

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  | FHZXL667C82   | 0.667                 | Diesel                                      | 3000                |
| SPECIAL FEATURES & EMISSION CONTROL SYSTEMS |               |                       | TYPICAL EQUIPMENT APPLICATION               |                     |
| Mechanical Direct Injection                 |               |                       | Pump, Generator, Other Industrial Equipment |                     |

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 |
| kW < 19           | Tier 4 Final               | STD  | N/A               | N/A | 7.5      | 6.6 | 0.40 | N/A         | N/A | N/A  |
|                   |                            | CERT | --                | --  | 6.7      | 4.0 | 0.24 | --          | --  | --   |

**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 12<sup>th</sup> day of January 2015.

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

Detailed engine models summarization of the engine family FHZXL.667C82

Attachment 1 of 2

U-R-034-0299  
1/7/15



| EPA Engine Family Name | Engine Model | Engine Code | Max. engine power prior to de-rating (kW) | de-rated max. power for production engine (kW) | Rated Speed (RPM) | Maximum Torque (N*m) | Speed at Maximum Torque (RPM) | Fuel Rate at Maximum Torque (mm3/stroke) | Fuel Rate at Rated Speed (mm3/stroke) | Emission Control System |
|------------------------|--------------|-------------|---|--|-------------------|----------------------|-------------------------------|--|---------------------------------------|-------------------------|
| FHZXL.667C82           | 1D81 S/Z/T/U | cs-D81-3000 | 10,0                                      | 9,3  | 3000              | 31,8                 | 3000                          | 34,5                                     | 34,5                                  | EM / DI                 |
| FHZXL.667C82           | 1D81 S/Z/T/U | cs-D81-2950 | 9,9                                       | 9,2  | 2950              | 32,0                 | 2950                          | 34,5                                     | 34,5                                  | EM / DI                 |
| FHZXL.667C82           | 1D81 S/Z/T/U | cs-D81-2900 | 9,8                                       | 9,0  | 2900              | 32,3                 | 2900                          | 34,5                                     | 34,5                                  | EM / DI                 |
| FHZXL.667C82           | 1D81 S/Z/T/U | cs-D81-2850 | 9,7                                       | 8,9  | 2850              | 32,5                 | 2850                          | 34,5                                     | 34,5                                  | EM / DI                 |
| FHZXL.667C82           | 1D81 S/Z/T/U | cs-D81-2800 | 9,6                                       | 8,8  | 2800              | 32,7                 | 2800                          | 34,5                                     | 34,5                                  | EM / DI                 |
| FHZXL.667C82           | 1D81 S/Z/T/U | cs-D81-2750 | 9,5                                       | 8,7  | 2750              | 33,0                 | 2750                          | 34,5                                     | 34,5                                  | EM / DI                 |
| FHZXL.667C82           | 1D81 S/Z/T/U | cs-D81-2700 | 9,4                                       | 8,6  | 2700              | 33,2                 | 2700                          | 34,5                                     | 34,5                                  | EM / DI                 |
| FHZXL.667C82           | 1D81 S/Z/T/U | cs-D81-2650 | 9,3                                       | 8,5  | 2650              | 33,5                 | 2650                          | 34,5                                     | 34,5                                  | EM / DI                 |
| FHZXL.667C82           | 1D81 S/Z/T/U | cs-D81-2600 | 9,2                                       | 8,4  | 2600              | 33,8                 | 2600                          | 34,5                                     | 34,5                                  | EM / DI                 |
| FHZXL.667C82           | 1D81 S/Z/T/U | cs-D81-2550 | 9,1                                       | 8,2  | 2550              | 34,1                 | 2550                          | 34,5                                     | 34,5                                  | EM / DI                 |
| FHZXL.667C82           | 1D81 S/Z/T/U | cs-D81-2500 | 8,9                                       | 8,0  | 2500              | 34,0                 | 2500                          | 34,5                                     | 34,5                                  | EM / DI                 |
| FHZXL.667C82           | 1D81 S/Z/T/U | cs-D81-2450 | 8,8                                       | 7,9  | 2450              | 34,3                 | 2450                          | 34,5                                     | 34,5                                  | EM / DI                 |
| FHZXL.667C82           | 1D81 S/Z/T/U | cs-D81-2400 | 8,6                                       | 7,8  | 2400              | 34,2                 | 2400                          | 34,5                                     | 34,5                                  | EM / DI                 |
| FHZXL.667C82           | 1D81 S/Z/T/U | cs-D81-2350 | 8,5                                       | 7,7  | 2350              | 34,5                 | 2350                          | 34,5                                     | 34,5                                  | EM / DI                 |
| FHZXL.667C82           | 1D81 S/Z/T/U | cs-D81-2300 | 8,3                                       | 7,6  | 2300              | 34,5                 | 2300                          | 34,5                                     | 34,5                                  | EM / DI                 |
| FHZXL.667C82           | 1D81 S/Z/T/U | cs-D81-2250 | 8,3                                       | 7,5  | 2250              | 35,2                 | 2250                          | 34,5                                     | 34,5                                  | EM / DI                 |
| FHZXL.667C82           | 1D81 S/Z/T/U | cs-D81-2200 | 8,1                                       | 7,4  | 2200              | 35,3                 | 2200                          | 34,5                                     | 34,5                                  | EM / DI                 |
| FHZXL.667C82           | 1D81 S/Z/T/U | cs-D81-2150 | 8,0                                       | 7,2  | 2150              | 35,5                 | 2150                          | 34,5                                     | 34,5                                  | EM / DI                 |
| FHZXL.667C82           | 1D81 S/Z/T/U | cs-D81-2100 | 7,8                                       | 6,9  | 2100              | 35,5                 | 2100                          | 34,5                                     | 34,5                                  | EM / DI                 |
| FHZXL.667C82           | 1D81 S/Z/T/U | cs-D81-2050 | 7,7                                       | 6,8  | 2050              | 35,9                 | 2050                          | 34,5                                     | 34,5                                  | EM / DI                 |
| FHZXL.667C82           | 1D81 S/Z/T/U | cs-D81-2000 | 7,5                                       | 6,7  | 2000              | 35,8                 | 2000                          | 34,5                                     | 34,5                                  | EM / DI                 |
| FHZXL.667C82           | 1D81 S/Z/T/U | cs-D81-1950 | 7,4                                       | 6,6  | 1950              | 36,2                 | 1950                          | 33,0                                     | 33,0                                  | EM / DI                 |
| FHZXL.667C82           | 1D81 S/Z/T/U | cs-D81-1900 | 7,2                                       | 6,4  | 1900              | 36,2                 | 1900                          | 33,0                                     | 33,0                                  | EM / DI                 |
| FHZXL.667C82           | 1D81 S/Z/T/U | cs-D81-1850 | 7,1                                       | 6,2  | 1850              | 36,6                 | 1850                          | 33,0                                     | 33,0                                  | EM / DI                 |
| FHZXL.667C82           | 1D81 S/Z/T/U | cs-D81-1800 | 6,8                                       | 6,1  | 1800              | 36,1                 | 1800                          | 33,0                                     | 33,0                                  | EM / DI                 |
| FHZXL.667C82           | 1D81 S/Z/T/U | cs-D81-1750 | 6,7                                       | 5,9  | 1750              | 36,6                 | 1750                          | 33,0                                     | 33,0                                  | EM / DI                 |
| FHZXL.667C82           | 1D81 S/Z/T/U | cs-D81-1700 | 6,4                                       | 5,8  | 1700              | 36,0                 | 1700                          | 33,0                                     | 33,0                                  | EM / DI                 |
| FHZXL.667C82           | 1D81 S/Z/T/U | cs-D81-1650 | 6,2                                       | 5,6  | 1650              | 35,9                 | 1650                          | 33,0                                     | 33,0                                  | EM / DI                 |
| FHZXL.667C82           | 1D81 S/Z/T/U | cs-D81-1600 | 6,0                                       | 5,4  | 1600              | 35,8                 | 1600                          | 33,0                                     | 33,0                                  | EM / DI                 |

## Detailed engine models summarization of the engine family FHZXL.667C82

Attachment 2 of 2

U-R-034-0299  
1/7/15



|              |              |              |     |     |      |      |      |      |      |         |
|--------------|--------------|--------------|-----|-----|------|------|------|------|------|---------|
| FHZXL.667C82 | 1D81 S/Z/T/U | cs-D81-1550  | 5,8 | 5,2 | 1550 | 35,7 | 1550 | 33,0 | 33,0 | EM / DI |
| FHZXL.667C82 | 1D81 S/Z/T/U | cs-D81-1500  | 5,5 | 5,0 | 1500 | 35,0 | 1500 | 33,0 | 33,0 | EM / DI |
| FHZXL.667C82 | 1D81C        | cs-D81C-3000 | 9,5 | 8,9 | 3000 | 30,2 | 3000 | 34,5 | 34,5 | EM / DI |
| FHZXL.667C82 | 1D81C        | cs-D81C-2950 | 9,4 | 8,7 | 2950 | 30,4 | 2950 | 34,5 | 34,5 | EM / DI |
| FHZXL.667C82 | 1D81C        | cs-D81C-2900 | 9,3 | 8,6 | 2900 | 30,6 | 2900 | 34,5 | 34,5 | EM / DI |
| FHZXL.667C82 | 1D81C        | cs-D81C-2850 | 9,3 | 8,5 | 2850 | 31,2 | 2850 | 34,5 | 34,5 | EM / DI |
| FHZXL.667C82 | 1D81C        | cs-D81C-2800 | 9,1 | 8,5 | 2800 | 31,0 | 2800 | 34,5 | 34,5 | EM / DI |
| FHZXL.667C82 | 1D81C        | cs-D81C-2750 | 9,0 | 8,3 | 2750 | 31,3 | 2750 | 34,5 | 34,5 | EM / DI |
| FHZXL.667C82 | 1D81C        | cs-D81C-2700 | 8,8 | 8,2 | 2700 | 31,1 | 2700 | 34,5 | 34,5 | EM / DI |
| FHZXL.667C82 | 1D81C        | cs-D81C-2650 | 8,7 | 8,1 | 2650 | 31,4 | 2650 | 34,5 | 34,5 | EM / DI |
| FHZXL.667C82 | 1D81C        | cs-D81C-2600 | 8,7 | 8,0 | 2600 | 32,0 | 2600 | 32,5 | 32,5 | EM / DI |
| FHZXL.667C82 | 1D81C        | cs-D81C-2550 | 8,6 | 7,8 | 2550 | 32,2 | 2550 | 32,5 | 32,5 | EM / DI |
| FHZXL.667C82 | 1D81C        | cs-D81C-2500 | 8,5 | 7,6 | 2500 | 32,5 | 2500 | 32,5 | 32,5 | EM / DI |
| FHZXL.667C82 | 1D81C        | cs-D81C-2450 | 8,4 | 7,5 | 2450 | 32,7 | 2450 | 32,5 | 32,5 | EM / DI |
| FHZXL.667C82 | 1D81C        | cs-D81C-2400 | 8,2 | 7,4 | 2400 | 32,7 | 2400 | 32,5 | 32,5 | EM / DI |
| FHZXL.667C82 | 1D81C        | cs-D81C-2350 | 8,1 | 7,3 | 2350 | 33,0 | 2350 | 32,5 | 32,5 | EM / DI |
| FHZXL.667C82 | 1D81C        | cs-D81C-2300 | 8,0 | 7,2 | 2300 | 33,2 | 2300 | 32,5 | 32,5 | EM / DI |
| FHZXL.667C82 | 1D81C        | cs-D81C-2250 | 7,8 | 7,1 | 2250 | 33,1 | 2250 | 32,5 | 32,5 | EM / DI |
| FHZXL.667C82 | 1D81C        | cs-D81C-2200 | 7,6 | 6,9 | 2200 | 33,0 | 2200 | 32,5 | 32,5 | EM / DI |
| FHZXL.667C82 | 1D81C        | cs-D81C-2150 | 7,5 | 6,8 | 2150 | 33,3 | 2150 | 32,5 | 32,5 | EM / DI |
| FHZXL.667C82 | 1D81C        | cs-D81C-2100 | 7,3 | 6,7 | 2100 | 33,2 | 2100 | 32,5 | 32,5 | EM / DI |
| FHZXL.667C82 | 1D81C        | cs-D81C-2050 | 7,2 | 6,5 | 2050 | 33,5 | 2050 | 32,5 | 32,5 | EM / DI |
| FHZXL.667C82 | 1D81C        | cs-D81C-2000 | 7,0 | 6,5 | 2000 | 33,4 | 2000 | 32,5 | 32,5 | EM / DI |
| FHZXL.667C82 | 1D81C        | cs-D81C-1950 | 7,0 | 6,3 | 1950 | 34,4 | 1950 | 32,5 | 32,5 | EM / DI |
| FHZXL.667C82 | 1D81C        | cs-D81C-1900 | 6,8 | 6,1 | 1900 | 34,2 | 1900 | 32,5 | 32,5 | EM / DI |
| FHZXL.667C82 | 1D81C        | cs-D81C-1850 | 6,7 | 5,9 | 1850 | 34,6 | 1850 | 32,5 | 32,5 | EM / DI |
| FHZXL.667C82 | 1D81C        | cs-D81C-1800 | 6,5 | 5,9 | 1800 | 34,5 | 1800 | 32,5 | 32,5 | EM / DI |
| FHZXL.667C82 | 1D81C        | cs-D81C-1750 | 6,3 | 5,7 | 1750 | 34,4 | 1750 | 32,5 | 32,5 | EM / DI |
| FHZXL.667C82 | 1D81C        | cs-D81C-1700 | 6,1 | 5,5 | 1700 | 34,3 | 1700 | 32,5 | 32,5 | EM / DI |
| FHZXL.667C82 | 1D81C        | cs-D81C-1650 | 6,0 | 5,4 | 1650 | 34,7 | 1650 | 32,5 | 32,5 | EM / DI |
| FHZXL.667C82 | 1D81C        | cs-D81C-1600 | 5,8 | 5,2 | 1600 | 34,6 | 1600 | 32,5 | 32,5 | EM / DI |
| FHZXL.667C82 | 1D81C        | cs-D81C-1550 | 5,6 | 5,0 | 1550 | 34,5 | 1550 | 32,5 | 32,5 | EM / DI |
| FHZXL.667C82 | 1D81C        | cs-D81C-1500 | 5,4 | 4,9 | 1500 | 34,4 | 1500 | 32,5 | 32,5 | EM / DI |