## State of California AIR RESOURCES BOARD

## EXECUTIVE ORDER U-R-26-20 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

	Engine	Useful	
	Displacement	Life	Emission Control Systems
<b>Engine Family</b>	(liters)	(hours)	and Special Features
1H3XL2.22L84	1.662 & 2.216	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):

Engine Power	Emission Standard		Exhaust Emissions (g/kw-hr)					Smoke	Smoke Opacity (%)		
Rating (kw)	<u>Category</u>		<u>HC</u>	<u>NOx</u>	NMHC+NOx	<u>CO</u>	<u>PM</u>	<u>Accel</u>	Lug	<u>Peak</u>	
19 <u>&lt;</u> KW<37	Tier 1	Standard	N/A	N/A	9.5	5.5	0.80	20	15	50	
		Certification			5.7	1 1	0.40	6	Λ	۵	

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 Wodel Summary Form

ATTACHMENT

Manufacturer:

Ishikawajima-Shibaura Machinery Co., Ltd.

Engine category:

Nonroad CI

EPA Engine Family: 1H3XL2.22L84 .

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
10422	KR32/1700	31.5@1700	33.7+/-1.8	12.6+/-0.7	99.1@1500	34.3+/-2.4	11.3+/-0.8	IFI
104-22	KR33/1800	32.9@1800	31.6+/-1.8	12.5+/-0.7	99.1@1500	34.3+/-2.4	11.3+/-0.8	IFI
104-22	KR35/2200	34.7@2200	29.9+/-2.9	14.4+/-1.4	90.0@1900	30.4+/-1.5	12.7+/-0.6	IFI
104-22	KR39/2200	38.9@2200	32.2+/-1.7	15.5+/-0.8	102.5@1650	36.0+/-2.0	13.0+/-0.7	lF1
104-22	KR44/2300	44.3@2300	32.8+/-2.7	16.6+/-1.4	104.1@2000	34.9+/-1.8	15.3+/-0.8	IFI
104-22	KR46/2600	46.0@2600	33.1+/-1.8	18.9+/-1.0	104.1@2000	34.9+/-1.8	15.3+/-0.8	IFI
104-22	KR47/2500	46.9@2500	33.1+/-2.4	18.2+/-1.3	104.1@2000	34.9+/-1.8	15.3+/-0.8	lFI
104-22	KR48/2600	48.0@2600	34.0+/-1.8	19.4+/-1.0	104.1@2000	34.9+/-1.8	15.3+/-0.8	IFI
404C-22	HP42/2200	41.6@2200	35.3+/-3.1	17.3+/-1.5	105.5@1800	37.4+/-3.5	15.0+/-1.4	IFI
404C-22	HP46/2400	45.7@2400	36.5+/-3.3	19.6+/-1.8	105.5@1800	37.4+/-3.5	15.0+/-1.4	<b>IF</b> I
404C-22	HP48/2600	47.9@2600	35.6+/-3.2	20.6+/-1.9	105.5@1800	37.4+/-3.5	15.0+/-1.4	lFI
N843L-2	35/2700-CM	34.9@2700	31.0+/-1.5	13.8+/-0.7	78.0@2000	34.2+/-1.7	11.3+/-0.6	IFI
N843L-2	TC35/2600	35.0@2600	34.4+/-1.4	14.7+/-0.6	84.8@1800	40.4+/-2.2	12.0+/-0.6	IFI
N844L	47/2600-F3415	46.7@2600	34.3+/-1.8	19.6+/-1.0	101.2@2000	36.7+/-1.8	16.1+/-0.8	IF1
N844L-2	41/2500-F2120	43.3@2500	31.3+/-1.6	17.2+/-0.9	99.7@1800	34.4+/-1.7	13.6+/-0.7	1FI
N844L-2	TC45/2600	44.9@2600	32.7+/-1.0	18.7+/-0.6	109.9@1800	39.5+/-2.1	15.6+/-0.8	IFI
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