

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
2022	NCEXH0912XCA	14.9	Diesel	Diesel	HHDD	DDI, TC, CAC, ECM, EGR-C, OC, PTOX, SCR-U, AMOX	OBD(P)
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/M/H 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; **IDI/DDI**=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; **AMOX**=Ammonia Oxidation Catalyst; **NOXS**=NOx sensor; **2 (prefix)**=parallel; **(2) (suffix)**=in series;
⁵ **ESS**=engine 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	0.002	0.001	0.09	0.03	*	*	0.02	0.03	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	505	445	*	*
FEL	520	458	0.10	0.10
CERT	499	443	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 13th day of December 2021.



Allen Lyons, Chief
Emissions Certification and Compliance Division

Attachment: Engine Models

EO #: A-021-0752Family: NCEXH0912XCAAttachment Last Revised: 11/17/2021

Model	Code	Trim	Config	Displacement	Displacement -		Peak Power	Peak Power -		Peak Power -	Peak Power -	Peak Power - Fuel		Peak Torque -	Peak Torque -		Peak Torque -	Peak Torque -		OBD	GHG	Special	Notes
					Units	Liters		Units	horsepower			Speed (rpm)	Fueling		Units	Peak Torque		Units	lb-ft				
X15 500EX	XH1	N/A	N/A	15	Liters		500	horsepower	1700	276	mm3/stroke	1850	lb-ft	950	316	mm3/stroke	Partial	Vocational	N/A	N/A			
X15 450V	XH2	N/A	N/A	15	Liters		450	horsepower	1900	232	mm3/stroke	1650	lb-ft	950	280	mm3/stroke	Partial	Vocational	N/A	N/A			
X15 500V	XH3	N/A	N/A	15	Liters		500	horsepower	1900	261	mm3/stroke	1850	lb-ft	950	316	mm3/stroke	Partial	Vocational	N/A	N/A			
X15 400ST	XH4	N/A	N/A	15	Liters		400	horsepower	1700	217	mm3/stroke	1650	lb-ft	950	280	mm3/stroke	Partial	Vocational	N/A	N/A			
X15 400ST	XH5	N/A	N/A	15	Liters		400	horsepower	1700	217	mm3/stroke	1750	lb-ft	950	298	mm3/stroke	Partial	Vocational	N/A	N/A			
X15 400ST	XH6	N/A	N/A	15	Liters		400	horsepower	1700	217	mm3/stroke	1850	lb-ft	950	316	mm3/stroke	Partial	Vocational	N/A	N/A			
X15 400EX	XH7	N/A	N/A	15	Liters		400	horsepower	1700	217	mm3/stroke	1650	lb-ft	950	280	mm3/stroke	Partial	Vocational	N/A	N/A			
X15 400EX	XH8	N/A	N/A	15	Liters		400	horsepower	1700	217	mm3/stroke	1750	lb-ft	950	298	mm3/stroke	Partial	Vocational	N/A	N/A			
X15 400EX	XH9	N/A	N/A	15	Liters		400	horsepower	1700	217	mm3/stroke	1850	lb-ft	950	316	mm3/stroke	Partial	Vocational	N/A	N/A			
X15 450	XH10	N/A	N/A	15	Liters		450	horsepower	1700	245	mm3/stroke	1650	lb-ft	950	280	mm3/stroke	Partial	Vocational	N/A	N/A			
X15 450	XH11	N/A	N/A	15	Liters		450	horsepower	1700	245	mm3/stroke	1750	lb-ft	950	298	mm3/stroke	Partial	Vocational	N/A	N/A			
X15 450	XH12	N/A	N/A	15	Liters		450	horsepower	1700	245	mm3/stroke	1850	lb-ft	950	316	mm3/stroke	Partial	Vocational	N/A	N/A			
X15 450ST	XH13	N/A	N/A	15	Liters		450	horsepower	1700	245	mm3/stroke	1650	lb-ft	950	280	mm3/stroke	Partial	Vocational	N/A	N/A			
X15 450ST	XH14	N/A	N/A	15	Liters		450	horsepower	1700	245	mm3/stroke	1750	lb-ft	950	298	mm3/stroke	Partial	Vocational	N/A	N/A			
X15 450ST	XH15	N/A	N/A	15	Liters		450	horsepower	1700	245	mm3/stroke	1850	lb-ft	950	316	mm3/stroke	Partial	Vocational	N/A	N/A			
X15 450EX	XH16	N/A	N/A	15	Liters		450	horsepower	1700	245	mm3/stroke	1850	lb-ft	950	316	mm3/stroke	Partial	Vocational	N/A	N/A			
X15 450EX	XH17	N/A	N/A	15	Liters		450	horsepower	1700	245	mm3/stroke	1750	lb-ft	950	298	mm3/stroke	Partial	Vocational	N/A	N/A			
X15 500	XH18	N/A	N/A	15	Liters		500	horsepower	1700	269	mm3/stroke	1850	lb-ft	950	316	mm3/stroke	Partial	Vocational	N/A	N/A			
X15 500	XH19	N/A	N/A	15	Liters		500	horsepower	1700	276	mm3/stroke	1650	lb-ft	950	280	mm3/stroke	Partial	Vocational	N/A	N/A			
X15 500ST	XH20	N/A	N/A	15	Liters		500	horsepower	1700	276	mm3/stroke	1850	lb-ft	950	316	mm3/stroke	Partial	Vocational	N/A	N/A			
X15 430V	XH21	N/A	N/A	15	Liters		430	horsepower	1900	221	mm3/stroke	1650	lb-ft	950	280	mm3/stroke	Partial	Vocational	N/A	N/A			
X15 450V	XH22	N/A	N/A	15	Liters		450	horsepower	1900	232	mm3/stroke	1750	lb-ft	950	298	mm3/stroke	Partial	Vocational	N/A	N/A			
X15 470V	XH23	N/A	N/A	15	Liters		470	horsepower	1900	243	mm3/stroke	1750	lb-ft	950	298	mm3/stroke	Partial	Vocational	N/A	N/A			
X15 500V	XH24	N/A	N/A	15	Liters		500	horsepower	1900	261	mm3/stroke	1650	lb-ft	950	280	mm3/stroke	Partial	Vocational	N/A	N/A			
X15 500EV	XHE1	N/A	N/A	15	Liters		500	horsepower	1900	261	mm3/stroke	1650	lb-ft	950	280	mm3/stroke	Partial	Vocational	N/A	Emergency Rating			
X15 500EX	XH1	N/A	N/A	15	Liters		500	horsepower	1700	276	mm3/stroke	1850	lb-ft	950	316	mm3/stroke	Partial	Tractor	N/A	N/A			
X15 450V	XH2	N/A	N/A	15	Liters		450	horsepower	1900	232	mm3/stroke	1650	lb-ft	950	280	mm3/stroke	Partial	Tractor	N/A	N/A			
X15 500V	XH3	N/A	N/A	15	Liters		500	horsepower	1900	261	mm3/stroke	1850	lb-ft	950	316	mm3/stroke	Partial	Tractor	N/A	N/A			
X15 400ST	XH4	N/A	N/A	15	Liters		400	horsepower	1700	217	mm3/stroke	1650	lb-ft	950	280	mm3/stroke	Partial	Tractor	N/A	N/A			
X15 400ST	XH5	N/A	N/A	15	Liters		400	horsepower	1700	217	mm3/stroke	1750	lb-ft	950	298	mm3/stroke	Partial	Tractor	N/A	N/A			
X15 400ST	XH6	N/A	N/A	15	Liters		400	horsepower	1700	217	mm3/stroke	1850	lb-ft	950	316	mm3/stroke	Partial	Tractor	N/A	N/A			
X15 400EX	XH7	N/A	N/A	15	Liters		400	horsepower	1700	217	mm3/stroke	1650	lb-ft	950	280	mm3/stroke	Partial	Tractor	N/A	N/A			
X15 400EX	XH8	N/A	N/A	15	Liters		400	horsepower	1700	217	mm3/stroke	1750	lb-ft	950	298	mm3/stroke	Partial	Tractor	N/A	N/A			
X15 400EX	XH9	N/A	N/A	15	Liters		400	horsepower	1700	217	mm3/stroke	1850	lb-ft	950	316	mm3/stroke	Partial	Tractor	N/A	N/A			
X15 450	XH10	N/A	N/A	15	Liters		450	horsepower	1700	245	mm3/stroke	1650	lb-ft	950	280	mm3/stroke	Partial	Tractor	N/A	N/A			
X15 450	XH11	N/A	N/A	15	Liters		450	horsepower	1700	245	mm3/stroke	1750	lb-ft	950	298	mm3/stroke	Partial	Tractor	N/A	N/A			
X15 450	XH12	N/A	N/A	15	Liters		450	horsepower	1700	245	mm3/stroke	1850	lb-ft	950	316	mm3/stroke	Partial	Tractor	N/A	N/A			
X15 450ST	XH13	N/A	N/A	15	Liters		450	horsepower	1700	245	mm3/stroke	1650	lb-ft	950	280	mm3/stroke	Partial	Tractor	N/A	N/A			
X15 450ST	XH14	N/A	N/A	15	Liters		450	horsepower	1700	245	mm3/stroke	1750	lb-ft	950	298	mm3/stroke	Partial	Tractor	N/A	N/A			
X15 450ST	XH15	N/A	N/A	15	Liters		450	horsepower	1700	245	mm3/stroke	1850	lb-ft	950	316	mm3/stroke	Partial	Tractor	N/A	N/A			
X15 450EX	XH16	N/A	N/A	15	Liters		450	horsepower	1700	245	mm3/stroke	1850	lb-ft	950	316	mm3/stroke	Partial	Tractor	N/A	N/A			
X15 450EX	XH17	N/A	N/A	15	Liters		450	horsepower	1700	245	mm3/stroke	1750	lb-ft	950	298	mm3/stroke	Partial	Tractor	N/A	N/A			
X15 500	XH18	N/A	N/A	15	Liters		500	horsepower	1700	269	mm3/stroke	1850	lb-ft	950	316	mm3/stroke	Partial	Tractor	N/A	N/A			
X15 500	XH19	N/A	N/A	15	Liters		500	horsepower	1700	276	mm3/stroke	1650	lb-ft	950	280	mm3/stroke	Partial	Tractor	N/A	N/A			
X15 500ST	XH20	N/A	N/A	15	Liters		500	horsepower	1700	276	mm3/stroke	1850	lb-ft	950	316	mm3/stroke	Partial	Tractor	N/A	N/A			
X15 430V	XH21	N/A	N/A	15	Liters		430	horsepower	1900	221	mm3/stroke	1650	lb-ft	950	280	mm3/stroke	Partial	Tractor	N/A	N/A			
X15 450V	XH22	N/A	N/A	15	Liters		450	horsepower	1900	232	mm3/stroke	1750	lb-ft	950	298	mm3/stroke	Partial	Tractor	N/A	N/A			
X15 470V	XH23	N/A	N/A	15	Liters		470	horsepower	1900	243	mm3/stroke	1750	lb-ft	950	298	mm3/stroke	Partial	Tractor	N/A	N/A			
X15 500V	XH24	N/A	N/A	15	Liters		500	horsepower	1900	261	mm3/stroke	1650	lb-ft	950	280	mm3/stroke	Partial	Tractor	N/A	N/A			
X15 500EV	XHE1	N/A	N/A	15	Liters		500	horsepower	1900	261	mm3/stroke	1650	lb-ft	950	280	mm3/stroke	Partial	Tractor	N/A	Emergency Rating			