

E.O.B.A.

State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER A-31-20
Relating to Certification of New Heavy-Duty Motor Vehicle Engines

HINO MOTORS, LTD.

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 Hino Motors, Ltd. 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 Cubic Inches (Liters)</u>		<u>Exhaust Emission Control Systems (Special Features)</u>
JHM0038EAA3	234	(3.839)	Engine Modification (Turbocharger) (Diesel Injection - Direct)
JHM0067DAA0	411	(6.728)	Engine Modification (Diesel Injection - Direct)
JHM0065EAA6	396	(6.485)	Engine Modification (Turbocharger) (Diesel Injection - Direct)
JHM0065FAA9	396	(6.485)	Engine Modification (Turbocharger) (Intercooler) (Diesel Injection - Direct)

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>	<u>Particulates gm/bhp-hr</u>
JHM0038EAA3	0.4	2.1	5.4	0.5
JHM0067DAA0	0.4	2.6	5.5	0.4
JHM0065EAA6	0.4	1.8	5.3	0.4
JHM0065FAA9	0.6	3.2	5.7	0.5

HINO MOTORS, LTD.


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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 28th day of August, 1987.


K. D. Drachand, Chief
Mobile Source Division

17.00.00.00

Sheets added by Requirement of Rule MAC 84-02
& Other information

E.O. # 17-1
A-31-20

01.00.00

1988 AIR RESOURCES BOARD SUPPLEMENTAL DATA SHEET

Page 1

LHDD

Manufacturer HINO MOTORS, LTD. Engine Family JHM0038EAA3
 Evaporative Family NA Engine Type L-4, 4 stroke cycle, Turbocharged
 Liters (CID) 3.839 (234)

ABBREVIATIONS

Ignition System

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

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 Catalyt

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

Fuel System

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

VEHICLE MODELS:

Engine: Front x Mid. Rear
 Drive: FWD RWD x 4WD Full Time 4WD Part Time

E.O.# A-31-20Page 21988 AIR RESOURCES BOARD SUPPLEMENTAL DATA SHEET
HEAVY-DUTY DIESEL ENGINESLHDD

Manufacturer HINO MOTORS, LTD. Engine Family JHM0038EAA3
 Liter (CID) 3.839 (234) Eng. Type L-4, 4 Stroke cycle, Turbocharged
 Emission Control Sys. and (Special Features) Engine Modification (DIP)

Engine Model	Fuel Injection Pump Mfr. Part Number	Injector Mfr. 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)
W04C-TD	Diesel Kiki 22000- 5781	Diesel Kiki 23600- 1981	125 @ 3,200	72.0 (50.2)	253 @ 2,000	80.0 (34.8)

Date of Issue July 10, 1987

Revisions:

17.00.00.00

Sheets added by requirement of Rule MAC84-02
& Other information

17-3

E.O. # A-31-20

01.00.00

1988 AIR RESOURCES BOARD SUPPLEMENTAL DATA SHEET

Page 1

MHDD

Manufacturer HINO MOTORS, LTD. Engine Family JHM0067DAA0
 Evaporative Family NA Engine Type L-6, 4 Stroke cycle,
Natural asp.
 Liters (CID) 6.728 (411)

ABBREVIATIONS

Ignition System

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

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

Fuel System

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

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

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HEAVY-DUTY DIESEL ENGINESMHDD

Manufacturer HINO MOTORS, LTD. Engine Family JHM0067DAA0
 Liter (CID) 6.728 (411) Eng. Type L-6, 4 Stroke cycle, Natural asp.
 Emission Control Sys. and (Special Features) Engine Modification (D1D)

Engine Model	Fuel Injection Pump Mfr. Part Number	Injector Mfr. 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)
H07C-F	Nippon Denso 22010- 5300 (OPT) 22010- 5310	Nippon Denso 23610- 1620	160 @ 3,000	67.5 (66.2)	304 @ 1,800	66.0 (38.8)

Date of Issue July 10, 1987 Revisions:

MHDD

Manufacturer HINO MOTORS, LTD. Engine Family JHM0065EAA6
 Evaporative Family NA Engine Type L-6, 4 Stroke cycle, Turbocharged
 Liters (CID) 6.485 (396)

ABBREVIATIONS

Ignition System

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

Exhaust Emissions Control System

AIP-Air Injection-Pump
 AIV-Air Injection-Valve
 DBC-Dual Bed Catalyst
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 EFI-Electronic Fuel Injection
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 MFI-Mechanical Fuel Injection
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 TC-Turbocharger

Fuel System

CFI, CL, DID, DIP, EFI, MFI
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VEHICLE MODELS:

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E.O.# A-31-20Page 21988 AIR RESOURCES BOARD SUPPLEMENTAL DATA SHEET
HEAVY-DUTY DIESEL ENGINESMHDD

Manufacturer HINO MOTORS, LTD. Engine Family JHM0065EAA6
 Liter (CID) 6.485 (396) Eng. Type L-6, 4 Stroke cycle, Turbocharged
 Emission Control Sys. and (Special Features) _____ Engine Modification (D1D)

Engine Model	Fuel Injection Pump Mfr. Part Number	Injector Mfr. 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)
H06C-TJ	Nippon Denso 22010- 5271	Nippon Denso 23610- 1610	180 @ 3,000	73.0 (71.5)	398 @ (1,600)	85.0 (44.4)

Date of Issue July 10, 1987 Revisions:

MHDP

Manufacturer HINO MOTORS, LTD. Engine Family JHM0065FAA9
 Evaporative Family NA Engine Type L-6, 4 Stroke cycle, TC-IC
 Liters (CID) 6.485 (396)

ABBREVIATIONS

Ignition System

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

Exhaust Emissions Control System

AIP-Air Injection-Pump
 AIV-Air Injection-Valve
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 EM-Engine Modification
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 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 Catalyt

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

Injection System

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

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HEAVY-DUTY DIESEL ENGINESMHDD

Manufacturer HINO MOTORS, LTD. Engine Family JHM0065FAA9
 Liter (CID) 6.485 (396) Eng. Type L-6, 4 Stroke cycle, TC-IC
 Emission Control Sys. and (Special Features) Engine Modification (D1D)(IC)

Engine Model	Fuel Injection Pump Mfr. Part Number	Injector Mfr. 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)
H06C-TH	Nippon Denso 22010-5001	Nippon Denso 23610-1590	225 @ 2,700	92.0 (81.2)	470 @ 1,600	94.5 (49.4)

Date of Issue July 10, 1987 Revisions: