California Environmental Protection Agency	DOOSAN INFRACORE AMERICA CO., LTD.	EXECUTIVE ORDER A-376-0007 New On-Road Heavy-Duty Engines Page 1 of 1 Pages
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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				FUEL TYPE	STANDARDS & TEST	INTENDED SERVICE	ECS & SPECIAL FEATURES	DIAGNOSTIC 6		
		JIZEJ	(Ľ)		PROCEDURE	CLASS	ECM, OC, TBI, TC, CAC, SCR-U,	Ν/Δ		
2012	CDICH11.1E	EA 11.1	1	CNG	Diesel	UB	O2S			
PRIMARY EMISSIO	ADDITIONAL IDLE EMISSIONS CONTROL 5									
E	XEMPT	EMPT N/A								
ENGINE (	NE (L) ENGINE MODELS / CODES (rated power, in hp)									
11.1	1.1 See attachment for engine models and codes									
* =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=itier, hp=horsepower; kw=kilowatt; hr=hour; 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 , grau upp=licable; upp=licable; upp=uback_compressed/liquefied petroleum gas; L9C=head did upp=licable; MF=multi fuel a.k.a. BF=bi fuel; DF=dual fuel; FF=flexible fuel;										

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) =warmup catalyst; DPF=diesel particulate filter; PTOX=periodic trap oxidizer; HO2S/OSS=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=excituation / 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)(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)(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)(D); Exempt=exempted per 10 CCR 1956.8(a)(D); Exempt

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 heavyduty 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 NMHC		NOx		NMHC+NOx		CO		РМ		нсно	
FTP	EURO	FTP	EURO	FTP	EURO	FTP	EURO	FTP	EURO	FTP	EURO
0.14	0.14	0.20	0.20	*	•	15.5	15.5	0.01	0.01	*	*
*	•			•	•	•	•	•	•	*	•
0.08	0.01	0.16	0.12	*	•	0.08	0.03	0.001	0.001	•	*
0.21		0.30		•		19.4		0.02		•	
	NN FTP 0.14 * 0.08 0.	NMHC   FTP EURO   0.14 0.14   • •   0.08 0.01   0.21 0.21	NMHC N   FTP EURO FTP   0.14 0.14 0.20   • • •   0.08 0.01 0.16   0.21 0 0	NMHC NOx   FTP EURO FTP EURO   0.14 0.14 0.20 0.20   • • - -   0.08 0.01 0.16 0.12   0.21 0.30 -	NMHC NOX NMH/   FTP EURO FTP EURO FTP   0.14 0.14 0.20 0.20 *   * * * * *   0.08 0.01 0.16 0.12 *   0.21 0.30 * * *	NMHC NOx NMHC+NOx   FTP EURO FTP EURO FTP EURO   0.14 0.14 0.20 0.20 * *   * * - - * *   0.08 0.01 0.16 0.12 * *   0.21 0.30 * * * *	NMHC NOX NMHC+NOX CC   FTP EURO FTP EURO FTP EURO FTP   0.14 0.14 0.20 0.20 * * 15.5   * * * * * * *   0.08 0.01 0.16 0.12 * * 0.08   0.21 0.30 * * 1 1	NMHC NOx NMHC+NOx CO   FTP EURO FTP EURO FTP EURO FTP EURO   0.14 0.14 0.20 0.20 * * 15.5 15.5   * * * * * * * *   0.08 0.01 0.16 0.12 * * 0.08 0.03   0.21 0.30 * * 19.4	NMHC NOx NMHC+NOx CO F   FTP EURO FTP FTO EURO FTO EURO	NMHC NOX NMHC+NOX CO PM   FTP EURO FTP EURO FTP EURO FTP EURO FTP EURO O.01 0.02 19.4 0.02 19.4 0.02 19.4 0.02 19.4 0.02 19.4 0.02 19.4 0.02 19.4 0.02 19.4 0.02 19.4 0.02 19.4 19.4 0.02 19.4 <th>NMHC NOX NMHC+NOX CO PM Ho   FTP EURO FTP EURO</th>	NMHC NOX NMHC+NOX CO PM Ho   FTP EURO

g/bhp-hr=grams per brake horsepower-hour; FTP=Federal Test Procedure; EURO=Euro III European Steady-State Cycle, including RMCSET=ram 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; (Rev.: 2007-02-26)

**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:** The listed engine models are certified using the small volume manufacturer provision such that the manufacturer has submit proper justification that complies with the use of assigned exhaust emission deterioration factors for certification.

**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.

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

Executed at El Monte, California on this

\_\_\_ day of February 2012.

Annette Hebert, Chief Mobile Source Operations Division

DATE: 2/2/2012 AHachient: page lof FO#: A-376-0007

			3.BHP@RPM	4.Fuel Rate: mm/stroke @ peak HP	5.Fuel Rate: (lbs/hr) @ peak HP	6.Torque @ RPM	7.Fuel Rate: mm/stroke@peak	8.Fuel Rate:	9.Emission Control	
Engine Family	1.Engine Code	2.Engine Model	(SAE Gross)	(for diesel only)	(for diesels only)	(SEA Gross)	torque	(lbs/hr)@peak torqu	eDevice Per SAE J1930	
CDICH11.1EEA	GL11-ABB00	GL11K	286@2200		115	904@1260	· · · · · · · · · · · · · · · · · · ·	71	tc,scr,oc,	an a
CDICH11.1EEA	GL11-ABB01	GL11K	286@2200		115	904@1260		71	TC,SCR,QC,	anna dhu ugu ha khar sar na 2 a dha an an an 19 anna.
CDICH11.1EEA	GL11-ABB02	GL11K	286@2200		115	904@1260		71	tc,scr,bc,	and the second second second second second second
CDICH11.1EEA	GL11-ABB03	GL11K	286@2200		115	904@1260		71	TO,SCROC,	
CDICH11.1EEA	GL11-ABB04	GL11K	286@2200		115	904@1260	a propagation of the day is a statement of the day of the	71	TCSCR,OC,	Name and a subset of some special countries of states a
CDICH11.1EEA	GL11-ABB05	GL11K	286@2200		115	904@1260		71	TC,SCR,OC,	names to some a so to be to the second of
CDICH11.1EEA	GL11-ABB06	GL11K	286@2200	ar an aide aige a' na bhair air an Annaich air an an an Annaich An Aile a' sa	115	904@1260	and a summer of the first state of the state	71	TC,SCR,OC,	
CDICH11.1EEA	GL11-ABB07	GL11K	286@2200		115	904@1260	an an an ann ann an an an an an an an an	71	TC,SOR,OC,	et sin ser can be served of the manual theory of the serve
CDICH11.1EEA	GL11-ABB08	GL11K	286@2200		115	904@1260	e na manana manana ang kanana manana kata kata kata kata kata kata kata	71	TC,SCR,OC,	
CDICH11.1EEA	GL11-ABB09	GL11K	286@2200		115	904@1260	an figural an an Arthresis and a state of the	71	TC,SCR,OC,	
CDICH11.1EEA	GL11-ABC00	GL11K	286@2200	analasina 114 sayahisi 2011 ya masa ang kata saya kata saya kata sa	115	904@1260		71	TC,\$CR,OC,	
CDICH11.1EEA	GL11-ABC01	GL11K	286@2200	Nalation 19-19-1 (): subdational and this but the set of the Alfred State Park Sold - th	115	904@1260	a da sun angelo ga na an ananan angelo da Valancean	71	TC,SCR,OC,	
CDICH11.1EEA	GL11-ABC02	GL11K	286@2200		115	904@1260		71	TC,SCROC,	alar sahara sa Salara da ata ata ata ata ata ata ata ata
CDICH11.1EEA	GL11-ABC03	GL11K	286@2200	an dahi kutan dalam kan kutan menangkan perangkan kan dari perta dari perta dari basi dari basa dari basa dari	115	904@1260	an dia se ang	71	TC,SCR,OC,	nar malana u sunda ina dise anana kang una sebuah s
CDICH11.1EEA	GL11-ABC04	GL11K	286@2200		115	904@1260	uningga agga su Assantan manan su masani ji sa kukumun	71	TC,SCR,QC,	
CDICH11.1EEA	GL11-ABC05	GL11K	286@2200		115	904@1260		71	TC,SCR,QC,	
CDICH11.1EEA	GL11-ABC06	GL11K	286@2200	na myönytöönen in maasaataise vaatet oppinkuur onnen in koon vaatetaa paavaateta vahkuutetta.	115	904@1260	and the second state of the se	71	TC,SCR,OC,	un men felte (Neulina e 1, Ma) i success data e traverse mener felte un f
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ECM, TBJ, TC, CAC OC, SCR-4, 025