California Environmental Protection Agency AIR RESOURCES BOARD	MOTORENFABRIK HATZ GMBH & CO. KG	EXECUTIVE ORDER U-R-034-0027 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 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)
2003	3HZXL.413C41	0.4	Diesel	3000

SPECIAL FEATURES & EMISSION CONTROL SYSTEMS	TYPICAL EQUIPMENT APPLICATION
Direct Diesel Injection	Pump, Compressor, Generator Set

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 1	STD	N/A	N/A	10.5	8.0	1.0	N/A	N/A	N/A
		CERT	--	--	8.5	5.2	0.64	--	--	--

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 2ND day of December 2002.

Allen Lyons, Chief
Mobile Source Operations Division

Attachment 1 of 5

Model Year: 2003
Manufacturer: Motorenfabrik Hatz GmbH & Co. KG
Engine Family: 3HZXL.413C41

Issued:
Revised: 10/22/2002
E.O. Number: U-R-034-0627

Small Off-Road Engine Model Summary Form

Units for Table: kw

Worst Case?	47. Model Designation	48. Sales Code	49. Displ (cc)	50. Bore/ Stroke	51. Ignition Timing	52. Max Power	53. Rated Speed (RPM)	54. Rated Torque	55. Torque Speed (RPM)	56. Emiss Control Sys
	1D41S/Z/T/U	Calif. Only	413	90/65	17.5	6.6	3600	13.0	3600	DDI
	1D41S/Z/T/U	Calif. Only	413	90/65	17.5	6.6	3550	13.1	3550	DDI
	1D41S/Z/T/U	Calif. Only	413	90/65	17.5	6.5	3500	13.1	3500	DDI
	1D41S/Z/T/U	Calif. Only	413	90/65	17.5	6.5	3450	13.3	3450	DDI
	1D41S/Z/T/U	Calif. Only	413	90/65	17.5	6.5	3400	13.5	3400	DDI
	1D41S/Z/T/U	Calif. Only	413	90/65	17.5	6.5	3350	13.7	3350	DDI
	1D41S/Z/T/U	Calif. Only	413	90/65	17.5	6.5	3300	13.9	3300	DDI
	1D41S/Z/T/U	Calif. Only	413	90/65	17.5	6.4	3250	13.9	3250	DDI
	1D41S/Z/T/U	Calif. Only	413	90/65	17.5	6.4	3200	14.1	3200	DDI
	1D41S/Z/T/U	Calif. Only	413	90/65	17.5	6.4	3150	14.4	3150	DDI
	1D41S/Z/T/U	Calif. Only	413	90/65	17.5	6.3	3100	14.4	3100	DDI
	1D41S/Z/T/U	Calif. Only	413	90/65	17.5	6.3	3050	14.6	3050	DDI
X	1D41S/Z/T/U	Calif. Only	413	90/65	15.0	6.2	3000	14.6	3000	DDI
	1D41S/Z/T/U	Calif. Only	413	90/65	15.0	6.1	2900	14.9	2900	DDI
	1D41S/Z/T/U	Calif. Only	413	90/65	15.0	6.0	2800	15.1	2800	DDI
	1D41S/Z/T/U	Calif. Only	413	90/65	15.0	5.8	2700	15.2	2700	DDI
	1D41S/Z/T/U	Calif. Only	413	90/65	15.0	5.7	2600	15.5	2600	DDI

Additional engine model info. please see record 2 |

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Model Year:
Manufacturer:
Engine Family:

Issued:
Revised: 10/22/2002
E.O. Number: U-R-034-0027

Small Off-Road Engine Model Summary Form

Units for Table:

Worst Case?	47. Model Designation	48. Sales Code	49. Displ (cc)	50. Bore/ Stroke	51. Ignition Timing	52. Max Power	53. Rated Speed (RPM)	54. Rated Torque	55. Torque Speed (RPM)	56. Emiss Control Sys
	1D41S/Z/T/U	Calif. Only	413	90/65	17.5	6.0	3600	11.8	3600	DDI
	1D41S/Z/T/U	Calif. Only	413	90/65	17.5	6.0	3550	11.9	3550	DDI
	1D41S/Z/T/U	Calif. Only	413	90/65	17.5	5.9	3500	11.9	3500	DDI
	1D41S/Z/T/U	Calif. Only	413	90/65	17.5	5.9	3450	12.1	3450	DDI
	1D41S/Z/T/U	Calif. Only	413	90/65	17.5	5.9	3400	12.3	3400	DDI
	1D41S/Z/T/U	Calif. Only	413	90/65	17.5	5.9	3350	12.4	3350	DDI
	1D41S/Z/T/U	Calif. Only	413	90/65	17.5	5.8	3300	12.4	3300	DDI
	1D41S/Z/T/U	Calif. Only	413	90/65	17.5	5.8	3250	12.6	3250	DDI
	1D41S/Z/T/U	Calif. Only	413	90/65	17.5	5.8	3200	12.8	3200	DDI
	1D41S/Z/T/U	Calif. Only	413	90/65	17.5	5.8	3150	13.0	3150	DDI
	1D41S/Z/T/U	Calif. Only	413	90/65	17.5	5.7	3100	13.0	3100	DDI
	1D41S/Z/T/U	Calif. Only	413	90/65	17.5	5.7	3050	13.2	3050	DDI
	1D41S/Z/T/U	Calif. Only	413	90/65	15.0	5.6	3000	13.2	3000	DDI
	1D41S/Z/T/U	Calif. Only	413	90/65	15.0	5.5	2800	13.9	2800	DDI
	1D41S/Z/T/U	Calif. Only	413	90/65	15.0	5.1	2600	13.9	2600	DDI
	1D41S/Z/T/U	Calif. Only	413	90/65	12.5	4.8	2400	14.1	2400	DDI
	1D41S/Z/T/U	Calif. Only	413	90/65	12.5	4.4	2200	14.1	2200	DDI
	1D41S/Z/T/U	Calif. Only	413	90/65	12.5	4.0	2000	14.1	2000	DDI
	1D41S/Z/T/U	Calif. Only	413	90/65	10.0	3.5	1800	13.7	1800	DDI
	Additional	**engine model**	**info.**	**please**	**see**	**record 3 !**				

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Model Year:
Manufacturer:
Engine Family:

Issued:
Revised: 10/22/2002
E.O. Number: UR-034-0627

Small Off-Road Engine Model Summary Form

Units for Table:

Worst Case?	47. Model Designation	48. Sales Code	49. Displ (cc)	50. Bore/ Stroke	51. Ignition Timing	52. Max Power	53. Rated Speed (RPM)	54. Rated Torque	55. Torque Speed (RPM)	56. Emiss Control Sys
	1D41S/Z/T/U	Calif. Only	413	90/65	15.0	5.1	3000	12.0	3000	DDI
	1D41S/Z/T/U	Calif. Only	413	90/65	15.0	5.1	2900	12.4	2900	DDI
	1D41S/Z/T/U	Calif. Only	413	90/65	15.0	5.0	2800	12.6	2800	DDI
	1D41S/Z/T/U	Calif. Only	413	90/65	15.0	4.8	2700	12.6	2700	DDI
	1D41S/Z/T/U	Calif. Only	413	90/65	15.0	4.6	2600	12.5	2600	DDI
	1D41S/Z/T/U	Calif. Only	413	90/65	15.0	4.5	2500	12.7	2500	DDI
	1D41S/Z/T/U	Calif. Only	413	90/65	12.5	4.3	2400	12.8	2400	DDI
	1D41S/Z/T/U	Calif. Only	413	90/65	12.5	4.2	2300	12.9	2300	DDI
	1D41S/Z/T/U	Calif. Only	413	90/65	12.5	4.0	2200	12.8	2200	DDI
	1D41S/Z/T/U	Calif. Only	413	90/65	12.5	3.8	2100	12.8	2100	DDI
	1D41S/Z/T/U	Calif. Only	413	90/65	12.5	3.6	2000	12.7	2000	DDI
	1D41S/Z/T/U	Calif. Only	413	90/65	10.0	3.4	1900	12.6	1900	DDI
	1D41S/Z/T/U	Calif. Only	413	90/65	10.0	3.2	1800	12.6	1800	DDI
	1D41S/Z/T/U	Calif. Only	413	90/65	10.0	3.0	1700	12.5	1700	DDI
	1D41S/Z/T/U	Calif. Only	413	90/65	10.0	2.8	1600	12.4	1600	DDI
	1D41S/Z/T/U	Calif. Only	413	90/65	10.0	2.6	1500	12.2	1500	DDI

Additional engine model info. please see record 4 !

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Model Year:
Manufacturer:
Engine Family:

Issued:
Revised: 10/22/2002
E.O. Number: U-R-054-0027

Small Off-Road Engine Model Summary Form

Units for Table:

Worst Case?	47. Model Designation	48. Sales Code	49. Displ (cc)	50. Bore/ Stroke	51. Ignition Timing	52. Max Power	53. Rated Speed (RPM)	54. Rated Torque	55. Torque Speed (RPM)	56. Emiss Control Sys
	1D41C	Calif. Only	413	90/65	17.5	5.2	3600	10.2	3600	DDI
	1D41C	Calif. Only	413	90/65	17.5	5.2	3500	10.5	3500	DDI
	1D41C	Calif. Only	413	90/65	17.5	5.2	3400	10.8	3400	DDI
	1D41C	Calif. Only	413	90/65	17.5	5.2	3300	11.1	3300	DDI
	1D41C	Calif. Only	413	90/65	17.5	5.2	3200	11.5	3200	DDI
	1D41C	Calif. Only	413	90/65	17.5	5.2	3100	11.9	3100	DDI
	1D41C	Calif. Only	413	90/65	15.0	5.2	3000	12.2	3000	DDI
	1D41C	Calif. Only	413	90/65	15.0	5.1	2900	12.4	2900	DDI
	1D41C	Calif. Only	413	90/65	15.0	5.0	2800	12.6	2800	DDI
	1D41C	Calif. Only	413	90/65	15.0	4.9	2700	12.7	2700	DDI
	1D41C	Calif. Only	413	90/65	15.0	4.7	2600	12.8	2600	DDI
	1D41C	Calif. Only	413	90/65	15.0	4.6	2500	13.0	2500	DDI
	1D41C	Calif. Only	413	90/65	12.5	4.4	2400	13.0	2400	DDI
	1D41C	Calif. Only	413	90/65	12.5	4.2	2300	12.9	2300	DDI
	1D41C	Calif. Only	413	90/65	12.5	4.0	2200	13.0	2200	DDI
	1D41C	Calif. Only	413	90/65	12.5	3.9	2100	13.1	2100	DDI
	1D41C	Calif. Only	413	90/65	12.5	3.7	2000	13.1	2000	DDI
	1D41C	Calif. Only	413	90/65	10.0	3.5	1900	13.0	1900	DDI
	1D41C	Calif. Only	413	90/65	10.0	3.3	1800	13.0	1800	DDI
	Additional	**engine model**	**info.**	**please**	**see**	**record 5 !**				

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Model Year:
Manufacturer:
Engine Family:

Issued:
Revised: 10/22/2002
E.O. Number: W-R-034-0027

Small Off-Road Engine Model Summary Form

Units for Table:

Worst Case?	47. Model Designation	48. Sales Code	49. Displ (cc)	50. Bore/ Stroke	51. Ignition Timing	52. Max Power	53. Rated Speed (RPM)	54. Rated Torque	55. Torque Speed (RPM)	56. Emiss Control Sys
	1D41C	Calif. Only	413	90/65	15.0	4.7	3000	11.2	3000	DDI
	1D41C	Calif. Only	413	90/65	15.0	4.6	2900	11.5	2900	DDI
	1D41C	Calif. Only	413	90/65	15.0	4.5	2800	11.5	2800	DDI
	1D41C	Calif. Only	413	90/65	15.0	4.4	2700	11.6	2700	DDI
	1D41C	Calif. Only	413	90/65	15.0	4.3	2600	11.7	2600	DDI
	1D41C	Calif. Only	413	90/65	15.0	4.2	2500	11.7	2500	DDI
	1D41C	Calif. Only	413	90/65	12.5	4.0	2400	11.8	2400	DDI
	1D41C	Calif. Only	413	90/65	12.5	3.8	2300	11.9	2300	DDI
	1D41C	Calif. Only	413	90/65	12.5	3.7	2200	11.9	2200	DDI
	1D41C	Calif. Only	413	90/65	12.5	3.5	2100	11.9	2100	DDI
	1D41C	Calif. Only	413	90/65	12.5	3.4	2000	12.0	2000	DDI
	1D41C	Calif. Only	413	90/65	10.0	3.2	1900	11.9	1900	DDI
	1D41C	Calif. Only	413	90/65	10.0	3.0	1800	11.8	1800	DDI
	1D41C	Calif. Only	413	90/65	10.0	2.8	1700	11.6	1700	DDI
	1D41C	Calif. Only	413	90/65	10.0	2.6	1600	11.5	1600	DDI
	1D41C	Calif. Only	413	90/65	10.0	2.4	1500	11.3	1500	DDI