

## PERKINS ENGINES COMPANY LTD.

EXECUTIVE ORDER U-R-022-0096-1 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-02-003;

IT IS ORDERED AND RESOLVED: That the following compression-ignition engine and emission control system 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)
2007	7PKXL04.4RG1	4.4	Diesel	8000
	FEATURES & EMISSION		TYPICAL EQUIPMENT A	
Tu Dire	urbo Charger, Engine Co ect Diesel Injection, Smo	ontrol Module, oke Puff Limiter	Crane, Loaders, Tract Other Industrial Equ	

The engine models and codes are attached.

The following are the exhaust certification standards (STD) and certification levels (CERT) for hydrocarbon (HC), 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	EMISSION			E	XHAUST (g/kW-	hr)		OI	ACITY (%	6)
CLASS	STANDARD CATEGORY		нс	NOx	NMHC+NOx	co	PM	ACCEL	LUG	PEAK
56 ≤ kW < 75	Tier 2	STD	N/A	N/A	7.5	5.0	0.40	20	15	50
		CERT			6.8	0.8	0.29	7	3	10

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.

This Executive Order hereby supersedes Executive Order U-R-022-0096 dated December 21, 2006.

Executed at El Monte, California on this \_\_\_\_\_\_ day of February 2007.

Annette Hebert, Chief

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Mobile Source Operations Division

## **Engine Model Summary Template**

Altachment 1 of 1.

1 2359/2100 2 2359/2200 3 2164/2200 4 2165/2200 5 2166/2100 5 2166/2100 7 2166/2200 9 2167/2200 11 2167/2200 12 2168/2200 14 2168/2200 15 2168/2200 16 2169/2200 17 2169/2200 18 2163/2200 20 2442/1800 20 2442/1800 22 2444/1500	Fnoine 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: 9.Emission Control (lbs/hr)@peak torqueDevice Per SAE J1930	
2         235912200         99.2 @ 2200         82.0         39.8         306.0 lbf t @         94.5         29.2         TC DDI           3         2164/12200         91.9 @ 2200         73.0         35.5         286.0 lbf t @         86.0         26.3         TC DDI           4         2166/12200         98.6 @ 2200         73.0         35.5         280.0 lbf t @         86.0         70.0           5         2166/12200         98.6 @ 2200         63.0         36.7         304.0 lbf t @         92.5         28.6         TC DDI           6         2166/1200         99.6 @ 2200         80.0         38.9         304.0 lbf t @         92.5         28.6         TC DDI           8         2166/1200         99.6 @ 2200         78.5         39.9         304.0 lbf t @         92.5         28.6         TC DDI           10         2166/1200         99.6 @ 2200         78.5         39.9         304.0 lbf t @         92.5         28.6         TC DDI           10         2166/1200         97.2 @ 2200         80.0         38.9         298.0 lbf t @         92.5         28.6         TC DDI           11         2166/1200         97.2 @ 2200         80.0         76.0         38.9         298.	04.4RG1	1	2359/2100	99.9 @ 2100	83.5	38.7	306.0 lbf ft @	94.5	29.2	7	_ [
3         2164/2200         91.9 @ 2200         73.0         35.5         286.0 lbff @         85.0         26.3           4         2165/2200         89.8 @ 2200         73.0         35.5         280.0 lbff @         85.0         26.3           5         2166/2200         98.6 @ 2000         83.0         36.7         304.0 lbff @         92.5         28.6           6         2166/2200         99.9 @ 2200         80.0         38.9         304.0 lbff @         92.5         28.6           7         2166/2200         99.9 @ 2200         78.5         39.9         304.0 lbff @         92.5         28.6           9         2166/2200         99.9 @ 2200         78.5         39.9         304.0 lbff @         92.5         28.6           10         2167/2200         96.6 @ 2000         83.0         36.7         286.0 lbff @         92.5         28.6           10         2167/2200         96.6 @ 2000         83.0         36.7         286.0 lbff @         92.5         28.6           11         2167/2200         97.2 @ 2200         80.0         36.7         286.0 lbff @         92.5         28.6           12         2167/2200         97.2 @ 2200         80.0         76.0	.04.4RG1	2	2359/2200	99.2 @ 2200	82.0	39.8	306.0 lbf ft @	94.5	29.2	TC DDI	
4         2166/2200         88.9 @ 2200         73.0         35.5         280.0 lbff @         85.0         28.3           5         2166/2000         98.6 @ 2000         83.0         36.7         304.0 lbff @         92.5         28.6           6         2166/2000         98.0 @ 200         81.5         37.8         304.0 lbff @         92.5         28.6           7         2166/2200         98.0 @ 2200         80.0         38.9         304.0 lbff @         92.5         28.6           9         2166/2200         98.0 @ 2200         80.0         36.7         298.0 lbff @         92.5         28.6           10         2167/2200         97.2 @ 2200         80.0         36.7         298.0 lbff @         92.5         28.6           11         2167/2200         97.2 @ 2200         76.0         38.9         290.0 lbff @         92.5         28.6           12         2167/2200         97.2 @ 2200         76.0         36.9         290.0 lbff @         92.5         28.6           13         2168/2200         97.0 @ 2200         76.0         36.9         274.0 lbff @         92.5         28.6           14         2168/2200         99.0 @ 2400         76.0         36.9	L04.4RG1	3	2164/2200	91.9 @ 2200	73.0	35.5	286.0 lbf ft @	85.0	26.3	TC DDI	
5         2166/2000         98.6 @ 2000         83.0         36.7         304.0 lbft @         92.5         28.6           6         2166/2100         99.9 @ 2100         81.5         37.8         304.0 lbft @         92.5         28.6           7         2166/2200         99.9 @ 2200         80.0         38.9         304.0 lbft @         92.5         28.6           8         2166/2200         99.9 @ 2300         78.5         39.9         304.0 lbft @         92.5         28.6           10         2167/2200         96.6 @ 2000         83.0         36.7         298.0 lbft @         92.5         28.6           11         2167/2200         97.2 @ 2200         80.0         38.9         298.0 lbft @         92.5         28.6           12         2167/2200         97.2 @ 2200         76.0         38.9         298.0 lbft @         92.5         28.6           13         2168/2200         76.0         38.9         298.0 lbft @         92.5         28.6           14         2168/2200         76.0         36.9         274.0 lbft @         92.5         28.6           15         2188/2200         76.0         36.9         296.0 lbft @         82.0         25.4      <	L04.4RG1	4	2165/2200	89.8 @ 2200	73.0	35.5	280.0 lbf ft @	85.0	26.3	TC DDI	
6         2166/2100         99.9 @ 2100         81.5         37.8         304.0 lbff @         92.5         28.6           7         2166/2200         99.9 @ 2200         80.0         38.9         304.0 lbff @         92.5         28.6           8         2166/2200         99.9 @ 2200         78.5         39.9         304.0 lbff @         92.5         28.6           9         2167/200         96.6 @ 200         83.0         36.7         298.0 lbff @         92.5         28.6           10         2167/200         96.6 @ 200         80.0         38.9         298.0 lbff @         92.5         28.6           11         2167/200         97.2 @ 2200         78.5         39.9         298.0 lbff @         92.5         28.6           12         2167/200         97.2 @ 2200         76.0         36.9         274.0 lbff @         92.5         28.6           13         2168/200         99.9 @ 2200         76.0         36.9         274.0 lbff @         82.0         25.4           14         2168/200         97.2 @ 2200         76.0         36.9         274.0 lbff @         82.0         25.4           15         2168/200         97.2 @ 2200         76.0         36.9 <td< td=""><td>L04.4RG1</td><td>5</td><td>2166/2000</td><td>98.6 @ 2000</td><td>83.0</td><td>36.7</td><td>304.0 lbf ft @</td><td>92.5</td><td>28.6</td><td>TC DDI</td><td>Appropriate and contact appropriate and approp</td></td<>	L04.4RG1	5	2166/2000	98.6 @ 2000	83.0	36.7	304.0 lbf ft @	92.5	28.6	TC DDI	Appropriate and contact appropriate and approp
7         2166/2200         99.9 @ 2200         80.0         38.9         304.0 lbft @         92.5         28.6           8         2166/2300         99.9 @ 2300         78.5         39.9         304.0 lbft @         92.5         28.6           9         216/72000         96.6 @ 2000         83.0         36.7         288.0 lbft @         92.5         28.6           10         216/7200         96.6 @ 2000         83.0         36.9         286.0 lbft @         92.5         28.6           11         216/72200         97.2 @ 2200         80.0         38.9         286.0 lbft @         92.5         28.6           12         216/72200         97.2 @ 2200         76.0         36.9         274.0 lbft @         92.5         28.6           13         2168/2200         99.9 @ 2200         76.0         36.9         274.0 lbft @         82.0         25.4           14         2168/2200         99.2 @ 2300         76.0         36.9         274.0 lbft @         82.0         25.4           15         2168/2200         97.2 @ 2400         76.0         36.9         274.0 lbft @         82.0         25.4           16         2169/2200         97.2 @ 240         74.0         36.9	L04.4RG1	6	2166/2100	99.9 @ 2100	81.5	37.8	304.0 lbf ft @	92.5	28.6	TC DDI	plants als same a sky my a wymy.
8         2166/2300         99.9 @ 2300         78.5         39.9         304.0 lbft @         92.5         28.6           9         2167/2000         96.6 @ 2000         83.0         36.7         298.0 lbft @         92.5         28.6           10         2167/2100         97.9 @ 2100         81.5         37.8         298.0 lbft @         92.5         28.6           11         2167/2100         97.2 @ 2200         80.0         38.9         298.0 lbft @         92.5         28.6           12         2168/2200         97.2 @ 2300         76.0         36.9         298.0 lbft @         92.5         28.6           13         2168/2200         99.9 @ 2300         76.0         36.9         274.0 lbft @         82.0         25.4           14         2168/2200         99.9 @ 2300         76.0         36.9         274.0 lbft @         82.0         25.4           16         2169/2400         97.2 @ 2400         74.0         36.2         274.0 lbft @         82.0         25.4           19         2169/2400         97.2 @ 2400         76.0         36.9         268.5 lbft @         82.0         25.4           19         2169/2200         76.0         31.8         254.0 lbft @	1L04.4RG1	7	2166/2200	99.9 @ 2200	80.0	38.9	304.0 lbf ft @	92.5	28.6	TC DDI	
9         2167/2000         96.6 @ 2000         83.0         36.7         298.0 lbff @         92.5         28.6           10         2167/2100         97.9 @ 2100         81.5         37.8         298.0 lbff @         92.5         28.6           11         2167/2200         97.2 @ 2200         78.5         39.9         298.0 lbff @         92.5         28.6           12         2167/2200         97.2 @ 2200         76.0         36.9         298.0 lbff @         92.5         28.6           14         2168/2300         99.9 @ 2300         76.0         36.9         274.0 lbff @         82.0         25.4           15         2168/2400         99.9 @ 2300         76.0         36.9         274.0 lbff @         82.0         25.4           16         2169/2400         97.2 @ 2200         76.0         36.9         268.5 lbff @         82.0         25.4           18         2169/2400         97.2 @ 2400         74.0         36.9         268.5 lbff @         82.0         25.4           19         2169/2200         94.5 @ 1800         92.0         36.9         268.5 lbff @         37.7         23.6           20         2442/1800         94.5 @ 1800         92.0         36.9	(L04.4RG1	8	2166/2300	99.9 @ 2300	78.5	39.9	304.0 lbf ft @	92.5	28.6	TC DDI	The second secon
10         2167/2100         97.9 @ 2100         81.5         37.8         298.0 lbfft @         92.5         28.6           11         2167/2200         97.2 @ 2200         80.0         38.9         298.0 lbfft @         92.5         28.6           12         2167/2200         97.2 @ 2300         76.0         36.9         298.0 lbfft @         92.5         28.6           13         2168/2200         99.9 @ 2200         76.0         36.9         274.0 lbfft @         82.0         25.4           14         2168/2200         99.9 @ 2400         74.0         39.2         274.0 lbfft @         82.0         25.4           16         2168/2400         97.2 @ 2240         74.0         36.9         274.0 lbfft @         82.0         25.4           17         2169/2400         97.2 @ 2240         74.0         36.9         268.5 lbfft @         82.0         25.4           18         2162/2200         94.5 @ 1800         92.0         31.8         268.5 lbfft @         82.0         25.4           20         2442/1800         94.5 @ 1800         92.0         31.8         254.0 lbfft @         85         25.2           21         22444/1500         94.5 @ 1800         95.0	(L04.4RG1	6	2167/2000	96.6 @ 2000	83.0	36.7	298.0 lbf ft @	92.5	28.6	TC DDI	
11         2167/2200         97.2 @ 2200         80.0         38.9         298.0 lbff @         92.5         28.6           12         2167/2300         97.2 @ 2300         78.5         36.9         298.0 lbff @         92.5         28.6           13         2168/2200         99.9 @ 2200         76.0         36.9         274.0 lbff @         82.0         25.4           14         2168/2200         99.9 @ 2200         76.0         38.1         274.0 lbff @         82.0         25.4           15         2168/2400         97.2 @ 2200         76.0         36.9         268.5 lbff @         82.0         25.4           17         2169/2200         97.2 @ 2400         74.0         39.2         268.5 lbff @         82.0         25.4           18         2169/2200         97.2 @ 2400         74.0         39.2         268.5 lbff @         82.0         25.4           19         2169/2200         86.0         31.8         254.0 lbff @         77.7         23.6           20         2442/1800         94.5 @ 1800         92.0         36.9         291.0 lbff @         77.7         25.2           22         2444/1800         91.50         95.5         31.4         Ahaanged	(L04.4RG1	10	2167/2100	97.9 @ 2100	81.5	37.8	298.0 lbf ft @	92.5	28.6	TC DDI	***************************************
12         2167/2300         97.2 @ 2300         78.5         39.9         298.0 lbfft @         92.5         28.6           13         2168/2200         99.9 @ 2200         76.0         36.9         274.0 lbfft @         82.0         25.4           14         2168/2300         99.9 @ 2400         76.0         38.1         274.0 lbfft @         82.0         25.4           15         2168/2400         99.9 @ 2400         74.0         39.2         274.0 lbfft @         82.0         25.4           16         2169/2400         97.2 @ 2200         76.0         36.9         268.5 lbfft @         82.0         25.4           17         2169/2400         97.2 @ 2200         74.0         39.2         268.5 lbfft @         82.0         25.4           18         2162/2200         83.1 @ 2200         86.0         31.8         269.5 lbfft @         77.7         23.6           20         2442/1800         94.5 @ 1800         92.0         36.8         77.7         23.6           21         2890/2200         94.5 @ 1800         95.5         31.4         AAAaaged         741.0         25.2           22         2444/1800         94.5 @ 1800         95.5         31.4         AAAaaged <td>(L04.4RG1</td> <td>- 11</td> <td>2167/2200</td> <td>97.2 @ 2200</td> <td>80.0</td> <td>38.9</td> <td>298.0 lbf ft @</td> <td>92.5</td> <td>28.6</td> <td>TC DDI</td> <td>***************************************</td>	(L04.4RG1	- 11	2167/2200	97.2 @ 2200	80.0	38.9	298.0 lbf ft @	92.5	28.6	TC DDI	***************************************
13         2168/2200         99.9 @ 2200         76.0         36.9         274.0 lbf ft @         82.0         25.4           14         2168/2300         99.9 @ 2300         75.0         38.1         274.0 lbf ft @         82.0         25.4           15         2169/2400         99.9 @ 2400         74.0         39.2         274.0 lbf ft @         82.0         25.4           16         2169/2400         97.2 @ 2400         74.0         36.9         268.5 lbf ft @         82.0         25.4           17         2169/2400         97.2 @ 2400         74.0         39.2         268.5 lbf ft @         82.0         25.4           18         2162/2200         83.1 @ 2200         86.0         31.8         260.0 lbf ft @         77.7         23.6           20         2442/1800         94.5 @ 1800         92.0         36.8         77.7         23.6           21         2890/2200         94.5 @ 1800         92.0         31.9         291.0 lbf ft @         85         25.2           22         2444/1500         83.1 @ 150         95.5         31.4         Ahauged         Values           23         2444/1800         94.5 @ 1800         91.5         36.1         Ahauged         Value	(L04.4RG1	12	2167/2300	97.2 @ 2300	78.5	39.9	298.0 lbf ft @	92.5	28.6	TC DDI	
14         2168/2300         99.9 @ 2300         75.0         38.1         274.0 lbff @         82.0         25.4           15         2168/2400         99.9 @ 2400         74.0         39.2         274.0 lbff @         82.0         25.4           16         2169/2400         97.2 @ 2400         76.0         36.9         268.5 lbff @         82.0         25.4           17         2169/2400         97.2 @ 2400         74.0         39.2         268.5 lbff @         82.0         25.4           18         2162/2200         83.1 @ 2200         66.0         31.8         256.0 lbff @         77.7         23.6           20         244/1800         94.5 @ 1800         92.0         36.8         77.7         23.6           21         2890/2200         96.5         31.9         291.0 lbff @         85         25.2           22         2444/1500         83.1@1500         96.5         31.4         Ahaunged         Values           23         2444/1800         94.5@1800         91.5         36.1         Ahaunged         Values	(L04.4RG1	13	2168/2200	99.9 @ 2200	76.0	36.9	274.0 lbf ft @	82.0	25.4	TC DDI	en e
15         2168/2400         99.9 @ 2400         74.0         39.2         274.0 lbft @         82.0         25.4           16         2169/2200         97.2 @ 2200         76.0         36.9         268.5 lbft @         82.0         25.4           17         2169/2400         97.2 @ 2400         74.0         39.2         268.5 lbft @         82.0         25.4           18         2162/2200         83.1 @ 2200         81.0         31.8         260.0 lbft @         77.7         23.6           20         2442/1800         94.5 @ 1800         92.0         36.8         77.7         23.6           21         2890/2200         91.9 @ 2200         66         31.9         291.0 lbft @         85         25.2           22         2444/1500         83.1 @ 150         95.5         31.4         Ahaanged Values         Values           23         2444/1800         94.5 @ 1800         91.5         36.1         Ahaanged Values	(L04.4RG1	14	2168/2300	99.9 @ 2300	75.0	38.1	274.0 lbf ft @	82.0	25.4	TC DDI	
16         2169/2200         97.2 @ 2200         76.0         36.9         268.5 lbfft @         82.0         25.4           17         2169/2400         97.2 @ 2400         74.0         39.2         268.5 lbfft @         82.0         25.4           18         2162/2200         83.1 @ 2200         66.0         31.8         260.0 lbfft @         77.7         23.6           20         2442/1800         94.5 @ 1800         92.0         36.8         77.7         23.6           21         2890/2200         94.5 @ 1800         92.0         36.8         291.0 lbfft @         85         25.2           22         2444/1500         83.1 @ 1500         96.5         31.9         Ahauged / Allien         441.160           23         2444/1800         94.5 @ 1800         91.5         31.4         Ahauged / Allien         441.160	L04.4RG1	15	2168/2400	99.9 @ 2400	74.0	39.2	274.0 lbf ft @	82.0	25.4	TC DDI	
17         2169/2400         97.2 @ 2400         74.0         39.2         268.5 lbfft @         82.0         25.4           18         2162/2200         83.1 @ 2200         66.0         31.8         260.0 lbfft @         77.7         23.6           20         2442/1800         94.5 @ 1800         92.0         36.8         36.8         36.8         254.0 lbfft @         85         25.2           21         2890/2200         94.5 @ 1800         66         31.9         291.0 lbfft @         85         25.2           22         2444/1500         83.1 @ 15.0         95.5         31.4         Ahauged Values         25.2           23         2444/1800         94.5 @ 1800         91.5         36.1         Ahauged Values	(L04.4RG1	16	2169/2200	97.2 @ 2200	76.0	36.9	268.5 lbf ft @	82.0	25.4	TC DDI	Hady-war - 1
18         2162/2200         83.1 @ 2200         66.0         31.8         260.0 lbfft @         77.7         23.6           19         2163/2200         74 @ 2200         81.0         31.8         254.0 lbfft @         77.7         23.6           20         2442/1800         94.5 @ 1800         92.0         36.8         31.9         291.0 lbfft @         85         25.2           21         2890/2200         91.9@ 2200         66         31.9         291.0 lbfft @         85         25.2           22         2444/1500         83.1@1500         95.5         31.4         Ahauged Values           23         2444/1800         94.5@1800         91.5         36.1         Ahauged Values	1.04.4RG1	17	2169/2400	97.2 @ 2400	74.0	39.2	268.5 lbf ft @	82.0	25.4	TC DDI	Water brillian determination and make
19         2163/2200         74 @ 2200         81.0         31.8         254.0 lbfft @         77.7         23.6           20         2442/1800         94.5 @ 1800         92.0         36.8         36.8         291.0 lbfft @         85         25.2           21         2890/2200         91.9 @ 2200         66         31.9         291.0 lbfft @         85         25.2           22         2444/1500         83.1 @ 1500         95.5         31.4         Ahauged Values         Values           23         2444/1800         94.5 @ 1800         91.5         36.1         Ahauged Values         Values	L04.4RG1	18	2162/2200	83.1 @ 2200	66.0	31.8	260.0 lbf ft @	7.77	23.6	TC DD!	
20 2442/1800 94.5 @ 1800 92.0 36.8 21 2890/2200 91.9 @ 2200 66 31.9 291.0 lbf ft @ 85 25.2 22 2444/1500 83.1 @ 1500 95.5 31.4 Ahauged Values	(L04.4RG1	19	2163/2200	74 @ 2200	81.0	31.8	254.0 lbf ft @	77.7	23.6	TC DDI	
21         2890/2200         91.9@ 2200         66         31.9         291.0 lbf ft @         85         25.2           22         2444/1500         83.1@1500         95.5         31.4         Anauged Values           23         2444/1800         94.5@1800         91.5         36.1	L04.4RG1	20	2442/1800	94.5 @ 1800	92.0	36.8				TC DD!	The second secon
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	L04.4RG1	23 ]	2444/1800	94.5@1800	91.5		) D			TC DDI	