California Environmental Protection Agency AIR RESOURCES BOARD	DEUTZ AG	EXECUTIVE ORDER U-R-013-0072 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	2DZXL02.9017	2.2, 2.9	Diesel	5000

SPECIAL FEATURES & EMISSION CONTROL SYSTEMS	TYPICAL EQUIPMENT APPLICATION
Direct Diesel Injection, Smoke Puff LImiter	Generator Set, 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
19≤kW<37	Tier 1	STD	N/A	N/A	9.5	5.5	0.80	20	15	50
		CERT	-	-	9.2	3.2	0.40	3	4	5

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

EO # U-R-013-0072
Attachment 1 of 2

Manufacturer: DEUTZ AG
Engine category: Nonroad CI
EPA Engine Family: 2DZXLO2.9017

Engine Model and Part Number Summary Form

Engine code	Engine Mode	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
C36,5	F4M1011F	49	36.5	2800	39.5	140	1800	34.0	PFE1A80S3010	DSLA144P547	7
C36,5/1	F4M1011F	49	36.5	2300	39.0	167	1800	40.5	PFE1A90S3001	DSLA144P860	4.2
D33,5	F4M1011F	45	33.5	2000	39.0	n.a.	n.a.	n.a.	PFE1A80S3010	DSLA144P547	5
D32,9	F4M1011F	44	32.9	1800	41.0	n.a.	n.a.	n.a.	PFE1A80S3010	DSLA144P547	5
D31,4	F4M1011F	42	31.4	1800	39.5	n.a.	n.a.	n.a.	PFE1A80S3010	DSLA144P547	5
D31,3	F4M1011F	42	31.3	1800	39.5	n.a.	n.a.	n.a.	PFE1A80S3010	DSLA144P547	5
D29,9	F4M1011F	40	29.9	1800	39.0	n.a.	n.a.	n.a.	PFE1A80S3010	DSLA144P547	5
D28,5	F4M1011F	38	28.5	1800	39.0	n.a.	n.a.	n.a.	PFE1A80S3010	DSLA144P547	5
D32,5	F4L1011FL	44	32.5	1800	41.0	n.a.	n.a.	n.a.	PFE1A80S3010	DSLA144P547	5
C35,6	F3M1011F	48	35.6	3000	43.0	130	1800	43.5	PFE1A90S3001	DSLA144P860	5
C33,7	F3M1011F	45	33.7	3000	41.0	124	1800	40.5	PFE1A80S3010	DSLA144P547	7
C35,4	F3M1011F	47	35.4	2900	44.0	130	1800	43.5	PFE1A90S3001	DSLA144P860	5
C34,8	F3M1011F	47	34.8	2900	43.0	130	1800	43.5	PFE1A90S3001	DSLA144P860	5
C34	F3M1011F	46	34.0	2800	41.0	130	1800	43.5	PFE1A90S3001	DSLA144P860	5
C32,5	F3M1011F	44	32.5	2800	41.0	124	1800	40.5	PFE1A80S3010	DSLA144P547	7
C33,2	F3M1011F	44	33.2	2700	41.0	130	1800	43.5	PFE1A90S3001	DSLA144P860	5
C32,6	F3M1011F	44	32.6	2650	42.0	130	1800	43.5	PFE1A90S3001	DSLA144P860	5
C32,4	F3M1011F	43	32.4	2600	42.0	140	1800	48.0	PFE1A90S3001	DSLA144P860	5
C30,6	F3M1011F	41	30.6	2600	41.0	124	1800	40.5	PFE1A80S3010	DSLA144P547	7
C31,2	F3M1011F	42	31.2	2500	42.0	130	1800	43.5	PFE1A90S3001	DSLA144P860	5
C29,7	F3M1011F	40	29.7	2500	40.0	124	1800	40.5	PFE1A90S3001	DSLA144P860	4.2
C30,3	F3M1011F	41	30.3	2400	41.5	130	1800	40.5	PFE1A90S3001	DSLA144P860	4.2
C29,9	F3M1011F	40	29.9	2400	41.0	130	1800	40.5	PFE1A90S3001	DSLA144P860	4.2
C29,5	F3M1011F	40	29.5	2300	42.0	130	1800	43.5	PFE1A90S3001	DSLA144P860	4.2
C28	F3M1011F	38	28.0	2300	40.0	124	1800	40.5	PFE1A90S3001	DSLA144P860	4.2
D24,3	F3M1011F	33	24.3	1800	42.0	n.a.	n.a.	n.a.	PFE1A80S3010	DSLA144P547	5
D23,1	F3M1011F	31	23.1	1800	40.0	n.a.	n.a.	n.a.	PFE1A80S3010	DSLA144P547	5
D22,6	F3M1011F	30	22.6	1800	40.0	n.a.	n.a.	n.a.	PFE1A80S3010	DSLA144P547	5
D22	F3M1011F	29	22.0	1800	39.0	n.a.	n.a.	n.a.	PFE1A80S3010	DSLA144P547	5

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		HP	kW	rpm	mm³/ stroke	Nm	rpm	mm³/ stroke	description	description	°btdc
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D20,9	F3M1011F	28	20.9	1800	38.0	n.a.	n.a.	n.a.	PFE1A80S3010	DSLA144P547	5
D19	F3M1011F	25	19.0	1800	36.0	n.a.	n.a.	n.a.	PFE1A80S3010	DSLA144P547	5