State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER A-13-28
Relating to Certification of New Motor Vehicle 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 1979 model-year diesel engines are certified for use in motor vehicles with a manufacturer's gross vehicle weight rating greater than 8500 pounds:

Engine Family	Displacement Cubic Inches	Exhaust Emission Control Systems (Special Features)
4	638	(Turbocharged)
10	893	(Turbocharged, Aftercooled)
11-B	893	(Turbocharged)
12	1099	(Turbocharged, Aftercooled)
13	636	Exhaust Gas Recirculation
14	638	(Turbocharged, Aftercooled)

Engine Models and Codes as listed on attachments.

Section 43200, Part 5, Division 26 of the California Health and Safety Code requires that the engine manufacturer furnish a decal with each engine sold or delivered to a vehicle manufacturer. The decal shall display the applicable model year heavy-duty engine exhaust emission standards and the following certification emission values:

Engine Family	Hydrocarbons gm/bhp-hr	Carbon Monoxide gm/bhp-hr	Nitrogen Oxides gm/bhp-hr
4	0.2	1	6.1
10	0.3	1	5.0
11-B	0.5	2	6.9
12	0.2	1	5.4
13	0.7	3	6.6
14	0.2	2	5.2

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

The Department of Motor Vehicles and the Bureau of Automotive Repair will be notified by copy of this order and attachment.

Executed at El Monte, California this 18 day of December, 1978.

G. C. Hass

G. C. Hass, Chief
Vehicle Emissions Control Division

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Engine Family see below Engine (CID) see below

ABBREVIATIONS

Ignition System
CA-Centrifugal Advance
EI-Electronic Ignition
ESAC
VA-Vacuum Advance
VR-Vacuum Retard

Fuel System
EFI, MFI
nV-nVenturi Carburetor
VV-Variable Venturi

Exhaust Emissions Control System
AI-Air Injection
CCAV-Comb. Chamber Air Valve
EFI-Electronic Fuel Injection
EGR-Exhaust Gas Recirculation
EM-Engine Modification

ESAC-Electronic Spark Advance Control
MFI-Mechanical Fuel Injection

OC-Oxidation Catalyst
PAI-Pulse Air Injection
TC-Turbo Charged
TR-Thermal Reactor
TWC-Three Way Catalyst (Feedback Control)
WOC-Warm-up Oxidation Catalyst

Engine Family	Model	Engine (CID)
4	3306	638
10	3406	893
11-B	3406	893
12	3408	1099
13	3208	636
14	3306	638

Revised: 10-19-79

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HEAVY-DUTY DIESEL ENGINES

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Engine Family 4 Engine (CID) 638

Emission Control Systems - Type Inline 6, TC

Engine Model	Fuel Injection Pump Mfgr. Part Number	Injector Mfg. Part Number	Maximum Rated HP and RPM	Fuel Rate at Maximum HP mm^3/stroke	Basic Initial Timing
3306	Caterpillar 9N2304	Caterpillar 7S8722	250 HP @ 2200 rpm	139 mm^3/ stroke 103.2 lb/hr	12° BTDC static
			225 HP @ 2200 rpm	122 mm^3/ stroke 90.8 lb/hr	
			*235 HP @ 2000 rpm	*140 mm^3/ stroke 94.2 lb/hr	

Date of Issue - 12-14-78
*10-19-79 Revision (9-28-79)

Abbreviations

Type
NA - Natural Aspiration
TC - Turbocharged
TCA - Turbocharged and Aftercooled

Emission Control Systems
AC - Aftercooler
EGR - Exhaust Gas Recirculation
TD - Throttle Delay

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HEAVY-DUTY DIESEL ENGINES

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Engine Family 10 Engine (CID) 893

Emission Control Systems - Type Inline 6, TCA

Engine Model	Fuel Injection Pump Mfgr. Part Number	Injector Mfg. Part Number	Maximum Rated HP and RPM	Fuel Rate at Maximum HP mm^3/stroke	Basic Initial Timing
3406	Caterpillar 9N72	Caterpillar 4N1251 or 7N9843*	375 HP @ 2100 rpm	211 mm^3/ stroke 150 lb/hr	10° BTDC static
			360 HP @ 2100 rpm	197 mm^3/ stroke 140 lb/hr	
			340 HP @ 1950 rpm	200 mm^3/ stroke 131.9 lb/hr	

Date of Issue - 12-14-78
*1-25-79 R.C.# 79-10-1R (10-30-78)

Abbreviations

Type
NA - Natural Aspiration
TC - Turbocharged
TCA - Turbocharged and Aftercooled

Emission Control Systems
AC - Aftercooler
EGR - Exhaust Gas Recirculation
TD - Throttle Delay

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HEAVY-DUTY DIESEL ENGINES

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Engine Family 11-B Engine (CID) 893

Emission Control Systems - Type Inline 6, TC

Engine Model	Fuel Injection Pump Mfgr. Part Number	Injector Mfg. Part Number	Maximum Rated HP and RPM	Fuel Rate at Maximum HP mm^3/stroke	Basic Initial Timing
3406	Caterpillar 9N3839	Caterpillar 9L6884	300 HP @ 2100 rpm	164 mm^3/ stroke 116.5 lb/hr	22.5° BTDC static
			300 HP @ 1900 rpm	175 mm^3/ stroke 112.5 lb/hr	

Date of Issue - 12-14-78

Abbreviations

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HEAVY-DUTY DIESEL ENGINES

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Engine Family 12 Engine (CID) 1099

Emission Control Systems - Type V8, TCA

Engine Model	Fuel Injection Pump Mfgr. Part Number	Injector Mfg. Part Number	Maximum Rated HP and RPM	Fuel Rate at Maximum HP mm^3/stroke	Basic Initial Timing
3408	Caterpillar 9N3316	Caterpillar 4N1251 or 7N9843*	450 HP @ 2100 rpm	191 mm^3/ stroke 181 lb/hr	11° BTDC static
			425 HP @ 2100 rpm	179 mm^3/ stroke 170 lb/hr	
			400 HP @ 2100 rpm	169 mm^3/ stroke 160.5 lb/hr	
			425 HP @ 1950 rpm	191 mm^3/ stroke 168 lb/hr	
			400 HP @ 1950 rpm	179 mm^3/ stroke 157.5 lb/hr	

Date of Issue - 12-14-78
* 3-13-79 R.C.# 79-12-1R (1-31-79)

Abbreviations

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Emission Control Systems
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TD - Throttle Delay

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HEAVY-DUTY DIESEL ENGINES

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Engine Family 13 Engine (CID) 636

Emission Control Systems EGR Type V8, NA

Engine Model	Fuel Injection Pump Mfgr. Part Number	Injector Mfg. Part Number	Maximum Rated HP and RPM	Fuel Rate at Maximum HP mm^3/stroke	Basic Initial Timing
3208	Caterpillar 9N2431 or 9N5178	Caterpillar 9N3979	200 HP @ 2800 rpm	63 mm^3/ stroke 79.6 lb/hr	16° BTDC static
			175 HP @ 2800 rpm	54 mm^3/ stroke 68.2 lb/hr	

Date of Issue - 12-14-78

Abbreviations

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TCA - Turbocharged and Aftercooled

Emission Control Systems
AC - Aftercooler
EGR - Exhaust Gas Recirculation
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HEAVY-DUTY DIESEL ENGINES

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Engine Family 14 Engine (CID) 638

Emission Control Systems - Type Inline 6, TCA

Engine Model	Fuel Injection Pump Mfgr. Part Number	Injector Mfg. Part Number	Maximum Rated HP and RPM	Fuel Rate at Maximum HP mm^3/stroke	Basic Initial Timing
3306	Caterpillar 9N2885	Caterpillar 9N2845	270 HP @ 2200 rpm	148 mm^3/ stroke 110 lb/hr	8.5° BTDC static
	9N2886		245 HP @ 2200 rpm	134 mm^3/ stroke 100 lb/hr	
	9N2885		*270 HP @ 2100 rpm	*154 mm^3/ stroke 109 lb/hr	

Date of Issue - 12-14-78
*10-19-79 Revision (9-4-79)

Abbreviations

Type
NA - Natural Aspiration
TC - Turbocharged
TCA - Turbocharged and Aftercooled

Emission Control Systems
AC - Aftercooler
EGR - Exhaust Gas Recirculation
TD - Throttle Delay