State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER U-R-13-27
Relating to Certification of New Heavy-Duty Off-Road Equipment Engines

DEUTZ AG

Pursuant to the authority vested in the Air Resources Board at Sections 43000.5, 43013, and 43018 of the Health and Safety Code; and

Pursuant to the authority vested in the undersigned at Sections 39515 and 39516 of the Health and Safety Code and Executive Order G-45-9;

IT IS ORDERED AND RESOLVED: That the following diesel engines and exhaust emission control systems produced by the manufacturer are certified as described below for use in heavy-duty off-road equipment:

Model Year: 2000

Typical Equipment Usage: Generator Set and Other OEM Equipment

Engine Power Ratings Range: 175 – 750 horsepower, inclusive

Fuel Type: Diesel

	Displacement		Exhaust Emission Control
Engine Family	Liters	Cubic Inches	Systems and Special Features
YDZXL07.1005	7.2	436	Turbocharger
(BF4/6M 1013/E)	4.8	290	Smoke Puff Limiter

The engine models and codes are listed on attachments. Production engines shall be in all material respects the same as those for which certification is granted.

The exhaust emission certification standards and certification values in grams per brake horsepower-hour (g/bhp-h) for total hydrocarbons (THC), carbon monoxide (CO), nitrogen oxides (NOx), and particulate matter (PM), and the opacity-of-smoke certification standards and certification values in percent (%) during acceleration (Accel), lugging (Lug), and the peak value from either mode (Peak) for this engine family are as follows (Title 13, California Code of Regulations, Section 2423):

	Exhaust Emissions (g/hp-h)				Smoke Opacity (%)		
	THC	CO	NOx	PM	Accel	Lug	Peak
Standard	1.0	8.5	6.9	0.4	20	15	50
Certification	0.3	0.8	6.3	0.1	6	4	10

BE IT FURTHER RESOLVED: That the engine models listed on the attachments with engine power ratings less than 175 horsepower are not covered by this Executive Order.

BE IT FURTHER RESOLVED: That the listed engine models comply with "Exhaust Emission Standards and Test Procedures -- Heavy-Duty Off-Road Diesel-Cycle Engines" (Title 13, California Code of Regulations, Section 2423) for the aforementioned model-year.

BE IT FURTHER RESOLVED: That the listed engine models also comply with "Emission Control Labels --1996 and Later Heavy-Duty Off-Road Diesel-Cycle Engines" (Title 13, California Code of Regulations, Section 2424) for the aforementioned model-year.

BE IT FURTHER RESOLVED: That for the listed engine models, the manufacturer has submitted the materials to demonstrate certification compliance with the Board's emission control system warranty provisions (Title 13, California Code of Regulations, Sections 2425 *et seq.*).

Engines certified under this Executive Order must conform to all applicable California emission regulations.

Executed at El Monte, California this 7th day of February 2000.

R. B. Summerfield, Chief
Mobile Source Operations Division

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List of emission related components

Engine type	Displacement	Engine code	Nominal Power ± 5%	Nominal Power ± 5%	Nominal speed ± 50 rpm	Mean effective presuure	Injection rate at nom. speed, ±4mm³	Peak torque ± 5%	Speed at peak torque ± 100 rpm	Mean effective pressure at peak torque	Injection rate at peak torque ±6mm³
	cm³		HP	kW	rpm	bar	mm³/ stroke	Nm	rpm	bar	mm³/ stroke
BF6M1013E	7146	C141/1	189	141	2500	9.47	87	632	1500	11.12	93.0
BF6M1013E	7146	C138	185	138	2500	9.27	87	632	1500	11.12	93.0
BF6M1013E	7146	C145/1	194	145	2400	10.15	91	667	1500	11.73	99.0
BF6M1013E	7146	C145	194	145	2300	10.59	94	702	1400	12.35	104.0
BF6M1013E	7146	C137	184	137	2300	10.00	89	667	1400	11.73	97.0
BF6M1013E	7146	C130	174	130	2300	9.49	85	632	1400	11.12	92.0
BF6M1013E	7146	C123	165	123	2300	8.98	81	598	1400	10.52	87.0
BF6M1013E	7146	C120	159	119	2350	8.50	77	613	1725	10.78	95.0
BF6M1013E	7146	C117	155	116	2350	8.29	75	613	1725	10.78	95.0
BF6M1013E	7146	C113	151	113	2300	8.25	75	594	1725	10.45	86.0
BF6M1013E	7146	C110/1	147	110	2300	8.03	73	594	1725	10.45	86.0
BF6M1013E	7146	C106	142	106	2300	7.74	70	556	1725	9.78	80.0
BF6M1013E	7146	C103	138	103	2300	7.52	68	556	1725	9.78	80.0
BF6M1013E	7146	C100	134	100	2300	7.30	66	540	1725	9.50	78.0
BF6M1013E	7146	C95	127	95	2300	6.94	63	497	1725	8.74	72.0
BF6M1013E	7146	C92	123	92	2300	6.72	61	497	1725	8.74	72.0
BF6M1013E	7146	C89	119	89	2300	6.50	59	481	1725	8.46	70.0
BF6M1013E	7146	C139	186	139	2200	10.61	93	702	1400	12.35	104.0
BF6M1013E	7146	C132	177	132	2200	10.08	89	667	1400	11.73	97.0
BF6M1013E	7146	C129	173	129	2200	9.85	87	667	1400	11.73	97.0
BF6M1013E	7146	C125	168	125	2200	9.54	84	632	1400	11.12	92.0
BF6M1013E	7146	C119	159	119	2200	9.08	80	598	1400	10.52	87.0
BF6M1013E	7146	C134	180	134	2100	10.72	93	702	1400	12.35	104.0
BF6M1013E	7146	C128	172	128	2100	10.24	89	667	1400	11.73	97.0
BF6M1013E	7146	C121	162	121	2100	9.68	84	632	1400	11.12	92.0

List of emission related components

Engine type	Displacement	Engine code	Nominal Power ± 5%	Nominal Power ± 5%	Nominal speed ± 50 rpm	Mean effective presuure	Injection rate at nom. speed, ±4mm³	Peak torque ± 5%	Speed at peak torque ± 100 rpm	Mean effective pressure at peak torque	Injection rate at peak torque ±6mm³
	cm³		HP	kW	rpm	bar	mm³/ stroke	Nm	rpm	bar	mm³/ stroke
BF6M1013E	7146	C115	154	115	2100	9.20	79	598	1400	10.52	87.0
BF6M1013E	7146	C129/2	173	129	2000	10.83	92	702	1400	12.35	104.0
BF6M1013E	7146	C122	163	122	2000	10.24	87	667	1400	11.73	97.0
BF6M1013E	7146	C116	155	116	2000	9.74	83	632	1400	11.12	92.0
BF6M1013E	7146	C110	147	110	2000	9.24	79	598	1400	10.52	87.0
BF6M1013E	7146	D145	194	145	2400	10.15	91	n.a.	n.a.	n.a.	n.a.
BF6M1013E	7146	D141	189	141	2400	9.87	89	n.a.	n.a.	n.a.	n.a.
BF6M1013E	7146	D128	172	128	2400	8.96	81	n.a.	n.a.	n.a.	n.a.
BF6M1013E	7146	D135	181	135	2000	11.34	97	n.a.	n.a.	n.a.	n.a.
BF6M1013E	7146	D123	165	123	2000	10.33	89	n.a.	n.a.	n.a.	n.a.
BF6M1013E	7146	D130	174	130	1846	11.83	101	n.a.	n.a.	n.a.	n.a.
BF6M1013E	7146	D118	158	118	1846	10.73	91	n.a.	n.a.	n.a.	n.a.
BF6M1013E	7146	D134	180	134	1800	12.50	106	n.a.	n.a.	n.a.	n.a.
BF6M1013E	7146	D134/1	180	134	1800	12.50	106	n.a.	n.a.	n.a.	n.a.
BF6M1013E	7146	D128/1	172	128	1800	11.94	102	n.a.	n.a.	n.a.	n.a.
BF6M1013E	7146	D122	163	122	1800	11.38	97	n.a.	n.a.	n.a.	n.a.
BF6M1013E	7146	D120	161	120	1800	11.20	95	n.a.	n.a.	n.a.	n.a.
BF6M1013E	7146	D114	153	114	1800	10.64	90	n.a.	n.a.	n.a.	n.a.
BF6M1013E	7146	D109	146	109	1800	10.17	86	n.a.	n.a.	n.a.	n.a.
BF4M1013E	4764	C95	127	95	2300	10.40	93	468	1400	12.35	104.0
BF4M1013E	4764	C90	121	90	2300	9.86	90	442	1400	11.66	102.0
BF4M1013E	4764	C86	115	86	2300	9.42	86	422	1400	11.13	97.0
BF4M1013E	4764	C81	109	81	2300	8.87	81	398	1400	10.50	91.0
BF4M1013E	4764	C92	123	92	2200	10.53	93	468	1400	12.35	104.0
BF4M1013E	4764	C88	118	88	2200	10.08	91	442	1400	11.66	102.0

List of emission related components

Engine type	Displacement	Engine code	Nominal Power ± 5%	Nominal Power ± 5%	Nominal speed ± 50 rpm	Mean effective presuure	Injection rate at nom. speed, ±4mm³	Peak torque ± 5%	Speed at peak torque ± 100 rpm	Mean effective pressure at peak torque	Injection rate at peak torque ±6mm³
	cm³		HP	kW	rpm	bar	mm³/ stroke	Nm	rpm	bar	mm³/ stroke
BF4M1013E	4764	C83	111	83	2200	9.50	86	422	1400	11.13	97.0
BF4M1013E	4764	C79	106	79	2200	9.05	82	398	1400	10.50	91.0
BF4M1013E	4764	C89	119	89	2100	10.68	93	468	1400	12.35	104.0
BF4M1013E	4764	C85	114	85	2100	10.20	90	442	1400	11.66	102.0
BF4M1013E	4764	C81/1	109	81	2100	9.72	87	422	1400	11.13	97.0
BF4M1013E	4764	C76	102	76	2100	9.12	80	398	1400	10.50	91.0
BF4M1013E	4764	C86/2	115	86	2000	10.83	93	468	1400	12.35	104.0
BF4M1013E	4764	C82	110	82	2000	10.33	91	442	1400	11.66	102.0
BF4M1013E	4764	C78	105	78	2000	9.82	86	422	1400	11.13	97.0
BF4M1013E	4764	C76/2	102	76	2000	9.57	84	398	1400	10.50	91.0
BF4M1013E	4764	C74	99	74	2000	9.32	82	398	1400	10.50	91.0
BF4M1013E	4764	D95	127	95	2400	9.97	90	n.a.	n.a.	n.a.	n.a.
BF4M1013E	4764	D86	115	86	2400	9.03	81	n.a.	n.a.	n.a.	n.a.
BF4M1013E	4764	D90	121	90	2000	11.34	97	n.a.	n.a.	n.a.	n.a.
BF4M1013E	4764	D82	110	82	2000	10.33	89	n.a.	n.a.	n.a.	n.a.
BF4M1013E	4764	D86/1	115	86	1846	11.73	100	n.a.	n.a.	n.a.	n.a.
BF4M1013E	4764	D78	105	78	1846	10.64	90	n.a.	n.a.	n.a.	n.a.
BF4M1013E	4764	D89	119	89	1800	12.45	106	n.a.	n.a.	n.a.	n.a.
BF4M1013E	4764	D89/2	119	89	1800	12.45	106	n.a.	n.a.	n.a.	n.a.
BF4M1013E	4764	D85	114	85	1800	11.89	101	n.a.	n.a.	n.a.	n.a.
BF4M1013E	4764	D81	109	81	1800	11.34	96	n.a.	n.a.	n.a.	n.a.
BF4M1013E	4764	D79	106	79	1800	11.06	94	n.a.	n.a.	n.a.	n.a.
BF4M1013E	4764	D76	102	76	1800	10.64	90	n.a.	n.a.	n.a.	n.a.
BF4M1013E	4764	D72	96	72	1800	10.08	86	n.a.	n.a.	n.a.	n.a.
BF6M1013	7146	C141/2	189	141	2500	9.47	89	697	1400	12.26	104.0

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List of emission related components

Engine type	Displacement	Engine code	Nominal Power ± 5%	Nominal Power ± 5%	Nominal speed ± 50 rpm	Mean effective presuure	Injection rate at nom. speed, ±4mm³	Peak torque ± 5%	Speed at peak torque ± 100 rpm	Mean effective pressure at peak torque	Injection rate at peak torque ±6mm³
	cm³		HP	kW	rpm	bar	mm³/ stroke	Nm	rpm	bar	mm³/ stroke
BF6M1013	7146	C133/1	178	133	2400	9.31	87	662	1400	11.64	97.0
BF6M1013	7146	C141	189	141	2300	10.29	94	697	1400	12.26	104.0
BF6M1013	7146	C133	178	133	2300	9.71	89	662	1400	11.64	97.0
BF6M1013	7146	C126	169	126	2300	9.20	85	627	1400	11.03	92.0
BF6M1013	7146	C119/1	159	119	2300	8.69	81	593	1400	10.43	87.0
BF6M1013	7146	C112/1	150	112	2300	8.18	76	560	1400	9.85	81.0
BF6M1013	7146	C100	134	100	2300	7.30	68	530	1400	9.32	75.0
BF6M1013	7146	C136	182	136	2200	10.38	93	697	1400	12.26	104.0
BF6M1013	7146	C129/1	173	129	2200	9.85	89	662	1400	11.64	97.0
BF6M1013	7146	C125/2	168	125	2200	9.54	87	662	1400	11.64	97.0
BF6M1013	7146	C122/1	163	122	2200	9.31	84	627	1400	11.03	92.0
BF6M1013	7146	C116/1	155	116	2200	8.85	80	593	1400	10.43	87.0
BF6M1013	7146	C131	176	131	2100	10.48	93	697	1400	12.26	104.0
BF6M1013	7146	C125/1	168	125	2100	10.00	89	662	1400	11.64	97.0
BF6M1013	7146	C118	158	118	2100	9.44	84	627	1400	11.03	92.0
BF6M1013	7146	C112	150	112	2100	8.96	79	593	1400	10.43	87.0
BF6M1013	7146	C104	139	104	2100	8.32	75	560	1400	9.85	81.0
BF6M1013	7146	C126/1	169	126	2000	10.58	100	697	1400	12.26	103.0
BF6M1013	7146	C120	161	120	2000	10.08	93	662	1400	11.64	97.0
BF6M1013	7146	C114	153	114	2000	9.57	90	627	1400	11.03	92.0
BF6M1013	7146	C108	145	108	2000	9.07	84	593	1400	10.43	87.0
BF6M1013	7146	C115/1	154	115	1800	10.73	94	662	1400	11.64	97.0
BF6M1013	7146	C107	143	107	1800	9.98	86	593	1400	10.43	87.0
BF6M1013	7146	D137	184	137	2400	9.59	89	n.a.	n.a.	n.a.	n.a.
BF6M1013	7146	D124	166	124	2400	8.68	81	n.a.	n.a.	n.a.	n.a.

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List of emission related components

Engine type	Displacement	Engine code	Nominal Power ± 5%	Nominal Power ± 5%	Nominal speed ± 50 rpm	Mean effective presuure	Injection rate at nom. speed, ±4mm³	Peak torque ± 5%	Speed at peak torque ± 100 rpm	Mean effective pressure at peak torque	Injection rate at peak torque ±6mm³
	cm³		HP	kW	rpm	bar	mm³/ stroke	Nm	rpm	bar	mm³/ stroke
BF6M1013	7146	D133	178	133	2000	11.17	97	n.a.	n.a.	n.a.	n.a.
BF6M1013	7146	D121	162	121	2000	10.16	89	n.a.	n.a.	n.a.	n.a.
BF6M1013	7146	D128/2	172	128	1846	11.64	101	n.a.	n.a.	n.a.	n.a.
BF6M1013	7146	D117	157	117	1846	10.64	91	n.a.	n.a.	n.a.	n.a.
BF6M1013	7146	D118/1	158	118	1800	11.01	95	n.a.	n.a.	n.a.	n.a.
BF6M1013	7146	D112	150	112	1800	10.45	90	n.a.	n.a.	n.a.	n.a.
BF6M1013	7146	D107	143	107	1800	9.98	86	n.a.	n.a.	n.a.	n.a.
BF4M1013	4764	C93	125	93	2300	10.19	93	464	1400	12.24	104.0
BF4M1013	4764	C88/1	118	88	2300	9.64	90	438	1400	11.56	102.0
BF4M1013	4764	C84	113	84	2300	9.20	86	418	1400	11.03	97.0
BF4M1013	4764	C79/1	106	79	2300	8.65	78	394	1400	10.40	91.0
BF4M1013	4764	C90/1	121	90	2200	10.30	93	464	1400	12.24	104.0
BF4M1013	4764	C86/1	115	86	2200	9.85	91	438	1400	11.56	102.0
BF4M1013	4764	C81/2	109	81	2200	9.27	86	418	1400	11.03	97.0
BF4M1013	4764	C77	103	77	2200	8.82	82	394	1400	10.40	91.0
BF4M1013	4764	C87	117	87	2100	10.44	94	464	1400	12.24	104.0
BF4M1013	4764	C83/1	111	83	2100	9.96	90	438	1400	11.56	102.0
BF4M1013	4764	C79/2	106	79	2100	9.48	86	418	1400	11.03	97.0
BF4M1013	4764	C74/1	99	74	2100	8.88	80	394	1400	10.40	91.0
BF4M1013	4764	C69	92	69	2100	8.28	76	370	1400	9.76	86.0
BF4M1013	4764	C80	107	80	2000	10.08	91	438	1400	11.56	102.0
BF4M1013	4764	C76/1	102	76	2000	9.57	86	418	1400	11.03	97.0
BF4M1013	4764	C72	96	72	2000	9.07	82	394	1400	10.40	91.0
BF4M1013	4764	C73	98	73	1800	10.22	82	418	1400	11.03	97.0
BF4M1013	4764	D92	123	92	2400	9.66	90	n.a.	n.a.	n.a.	n.a.

List of emission related components

Engine type	Displacement	Engine code	Nominal Power ± 5%	Nominal Power ± 5%	Nominal speed ± 50 rpm	Mean effective presuure	Injection rate at nom. speed, ±4mm³	Peak torque ± 5%	Speed at peak torque ± 100 rpm	Mean effective pressure at peak torque	Injection rate at peak torque ±6mm³
	cm³		HP	kW	rpm	bar	mm³/ stroke	Nm	rpm	bar	mm³/ stroke
BF4M1013	4764	D84	113	84	2400	8.82	81	n.a.	n.a.	n.a.	n.a.
BF4M1013	4764	D89/1	119	89	2000	11.21	97	n.a.	n.a.	n.a.	n.a.
BF4M1013	4764	D80	107	80	2000	10.08	89	n.a.	n.a.	n.a.	n.a.
BF4M1013	4764	D85/1	114	85	1846	11.60	100	n.a.	n.a.	n.a.	n.a.
BF4M1013	4764	D77	103	77	1846	10.51	90	n.a.	n.a.	n.a.	n.a.
BF4M1013	4764	D78/1	105	78	1800	10.92	90	n.a.	n.a.	n.a.	n.a.
BF4M1013	4764	D75	101	75	1800	10.50	86	n.a.	n.a.	n.a.	n.a.
BF4M1013	4764	D71	95	71	1800	9.94	94	n.a.	n.a.	n.a.	n.a.