State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER A-13-47
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. 1988 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 Cubic Inches	(Liters)	Exhaust Emission Control Systems (Special Features)
JCT0638FPA1	638	(10.5)	Smoke Puff Limiter (Diesel Injection - Prechamber) (Turbocharger) (Intercooler)
JCT0638FPC3	638	(10.5)	Smoke Puff Limiter (Diesel Injection - Direct) (Turbocharger) (Intercooler)
JCT0893FPB2	893	(14.6)	Smoke Puff Limiter (Diesel Injection - Direct) (Turbocharger) (Intercooler)
JCT0893FZC7	893	(14.6)	Electronic Injection Control (Diesel Injection - Direct) (Turbocharger) (Intercooler)

Engine models and codes are listed on attachments.

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
JCT0638FPA1	1.1	3.1	5.5	0.59
JCT0638FPC3	1.0	4.5	5.8	0.46
JCT0893FPB2	0.4	1.8	6.0	0.51
JCT0893FZC7	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.

Executed at El Monte, California this 22nd day of September, 1987.

K. D. Drachand, Chief
Mobile Source Division

1988 AIR RESOURCES BOARD SUPPLEMENTAL DATA SHEET

Manufacturer Caterpillar Inc. Engine Family JCT0893FPB2 Codes C, D, E, & F

Evaporative Family NA Engine Type 16

Liters (CID) 14.6 (893)

ABBREVIATIONS

Ignition System

CA -Centrifugal Advance
ECU -Electronic Control Unit
EI -Electronic Ignition
ESAC-Electronic Spark Advance Control
VA -Vacuum Advance
VR -Vacuum Retard

Fuel System

CFI, CL, DID, DIP, EFI, MFI
nV-nVenturi Carburetor

Exhaust Emissions Control System

AIP -Air Injection-Pump
AIV -Air Injection-Valve
DBC -Dual Bed Catalyst
EGR -Exhaust Gas Recirculation
EIC -Electronic Injection Control
EM -Engine Modification
OC -Oxidation Catalyst
OS -Oxygen Sensor
HOS -Heated Oxygen Sensor
SPL -Smoke Puff Limiter or Throttle Delay
TOC -Trap Oxidizer, Continual
TOP -Trap Oxidizer, Periodical
TWC -Three-Way Catalyst
WUOC -Warm-Up Oxidation Catalyst
WUTWC-Warm-Up Three-Way Catalyst

Special Features

CCV -Combustion Chamber Valve
CFI -Central Fuel Injection or Throttle Body Injection
DID -Diesel Injection-Direct
DIP -Diesel Injection-Prechamber
EFI -Electronic Fuel Injection
IC -Intercooler or Aftercooler
MFI -Mechanical Fuel Injection
OBD -On-Board Diagnostics
TC -Turbocharger
ATAAC-Air-to-Air Aftercooled
PEEC -Programmable Electronic Engine Control

VEHICLE MODELS:

Engine: Front _____ Mid. _____ Rear _____

Drive: FWD _____ RWD _____ 4WD Full Time _____ 4WD Part Time _____

1988 AIR RESOURCES BOARD SUPPLEMENTAL DATA SHEET
HEAVY-DUTY DIESEL ENGINES

Manufacturer Caterpillar Inc. Engine Family JCT0638FPA1

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^3/stroke (lbs/hr)	Maximum Rated Torque at RPM	Fuel Rate mm^3/stroke (lbs/hr)
3306 PCTA	*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) 174 (82) 181 (85.1) 181 (85.1)

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

Date of Issue 06 JUL 87 Revisions:

52.26

1988 AIR RESOURCES BOARD SUPPLEMENTAL DATA SHEET
HEAVY-DUTY DIESEL ENGINES

Manufacturer Caterpillar Inc. Engine Family JCT0638FPC3 Code A

Liter (CID) 10.5 (638) Engine Type 16

Emission Control Sys. and (Special Features) EM, SPL (DID, TC, ATAAC)

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	*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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1988 AIR RESOURCES BOARD SUPPLEMENTAL DATA SHEET
HEAVY-DUTY DIESEL ENGINES

Manufacturer Caterpillar Inc. Engine Family JCT0893FPB2 Codes C,D,E,&F

Liter (CID) 14.6 (893) Engine Type 16

Emission Control Sys. and (Special Features) EM, SPL (DID, TC, ATAAC)

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 C	*Caterpillar 7C6605	Caterpillar 7W7026	400 @ 2100	194 (136.9)	1340 @ 1200	253 (102.1)
			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)
			370 @ 1800	202 (122.1)	1395 @ 1200	264 (106.4)
Code D	*Caterpillar 7C6649	Caterpillar 7W7032	310 @ 1800	173 (104.7)	1150 @ 1100	241 (81.0)
			285 @ 1800	160 (96.8)	1150 @ 1100	241 (81.0)
			285 @ 1600	177 (95.5)	1150 @ 1100	241 (81.0)
Code E	*Caterpillar 7C6651	Caterpillar 7W7037	350 @ 2100	174 (122.8)	1350 @ 1100	266 (98.5)
			350 @ 1800	194 (117.5)	1350 @ 1100	266 (98.5)
			325 @ 2100	162 (114.5)	1250 @ 1200	242 (97.8)
Code F	*Caterpillar 7C6650	Caterpillar 7W7026	425 @ 2100	204 (144.2)	1450 @ 1200	277 (111.7)
			425 @ 1900	222 (142.0)	1450 @ 1200	277 (111.7)
			425 @ 1800	232 (140.1)	1450 @ 1200	277 (111.7)

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

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No. 2 -- 02 OCT 87
No. 3 -- 09 FEB 88

52A.5

1988 AIR RESOURCES BOARD SUPPLEMENTAL DATA SHEET
HEAVY-DUTY DIESEL ENGINES

Manufacturer: Caterpillar Inc.

Engine Family: JCT0893FZC7 Codes E, F, & G

Liter (CID): 14.6 (893)

Engine Type: 16

Emission Control Sys. and (Special Features): EM (DID, TC, PEEC, ATAAC, OBD)

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/ATAAC						
Code E	*Caterpillar	Caterpillar	310 @ 1900	162 (103.4)	1150 @ 1100	213 (78.7)
			310 @ 1800	169 (102.2)	1350 @ 1100	251 (93.0) ← ADDED
	4W2830	7W7032	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)
Code F	*Caterpillar 4W2830	Caterpillar 7W7026	400 @ 2100	193 (136.5)	1340 @ 1200	251 (101.4)
			400 @ 2100	193 (136.5)	1395 @ 1200	262 (105.7)
			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	214 (122.1)	1395 @ 1200	262 (105.7)
			370 @ 1600	226 (121.8)	1395 @ 1200	262 (105.7)
Code G	*Caterpillar 4W2830	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 2W3413 (Reference Page No. 16.05.01-0893FZC-2).

ADDED 1 CODE E POWER SETTING. NO EMISSION TEST FROM 350 hp ENGINE

Date of Issue: 04 AUG 87

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No. 2 -- 26 JAN 88