



Test Report:

**JUSTIFICATION FOR
CERTIFICATE OF COMPLIANCE
WITH EPA TAMPERING POLICY,
ISSUED NOVEMBER 23RD 2020.**

**Client: Calibrated Power Solutions Inc.
Device: Spade Tuner for the Powerstroke
Part #: 13-10, 13-11, 13-12
COC#: SC-CPS01-0064**

**Prepared By:
Thomas Manley**



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1 Introduction

This Test Report has been created to communicate the test results to interested parties. It includes the objectives, scope, test sequence, venue, and results. This document will clearly demonstrate that the installation of the Calibrated Power Solutions Inc., Spade Tuner for the Powerstroke, part number(s): 13-10, 13-11, 13-12, do not increase emissions above the applicable standards.

Calibrated Power Solutions has previously obtained a CARB EO with vehicle coverage for 2020 and 2021 model year Ford F-250, F-350 and F-450 vehicles (CARB EO D-845-2). This CARB EO is being considered in the justification used for a SEMA Certification that extends coverage to additional model years.

Product Background

According to manufacturer claims, the Spade Tuner for the Powerstroke is designed to increase the performance and efficiency of the vehicle as seen with the SEMA test results. The product is a calibration flash which uses the supplied hardware to flash an updated calibration. There are no user adjustable parameters and no other modification to an otherwise stock engine.

Objectives

The objective of this process was to demonstrate that the installation of this product, on the identified exemplar vehicle, for the family of applicable vehicles, will not result in a negative impact on OBD function and tailpipe emissions that exceed the applicable standards.



2 Definitions

“Adjustment Factors” means a numerical value added, multiplied, or subtracted to measured emissions for determining compliance with the emission standards.

“Baseline levels” are the benchmark emission levels from a vehicle or engine in a configuration certified by the original equipment manufacturer (OEM).

“Certified Vehicle” is a motor vehicle that is covered by a California Executive Order issued by the California Air Resources Board and/or a Certificate of Conformity issued by the U.S. EPA.

“Certification Emission Standards” means EPA Emission Standards for Light-Duty Vehicles and Trucks used by the original vehicle manufacturer for certification.

“Days” means business days, unless otherwise noted.

“Deterioration Factors” (DF) means the numerical values added to or multiplied with measured emissions for determining compliance with the emission standards through the vehicle’s useful life period.

“Device” means a manufacturer’s add-on or modified part as described in the application for SEMA Certification.

“Drivability” means vehicle or engine performance during in-use driving conditions such as acceleration, cruise, idle, or cold-start operation.

“Emission Control System” or “ECS” means the pollution control components on a vehicle or engine at the time of test group or engine family certification. The emission control label is part of the vehicle or engine’s emission control system.

“Emission Standards” are the legal limits on the amount of specific air pollutants released from the vehicle or engine over a specific interval (e.g., distance traveled, brake horsepower hour, etc.).

“Engine Configuration” describes the set of common engine operating characteristics (e.g., method of aspiration) and engine design (e.g., cylinder count).

“Evaporative Testing” refers to the procedures set forth in evaporative emission test requirements of Code of Federal Regulations, Title 40, Section 86.133-96.

“Exemplar Vehicle” describes the vehicle selected by the SEMA Engineer to best represent the family of vehicles the manufacturer seeks to cover with the SEMA certification.

“Federal Test Procedure” (FTP) means the test procedure as described in Code of Federal Regulations, Title 40, Section 86.130-00 (a) through (d) and (f) which is designed to measure urban driving tail pipe exhaust emissions and evaporative emissions over the Urban Dynamometer Driving Schedule.

“Gross Vehicle Weight Rating” (GVWR) means the value specified by the manufacturer as the maximum design loaded weight of a single vehicle, consistent with good engineering judgement as referenced in Code of Federal Regulations, Title 40, Section 86.1803-01.

“Highway Fuel Economy Test” (Highway Testing) means the test described in the Code of Federal Regulations, Title 40, Section 1066.801(c)(3).

“Hydrocarbon Trap” (HCT) refers to the element that retains hydrocarbons from fuel evaporated emissions.

“Malfunction Indicator Light” (MIL) refers to the dashboard symbol that, when illuminated or blinking, indicates a fault in the emission control system as referenced in the Code of Federal Regulations, Title 40, Section 86.1806-05.

“Manufacturer” means any entity with design control that manufactures add-on or modified parts.

“On-Board Diagnostic System” (OBD) is a system that manufacturers develop and implement to meet vehicle or engine self-diagnosis and reporting capabilities as referenced in the Code of Federal Regulations, Title 40, Section 86.1806-05.

“Refueling Testing” refers to the procedures set forth the Code of Federal Regulations, Title 40, Section 86.150-98.

“Road Load” means the force that opposes the movement of a vehicle during on road driving.



“SC03 Supplemental Federal Test Procedure” (SC03) sets forth the procedures for measuring vehicle emissions while air conditioning is in operation, as described in the Code of Federal Regulations Title 40, Section 86.160-00 which is designed to represent driving immediately following startup.

“US06 Supplemental Federal Test Procedure” (US06 or US06 SFTP) means the test cycle, described in the Code of Federal Regulations Title 40, Section 86.159-00, which is designed to evaluate emissions during aggressive and micro-transient driving.

“Vehicle Identification Number” (VIN) means a series of letters and numbers that is assigned to a motor vehicle for identification purposes as referenced in the Code of Federal Regulations, Title 49, Part 565, amended April 30, 2008, incorporated by reference herein).

“Diagnostic Trouble Code” (DTC) is a part of the OBD system which indicates the status of an emission control system for the purpose of identifying a potential issue with a specific system as referenced in the Code of Federal Regulations, Title 40, Section 86.1806-05).

“Certification to Standard Ratio” refers to the calculated percentage which the certification test result is compared to the applicable emissions standard. The percentage is calculated using the following equation:
(Certification Result / Standard) * 100.

“Pollutants” refers to the tailpipe exhaust emissions emitted by vehicles during the test procedures. These include the following compounds: Carbon Monoxide (CO), Non-Methane Hydrocarbons (NMHC), Non-Methane Organic Gas (NMOG), Formaldehyde (HCHO), Nitrogen Oxides (NOx), Particulate Matter (PM).

“Readiness Indicators” (RI), also known as Readiness Monitors, refers to a part of the OBD system which indicates the status of emissions control systems after mileage accumulation as referenced in the Code of Federal Regulations, Title 40, Section 86.1806-05.

“Low-Emissions Vehicle” (LEV) refers to a program standard created by CARB described in sections in Title 13 of the California Code of Regulations. Includes “Ultra-Low Emissions Vehicle” (ULEV) and “Super Ultra-Low Emissions Vehicle” (SULEV).

“California Air Resources Board” (CARB or ARB) is an agency of the government of California that aims to reduce air pollution.

“Environmental Protection Agency” (EPA) is an independent agency of the United States government tasked with environmental protection matters.

“Useful Life” (UL) is defined as the period during which the equipment is required to comply with all emission standards, and it is typically specified as a given number of calendar years or miles of driving, whichever comes first. Described in the Code of Federal Regulations Title 40, Section 86.1805-17.

“LA92 Supplemental Federal Test Procedure” (LA92) also known as HOT 1435 Unified Cycle means the test cycle, described in the Code of Federal Regulations Title 40, Section 1066.831, which is designed to represent rural and freeway driving.

“Constant Volume Sampling” (CVS) means a system that dilutes engine exhaust with ambient air for sampling, maintaining a nearly constant total combined flow rate of exhaust and dilution air mix across all engine operating conditions. Described in the Code of Federal Regulations Title 40, Section 90.420

“Bag Mini-Diluter” (BMD) means a proportional exhaust sampling system used for accurate ultra-low level vehicle exhaust emission measurements.

“Wide-Open Throttle” (WOT), also called full throttle, refers to the fully opened state of a throttle on an engine, usually indicating the maximum-speed state of running the engine.

“Sealed Housing for Evaporative Determination” (SHED) test chambers are utilized to measure hydrocarbon emissions from vehicles and their components under variable temperature profiles in a sealed environment.



3 Vehicle Application List

This testing is presented as evidence of compliance for the following range of vehicles. A detailed vehicle coverage list is included in the Appendix.

Primary Models

Models included in this application are 2011-2022 Ford F-250, F-350, and F-450 pickup trucks. These include HD, and Chassis Cab models. All are equipped with 6.7L turbocharged diesel engines.

MAKE	MODEL	ENGINE SIZE	ASPIRATION	FUEL	YEAR RANGE	
Ford	F-250	6.7L	TURBO	DIESEL	2011	2022
Ford	F-350	6.7L	TURBO	DIESEL	2011	2022
Ford	F-450	6.7L	TURBO	DIESEL	2011	2022

4 Test Vehicle Selection

Test Vehicle Selection Criteria

In order to identify the appropriate test vehicle from the above application list, the following criteria were considered:

- Applicable emissions standards (cleanest standard)
- The highest certification emissions results as a percentage of the applicable standard
- Vehicle test weight and road load factors
- Engine displacement
- Sales volume mix

Test Vehicle Evaluation

The test vehicle is a 2020 Ford F-350 4x4 equipped with a 6.7L turbocharged diesel engine. In reviewing the vehicle application list, all were certified to either LEV2 ULEV, LEV3 ULEV270, or LEV3 ULEV200 for California, and Tier 2 HDV, Tier 3 Bin270, or Tier 3 Bin200 federally, the LEV3 ULEV200 being the cleanest standard. The pollutants of greatest concern are NMOG+NO_x for the FTP with a certification standard ratio of 90% of the LEV2 ULEV, 71% LEV3 ULEV270 and 79% LEV3 ULEV200. The PM certification to standard ratio is below 33% LEV2 ULEV, 30% LEV3 ULEV270, and 13% LEV3 ULEV200. The LEV3 ULEV270 vehicle has the highest composite result of all vehicles at 43% of the NMHC+NO_x standard. The dirtiest group relative to its standard is the 2013-2014 Ford F-250/F-350 LEV2 ULEV with a 90% certification to standard ratio of the calculated equivalent NMHC+NO_x in the FTP, a certification to standard ratio for NMHC of 76% in the FTP, and a NO_x certification to standard ratio of 100% in the FTP which is most likely to exceed its standard. The composite standards do not apply to LEV2 ULEV vehicles. The LEV3 (test group LFMXD06.771D) has a combined NMHC+NO_x standard, therefore a concern is raised when comparing to LEV2 ULEV vehicles which have a 100% certification to standard ratio for a NO_x standard of 0.2g/mi. A review of the original certification data and comparison to modified test results are needed to mitigate the concern.

Exemplar Vehicle Test Group(s)	LFMXD06.771D
MY(s)	2020
Model(s)	F-350
Engine(s)	6.7L Turbocharged Diesel Engine
Other	4x4



Test vehicle and catalytic converters must have accumulated at least 4000 miles in normal operation to ensure emission stability. Exemptions can be made for vehicles at least 2000 miles with additional testing. Test vehicle must remain under the control of the test laboratory for the entire duration of all described testing. No engine maintenance will be allowed during test sequence on test vehicle.

Test vehicle in modified condition must meet emissions standards shown below and all the OBDII system readiness indicators (RI) must set with no DTCs. Deterioration Factors & NMOG-to-NMHC ratio should be applied where applicable to results. Respective values used shall be the same as OEM test vehicle's certification documents.

TEST	Standards (grams/mile) (*milligrams/mile)					
	NMOG(NMHC)+NO _x	CO	NMOG	NO _x	HCHO	PM
FTP-75	0.270	4.2	-	-	6	0.010
Composite	0.550	6.0	-	-	-	7*

5 Test Plan

Test Scope

Based on the SEMA Certified, published test procedures Section VIII. 3 (A), it has been determined that the following sequence, performed on the exemplar vehicle, is required to determine reasonable basis for knowing that the subject device does not increase emissions above the applicable standards or baseline requirements for the specified grouping of vehicles.

Device:

1. Install and record (photograph) Calibrated Power Solutions Inc. Spade Tuner for the Powerstroke
2. Install correct calibration for exemplar vehicle at test laboratory, record (photograph) process.

Exhaust:

Test parameters (road load coefficients, canister loading, test weight, test fuel, etc.) shall be the same as the OEM specified in the test vehicle's certification, unless otherwise noted below:

Parameter Note: N/A

1. Perform FTP-75 as described in Code of Federal Regulations, Title 40, Section 86.130-00 (a) through (d) and (f).
2. Perform SC03 as described in the Code of Federal Regulations Title 40, Section 1066.835.
3. Perform LA92 as described in the Code of Federal Regulations Title 40, Section 1066.831.

Other:

1. Perform OBD read & report as specified in test procedures. Please include short and long-term fuel trim levels at 2500rpm and modes 1,2,3,6,7 and 9 with part installation.
2. Perform SEMA-WOT validation test. – To confirm OBD and product function at the following operating points:
 - a. Maximum horsepower and torque.



Detailed Test Sequence

Step	Task	Note
1	Log Incoming Vehicle Data: VECI, VIN, GVWR, ODO, Tire Info, Device info as requested.	Record all findings and deviations from Test Sequence or CFR.
2	Log OBD (RI & DTC status), and reset OBD (RI status)	
3	Mileage accumulation (50-mile min.) using an appropriate transient driving pattern.	
4	Log OBD (RI & DTC status)	
5	Perform FTP-75* as per CFR	
6	Perform SC03** as per CFR	
7	Perform LA92 as per CFR	
8	If using CVS, repeat exhaust testing.	
9	Log OBD (RI & DTC status)	
10	Post-Test mileage accumulation if RI not set	
11	Log OBD (RI & DTC status)	
12	Perform SEMA-WOT	
13	Log OBD (RI & DTC status)	

*Evaporative canister must be purged and loaded to 1.5x working capacity. Report shall include canister pre-conditioning results.

**The alternative AC2 test procedure may be conducted in lieu of the SC03; however, a multiplication factor of 1.2 will be applied to AC2 results.



6 Test Summary Report

CONFIDENTIAL

ACCEPT:	☒
Signature:	<i>[Signature]</i>
Date:	08/17/2021



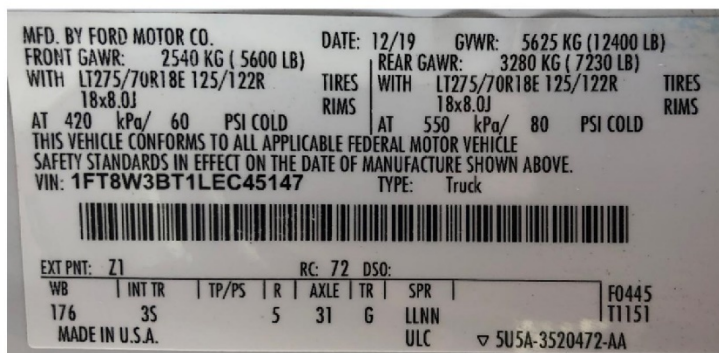
EMISSIONS COMPLIANCE CENTER TEST SUMMARY

Lab Manager: Dan Ogden**Prepared by:** Ian Enderby

07/27/2021

The SEMA Emissions Compliance Center is a Certification Ready Automotive Emissions Testing Laboratory located in Diamond Bar, California at 1577 Valley Vista Drive. The lab is equipped with a 48" AVL-Zollner 2 wheel-drive chassis dynamometer, AVL i60 CVS System, AVL i60 AMA emissions analyzer bench with HC, NO_x, CO, CO₂ and CH₄ analyzers, Dilution Tunnel with AVL SPC 478 Particulate Matter (PM) Sampler, and an AVL 4-station Canister Loading Bench.

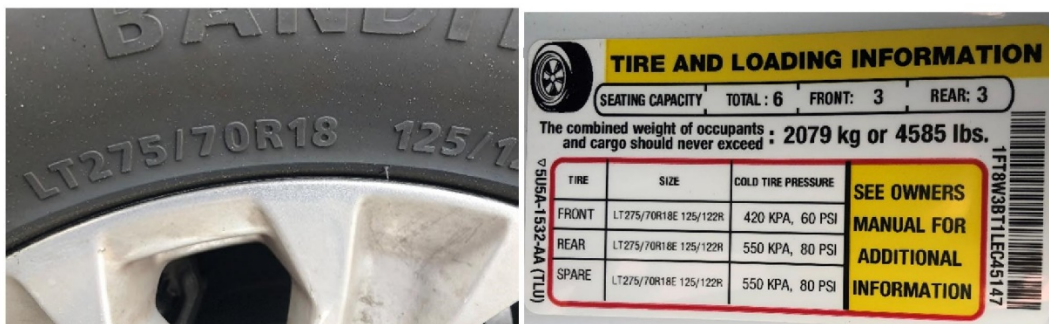
Client: Calibrated Power Solutions**Contact:** Tim Mahoney (tim@duramax tuner.com)**Device Under Test:** Spade Flash- Ford**Part #:** 13-12**Test Vehicle:** 2020 Ford F-350**VIN:** 1FT8W3BT1LEC45147**Engine:** 6.7L Turbodiesel**Test Group:** LFMXD06.771D**CA Emissions Category:** LEV3 ULEV270**EPA Emissions Category:** T3B270 HDV*Test Vehicle*



VIN Tag



VECI Label



Tire Info

Test Fuel: Certification Diesel

Tire Size: LT275/70R18

Vehicle Test Weight: 11500 lbs.

Dyno Set Coefficients: A=44.833, B=-0.46170, C=0.081619

Dyno Target Coefficients: A=78.300, B=0.18720, C=0.078560

Notes:

- The test vehicle remained in the custody of the SEMA Emissions Lab staff throughout the testing process.
- The product was installed on the vehicle on 07/12/21.
- The product is a direct ECU reflash with no features adjustable by the end user.
- Testing parameters provided by CARB and confirmed on EPA CSI document page 4.
- All emissions testing was conducted with an AVL road speed fan.



ATTACHMENTS

- Vehicle Check In Form
- OBD Report, As Received
- Road Load Determination Printouts
- Baseline HP Test Results
- OBD Report, Clear
- Mileage Accumulation Log
- OBD Report, Post Mileage Accumulation
- FTP-74 Test Report (Test ID: UDDS_20210719_04_TC1)
- FTP-75 Test Report (Test ID: FTP75_20210720_06_TC1)
- LA92 Test Report (Test ID: HWFET_LA92H_20210720_07_TC1)
- SC03 Test Report (Test ID: SC03_SC03_20210720_08_TC1)
- FTP-74 Test Report (Test ID: UDDS_20210720_09_TC1)
- FTP-75 Test Report (Test ID: FTP75_20210721_08_TC1)
- HWFET Test Report (Test ID: HWFET_HWFET_20210721_09_TC1)
- HWFET Test Report (Test ID: HWFET_HWFET_20210721_10_TC1)
- LA92 Test Report (Test ID: HWFET_LA92H_20210721_11_TC1)
- SC03 Test Report (Test ID: SC03_SC03_20210721_12_TC1)
- OBD Report, Post Test
- Modified HP Test Results
- OBD Report, Post HP Test



PROCEDURE SEQUENCE

- 03/11/21: Vehicle Check In
- 03/14/21: OBD Read and Report, As Received
- 03/15/21: Road Load Determination
- 04/26/21: Baseline HP Testing
- 07/12/21: Product Installed
- 07/12/21: OBD Read and Report, Clear
- 07/15/21: Mileage Accumulation
- 07/15/21: OBD Read and Report, Post Mileage Accumulation
- 07/19/21: Drain and Fill with Test Fuel
- 07/19/21: 6-36 hour soak
- 07/19/21: Prep for FTP-75 (FTP-74 Precondition w/ no bags, (Test ID: UDDS_20210719_04_TC1)
- 07/19/21: 12-36 hour soak
- 07/20/21: FTP-75 (Test ID: FTP75_20210720_06_TC1)
- 07/20/21: LA92 (Test ID: HWFET_LA92H_20210720_07_TC1)
- 07/20/21: SC03 (Test ID: SC03_SC03_20210720_08_TC1)
- 07/20/21: Prep for FTP-75 (FTP-74 Precondition w/ no bags, Test ID: UDDS_20210720_09_TC1)
- 07/20/21: 12-36 hour soak
- 07/21/21: FTP-75 (Test ID: FTP75_20210721_08_TC1)
- 07/21/21: HWFET (Test ID: HWFET_HWFET_20210721_09_TC1)
- 07/21/21: HWFET (Test ID: HWFET_HWFET_20210721_10_TC1)
- 07/21/21: LA92 (Test ID: HWFET_LA92H_20210721_11_TC1)
- 07/21/21: SC03 (Test ID: SC03_SC03_20210721_12_TC1)
- 07/21/21: OBD Read and Report, Post Test
- 07/27/21: Modified HP Testing
- 07/27/21: OBD Read and Report, Post HP Test

**OBD SUMMARY**

Date	Mileage	Report Type	Misfire	Fuel System	Component	NMHC Catalyst	NOx Aftertreatment	Boost Pressure	Exhaust Gas Sensor	PM Filtering	EGR/VVT	MIL Status	OBD Codes
3/14/2021	33323	As Received	C	C	C	C	C	C	C	C	C	OFF	None
7/12/2021	36242	OBD Clear	I	I	C	I	I	I	I	I	I	OFF	None
7/15/2021	36538	Post-Mileage	C	C	C	C	C	C	C	C	C	OFF	None
7/21/2021	36697	Post-Test	C	C	C	C	C	C	C	C	C	OFF	None
7/27/2021	36817	Post-HP Test	C	C	C	C	C	C	C	C	C	OFF	None

C=Monitor Complete

I=Monitor Incomplete

Date	Mileage	Report Type	ECM CAL ID(s)	ECM CVN(s)	TCM CAL ID(s)	TCM CVN(s)
3/14/2021	33323	As Received	LC3A-14C204-UH BC3A-14D609-BC K2GA-14F553-AB HC3A-14G265-BF KC3A-5M203-AB LC34-14G336-AB	38 11 86 EF 1D DA 3E C0 67 68 8C 6B 0D CB 8B C4 95 5F 61 8E 66 0F A7 C4	TDSM0PG.H32	E1 D1 06 5B
7/12/2021	36242	OBD Clear	LC3A-14C204-EVC BC3A-14D609-BC K2GA-14F553-AB HC3A-14G265-BF KC3A-5M203-AB LC34-14G336-AB	D9 BF 99 14 1D DA 3E C0 67 68 8C 6B 0D CB 8B C4 95 5F 61 8E 66 0F A7 C4	TDSM0PG.H32	FB EF F5 19
7/15/2021	36538	Post-Mileage	LC3A-14C204-EVC BC3A-14D609-BC K2GA-14F553-AB HC3A-14G265-BF KC3A-5M203-AB LC34-14G336-AB	D9 BF 99 14 1D DA 3E C0 67 68 8C 6B 0D CB 8B C4 95 5F 61 8E 66 0F A7 C4	TDSM0PG.H32	FB EF F5 19
7/21/2021	36697	Post-Test	LC3A-14C204-EVC BC3A-14D609-BC K2GA-14F553-AB HC3A-14G265-BF KC3A-5M203-AB LC34-14G336-AB	D9 BF 99 14 1D DA 3E C0 67 68 8C 6B 0D CB 8B C4 95 5F 61 8E 66 0F A7 C4	TDSM0PG.H32	FB EF F5 19
7/27/2021	36817	Post-HP Test	LC3A-14C204-EVC BC3A-14D609-BC K2GA-14F553-AB HC3A-14G265-BF KC3A-5M203-AB LC34-14G336-AB	D9 BF 99 14 1D DA 3E C0 67 68 8C 6B 0D CB 8B C4 95 5F 61 8E 66 0F A7 C4	TDSM0PG.H32	FB EF F5 19

**RESULTS SUMMARY**

Full DFs				
NMHC	NOX	CO	PM	HCHO
0.0139	0.0726	0.08	0.0024	

Vehicle Mileage=	36570
Ex. Useful Life=	150000
UL Factor=	0.223

	NMHC	NOx	NMHC+NOx	CO	PM	HCHO
FTP Test Result #1	0.0063	0.1077		0.0887	0.0002	0.000
FTP Test Result #2	0.0000	0.0998		0.0739	0.0003	0.000
FTP Average	0.0032	0.1038		0.0813	0.0003	0.0000
DAF	0.001	0.0241		0.01	0.0002	
Additive DF	0.0108	0.0564		0.0622	0.0019	0.0000
Result	0.0149	0.1843	0.1992	0.1535	0.0023	0.0000

HWFET Test Result #1	0.0000	0.0432	
HWFET Test Result #2	0.0000	0.0553	
HWFET Average	0.0000	0.0493	
DAF	0.0015	0.0598	
Additive DF	0.0108	0.0564	
Result	0.0123	0.1655	0.1778

LA92 Test Result #1	0.0000	0.0896		0.0000	0.5232	*
LA92 Test Result #2	0.0000	0.0656		0.0000	0.5909	*
LA92 Average	0.0000	0.0776		0.0000	0.5571	*
DAF	0.0002	0.0728		0.02	0.0007	*
Additive DF	0.0108	0.0564		0.0622	0.0019	*
Result	0.0110	0.2068	0.2178	0.0822	0.5596	*

SC03 Test Result #1	0.0014	0.0570		0.0000	0.3228	*
SC03 Test Result #2	0.0018	0.0514		0.0000	0.3917	*
SC03 Average	0.0016	0.0542		0.0000	0.3573	*
+20% for AC2	0.0003	0.0108		0.0000	0.0715	*
DAF	0.001	0.0241		0.01	0.0002	*
Additive DF	0.0108	0.0564		0.0622	0.0019	*
Result	0.0137	0.1455	0.1593	0.0722	0.4308	*

	NMHC+NOx	CO	PM	HCHO*
FTP UL Std.	0.270	4.2	0.010	6
Final Result	0.199	0.2	0.002	0
% of Std	73.8%	3.7%	23.1%	0.0%
PASS/FAIL	PASS	PASS	PASS	PASS

NMHC+NOx	
HWFET UL Std.	0.270
Final Result	0.178
% of Std	65.8%
PASS/FAIL	PASS

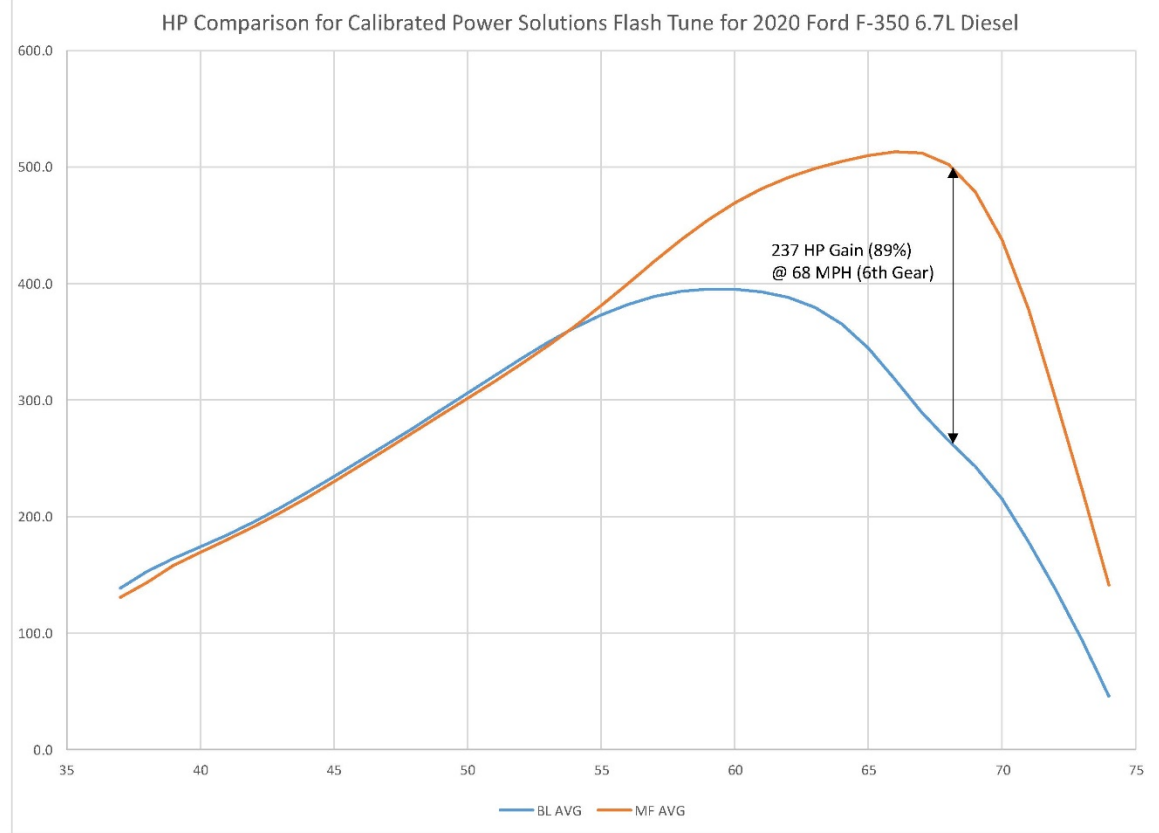
	NMHC+NOx	CO	PM*
Composite UL Std.	0.550	6.0	7
Final Result	0.190	0.1	1
% of Std	34.5%	1.7%	16.1%
PASS/FAIL	PASS	PASS	PASS

Results Summary Notes

- All values shown in grams per mile unless marked with a *, in which case it is milligrams per mile
- Light grey cells with italicized numbers are calculated
- DFs taken from EPA Certificate Summary Data and adjusted by 22.3% for vehicle mileage of 36,570



HORSEPOWER TESTING





7 Conclusion

As illustrated by the data above in Section 6, appropriate testing yielded results that are within the applicable tailpipe emissions standard for LEV3 ULEV270, as well as Tier 3 Bin 270. In addition, demonstrations and declarations have verified that all OBD readiness monitors and DTCs are functional and intact. All tests were performed on a vehicle that exemplifies the population of applications considered, based on the criteria presented in Section 5 of this document.

Utilizing the data obtained from testing, a factor can be calculated from the NO_x results and the test vehicle's certification values. This factor can then be applied to the LEV2 vehicles. The LEV2 ULEV standard is 0.2g/mi for NO_x, the LEV3 (LFMXD06.771D) certification test results are 0.17g/mi for NO_x, the delta from the modified vehicle result of 0.1843g/mi to its original certification is 0.0143g/mi. The percentage increase of NO_x can be assumed as 7.75%. When applying that percentage to the LEV2 certification results the NO_x is 0.2015g/mi, which when rounded is still within LEV2 ULEV 0.2g/mi. standard. Therefore, the test vehicle selection of the does adequately represent all vehicle applications requested.

All testing was performed in accordance with Title 40, Part 86, and 1066 of the Code of Federal Regulations at an EPA-recognized laboratory. In aggregate, this presents a compelling reasonable basis for knowing that the Calibrated Power Solutions Inc., Spade Tuner for the Powerstroke, installed per manufacturer's instructions and as presented for the proposed application list, is compliant with all federal emissions regulations in accordance with the EPA tampering policy issued on November 23, 2020.



8 Appendix

Application Form

	SEMA CERTIFIED APPLICATION FOR CERTIFICATION OF COMPLIANCE WITH EPA TAMPERING POLICY	FORM A-001 REV 9/20/22	WARNING: ANY FALSE STATEMENTS IN THIS APPLICATION IS A VIOLATION OF SEMA CERTIFIED POLICY AND WILL RESULT IN IMMEDIATE RETRACTION OF SEMA COC, AND COULD RESULT IN PERMANENT DISQUALIFICATION FROM THE SEMA CERTIFIED PROGRAM
COMPLETE INFORMATION AS REQUIRED			
APPLICATION	MANUFACTURER:	Calibrated Power Solutions Inc.	
	MANUFACTURER ADDRESS:	455 Borden St, Woodstock, IL 60098	
	AUTHORIZED REPRESENTATIVE:	NAME:	Tim Mahoney
		TITLE:	R&D/ NEW PRODUCT COORDINATOR
	TELEPHONE NUMBER:	(224) 361-6333	
	EMAIL ADDRESS:	tim@duramaxtuner.com	
	PRODUCT NAME:	Spade Tuner - Powerstroke	
	PRODUCT CATEGORY:	Flash Tune	
	PRODUCT PART NUMBER(S):	13-10, 13-11, 13-12	
		DESCRIBE THE INTENDED PURPOSE OF THE PRODUCT: Increase the Performance and Efficiency of the vehicle as seen with our test results.	
	HOW DOES THE PRODUCT WORK: The product is a calibration flash. Use supplied hardware to flash an updated calibration, same as an OE Engineer would.		
	DESCRIBE VEHICLE FITMENT, INCLUDE YEARS, MAKES, MODELS, TRIMS, ENGINES, FUEL TYPES, ETC. (VEHICLE COVERAGE LIST WILL BE CREATED BY SEMA TO CONFIRM FITMENT): 2011-2022 Ford F-250/F-350/F-450 6.7L Powerstroke. See VCL		
	THE FOLLOWING DOCUMENTATION IS REQUIRED BY SEMA. PLEASE CHECK ALL THAT ARE INCLUDED IN THIS APPLICATION PACKAGE.		
	☐ ALL APPLICABLE INSTALLATION INSTRUCTIONS AND USER MANUALS		
	☐ PARTS LIST/BILL OF MATERIALS (MUST INCLUDE HOSE/COUPLER MATERIAL SPECIFICATIONS)		
	☐ EXAMPLE OF MARKETING/ADVERTISING MATERIALS, (E.G. WEBSITE PAGE, CATALOG, ETC.) IF AVAILABLE		
	☐ ENGINE COMPARTMENT LABEL, (CHANGES IN SERVICE INFORMATION, E.G. SPARK PLUG GAP, BELT ROUTING, ETC.) IF APPLICABLE		
SECTION F	DOES THIS PRODUCT INCLUDE A TURBOCHARGER, SUPERCHARGER, OR FUEL INJECTORS?		NO
	IF ANSWERED YES TO THE PREVIOUS QUESTION, COMPLETE FORM F (FORCED INDUCTION / FUEL MODIFICATION FORM)		
	☐ FORM F (FORCED INDUCTION / FUEL MODIFICATION FORM) PLEASE FILL IN FORM FILE AND SAVE. IF SAVING AS PDF, PLEASE SAVE AS AND SUBMIT FILE SEPERATELY WITH APPLICATION.		 SC-E FORM F.docx



SECTION E	DOES THIS PRODUCT INCLUDE ANY ECU OR SIGNAL MODIFICATION?	YES
	IF ANSWERED YES TO THE PREVIOUS QUESTION, COMPLETE FORM E (ECU/SIGNAL MODIFICATION FORM)	
	☐ FORM E (ECU/SIGNAL MODIFICATION FORM) PLEASE FILL IN FORM FILE AND SAVE. IF SAVING AS PDF, PLEASE SAVE AS AND SUBMIT FILE SEPERATELY WITH APPLICATION.	 SC-E FORM E.docx
	HAVE ANY DIAGNOSTIC TROUBLE CODES BEEN TURNED OFF OR MODIFIED?	NO
IF ANSWERED YES TO ABOVE, EXPLAIN: Click or tap here to enter text.		
AFFIDAVIT	TO THE BEST OF YOUR KNOWLEDGE DOES, OR CAN, THIS PRODUCT PERFORM DIFFERENTLY ON ROAD VS. ON THE SPECIFIED DRIVE CYCLES PERFORMED IN THE EMISSIONS TEST LAB.	NO
	IF ANSWERED YES TO ABOVE, EXPLAIN: Click or tap here to enter text.	
	HAVE ANY MODIFICATIONS BEEN DESIGNED TO SPECIFICALLY OPERATE OUTSIDE OF THE EMISSIONS TEST CYCLE?	NO
	IF ANSWERED YES TO ABOVE, EXPLAIN: Click or tap here to enter text.	
	DO YOU HAVE ANY REASON TO BELIEVE THAT ANY OF THE MODIFICATIONS MADE IN CONJUNCTION WITH THE INSTALLATION OF THIS DEVICE MIGHT RESULT IN A DEGREDDATION IN THE DURABILITY OF ANY EMISSIONS CONTROL DEVICES ON THE VEHICLE?	NO
	IF ANSWERED YES TO ABOVE, EXPLAIN: Click or tap here to enter text.	
	☒ I AFFIRM THAT TO THE BEST OF MY KNOWLEDGE THIS DEVICE WILL NOT CAUSE EMISSIONS INTO THE AMBIENT AIR OF ANY NOXIOUS OR TOXIC MATTER THAT IS NOT EMITTED IN THE OPERATION OF SUCH MOTOR VEHICLE WITHOUT SUCH DEVICE	
	☒ I UNDERSTAND THAT IF GRANTED A COC FROM SEMA CERTIFIED, IT DOES NOT CONSTITUTE AN ENDORSEMENT BY SEMA, OR A CERTIFICATION, ENDORSEMENT OR APPROVAL BY EPA, CARB, OR ANY OTHER REGULATORY BODY.	
SIGNATURE: Insert Signature Here		DATE: 9/11/2023



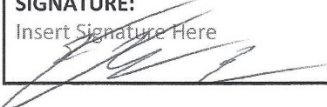
Form E

	SEMA CERTIFIED ECU/SIGNAL MODIFICATION FORM	FORM E-001 REV 9/20/22	WARNING: ANY FALSE STATEMENTS IN THIS APPLICATION IS A VIOLATION OF SEMA CERTIFIED POLICY AND WILL RESULT IN IMMEDIATE RETRACTION OF SEMA COC, AND COULD RESULT IN PERMANENT DISQUALIFICATION FROM THE SEMA CERTIFIED PROGRAM
COMPLETE INFORMATION AS REQUIRED			
MANUFACTURER:		Calibrated Power Solutions Inc.	
PRODUCT PART NUMBER(S):		13-10, 13-11,13-12	
ECU MODIFICATION STRATEGY			
IS THIS PRODUCT'S ECU MODIFICATION PERFORMED BY A PIGGY-BACK DEVICE?		NO	
IF ANSWERED YES TO ABOVE, IDENTIFY ALL SENSORS AND/OR SIGNALS MODIFIED FROM OEM SPECIFICATIONS: .			
EXPLAIN HOW EACH SENSOR AND/OR SIGNAL IS BEING MODIFIED: .			
EXPLAIN IN PERCENTAGES, THE AMOUNT EACH SENSOR AND/OR SIGNAL IS BEING MODIFIED AND UNDER WHAT CONDITION: .			
DOES THE PIGGY-BACK DEVICE INCLUDE CONTROL NOT AVAILABLE WITH THE FACTORY OEM CALIBRATION?		Choose an item.	
IF ANSWERED YES TO ABOVE, EXPLAIN: .			
EXPLAIN HOW THE MODIFICATION STATED ABOVE WILL DIFFER IF THE PIGGY-BACK DEVICE FAILS: Click or tap here to enter text.			
IS THIS PRODUCT'S ECU MODIFICATION PERFORMED BY AN ECU FLASH?		YES	
IF ANSWERED YES TO ABOVE, IDENTIFY ALL PARAMETERS BEING MODIFIED FROM OEM SPECIFICATIONS: See attached Spread sheet.			
SUBMIT PARAMETER LIST AND CALIBRATION TABLES TO DEMONSTRATE THE PRODUCT'S ECU MODIFICATION: A. ATTACH PARAMETER LIST AND CALIBRATION TABLES WITH THIS DOCUMENT. Click or tap here to enter text.			
DOES THIS PRODUCT'S ECU MODIFICATION CHANGE THE OEM ECU OPERATING SYSTEM?		NO	
IF ANSWERED YES TO ABOVE, EXPLAIN (E.G., BASE CONTROL CONFIGURATION, SENSOR ADDITIONS): No physical operating system changes are made, we work within the factory OS to calibrate fuel, airflow, and torque within normal operating modes only. No Warm up, cool down, regen, or any similar modes are adjusted.			
ECU MODIFICATION PERFORMANCE			
EXPLAIN HOW THIS PRODUCT'S ECU MODIFICATION AFFECTS PERFORMANCE, FUEL ECONOMY, AND EMISSIONS DURING LOW LOAD CONDITIONS (E.G., HIGHWAY CRUISE SPEEDS, COASTING): As our testing shows, our calibration increases horsepower and reduces emissions. Anytime you can broaden the torque band, and allow the truck to work less; overall efficiency, fuel mileage, and emissions will be better.			



EXPLAIN HOW THIS PRODUCT'S ECU MODIFICATION AFFECTS PERFORMANCE, FUEL ECONOMY, AND EMISSIONS DURING HIGH LOAD CONDITIONS (E.G., HARD ACCELERATION, TOWING): Increases horsepower will reducing emissions under heavy load.	
EXPLAIN HOW THIS PRODUCT'S ECU MODIFICATION AFFECTS PERFORMANCE, FUEL ECONOMY, AND EMISSIONS DURING COLD START CONDITIONS (E.G., TEMPERATURES EQUAL TO AMBIENT AND BELOW NORMAL OPERATING TEMPERATURES): No changes	
EXPLAIN HOW THIS PRODUCT'S ECU MODIFICATION AFFECTS PERFORMANCE, FUEL ECONOMY, AND EMISSIONS DURING IDLE CONDITIONS (E.G., VEHICLE SPEED IS BELOW 2MPH): No changes	
EXPLAIN HOW THIS PRODUCT'S ECU MODIFICATION AFFECTS PERFORMANCE, FUEL ECONOMY, AND EMISSIONS DURING RAPID-THROTTLE CONDITIONS (E.G., TRANSIENT TIP-IN AND TIP-OUT): A. EXPLAIN FUEL ENRICHMENT PERCENTAGE CHANGE. With a leaner then factory air fuel mixture, our calibration will allow for less soot build up then factory.	
EXPLAIN HOW THIS PRODUCT'S ECU MODIFICATION AFFECTS PERFORMANCE, FUEL ECONOMY, AND EMISSIONS DURING WIDE-OPEN THROTTLE CONDITIONS (E.G., FULL POWER/TORQUE): A. EXPLAIN FUEL ENRICHMENT PERCENTAGE CHANGE. With added power, the truck will not need to work as hard resulting in less emissions, better fuel economy, lower EGTS, etc.	
IDENTIFY ALL CHANGES MADE TO THIS PRODUCT'S ECU MODIFICATION THAT ARE OUTSIDE OF ANY EMISSIONS TEST CYCLE (E.G., FTP, SFTP): A. EXPLAIN USING PERCENTAGE, ANY CHANGES MADE TO THE VEHICLE'S PERFORMANCE, FUEL ECONOMY, AND EMISSIONS WHEN COMPARED TO THE STOCK CONFIGURATION. Additional power of up to 89%, emissions numbers presented in the testing with our EO D-845-2	
IDENTIFY ALL OPERATING CONDITIONS WHERE THIS PRODUCT'S ECU MODIFICATION COMMANDS OPEN LOOP OPERATION OR TURNS OFF OEM DESIGNATED POWER DERATES: All OE Operating modes left unchanged	
EXPLAIN HOW THIS PRODUCT'S ECU MODIFICATION AFFECTS AND CONTROLS CATALYST OVER TEMPERATURE (COT) OPERATION (E.G., ENABLE THRESHOLDS, ENRICHMENT TARGET, IGNITION ADVANCE, NORMALIZED TEMPERATURE TARGET): No changes made to emissions modes, we target a leaner air fuel mixture as well as aim to reduce NOX when compared to factory.	
CAN THE CATALYST OVER TEMPERATURE (COT) ENRICHMENT TARGET BE UTILIZED AT PEAK LOAD AND PEAK ENGINE SPEEDS WITHOUT DEVIATION?	NO
IF ANSWERED NO TO ABOVE, EXPLAIN: Click or tap here to enter text.	
DESCRIBE ANY IMPACT THIS PRODUCT'S ECU MODIFICATION COULD RESULT IN A DEGRADATION IN THE DURABILITY OF ANY EMISSIONS CONTROL DEVICES ON THE VEHICLE? Reducing emissions and adding efficiency should in theory increase the longevity of the emissions control parts.	
DOES THIS PRODUCT'S ECU MODIFICATION CHANGE EVAP PURGE CONTROL?	NO



IF ANSWERED YES TO ABOVE, EXPLAIN: Click or tap here to enter text.	
DOES THIS PRODUCT'S ECU MODIFICATION UTILIZE USER SELECTABLE/ON THE FLY CALIBRATION CHANGES?	NO
IF ANSWERED YES TO ABOVE, EXPLAIN THE ECU MODIFICATION DIFFERENCES BETWEEN EACH USER SELECTABLE CALIBRATION: Click or tap here to enter text.	
DOES THIS PRODUCT'S ECU MODIFICATION TURN OFF ANY EMISSIONS CONTROL COMPONENTS OR FUNCTIONS?	NO
IF ANSWERED YES TO ABOVE, EXPLAIN: Click or tap here to enter text.	
DOES THIS PRODUCT'S ECU MODIFICATION CHANGE ANY OEM DIAGNOSTIC THRESHOLDS?	NO
IF ANSWERED YES TO ABOVE, EXPLAIN: Click or tap here to enter text.	
DOES THIS PRODUCT'S ECU MODIFICATION TURN OFF ANY OEM DIAGNOSTIC TROUBLE CODES?	NO
IF ANSWERED YES TO ABOVE, EXPLAIN: Click or tap here to enter text.	
SIGNATURE: Insert Signature Here 	DATE: 9/11/2023



Calibration Parameters



6.7 Powerstroke
Additional Cal Table:

Calibration Parameters

Vehicle Coverage List

[illegible]

CPS01.C003_VCL_20
23.08.01.x|sx

Complete VCL



New Vehicle EPA COC and CARB Executive Order (Tested Vehicle)

 LFMXD06.771D-069. PDF	 pc-ldt-mdv_mdv_a-1 0-2227__sdt--201911
EPA COC LFMXD06.771D-069	CARB EO A-010-2227



CARB Executive Order D-845-2



D-845-2 EO
Calibrated Power So

CARB EO
#D-845-2



Installation Instructions

 11-19 Calibrated Power Ford Spade 1	 V1.1 2020+ Ford Spade Flash-FORD
Part # 13-11, 13-12 Spade Flash – Ford Instructions	Duramax Tuner EZ Lynk Hardware & Tune Installation



Marketing Material



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Home > SPADE Flash - Ford - 50 STATE (LIGHT TOW TUNE) - BENCH FLASH ECM TUNING - POWERSTROKE 6.7L (2020, 2021)



50 State Tuning

SPADE FLASH - FORD - 50 STATE (LIGHT TOW TUNE) - BENCH FLASH ECM TUNING - POWERSTROKE 6.7L (2020, 2021)

Calibrated Power's 2020+ 6.7L Powerstroke Light Tow Tune Package includes the Engine Tuning your truck needs! Gets rid of the factory dead pedal, safely gives you more useable power, and dramatically improves your overall driving experience. Unlike the pressure boxes and pedal-signal-interceptors on the market, our Custom Tuning recalibrates your entire engine operation to run more efficiently and produce more power!

Over 10 years have been spent focusing our research and development efforts on building aftermarket diesel tuning and other upgrades that retain all factory emissions equipment. Unlike others deleting DPFs or offering minimal HP/TQ gains, we give you big power with Emissions Equipped Performance! Features like SMART EGT Control and Integrated Air/Fuel Ratio Adjustment are designed to manage your soot accumulation levels while allowing you to take advantage of this amazing engine and transmission.

As low as **\$750.00**IN STOCK
SKU#: DT830060000500

Customize and Add to Cart





Details

Get 50 State Light Tow Tune For 2020+ Powerstroke

- Emissions Intact – you do not remove your emissions equipment
- 50 State Legal!
- Product as registered with CARB
 - Name: Spade Flash - Ford
 - Part Number: DT130060000500
 - E.O. Number: D-845-2
 - [PDF](#)

Do you need DuramaxTuner.com Custom Tuning?

- Designed to be safe for your engine and emissions equipment
- DuramaxTuner has 14+ years of experience with Custom Tuning
- Fully customized tuning with more than 100+ calibration changes from stock
- No hacking wires into control units or fuel pump and turbo sensors
- More power and less soot than box programmers
- World Class Customer Service Phone Support!

Light Tow

- **Balance between Daily Driving and Towing**
 - Smooth power curve that's fun to drive
 - Custom "SMART EGT Control" will automatically manage your EGTs
 - Air-Fuel Ratio limits built into calibration to limit soot production
 - Designed to tow less than 8,000 lbs.
 - Factory turbo brake retains complete functionality
- **Horsepower & Torque Increase +60 RWHP +108 ft-lbs**
 - Get your truck up and moving more quickly
 - More useable power in all driving scenarios
 - Have enough power to "Shift Up, Throttle Back"
- **Revised pedal sensitivity**
 - Low-speed trailer maneuvering
 - Back up with trailer without lurching

Towing & Performance

- Use the wider torque curve provided by ECM Tuning
- Keep your truck in its power band when lugging up a grade
- Quicker shifts mean less time between gears and more time putting power to the ground
- Optimize your aftermarket performance parts

How it works

- ECM Tuning can only be provided with a bench flash. This means your ECM needs to be removed from your truck and shipped to us.
 - Your truck will be inoperable during this process.
- We promise to work as quickly as possible to complete the bench flash process and ship your Tuned ECM back. For the quickest possible turn-around time, please follow these steps.
 1. Place your order online or over the phone and select overnight shipping. This will cover the cost of us shipping the Tuned ECM back to you. IT DOES NOT COVER THE COST OF YOU SHIPPING YOUR STOCK ECM TO US.
 2. Print a copy of your receipt.
 3. Arrange overnight shipping to us with early delivery if possible. Make sure to keep a copy of your tracking number.
 4. **INCLUDE THE RECEIPT FROM YOUR PURCHASE WITH THE ECM BEING SHIPPED TO US!**
 5. Make sure the ECM is scheduled to arrive at our facility on a Monday, Tuesday, Wednesday, or Thursday that does not run concurrently with a National Holiday.

Warning: This product can expose you to chemicals that are known to the State of California to cause cancer. For more information, visit www.P65warnings.ca.gov