State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER U-R-13-16
Relating to Certification of New Heavy-Duty Off-Road Equipment Engines

DEUTZ CORPORATION GmbH

Pursuant to the authority vested in the Air Resources Board by Sections 43000.5, 43013 and 43018 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 Deutz Corporation GmbH 1998 model-year engines, with rated power between 175 and 750 horsepower, and exhaust emission control systems are certified as described below for use in heavy-duty off-road equipment:

Typical Equipment Usage: Compressor, Generator, Air Conditioner

Fuel Type: Diesel

Engine Family	Displacement Liters (Cubic Inches)	Exhaust Emission Control Systems and Special Features
WDZXL07.1003	7.1/4.8 (436/290)	Turbocharger Charge Air Cooler Smoke Puff Limiter

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

Exhaust Emissions (g/bhp-hr)				Smoke Opacity (%)		
THC	CO	NOx	PM	Accel	Lug	Peak
1.0	8.5	6.9	0.4	20	15	50

The THC, CO, NOx and PM exhaust emission certification values, in g/bhp-hr, and the opacity of smoke emission certification values, in percent (%), for this engine family are:

Exhaust Emissions (g/bhp-hr)				Smoke Opacity (%)		
THC	CO	NOx	PM	Accel	Lug	Peak
0.3	0.8	5.4	0.2	10	4	15

BE IT FURTHER RESOLVED: That the listed engine models comply with the "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 the "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, Section 2425 et seq.).

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

Executed at El Monte, California this 19th day of July 1999.

R. B. Summerfield, Chief
Mobile Source Operations Division

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List of emission related

	Engine type	Engine code	Nominal Power ± 5%	Injection rate at nom. speed, ±4mm³	Mean effective presuure	Injection rate at nom. speed, ±4mm³	Peak torque ± 5%	Speed at peak torque ± 100 rpm	Low idle (+300 rpm, dep. on engine applic.)	High idle (+300 rpm, dep. on engine applic.)
			kW	rpm	bar	mm³/stroke	Nm	rpm	rpm	rpm
1	BF 6M 1013 ECP	C195	195	2500	13.10	118	907	1500	700.00	2600
2	BF 6M 1013 ECP	C195/1	195	2300	14.24	125	954	1400	700.00	2400
3	BF 6M 1013 ECP	C195/2	195	2300	14.24	125	907	1400	700.00	2400
4	BF 6M 1013 ECP	C186	186	2300	13.58	120	897	1400	700.00	2400
5	BF 6M 1013 ECP	C176	176	2300	12.85	113	850	1400	700.00	2400
6	BF 6M 1013 ECP	C188	188	2200	14.35	125	954	1400	700.00	2300
7	BF 6M 1013 ECP	C188/1	188	2200	14.35	125	907	1400	700.00	2300
8	BF 6M 1013 ECP	C179	179	2200	13.66	119	897	1400	700.00	2300
9	BF 6M 1013 ECP	C170	170	2200	12.98	113	850	1400	700.00	2300
10	BF 6M 1013 ECP	C182	182	2100	14.55	125	954	1400	700.00	2180
11	BF 6M 1013 ECP	C182/1	182	2100	14.55	125	907	1400	700.00	2180
12	BF 6M 1013 ECP	C173	173	2100	13.83	119	897	1400	700.00	2180
13	BF 6M 1013 ECP	C165	165	2100	13.19	113	850	1400	700.00	2180
14	BF 6M 1013 ECP	C166	166	2000	13.94	118	897	1400	700.00	2080
15	BF 6M 1013 ECP	C158	158	2000	13.27	113	850	1400	700.00	2080
16	BF 6M 1013 CP	C190	190	2500	12.76	118	899	1500	700.00	2600
17	BF 6M 1013 CP	C190/1	190	2300	13.87	125	946	1400	700.00	2400
18	BF 6M 1013 CP	C190/2	190	2300	13.87	125	899	1400	700	2400
19	6M 1013 CP	C181	181	2300	13.22	120	890	1400	700	2400
20	6M 1013 CP	C171	171	2300	12.48	113	843	1400	700	2400
21	6M 1013 CP	C184	184	2200	14.04	125	946	1400	700	2300
22	BF 6M 1013 CP	C184/1	184	2200	14.04	125	899	1400	700	2300
23	BF 6M 1013 CP	C175	175	2200	13.36	119	890	1400	700	2300
24	BF 6M 1013 CP	C166/1	166	2200	12.67	113	843	1400	700	2300
25	BF 6M 1013 CP	C178	178	2100	14.23	125	946	1400	700	2180
26	BF 6M 1013 CP	C178/1	178	2100	14.23	125	899	1400	700	2180
27	BF 6M 1013 CP	C169	169	2100	13.51	119	890	1400	700	2180
28	BF 6M 1013 CP	C161	161	2100	12.87	113	843	1400	700	2180
29	BF 6M 1013 CP	C163	163	2000	13.69	118	890	1400	700	2080
30	BF 6M 1013 CP	C155	155	2000	13.01	113	843	1400	700	2080
31	BF 6M 1013 EC	C174	174	2300	12.70	112	854	1400	700.00	2400
32	BF 6M 1013 EC	C165/1	165	2300	12.05	106	811	1400	700.00	2400
33	BF 6M 1013 EC	C157	157	2300	11.46	101	769	1400	700.00	2400
34	BF 6M 1013 EC	C169/1	169	2200	12.90	112	854	1400	700.00	2300
35	BF 6M 1013 EC	C160	160	2200	12.21	106	811	1400	700.00	2300
36	BF 6M 1013 EC	C152	152	2200	11.60	101	769	1400	700.00	2300
37	BF 6M 1013 EC	C162	162	2100	12.95	111	854	1400	700.00	2180
38	BF 6M 1013 EC	C154	154	2100	12.31	106	811	1400	700.00	2180
39	BF 6M 1013 EC	C146	146	2100	11.67	100	769	1400	700.00	2180
40	BF 6M 1013 EC	C149	149	2000	12.51	106	811	1400	700.00	2080
41	BF 6M 1013 EC	C142	142	2000	11.92	101	769	1400	700.00	2080
42	BF 6M 1013 C	C170/1	170	2300	12.41	112	847	1400	700.00	2400
43	BF 6M 1013 C	C161/1	161	2300	11.75	106	804	1400	700.00	2400
44	BF 6M 1013 C	C153	153	2300	11.17	101	762	1400	700.00	2400
45	BF 6M 1013 C	C165/2	165	2200	12.59	112	847	1400	700.00	2300
46	BF 6M 1013 C	C156	156	2200	11.91	106	804	1400	700	2300
47	BF 6M 1013 C	C148	148	2200	11.30	101	762	1400	700	2300
48	BF 6M 1013 C	C159	159	2100	12.71	111	847	1400	700	2180
49	BF 6M 1013 C	C151	151	2100	12.07	106	804	1400	700	2180
50	BF 6M 1013 C	C143	143	2100	11.43	100	762	1400	700	2180
51	6M 1013 C	C146/1	146	2000	12.26	106	804	1400	700	2080
52	6M 1013 C	C139	139	2000	11.67	101	762	1400	700	2080
53	BF 4M 1013 EC	C118	118	2500	11.89	108	577	1400	700	2600
54	BF 4M 1013 EC	C118/1	118	2300	12.92	115	577	1400	700	2400
55	BF 4M 1013 EC	C115	115	2300	12.59	112	548	1400	700	2400

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List of emission related

	BF 4M 1013 EC	C107	107	2300	11.72	104	520	1400	700	2400
	BF 4M 1013 EC	C114	114	2200	13.05	115	577	1400	700	2300
	BF 4M 1013 EC	C111	111	2200	12.71	112	548	1400	700.00	2300
	BF 4M 1013 EC	C104	104	2200	11.91	105	520	1400	700.00	2300
60	BF 4M 1013 EC	C110	110	2100	13.19	115	577	1400	700.00	2180
61	BF 4M 1013 EC	C106	106	2100	12.71	111	548	1400	700.00	2180
62	BF 4M 1013 EC	C101	101	2100	12.11	105	520	1400	700.00	2180
63	BF 4M 1013 EC	C103	103	2000	12.97	112	548	1400	700.00	2080
64	BF 4M 1013 EC	C98	98	2000	12.34	106	520	1400	700.00	2080
65	BF 4M 1013 C	C115/1	115	2500	11.59	108	573	1400	700.00	2600
66	BF 4M 1013 C	C115/2	115	2300	12.59	115	573	1400	700.00	2400
67	BF 4M 1013 C	C112	112	2300	12.27	112	544	1400	700.00	2400
68	BF 4M 1013 C	C104/1	104	2300	11.39	104	516	1400	700.00	2400
69	BF 4M 1013 C	C111/1	111	2200	12.71	115	573	1400	700.00	2300
70	BF 4M 1013 C	C108	108	2200	12.37	112	544	1400	700.00	2300
71	BF 4M 1013 C	C101/1	101	2200	11.56	105	516	1400	700.00	2300
72	BF 4M 1013 C	C108/1	108	2100	12.95	115	573	1400	700.00	2180
73	BF 4M 1013 C	C104/2	104	2100	12.47	111	544	1400	700.00	2180
74	BF 4M 1013 C	C99	99	2100	11.87	105	516	1400	700	2180
75	BF 4M 1013 C	C101/2	101	2000	12.72	112	544	1400	700	2080
76	BF 4M 1013 C	C96	96	2000	12.09	106	516	1400	700	2080
77	BF 6M 1013 ECP	D195	195	2400	13.64	121	n.a.	n.a.	n.a.	n.a.
78	BF 6M 1013 ECP	D190	190	2400	13.29	118	n.a.	n.a.	n.a.	n.a.
79	BF 6M 1013 ECP	D173	173	2400	12.10	108	n.a.	n.a.	n.a.	n.a.
80	BF 6M 1013 ECP	D182	182	2000	15.28	130	n.a.	n.a.	n.a.	n.a.
81	BF 6M 1013 ECP	D165	165	2000	13.85	118	n.a.	n.a.	n.a.	n.a.
82	BF 6M 1013 ECP	D174	174	1846	15.83	133	n.a.	n.a.	n.a.	n.a.
83	BF 6M 1013 ECP	D158	158	1846	14.37	121	n.a.	n.a.	n.a.	n.a.
84	BF 6M 1013 CP	D190/1	190	2400	13.29	121	n.a.	n.a.	n.a.	n.a.
85	BF 6M 1013 CP	D185	185	2400	12.94	118	n.a.	n.a.	n.a.	n.a.
86	BF 6M 1013 CP	D167	167	2400	11.68	108	n.a.	n.a.	n.a.	n.a.
87	BF 6M 1013 CP	D179	179	2000	15.03	130	n.a.	n.a.	n.a.	n.a.
88	BF 6M 1013 CP	D162	162	2000	13.60	118	n.a.	n.a.	n.a.	n.a.
89	BF 6M 1013 CP	D172	172	1846	15.65	133	n.a.	n.a.	n.a.	n.a.
	BF 6M 1013 CP	D156	156	1846	14.19	121	n.a.	n.a.	n.a.	n.a.
	BF 6M 1013 EC	D170	170	2400	11.89	106	n.a.	n.a.	n.a.	n.a.
92	BF 6M 1013 EC	D155	155	2400	10.85	97	n.a.	n.a.	n.a.	n.a.
93	BF 6M 1013 EC	D163/1	163	2000	13.69	116	n.a.	n.a.	n.a.	n.a.
94	BF 6M 1013 EC	D148	148	2000	12.43	106	n.a.	n.a.	n.a.	n.a.
95	BF 6M 1013 EC	D156/1	156	1846	14.19	119	n.a.	n.a.	n.a.	n.a.
96	BF 6M 1013 EC	D142	142	1846	12.92	109	n.a.	n.a.	n.a.	n.a.
97	BF 6M 1013 EC	D163	163	1800	15.21	128	n.a.	n.a.	n.a.	n.a.
98	BF 6M 1013 EC	D155/1	155	1800	14.46	121	n.a.	n.a.	n.a.	n.a.
99	BF 6M 1013 C	D165/1	165	2400	11.54	106	n.a.	n.a.	n.a.	n.a.
100	BF 6M 1013 C	D150	150	2400	10.50	97	n.a.	n.a.	n.a.	n.a.
101	BF 6M 1013 C	D160/1	160	2000	13.43	116	n.a.	n.a.	n.a.	n.a.
102	BF 6M 1013 C	D146	146	2000	12.26	106	n.a.	n.a.	n.a.	n.a.
103	BF 6M 1013 C	D154	154	1846	14.01	119	n.a.	n.a.	n.a.	n.a.
104	BF 6M 1013 C	D140	140	1846	12.74	109	n.a.	n.a.	n.a.	n.a.
105	BF 6M 1013 C	D160	160	1800	14.93	128	n.a.	n.a.	n.a.	n.a.
106	BF 6M 1013 C	D152	152	1800	14.18	121	n.a.	n.a.	n.a.	n.a.
107	BF 6M 1013 C	D130	130	1800	12.13	102	n.a.	n.a.	n.a.	n.a.
108	BF 4M 1013 EC	D113	113	2400	11.66	107	n.a.	n.a.	n.a.	n.a.
109	BF 4M 1013 EC	D103	103	2400	10.61	97	n.a.	n.a.	n.a.	n.a.
110	BF 4M 1013 EC	D108	108	2000	13.6	117	n.a.	n.a.	n.a.	n.a.
111	BF 4M 1013 EC	D98	98	2000	12.34	106	n.a.	n.a.	n.a.	n.a.
112	BF 4M 1013 EC	D104	104	1846	14.19	121	n.a.	n.a.	n.a.	n.a.
113	BF 4M 1013 EC	D95	95	1846	12.96	110	n.a.	n.a.	n.a.	n.a.
114	BF 4M 1013 EC	D110	110	1800	15.39	131	n.a.	n.a.	n.a.	n.a.
115	BF 4M 1013 EC	D105	105	1800	14.69	125	n.a.	n.a.	n.a.	n.a.
116	BF 4M 1013 C	D110/1	110	2400	11.54	107	n.a.	n.a.	n.a.	n.a.
117	BF 4M 1013 C	D100	100	2400	10.5	97	n.a.	n.a.	n.a.	n.a.
118	BF 4M 1013 C	D106	106	2000	13.35	117	n.a.	n.a.	n.a.	n.a.
119	BF 4M 1013 C	D96	96	2000	12.09	106	n.a.	n.a.	n.a.	n.a.
120	BF 4M 1013 C	D103/1	103	1846	14.05	121	n.a.	n.a.	n.a.	n.a.
121	BF 4M 1013 C	D93	93	1846	12.69	110	n.a.	n.a.	n.a.	n.a.