California Environmental Protection Agency AIR RESOURCES BOARD	MOTORENFABRIK HATZ GMBH & CO. KG	EXECUTIVE ORDER U-R-034-0015 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-45-9;

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)
2002	2HZXL.517C50	0.5	Diesel	3000

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

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	--	--	7.6	5.1	0.79	--	--	--

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 10th day of January 2002.

R. B. Summerfield, Chief
Mobile Source Operations Division

Model Year: 2002
Manufacturer: Motorenfabrik Hatz GmbH & Co. KG
Engine Family: 2HZXL.517C50

Issued:
Revised: 10/26/2001
E.O. Number: EO# U-R-034-0015

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 (kw)	53. Rated Speed (RPM)	54. Rated Torque	55. Torque Speed (RPM)	56. Emiss Control Sys
	1D50S/Z/T/U	Calif. Only	517	97/70	17.5	10.6 7.9	3600	15.5	3600	DDI
	1D50S/Z/T/U	Calif. Only	517	97/70	17.5	10.6	3550	15.7	3550	DDI
	1D50S/Z/T/U	Calif. Only	517	97/70	17.5	10.6	3500	16.0	3500	DDI
	1D50S/Z/T/U	Calif. Only	517	97/70	17.5	10.6	3450	16.2	3450	DDI
	1D50S/Z/T/U	Calif. Only	517	97/70	17.5	10.6	3400	16.4	3400	DDI
	1D50S/Z/T/U	Calif. Only	517	97/70	17.5	10.6	3350	16.7	3350	DDI
	1D50S/Z/T/U	Calif. Only	517	97/70	17.5	10.6	3300	16.9	3300	DDI
	1D50S/Z/T/U	Calif. Only	517	97/70	17.5	10.6	3250	17.2	3250	DDI
	1D50S/Z/T/U	Calif. Only	517	97/70	17.5	10.6	3200	17.4	3200	DDI
	1D50S/Z/T/U	Calif. Only	517	97/70	17.5	10.6	3150	17.7	3150	DDI
	1D50S/Z/T/U	Calif. Only	517	97/70	17.5	10.6	3100	18.0	3100	DDI
	1D50S/Z/T/U	Calif. Only	517	97/70	17.5	10.6	3050	18.3	3050	DDI
X	1D50S/Z/T/U	Calif. Only	517	97/70	15.0	10.6	3000	18.6	3000	DDI
	1D50S/Z/T/U	Calif. Only	517	97/70	15.0	10.6	2900	19.3	2900	DDI
	1D50S/Z/T/U	Calif. Only	517	97/70	15.0	10.5 7.8	2800	19.7	2800	DDI
	1D50S/Z/T/U	Calif. Only	517	97/70	15.0	10.3 7.7	2700	20.2	2700	DDI
	1D50S/Z/T/U	Calif. Only	517	97/70	15.0	10.1 7.5	2600	20.4	2600	DDI

Unit in [hp]

Additional engine model info. please see record 2 !

EPA# HZX-NR1-02-09

ATTACHMENT 1 of 3

Model Year:
Manufacturer:
Engine Family:

Issued:
Revised: 10/26/2001
E.O. Number: EO# U-R-034-0015

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 (Kw)	53. Rated Speed (RPM)	54. Rated Torque	55. Torque Speed (RPM)	56. Emiss Control Sys
	1D50S/Z/T/U	Calif. Only	517	97/70	17.5	9.8 7.3	3600	14.3	3600	DDI
	1D50S/Z/T/U	Calif. Only	517	97/70	17.5	9.8	3550	14.5	3550	DDI
	1D50S/Z/T/U	Calif. Only	517	97/70	17.5	9.9 7.4	3500	14.9	3500	DDI
	1D50S/Z/T/U	Calif. Only	517	97/70	17.5	9.9	3450	15.2	3450	DDI
	1D50S/Z/T/U	Calif. Only	517	97/70	17.5	10.1 7.5	3400	15.6	3400	DDI
	1D50S/Z/T/U	Calif. Only	517	97/70	17.5	10.1	3350	15.8	3350	DDI
	1D50S/Z/T/U	Calif. Only	517	97/70	17.5	10.1	3300	16.1	3300	DDI
	1D50S/Z/T/U	Calif. Only	517	97/70	17.5	10.1	3250	16.3	3250	DDI
	1D50S/Z/T/U	Calif. Only	517	97/70	17.5	10.1	3200	16.6	3200	DDI
	1D50S/Z/T/U	Calif. Only	517	97/70	17.5	10.1	3150	16.8	3150	DDI
	1D50S/Z/T/U	Calif. Only	517	97/70	17.5	10.1	3100	17.1	3100	DDI
	1D50S/Z/T/U	Calif. Only	517	97/70	17.5	10.1	3050	17.4	3050	DDI
	1D50S/Z/T/U	Calif. Only	517	97/70	15.0	10.1	3000	17.7	3000	DDI
	1D50S/Z/T/U	Calif. Only	517	97/70	15.0	9.6 7.2	2800	18.2	2800	DDI
	1D50S/Z/T/U	Calif. Only	517	97/70	15.0	9.1 6.8	2600	18.5	2600	DDI
	1D50S/Z/T/U	Calif. Only	517	97/70	15.0	8.8 6.6	2500	18.7	2500	DDI
	1D50S/Z/T/U	Calif. Only	517	97/70	12.5	8.0 6.0	2300	18.4	2300	DDI
	1D50S/Z/T/U	Calif. Only	517	97/70	12.5	7.0 5.2	2000	18.4	2000	DDI
	1D50S/Z/T/U	Calif. Only	517	97/70	12.5	6.2 4.6	1800	18.1	1800	DDI
	Additional	engine model	info.	please	see	record 3 !				

ATTACHMENT 2 of 3

Model Year:
Manufacturer:
Engine Family:

Issued:
Revised: 10/26/2001
E.O. Number: EO#U-R-034-0015

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 (KW)	53. Rated Speed (RPM)	54. Rated Torque	55. Torque Speed (RPM)	56. Emiss Control Sys
	1D50S/Z/T/U	Calif. Only	517	97/70	15.0	9.1 6.8	3000	16.0	3000	DDI
	1D50S/Z/T/U	Calif. Only	517	97/70	15.0	9.0 6.7	2900	16.3	2900	DDI
	1D50S/Z/T/U	Calif. Only	517	97/70	15.0	8.8 6.6	2800	16.7	2800	DDI
	1D50S/Z/T/U	Calif. Only	517	97/70	15.0	8.6 6.4	2700	16.8	2700	DDI
	1D50S/Z/T/U	Calif. Only	517	97/70	15.0	8.2 6.1	2600	16.6	2600	DDI
	1D50S/Z/T/U	Calif. Only	517	97/70	15.0	7.9 5.9	2500	16.7	2500	DDI
	1D50S/Z/T/U	Calif. Only	517	97/70	15.0	7.5 5.6	2400	16.5	2400	DDI
	1D50S/Z/T/U	Calif. Only	517	97/70	12.5	7.2 5.4	2300	16.6	2300	DDI
	1D50S/Z/T/U	Calif. Only	517	97/70	12.5	7.0 5.2	2200	16.7	2200	DDI
	1D50S/Z/T/U	Calif. Only	517	97/70	12.5	6.6 4.9	2100	16.5	2100	DDI
	1D50S/Z/T/U	Calif. Only	517	97/70	12.5	6.3 4.7	2000	16.6	2000	DDI
	1D50S/Z/T/U	Calif. Only	517	97/70	12.5	5.9 4.4	1900	16.4	1900	DDI
	1D50S/Z/T/U	Calif. Only	517	97/70	12.5	5.6 4.2	1800	16.3	1800	DDI
	1D50S/Z/T/U	Calif. Only	517	97/70	10.0	5.2 3.9	1700	16.0	1700	DDI
	1D50S/Z/T/U	Calif. Only	517	97/70	10.0	4.8 3.6	1600	15.9	1600	DDI
	1D50S/Z/T/U	Calif. Only	517	97/70	10.0	4.3 3.2	1500	15.1	1500	DDI

ATTACHMENT 3 of 3