State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER A-13-54
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. 1990 model-year diesel engines are certified for use in motor vehicles with a manufacturer's gross vehicle weight rating (GVWR) over 8,500 pounds:

Engine Family	Displacement Liters	(Cubic Inches)	Exhaust Emission Control Systems
LCT0629FZD5	10.3	(629)	Electronic Injection Control Charge Air Cooler Turbocharger On-Board Diagnostic System
LCT0636DAA6	10.4	(636)	Engine Modification
LCT0636EPB0	10.4	(636)	Smoke Puff Limiter Turbocharger
LCT0636EPC1	10.4	(636)	Smoke Puff Limiter Turbocharger
LCT0636FPA2	10.4	(636)	Smoke Puff Limiter Charge Air Cooler Turbocharger
LCT0638FPAX	10.5	(638)	Smoke Puff Limiter Charge Air Cooler Turbocharger
LCT0638FPC1	10.5	(638)	Smoke Puff Limiter Charge Air Cooler Turbocharger
[illegible]	[illegible]	[illegible]	Smoke Puff Limiter Charge Air Cooler Turbocharger
LCT0893FZC5	14.6	(893)	Charge Air Cooler Turbocharger On-Board Diagnostic System / ECM

Engine models and codes are listed on attachments.

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

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

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

Engine Family	Hydrocarbons gm/bhp-hr	Carbon Monoxide gm/bhp-hr	Nitrogen Oxides gm/bhp-hr	Particulates gm/bhp-hr
LCT0629FZD5	0.3	4.0	5.9	0.37
LCT0636DAA6	1.2	2.6	6.0	0.60
LCT0636EPB0	0.8	1.6	5.4	0.48
LCT0636EPC1	0.8	2.2	5.4	0.43
LCT0636FPA2	1.2	2.7	4.4	0.60
LCT0638FPAX	1.1	3.1	5.5	0.59
LCT0638FPC1	1.0	4.5	5.8	0.46
LCT0893FPB0	0.4	1.8	6.0	0.51
LCT0893FZC5	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 (Health and Safety Code Section 43205.5 and Title 13, California Code of Regulations, 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 4th day of October, 1989.

K. D. Drachand, Chief
Mobile Source Division

1990 AIR RESOURCES BOARD SUPPLEMENTAL DATA SHEET

HEAVY-DUTY DIESEL ENGINES

MHDD

Manufacturer Caterpillar Inc. Engine Family LCT0636EPC1

Liter (CID) 10.4L (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^3/stroke (lbs/hr)	Maximum Rated Torque at rpm	Fuel Rate mm^3/stroke (lbs/hr)
3208T Code A	Caterpillar 7E9889	Caterpillar 4W7016	250 @ 2600 225 @ 2600	84 (97.9) 77 (89.3)	640 @ 1500 600 @ 1400	99 (66.4) 88 (55.4)
Code B	Caterpillar 7E9889	Caterpillar 4W7016	210 @ 2600	71 (83.3)	560 @ 1400	81 (51.1)

*Basic Fuel Pump 7C8927 (Reference Page No. 16.05.01-0636EPC-1.).

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HEAVY-DUTY DIESEL ENGINES

HHDD

Manufacturer Caterpillar Inc. Engine Family LCT0629FZD5

Liter (CID) 10.3L (629) Engine Type I6

Emission Control Sys. and (Special Features) EM, EIC (IC,OBD,TC,DID)

Engine Model	*Fuel Injection Pump Manufacturer Part Number	Injector Manufacturer Part Number	Maximum Rated hp at rpm	Fuel Rate mm^3/stroke (lbs/hr)	Maximum Rated Torque at rpm	Fuel Rate mm^3/stroke (lbs/hr)
3176 Code A	Caterpillar 7E6110	Caterpillar 4P2710	250 @ 2100	116 (81.7)	975 @ 1300	174 (75.9)
			250 @ 2100	116 (81.7)	720 @ 1300	128 (56.0)
			250 @ 2000	120 (80.7)	975 @ 1300	174 (75.9)
			250 @ 1900	125 (80.0)	975 @ 1100	179 (66.1)
			250 @ 1800	131 (79.2)	975 @ 1100	179 (66.1)
			250 @ 1800	131 (79.2)	860 @ 1100	158 (58.3)
3176 Code B	Caterpillar 7E6110	Caterpillar 4P2710	275 @ 2100	126 (89.1)	1050 @ 1300	185 (81.1)
			275 @ 2100	126 (89.1)	975 @ 1300	172 (75.3)
			275 @ 2000	131 (88.1)	1050 @ 1300	185 (81.1)
			275 @ 1900	137 (87.5)	1050 @ 1100	193 (71.3)
			275 @ 1800	143 (86.8)	1050 @ 1100	193 (71.3)
			275 @ 1800	143 (86.8)	950 @ 1100	174 (64.3)
			275 @ 1700	151 (86.1)	1050 @ 1000	179 (66.3)
3176 Code C	Caterpillar 7E6120	Caterpillar 4P2720	300 @ 2100	135 (95.7)	1150 @ 1300	218 (95.4)
			300 @ 2100	135 (95.7)	975 @ 1300	184 (80.4)
			300 @ 2000	141 (95.0)	1150 @ 1300	218 (95.4)
			300 @ 1900	148 (94.5)	1150 @ 1100	222 (82.0)
			300 @ 1800	156 (94.2)	1150 @ 1100	222 (82.0)
			300 @ 1800	148 (89.3)	1150 @ 1100	222 (82.0)
			300 @ 1700	156 (89.1)	1150 @ 1100	222 (82.0)
3176 Code D	Caterpillar 7E6120	Caterpillar 4P2720	325 @ 2100	146 (103.0)	1225 @ 1300	225 (98.4)
			325 @ 2000	152 (102.5)	1225 @ 1300	225 (98.4)
			325 @ 1900	160 (102.0)	1225 @ 1200	229 (92.4)
			310 @ 1800	160 (97.0)	1225 @ 1200	229 (92.4)
3176 Code E	Caterpillar 7E6120	Caterpillar 4P2720	350 @ 1900	178 (113.5)	1250 @ 1200	231 (93.1)

*Basic Fuel Pump (Injector Gp.) 9Y9923 (Reference Page No. 16.05.01-0629FZD-1).

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HEAVY-DUTY DIESEL ENGINES

Manufacturer Caterpillar Inc. Engine Family LCT0636DAA6

Liter (CID) 10.4L (636) Engine Type V8

Emission Control Sys. and (Special Features) EM

Engine Model	*Fuel Injection Pump Manufacturer Part Number	Injector Manufacturer Part Number	Maximum Rated hp at rpm	Fuel Rate mm^3/stroke (lbs/hr)	Maximum Rated Torque at rpm	Fuel Rate mm^3/stroke (lbs/hr)
3208 DINA	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 ENGINES

Manufacturer Caterpillar Inc. Engine Family LCT0636EPB0

Liter (CID) 10.4L (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^3/stroke (lbs/hr)	Maximum Rated Torque at rpm	Fuel Rate mm^3/stroke (lbs/hr)
3208T Code A	Caterpillar 9Y0592 or 7C8968	Caterpillar 4W7016	240 @ 2200	90 (88.8)	680 @ 1500	105 (70.7)
			225 @ 2200	84 (82.6)	635 @ 1500	94 (63.2)
			240 @ 2100	93 (87.6)	700 @ 1500	108 (72.8)
			230 @ 2100	90 (84.5)	664 @ 1500	99 (66.5)
Code B	Caterpillar 9Y0592	Caterpillar 4W7016	215 @ 2200	79 (78.4)	600 @ 1400	88 (55.3)
			200 @ 2000	79 (70.9)	620 @ 1400	92 (57.6)
Code C	Caterpillar 9Y0592	Caterpillar 4W7016	175 @ 2200	65 (64.2)	500 @ 1400	72 (45.2)

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

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HEAVY-DUTY DIESEL ENGINES

Manufacturer Caterpillar Inc. Engine Family LCT0636FPA2

Liter (CID) 10.4L (636) Engine Type V8

Emission Control Sys. and (Special Features) SPL,CAC,TC

Engine Model	*Fuel Injection Pump Manufacturer Part Number	Injector Manufacturer Part Number	Maximum Rated hp at rpm	Fuel Rate mm^3/stroke (lbs/hr)	Maximum Rated Torque at rpm	Fuel Rate mm^3/stroke (lbs/hr)
3208 ATAAC Code A	Caterpillar 9Y4838	Caterpillar 4W7016	300 @ 2800 275 @ 2600	95 (120.0) 87 (101.6)	743 @ 1600 700 @ 1400	110 (79.1) 106 (66.4)
3208 ATAAC Code B	Caterpillar 7C8970	Caterpillar 4W7016	250 @ 2200 225 @ 2200 225 @ 2200	90 (88.7) 80 (79.0) 90 (79.0)	715 @ 1500 680 @ 1400 630 @ 1400	108 (72.4) 103 (64.4) 93 (58.5)

*Basic Fuel Pump 4P4259 (Reference Page No. 16.05.01-0636FPA-1.).

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HEAVY-DUTY DIESEL ENGINES

Manufacturer Caterpillar Inc. Engine Family LCT0638FPAX

Liter (CID) 10.5L (638) Engine Type 16

Emission Control Sys. and (Special Features) SPL, CAC, TC,

Engine Model	*Fuel Injection Pump Manufacturer Part Number	Injector Manufacturer Part Number	Maximum Rated hp at rpm	Fuel Rate mm^3/stroke (lbs/hr)	Maximum Rated Torque at rpm	Fuel Rate mm^3/stroke (lbs/hr)
3306PCTA Code A	Caterpillar 7W0275 or 7W0276	Caterpillar 9N2845	270 @ 2000 270 @ 2100 245 @ 2200 245 @ 2100	150 (111.0) 152 (107.6) 136 (100.7) 138 (97.6)	775 @ 1400 775 @ 1400 810 @ 1400 810 @ 1400	174 (82.0) 174 (82.0) 181 (85.1) 181 (85.1)

*Basic Fuel Pump 7W0279 (Reference Page No. 16.05.01-0638FPA-1.).

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HEAVY-DUTY DIESEL ENGINES

Manufacturer Caterpillar Inc. Engine Family LCT0638FPC1

Liter (CID) 10.5L (638) Engine Type I6

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^3/stroke (lbs/hr)	Maximum Rated Torque at rpm	Fuel Rate mm^3/stroke (lbs/hr)
3306B ATAAC Code A	Caterpillar 7C9350	Caterpillar 7W7038	300 @ 2000 285 @ 2000	163 (109.6) 153 (103.0)	1100 @ 1200 1100 @ 1200	216 (87.2) 216 (87.2)
3306B ATAAC Code B	Caterpillar 7C9349	Caterpillar 7W7038	300 @ 1800 285 @ 1800	178 (107.7) 166 (100.7)	1100 @ 1200 1100 @ 1200	211 (85.0) 211 (85.0)

*Basic Fuel Pump 7W5928 (Reference Page No. 16.05.01-0638FPC-1).

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HEAVY-DUTY DIESEL ENGINES

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Manufacturer Caterpillar Inc. Engine Family LCT0893FPB0

Liter (CID) Engine Type I6

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^3/stroke (lbs/hr)	Maximum Rated Torque at rpm	Fuel Rate mm^3/stroke (lbs/hr)
3406B ATAAC Code A	Caterpillar 7C6649 or 9Y8336 or 4P1669	Caterpillar 7W7032	310 @ 1800	169 (102.6)	1150 @ 1100	218 (80.5)
			310 @ 1700	178 (101.9)	1150 @ 1100	218 (80.5)
			300 @ 1600	183 (98.3)	1150 @ 1100	218 (80.5)
			285 @ 1600	174 (93.7)	1150 @ 1100	241 (81.0)
3406B ATAAC Code B	Caterpillar 7C6651 or 9Y3367 or 9Y3816 or 9Y5333	Caterpillar 7W7032	350 @ 2100	173 (122.3)	1350 @ 1100	257 (95.2)
			325 @ 2100	162 (114.2)	1250 @ 1200	237 (95.6)
			350 @ 1900	184 (117.7)	1350 @ 1100	257 (95.2)
			350 @ 1800	192 (116.4)	1350 @ 1100	257 (95.2)
			350 @ 1600	203 (109.4)	1350 @ 1100	257 (95.2)
3406B ATAAC Code C	Caterpillar 7C6651 or 9Y3367 or 9Y3816 or 9Y5575	Caterpillar 7W7037	350 @ 1800	194 (117.5)	1200 @ 1200	232 (93.7)
3406B ATAAC Code D	Caterpillar 7C6605 or 9Y3292or 9Y5575	Caterpillar 7W7026	400 @ 2100	194 (136.9)	1395 @ 1200	264 (106.4)
			400 @ 1900	210 (134.2)	1395 @ 1200	264 (106.4)
			400 @ 1800	218 (132.3)	1395 @ 1200	264 (106.4)
3406B ATAAC Code E	Caterpillar 7C6650 or 9Y4474 or 7E7942	Caterpillar 7W7026	425 @ 2100	207 (146.0)	1450 @ 1200	285 (115.0)
			425 @ 1900	225 (143.8)	1450 @ 1200	285 (115.0)
			425 @ 1800	234 (141.9)	1450 @ 1200	285 (115.0)
			425 @ 2100	207 (146.0)	1550 @ 1200	305 (123.0)
			425 @ 1900	225 (143.8)	1550 @ 1200	305 (123.0)
			425 @ 1800	234 (141.9)	1550 @ 1200	305 (123.0)

*Basic Fuel Pump 7E6006 (Reference Page No. 16.05.01-0893FPB-1).

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HEAVY-DUTY DIESEL ENGINES

Manufacturer Caterpillar Inc. Engine Family LCT0893FZC5

Liter (CID) 14.6L (893) Engine Type 16

Emission Control Sys. and (Special Features) EM, (DID,TC,IC,ORD)

Engine Model	*Fuel Injection Pump Manufacturer Part Number	Injector Manufacturer Part Number	Maximum Rated hp at rpm	Fuel Rate mm^3/stroke (lbs/hr)	Maximum Rated Torque at rpm	Fuel Rate mm^3/stroke (lbs/hr)
3406B PEEC Code A	Caterpillar 4W2830 or 7E5396	Caterpillar 7W7032	310 @ 1900	162 (103.4)	1150 @ 1100	213 (78.7)
			310 @ 1800	169 (102.2)	1350 @ 1100	251 (93.1)
			310 @ 1800	169 (102.2)	1150 @ 1100	213 (78.7)
			310 @ 1700	177 (101.2)	1150 @ 1100	213 (78.7)
			285 @ 1800	157 (94.8)	1150 @ 1100	213 (78.7)
			285 @ 1700	163 (93.5)	1150 @ 1100	213 (78.7)
			285 @ 1600	171 (92.3)	1150 @ 1100	213 (78.7)
3406B PEEC Code B	Caterpillar 4W2830 or 7E5396	Caterpillar 7W7032	350 @ 2100	168 (119.0)	1350 @ 1100	258 (95.5)
			350 @ 2000	177 (118.9)	1350 @ 1100	258 (95.5)
			350 @ 1900	183 (117.0)	1350 @ 1100	258 (95.5)
			350 @ 1800	190 (115.1)	1350 @ 1100	258 (95.5)
			350 @ 1800	190 (115.1)	1200 @ 1200	223 (90.2)
			330 @ 1800	180 (109.0)	1350 @ 1100	258 (95.5)
			330 @ 1700	189 (108.3)	1350 @ 1100	258 (95.5)
			330 @ 1600	200 (107.9)	1350 @ 1100	258 (95.5)
3406B PEEC Code C	Caterpillar 4W2830 or 7E5396	Caterpillar 7W7026	400 @ 2100	193 (136.5)	1395 @ 1200	262 (105.7)
			400 @ 2100	193 (136.5)	1340 @ 1200	251 (101.4)
			400 @ 2000	200 (134.8)	1395 @ 1200	262 (105.7)
			400 @ 1900	208 (133.1)	1395 @ 1200	262 (105.7)
			400 @ 1800	219 (132.9)	1395 @ 1200	262 (105.7)
			370 @ 1800	202 (122.4)	1395 @ 1200	262 (105.7)
			370 @ 1700	213 (122.1)	1395 @ 1200	262 (105.7)
			370 @ 1600	226 (121.8)	1395 @ 1200	262 (105.7)
3406B PEEC Code D	Caterpillar 4W2830 or 7E5396	Caterpillar 7W7026	425 @ 2100	206 (145.2)	1450 @ 1200	274 (110.8)
			425 @ 2000	212 (142.8)	1450 @ 1200	274 (110.8)
			425 @ 1900	221 (141.4)	1450 @ 1200	274 (110.8)
			425 @ 1800	232 (140.5)	1450 @ 1200	274 (110.8)

*Basic Fuel Pump 7E6006 (Reference Page No. 16.05.01-0893FZC-1).

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