

Pursuant to the authority vested in the 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-14-012;

**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 <sup>1</sup>	STANDARDS & TEST PROCEDURE	INTENDED SERVICE CLASS <sup>2</sup>	ECS & SPECIAL FEATURES <sup>3</sup>	DIAGNOSTIC <sup>6</sup>
			CNG/LNG				
2017	HCEXH0729XBA	11.9	CNG/LNG	Diesel +	HHDD-UB	TBI, TC, CAC, ECM, EGR, TWC, HO2S	EMD+
PRIMARY ENGINE'S IDLE EMISSIONS CONTROL <sup>5</sup>		ADDITIONAL IDLE EMISSIONS CONTROL <sup>5</sup>					
N/A		N/A					
ENGINE (L)	ENGINE MODELS / CODES (rated power, in hp)						
11.9	See Attachment for engine models and ratings						
<small>                     * =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; HQ2S/O2S=heated/oxygen sensor; HAFS/AFS=heated/air-fuel-ratio sensor (a.k.a., universal or linear oxygen sensor); TBI=throttle body fuel injection; SF/IMF=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; 2 (prefix)=parallel; (2) (suffix)=in series;                      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);                      EMD=engine manufacturer diagnostic system (13 CCR 1971); OBD=on-board diagnostic system (13 CCR 1971.1);                 </small>							

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.)

in g/bhp-hr	NMHC		NOx		CO		PM		HCHO	
	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	0.03	0.01	0.15	0.03	8.7	6.4	0.003	0.001	*	*
NTE	0.21		0.30		19.4		0.02		*	

**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 Dec. 12, 2002, as last amended Oct. 21, 2014 using the 2014 model year National Heavy-Duty Engine and Vehicle Greenhouse Gas Program as specified in Section 1036.108 of the HDDE Test Procedures. The manufacturer has submitted the required information and therefore has met the criteria necessary to receive a California Executive Order based on the Environmental Protection Agency's Certificate of Conformity for the above listed engine family.

In g/bhp-hr	EPA CERTIFICATE OF CONFORMITY				PRIMARY INTENDED SERVICE CLASS	
	HCEXH0729XBA-013				TRACTOR / VOCATIONAL	
	CO <sub>2</sub>				CH <sub>4</sub>	N <sub>2</sub> O
	FTP	SET	FTP	SET		
STD	555	460			0.10	0.10
FCL	506	427			*	*
FEL	521	440			1.40	0.10
CERT	506	427			1.06	0.03

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; CO<sub>2</sub>=carbon dioxide; CH<sub>4</sub>=methane; N<sub>2</sub>O=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.

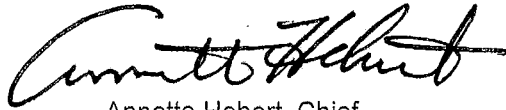
**BE IT FURTHER RESOLVED:** For the listed engine models the manufacturer has submitted the materials to demonstrate certification compliance with 13 CCR 1965 (emission control labels), 13 CCR 1971 (engine manufacturer diagnostic) and 13 CCR 2035 et seq. (emission control warranty).

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.

This Executive Order hereby supersedes Executive Order A-021-0664 dated November 15, 2016.

Executed at El Monte, California on this 10 day of March 2017.



Annette Hebert, Chief  
Emissions Compliance, Automotive Regulations and Science Division

R/c

2-28-2017

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EO#: A-021-0664-1

Engine Model Summary Template

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
form_engine	fa15_EngineCo	fa15_EngineMod	fa15_bhp@rpm	fa15_FR_mmst	fa15_FR_lbshr	fa15_torque@r	fa15_FR_mmto	fa15_FR_lbsht	fa15_eev
HCEXH0729XBA	3647;FR20288	ISX12 G 400	400@1800	N/A	N/A	1450@1200	N/A	N/A	H02S, PCM, TWC,
HCEXH0729XBA	3647;FR20290	ISX12 G 385	385@1700	N/A	N/A	1350@1200	N/A	N/A	H02S, PCM, TWC,
HCEXH0729XBA	3647;FR20292	ISX12 G 350	350@1700	N/A	N/A	1350@1200	N/A	N/A	H02S, PCM, TWC,
HCEXH0729XBA	3647;FR20296	ISX12 G 350	350@1700	N/A	N/A	1450@1200	N/A	N/A	H02S, PCM, TWC,
HCEXH0729XBA	3647;FR20298	ISX12 G 330	330@2100	N/A	N/A	1250@1200	N/A	N/A	H02S, PCM, TWC,
HCEXH0729XBA	3647;FR20300	ISX12 G 320	320@1700	N/A	N/A	1150@1200	N/A	N/A	H02S, PCM, TWC,
HCEXH0729XBA	3647;FR20754	ISX12 G 400	400@1800	N/A	N/A	1450@1200	N/A	N/A	H02S, PCM, TWC,
HCEXH0729XBA	3647;FR20755	ISX12 G 385	385@1700	N/A	N/A	1350@1200	N/A	N/A	H02S, PCM, TWC,
HCEXH0729XBA	3647;FR20756	ISX12 G 350	350@1700	N/A	N/A	1350@1200	N/A	N/A	H02S, PCM, TWC,
HCEXH0729XBA	3647;FR20757	ISX12 G 350	350@1700	N/A	N/A	1450@1200	N/A	N/A	H02S, PCM, TWC,
HCEXH0729XBA	3647;FR20758	ISX12 G 330	330@2100	N/A	N/A	1250@1200	N/A	N/A	H02S, PCM, TWC,
HCEXH0729XBA	3647;FR20759	ISX12 G 320	320@1700	N/A	N/A	1150@1200	N/A	N/A	H02S, PCM, TWC,
* HCEXH0729XBA	3647;FR20911	ISX12 G 400	400@1800	N/A	N/A	1450@1200	N/A	N/A	H02S, PCM, TWC,
* HCEXH0729XBA	3647;FR20912	ISX12 G 385	385@1700	N/A	N/A	1350@1200	N/A	N/A	H02S, PCM, TWC,
* HCEXH0729XBA	3647;FR20913	ISX12 G 350	350@1700	N/A	N/A	1350@1200	N/A	N/A	H02S, PCM, TWC,
* HCEXH0729XBA	3647;FR20914	ISX12 G 330	330@2100	N/A	N/A	1250@1200	N/A	N/A	H02S, PCM, TWC,
* HCEXH0729XBA	3647;FR20915	ISX12 G 320	320@1700	N/A	N/A	1150@1200	N/A	N/A	H02S, PCM, TWC,
	Urban bus	Ratings	Below						
HCEXH0729XBA	4745;FR20709	ISX12 G 400CC	400@1800	N/A	N/A	1450@1200	N/A	N/A	H02S, PCM, TWC,
HCEXH0729XBA	4745;FR20760	ISX12 G 400CC	400@1800	N/A	N/A	1450@1200	N/A	N/A	H02S, PCM, TWC,

TBI, Ic, CAC,  
ECM, EGR, TWC,  
H02S

\* New ratings added for running change