

State of California  
AIR RESOURCES BOARD

EXECUTIVE ORDER A-13-43  
Relating to Certification of New Motor Vehicle Heavy-Duty Engines

CATERPILLAR TRACTOR COMPANY

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 Tractor Company 1986 model-year heavy-duty diesel engines have shown compliance with the optional transient test procedure and standards and are certified for use in motor vehicles with a manufacturer's gross vehicle weight rating greater than 8500 pounds:

<u>Engine Family</u>	<u>Displacement</u> <u>Cubic Inches (Liters)</u>		<u>Exhaust Emission Control Systems</u> <u>(Special Features)</u>
GCT0636EPA6 Code B	636	(10.4)	Engine Modifications (Diesel Injection - Direct) (Turbocharger)
GCT0638FPA6	638	(10.5)	Engine Modifications (Aftercooler) (Diesel Injection - Prechamber) (Turbocharger)
GCT0893FPA6 Codes H & J	893	(14.6)	Engine Modifications (Aftercooler) (Diesel Injection - Direct) (Turbocharger)
GCT0893FPB7 Codes D & E	893	(14.6)	Engine Modifications (Aftercooler) (Diesel Injection - Direct) (Turbocharger)

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 gm/bhp-hr</u>	<u>Carbon Monoxide gm/bhp-hr</u>	<u>Nitrogen Oxides gm/bhp-hr</u>
GCT0636EPA6 Code B	0.73	1.8	4.2
GCT0638FPA6	0.47	1.7	4.6
GCT0893FPA6 Codes H & J	0.40	2.4	5.1
GCT0893FPB7 Codes D & E	0.28	2.4	5.1

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 including the aftercooler in the turbocharger system (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 12<sup>th</sup> day of December, 1985.

  
K. D. Drachand, Chief  
Mobile Source Division

MHDD

1986 AIR RESOURCES BOARD SUPPLEMENTAL DATA SHEET

Manufacturer Caterpillar Tractor Co. Executive Order No. A-13-43 Page 1A  
 Engine Family GCT0636EPA6 Evaporative Family N/A  
 Engine CID (Liters) 636 (10.4) V8

ABBREVIATIONS

Ignition System

CA -Centrifugal Advance  
 EEC -Electronic Engine Control  
 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  
 VV -Variable Venturi

Exhaust Emissions Control System

AIP-Air Injection-Pump  
 AIV-Air Injection-Valve  
 CL -Closed Loop  
 EGR-Exhaust Gas Recirculation  
 EM -Engine Modification  
 OC -Oxidation Catalyst System  
 TR -Thermal Reactor  
 TWC-Three Way Catalyst System

Special Features

CCV -Combustion Chamber Valve  
 CFI -Central Fuel Injection  
 DID -Diesel Injection-Direct  
 DIP -Diesel Injection-Prechamber  
 MFI -Mechanical Fuel Injection  
 TC -Turbocharged  
 AC -Aftercooled  
 AA/AC-Air-to-Air and Aftercooled

Engine Family

GCT0636EPA6

Engine Model

3208 Code B

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Manufacturer Caterpillar Tractor Co. Executive Order No. A-13-43 Page 1B  
Engine Family GCT0638FPA6 Evaporative Family N/A  
Engine CID (Liters) 638 (10.5) I6

ABBREVIATIONS

Ignition System

CA -Centrifugal Advance  
EEC-Electronic Engine Control  
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  
VV -Variable Venturi

Exhaust Emissions Control System

AIP-Air Injection-Pump  
AIV-Air Injection-Valve  
CL -Closed Loop  
EGR-Exhaust Gas Recirculation  
EM -Engine Modification  
OC -Oxidation Catalyst System  
TR -Thermal Reactor  
TWC-Three Way Catalyst System

Special Features

CCV -Combustion Chamber Valve  
CFI -Central Fuel Injection  
DID -Diesel Injection-Direct  
DIP -Diesel Injection-Prechamber  
MFI -Mechanical Fuel Injection  
TC -Turbocharged  
AC -Aftercooled  
AA/AC-Air-to-Air and Aftercooled

Engine Family

GCT0638FPA6

Engine Model

3306

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Manufacturer Caterpillar Tractor Co. Executive Order No. A-13-43 Page 10  
Engine Family GCT0893FPA6 Evaporative Family N/A  
Engine CID (Liters) 893 (14.6) I6

ABBREVIATIONS

Ignition System

CA -Centrifugal Advance  
EEC-Electronic Engine Control  
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  
VV -Variable Venturi

Exhaust Emissions Control System

AIP-Air Injection-Pump  
AIV-Air Injection-Valve  
CL -Closed Loop  
EGR-Exhaust Gas Recirculation  
EM -Engine Modification  
OC -Oxidation Catalyst System  
TR -Thermal Reactor  
TWC-Three Way Catalyst System

Special Features

CCV -Combustion Chamber Valve  
CFI -Central Fuel Injection  
DID -Diesel Injection-Direct  
DIP -Diesel Injection-Prechamber  
MFI -Mechanical Fuel Injection  
TC -Turbocharged  
AC -Aftercooled  
AA/AC-Air-to-Air and Aftercooled

Engine Family

GCT0893FPA6

Engine Model

3406B Code H  
3406B Code J

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Manufacturer Caterpillar Tractor Co. Executive Order No. A-13-43 Page 1D  
 Engine Family GCT0893FPB7 Evaporative Family N/A  
 Engine CID (Liters) 893 (14.6) I6

ABBREVIATIONS

Ignition System

CA -Centrifugal Advance  
 EEC-Electronic Engine Control  
 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  
 VV -Variable Venturi

Exhaust Emissions Control System

AIP-Air Injection-Pump  
 AIV-Air Injection-Valve  
 CL -Closed Loop  
 EGR-Exhaust Gas Recirculation  
 EM -Engine Modification  
 OC -Oxidation Catalyst System  
 TR -Thermal Reactor  
 TWC-Three Way Catalyst System

Special Features

CCV -Combustion Chamber Valve  
 CFI -Central Fuel Injection  
 DID -Diesel Injection-Direct  
 DIP -Diesel Injection-Prechamber  
 MFI -Mechanical Fuel Injection  
 TC -Turbocharged  
 AC -Aftercooled  
 AA/AC-Air-to-Air and Aftercooled

Engine Family

GCT0893FPB7

Engine Model

3406B Code D  
3406B Code E

1986 AIR RESOURCES BOARD SUPPLEMENTAL DATA SHEET  
HEAVY-DUTY DIESEL ENGINES

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Manufacturer CATERPILLAR TRACTOR CO. Page 2A  
 Engine Family GCT0636EPA6 (CODE B) CID(Liter)-Type 636 (10.4) V8  
 ECS (Special Features) EM, (TC, DID)

Engine Model	Fuel Injection Pump Manufacturer Part Number	Injector Manufacturer Part Number	Maximum Rated hp and rpm	Fuel Rate at Maximum hp mm <sup>3</sup> /stroke	Label Identification	
3208 CODE B	CATERPILLAR 7W5479	CATERPILLAR 4W7016	590 @ 1400	92	LABEL INFORMATION WILL BE PROVIDED WHEN DESIGNED.	
			225 @ 2600	79		
	TURBOCHARGER			550 @ 1400		87
				210 @ 2600		74
				560 @ 1400		89
				200 @ 2200		76
7W2874 7W2875			500 @ 1400	79		
			175 @ 2200	69		

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HEAVY-DUTY DIESEL ENGINESHHDDManufacturer CATERPILLAR TRACTOR CO. Page 28Engine Family GCT0638FPA6 CID(Liter)-Type 638 (10.5) I6ECS (Special Features) EM, (TC, AC, DIP)

Engine Model	Fuel Injection Pump Manufacturer Part Number	Injector Manufacturer Part Number	Maximum Rated hp and rpm	Fuel Rate at Maximum hp mm <sup>3</sup> /stroke	Label Identification
3306	CATERPILLAR 7W0279	CATERPILLAR 9N2845	775 @ 1400	174	LABEL INFORMATION WILL BE PROVIDED WHEN DESIGNED.
			270 @ 2200	151	
	775 @ 1400		174		
	270 @ 2100		157		
	810 @ 1400		181		
	245 @ 2200		137		
<u>TURBOCHARGER</u>	9N1289 9N1287	810 @ 1400	181		
		245 @ 2100	138		

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HEAVY-DUTY DIESEL ENGINES

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Manufacturer CATERPILLAR TRACTOR CO. Page 20  
 Engine Family GCT0893FPA6 CID(Liter)-Type 893(14.6) 16  
 ECS (Special Features) EM, (TC, AC, DID)

Engine Model	Fuel Injection Pump Manufacturer Part Number	Injector Manufacturer Part Number	Maximum Rated hp and rpm	Fuel Rate at Maximum hp mm <sup>3</sup> /stroke	Label Identification
3406B CODE H	CATERPILLAR 4W2551	CATERPILLAR 4W7018	1145 @ 1200	232	LABEL INFORMATION WILL BE PROVIDED WHEN DESIGNED.
			300 @ 2100	165	
			1145 @ 1200	232	
	300 @ 1800	186			
	1145 @ 1200	232			
	280 @ 1600	189			
3406B CODE J	TURBOCHARGER 4W4537 4W4538	CATERPILLAR 4W7018	1325 @ 1260	264	
			400 @ 2100	211	
			1395 @ 1260	279	
	400 @ 1800		238		
	1325 @ 1260		264		
	380 @ 1800		221		
	1325 @ 1260		264		
	360 @ 1800		210		
	1325 @ 1260		264		
	340 @ 1700		211		
TURBOCHARGER 4W5188 4W5189					

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HEAVY-DUTY DIESEL ENGINES

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Manufacturer CATERPILLAR TRACTOR CO. Page 20  
 Engine Family GCT0893FPB7 CID(Liter)-Type 893(14.6) I6  
 ECS (Special Features) EM, (TC, AA/AC, DID)

Engine Model	Fuel Injection Pump Manufacturer Part Number	Injector Manufacturer Part Number	Maximum Rated hp and rpm	Fuel Rate at Maximum hp mm <sup>3</sup> /stroke	Label Identification
3406B CODE D	CATERPILLAR 4W2551	CATERPILLAR 4W7022	1150 @ 1000	227	LABEL INFORMATION WILL BE PROVIDED WHEN DESIGNED.
			310 @ 1800	173	
	<u>TURBOCHARGER</u> 7C0455	CATERPILLAR 4W7017	1150 @ 1000	227	
			285 @ 1600	178	
3406B CODE E	CATERPILLAR 7L0007	CATERPILLAR 4W7017	1375 @ 1200	259	
			400 @ 2100	203	
	<u>TURBOCHARGER</u> 7W9472	CATERPILLAR 4W7017	1375 @ 1200	259	
			400 @ 1800	223	
			1375 @ 1200	259	
			370 @ 1800	207	
		1375 @ 1200	259		
		360 @ 1700	212		

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