## PERKINS ENGINES COMPANY LTD.

EXECUTIVE ORDER U-R-022-0175 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 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<br>YEAR | ENGINE FAMILY                                                                                           | DISPLACEMENT (liters)                  | FUEL TYPE                                        | USEFUL LIFE<br>(hours) |  |  |  |
|---------------|---------------------------------------------------------------------------------------------------------|----------------------------------------|--------------------------------------------------|------------------------|--|--|--|
| 2012          | CPKXL06.6BK1                                                                                            | 6.6                                    | Diesel                                           | 8000                   |  |  |  |
| SPECIAL       | FEATURES & EMISSION                                                                                     | CONTROL SYSTEMS                        | TYPICAL EQUIPMENT APPLICATION                    |                        |  |  |  |
| Charg         | ctronic Direct Injection,<br>ge Air Cooler, Electronic<br>Gas Recirculation, Diese<br>Continuous Trap O | Control Module,<br>Oxidation Catalyst, | Cranes, Loaders, Tracto<br>Pump, Compressor, Gen |                        |  |  |  |

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            |      | EXHAUST (g/kw-hr) |     |          |     |      | OPACITY (%) |     |      |
|---------------|---------------------|------|-------------------|-----|----------|-----|------|-------------|-----|------|
| CLASS         | STANDARD            |      | НС                | NOx | NMHC+NOx | co  | PM   | ACCEL       | LUG | PEAK |
| 75 ≤ kW < 130 | Tier 4 /<br>ALT NOx | STD  | 0.19              | 3.4 | N/A      | 5.0 | 0.02 | N/A         | N/A | N/A  |
|               |                     | CERT | 0.00              | 2.5 |          | 0.1 | 0.00 |             |     |      |

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

\_\_\_ day of June 201

Annette Hebert, Chief

Mobile Source Operations Division

## **Engine Model Summary Template**

U-R-022-0175 6/20/2011

| Engine Family | 1.Engine Code | 2.Engine Model | 3.BHP@RPM<br>(SAE Gross) | 4.Fuel Rate:<br>mm/stroke @ peak HP<br>(for diesel only) | 5.Fuel Rate:<br>(lbs/hr) @ peak HP<br>(for diesels only) | 6.Torque @ RPM<br>(SEA Gross) | 7.Fuel Rate:<br>mm/stroke@peak<br>torque | 8.Fuel Rate<br>(lbs/hr)@peak to | : 9.Emission Control orqueDevice Per SAE J193 |
|---------------|---------------|----------------|--------------------------|----------------------------------------------------------|----------------------------------------------------------|-------------------------------|------------------------------------------|---------------------------------|-----------------------------------------------|
| BPKXL06.6BK1  | Cert Test 1   | 3774/2200      | 173@2200<br>127・2 火      | <b>09</b>                                                | 65                                                       | 627@1400                      | 130                                      | 60                              | TC DDI TARECM DOC CTOX EGR EPR                |
| BPKXL06.6BK1  | 1             | 3774/2200      | 173@2200                 | 90                                                       | 65                                                       | 627@1400                      | 130                                      | 60                              | DDI THA ECM<br>DOC CTOX<br>EGR EPR            |
| BPKXL06.6BK1  | 2             | 3768/1800      | 152@1800                 | 88.6                                                     | 52                                                       | 486@1400                      | 92.5                                     | 43                              | DDI TAA ECM<br>DOC CTOX<br>EGR EPR            |
| BPKXL06.6BK1  | 3             | 3770/1800      | 164@1800                 | 95.1                                                     | 56                                                       | 525@1400                      | 104.3                                    | 48                              | DDI <del>TAA</del> ECM<br>DOC CTOX<br>EGR EPR |
| BPKXL06.6BK1  | 4             | 3772/1800      | 160@1800                 | 93.1                                                     | 55                                                       | 572@1350                      | 117.1                                    | 52                              | DDI <del>TAA</del> ECM<br>DOC CTOX<br>EGR EPR |
| BPKXL06.6BK1  | 5             | 3776/2200      | 155@2200                 | 80                                                       | 58                                                       | 521@1400                      | 104.5                                    | 48                              | DDI <del>TAA</del> ECM<br>DOC CTOX<br>EGR EPR |
| BPKXL06.6BK1  | 6             | 3778/1800      | 173@1800                 | 101.6                                                    | 60                                                       | 608@1400                      | 121.4                                    | 56                              | DDI <del>TAA</del> ECM<br>DOC CTOX<br>EGR EPR |
| BPKXL06.6BK1  | 7             | 3782/1800      | 146@1800                 | 110                                                      | 65                                                       | 535@1350                      | 103                                      | 46                              | DDI TAA ECM<br>DOC CTOX<br>EGR EPR            |

## **Engine Model Summary Template**

| Engine Family | 1.Engine Code | 2.Engine Model | 3.BHP@RPM<br>(SAE Gross) | 4.Fuel Rate:<br>mm/stroke @ peak HP<br>(for diesel only) | 5.Fuel Rate:<br>(lbs/hr) @ peak HP<br>(for diesels only) | 6.Torque @ RPM<br>(SEA Gross) | 7.Fuel Rate:<br>mm/stroke@peak<br>torque | 8.Fuel Rate:<br>(lbs/hr)@peak torque | 9.Emission Control<br>Device Per SAE J193     |
|---------------|---------------|----------------|--------------------------|----------------------------------------------------------|----------------------------------------------------------|-------------------------------|------------------------------------------|--------------------------------------|-----------------------------------------------|
| BPKXL06.6BK1  | 8             | 3540/2200      | 119@2200<br>87.5 KW      | 62.5                                                     | 45                                                       | 402@1400                      | 88.5                                     | 41 TO                                | DUGGIUX                                       |
| BPKXL06.6BK1  | 9             | 3546/2200      | 156@2200                 | 80.9                                                     | 59                                                       | 504@1400                      | 113.1                                    | 52                                   | DDI TAA ECM<br>DOC CTOX<br>EGR EPR            |
| BPKXL06.6BK1  | 10            | 3548/2200      | 174@2200                 | 89.1                                                     | 64                                                       | 608@1400                      | 125.7                                    | 58                                   | DDI <del>TAA</del> ECM<br>DOC CTOX<br>EGR EPR |