State of California AIR RESOURCES BOARD

EXECUTIVE ORDER U-R-26-25 Relating to Certification of New Off-Road Compression-Ignition Engines

ISHIKAWAJIMA-SHIBAURA MACHINERY CO., LTD.

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-45-9;

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:

Model Year: 2001

Typical Equipment Usage: Loader and Other Industrial Equipment

Fuel Type: Diesel

| | Engine | Useful | |
|---------------|-----------------|----------------|---------------------------|
| | Displacement | Life | Emission Control Systems |
| Engine Family | <u>(liters)</u> | <u>(hours)</u> | and Special Features |
| 1H3XL2.22N4L | 2.216 | 8000 | Indirect Diesel Injection |

Engine models and codes are listed on attachments. Production engines shall be in all material respects the same as those for which certification is granted.

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

| Engine Power | Emission Standard | | | Exhaus | <u>st Emissions (g/</u> | <u>kw-hr)</u> | | Smoke | <u>) Opac</u> | ity (%) |
|--|---------------------------|---------------|------------------|-------------------|-------------------------|------------------|------------------|--------------------|------------------|-------------------|
| <u>Rating (kw)</u> 37 <u>≤</u> KW<130 | <u>Category</u> Tier 1 | Standard | <u>HC</u> N/A | <u>NOx</u> 9.2 | <u>NMHC+NOx</u> N/A | <u>CO</u> N/A | <u>РМ</u> N/А | <u>Accel</u> 20 | <u>Lug</u> 15 | <u>Peak</u> 50 |
| | | Certification | | 4.6 | | | | 4 | 3 | 7 |

BE IT FURTHER RESOLVED: That the listed engine models also comply with "Emission Control Labels— 1996 and Later Off-Road Compression-Ignition Engines" (Title 13, California Code of Regulations, Section 2424) for the aforementioned model-year.

BE IT FURTHER RESOLVED: That for the listed engine models, the manufacturer has submitted the materials to demonstrate certification compliance with the Board's emission control system warranty provisions (Title 13, California Code of Regulations, Sections 2425 and 2426).

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

Executed at El Monte, California this ______ day of January 2001.

R. B. Summerfield, Chief Mobile Source Operations Division

Engine Model Summary Form

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Ishikawajima-Shibaura Machinery Co., Ltd. Manufacturer:

Engine category: Nonroad CI EPA Engine Famy: 1H3XL2.22N4L

Mfr Family Name: N/A

Running Change Process Code:

W-R-26-25

| 104-22 Krstorzeto 50.@@2800 32.2.4/2.1 19.8.4/1.3 104.1@2.000 33.9.4/1.7 14.9.4/0.7 Fill Mard. Na44.s072800 50.0@20800 32.2.4/2.1 19.8.4/1.3 104.1@2.000 33.9.4/1.7 14.9.4/0.7 Fill 404-522 HP502000 50.0@20800 31.4/4/3.2 21.74/2.0 105.5@1000 33.9.4/1.5 Fill 404-522 HP502000 33.54/3.2 22.14/2.1 105.5@1000 33.54/3.5 14.94/1.5 Fill 404-52 HP502000 33.54/3.2 22.54/2.1 105.5@1000 33.74/4.5 Fill 404-52 HP502000 33.54/3.2 22.54/2.1 105.5@1000 37.14/3.6 14.94/1.5 Fill 404-55 Fill 105.5@1000 33.54/3.2 22.54/2.1 105.5@1000 37.14/3.6 14.94/1.5 Fill 404-55 Fill 105.5@1000 33.54/3.2 22.54/2.1 105.5@1000 37.14/3.6 14.94/1.5 Fill 404-55 Fill 105.5@100 37.14/3.6 14.94/1.5 Fill Fill 14.94/1.5 Fill 10.1000 | 104-22 NB44L 404C-22 404C-22 | KR50/2800 N841L-50/2800 HP51/3000 | 50.0@2800 50.0@2800 51.0@3000 51.0@3000 | 32.2 +/-2.1 32.2 +/-3.2 33.5+/-3.2 33.5+/-3.2 | 19.8 +/-1.3 19.8 +/-1.3 21.7 +/-2.0 22.5 +/-2.1 | 104.1@2000 104.1@2000 105.5@1800 105.5@1800 | 33.9 +/-1.7 33.9 +/-1.7 37.1+/-3.6 37.1+/-3.6 | 14.9 +/-0.7 14.9 +/-0.7 14.9+/-1.5 14.9+/-1.5 | |
|---|--|--|--|--|---|---|---|---|--|
| Na44502800 50.0@2800 32.2 +2.1 19.0 +1.3 104.1@2000 33.9 +1.7 14.9 +0.7 1F1 HP50/2800 51.0@3000 31.7 +1.3.2 21.7 +2.0 105.5@1800 37.1 +1.3.6 14.9 +1.1.5 1F1 HP51/3000 51.0@3000 33.3 +1.3.2 22.5 +2.1 105.5@1800 37.1 +1.3.6 14.9 +1.1.5 1F1 HP51/3000 51.0@3000 33.3 +1.3.2 22.5 +2.1 105.5@1800 37.1 +1.3.6 14.9 +1.1.5 1F1 | N844L 404C-22 404C-22 | N844L-50/2800 HP50/2800 HP51/3000 | 50.0@2800 50.0@2800 51.0@3000 | 32.2 +/-2.1 34.7 +/-3.2 33.5 +/-3.2 | 19.8 +/-1.3 21.7+/-2.0 22.5+/-2.1 | 104.1@2000 105.5@1800 105.5@1800 | 33.9 +/-1.7 37.1+/-3.6 37.1+/-3.6 37.1+/-3.6 | 14.9+/-1.5 14.9+/-1.5 14.9+/-1.5 | |
| HP5/12000 50.0@2600 31.14/3.2 21.74/2.0 105.5@1800 37.14/3.6 14.94/1.5 H HP5/12000 51.0@3000 33.54/3.2 22.54/2.1 105.5@1800 37.14/3.6 14.94/1.5 H | 404C-22 404C-22 | HP50/2800 HP51/3000 | 50.0@2800 51.0@3000 | 34.7+/-3.2 33.5+/-3.2 | 21.7+/-2.0 22.5+/-2.1 | 105.5@1800 105.5@1800 | 37.1+/-3.6 | 14.9+/-1.5 | |
| H5113000 51.0@3000 33.5.1.3.2 22.5+1.2.1 105.5@1800 37.14/3.6 14.9+1.15 | 404C-22 | HP51/3000 | 51.0@3000 | 33.5+/-3.2 | 22.5+/-2.1 | 105.5@1800 | 37.1+/-3.6 | 14.9+/-1.5 | ΞΞ |
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