California Environmental Protection Agency **Air Resources Board**	**DOOSAN INFRACORE CO., LTD.**	**EXECUTIVE ORDER U-R-019-0143** New Off-Road Compression-Ignition Engines

Pursuant to the authority vested in the Air Resources Board by Sections 43013, 43018, 43101, 43102, 43104 and 43105 of the Health and Safety Code; and

Pursuant to the authority vested in the undersigned by Sections 39515 and 39516 of the Health and Safety Code and Executive Order G-14-012;

IT IS ORDERED AND RESOLVED: That the following compression-ignition engines and emission control systems produced by the manufacturer are certified as described below for use in off-road equipment. Production engines shall be in all material respects the same as those for which certification is granted.

MODEL YEAR	ENGINE FAMILY	DISPLACEMENT (liters)	FUEL TYPE	USEFUL LIFE (hours)
2016	GDICL03.4LEA	3.4	Diesel	8000

SPECIAL FEATURES & EMISSION CONTROL SYSTEMS	TYPICAL EQUIPMENT APPLICATION
Exhaust Gas Recirculation, Diesel Oxidation Catalyst, Selective Catalyst Reduction-Urea, Electronic Direct Injection, Turbocharger, Charge Air Cooler, Electronic Control Module, DEF Quality Sensor	Crane, Loader, Tractor, Dozer, Pump, Compressor, Generator, Excavator, Forklift

The engine models and codes are attached.

The following are the exhaust certification standards (STD) and certification levels (CERT) for non-methane hydrocarbon (NMHC), oxides of nitrogen (NOx), or non-methane hydrocarbon plus oxides of nitrogen (NMHC+NOx), carbon monoxide (CO), and particulate matter (PM) in grams per kilowatt-hour (g/kw-hr), and the opacity-of-smoke certification standards and certification levels in percent (%) during acceleration (Accel), lugging (Lug), and the peak value from either mode (Peak) for this engine family (Title 13, California Code of Regulations, (13 CCR) Section 2423):

RATED POWER CLASS	EMISSION STANDARD CATEGORY		EXHAUST (g/kw-hr)					OPACITY (%)		
			NMHC	NOx	NMHC+NOx	CO	PM	ACCEL	LUG	PEAK
56 ≤ kW < 130	Tier 4 Final	STD	0.19	0.40	N/A	5.0	0.02	N/A	N/A	N/A
		CERT	0.01	0.15	--	0.02	0.02	--	--	--

BE IT FURTHER RESOLVED: That for the listed engine models, the manufacturer has submitted the information and materials to demonstrate certification compliance with 13 CCR Section 2424 (emission control labels), and 13 CCR Sections 2425 and 2426 (emission control system warranty).

BE IT FURTHER RESOLVED: That for the listed engine models, the manufacturer has complied with the more stringent set of standards from the various power categories in conformance with Section 1039.230 (e) of the "California Exhaust Emission Standards and Test Procedures for 2008 and Later Tier 4 Off-Road Compression-Ignition Engines, Part I-C" adopted October 20, 2005 and last amended October 25, 2012.

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

This Executive Order is only granted to the engine family and model-year listed above. Engines in this family that are produced for any other model-year are not covered by this Executive Order.

Executed at El Monte, California on this 17th day of December 2015.

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

Engine Model Summary Template

Attachment 1 of 3

U-R-019-0143
2/2/2016

Engine Family	1.Engine Code	2.Engine Model	3.kW@RPM (SAE Gross)	4.Fuel Rate: mm/stroke @ peak kW (for diesel only)	5.Fuel Rate: (kg/hr) @ peak kW (for diesels only)	6.Torque Nm@ RPM (SEA Gross)	7.Fuel Rate: mm/stroke@peak torque	8.Fuel Rate: (kg/hr)@peak torque	9.Emission Control Device Per SAE J1930
GDICL03.4LEA	DL03-LEL00	D34P	82.0@2,400	83.1	20.0	430@1,400	102.4	14.4	EGR,DOC,SCR,DFI, TC,CAC,ECM,DQS
GDICL03.4LEA	DL03-LEL01	D34P	74.6@2,400	74.9	18.0	375@1,600	86.8	13.9	EGR,DOC,SCR,DFI, TC,CAC,ECM,DQS
GDICL03.4LEA	DL03-LEL02	D34P	68.6@2,400	69.0	16.5	350@1,600	81.2	13.0	EGR,DOC,SCR,DFI, TC,CAC,ECM,DQS
GDICL03.4LEA	DL03-LEL03	D34P	63.4@2,400	64.3	15.4	325@1,600	75.9	12.1	EGR,DOC,SCR,DFI, TC,CAC,ECM,DQS
GDICL03.4LEA	DL03-LEF00	D34P	80.4@2,300	83.4	19.1	375@1,600	86.8	13.9	EGR,DOC,SCR,DFI, TC,CAC,ECM,DQS
GDICL03.4LEA	DL03-LEF01	D34P	73.6@2,300	76.7	17.6	335@1,600	77.9	12.4	EGR,DOC,SCR,DFI, TC,CAC,ECM,DQS
GDICL03.4LEA	DL03-LEF02	D34P	73.6@2,300	76.7	17.6	335@1,600	77.9	12.4	EGR,DOC,SCR,DFI, TC,CAC,ECM,DQS
GDICL03.4LEA	DL03-LEF05	D34P	80.4@2,300	83.4	19.1	375@1,600	86.8	13.9	EGR,DOC,SCR,DFI, TC,CAC,ECM,DQS
GDICL03.4LEA	DL03-LEF06	D34P	73.6@2,300	76.7	17.6	335@1,600	77.9	12.4	EGR,DOC,SCR,DFI, TC,CAC,ECM,DQS
GDICL03.4LEA	DL03-LEF07	D34P	73.6@2,300	76.7	17.6	335@1,600	77.9	12.4	EGR,DOC,SCR,DFI, TC,CAC,ECM,DQS
GDICL03.4LEA	DL03-LEA00	D34P	82.0@2,200	85.6	18.8	430@1,400	100.0	14.0	EGR,DOC,SCR,DFI, TC,CAC,ECM,DQS
GDICL03.4LEA	DL03-LEA01	D34P	74.6@2,200	78.0	17.1	410@1,400	95.6	13.4	EGR,DOC,SCR,DFI, TC,CAC,ECM,DQS

Engine Model Summary Template

Attachment 2 of 3

U-R-019-0143
2/2/2016

Engine Family	1.Engine Code	2.Engine Model	3.kW@RPM (SAE Gross)	4.Fuel Rate: mm/stroke @ peak kW (for diesel only)	5.Fuel Rate: (kg/hr) @ peak kW (for diesels only)	6.Torque Nm@ RPM (SEA Gross)	7.Fuel Rate: mm/stroke@peak torque	8.Fuel Rate: (kg/hr)@peak torque	9.Emission Control Device Per SAE J1930
GDICL03.4LEA	DL03-LEA02	D34P	67.1@2,200	70.4	15.5	390@1,400	89.7	12.2	EGR,DOC,SCR,DFI, TC,CAC,ECM,DQS
GDICL03.4LEA	DL03-LEA03	D34P	59.7@2,200	63.2	13.9	370@1,400	85.9	11.5	EGR,DOC,SCR,DFI, TC,CAC,ECM,DQS
GDICL03.4LEA	DL03-LEA04	D34P	78.3@2,300	79.9	18.3	430@1,400	100.0	14.0	EGR,DOC,SCR,DFI, TC,CAC,ECM,DQS
GDICL03.4LEA	DL03-LEA05	D34P	70.8@2,300	72.3	16.6	400@1,400	93.3	13.0	EGR,DOC,SCR,DFI, TC,CAC,ECM,DQS
GDICL03.4LEA	DL03-LEA06	D34P	63.4@2,300	65.2	15.0	370@1,400	85.9	12.0	EGR,DOC,SCR,DFI, TC,CAC,ECM,DQS
GDICL03.4LEA	DL03-LEA07	D34P	82.0@2,200	85.2	18.2	430@1,400	100.0	13.7	EGR,DOC,SCR,DFI, TC,CAC,ECM,DQS
GDICL03.4LEA	DL03-LEA08	D34P	79.7@2,200	79.7	17.0	430@1,400	100.0	13.7	EGR,DOC,SCR,DFI, TC,CAC,ECM,DQS
GDICL03.4LEA	DL03-LEA09	D34P	69.3@2,200	71.5	15.2	390@1,400	89.7	12.2	EGR,DOC,SCR,DFI, TC,CAC,ECM,DQS
GDICL03.4LEA	DL03-LEA10	D34P	61.9@2,200	64.5	13.8	380@1,400	87.0	11.8	EGR,DOC,SCR,DFI, TC,CAC,ECM,DQS
GDICL03.4LEA	DL03-LEV01	D34P	74.6@2,400	74.9	17.3	430@1,400	102.4	13.7	EGR,DOC,SCR,DFI, TC,CAC,ECM,DQS
GDICL03.4LEA	DL03-LEF09	D34P	81.9@2,400	83.1	19.0	430@1,400	102.4	13.7	EGR,DOC,SCR,DFI, TC,CAC,ECM,DQS
GDICL03.4LEA	DL03-LEG00	D34PP	72.6@1,800	91.6	15.9	385.3@1,800	91.6	15.9	EGR,DOC,SCR,DFI, TC,CAC,ECM,DQS

Engine Model Summary Template

Attachment 3 of 3

U-R-019-0143
2/2/2016

Engine Family	1.Engine Code	2.Engine Model	3.kW@RPM (SAE Gross)	4.Fuel Rate: mm/stroke @ peak kW (for diesel only)	5.Fuel Rate: (kg/hr) @ peak kW (for diesels only)	6.Torque Nm@ RPM (SEA Gross)	7.Fuel Rate: mm/stroke@peak torque	8.Fuel Rate: (kg/hr)@peak torque	9.Emission Control Device Per SAE J1930
GDICL03.4LEA	DL03-LEG00	D34PP	66.0@1,500	102.3	14.8	420.2@1,500	102.3	14.8	EGR,DOC,SCR,DFI, TC,CAC,ECM,DQS
*GDICL03.4LEA	DL03-LEG01	D34PP	72.6@1,800	91.6	15.9	385.3@1,800	91.6	15.9	EGR,DOC,SCR,DFI, TC,CAC,ECM,DQS
*GDICL03.4LEA	DL03-LEG01	D34PP	66.0@1,500	102.3	14.8	420.2@1,500	102.3	14.8	EGR,DOC,SCR,DFI, TC,CAC,ECM,DQS
*GDICL03.4LEA	DL03-LER01	D34P	81.9@2,400	83.1	19.0	430@1,400	102.4	13.7	EGR,DOC,SCR,DFI, TC,CAC,ECM,DQS
*GDICL03.4LEA	DL03-LER02	D34P	74.6@2,400	74.9	18.0	375@1,600	86.8	13.9	EGR,DOC,SCR,DFI, TC,CAC,ECM,DQS
*GDICL03.4LEA	DL03-LER03	D34P	68.6@2,400	69.0	16.5	350@1,600	81.2	13.0	EGR,DOC,SCR,DFI, TC,CAC,ECM,DQS
*GDICL03.4LEA	DL03-LER04	D34P	63.4@2,400	64.3	15.4	325@1,600	75.9	12.1	EGR,DOC,SCR,DFI, TC,CAC,ECM,DQS

***New Model Added**