California Environmental Protection Agency AIR RESOURCES BOARD	IHI SHIBAURA MACHINERY CORPORATION	EXECUTIVE ORDER U-R-026-0208 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)
2008	8H3XL.761E3V	0.507 & 0.761	Diesel	3000

SPECIAL FEATURES & EMISSION CONTROL SYSTEMS	TYPICAL EQUIPMENT APPLICATION
Indirect Diesel Injection	Loader 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
8≤KW<19	Tier 4	STD	N/A	N/A	7.5	6.6	0.40	20	15	50
		CERT	--	--	5.1	3.1	0.28	10	6	17

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 8 day of January 2008.

Annette Hebert, Chief
Mobile Source Operations Division

Engine Model Summary Template

ATTACHMENT 1 OF 2

U-R-026-0208

Engine Family	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
[illegible]	402C-05	HB14/3600	13.7@3600	17.0+/-1.2	6.7+/-0.5	23.2@2600	18.1+/-1.2	5.2+/-0.3	IFI
8H3XL.761E3V	402D-05	GG11/2800	11.0@2800	16.1+/-1.1	4.9+/-0.3	21.9@2100	16.6+/-1.0	3.8+/-0.2	IFI
8H3XL.761E3V	402D-05	GG12/3000	11.8@3000	16.1+/-1.1	5.3+/-0.4	21.9@2100	16.6+/-1.0	3.8+/-0.2	IFI
8H3XL.761E3V	402D-05	GG12/3000C	11.8@3000	16.1+/-1.1	5.3+/-0.4	21.9@2100	16.6+/-1.0	3.8+/-0.2	IFI
8H3XL.761E3V	402D-05	GG14/3600	13.7@3600	17.0+/-1.0	6.7+/-0.4	21.9@2600	18.1+/-1.0	5.2+/-0.3	IFI
8H3XL.761E3V	402D-05	GG14/3600C	13.7@3600	17.0+/-1.0	6.7+/-0.4	21.9@2600	18.1+/-1.0	5.2+/-0.3	IFI
8H3XL.761E3V	403C-07	HD12/2200	12.1@2200	14.5+/-0.7	5.3+/-0.3	31.7@2000	15.8+/-1.1	5.2+/-0.4	IFI
8H3XL.761E3V	403C-07	HD16/2800	16.4@2800	15.9+/-1.0	7.3+/-0.5	33.6@2000	16.4+/-1.2	5.4+/-0.4	IFI
8H3XL.761E3V	403C-07	HD21/3600	20.5@3600	15.7+/-1.0	9.3+/-0.6	37.2@2400	18.2+/-1.3	7.2+/-0.5	IFI
8H3XL.761E3V	403D-07	GH12/2200	12.1@2200	14.5+/-0.7	5.3+/-0.3	31.7@2000	15.8+/-1.1	5.2+/-0.4	IFI
8H3XL.761E3V	403D-07	GH16/2800	16.4@2800	15.9+/-1.0	7.3+/-0.5	33.6@2000	16.4+/-1.2	5.4+/-0.4	IFI
8H3XL.761E3V	403D-07	GH18/3000	17.7@3000	16.0+/-1.0	7.9+/-0.5	34.7@2000	17.6+/-1.7	5.8+/-0.6	IFI
8H3XL.761E3V	403D-07	GH18/3000C	17.7@3000	16.0+/-1.0	7.9+/-0.5	34.7@2000	17.6+/-1.7	5.8+/-0.6	IFI
8H3XL.761E3V	403D-07	GH19/3400	19.4@3400	15.3+/-1.0	8.6+/-0.6	34.3@2400	16.1+/-1.2	6.4+/-0.5	IFI
8H3XL.761E3V	403D-07	GH21/3600	20.5@3600	15.7+/-1.0	9.3+/-0.6	37.2@2400	18.2+/-1.3	7.2+/-0.5	IFI
8H3XL.761E3V	403D-07	GH21/3600C	20.5@3600	15.7+/-1.0	9.3+/-0.6	37.2@2400	18.2+/-1.3	7.2+/-0.5	IFI
8H3XL.761E3V	C0.5	GG11/2800	11.0@2800	16.1+/-1.1	4.9+/-0.3	21.9@2100	16.6+/-1.0	3.8+/-0.2	IFI
8H3XL.761E3V	C0.5	GG12/3000	11.8@3000	16.1+/-1.1	5.3+/-0.4	21.9@2100	16.6+/-1.0	3.8+/-0.2	IFI
8H3XL.761E3V	C0.5	GG12/3000C	11.8@3000	16.1+/-1.1	5.3+/-0.4	21.9@2100	16.6+/-1.0	3.8+/-0.2	IFI
8H3XL.761E3V	C0.5	GG14/3600	13.7@3600	17.0+/-1.0	6.7+/-0.4	21.9@2600	18.1+/-1.0	5.2+/-0.3	IFI
8H3XL.761E3V	C0.5	GG14/3600C	13.7@3600	17.0+/-1.0	6.7+/-0.4	21.9@2600	18.1+/-1.0	5.2+/-0.3	IFI
8H3XL.761E3V	C0.7	GH12/2200	12.1@2200	14.5+/-0.7	5.3+/-0.3	31.7@2000	15.8+/-1.1	5.2+/-0.4	IFI
8H3XL.761E3V	C0.7	GH16/2800	16.4@2800	15.9+/-1.0	7.3+/-0.5	33.6@2000	16.4+/-1.2	5.4+/-0.4	IFI
8H3XL.761E3V	C0.7	GH18/3000	17.7@3000	16.0+/-1.0	7.9+/-0.5	34.7@2000	17.6+/-1.7	5.8+/-0.6	IFI
8H3XL.761E3V	C0.7	GH18/3000C	17.7@3000	16.0+/-1.0	7.9+/-0.5	34.7@2000	17.6+/-1.7	5.8+/-0.6	IFI
8H3XL.761E3V	C0.7	GH19/3400	19.4@3400	15.3+/-1.0	8.6+/-0.6	34.3@2400	16.1+/-1.2	6.4+/-0.5	IFI
8H3XL.761E3V	C0.7	GH21/3600	20.5@3600	15.7+/-1.0	9.3+/-0.6	37.2@2400	18.2+/-1.3	7.2+/-0.5	IFI
8H3XL.761E3V	C0.7	GH21/3600C	20.5@3600	15.7+/-1.0	9.3+/-0.6	37.2@2400	18.2+/-1.3	7.2+/-0.5	IFI

Engine Model Summary Template

ATTACHMENT 2 OF 2

U-R-026-0208

Engine Family	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
8H3XL.761E3V	E673L-C	13/2300	13.3@2300	14.7+/-1.0	5.6+/-0.4	31.7@1700	16.6+/-1.2	4.6+/-0.3	IFI
8H3XL.761E3V	E673L-C	14/2400	13.8@2400	14.9+/-1.0	5.9+/-0.4	29.5@2000	17.0+/-0.8	5.6+/-0.3	IFI
8H3XL.761E3V	E673L-C	17/3400-LS125	16.5@3400	13.9+/-1.0	7.8+/-0.6	28.3@2500	14.9+/-1.3	6.1+/-0.5	IFI
8H3XL.761E3V	3TE67L-DUM	18/3000	17.7@3000	16.0+/-1.1	7.9+/-0.5	34.7@2000	17.6+/-1.7	5.8+/-0.6	IFI