California Environmental Protection Agency **Air Resources Board**	**PERKINS ENGINES COMPANY LTD.**	**EXECUTIVE ORDER U-R-022-0199** 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)
2015	FPKXL07.0BN1	7.01	Diesel	8000

SPECIAL FEATURES & EMISSION CONTROL SYSTEMS	TYPICAL EQUIPMENT APPLICATION
Electronic Direct Injection, Turbocharger, Charge Air Cooler, Electronic Control Module, Exhaust Gas Recirculation, Diesel Oxidation Catalyst, Continuous Trap Oxidizer, Selective Catalytic Reduction-Urea, Ammonia Oxidation Catalyst	Cranes, Loaders, Tractor, Dozer, Pump, Compressor, Generator Set

The engine models and codes are attached.

The following are the exhaust certification standards (STD), or family emission limit(s) (FEL) as applicable, 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
75 ≤ kW ≤ 560	Tier 4 Final	STD	0.19	0.40	N/A	3.5	0.02	N/A	N/A	N/A
		FEL	N/A	N/A	N/A	N/A	0.01	N/A	N/A	N/A
		CERT	0.01	0.26	--	1.3	0.002	--	--	--

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.

BE IT FURTHER RESOLVED: That the family emission limit(s) (FEL) is an emission level declared by the manufacturer for use in any averaging, banking and trading program and in lieu of an emission standard for certification. It serves as the applicable emission standard for determining compliance of any engine within this engine family under 13 CCR Sections 2423 and 2427.

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).

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 29 day of September 2014.

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

Engine Model Summary Template

U-R-022-0199
6-19-2015

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
FPKXL07.0BN1	Cert Test 1	3924/2200	275@2200	143	103	927@1400	191	88	DDI TAA ECM DOC CTOX EGR SCR AMOX EPR
FPKXL07.0BN1	1	3924/2200	275@2200	144	104	927@1400	186	86	DDI TAA ECM DOC CTOX EGR SCR AMOX EPR
FPKXL07.0BN1	2	3960/2200	269@2200	140	101	918@1400	184	85	DDI TAA ECM DOC CTOX EGR SCR AMOX EPR
FPKXL07.0BN1	3	3926/2200	250@2200	128	93	895@1400	179	82	DDI TAA ECM DOC CTOX EGR SCR AMOX EPR
FPKXL07.0BN1	4	4038/2200	250@2200	128	93	895@1400	179	82	DDI TAA ECM DOC CTOX EGR SCR AMOX EPR

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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
FPKXL07.0BN1	5	3962/2200	248@2200	127	92	908@1300	182	78	DDI TAA ECM DOC CTOX EGR SCR AMOX EPR
FPKXL07.0BN1	6	3976/1800	239@1800	140	83	766@1400	153	70	DDI TAA ECM DOC CTOX EGR SCR AMOX EPR
FPKXL07.0BN1	7	3928/2200	225@2200	115	83	805@1400	160	74	DDI TAA ECM DOC CTOX EGR SCR AMOX EPR
FPKXL07.0BN1	8	4036/2200	225@2200	115	83	805@1400	160	74	DDI TAA ECM DOC CTOX EGR SCR AMOX EPR
FPKXL07.0BN1	9	3966/2200	215@2200	109	79	735@1400	140	64	DDI TAA ECM DOC CTOX EGR SCR AMOX EPR

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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
FPKXL07.0BN1	10	3930/2200	202@2200	103	75	725@1400	138	64	DDI TAA ECM DOC CTOX EGR SCR AMOX EPR
FPKXL07.0BN1	11	4034/2200	202@2200	103	75	725@1400	138	64	DDI TAA ECM DOC CTOX EGR SCR AMOX EPR
FPKXL07.0BN1	12	3978/1800	204@1800	121	72	642@1400	124	57	DDI TAA ECM DOC CTOX EGR SCR AMOX EPR
FPKXL07.0BN1	13	3932/2200	202@2200	105	75	642@1400	124	57	DDI TAA ECM DOC CTOX EGR SCR AMOX EPR
FPKXL07.0BN1	14	4052/1800	188@1800	111	65	642@1400	124	57	DDI TAA ECM DOC CTOX EGR SCR AMOX EPR

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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
FPKXL07.0BN1	15	4054/2000	176@2000	99	62	637@1400	122	56	DDI TAA ECM DOC CTOX EGR SCR AMOX EPR
FPKXL07.0BN1	16	3934/2200	174@2200	92	64	621@1400	118	55	DDI TAA ECM DOC CTOX EGR SCR AMOX EPR
FPKXL07.0BN1	17	4028/2200	174@2200	92	64	621@1400	118	55	DDI TAA ECM DOC CTOX EGR SCR AMOX EPR
FPKXL07.0BN1	18	4032/2200	173@2200	92	64	642@1400	124	57	DDI TAA ECM DOC CTOX EGR SCR AMOX EPR
FPKXL07.0BN1	19	4064/1800	164@1800	97	57	586@1400	115	52	DDI TAA ECM DOC CTOX EGR SCR AMOX EPR

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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
FPKXL07.0BN1	20	3990/1800	164@1800	97	57	547@1400	110	49	DDI TAA ECM DOC CTOX EGR SCR AMOX EPR
FPKXL07.0BN1	21	3936/2200	156@2200	81	59	557@1400	112	50	DDI TAA ECM DOC CTOX EGR SCR AMOX EPR
FPKXL07.0BN1	22	4050/2200	156@2200	81	59	557@1400	112	50	DDI TAA ECM DOC CTOX EGR SCR AMOX EPR
FPKXL07.0BN1	23	4060/1800	153@1800	90	53	532@1400	106	48	DDI TAA ECM DOC CTOX EGR SCR AMOX EPR
FPKXL07.0BN1	24	4354/2200	273@2200	143	103	* 923@1400	186	86	DDI TAA ECM DOC CTOX EGR SCR AMOX EPR

*: Correction on this R/C

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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
FPKXL07.0BN1	25	4356/2200	250@2200	128	93	895@1400	179	82	DDI TAA ECM DOC CTOX EGR SCR AMOX EPR
FPKXL07.0BN1	26	4358/2200	225@2200	115	83	805@1400	160	74	DDI TAA ECM DOC CTOX EGR SCR AMOX EPR
FPKXL07.0BN1	27	4360/2200	202@2200	103	75	725@1400	138	64	DDI TAA ECM DOC CTOX EGR SCR AMOX EPR
FPKXL07.0BN1	Cert Test 28	4346/2200	302@2200	156	113	946@1400	187	86	DDI TAA ECM DOC CTOX EGR SCR AMOX EPR
FPKXL07.0BN1	28	4346/2200	302@2200	156	113	946@1400	187	86	DDI TAA ECM DOC CTOX EGR SCR AMOX EPR

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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
FPKXL07.0BN1	29	4348/2200	302@2200	156	113	940@1400	179	82	DDI TAA ECM DOC CTOX EGR SCR AMOX EPR
FPKXL07.0BN1	Cert Test 30	4350/1800	321@1800	197	117	935@1800	197	117	DDI TAA ECM DOC CTOX EGR SCR AMOX EPR
FPKXL07.0BN1	30	4350/1800	321@1800	195	115	935@1800	195	115	DDI TAA ECM DOC CTOX EGR SCR AMOX EPR
FPKXL07.0BN1	31	4352/1800	247@1800	140	83	720@1800	140	83	DDI TAA ECM DOC CTOX EGR SCR AMOX EPR
FPKXL07.0BN1	32	4460/2200	227@2200	115	83	805@1400	162	75	DDI TAA ECM DOC CTOX EGR SCR AMOX EPR

Engine Model Summary Template

V-R-022-0199
6-19-2015

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
FPKXL07.0BN1	33 *	4530/2200	178@2200	92	67	642@1400	123	57	DDI TAA ECM DOC CTOX EGR SCR AMOX EPR

* Correction

TAA: TC+CAC