

State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER A-20-83
Relating to Certification of New Heavy-Duty Motor Vehicle Engines

ISUZU MOTORS LIMITED

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 Isuzu Motors Limited 1990 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</u> <u>Liters (Cubic Inches)</u>		<u>Exhaust Emission Control Systems</u>
LSZ0235EAA9	3.8	(235)	Engine Modification Diesel Injection - Direct Turbocharger
LSZ0353EAB7	5.8	(353)	Engine Modification Diesel Injection - Direct Turbocharger
LSZ0396DAB3	6.5	(396)	Engine Modification Diesel Injection - Direct
LSZ0396FAB9	6.5	(396)	Engine Modification Diesel Injection - Direct Turbocharger Intercooler
LSZ0513EABX	8.4	(513)	Engine Modification Diesel Injection - Direct Turbocharger

Engine models and codes are listed on attachments.

The following are the certification emission standards for these engine families:

<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>	<u>Particulates</u> <u>gm/bhp-hr</u>
1.3	15.5	6.0	0.6

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>
LSZ0235EAA9	0.6	1.5	5.1	0.54
LSZ0353EAB7	0.6	1.6	5.1	0.50
LSZ0396DAB3	0.8	3.4	5.4	0.54
LSZ0396FAB9	0.4	2.3	4.6	0.49
LSZ0513EABX	1.2	2.0	5.5	0.44

BE IT FURTHER RESOLVED: That the Executive Officer has been provided all material required to demonstrate certification compliance with the provisions of the Board's emission control system warranty regulations (California Health and Safety Code, Section 43205.5).

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 and attachments.

Executed at El Monte, California this 22nd day of June, 1989.


K.D. Drachand, Chief
Mobile Source Division

1990 AIR RESOURCES BOARD SUPPLEMENTAL DATA SHEET

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Manufacturer	<u>ISUZU MOTORS LIMITED</u>	Engine Family	<u>LSZ0235EAA9, LSZ0353EAB7, LSZ0396DAB3, LSZ0396FAB9, LSZ0513EABX</u>
Evaporative Family	<u>NA</u>	Engine Type	<u>L4 , L6 L6 , L6 , L6</u>
		Liters (CID)	<u>3.856(235) , 5.785(353) , 6.494(396) , 6.494(396) , 8.407(513)</u>

ABBREVIATIONSIgnition 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, EPFI, MPFI, SFI,
 DID, DIP, HOS, OS
 nV-nVenturi Carburetor
 VV-Variable Venturi Carburetor

Exhaust Emissions Control System

AIP-Air Injection - Pump
 AIV-Air Injection - Valve
 EGR-Exhaust Gas Recirculation
 EIC-Electronic Injection Control
 (Diesel Only)
 EM-Engine Modification
 SPL-Smoke Puff Limiter or
 Throttle Delay
 TOC-Trap Oxidizer, Continual
 TOP-Trap Oxidizer, Periodical
 DBC-Dual Bed Catalyst
 OC-Oxidation Catalyst
 TWC-Three-Way Catalyst
 WUOC-Warm-Up Oxidation Catalyst
 WUTWC-Warm-Up Three-Way Catalyst
 OS-Oxygen Sensor
 HOS-Heated Oxygen Sensor

Special Features

CFI-Central Fuel
 Injection or
 Throttle Body
 Injection
 EPFI-Electronic Port
 Fuel Injection
 MPFI-Mechanical Port
 Fuel Injection
 SFI-Sequential Fuel
 Injection
 DID-Diesel Injection-
 Direct
 DIP-Diesel Injection-
 Prechamber
 TC-Turbocharger
 SC-Supercharger
 IC-Intercooler or
 Aftercooler
 CCV-Combustion Chamber
 Valve
 OBD-On-Board Diagnostics

VEHICLE MODELS:

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

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HEAVY-DUTY DIESEL ENGINES

LHDD

Manufacturer ISUZU MOTORS LIMITED Engine Family LSZ0235EAA9

Liter (CID) 3.856(235) Eng. Type L4

Emission Control Sys. and (Special Features) EM (DID, TC)

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)
4BD1T	DIESEL KIKI CO., LTD. 8944551022 8944574772	DIESEL KIKI CO., LTD. 1153001420	121 HP 3000 RPM	70.0 mm ³ /stroke (46.7 lbs/Hr)	235 ft-lb 2200 RPM	70.0 mm ³ /stroke (34.2 lbs/Hr)

Date of Issue _____

Revisions:

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HEAVY-DUTY DIESEL ENGINES

MHDD

Manufacturer ISUZU MOTORS LIMITED Engine Family LSZ0353EAB7

Liter (CID) 5.785(353) Eng. Type L6

Emission Control Sys. and (Special Features) EM (DID, TC)

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)
6BD1T	DIESEL KIKI CO., LTD. 1156022281 1156022741	DIESEL KIKI CO., LTD. 1153002120	165 HP 3000 RPM	68.1 mm ³ /stroke (68.1 lbs/Hr)	335 ft-lb 1900 RPM	68.1 mm ³ /stroke (43.1 lbs/Hr)

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 HEAVY-DUTY DIESEL ENGINES

LMDD

Manufacturer ISUZU MOTORS LIMITED Engine Family LSZ0396DAB3
 Liter (CID) 6.494(396) Eng. Type L6
 Emission Control Sys. and (Special Features) EM (DID)

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)
6BG1	DIESEL KIKI CO., LTD. 1156024821 1156024831	DIESEL KIKI CO., LTD. 1153002120	150 HP 3000 RPM	62.3 mm ³ /stroke (62.3 lbs/Hr)	281 ft-lb 1800 RPM	59.5 mm ³ /stroke (35.8 lbs/Hr)
6BG1N	DIESEL KIKI CO., LTD. 1156026290	DIESEL KIKI CO., LTD. 1153002120	140 HP 2700 RPM	65.9 mm ³ /stroke (59.4 lbs/Hr)	281 ft-lb 1800 RPM	59.5 mm ³ /stroke (35.8 lbs/Hr)

Date of Issue _____ Revisions: Engine model 6BG1N added by running change RC90H01 on 9-28-89.

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HEAVY-DUTY DIESEL ENGINES**

MHDD

Manufacturer ISUZU MOTORS LIMITED Engine Family LSZ0396FAB9
 Liter (CID) 6.494(396) Eng. Type L6
 Emission Control Sys. and (Special Features) EM (DID, IC, TC)

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)
6BG1X	DIESEL KIKI CO., LTD. 1156022153	DIESEL KIKI CO., LTD. 1153002190	185 HP 2800 RPM	81.6 mm ³ /stroke (76.3 lbs/Hr)	398 ft-lb 1700 RPM	79.7 mm ³ /stroke (45.2 lbs/Hr)

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HEAVY-DUTY DIESEL ENGINES

MHDD

Manufacturer ISUZU MOTORS LIMITED Engine Family LSZ0513EABX
 Liter (CID) 8.407(513) Eng. Type L6
 Emission Control Sys. and (Special Features) EM (DID, TC)

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)
6SAIT	DIESEL KIKI CO., LTD. 1156026230	DIESEL KIKI CO., LTD. 1153002510	220 HP 2500 RPM	101.3 mm ³ /stroke (84.4 lbs/Hr)	542 ft-lb 1700 RPM	109.6 mm ³ /stroke (62.1 lbs/Hr)

Date of Issue _____ Revisions: