

State of California  
AIR RESOURCES BOARD

EXECUTIVE ORDER A-13-51  
Relating to Certification of New Heavy-Duty Motor Vehicle Engines

CATERPILLAR INC.

Pursuant to the authority vested in the Air Resources Board by Sections 43100, 43102 and 43103 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-45-3;

IT IS ORDERED AND RESOLVED: That the following Caterpillar Inc. 1989 model-year diesel engines are certified for use in motor vehicles with a manufacturer's gross vehicle weight rating (GVWR) over 8,500 pounds.

<u>Engine Family</u>	<u>Displacement Liters (Cubic Inches)</u>	<u>Exhaust Emission Control Systems (Special Features)</u>
KCT0636DAA7	10.4 (636)	(Diesel Injection - Direct)
KCT0636EPB1	10.4 (636)	Smoke Puff Limiter (Diesel Injection - Direct) (Turbocharger)
KCT0636FPA3	10.4 (636)	Smoke Puff Limiter (Diesel Injection - Direct) (Intercooler) (Turbocharger)
KCT0638FPA0	10.5 (638)	Smoke Puff Limiter (Diesel Injection - Prechamber) (Intercooler) (Turbocharger)
KCT0638FPC2	10.5 (638)	Smoke Puff Limiter (Diesel Injection - Direct) (Intercooler) (Turbocharger)
KCT0893FPB1	14.6 (893)	Smoke Puff Limiter (Diesel Injection - Direct) (Intercooler) (Turbocharger)
KCT0893FZC6	14.6 (893)	Electronic Injection Control (Diesel Injection - Direct) (Intercooler) (Turbocharger)

Engine models and codes are listed on attachments.

The following are the certification emission standards for these engine families:

<u>Hydrocarbons</u> <u>gm/bhp-hr</u>	<u>Carbon</u> <u>Monoxide</u> <u>gm/bhp-hr</u>	<u>Nitrogen Oxides</u> <u>gm/bhp-hr</u>	<u>Particulates</u> <u>gm/bhp-hr</u>
1.3	15.5	6.0	0.60

The following are the certification emission values for these engine families.

<u>Engine Family</u>	<u>Hydrocarbons</u> <u>gm/bhp-hr</u>	<u>Carbon</u> <u>Monoxide</u> <u>gm/bhp-hr</u>	<u>Nitrogen Oxides</u> <u>gm/bhp-hr</u>	<u>Particulates</u> <u>gm/bhp-hr</u>
KCT0636DAA7	1.2	2.6	6.0	0.60
KCT0636EPB1	1.2	2.5	5.4	0.60
KCT0636FPA3	1.2	2.7	4.4	0.60
KCT0638FPA0	1.1	3.1	5.5	0.59
KCT0638FPC2	1.1	4.5	5.8	0.46
KCT0893FPB1	0.4	1.8	6.0	0.51
KCT0893FZC6	0.3	2.0	5.4	0.53

BE IT FURTHER RESOLVED: That the Executive Officer has been provided all material required to demonstrate certification compliance with the Board's emission control system warranty regulations (Title 13, California Administrative Code, Section 2036).

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

The Bureau of Automotive Repair will be notified by copy of this order and attachments.

Executed at El Monte, California this 18<sup>th</sup> day of September, 1988.

  
K. D. Drachand, Chief  
Mobile Source Division

1989 AIR RESOURCES BOARD SUPPLEMENTAL DATA SHEET  
HEAVY-DUTY DIESEL ENGINESMHDDManufacturer Caterpillar Inc. Engine Family KCT0636DAA7 Code BLiter (CID) 10.4 (636) Engine Type V8Emission Control Sys. and (Special Features) EM (DiD)

Engine Model	Fuel Injection Pump Manufacturer Part Number	Injector Manufacturer Part Number	Maximum Rated hp at rpm	Fuel Rate mm <sup>3</sup> /stroke (lbs/hr)	Maximum Rated Torque at RPM	Fuel Rate mm <sup>3</sup> /stroke (lbs/hr)
3208 DINA Code B	*Caterpillar 9Y0485	Caterpillar 7W7024	165 @ 2200	63 (62.7)	470 @ 1400	72 (45.1)

\*Basic Fuel Pump 7C8929 (Reference Page No. 16.05.01-0636DAA-1).

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HEAVY-DUTY DIESEL ENGINESMHDD

Manufacturer Caterpillar Inc. Engine Family KCT0636EPB1 Codes A and B  
 Liter (CID) 10.4 (636) Engine Type V8  
 Emission Control Sys. and (Special Features) EM, SPL (DID, TC)

Engine Model	Fuel Injection Pump Manufacturer Part Number	Injector Manufacturer Part Number	Maximum Rated hp at rpm	Fuel Rate mm <sup>3</sup> /stroke (lbs/hr)	Maximum Rated Torque at RPM	Fuel Rate mm <sup>3</sup> /stroke (lbs/hr)
3208 DIT Code A	*Caterpillar 7C8970 or 9Y4547	Caterpillar 4W7016	225 @ 2600	75 (87.5)	600 @ 1400	87 (54.6)
			210 @ 2600	70 (81.5)	560 @ 1400	80 (50.2)
Code B	*Caterpillar 9Y0592	Caterpillar 4W7016	240 @ 2200	90 (88.8)	680 @ 1500	105 (70.7)
			225 @ 2200	84 (82.6)	635 @ 1500	94 (63.2)
			215 @ 2200	79 (78.4)	600 @ 1400	88 (55.3)
			175 @ 2200	65 (64.2)	500 @ 1400	72 (45.2)
			240 @ 2100	93 (87.6)	700 @ 1500	108 (72.8)
			230 @ 2100	90 (84.5)	664 @ 1500	99 (66.5)
			200 @ 2000	79 (70.9)	620 @ 1400	92 (57.6)

\*Basic Fuel Pump 7C8930 (Reference Page No. 16.05.01-0636EPB-1).

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HEAVY-DUTY DIESEL ENGINESMHDD

Manufacturer Caterpillar Inc. Engine Family KCT0636FPA3 Codes A and B  
 Liter (CID) 10.4 (636) Engine Type V8  
 Emission Control Sys. and (Special Features) EM, SPL (IC, TC, DID)

Engine Model	Fuel Injection Pump Manufacturer Part Number	Injector Manufacturer Part Number	Maximum Rated hp at rpm	Fuel Rate mm <sup>3</sup> /stroke (lbs/hr)	Maximum Rated Torque at RPM	Fuel Rate mm <sup>3</sup> /stroke (lbs/hr)
3208 ATAAC Code A	*Caterpillar 7C8970	Caterpillar 4W7016	300 @ 2800	95 (120.0)	743 @ 1600	110 (79.1)
			275 @ 2600	87 (101.6)	700 @ 1400	106 (66.4)
Code B	*Caterpillar 7C8968	Caterpillar 4W7016	250 @ 2200	90 ( 88.7)	715 @ 1500	108 (72.4)
			225 @ 2200	80 ( 79.0)	680 @ 1400	103 (64.4)
			225 @ 2200	80 ( 79.0)	630 @ 1400	93 (58.5)

\*Basic Fuel Pump 7C8930 (Reference Page No. 16.05.01-0636FPA-1).

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HEAVY-DUTY DIESEL ENGINESHHDD

Manufacturer Caterpillar Inc. Engine Family KCT0638FPA0  
 Liter (CID) 10.5 (638) Engine Type 16  
 Emission Control Sys. and (Special Features) EM, SPL (DIP, TC, IC)

Engine Model	Fuel Injection Pump Manufacturer Part Number	Injector Manufacturer Part Number	Maximum Rated hp at rpm	Fuel Rate mm <sup>3</sup> /stroke (lbs/hr)	Maximum Rated Torque at RPM	Fuel Rate mm <sup>3</sup> /stroke (lbs/hr)
3306 PCTA	*Caterpillar 7W0275 or 7W0276	Caterpillar 9N2845	270 @ 2000	150 (111.0)	775 @ 1400	174 (82)
			270 @ 2100	152 (107.6)	775 @ 1400	174 (82)
			245 @ 2200	136 (100.7)	810 @ 1400	181 (85.1)
			245 @ 2100	138 (97.6)	810 @ 1400	181 (85.1)

\*Basic Fuel Pump 7W0279 (Ref. 16.05.01-0638FPA-1)

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HEAVY-DUTY DIESEL ENGINESHHDD

Manufacturer Caterpillar Inc. Engine Family KCT0638FPC2 Code A  
 Liter (CID) 10.5 (638) Engine Type 16  
 Emission Control Sys. and (Special Features) EM, SPL (DID, TC, IC)

Engine Model	Fuel Injection Pump Manufacturer Part Number	Injector Manufacturer Part Number	Maximum Rated hp at rpm	Fuel Rate mm <sup>3</sup> /stroke (lbs/hr)	Maximum Rated Torque at RPM	Fuel Rate mm <sup>3</sup> /stroke (lbs/hr)
3306B ATAAC	*Caterpillar 7C7606 or 7C1917	Caterpillar 8N7003	300 @ 2000	162 (109.2)	1050 @ 1350	208 (94.6)
			285 @ 2000	153 (102.8)	1050 @ 1350	208 (94.6)
			300 @ 1900	161 (103.2)	1050 @ 1350	208 (94.6)
			285 @ 1900	153 (98.0)	1050 @ 1350	208 (94.6)
			300 @ 1800	169 (102.3)	1050 @ 1350	208 (94.6)
			285 @ 1800	161 (97.5)	1050 @ 1350	208 (94.6)
			300 @ 2000	162 (109.2)	950 @ 1350	186 (84.7)
			285 @ 2000	153 (102.8)	950 @ 1350	186 (84.7)
			300 @ 1900	161 (103.2)	950 @ 1350	186 (84.7)
			285 @ 1900	153 (98.0)	950 @ 1350	186 (84.7)
			300 @ 1800	169 (102.3)	950 @ 1350	186 (84.7)
			285 @ 1800	161 (97.5)	950 @ 1350	186 (84.7)

\*Basic Fuel Pump 7W5928 (Ref. 16.05.01-0638FPC-1)

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1989 AIR RESOURCES BOARD SUPPLEMENTAL DATA SHEET  
HEAVY-DUTY DIESEL ENGINESHHDD

Manufacturer Caterpillar Inc. Engine Family KCT0893FPB1 Codes C,D,E,&F  
 Liter (CID) 14.6 (893) Engine Type 16  
 Emission Control Sys. and (Special Features) EM, SPL (DID, TC, IC)

Engine Model	Fuel Injection Pump Manufacturer Part Number	Injector Manufacturer Part Number	Maximum Rated hp at rpm	Fuel Rate mm <sup>3</sup> /stroke (lbs/hr)	Maximum Rated Torque at RPM	Fuel Rate mm <sup>3</sup> /stroke (lbs/hr)
3406B ATAAC						
Code C	*Caterpillar 7C6605	Caterpillar 7W7026	400 @ 2100 400 @ 2100 400 @ 1900 400 @ 1800 370 @ 1800	194 (136.9) 194 (136.9) 210 (134.2) 218 (132.3) 202 (122.1)	1340 @ 1200 1395 @ 1200 1395 @ 1200 1395 @ 1200 1395 @ 1200	253 (102.1) 264 (106.4) 264 (106.4) 264 (106.4) 264 (106.4)
Code D	*Caterpillar 7C6649	Caterpillar 7W7032	310 @ 1800 285 @ 1800 285 @ 1600	173 (104.7) 160 (96.8) 177 (95.5)	1150 @ 1100 1150 @ 1100 1150 @ 1100	241 (81.0) 241 (81.0) 241 (81.0)
Code E	*Caterpillar 7C6651	Caterpillar 7W7037	350 @ 2100 350 @ 2100 350 @ 1800 350 @ 1800 325 @ 2100	174 (122.8) 174 (122.8) 194 (117.5) 194 (117.5) 162 (114.5)	1350 @ 1100 1200 @ 1200 1350 @ 1100 1200 @ 1200 1250 @ 1200	266 (98.5) 232 (93.7) 266 (98.5) 232 (93.7) 242 (97.8)
Code F	*Caterpillar 7C6650	Caterpillar 7W7026	425 @ 2100 425 @ 1900 425 @ 1800	204 (144.2) 222 (142.0) 232 (140.1)	1450 @ 1200 1450 @ 1200 1450 @ 1200	277 (111.7) 277 (111.7) 277 (111.7)

\*Basic Fuel Pump 2W3413 (Ref. 16.05.01-0893FPB-1 and 2)

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1989 AIR RESOURCES BOARD SUPPLEMENTAL DATA SHEET  
HEAVY-DUTY DIESEL ENGINESHHDD

Manufacturer Caterpillar Inc. Engine Family KCT0893FZC6 Codes E, F, & G  
 Liter (CID) 14.6 (893) Engine Type 16  
 Emission Control Sys. and (Special Features) EM (DID, TC, IC, OBD) EIC

Engine Model	Fuel Injection Pump Manufacturer Part Number	Injector Manufacturer Part Number	Maximum Rated hp at rpm	Fuel Rate mm <sup>3</sup> /stroke (lbs/hr)	Maximum Rated Torque at RPM	Fuel Rate mm <sup>3</sup> /stroke (lbs/hr)
3406B PEEC/ATAAC						
Code E	*Caterpillar 4W2830	Caterpillar 7W7032	310 @ 1900 310 @ 1800 310 @ 1800 310 @ 1700 285 @ 1800 285 @ 1700 285 @ 1600	162 (103.4) 169 (102.2) 169 (102.2) 177 (101.2) 157 (94.8) 163 (93.5) 171 (92.3)	1150 @ 1100 1350 @ 1100 1150 @ 1100 1150 @ 1100 1150 @ 1100 1150 @ 1100 1150 @ 1100	213 (78.7) 251 (93.1) 213 (78.7) 213 (78.7) 213 (78.7) 213 (78.7) 213 (78.7)
Code F	*Caterpillar 4W2830	Caterpillar 7W7026	400 @ 2100 400 @ 2100 400 @ 2000 400 @ 1900 400 @ 1800 370 @ 1800 370 @ 1700 370 @ 1600	193 (136.5) 193 (136.5) 200 (134.8) 208 (133.1) 219 (132.9) 202 (122.4) 214 (122.1) 226 (121.8)	1340 @ 1200 1395 @ 1200 1395 @ 1200 1395 @ 1200 1395 @ 1200 1395 @ 1200 1395 @ 1200 1395 @ 1200	251 (101.4) 262 (105.7) 262 (105.7) 262 (105.7) 262 (105.7) 262 (105.7) 262 (105.7) 262 (105.7)
Code G	*Caterpillar 4W2830	Caterpillar 7W7026	425 @ 2100 425 @ 2000 425 @ 1900 425 @ 1800	206 (145.2) 212 (142.8) 221 (141.4) 232 (140.5)	1450 @ 1200 1450 @ 1200 1450 @ 1200 1450 @ 1200	274 (110.8) 274 (110.8) 274 (110.8) 274 (110.8)

\*Basic Fuel Pump 2W3413 (Reference Page No. 16.05.01-0893FZC-2).

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