California Environmental Protection Agency AIR RESOURCES BOARD	MOTORENFABRIK HATZ	EXECUTIVE ORDER U-R-034-0162 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 engines and emission control systems 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	8HZXL.413V41	0.413	Diesel	3000

SPECIAL FEATURES & EMISSION CONTROL SYSTEMS	TYPICAL EQUIPMENT APPLICATION
Direct Diesel Injection	Compressor, Other

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
kW < 8	Tier 4	STD	N/A	N/A	7.5	8.0	0.80	N/A	N/A	N/A
		CERT	--	--	6.3	6.0	0.57	--	--	--

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 17th day of December 2007.

Annette Hebert, Chief
Mobile Source Operations Division

U-R-034-0162

Attachment p. 1 of 3

Return to Template

Engine Model Summary Template

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 Device Per S
8HZXL.413V41	N/A	1D41 S/Z	8,0@3000	22,5	3,8	16,3@1800	24,5	2,5	DDI
8HZXL.413V41	N/A	1D41 S/Z	8,0@2950	22,5	3,7	16,3@1800	24,5	2,5	
8HZXL.413V41	N/A	1D41 S/Z	7,9@2900	22,5	3,6	16,3@1800	24,5	2,5	
8HZXL.413V41	N/A	1D41 S/Z	7,9@2850	22,5	3,6	16,3@1800	24,5	2,5	
8HZXL.413V41	N/A	1D41 S/Z	7,8@2800	22,5	3,5	16,3@1800	24,5	2,5	
8HZXL.413V41	N/A	1D41 S/Z	7,8@2750	22,5	3,4	16,3@1800	24,5	2,5	
8HZXL.413V41	N/A	1D41 S/Z	7,6@2700	22,5	3,4	16,3@1800	24,5	2,5	
8HZXL.413V41	N/A	1D41 S/Z	7,5@2650	22,5	3,3	16,3@1800	24,5	2,5	
8HZXL.413V41	N/A	1D41 S/Z	7,4@2600	22,5	3,3	16,3@1800	24,5	2,5	
8HZXL.413V41	N/A	1D41 S/Z	7,8@3000	21,5	3,6	15,9@1800	23,5	2,4	
8HZXL.413V41	N/A	1D41 S/Z	7,8@2950	21,5	3,5	15,9@1800	23,5	2,4	
8HZXL.413V41	N/A	1D41 S/Z	7,6@2900	21,5	3,5	15,9@1800	23,5	2,4	
8HZXL.413V41	N/A	1D41 S/Z	7,6@2850	21,5	3,4	15,9@1800	23,5	2,4	
8HZXL.413V41	N/A	1D41 S/Z	7,5@2800	21,5	3,4	15,9@1800	23,5	2,4	
8HZXL.413V41	N/A	1D41 S/Z	7,5@2750	21,5	3,3	15,9@1800	23,5	2,4	
8HZXL.413V41	N/A	1D41 S/Z	7,4@2700	21,5	3,2	15,9@1800	23,5	2,4	
8HZXL.413V41	N/A	1D41 S/Z	7,2@2650	21,5	3,2	15,9@1800	23,5	2,4	
8HZXL.413V41	N/A	1D41 S/Z	7,1@2600	21,5	3,1	15,9@1800	23,5	2,4	
8HZXL.413V41	N/A	1D41 S/Z	7,8@3300	20,5	3,8	15,5@1800	22	2,2	
8HZXL.413V41	N/A	1D41 S/Z	7,8@3250	20,5	3,7	15,5@1800	22	2,2	
8HZXL.413V41	N/A	1D41 S/Z	7,8@3200	20,5	3,7	15,5@1800	22	2,2	
8HZXL.413V41	N/A	1D41 S/Z	7,8@3150	20,5	3,6	15,5@1800	22	2,2	
8HZXL.413V41	N/A	1D41 S/Z	7,6@3100	20,5	3,5	15,5@1800	22	2,2	
8HZXL.413V41	N/A	1D41 S/Z	7,6@3050	20,5	3,5	15,5@1800	22	2,2	
8HZXL.413V41	N/A	1D41 S/Z	7,5@3000	20,5	3,4	15,5@1800	22	2,2	
8HZXL.413V41	N/A	1D41 S/Z	7,5@2950	20,5	3,4	15,5@1800	22	2,2	
8HZXL.413V41	N/A	1D41 S/Z	7,5@2900	20,5	3,3	15,5@1800	22	2,2	
8HZXL.413V41	N/A	1D41 S/Z	7,4@2850	20,5	3,3	15,5@1800	22	2,2	

U-R-034-0162

Attachment p. 2 of 3

Return to Template

Engine Model Summary Template

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 Device Per S
8HZXL 413V41	N/A	1D41 S/Z	7,4@2800	20,5	3,2	15,5@1800	22	2,2	DDI
8HZXL 413V41	N/A	1D41 S/Z	7,2@2750	20,5	3,1	15,5@1800	22	2,2	
8HZXL 413V41	N/A	1D41 S/Z	7,1@2700	20,5	3,1	15,5@1800	22	2,2	
8HZXL 413V41	N/A	1D41 S/Z	7,0@2650	20,5	3,0	15,5@1800	22	2,2	
8HZXL 413V41	N/A	1D41 S/Z	6,8@2600	20,5	3,0	15,5@1800	22	2,2	
8HZXL 413V41	N/A	1D41 S/Z	6,7@2550	20,5	2,9	15,5@1800	22	2,2	
8HZXL 413V41	N/A	1D41 S/Z	6,7@2500	20,5	2,9	15,5@1800	22	2,2	
8HZXL 413V41	N/A	1D41 S/Z	6,6@2450	20,5	2,8	15,5@1800	22	2,2	
8HZXL 413V41	N/A	1D41 S/Z	6,4@2400	20,5	2,7	15,5@1800	22	2,2	
8HZXL 413V41	N/A	1D41 S/Z	6,3@2350	20,5	2,7	15,5@1800	22	2,2	
8HZXL 413V41	N/A	1D41 S/Z	6,2@2300	20,5	2,6	15,5@1800	22	2,2	
8HZXL 413V41	N/A	1D41 S/Z	6,0@2250	20,5	2,6	15,5@1800	22	2,2	
8HZXL 413V41	N/A	1D41 S/Z	5,9@2200	20,5	2,5	15,5@1800	22	2,2	
8HZXL 413V41	N/A	1D41 S/Z	5,8@2150	20,5	2,5	15,5@1800	22	2,2	
8HZXL 413V41	N/A	1D41 S/Z	5,6@2100	20,5	2,4	15,5@1800	22	2,2	
[illegible]	N/A	1D41 S/Z	5,5@2050	20,5	2,3	15,5@1800	22	2,2	
8HZXL 413V41	N/A	1D41 S/Z	5,4@2000	20,5	2,3	15,5@1800	22	2,2	
8HZXL 413V41	N/A	1D41C	7,0@3300	19,5	3,6	14,8@1800	20,5	2,1	
8HZXL 413V41	N/A	1D41C	5,4@3250	19,5	3,5	14,8@1800	20,5	2,1	
8HZXL 413V41	N/A	1D41C	5,4@3200	19,5	3,5	14,8@1800	20,5	2,1	
8HZXL 413V41	N/A	1D41C	5,4@3150	19,5	3,4	14,8@1800	20,5	2,1	
8HZXL 413V41	N/A	1D41C	5,4@3100	19,5	3,4	14,8@1800	20,5	2,1	
8HZXL 413V41	N/A	1D41C	5,4@3050	19,5	3,3	14,8@1800	20,5	2,1	
8HZXL 413V41	N/A	1D41C	5,4@3000	20,0	3,3	14,8@1800	20,5	2,1	
8HZXL 413V41	N/A	1D41C	6,8@2950	20,0	3,3	14,8@1800	20,5	2,1	
8HZXL 413V41	N/A	1D41C	6,8@2900	20,0	3,2	14,8@1800	20,5	2,1	
8HZXL 413V41	N/A	1D41C	6,7@2850	20,0	3,2	14,8@1800	20,5	2,1	
8HZXL 413V41	N/A	1D41C	6,7@2800	20,0	3,1	14,8@1800	20,5	2,1	

Return to Template

Engine Model Summary Template

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 Device Per S
8HZXL.413V41	N/A	1D41C	6,6@2750	20,0	3,1	14,8@1800	20,5	2,1	DDI
8HZXL.413V41	N/A	1D41C	6,4@2700	20,0	3,0	14,8@1800	20,5	2,1	
8HZXL.413V41	N/A	1D41C	6,4@2650	20,0	3,0	14,8@1800	20,5	2,1	
8HZXL.413V41	N/A	1D41C	6,3@2600	20,0	2,9	14,8@1800	20,5	2,1	
8HZXL.413V41	N/A	1D41C	6,2@2550	20,0	2,8	14,8@1800	20,5	2,1	
8HZXL.413V41	N/A	1D41C	6,2@2500	20,0	2,8	14,8@1800	20,5	2,1	
8HZXL.413V41	N/A	1D41C	6,0@2450	20,0	2,7	14,8@1800	20,5	2,1	
8HZXL.413V41	N/A	1D41C	5,9@2400	20,0	2,7	14,8@1800	20,5	2,1	
8HZXL.413V41	N/A	1D41C	5,8@2350	20,0	2,6	14,8@1800	20,5	2,1	
8HZXL.413V41	N/A	1D41C	5,6@2300	20,0	2,6	14,8@1800	20,5	2,1	
8HZXL.413V41	N/A	1D41C	5,5@2250	20,0	2,5	14,8@1800	20,5	2,1	
8HZXL.413V41	N/A	1D41C	5,5@2200	20,0	2,5	14,8@1800	20,5	2,1	
8HZXL.413V41	N/A	1D41C	5,4@2150	20,0	2,4	14,8@1800	20,5	2,1	
8HZXL.413V41	N/A	1D41C	5,2@2100	20,0	2,3	14,8@1800	20,5	2,1	
8HZXL.413V41	N/A	1D41C	5,1@2050	20,0	2,3	14,8@1800	20,5	2,1	
8HZXL.413V41	N/A	1D41C	5,0@2000	20,0	2,2	14,8@1800	20,5	2,1	