

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 28<sup>th</sup> 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 \_\_\_\_\_

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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 <sup>3</sup> /stroke (lbs/Hr)	Maximum Rated Torque at RPM	Fuel Rate mm <sup>3</sup> /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

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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

VEHICLE MODELS:

Engine: Front x Mid. \_\_\_\_\_ Rear \_\_\_\_\_  
 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 <sup>3</sup> /stroke (lbs/Hr)	Maximum Rated Torque at RPM	Fuel Rate mm <sup>3</sup> /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

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

VEHICLE MODELS:

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

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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 <sup>3</sup> /stroke (lbs/Hr)	Maximum Rated Torque at RPM	Fuel Rate mm <sup>3</sup> /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)

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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  
 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

Injection 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 \_\_\_\_\_

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HEAVY-DUTY DIESEL ENGINESMHDD

Manufacturer HINO MOTORS, LTD. Engine Family JHMO065FAA9  
 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 <sup>3</sup> /stroke (lbs/Hr)	Maximum Rated Torque at RPM	Fuel Rate mm <sup>3</sup> /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)

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