

State of California  
AIR RESOURCES BOARD

EXECUTIVE ORDER U-R-26-19  
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, Tractor and Other Industrial Equipment

Fuel Type: Diesel

<u>Engine Family</u>	<u>Engine Displacement (liters)</u>	<u>Useful Life (hours)</u>	<u>Emission Control Systems and Special Features</u>
1H3XL2.00N84	1.496 & 1.995	5000	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):

<u>Engine Power Rating (kw)</u>	<u>Emission Standard Category</u>	<u>Standard Certification</u>	<u>Exhaust Emissions (g/kw-hr)</u>					<u>Smoke Opacity (%)</u>		
			<u>HC</u>	<u>NOx</u>	<u>NMHC+NOx</u>	<u>CO</u>	<u>PM</u>	<u>Accel</u>	<u>Lug</u>	<u>Peak</u>
19≤KW<37	Tier 1		N/A	N/A	9.5	5.5	0.80	20	15	50
			--	--	4.2	1.3	0.36	5	4	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 22<sup>nd</sup> day of January 2001.



R. B. Summerfield, Chief  
Mobile Source Operations Division

## Engine Model Summary Form

Manufacturer: Ishikawajima-Shibaura Machinery Co., Ltd.

Engine category: Nonroad CI

EPA Engine Family: 1H3XL2.00N84

Mfr Family Name: N/A

Process Code: Running Change

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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
103-15	KE25/2300	24.8@2300	27.4+/-1.5	10.4+/-0.6	56.8@2000	27.5+/-1.5	9.0+/-0.5	IFI
103-15	KE27/2300	26.9@2300	31.3+/-1.8	11.85+/-0.7	64.9@1700	32.7+/-1.6	9.1+/-0.5	IFI
103-15	KE28/2200	28.2@2200	33.1+/-1.8	12.0+/-0.7	64.9@1650	33.8+/-1.7	9.2+/-0.5	IFI
103-15	KE28/2500	27.7@2500	27.7+/-2.4	11.4+/-1.0	62.9@1500	32.1+/-1.6	7.9+/-0.4	IFI
103-15	KE32/2600	32.2@2600	29.2+/-2.1	14.0+/-1.1	66.5@2450	33.8+/-1.7	13.6+/-0.7	IFI
103-15	KE32/2800	31.5@2800	29.2+/-2.1	13.5+/-1.0	64.4@2100	32.1+/-1.6	11.1+/-0.6	IFI
104-19	KF33/2500	33.3@2500	25.3+/-2.4	13.9+/-1.3	83.2@1700	30.9+/-1.6	11.5+/-0.6	IFI
104-19	KF37/2300	37.3@2300	31.0+/-2.1	15.7+/-1.1	83.9@1800	30.4+/-1.5	12.0+/-0.6	IFI
104-19	KF39/2500	39.0@2500	29.8+/-2.1	16.4+/-1.2	83.2@2000	30.9+/-1.6	13.6+/-0.7	IFI
104-19	KF43/2800	42.5@2800	29.2+/-2.1	18.0+/-1.3	85.3@2200	31.5+/-1.6	15.2+/-0.8	IFI
403C-15	HL28/2200	27.8@2200	31.1+/-2.1	11.4+/-0.8	70.8@1800	33.5+/-2.7	10.0+/-0.8	IFI
403C-15	HL30/2400	29.9@2400	31.1+/-2.1	12.4+/-0.9	70.8@1800	33.5+/-2.7	10.0+/-0.8	IFI
403C-15	HL31/2600	31.4@2600	31.1+/-2.1	13.5+/-0.9	70.8@1800	33.5+/-2.7	10.0+/-0.8	IFI
403C-15	HL33/2800	32.7@2800	30.0+/-1.8	14.0+/-0.8	70.8@1800	32.9+/-2.7	9.9+/-0.8	IFI
403C-15	HL34/3000	33.7@3000	29.6+/-1.8	14.8+/-0.9	70.8@1800	32.9+/-2.7	9.9+/-0.8	IFI
N843-2	28/2500	27.8@2500	27.7+/-2.4	11.4+/-1.0	63.1@1500	32.1+/-1.6	7.9+/-0.4	IFI
N843-2	29/2500	29.0@2500	29.9+/-1.9	12.3+/-0.8	65.7@1800	33.2+/-1.7	9.8+/-0.5	IFI
N843-2	30/2600	30.0@2600	29.9+/-1.9	12.8+/-0.8	65.8@1800	33.2+/-1.7	9.8+/-0.5	IFI
N843-2	32/2900-L465	31.9@2900	29.9+/-1.7	14.3+/-0.8	66.5@1800	35.1+/-1.8	10.4+/-0.5	IFI
N843-2	33/3000-CM	33.0@3000	31.0+/-2.2	15.3+/-1.0	62.9@2200	33.7+/-1.7	12.2+/-0.6	IFI
N843-2-H	38/3200-L485	37.8@3200	30.4+/-1.0	16.0+/-0.5	70.8@2000	34.4+/-1.7	11.3+/-0.6	IFI
N843-4	TC33/2800	33.0@2800	32.6+/-1.6	15.0+/-0.8	73.0@2000	35.5+/-2.5	11.7+/-0.8	IFI
N844	43/2900-L565	42.5@2900	27.8+/-1.9	17.7+/-1.2	90.0@1700	34.5+/-1.7	12.8+/-0.6	IFI
N844-2	34/2500-F1920	33.8@2500	26.5+/-1.3	14.6+/-0.7	87.0@1800	30.8+/-1.5	12.2+/-0.6	IFI
N844-2	TC40/2600	40.0@2600	30.7+/-1.6	17.5+/-0.9	97.4@1800	35.3+/-1.8	13.9+/-0.7	IFI