

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:

<u>Engine Family</u>	<u>Displacement</u>		<u>Exhaust Emission Control Systems</u>
	<u>Cubic Inches</u>	<u>(Liters)</u>	<u>(Special Features)</u>
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:

<u>Engine Family</u>	<u>Hydrocarbons</u>	<u>Carbon</u>	<u>Nitrogen Oxides</u>	<u>Particulates</u>
	<u>gm/bhp-hr</u>	<u>Monoxide</u> <u>gm/bhp-hr</u>	<u>gm/bhp-hr</u>	<u>gm/bhp-hr</u>
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

CATERPILLAR, INC.

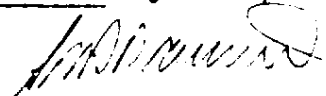
EXECUTIVE ORDER A-13-47
(Page 2 of 2)

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

<u>Ignition System</u>	<u>Exhaust Emissions Control System</u>	<u>Special Features</u>
CA -Centrifugal Advance	AIP -Air Injection-Pump	CCV -Combustion Chamber Valve
ECU -Electronic Control Unit	AIV -Air Injection-Valve	CFI -Central Fuel Injection or Throttle Body Injection
EI -Electronic Ignition	DBC -Dual Bed Catalyst	DID -Diesel Injection-Direct
ESAC-Electronic Spark Advance Control	EGR -Exhaust Gas Recirculation	DIP -Diesel Injection-Prechamber
VA -Vacuum Advance	EIC -Electronic Injection Control	EFI -Electronic Fuel Injection
VR -Vacuum Retard	EM -Engine Modification	IC -Intercooler or Aftercooler
	OC -Oxidation Catalyst	MFI -Mechanical Fuel Injection
	OS -Oxygen Sensor	OBD -On-Board Diagnostics
	HOS -Heated Oxygen Sensor	TC -Turbocharger
	SPL -Smoke Puff Limiter or Throttle Delay	ATAAC-Air-to-Air Aftercooled
	TOC -Trap Oxidizer, Continual	PEEC -Programmable Electronic Engine Control
	TOP -Trap Oxidizer, Periodical	
	TWC -Three-Way Catalyst	
	WUOC -Warm-Up Oxidation Catalyst	
	WUTWC-Warm-Up Three-Way Catalyst	

Fuel System

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

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 ENGINESManufacturer Caterpillar Inc. Engine Family JCT0638FPA1Liter (CID) 10.5 (638) Engine Type 16Emission Control Sys. and (Special Features) BM, 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	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)

Date of Issue 06 JUL 87 Revisions:

1988 AIR RESOURCES BOARD SUPPLEMENTAL DATA SHEET
HEAVY-DUTY DIESEL ENGINESManufacturer Caterpillar Inc. Engine Family JCT0638FPC3 Code ALiter (CID) 10.5 (638) Engine Type I6Emission 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)

Date of Issue 06 JUL 87 Revisions:

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)

Date of Issue 06 JUL 87

Revisions: No. 1 -- 02 SEP 87

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 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 (93.0) ← ADDED 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).

Date of Issue 04 AUG 87

Revisions: No. 1 -- 02 SEP 87
No. 2 -- 26 JAN 88

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