

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
2023	PCEXH0721XCA	11.8	Diesel	Diesel	HHDD-UB	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)						
11.8	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	0.01	0.01	0.09	0.06	*	*	0.3	0.03	0.004	0.004	*	*
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 September 9, 2021.

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	509	456	*	*
FEL	524	470	0.10	0.11
CERT	503	455	0.02	0.09

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 September 9, 2021, 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 6th day of October 2022.



Robin U. Lang, Chief
Emissions Certification and Compliance Division

Attachment: Engine Models

EO #: A-021-0761

Family: PCEXH0721XCA

Attachment Last Revised: 9/23/2022

Model	Code	Trim	Config	Displacement	Displacement - Units	Peak Power	Peak Power - Units	Peak Power - Speed (rpm)	Peak Power - Fueling	Peak Power - Fuel Units	Peak Torque	Peak Torque - Units	Peak Torque - Speed (rpm)	Peak Torque - Fuel	Peak Torque - Fuel Units	OBD	GHG	Special	Notes
X12 350	XH1	N/A	I6	12	Liters	350	horsepower	1800	186	mm3/stroke	1350	lb-ft	1000	235	mm3/stroke	Partial	Tractor	N/A	N/A
X12 370	XH2	N/A	I6	12	Liters	370	horsepower	1800	197	mm3/stroke	1350	lb-ft	1000	235	mm3/stroke	Partial	Tractor	N/A	N/A
X12 380	XH3	N/A	I6	12	Liters	380	horsepower	1800	203	mm3/stroke	1450	lb-ft	1000	253	mm3/stroke	Partial	Tractor	N/A	N/A
X12 400ST	XH4	N/A	I6	12	Liters	400	horsepower	1800	214	mm3/stroke	1700	lb-ft	1000	303	mm3/stroke	Partial	Tractor	N/A	N/A
X12 400EX	XH5	N/A	I6	12	Liters	400	horsepower	1800	214	mm3/stroke	1700	lb-ft	1000	303	mm3/stroke	Partial	Tractor	N/A	N/A
X12 410	XH6	N/A	I6	12	Liters	410	horsepower	1800	220	mm3/stroke	1450	lb-ft	1000	253	mm3/stroke	Partial	Tractor	N/A	N/A
X12 410	XH7	N/A	I6	12	Liters	410	horsepower	1900	211	mm3/stroke	1450	lb-ft	1000	253	mm3/stroke	Partial	Tractor	N/A	N/A
X12 410	XH8	N/A	I6	12	Liters	410	horsepower	1800	220	mm3/stroke	1650	lb-ft	1000	293	mm3/stroke	Partial	Tractor	N/A	N/A
X12 410ST	XH9	N/A	I6	12	Liters	410	horsepower	1800	220	mm3/stroke	1650	lb-ft	1000	293	mm3/stroke	Partial	Tractor	N/A	N/A
X12 380EX	XH10	N/A	I6	12	Liters	380	horsepower	1800	203	mm3/stroke	1450	lb-ft	1000	253	mm3/stroke	Partial	Tractor	N/A	N/A
X12 430	XH11	N/A	I6	12	Liters	430	horsepower	1800	232	mm3/stroke	1550	lb-ft	1000	273	mm3/stroke	Partial	Tractor	N/A	N/A
X12 430	XH12	N/A	I6	12	Liters	430	horsepower	1800	232	mm3/stroke	1650	lb-ft	1000	293	mm3/stroke	Partial	Tractor	N/A	N/A
X12 455	XH13	N/A	I6	12	Liters	455	horsepower	1800	248	mm3/stroke	1700	lb-ft	1000	303	mm3/stroke	Partial	Tractor	N/A	N/A
X12 455ST	XH14	N/A	I6	12	Liters	455	horsepower	1800	248	mm3/stroke	1700	lb-ft	1000	303	mm3/stroke	Partial	Tractor	N/A	N/A
X12 455EX	XH15	N/A	I6	12	Liters	455	horsepower	1800	248	mm3/stroke	1700	lb-ft	1000	303	mm3/stroke	Partial	Tractor	N/A	N/A
X12 350	XH16	N/A	I6	12	Liters	350	horsepower	1900	178	mm3/stroke	1350	lb-ft	1000	235	mm3/stroke	Partial	Vocational	N/A	N/A
X12 350	XH17	N/A	I6	12	Liters	350	horsepower	1900	178	mm3/stroke	1450	lb-ft	1000	253	mm3/stroke	Partial	Vocational	N/A	N/A
X12 365	XH18	N/A	I6	12	Liters	365	horsepower	1850	190	mm3/stroke	1250	lb-ft	900	218	mm3/stroke	Partial	Vocational	N/A	N/A
X12 370	XH19	N/A	I6	12	Liters	370	horsepower	1900	189	mm3/stroke	1350	lb-ft	1000	235	mm3/stroke	Partial	Vocational	N/A	N/A
X12 380	XH20	N/A	I6	12	Liters	380	horsepower	1900	194	mm3/stroke	1450	lb-ft	1000	253	mm3/stroke	Partial	Vocational	N/A	N/A
X12 410	XH21	N/A	I6	12	Liters	410	horsepower	1900	211	mm3/stroke	1450	lb-ft	1000	253	mm3/stroke	Partial	Vocational	N/A	N/A
X12 430	XH22	N/A	I6	12	Liters	430	horsepower	1900	222	mm3/stroke	1550	lb-ft	1000	273	mm3/stroke	Partial	Vocational	N/A	N/A
X12 430	XH23	N/A	I6	12	Liters	430	horsepower	1900	222	mm3/stroke	1650	lb-ft	1000	293	mm3/stroke	Partial	Vocational	N/A	N/A
X12 455	XH24	N/A	I6	12	Liters	455	horsepower	1900	238	mm3/stroke	1550	lb-ft	1000	273	mm3/stroke	Partial	Vocational	N/A	N/A
X12 455	XH25	N/A	I6	12	Liters	455	horsepower	1900	238	mm3/stroke	1700	lb-ft	1000	303	mm3/stroke	Partial	Vocational	N/A	N/A
X12 475	XH26	N/A	I6	12	Liters	475	horsepower	1900	251	mm3/stroke	1700	lb-ft	1000	303	mm3/stroke	Partial	Vocational	N/A	N/A
X12 500	XH27	N/A	I6	12	Liters	500	horsepower	1900	276	mm3/stroke	1700	lb-ft	1000	303	mm3/stroke	Partial	Vocational	N/A	N/A
X12 350	XH28	N/A	I6	12	Liters	350	horsepower	1900	178	mm3/stroke	1350	lb-ft	1000	235	mm3/stroke	Partial	Vocational	N/A	N/A
X12 350	XH29	N/A	I6	12	Liters	350	horsepower	1900	178	mm3/stroke	1450	lb-ft	1000	253	mm3/stroke	Partial	Vocational	N/A	N/A
X12 365	XH30	N/A	I6	12	Liters	365	horsepower	1850	190	mm3/stroke	1250	lb-ft	900	218	mm3/stroke	Partial	Vocational	N/A	N/A
X12 380	XH31	N/A	I6	12	Liters	380	horsepower	1900	194	mm3/stroke	1450	lb-ft	1000	253	mm3/stroke	Partial	Vocational	N/A	N/A
X12 410	XH32	N/A	I6	12	Liters	410	horsepower	1900	211	mm3/stroke	1450	lb-ft	1000	253	mm3/stroke	Partial	Vocational	N/A	N/A
X12 455	XH33	N/A	I6	12	Liters	455	horsepower	1900	238	mm3/stroke	1550	lb-ft	1000	273	mm3/stroke	Partial	Vocational	N/A	N/A
X12 455	XH34	N/A	I6	12	Liters	455	horsepower	1900	238	mm3/stroke	1700	lb-ft	1000	303	mm3/stroke	Partial	Vocational	N/A	N/A
X12 455	XH35	N/A	I6	12	Liters	455	horsepower	1900	238	mm3/stroke	1550	lb-ft	1000	273	mm3/stroke	Partial	Vocational	N/A	N/A
X12 500	XH36	N/A	I6	12	Liters	500	horsepower	1900	276	mm3/stroke	1700	lb-ft	1000	303	mm3/stroke	Partial	Vocational	N/A	N/A
X12 455	XHE1	N/A	I6	12	Liters	455	horsepower	1900	238	mm3/stroke	1700	lb-ft	1000	303	mm3/stroke	Partial	Vocational	N/A	Emergency Rating
X12 500	XHE2	N/A	I6	12	Liters	500	horsepower	1900	276	mm3/stroke	1700	lb-ft	1000	303	mm3/stroke	Partial	Vocational	N/A	Emergency Rating
X12 410	XH37	N/A	I6	12	Liters	410	horsepower	1900	211	mm3/stroke	1450	lb-ft	1000	253	mm3/stroke	Partial	Vocational	N/A	Urban Bus Rating
X12 525	XH38	N/A	I6	12	Liters	525	horsepower	1900	290	mm3/stroke	1695	lb-ft	1000	302	mm3/stroke	Partial	Vocational	N/A	N/A
X12 525	XHE3	N/A	I6	12	Liters	525	horsepower	1900	290	mm3/stroke	1695	lb-ft	1000	302	mm3/stroke	Partial	Vocational	N/A	Emergency Rating