

State of California  
AIR RESOURCES BOARD

EXECUTIVE ORDER U-R-13-20

Relating to Certification of New Heavy-Duty Off-Road Equipment Engines

DEUTZ AG

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 AG 1999 model-year engine, 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, Genset, Pump and Other Industrial Equipment

Fuel Type: Diesel

<u>Engine Family</u>	<u>Liters (Cubic Inches)</u>	<u>Exhaust Emission Control Systems and Special Features</u>
XDZXL15.9002	11.91/15.87 (730/974)	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):

<u>Exhaust Emissions (g/bhp-hr)</u>				<u>Smoke Opacity (%)</u>		
<u>THC</u>	<u>CO</u>	<u>NOx</u>	<u>PM</u>	<u>Accel</u>	<u>Lug</u>	<u>Peak</u>
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:

<u>Exhaust Emissions (g/bhp-hr)</u>				<u>Smoke Opacity (%)</u>		
<u>THC</u>	<u>CO</u>	<u>NOx</u>	<u>PM</u>	<u>Accel</u>	<u>Lug</u>	<u>Peak</u>
0.2	0.5	4.6	0.1	9	8	21

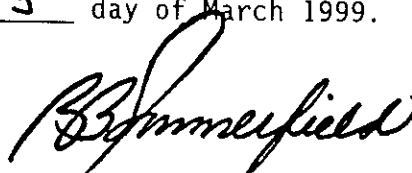
BE IT FURTHER RESOLVED: That the listed engine models comply with the "Exhaust Emission Standards and Test Procedures--Heavy-Duty Off-Road Diesel Cycle Engines" (Title 13, California Code of Regulations, Section 2423) for the aforementioned model year.

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 3<sup>rd</sup> day of March 1999.



R. B. Summerfield, Chief  
Mobile Source Operations Division

List of emission related components

Engine type	Displacement	Engine code	HP	Nominal power ±5%	Nominal speed ±50rpm	Mean effective pressure at nominal power	Injection rate at nominal power ±6mm³	Peak torque ±5%	Mean effective pressure at peak torque	Injection rate at peak torque ±6mm³	Speed at nom. torque ± 100rpm	Low idle (+300 rpm, dep. on engine applic.)	High idle (+300 rpm, dep. on engine applic.)	Fuel injection pump	Fuel injection nozzle	Injection timing ±1°	Speed governor	Smoke limiter, part of speed governor - 10mm²	Turbocharger
	cm³			kW	rpm	bar	mm³/stroke	Nm	bar	mm³/stroke	rpm	rpm	rpm	BOSCH TYPE	BOSCH TYPE	*bl/c	BOSCH TYPE	mm³/stroke-rpm	Designation
BF8M1015C	15874	C420	563	420	2100	15.12	370	2674	21.17		1300	550	2180	PE 8P 120A 320 LS 7906	DLLA 168 P 426	15	RQV300-1050PA1325	165-800	S2B164M
BF8M1015C	15874	C400	536	400	2100	14.40	350	2547	20.17		1300	550	2180	PE 8P 120A 320 LS 7906	DLLA 168 P 426	15	RQV300-1050PA1325	165-800	S2B164M
BF8M1015C	15874	C385	516	385	2100	13.86	330	2451	19.41		1300	550	2180	PE 8P 120A 320 LS 7906	DLLA 168 P 426	15	RQV300-1050PA1325	165-800	S2B164M
BF8M1015C	15874	C381	511	381	2100	13.72	330	2426	19.21		1300	550	2180	PE 8P 120A 320 LS 7906	DLLA 168 P 426	15	RQV300-1050PA1325	165-800	S2B164M
BF8M1015C	15874	C364	488	364	2100	13.10	315	2317	18.35		1300	550	2180	PE 8P 120A 320 LS 7906	DLLA 168 P 426	15	RQV300-1050PA1325	165-800	S2B164M
BF8M1015C	15874	C348	466	348	2100	12.53	300	2216	17.54		1300	550	2180	PE 8P 120A 320 LS 7906	DLLA 168 P 426	15	RQV300-1050PA1325	165-800	S2B164M
BF8M1015C	15874	C420/1	563	420	2000	15.88	370	2700	21.38		1300	550	2080	PE 8P 120A 320 LS 7906	DLLA 168 P 426	15	RQV300-1000 PAV	165-800	S2B164M
BF8M1015C	15874	C400/1	536	400	2000	15.12	350	2674	21.17		1300	550	2080	PE 8P 120A 320 LS 7906	DLLA 168 P 426	15	RQV300-1000 PAV	165-800	S2B164M
BF8M1015C	15874	C381/1	511	381	2000	14.40	330	2547	20.17		1300	550	2080	PE 8P 120A 320 LS 7906	DLLA 168 P 426	15	RQV300-1000 PAV	165-800	S2B164M
BF8M1015C	15874	C370	496	370	2000	13.99	321	2473	19.59		1300	550	2080	PE 8P 120A 320 LS 7906	DLLA 168 P 426	15	RQV300-1000 PAV	165-800	S2B164M
BF8M1015C	15874	C364/1	488	364	2000	13.76	315	2433	19.27		1300	550	2080	PE 8P 120A 320 LS 7906	DLLA 168 P 426	15	RQV300-1000 PAV	165-800	S2B164M
BF8M1015C	15874	C348/1	466	348	2000	13.15	300	2326	18.42		1300	550	2080	PE 8P 120A 320 LS 7906	DLLA 168 P 426	15	RQV300-1000 PAV	165-800	S2B164M
BF8M1015C	15874	C420/2	563	420	1900	16.71	370	2700	21.38		1300	550	1970	PE 8P 120A 320 LS 7906	DLLA 168 P 426	15	RQV300-950 PAV	165-800	S2B160L
BF8M1015C	15874	C415	556	415	1900	16.51	367	2700	21.38		1300	550	1970	PE 8P 120A 320 LS 7906	DLLA 168 P 426	15	RQV300-950 PAV	165-800	S2B160L
BF8M1015C	15874	C400/2	536	400	1900	15.91	350	2700	21.38		1300	550	1970	PE 8P 120A 320 LS 7906	DLLA 168 P 426	15	RQV300-950 PAV	165-800	S2B160L
BF8M1015C	15874	C381/2	511	381	1900	15.16	336	2585	20.47		1300	550	1970	PE 8P 120A 320 LS 7906	DLLA 168 P 426	15	RQV300-950 PAV	165-800	S2B160L
BF8M1015C	15874	C364/2	488	364	1900	14.48	320	2470	19.56		1300	550	1970	PE 8P 120A 320 LS 7906	DLLA 168 P 426	15	RQV300-950 PAV	165-800	S2B160L
BF8M1015C	15874	C348/2	466	348	1900	13.85	303	2361	18.70		1300	550	1970	PE 8P 120A 320 LS 7906	DLLA 168 P 426	15	RQV300-950 PAV	165-800	S2B160L
BF8M1015C	15874	C400/3	536	400	1800	16.80	360	2700	21.38		1300	550	1970	PE 8P 120A 320 LS 7906	DLLA 168 P 426	15	RQV300-900 PAV	165-800	S2B160L
BF8M1015C	15874	C380	509	380	1800	15.96	340	2700	21.38		1300	550	1970	PE 8P 120A 320 LS 7906	DLLA 168 P 426	15	RQV300-900 PAV	165-800	S2B160L
BF8M1015C	15874	C362	485	362	1800	15.20	325	2593	20.53		1300	550	1870	PE 8P 120A 320 LS 7906	DLLA 168 P 426	15	RQV300-900 PAV	165-800	S2B160L
BF8M1015C	15874	C345	462	345	1800	14.49	310	2471	19.57		1300	550	1870	PE 8P 120A 320 LS 7906	DLLA 168 P 426	15	RQV300-900 PAV	165-800	S2B160L
BF8M1015C	15874	C330	442	330	1800	13.86	297	2364	18.72		1300	550	1870	PE 8P 120A 320 LS 7906	DLLA 168 P 426	15	RQV300-900 PAV	165-800	S2B160L
BF8M1015C	15874	D420	563	420	2100	15.12	370	n.a.	n.a.		n.a.	n.a.	n.a.	PE 8P 120A 320 LS 7906	DLLA 168 P 426	15	RQV300-1050PA1325	n.a.	S2B160L
BF8M1015C	15874	D454	608	454	1800	19.07	410	n.a.	n.a.		n.a.	n.a.	n.a.	PE 8P 120A 320 LS 7906	DLLA 168 P 426	15	RQV300-1050PA1325	n.a.	S2B164M
BF8M1015C	15874	D413	553	413	1800	17.34	374	n.a.	n.a.		n.a.	n.a.	n.a.	PE 8P 120A 320 LS 7906	DLLA 168 P 426	15	RQV300-900 PAV	n.a.	S2B164M
BF8M1015C	15874	D362	485	362	1800	15.20	325	n.a.	n.a.		n.a.	n.a.	n.a.	PE 8P 120A 320 LS 7906	DLLA 168 P 426	15	RQV300-900 PAV	n.a.	S2B164M
BF6M1015C	11906	C261/3	350	261	2300	11.44	290	1517	16.02		1300	550	2400	PE 6P 120A 320 LS 7904	DLLA 168 P 426	15	RQV300-900 PAV	n.a.	S2B164M
BF6M1015C	11906	C300	402	300	2100	14.40	335	1910	20.17		1300	550	2180	PE 6P 120A 320 LS 7904	DLLA 168 P 426	15	RQV300-1050PAVK	165-800	S3B152H
BF6M1015C	11906	C286	383	286	2100	13.73	322	1821	19.22		1300	550	2180	PE 6P 120A 320 LS 7904	DLLA 168 P 426	15	RQV300-1050PA1325	165-800	S3B152H
BF6M1015C	11906	C273	366	273	2100	13.10	309	1738	18.35		1300	550	2180	PE 6P 120A 320 LS 7904	DLLA 168 P 426	15	RQV300-1050PA1325	165-800	S3B152H
BF6M1015C	11906	C261	350	261	2100	12.53	298	1662	17.54		1300	550	2180	PE 6P 120A 320 LS 7904	DLLA 168 P 426	15	RQV300-1050PA1325	165-800	S3B152H
BF6M1015C	11906	C300/1	402	300	2000	15.12	340	2006	21.17		1300	550	2080	PE 6P 120A 320 LS 7904	DLLA 168 P 426	15	RQV300-1000 PAV	165-800	S3B152H

List of emission related components

XDZXL15.9002

Engine type	Displacement	Engine code	Nominal power ±5%	Nominal power ±5%	Nominal speed ±50rpm	Mean effective pressure at nominal power	Injection rate at nominal power ±6mm³	Peak torque ±5%	Mean effective pressure at peak torque	Injection rate at peak torque ±6mm³	Speed at nom. torque ± 100rpm	Low idle (+300 rpm, dep. on engine applic.)	High idle (+300 rpm, dep. on engine applic.)	Fuel injection pump	Fuel injection nozzle	Injection timing ±1°	Speed governor	Smoke limiter, part of speed governor - 10mm³	Turbocharger
	cm³		HP	kW	rpm	bar	mm³/stroke	Nm	bar	mm³/stroke	rpm	rpm	rpm	BOSCH TYPE	BOSCH TYPE	*bl/dc	BOSCH TYPE	mm³/stroke -rpm	Designation
BF6M1015C	11906	C286/1	383	286	2000	14.41	328	1912	20.19		1300	550	2080	PE 6P 120A 320 LS 7904	DLA 168 P 426	15	RQV300-1000 PAV	165-800	S3B152H
BF6M1015C	11906	C273/1	366	273	2000	13.76	314	1825	19.27		1300	550	2080	PE 6P 120A 320 LS 7904	DLA 168 P 426	15	RQV300-1000 PAV	165-800	S3B152H
BF6M1015C	11906	C261/1	350	261	2000	13.15	302	1745	18.42		1300	550	2080	PE 6P 120A 320 LS 7904	DLA 168 P 426	15	RQV300-1000 PAV	165-800	S3B152H
BF6M1015C	11906	C300/2	402	300	1900	15.91	350	2025	21.38		1300	550	1970	PE 6P 120A 320 LS 7904	DLA 168 P 426	15	RQV300-950 PAV	165-800	S3B152G
BF6M1015C	11906	C286/2	383	286	1900	15.17	335	1941	20.49		1300	550	1970	PE 6P 120A 320 LS 7904	DLA 168 P 426	15	RQV300-950 PAV	165-800	S3B152G
BF6M1015C	11906	C273/2	366	273	1900	14.48	324	1852	19.56		1300	550	1970	PE 6P 120A 320 LS 7904	DLA 168 P 426	15	RQV300-950 PAV	165-800	S3B152G
BF6M1015C	11906	C261/2	350	261	1900	13.85	312	1771	18.70		1300	550	1970	PE 6P 120A 320 LS 7904	DLA 168 P 426	15	RQV300-950 PAV	165-800	S3B152G
BF6M1015C	11906	C285	382	285	1800	15.96	340	2025	21.38		1300	550	1870	PE 6P 120A 320 LS 7904	DLA 168 P 426	15	RQV300-900 PAV	165-800	S3B152G
BF6M1015C	11906	C271	363	271	1800	15.17	325	1941	20.49		1300	550	1870	PE 6P 120A 320 LS 7904	DLA 168 P 426	15	RQV300-900 PAV	165-800	S3B152G
BF6M1015C	11906	C259	347	259	1800	14.50	315	1855	19.59		1300	550	1870	PE 6P 120A 320 LS 7904	DLA 168 P 426	15	RQV300-900 PAV	165-800	S3B152G
BF6M1015C	11906	C248	332	248	1800	13.89	303	1776	18.75		1300	550	1870	PE 6P 120A 320 LS 7904	DLA 168 P 426	15	RQV300-900 PAV	165-800	S3B152G
BF6M1015C	11906	D300	402	300	2100	14.40	335	n.a.	n.a.		n.a.	n.a.	n.a.	PE 6P 120A 320 LS 7904	DLA 168 P 426	15	RQV300-900 PAV	165-800	S3B152G
BF6M1015C	11906	D341	457	341	1800	19.09	400	n.a.	n.a.		n.a.	n.a.	n.a.	PE 6P 120A 320 LS 7904	DLA 168 P 426	15	RQV300-1050 PA1325	n.a.	S3B152H
BF6M1015C	11906	D310	415	310	1800	17.36	365	n.a.	n.a.		n.a.	n.a.	n.a.	PE 6P 120A 320 LS 7904	DLA 168 P 426	15	RQV300-900 PAV	n.a.	S3B152G
BF6M1015C	11906	D271	363	271	1800	15.17	325	n.a.	n.a.		n.a.	n.a.	n.a.	PE 6P 120A 320 LS 7904	DLA 168 P 426	15	RQV300-900 PAV	n.a.	S3B152G

(U-R-13-20)