

Pursuant to the authority vested in California Air Resources Board by Health and Safety Code Division 26, Part 5, Chapter 2; and pursuant to the authority vested in the undersigned by Health and Safety Code Sections 39515 and 39516 and Executive Order G-19-095;

IT IS ORDERED AND RESOLVED: The engine and emission control systems produced by the manufacturer are certified as described below for use in on-road motor vehicles with a manufacturer's GVWR over 14,000 pounds. Production engines shall be in all material respects the same as those for which certification is granted.

MODEL YEAR	ENGINE FAMILY	ENGINE SIZES (L)	FUEL TYPE ¹	STANDARDS & TEST PROCEDURE	INTENDED SERVICE CLASS ²	ECS & SPECIAL FEATURES ³	DIAGNOSTIC ⁶
PRIMARY ENGINE'S IDLE EMISSIONS CONTROL ⁵		ADDITIONAL IDLE EMISSIONS CONTROL ⁵					
30g		N/A					
ENGINE (L)	ENGINE MODELS / CODES (rated power, in hp)						
14.9	See attachment for engine models and ratings						
[*] =not applicable; GVWR =gross vehicle weight rating; 13 CCR xyz =Title 13, California Code of Regulations, Section xyz; 40 CFR 86.abc =Title 40, Code of Federal Regulations, Section 86.abc; L =liter; hp =horsepower; kw =kilowatt; hr =hour; ¹ CNG/LNG =compressed/liquefied natural gas; LPG =liquefied petroleum gas; E85 =85% ethanol fuel; MF =multi fuel a.k.a. BF =bi fuel; DF =dual fuel; FF =flexible fuel; ² L/MH HDD =light/medium/heavy heavy-duty diesel; UB =urban bus; HDO =heavy duty Otto; ³ ECS =emission control system; TWC/OC =three-way/oxidizing catalyst; NAC =NOx adsorption catalyst; SCR-U / SCR-N =selective catalytic reduction – urea / – ammonia; WU (prefix) =warm-up catalyst; DPF =diesel particulate filter; PTOX =periodic trap oxidizer; HO2S/O2S =heated/oxygen sensor; HAFS/AFS =heated/air-fuel-ratio sensor (a.k.a., universal or linear oxygen sensor); TBI =throttle body fuel injection; SFI/MFI =sequential/multi port fuel injection; DGI =direct gasoline injection; GCARB =gaseous carburetor; ID/IDI =indirect/direct diesel injection; TC/SC =turbo/super charger; CAC =charge air cooler; EGR / EGR-C =exhaust gas recirculation / cooled EGR; PAIR/AIR =pulsed/secondary air injection; SPL =smoke puff limiter; ECM/PCM =engine/powertrain control module; EM =engine modification; 2 (prefix) =parallel; (2) (suffix) =in series; ⁵ ESS =emission shutdown system (per 13 CCR 1956.8(a)(6)(A)(1)); 30g =30 g/hr NOx (per 13 CCR 1956.8(a)(6)(C)); APS =internal combustion auxiliary power system; ALT =alternative method (per 13 CCR 1956.8(a)(6)(D)); Exempt =exempted per 13 CCR 1956.8(a)(6)(B) or for CNG/LNG fuel systems; N/A =not applicable (e.g., Otto engines and vehicles); ⁶ EMD =engine manufacturer diagnostic system (13 CCR 1971); OBD(F) / (P) / (S) =full / partial / partial with a fine / on-board diagnostic;							

Following are: 1) the FTP exhaust emission standards, or family emission limit(s) as applicable, under 13 CCR 1956.8; 2) the SET and NTE limits under the applicable California exhaust emission standards and test procedures for heavy-duty diesel engines and vehicles (Test Procedures); and 3) the corresponding certification levels, for this engine family. "Diesel" CO, SET and NTE certification compliance may have been demonstrated by the manufacturer as provided under the applicable Test Procedures in lieu of testing. (For flexible- and dual-fueled engines, the CERT values in brackets [] are those when tested on conventional test fuel. For multi-fueled engines, the STD and CERT values for default operation permitted in 13 CCR 1956.8 are in parentheses.). ⁴

in g/bhp-hr	NMHC		NOx		NMHC+NOx		CO		PM		HCHO	
	FTP	SET	FTP	SET	FTP	SET	FTP	SET	FTP	SET	FTP	SET
STD	0.14	0.14	0.20	0.20	*	*	15.5	15.5	0.01	0.01	*	*
CERT	0.003	0.003	0.07	0.03	*	*	0.04	0.01	0.004	0.003	*	*
NTE	0.21		0.30		*		19.4		0.02		*	

⁴ g/bhp-hr=grams per brake horsepower-hour; FTP=Federal Test Procedure; SET=Supplemental emissions testing; NTE=Not-to-Exceed; STD=standard or emission test cap; FEL=family emission limit; CERT=certification level; NMHC/HC=non-methane/hydrocarbon; NOx=oxides of nitrogen; CO=carbon monoxide; PM=particulate matter; HCHO=formaldehyde;

BE IT FURTHER RESOLVED: The manufacturer has demonstrated compliance with the Greenhouse Gas Emission Standards as specified in Title 13 CCR 1956.8 and the incorporated "California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy Duty Diesel-Engines and Vehicles" (HDDE Test Procedures) adopted December 12, 2002, as last amended April 18, 2019.

PRIMARY INTENDED SERVICE CLASS: Tractor/Vocational				
In g/bhp-hr	CO ₂		CH ₄	N ₂ O
	FTP	SET		
STD	513	447	0.10	0.10
FCL	506	446	*	*
FEL	521	459	0.10	0.10
CERT	505	446	0.02	0.08

⁴ g/bhp-hr=grams per brake horsepower-hour; FTP=Federal Test Procedure; SET=Supplemental emissions testing; STD = standard or emission test cap; FEL=family emission limit; FCL=family certification level; CERT=certification level; CO₂=carbon dioxide; CH₄=methane; N₂O=nitrous oxide; VOCATIONAL=vocational engine; TRACTOR=tractor engine

BE IT FURTHER RESOLVED: Certification to the FEL(s) / FCL(s) listed above, as applicable, is subject to the following terms, limitations and conditions. The FEL(s) / FCL(s) is the emission level declared by the manufacturer and serves in lieu of an emission standard for certification purposes in any averaging, banking, or trading (ABT) programs. It will be used for determining compliance of any engine in this family and compliance with such ABT programs.

BE IT FURTHER RESOLVED: For the listed engine models the manufacturer has submitted the materials to demonstrate certification compliance with 13 CCR 1965 (emission control labels), 13 CCR 1971.1 (on-board diagnostic, full or partial compliance) and 13 CCR 2035 et seq. (emission control warranty).

BE IT FURTHER RESOLVED: That the manufacturer has elected to include engine models in this engine family which are identified for "emergency vehicle use only". These "emergency vehicle use only" engines are exempt from requirements imposed pursuant to California law and the regulations adopted pursuant thereto for motor vehicle pollution control devices per California Vehicle Code Section 27156.2. The manufacturer must clearly label these engines for "emergency vehicle use only" on the engines' emission control label.

BE IT FURTHER RESOLVED: Except in vehicle applications exempted per 13 CCR 1956.8(a)(6)(B), engines in this engine family certified under 13 CCR 1956.8(a)(6)(C) [30 g/hr NO_x] and section 35.B.4 of the incorporated "California Exhaust Emissions Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Diesel Engines and Vehicles" (HDDE Test Procedures) adopted December 12, 2002, as last amended April 18, 2019, shall be provided with an approved "Certified Clean Idle" label that shall be affixed to the vehicle into which the engine is installed.

Engines certified under this Executive Order must conform to all applicable California emission regulations.

The Bureau of Automotive Repair will be notified by copy of this Executive Order.

Executed on this 17th day of September 2020.



Allen Lyons, Chief
Emissions Certification and Compliance Division

Engine Model Summary Template

9/9/2020

Engine Family	1.Engine Code	2.Engine Model	3.BHP@RPM (SAE Gross)	4.Fuel Rate: mm/stroke @ peak HP (for diesel only)	5.Fuel Rate: (lbs/hr) @ peak HP (for diesels only)	6.Torque @ RPM (SEA Gross)	7.Fuel Rate: mm/stroke@peak torque	8.Fuel Rate: (lbs/hr)@peak torque	9.Emission Control Device Per SAE J1930
MCEXH0912XCA	XH1	X15 500EX	500@1700	276	158	1850@950	316	101	DDI, TC, CAC, ECM, EGR, OC, PTOX, SCR-U, AMOX
MCEXH0912XCA	XH2	X15 450V	450@1900	232	149	1650@950	280	90	
MCEXH0912XCA	XH3	X15 500V	500@1900	261	167	1850@950	316	101	
MCEXH0912XCA	XH4	X15 400ST	400@1700	217	125	1650@950	280	90	
MCEXH0912XCA	XH5	X15 400ST	400@1700	217	125	1750@950	298	96	
MCEXH0912XCA	XH6	X15 400ST	400@1700	217	125	1850@950	316	101	
MCEXH0912XCA	XH7	X15 400EX	400@1700	217	125	1650@950	280	90	
MCEXH0912XCA	XH8	X15 400EX	400@1700	217	125	1750@950	298	96	
MCEXH0912XCA	XH9	X15 400EX	400@1700	217	125	1850@950	316	101	
MCEXH0912XCA	XH10	X15 450	450@1700	245	141	1650@950	280	90	
MCEXH0912XCA	XH11	X15 450	450@1700	245	141	1750@950	298	96	
MCEXH0912XCA	XH12	X15 450	450@1700	245	141	1850@950	316	101	
MCEXH0912XCA	XH13	X15 450ST	450@1700	245	141	1650@950	280	90	
MCEXH0912XCA	XH14	X15 450ST	450@1700	245	141	1750@950	298	96	
MCEXH0912XCA	XH15	X15 450ST	450@1700	245	141	1850@950	316	101	
MCEXH0912XCA	XH16	X15 450EX	450@1700	245	141	1850@950	316	101	
MCEXH0912XCA	XH17	X15 450EX	450@1700	245	141	1750@950	298	96	
MCEXH0912XCA	XH18	X15 500	500@1700	276	158	1850@950	316	101	
MCEXH0912XCA	XH19	X15 500	500@1700	276	158	1650@950	280	90	
MCEXH0912XCA	XH20	X15 500ST	500@1700	276	158	1850@950	316	101	
MCEXH0912XCA	XH21	X15 430V	430@1900	221	142	1650@950	280	90	
MCEXH0912XCA	XH22	X15 450V	450@1900	232	149	1750@950	298	96	
MCEXH0912XCA	XH23	X15 470V	470@1900	243	156	1750@950	298	96	
MCEXH0912XCA	XH24	X15 500V	500@1900	261	167	1650@950	280	90	
			Emergency	ratings	below				
MCEXH0912XCA	XHE1	X15 500EV	500@1900	261	167	1650@950	280	90	↓