 AIR RESOURCES BOARD	ISHIKAWAJIMA-SHIBAURA MACHINERY CO., LTD.	EXECUTIVE ORDER U-R-026-0190 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 engine and emission control system 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)
2007	7H3XL2.22L84	1.662 and 2.216	Diesel	5000
SPECIAL FEATURES & EMISSION CONTROL SYSTEMS			TYPICAL EQUIPMENT APPLICATION	
Indirect Diesel Injection			Loader, Tractor and Industrial Equipment	

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 CLASS	EMISSION STANDARD CATEGORY		EXHAUST (g/kw-hr)					OPACITY (%)		
			HC	NOx	NMHC+NOx	CO	PM	ACCEL	LUG	PEAK
19≤KW<37	Tier 2	STD	N/A	N/A	7.5	5.5	0.60	20	15	50
		CERT	--	--	4.2	1.0	0.29	6	4	9

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 28TH day of December 2006.


for Annette Hebert, Chief
Mobile Source Operations Division

Engine Model Summary Form

ATTACHMENT 1 OF 1

U-R-026-0190

Manufacturer: **Ishikawajima-Shibaura Machinery Co., Ltd.**
 Engine category: **Nonroad CI**
 EPA Engine Family: **7H3XL2.22L84**
 Mfr Family Name: **N/A**
 Process Code: **New Submission**

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
403C-17	HM32/2400	31.6@2400	32.4+/-1.9	12.8+/-0.8	77.4@1800	35.3+/-2.4	10.5+/-0.7	IFI
403C-17	HM35/2600	35.0@2600	33.4+/-2.0	14.3+/-0.9	81.3@1800	37.3+/-3.1	11.1+/-0.9	IFI
404C-22	HP28/1500	27.6@1500	34.0+/-2.4	11.2+/-0.8	95.9@1400	33.6+/-2.2	10.3+/-0.7	IFI
404C-22	HP32/1700	31.8@1700	35.0+/-2.3	13.1+/-0.9	99.1@1500	35.3+/-2.7	11.6+/-0.9	IFI
404C-22	HP33/1770	32.6@1770	35.5+/-2.4	13.8+/-0.9	99.1@1500	35.3+/-2.7	11.6+/-0.9	IFI
404C-22	HP33/1800	32.6@1800	34.4+/-2.0	13.6+/-0.8	99.1@1500	35.3+/-2.7	11.6+/-0.9	IFI
404C-22	HP37/2200	36.9@2200	32.0+/-2.0	15.5+/-1.0	95.9@1800	32.7+/-1.9	12.9+/-0.8	IFI
404C-22	HP40/2400	39.8@2400	32.2+/-2.2	17.0+/-1.1	95.9@1800	32.7+/-1.9	12.9+/-0.8	IFI
404C-22	HP42/2200	41.6@2200	35.3+/-3.1	17.1+/-1.5	105.5@1800	37.4+/-3.5	14.8+/-1.4	IFI
404C-22	HP42/2600	42.1@2600	31.7+/-2.0	18.1+/-1.1	95.9@1800	32.7+/-1.9	12.9+/-0.8	IFI
404C-22	HP44/2800	44.0@2800	31.0+/-1.6	19.1+/-1.0	95.9@1800	32.7+/-1.9	12.9+/-0.8	IFI
404C-22	HP46/2400	45.7@2400	36.5+/-3.3	19.2+/-1.7	105.5@1800	37.4+/-3.5	14.8+/-1.4	IFI
404C-22	HP46/3000	45.6@3000	30.9+/-1.5	20.4+/-1.0	95.9@1800	32.7+/-1.9	12.9+/-0.8	IFI
404C-22	HP46A/2400	45.7@2400	36.5+/-3.3	19.2+/-1.7	105.5@1800	37.4+/-3.5	14.8+/-1.4	IFI
404C-22	HP47/2600	47.5@2600	35.6+/-3.2	20.3+/-1.8	105.5@1800	37.4+/-3.5	14.8+/-1.4	IFI
404C-22	HP48/2600	47.9@2600	35.6+/-3.2	20.3+/-1.8	105.5@1800	37.4+/-3.5	14.8+/-1.4	IFI
404C-22	HP49/2800	49.5@2800	34.7+/-3.2	21.3+/-2.0	105.5@1800	37.1+/-3.6	14.7+/-1.4	IFI
404D-22	GN28/1500	27.6@1500	34.0+/-2.4	11.2+/-0.8	95.9@1400	33.6+/-2.2	10.3+/-0.7	IFI
404D-22	GN33/1770	32.6@1770	35.5+/-2.4	13.8+/-0.9	99.1@1500	35.3+/-2.7	11.6+/-0.9	IFI
404D-22	GN33/1800	32.6@1800	34.4+/-2.0	13.6+/-0.8	99.1@1500	35.3+/-2.7	11.6+/-0.9	IFI
404D-22	GN42/2200	41.6@2200	35.2+/-3.3	17.0+/-1.6	105.5@1800	36.2+/-2.4	14.3+/-0.9	IFI
404D-22	GN42/2600	42.1@2600	30.5+/-1.7	17.4+/-1.0	95.9@1800	31.8+/-1.8	12.6+/-0.7	IFI
404D-22	GN48/2600	47.9@2600	35.3+/-3.2	20.2+/-1.8	105.5@1800	36.3+/-2.6	14.3+/-1.0	IFI
N843L-C	35/2600-C2	35.0@2600	34.5+/-1.4	14.8+/-0.6	81.3@1800	40.2+/-2.2	11.9+/-0.6	IFI
N843L-C	35/2700-CM	35.0@2700	31.0+/-1.5	13.8+/-0.7	78.0@2000	34.2+/-1.7	11.3+/-0.6	IFI
N843L-C	42/3000	41.6@3000	36.4+/-2.2	18.0+/-1.1	73.6@2200	32.9+/-1.6	11.9+/-0.6	IFI

Engine Model Summary Form

Manufacturer: **Ishikawajima-Shibaura Machinery Co., Ltd.**

Engine category: **Nonroad CI**

BPA Engine Family: **7H3XL2.22L84**

Mfr Family Name:

Process Code: **Running Change**

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/m ³) @ 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
403C-17	HM32/2400	31.6@2400	32.4+/-1.9	12.8+/-0.8	77.4@1800	35.3+/-2.4	10.5+/-0.7	IFI
403C-17	HM35/2600	35.0@2600	33.4+/-2.0	14.3+/-0.9	81.3@1800	37.3+/-3.1	11.1+/-0.9	IFI
404C-22	HP28/1500	27.6@1500	34.0+/-2.4	11.2+/-0.8	95.9@1400	33.6+/-2.2	10.3+/-0.7	IFI
404C-22	HP32/1700	31.8@1700	35.0+/-2.3	13.1+/-0.9	99.1@1500	35.3+/-2.7	11.6+/-0.9	IFI
404C-22	HP33/1770	32.6@1770	35.5+/-2.4	13.8+/-0.9	99.1@1500	35.3+/-2.7	11.6+/-0.9	IFI
404C-22	HP33/1800	32.6@1800	34.4+/-2.0	13.6+/-0.8	99.1@1500	35.3+/-2.7	11.6+/-0.9	IFI
404C-22	HP37/2200	36.9@2200	32.0+/-2.0	15.5+/-1.0	95.9@1800	32.7+/-1.9	12.9+/-0.8	IFI
404C-22	HP40/2400	39.8@2400	32.2+/-2.2	17.0+/-1.1	95.9@1800	32.7+/-1.9	12.9+/-0.8	IFI
404C-22	HP42/2200	41.6@2200	35.3+/-3.1	17.1+/-1.5	105.5@1800	37.4+/-3.5	14.8+/-1.4	IFI
404C-22	HP42/2600	42.1@2600	31.7+/-2.0	18.1+/-1.1	95.9@1800	32.7+/-1.9	12.9+/-0.8	IFI
404C-22	HP44/2800	44.0@2800	31.0+/-1.6	19.1+/-1.0	95.9@1800	32.7+/-1.9	12.9+/-0.8	IFI
404C-22	HP46/2400	45.7@2400	36.5+/-3.3	19.2+/-1.7	105.5@1800	37.4+/-3.5	14.8+/-1.4	IFI
404C-22	HP46/3000	45.6@3000	30.9+/-1.5	20.4+/-1.0	95.9@1800	32.7+/-1.9	12.9+/-0.8	IFI
404C-22	HP46A/2400	45.7@2400	36.5+/-3.3	19.2+/-1.7	105.5@1800	37.4+/-3.5	14.8+/-1.4	IFI
404C-22	HP47/2600	47.5@2600	35.6+/-3.2	20.3+/-1.8	105.5@1800	37.4+/-3.5	14.8+/-1.4	IFI
404C-22	HP48/2600	47.9@2600	35.6+/-3.2	20.3+/-1.8	105.5@1800	37.4+/-3.5	14.8+/-1.4	IFI
404C-22	HP49/2800	49.5@2800	34.7+/-3.2	21.3+/-2.0	105.5@1800	37.1+/-3.6	14.7+/-1.4	IFI
404D-22	GN28/1500	27.6@1500	34.0+/-2.4	11.2+/-0.8	95.9@1400	33.6+/-2.2	10.3+/-0.7	IFI
404D-22	GN33/1770	32.6@1770	35.5+/-2.4	13.8+/-0.9	99.1@1500	35.3+/-2.7	11.6+/-0.9	IFI
404D-22	GN33/1800	32.6@1800	34.4+/-2.0	13.6+/-0.8	99.1@1500	35.3+/-2.7	11.6+/-0.9	IFI
404D-22	GN42/2200	41.6@2200	35.2+/-3.3	17.0+/-1.6	105.5@1800	36.2+/-2.4	14.3+/-0.9	IFI
404D-22	GN42/2600	42.1@2600	30.5+/-1.7	17.4+/-1.0	95.9@1800	31.8+/-1.8	12.6+/-0.7	IFI
404D-22	GN44/2800	44.0@2800	29.6+/-1.7	18.2+/-1.0	95.9@1800	31.8+/-1.8	12.6+/-0.7	IFI
404D-22	GN46/2400	45.7@2400	36.2+/-2.2	19.1+/-1.2	105.5@1800	36.3+/-2.6	14.3+/-1.0	IFI
404D-22	GN46/3000	45.6@3000	30.5+/-1.6	20.1+/-1.1	95.9@1800	31.8+/-1.8	12.6+/-0.7	IFI
404D-22	GN47/2600	47.5@2600	34.9+/-2.1	19.9+/-1.2	105.5@1800	36.3+/-2.6	14.3+/-1.0	IFI