California Environmental Protection Agency AIR RESOURCES BOARD	DEUTZ AG	EXECUTIVE ORDER U-R-013-0071 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	2DZXL02.9013	2.9	Diesel	8000

SPECIAL FEATURES & EMISSION CONTROL SYSTEMS	TYPICAL EQUIPMENT APPLICATION
Direct Diesel Injection, Smoke Puff LImiter	Compressor, Loader, 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
37≤kW<75	Tier 1	STD	N/A	9.2	N/A	N/A	N/A	20	15	50
		CERT	-	7.8	-	-	-	3	4	4

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 February 2002.

Allen Lyons, Chief
New Vehicle/Engine Programs Branch

EOA U-R-013-0071

Attachment 1&8 1

Manufacturer: DEUTZ AG
Engine category: Nonroad CI
EPA Engine Family: 2DZXL02.9013

Engine Model and Part Number Summary Form

Engine code	Engine Model	BHP	BkW	Rated Power Engine Speed	Injection rate at rated power ±6mm³	Peak torque ± 5%	Speed at peak torque ± 200 rpm	Injection rate at peak torque ±4mm³	Fuel injection pump	Fuel injector	Injection timing (±1°)
		HP	kW	rpm	mm³/ stroke	Nm	rpm	mm³/ stroke	description	description	°btdc
C48,1	F4M1011F	64	48.1	3000	44.5	176	1800	43	PFE1A90S3001	DSLA144P860	6
C46	F4M1011F	62	46.0	3000	42.0	167	1800	40	PFE1A80S3010	DSLA144P547	7
C47	F4M1011F	63	47.0	2900	44.0	176	1800	43	PFE1A90S3001	DSLA144P860	6
C45,8	F4M1011F	61	45.8	2800	43.0	176	1800	43	PFE1A90S3001	DSLA144P860	6
C43,6	F4M1011F	58	43.6	2800	41.5	167	1800	40	PFE1A80S3010	DSLA144P547	7
C45,2	F4M1011F	61	45.2	2750	43.0	176	1800	43	PFE1A90S3001	DSLA144P860	6
C44	F4M1011F	59	44.0	2650	42.5	176	1800	43	PFE1A90S3001	DSLA144P860	6
C43,3	F4M1011F	58	43.3	2600	42.5	176	1800	43	PFE1A90S3001	DSLA144P860	6
C41,3	F4M1011F	55	41.3	2600	40.0	167	1800	40	PFE1A80S3010	DSLA144P547	7
C42,1	F4M1011F	56	42.1	2500	42.5	176	1800	43	PFE1A90S3001	DSLA144P860	6
C40,2	F4M1011F	54	40.2	2500	39.5	167	1800	40	PFE1A80S3010	DSLA144P547	7
C39,8	F4M1011F	53	39.8	2300	43.0	176	1800	43	PFE1A90S3001	DSLA144P860	6
C37,9	F4M1011F	51	37.9	2300	39.0	167	1800	40	PFE1A80S3010	DSLA144P547	7
C39	F4M1011F	52	39.0	2250	42.5	176	1800	43	PFE1A90S3001	DSLA144P860	6
C46,6	F4L1011FL	62	46.6	3000	44.5	176	1800	43	PFE1A90S3001	DSLA144P860	6
C40,2	F4L1011FL	54	40.2	2400	42.5	176	1800	43	PFE1A90S3001	DSLA144P860	6
C39,1	F4L1011FL	52	39.1	2300	42.5	176	1800	43	PFE1A90S3001	DSLA144P860	6