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 <sup>1</sup>	STANDARDS & TEST PROCEDURE	INTENDED SERVICE CLASS <sup>2</sup>	ECS & SPECIAL FEATURES <sup>3</sup>	DIAGNOSTIC <sup>6</sup>				
2021	MVPTH12.8	G01	12.8	Diesel	Diesel	HHDD	TC, CAC, EGR, DDI, ECM, DOC, PTOX, SCR-U, AMOX	OBD(P)				
PRIMARY ENGINE'S IDLE EMISSIONS CONTROL <sup>5</sup> ADDITIONAL IDLE EMISSIONS CONTROL <sup>5</sup>												
30g N/A												
ENGINE (	L)			ENGINE MODE	LS / CODES (rat	ted power, in	hp)					
12.8				See attachmen	it for engine m	odels and ra	atings					
* =not appli L=liter; hp	* =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;											

<sup>1</sup> 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;

<sup>2</sup> L/M/H HDD=light/medium/heavy heavy-duty diesel; UB=urban bus; HDO=heavy duty Otto;

<sup>3</sup> 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; SFI=smoke pulf limiter; ECM/PCM=engine/powertrain control module; EM=engine modification; AMOX=Ammonia Oxidation Catalyst; NOXS=NOx sensor; 2 (prefix)=parallel; (2) (suffix)=in series;

<sup>5</sup> 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(F) / (P) / (\$)=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 heavyduty 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.). <sup>4</sup>

in	NMHC		NOx		NMHC+NOx		C	0	Р	м	нсно	
g/bhp-hr	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	0.001	0.001	0.06	0.05	*	*	0.2	0.00	0.000	0.001	*	*
NTE	0.21		0.30		*		19.4		0.02		*	

<sup>4</sup> 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.

In		CO <sub>2</sub>	011				
g/bhp-hr	FTP	SET	CH₄	N <sub>2</sub> O			
STD	506	442	0.10	0.10			
FCL	507	453	*	*			
FEL	522	467	0.10	0.10			
CERT	499	451	0.02	0.09			

**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:** 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 NOx] 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.

**BE IT FURTHER RESOLVED:** Per Volvo's request for conditional Executive Order (EO) approval (Volvo's Request) dated January 10, 2021 and attached to CARB letter Reference Number E-21-007, the listed engine models are certified conditionally on Volvo implementing by June 30, 2021, a CARB-approved running change for the improvement of the Heavy-Duty On-Board Diagnostic system (HD OBD) described in Volvo's Request. Volvo shall also implement a service campaign to incorporate the improvements in the CARB-approved running change for engines produced before June 30, 2021. Volvo shall also submit a voluntary recall plan for CARB's approval to remedy production engines that do not have the CARB-approved updated calibrations. Failure to fulfill any of the conditions in the Volvo Conditional HD OBD Request letter, failure to respond satisfactorily to any question from CARB, or failure of test data, generated by Volvo or by CARB, to demonstrate compliance with HD OBD requirements, shall be cause for CARB to revoke the conditional EO ab initio. Engines sold or introduced into commerce under the revoked conditional EO shall be deemed uncertified and subject to a civil penalty of up to \$40,050 per violation per engine pursuant to HSC Section 43154.

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 2th day of January 2021.

Allen Lyons, Chief Emissions Certification and Compliance Division Attachment: Engine Models

EO #: A-242-0148

 Family:
 MVPTH12.8G01
 Attachment Last Revised:
 12/28/2020

Model	Code	Trim	Config	Displacement	Displacement - Units	Peak Power	Peak Power - Units	Peak Power - Speed (rpm)	Peak Power - Fueling	Peak Power - Fue Units	Peak Torque	Peak Torque - Units	Peak Torque - Speed (rpm)	Peak Torque - Fuel	Peak Torque - Fu	ei OBD	GHG	Special	Notes
D13N - 500	SWrev-00		L6	12.8	Liters	500	horsepower	1700	162	lb/hr	1850	lb-ft	1150	154	lb/hr	Partial		Special	TC, CAC, EGR, DDI, ECM,
D13N - 300	300120-00			12.0	Liters	500	noisepower	1700	102	10/11	1830	10-11	1150	134	10/11	Faitiai	_		DOC, PTOX, SCR, AMOX TC, CAC, EGR, DDI, ECM,
D13N - 455	SWrev-01		L6	12.8	Liters	455	horsepower	1700	149	lb/hr	1850	lb-ft	1150	143	lb/hr	Partial			DOC, PTOX, SCR, AMOX
D13N - 455	SWrev-02		L6	12.8	Liters	455	horsepower	1700	149	lb/hr	1750	lb-ft	1050	146	lb/hr	Partial			TC, CAC, EGR, DDI, ECM,
D15N - 455	300160-02		LO	12.0	Liters	455	norsepower	1700	149		1750	10-11	1030	140		Partial			DOC, PTOX, SCR, AMOX
D13N - 435	SWrev-03		L6	12.8	Liters	435	horsepower	1700	147	lb/hr	1650	lb-ft	1050	141	lb/hr	Partial			TC, CAC, EGR, DDI, ECM, DOC, PTOX, SCR, AMOX
																			TC, CAC, EGR, DDI, ECM,
D13N - 425	SWrev-04		L6	12.8	Liters	425	horsepower	1700	146	lb/hr	1750	lb-ft	1050	136	lb/hr	Partial			DOC, PTOX, SCR, AMOX
D13N - 425	SWrev-05		L6	12.8	Liters	425	horsepower	1700	145	lb/hr	1550	lb-ft	1050	132	lb/hr	Partial			TC, CAC, EGR, DDI, ECM,
						-													DOC, PTOX, SCR, AMOX TC, CAC, EGR, DDI, ECM,
D13N - 405	SWrev-06		L6	12.8	Liters	405	horsepower	1700	137	lb/hr	1650	lb-ft	1050	130	lb/hr	Partial			DOC, PTOX, SCR, AMOX
D13N - 405	SWrev-07		L6	12.8	Liters	405	horsepower	1700	134	lb/hr	1450	lb-ft	1000	126	lb/hr	Partial			TC, CAC, EGR, DDI, ECM,
	_																_		DOC, PTOX, SCR, AMOX TC, CAC, EGR, DDI, ECM,
D13N - 375	SWrev-08		L6	12.8	Liters	375	horsepower	1700	126	lb/hr	1450	lb-ft	1000	116	lb/hr	Partial			DOC, PTOX, SCR, AMOX
D13N - 500P	SWrev-09		L6	12.8	Liters	500	horsepower	1700	162	lb/hr	1850	lb-ft	1150	154	lb/hr	Partial			TC, CAC, EGR, DDI, ECM,
5001	500100 05			12.0	Liters		noisepower	1700	102	10/11	1050		1150	154	15,111	i ai tiai	_		DOC, PTOX, SCR, AMOX
D13N - 435P	SWrev-10		L6	12.8	Liters	435	horsepower	1700	147	lb/hr	1650	lb-ft	1050	141	lb/hr	Partial			TC, CAC, EGR, DDI, ECM, DOC, PTOX, SCR, AMOX
MP8 - 505E	SWrev-11		L6	12.8	Liters	505	horsepower	1700	162	lb/hr	1860	lb-ft	1150	154	lb/hr	Partial			TC, CAC, EGR, DDI, ECM,
IVIP6 - SUSE	300160-11		LO	12.0	Liters	505	norsepower	1700	102	ID/III	1860	IDelt	1150	154	IU/III	Partial			DOC, PTOX, SCR, AMOX
MP8 - 445E	SWrev-12		L6	12.8	Liters	445	horsepower	1700	149	lb/hr	1860	lb-ft	1150	143	lb/hr	Partial			TC, CAC, EGR, DDI, ECM, DOC, PTOX, SCR, AMOX
																			TC, CAC, EGR, DDI, ECM,
MP8 - 415E	SWrev-13		L6	12.8	Liters	415	horsepower	1700	137	lb/hr	1660	lb-ft	1100	130	lb/hr	Partial			DOC, PTOX, SCR, AMOX
MP8 - 505C	SWrev-14		L6	12.8	Liters	505	horsepower	1700	162	lb/hr	1860	lb-ft	1150	154	lb/hr	Partial			TC, CAC, EGR, DDI, ECM,
																	_		DOC, PTOX, SCR, AMOX TC, CAC, EGR, DDI, ECM,
MP8 - 445C	SWrev-15		L6	12.8	Liters	445	horsepower	1700	149	lb/hr	1860	lb-ft	1100	143	lb/hr	Partial			DOC, PTOX, SCR, AMOX
MP8 - 415C	SWrev-16		L6	12.8	Liters	415	horsepower	1700	137	lb/hr	1660	lb-ft	1100	130	lb/hr	Partial			TC, CAC, EGR, DDI, ECM,
															,				DOC, PTOX, SCR, AMOX TC, CAC, EGR, DDI, ECM,
MP8 - 505M	SWrev-17		L6	12.8	Liters	505	horsepower	1700	162	lb/hr	1860	lb-ft	1150	154	lb/hr	Partial			DOC, PTOX, SCR, AMOX
MP8 - 455M	SWrev-18		L6	12.8	Liters	455	horsepower	1700	149	lb/hr	1750	lb-ft	1000	146	lb/hr	Partial			TC, CAC, EGR, DDI, ECM,
1011-0 - 400101	200160-10		10	12.0	Liters	455	noisepowei	1/00	145	10/11	1750	10-11	1000	140	10/11	Faitiai			DOC, PTOX, SCR, AMOX
MP8 - 425M	SWrev-19		L6	12.8	Liters	425	horsepower	1700	145	lb/hr	1540	lb-ft	1100	132	lb/hr	Partial			TC, CAC, EGR, DDI, ECM, DOC, PTOX, SCR, AMOX
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