

State of California  
AIR RESOURCES BOARD

EXECUTIVE ORDER A-31-17  
Relating to Certification of New Motor Vehicle Heavy-Duty 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. 1987 model-year diesel engines have shown compliance with the 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>
HHM0060DAA9	367	(6.0)	Engine Modification (Diesel Injection - Direct)
HHM0065EAA0	396	(6.5)	Engine Modification (Diesel Injection - Direct) (Turbocharger)
HHM0067DAA4	411	(6.7)	Engine Modification (Diesel Injection - Direct)
HHM0094DAA7	575	(9.4)	Engine Modification (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</u> <u>gm/bhp-hr</u>	<u>Carbon</u> <u>Monoxide</u> <u>gm/bhp-hr</u>	<u>Nitrogen Oxides</u> <u>gm/bhp-hr</u>
HHM0060DAA9	1.0	4.6	4.8
HHM0065EAA0	0.9	1.9	4.8
HHM0067DAA4	0.8	4.3	4.5
HHM0094DAA7	0.6	2.5	4.4

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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 27<sup>th</sup> day of June, 1986.



K. D. Drachand, Chief  
Mobile Source Division

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MHDD

Manufacturer HINO MOTORS, LTD. Engine Family HHM0060DAA9  
 Evaporative Family NA Engine Type L-6, 4 Stroke cycle, Natural asp.  
 Liters (CID) 6.014 (367)

ABBREVIATIONS

Ignition System

CA-Centrifugal Advance  
 EEC-Electronic Engine Control  
 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  
 CL-Closed Loop  
 EGR-Exhaust Gas Recirculation  
 EM-Engine Modification  
 OC-Oxidation Catalyst System  
 SPL-Smoke Puff Limiter or Throttle Delay  
 TOC-Trap Oxidizer, Continual  
 TOP-Trap Oxidizer, Periodical  
 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  
 EFI-Electronic Fuel Injection  
 IC-Intercooler or aftercooler  
 MFI-Mechanical Fuel Injection  
 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 \_\_\_\_\_

Manufacturer HINO MOTORS, LTD. Engine Family HHMC065EAAQ  
 Evaporative Family NA Engine Type L-6, 4 Stroke cycle, Turbo-charged  
 Liters (CID) 6.485 (396)

ABBREVIATIONS

Ignition System

CA-Centrifugal Advance  
 EEC-Electronic Engine Control  
 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  
 CL-Closed Loop  
 EGR-Exhaust Gas Recirculation  
 EM-Engine Modification  
 OC-Oxidation Catalyst System  
 SPL-Smoke Puff Limiter or Throttle Delay  
 TOC-Trap Oxidizer, Continual  
 TOP-Trap Oxidizer, Periodical  
 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  
 EFI-Electronic Fuel Injection  
 IC-Intercooler or aftercooler  
 MFI-Mechanical Fuel Injection  
 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 \_\_\_\_\_

Manufacturer HINO MOTORS, LTD.

Engine Family HHM0067DAA4

Evaporative Family NA

Engine Type L-6, 4 Stroke cycle, Natural asp.

Liters (CID) 6.728 (411)

ABBREVIATIONS

Ignition System

- CA-Centrifugal Advance
- EEC-Electronic Engine Control
- 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
- CL-Closed Loop
- EGR-Exhaust Gas Recirculation
- EM-Engine Modification
- OC-Oxidation Catalyst System
- SPL-Smoke Puff Limiter or Throttle Delay
- TOC-Trap Oxidizer, Continual
- TOP-Trap Oxidizer, Periodical
- 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
- EFI-Electronic Fuel Injection
- IC-Intercooler or aftercooler
- MFI-Mechanical Fuel Injection
- 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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Manufacturer HINO MOTORS, LTD. Engine Family HFM0094DAA7  
 Evaporative Family NA Engine Type L-6, 4 Stroke cycle, Natural asp.  
 Liters (CID) 9.419 (575)

ABBREVIATIONS

Ignition System

CA-Centrifugal Advance  
 EEC-Electronic Engine Control  
 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  
 CL-Closed Loop  
 EGR-Exhaust Gas Recirculation  
 EM-Engine Modification  
 OC-Oxidation Catalyst System  
 SPL-Smoke Puff Limiter or Throttle Delay  
 TOC-Trap Oxidizer, Continual  
 TOP-Trap Oxidizer, Periodical  
 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  
 EFI-Electronic Fuel Injection  
 IC-Intercooler or aftercooler  
 MFI-Mechanical Fuel Injection  
 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 ENGINES

Manufacturer HINO MOTORS, LTD. Engine Family HFM0060DAA9  
 Liter (CID) 6.014 (367) Eng. Type L-6, 4 Stroke cycle, Natural asp.  
 Emission Control Sys. and (Special Features) \_\_\_\_\_ Engine Modification \_\_\_\_\_

Engine Model	Fuel Injection Pump Mfr. Part Number	Injector Mfr. Part Number	Maximum Rated HP at RPM	Fuel Rate $\text{mm}^3/\text{stroke}$ (lbs/Hr)	Maximum Rated Torque at RPM	Fuel Rate $\text{mm}^3/\text{stroke}$ (lbs/Hr)
W06E-C	Diesel KiKi 22000-4990	Diesel KiKi 23600-1730	150@ 3,000	61 (59.8)	268@ 1,800	60 (35.3)

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HEAVY-DUTY DIESEL ENGINES

Manufacturer HINO MOTORS, LTD. Engine Family HHM0065FAA0  
 Liter (CID) 6.485 (396) Eng. Type L-6, 4 Stroke cycle, Turbo-charged  
 Emission Control Sys. and (Special Features) Engine Modification

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-TD	Nippon Denso 22010-3782	Nippon Denso 23610-1412	175@ 3,000	73 (71.5)	383@ 1,600	83 (43.4)

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HEAVY-DUTY DIESEL ENGINES

Manufacturer HINO MOTORS, LTD. Engine Family HHM0067DAA4  
 Liter (CID) 6.728 (411) Eng. Type L-6, 4 Stroke cycle, Natural asp.  
 Emission Control Sys. and (Special Features) Engine Modification

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-C	Nippon Denso 22010-4051	Nippon Denso 23610-1390	155@ 3,000	67 (65.7)	297@ 1,800	65 (38.2)

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1987 AIR RESOURCES BOARD SUPPLEMENTAL DATA SHEET  
HEAVY-DUTY DIESEL ENGINES

Manufacturer HINO MOTORS, LTD. Engine Family HFM0094DAA7  
 Liter (CID) 9.419 (575) Eng. Type L-6, 4 Stroke cycle, Natural asp.  
 Emission Control Sys. and (Special Features) Engine Modification

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)
EM100F	Nippon Denso 22010-4101 (For Manual Transmission)	Nippon Denso 23610-1430	190@ 2,700	88 (77.6)	427@ 1,600	93 (48.6)
	Nippon Denso 22010-4440 (For Automatic Transmission)					

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