehicles*

- ▶ **Deadline:** Based on DMV Registration Date
- ▶ **Passing Test Submitted:** Within 90-days of upcoming deadline
- ▶ **Compliance Year:** Starts from Registration Date

Testing Deadline Example:

- **Example Registration Date:** May 21
- **Annual Schedule Deadline would be:** May 21
- **Semiannual Testing Deadlines would be:**
 - May 21
 - November 21
- **Quarterly Testing Deadlines would be:**
 - May 21
 - August 21
 - November 21
 - February 21



43

43

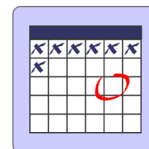
Testing Deadlines: Vehicles Registered *Outside CA*

- ▶ **Deadline:** Based on last digit of VIN
- ▶ **Passing Test Submitted:** By last day of compliance month

Testing Deadline Example:

- **VIN Ends in:** 7
- **Annual Testing Deadline would be:** May 31
- **Semiannual Testing Deadlines would be:**
 - May 31
 - November 30
- **Quarterly Testing Deadlines would be:**
 - May 31
 - August 31
 - November 30
 - February 28 (29 in leap year)

VIN	Month
0	October
1	November
2	December
3	January
4	February
5	March
6	April
7	May
8	June
9	July



44

44

Clean Truck Check Compliance Test Methods

Engine Model Year	Engine Type	Test Method
2013 & Newer	Diesel or Diesel Hybrid	OBD
2018 & Newer	Alternative Fuel & Alternative Fuel Hybrid	OBD
2012 & Older	All	<ul style="list-style-type: none"> • SAE J1667 & • Vehicle Emissions Control Inspection
<i>2013 - 2017</i>	<i>Alternative Fuel & Alternative Fuel Hybrid</i>	<i>Exempt per section 2196.4 (a)(1)</i>



45

45

Compliance Test: *OBD Engines*

OBD Testing Device:

- ▶ Must meet CARB Standards
- ▶ May include telematics dongle or scan tool
- ▶ Collect CARB-regulated OBD parameters to validate emissions components



Passing OBD Test:

- ▶ No emissions-related issues
- ▶ No emissions-related MIL illuminated
- ▶ No emissions-related diagnostic trouble codes



46

46

Compliance Test: *Non-OBD Engines (MY 2012 & Older)*

Opacity Test:

- ▶ SAE J1667 Snap-Acceleration Procedure
- ▶ SAE J1667 Compliant Smoke Meter
- ▶ Passing test may not exceed specified opacity limits (next slide)

Vehicle Emissions Control Inspection:

- ▶ Visual check for specified emissions components
- ▶ Ensures components are present, properly configured, not tampered with
- ▶ Inspection form available on CARB Clean Truck Check webpage



47

47

Smoke Opacity Limits

By Engine Model Year

Engine Model Year	Opacity Limit
2007 and Newer	5%
1997 - 2006	20%
1991 - 1996	30%
Pre 1991	40%

By VDEC Regardless of Model Year

VDECS	Opacity Limit
Level 3 (DPF)	5%
Level 2	20%
2-Engine Crane driven by Non-DPF Off Road Engine	40%

Source: CARB Attachment A-1 Final Regulation Order Heavy-Duty Inspection and Maintenance Program Section 2196.6

<https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2021/hdim2021/hd-imfroatta1.pdf>

48

48

Smoke Opacity Limits: Vehicles with Off-Road Engines

Use of off-road engines in on-road vehicles is rare.

VDECS Level	Opacity Limit
DPF/Level 3 VDECS	5%
Tier 4 Engines without DPF/Level 3 VDECS	10%
Tier 2 or 3 Engines without Level 3 VDECS	30%
Tier 1 Engines without Level 3 VDECS	40%

Source: CARB Attachment A-1 Final Regulation Order Heavy-Duty Inspection and Maintenance Program Section 2196.6

<https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2021/hdim2021/hd-imfroatta1.pdf>

49

49

What is OBD?

Compliance Testing with
Onboard Diagnostics (OBD)

50

50

What is OBD?

- ▶ **Monitor** the performance of the engine and emissions-related components
- ▶ **Detect malfunctions** of the monitored emission systems
- ▶ **Illuminate MIL** (Malfunction Indicator Light) to notify the vehicle operator of detected emission system malfunctions
- ▶ **Store fault information** regarding emission system malfunctions

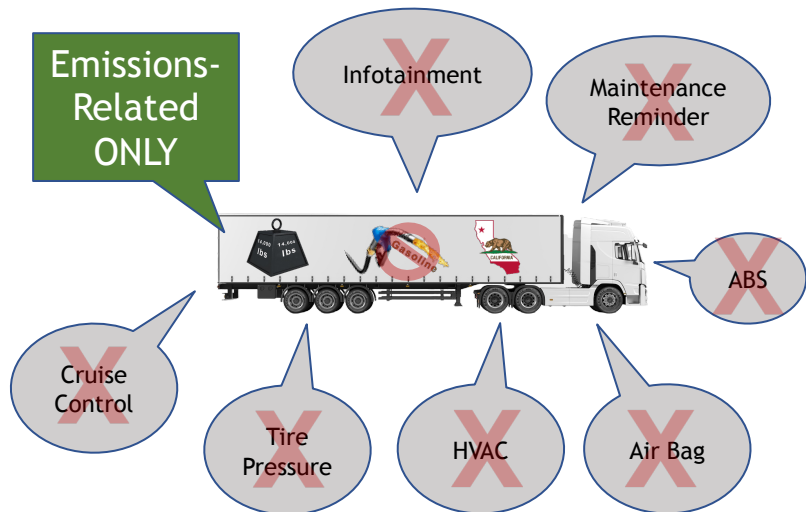


51

51

Approved OBD Devices Only Check Emissions-control Data

- ▶ Strictly monitors emissions-related components / systems
- ▶ Systems that could cause a direct increase in emissions if malfunctioning
- ▶ No reporting on other types of data



52

52

Why is OBD Needed?

- ▶ Monitors effectiveness of components during operation
- ▶ Identifies systems in need of repair
- ▶ Notifies driver when a problem occurs
- ▶ Helps technicians to diagnose & repair
- ▶ Relatively inexpensive emissions inspection
- ▶ Encourages design of durable and robust emissions control systems



53

53

OBD is better than Smoke Opacity Testing

- ▶ More comprehensive
 - Monitors **all** emissions components including both **NOx** and **PM**
 - Smoke tests are **PM only**
- ▶ More convenient
 - Faster
 - Less expensive equipment
 - Streamlined submission process



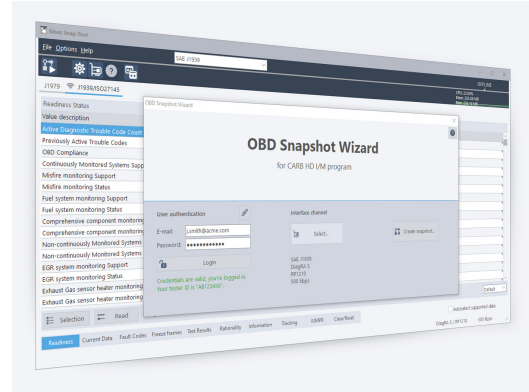
54

54

OBD Test Devices

► CARB Approved Devices

- [CARB OBD Device Page](#)
- Or Navigate to URL:
<https://ww2.arb.ca.gov/our-work/programs/inspection-and-maintenance-program/obd-test-devices>



Pictured here is a screen from the Silver Snap-Tool from RA Consulting

- One-time License Fee
- Annual Cloud Service Fee
- Plus Connector package Fee

55

55

Overview of OBD Systems: *Hardware*

► Sensors and actuators in vehicle

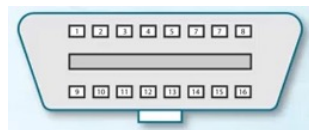
- Monitor emission-related components

► Malfunction Indicator Light (MIL)

- Visual notification on dashboard instrument panel to indicate an emissions-related malfunction

► Datalink Connector

- Port on vehicle to connect to OBD device



J1979 Connector



J1939 Connector

56

56

OBD Systems: *Hardware: Data Link Connectors*

J1939 Type 1 Connector:

- Does not fit Type 2 Port
- Usually MY 2016 & older
- 250 kb/s communication rate

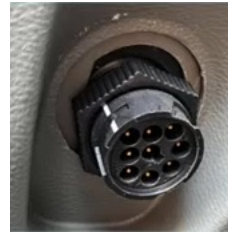
J1939 Type 2 Connector

- Backward compatible (Fits Type 1)
- Usually MY 2016 & newer
- 500 kb/s communication rate

J1979 Type HD OBD III

- Called OBD II, Type B, or 16-pin
- 24 Volt power supply output
- 500 kb/s communication rate

Check owner's manual for connector type in your vehicle.



J1939
Type 1



J1939
Type 2



J1979 HD OBD II

57

57

Overview of OBD Systems: *Software*

► Processes Information

- Uses info from sensors to measure emissions component performance

► Diagnostic Support

- Diagnostic info regarding catalysts, fuel system, and other critical components

► Identify Malfunctions

- Calibrated to identify emission component malfunctions
- Can indicate when a specific emission level exceeded; e.g., 1.5 times emissions certification standard for the vehicle



58

58

OBD Software Demo



59

59

Fail Procedures

Clearing Citations

Resolving MIL

60

60

Clearing Citations

Non-compliance:

- ▶ Failure to clear NST within allotted timeframe
- ▶ Failure to submit a passing periodic test by the specified deadline
- ▶ Violations may result in financial penalties
- ▶ CA vehicles will have DMV registration blocked

Compliance:

- ▶ Issues resolved (no MIL illuminated, etc.)
- ▶ Proof of repair provided to CARB
- ▶ All fees and penalties paid



61

61

Non-OBD Emissions Testing Procedures

Model Year 2012 and Older Engines

Clearing Citations

Resolving MIL

62

62

Vehicle Emissions Control Equipment Inspection

Inspection Checklist:



Vehicle Emissions Control Equipment Checklist			
Y=Yes NP=Not Present NL=Not Legible N/A=Not Applicable P=Proper Configuration M=Missing MO=Modified D=Defective DI=Disconnected			
Emission Control Label Is it present and legible?		Selective Catalytic Reduction System (SCR-U, SCR-N)	
Fuel Injection System (IDI = Indirect Diesel Injection, DDI = Direct Diesel Injection)		Three-Way/Oxidizing Catalyst (TWC/OC)	
Exhaust Gas Recirculation (EGR)		Sensors and Switches (e.g., HO2S/O2S)	
Super/Turbo Charger and Charge Air Cooler (SC/TC, CAC)		Diesel Particulate Filter (DPF, PTOX)	
Engine/Powertrain Control Module (ECM/PCM)		Verified Diesel Emission Control Strategy (VDECS)***	
Additional Information****			

***Complete next section on VDECS before entering designation for a VDECS in this checklist.

****Use this section to record other emissions control components identified on the ECL but not shown on this checklist, and/or other pertinent information. Please write legibly.

Verified Diesel Emission Control Strategies (VDECS): record the information below for any vehicle equipped with a 2006 or older model year on-road engine.

Is the vehicle equipped with a VDECS (circle Yes or No)? **Yes or No** (if No, skip this section and move on to signing and submitting the form as instructed below).



63

63

SAE J1667 Snap-Acceleration Procedures

Smoke-testing Diesel Vehicles

64

64

Smoke Opacity Limits

By Engine Model Year		By VDEC Regardless of Model Year	
Engine Model Year	Opacity Limit	VDECS	Opacity Limit
2007 and Newer	5%	Level 3 (DPF)	5%
1997 - 2006	20%	Level 2	20%
1991 - 1996	30%	2-Engine Crane driven by Non-DPF Off Road Engine	40%
Pre 1991	40%		

Source: CARB Attachment A-1 Final Regulation Order Heavy-Duty Inspection and Maintenance Program Section 2196.6

<https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2021/hdim2021/hd-imfroatta1.pdf>

65

65

Smoke Opacity Limits: Vehicles with Off-Road Engines

Use of off-road engines in on-road vehicles is rare.

VDECS Level	Opacity Limit
DPF/Level 3 VDECS	5%
Tier 4 Engines without DPF/Level 3 VDECS	10%
Tier 2 or 3 Engines without Level 3 VDECS	30%
Tier 1 Engines without Level 3 VDECS	40%

Source: CARB Attachment A-1 Final Regulation Order Heavy-Duty Inspection and Maintenance Program Section 2196.6

<https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2021/hdim2021/hd-imfroatta1.pdf>

66

66

Smoke Meters

Smoke-testing Diesel Vehicles

67

67

Full Flow v Partial Flow

Full Flow Meters:

- ▶ 100% of the exhaust flows through the sensor
- ▶ Attachment / placement is critical
- ▶ Affected by weather conditions



Partial Flow Meters:

- ▶ Senses partial exhaust from pipe or outlet
- ▶ Weather has limited effect



68

68

Before: Know Your Meter

- ▶ Smoke Meter must be SAE J1667 compliant
- ▶ Meter may adjust readings based on conditions or may not
- ▶ Choose your meter depending on, cost, test location, and ambient conditions encountered
- ▶ Follow **Owners Manual** regarding installing, cleaning, & calibrating
- ▶ Readings are in **% of opacity**



69

69

Before: Test Conditions

All Meter Types:

- ▶ Altitude above 1500 feet reading correction
- ▶ **Avoid** air **temperature** above 86° F or below 36° F
- ▶ **Dry** air **density** may affect the exhaust smoke opacity

Full Flow Meters

- ▶ **Avoid humidity:** No visible fog, rain, or snow in the area where the smoke plume is measured
- ▶ **Avoid** excessively **windy conditions**



70

70

SAE J1667 Opacity Test

- ▶ Adopted by SAE in February 1996



71

71

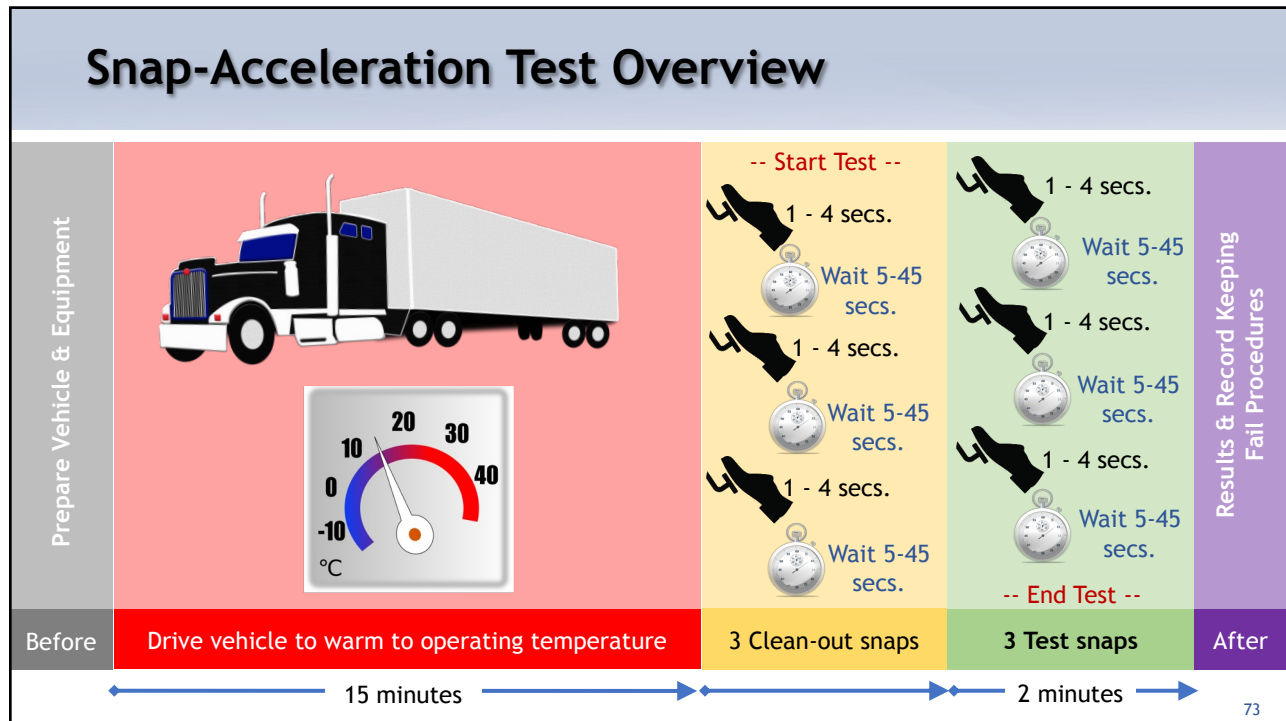


Preventive Maintenance for
Heavy Duty Trucks

SAE J1667 Snap Acceleration Test



72



73

Before: Preparation & Safety

- ▶ Wear appropriate **personal safety equipment**
 - Gloves, goggles, and ear protection to protect against hot exhaust, heated exhaust elbows etc., and loud engines
- ▶ Wheels **chocked** and **brakes released**
- ▶ Transmission in **neutral (manual)** or **park (automatic)**
- ▶ Vehicle **A/C off**, **engine brake off**
- ▶ Any **devices that affect normal acceleration** must be **turned off**
- ▶ Verify proper governor speed limiting and engine soundness
- ▶ Check for exhaust leaks and exhaust smoke color



74

74

Performing the Test

- ▶ Engine should be at normal operating temperature
- ▶ Readings taken from stack with visually highest opacity
- 1. Perform the Snap:
 - a. Driver depresses throttle to full open as rapidly as possible
 - b. When engine reaches max RPM, hold throttle at max governed speed for 1 to 4 seconds, and then release the throttle
- 2. Let engine reach low idle RPM, wait 5-45 secs. (target 8-10 secs)
- 3. Repeat six times (3 cleanout/purge snaps; 3 test snaps)
 - Test snaps must be completed within 2 minutes of the purge snaps



Note: At the beginning of each snap, the tester indicates a new snap in the test meter according to the Owners Manual the opacity meter being used.

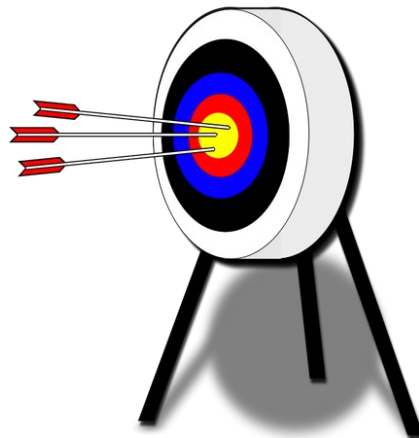
75

75

Advice on being a good Snap-Acceleration Tester

Stay consistent!:

- ▶ The **snaps** should be of **similar lengths**
- ▶ The **idle times** should be **similar**
- ▶ **Pick a duration** for the snap within the acceptable range, and **try for the same number every time**



76

76

After: Are the Test Results Valid?

Test Validity Check:

- ▶ Post-test smoke meter zero shift check - Not to exceed 2% opacity
- ▶ The differences between test snaps must not exceed 5% opacity



.....OFFICIAL OPACITY TESTS.....		
Test #	Peak %	Corrected Peak%
1	4.32	4.32
2	4.68	4.68
3	5.33	5.33
Results Corrected for Ambient Conditions		
Peak Opacity Difference: 1.01 %		
HI-LO Difference within spec		
*** HI-LO Difference VALID ***		
*** Zero-Drift Check VALID ***		
3 TEST AVERAGE OPACITY:.....4.78 %		
Max Limit - Engines 1991 and Newer: 40 %		

TEST RESULTS: *** PASS ***		

Last Calibrated On: 07-13-19 14:02:41		
Calibration Filter: 50.7 %		

77

77

After: Are the Test Results Valid?

Conditions that will invalidate or cause a failed opacity test:

- ▶ Engine not at **operating temperature**
- ▶ Improper or **inconsistent** application of the vehicle **throttle**
- ▶ Improper **smoke meter installation** on the tail pipe or stack
- ▶ **Post-zero shift check** exceeds 2% opacity
 - Possible cause, soot accumulation on the lens/optics of the smoke meter head



78

78

CCDET I: Clean Truck Check

Sample Results

VEHICLE SNAP-ACCELERATION TEST REPORT

Vehicle Exhaust Diameter: 4.0 in
Vehicle Rated HP is in Range: 101-200
"STD" Exh. Diam. for Rated HP: 3.0 in

PROCONDITIONING - FINAL 3 PURGES

Purge	Opacity	"STD" Opacity
1	6.5%	4.9%
2	5.2%	3.9%
3	4.1%	3.1%

PEAK TEST READING AND RESULTS

Test	Opacity	"STD" Opacity
1	6.5%	4.9%
2	5.6%	4.2%
3	7.6%	3.1%
AVERAGE:	6.6%	5.0%
RANGE:	2.0%	1.6%

AMBIENT CONDITIONS CORRECTIONS
Air corrections not used for this test.

	STD	ACTUAL	STD MET?
Number of Purges	3 Min.	4	YES
Number of Tests	3	3	YES
Number of Tests AVGED	3	3	YES
Range of Tests AVGED	5%	1.6%	YES
Peak Average	5%	6.6%	NO
Post-Test Zero Shift	2%	2.5%	NO

FINAL TEST RESULTS: FAIL

VEHICLE SNAP-ACCELERATION TEST REPORT

Vehicle Exhaust Diameter: 5.0 in

PROCONDITIONING - FINAL 3 PURGES

Purge	Actual Opacity
1	6.2%
2	3.7%
3	3.5%

PEAK TEST READING AND RESULTS

Test	Actual Opacity
1	3.4%
2	3.3%
3	3.3%

AVERAGE: 3.3%

RANGE: 0.1%

AMBIENT CONDITIONS CORRECTIONS
Air corrections not used for this test.

	STD	ACTUAL	STD MET?
Number of Purges	3 Min.	4	YES
Number of Tests	3	3	YES
Number of Tests AVGED	3	3	YES
Range of Tests AVGED	5%	0.1%	YES
Peak Average	40%	3.3%	YES
Post-Test Zero Shift	2%	0.0%	YES

FINAL TEST RESULTS: PASS

79

False Pass Result

VEHICLE SNAP-ACCELERATION TEST REPORT

Vehicle Exhaust Diameter: 5.0 in

PROCONDITIONING - FINAL 3 PURGES

Purge	Actual Opacity
1	8.2%
2	6.7%
3	6.5%

PEAK TEST READING AND RESULTS

Test	Actual Opacity
1	6.4%
2	6.3%
3	6.3%

AVERAGE: 6.3%

RANGE: 0.1%

AMBIENT CONDITIONS CORRECTIONS
Air corrections not used for this test.

	STD	ACTUAL	STD MET?
Number of Purges	3 Min.	4	YES
Number of Tests	3	3	YES
Number of Tests AVGED	3	3	YES
Range of Tests AVGED	5%	0.1%	YES
Peak Average	40%	6.3%	YES
Post-Test Zero Shift	2%	0.0%	YES

FINAL TEST RESULTS: PASS

Meter was not updated to reflect 5% opacity limit; so it falsely reports a 6.3% as a pass when it is actually a fail

80

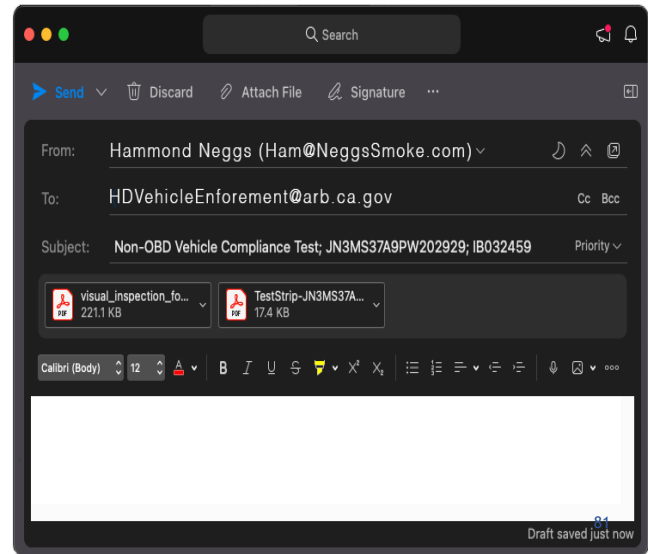
Non-OBD Test Results Email

HDVehicleEnforcement@arb.ca.gov

CARB Email Address

“Non-OBD Vehicle...”; VIN; Tester ID Number

Attach Completed Inspection Form & Test Strip



81

Smoke Test Record Keeping (Opacity Test)

Maintain Records

- ✓ 5 Years
- ✓ Present upon CARB audit

Vehicle

- ✓ Opacity standard for tested vehicle
- ✓ VIN
- ✓ Engine Year
- ✓ Engine Make
- ✓ Engine Model



Meter

- ✓ Brand & Model
- ✓ Date of Calibration
 - To manufacturer specifications
 - Every 6 mo. recommended

Meter Operator

- ✓ Operator Name & Tester ID Number
- ✓ If a test contractor: Name & address of contractor company

Opacity Test

- ✓ Test Date
- Test Results
 - Avg & range
 - Legible printout or copy/scan
 - Signature of tester
- ✓ Pass or Fail*

Test Failure Records

- ✓ Post Repair Test Date
- ✓ Post repair opacity levels
- ✓ Repair info specified in Section 2186(a), Title 13, CCR

82

82

Questions, Comments, Clarifications?



83

83

Snap-Acceleration Fail Procedures

Opacity-testing Diesel Vehicles

84

84

Opacity Is Above the Limit - Now What?

- ▶ Perform required repair or maintenance within 45 days (75 for agricultural vehicles)
- ▶ Repeat opacity test after repair/maintenance
- ▶ Post-repair information, receipt, invoice, repair order, etc.
- ▶ Post-repair test with required information
- ▶ Valid opacity meter print-out
(meter calibration current as per manufacturer)
- ▶ Shall not operate vehicle that exceeds standard, has defective or tampered components, or non-compliant aftermarket parts



85

85

Questions, Comments, Clarifications?



86

86

CCDET I: Clean Truck Check



Hands-On

Practical Exercises:

- OBD Device
- SAE J1667 Smoke Meter

OBD



SAE J1667 Smoke Meter



87

87

Assessment

CARB Clean Truck Check (HD I/M)

1. Scan the QR Code or navigate to the URL
2. Click the **Credentialed Tester Training** Link
3. Enter registration info and then click the **Complete Registration Button**
4. You may skip the training modules, and then click the link to start the test.



Or

[tinyurl.com/CleanTruckCheck](https://www2.arb.ca.gov/our-work/programs/inspection-and-maintenance-program/hd-im-tester-training-course-and-exam)

Or

<https://www2.arb.ca.gov/our-work/programs/inspection-and-maintenance-program/hd-im-tester-training-course-and-exam>

88

88

End

89

89