California Environmental Protection Agency AIR RESOURCES BOARD	VOLVO POWERTRAIN CORPORATION	EXECUTIVE ORDER A-242-0055-1 New On-Road Heavy-Duty Engines Page 1 of 1

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-02-003;

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]
2010	AVPTH12.8S01	12.8	Diesel	Diesel	HHDD	DDI, TC, CAC, ECM, EGR, OC, DPF, SCR, SPL	EMD

PRIMARY ENGINE'S IDLE EMISSIONS CONTROL [5]	ADDITIONAL IDLE EMISSIONS CONTROL [5]
30g	N/A

ENGINE (L)	ENGINE MODELS / CODES (rated power, in hp)
12.8	See attachment for engine models and ratings (clean idle engines are labeled as 50-State compliant engines)

* =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; **2 (prefix)**=parallel; **(2) (suffix)**=in series; SCR = Selective Catalytic Reduction system

[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 powar 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**=on-board diagnostic system (13 CCR 1971.1);

Following are: 1) the FTP exhaust emission standards, or family emission limit(s) as applicable, under 13 CCR 1956.8; 2) the EURO 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, EURO 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		NMHC+NOx		CO		PM		HCHO	
	FTP	EURO	FTP	EURO	FTP	EURO	FTP	EURO	FTP	EURO	FTP	EURO
STD	0.14	0.14	0.20	0.20	*	*	15.5	15.5	*	*	*	*
FEL	*	*	*	*	*	*	*	*	0.00	0.00	*	*
CERT	0.01	0.06	0.11	0.10	*	*	*	*	0.003	0.001	*	*
NTE	0.21		0.30		*		19.4		0.02		*	

[4] **g/bhp-hr**=grams per brake horsepower-hour; **FTP**=Federal Test Procedure; **EURO**=Euro III European Steady-State Cycle, including **RMCSET**=ramp mode cycle 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: Certification to the FEL(s) listed above, as applicable, is subject to the following terms, limitations and conditions. The FEL(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) and 13 CCR 2035 et seq. (emission control warranty).

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

This Executive Order hereby supersedes Executive Order A-242-0055 dated, November 9, 2009.

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

Executed at El Monte, California on this 17th day of December 2009.

Annette Hebert, Chief
Mobile Source Operations Division

ATTACHMENT A-242-0055-1

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
TH12.8S01	N / A	D13H - 500	500 @ 1700	307.5	174.5	1812 @ 1050	336.8	118.1	EM,EC,TC,CAC,DI,EGR,DPF,SCR
TH12.8S01	N / A	D13H - 475	475 @ 1800	279.7	168.1	1734 @ 1050	324.6	113.8	EM,EC,TC,CAC,DI,EGR,DPF,SCR
TH12.8S01	N / A	D13H - 435	435 @ 1700	286.7	162.7	1711 @ 1050	317.8	111.4	EM,EC,TC,CAC,DI,EGR,DPF,SCR
TH12.8S01	N / A	D13H - 425	425 @ 1700	273.2	155.1	1600 @ 1050	297.7	104.4	EM,EC,TC,CAC,DI,EGR,DPF,SCR
TH12.8S01	N / A	D13H - 405	405 @ 1700	250.2	142.0	1508 @ 1000	278.1	92.9	EM,EC,TC,CAC,DI,EGR,DPF,SCR
TH12.8S01	N / A	D13H - 375	375 @ 1700	236.7	134.4	1506 @ 1000	277.6	92.7	EM,EC,TC,CAC,DI,EGR,DPF,SCR
TH12.8S01	N / A	D13H - 500P							
TH12.8S01	N / A	D13H - 435P							
TH12.8S01	N / A	MP8 - 505E	505 @ 1700	308.2	174.9	1824 @ 1100	340.3	125.0	EM,EC,TC,CAC,DI,EGR,DPF,SCR
TH12.8S01	N / A	MP8 - 500E	500 @ 1700	308.2	174.9	1839 @ 1200	340.3	136.3	EM,EC,TC,CAC,DI,EGR,DPF,SCR
TH12.8S01	N / A	MP8 - 455E	455 @ 1700	282.3	160.2	1750 @ 1200	324.7	130.1	EM,EC,TC,CAC,DI,EGR,DPF,SCR
TH12.8S01	N / A	MP8 - 445E	445 @ 1700	286.0	162.3	1780 @ 1100	330.4	121.3	EM,EC,TC,CAC,DI,EGR,DPF,SCR
TH12.8S01	N / A	MP8 - 425E	425 @ 1700	271.8	154.3	1604 @ 1200	296.2	118.7	EM,EC,TC,CAC,DI,EGR,DPF,SCR
TH12.8S01	N / A	MP8 - 415E	415 @ 1700	266.9	151.5	1702 @ 1100	314.4	115.5	EM,EC,TC,CAC,DI,EGR,DPF,SCR
TH12.8S01	N / A	MP8 - 505C	505 @ 1500	341.9	171.3	1824 @ 1100	336.2	123.5	EM,EC,TC,CAC,DI,EGR,DPF,SCR
TH12.8S01	N / A	MP8 - 445C	445 @ 1500	311.3	155.9	1780 @ 1100	330.4	121.3	EM,EC,TC,CAC,DI,EGR,DPF,SCR
TH12.8S01	N / A	MP8 - 415C	415 @ 1500	290.1	145.3	1702 @ 1100	314.4	115.5	EM,EC,TC,CAC,DI,EGR,DPF,SCR
TH12.8S01	N / A	MP8 - 505M	505 @ 1700	309.2	175.5	1837 @ 1100	340.7	125.1	EM,EC,TC,CAC,DI,EGR,DPF,SCR
TH12.8S01	N / A	MP8 - 455M	455 @ 1700	282.1	160.2	1715 @ 1100	317.9	116.8	EM,EC,TC,CAC,DI,EGR,DPF,SCR
TH12.8S01	N / A	MP8 - 425M	425 @ 1700	274.1	155.6	1602 @ 1100	296.6	109.0	EM,EC,TC,CAC,DI,EGR,DPF,SCR

R/C corrects PM NTE