

ENGINE SPECIFICATIONS

Engine Model	Base Model :	4HK1X (Intercooler turbo)
	Model No. :	BI-4HK1XYGV-02
Customer	EXPORT	
Application	Generator	
Drawing No. (3D Data Code)	E4-1033-024-0	

Symbol	Date	Revision Record	Issue No.
0	30 Oct. 2008	: For confirmation of prototype specification	:
	:	:	:
	:	:	:
	:	:	:
	:	:	:
	:	:	:

ISUZU MOTORS LIMITED
Powertrain Business Dept.

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Engine Specifications

Model No. BI-4HK1XYGV-02

Rev. 0

Manufacturer	ISUZU MOTORS LIMITED	
Engine Model	Base Model: 4HK1X Intercooler Turbo	Model No.: BI-4HK1XYGV-02
Application	Generator	
Emission regulation	EPA Tier-3 / EC Stage-III A	
Engine type	Four cycle, water cooled, overhead camshaft, vertical in-line, direct injection type, with turbocharger	

No. of cylinders - bore x stroke 4 - 115.0 mm x 125.0 mm

Total piston displacement 5.193 L

Compression ratio 17.5 to 1

Engine performance Rating

Test conditions Standard atmospheric condition

Conforming standard JPN;JIS D0006-1 US;SAEJ1349 EU;ISO15550
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Break-in time 30 hrs

With AC generator and without cooling fan

With air cleaner and exh. silencer

Fuel : JPN: JIS-NO.2

Rated Output	: 129.0 ± 2.6 kW / 1800 min ⁻¹
	: 108 ± 5.5 kW / 1500 min ⁻¹

Continuous rating	: 116 kW / 1800 min ⁻¹
	: 97.2 kW / 1500 min ⁻¹

S.F.C at Continuous rating	: 217 ± 13.6 g/kw.h (at 1800min ⁻¹)
	: 216 ± 13.6 g/kw.h (at 1500min ⁻¹)

No load max. speed : 1800 ± 20 min⁻¹Low idle speed : 1000±20 min⁻¹

Type of fuel	Diesel fuel only (JPN:JIS-NO.2, US:ASTM-2D, EU:EN590)
Engine dry weight	Approx. 470 kg
Dimensions	L 947 x W 776 x H 994.8 (without cooling fan)
Firing order	1 - 3 - 4 - 2
Rotating direction	Clockwise viewed from cooling fan
Valve device	Overhead camshaft

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Supercharging device

Supercharging system	With Exhaust turbocharger
Driving system	---
Lubricating system	Full forced pressure feed type (Oil-cooled)
Manufacturer	ISIKAWAJIMA HARIMA HEAVY INDUSTRIES, LTD.
Name of type	RHF55 without waist gate

Fuel device

Injection pump	
Manufacturer	Denso corporation
Name of type	Common rail HP3 type
Plunger	2 - Diameter 8.5 mm x Stroke 8.8 mm (Lubricated by fuel oil)
Injection nozzle	
Manufacturer	Denso corporation
Name of type	Electrical multi-hole type
Fuel injection time regulator	Electrical controlled
Manufacturer	---
Name of type	---
Fuel feed pump	With
Manufacturer	Denso corporation
Name of type	Rotary type (Lubricated by fuel oil)
Fuel filter	With (Loose part)
Filtering system	Paper element type (With priming pump and water separator)
Manufacturer	WAKO INDUSTRIAL CO.,LTD
Name of type	Cartridge type
Governor	
Speed control system	Electrical variable speed control
Lubricating system	---
Manufacturer	TRANSTRON Inc.
Name of type	Electrical control type

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Lubricating device

Lubricating system Full forced pressure feed type

Lubricating pump

Type of pump Gear pump

Driving system Crank gear driven

Oil pressure regulating device Piston - spring type

Oil pressure indicating device With engine oil pressure sensor

Oil filter

Filtering system Full flow paper element, Remoto type

Manufacturer Nippon Donaldson,Ltd

Oil cooler

Cooling system Water cooled type (Built-in Engine)

Manufacturer TOKYO ROKI CO.,LTD

Cooling device

Cooling system Pressurized water forced circulation type

Cooling fan Without

Type of fan

Driving system Belt driven by crankshaft, speed ratio: 1.01

Water pump

Type of pump Impeller type

Driving system Belt driven by crankshaft pulley

Thermostat

Regulating system Wax-pellet type

Manufacturer Fuji Bellows Co., Ltd.

Water temperature
indicating device With engine coolant water temperature sensor

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Air cleaner

Cleaning system ---
Manufacturer ---

Starting device

Starting motor
Manufacturer Nikko Electric Industry Co.,Ltd
Name of type Reduction type
Voltage 12 V
Output 2.5 kW

Engine stop device Fuel cut (Electronic controlled)

Preheating device QOS- II

Alternator

Generating system A/C type
Manufacturer HITACHI LTD.
Voltage 12 V
Output 110 A
Driving system Belt driven by crankshaft pulley

Regulator

Regulating system Built-in IC regulator
Manufacturer HITACHI LTD.
Charging discharging indicating system: ---

Hour meter

Without
System ---
Manufacturer ---
Fitting position ---
Driving system ---
Speed ratio ---
Rated speed indicator ---

Power Take Off

Without
Flange type ---
Speed ratio ---
Spline number of teeth ---

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Allowable inclination angle 0.35 rad. for all directions viewed from flywheel

Capacity

Lubrication oil MAX: approx. 20.5 L MIN: approx. 13.0 L (Oil pan only)
 Air cleaner ---
 Injection pump ---
 Governor ---
 Cooling water 14.0 L (Engine only)
 Others ---

Maintenance data

Valve clearance and adjustment	Valve	Valve clearance	Valve timing: open	Valve timing: close
	Inlet	0.4 mm at cold	0.33 rad BTDC	0.93 rad ABDC
	Exhaust	0.4 mm at cold	0.84 rad BBDC	0.24 rad ATDC

Injection timing Electrical control
 Initial injection pressure ---
 Compressive pressure 3.04 MPa (31 kgf/cm²) (At engine speed 200 min⁻¹)

Reference data

Thermostat Initial opening temperature at atmospheric pressure: 82.0°C
 Temperature at valve lift of 10.0 mm and over: 95.0°C

Painting color Clear, except for cooling fan, electrical part connectors, and labels

Lubricating oil at delivery There is no engine oil when engine deliver from Isuzu factory.

Recommended lubrication oil API Grade CD, CE, CF, CF-4 or ACEA Grade B2/B3, E2/E3
 *Please refer to "Engine Instruction Manual" for details.

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Dress Level

No.	Item	Description
1	HOUSING ; FLYWHEEL	SAE J617c #3
2	FLYWHEEL	SAE J620 11.5"
3	OIL PAN	Rear sump type
4	COOLING FAN	Without
5	AC GENERATOR	12V - 110A
6	STARTER	12V - 2.5kW
7	FUEL FILTER	Loose parts (Remote type)
8	WATER SEDIMENTER	With (Integrated with fuel filter)
9	OIL FILTER	Spin-on type, Combined type (Remote)

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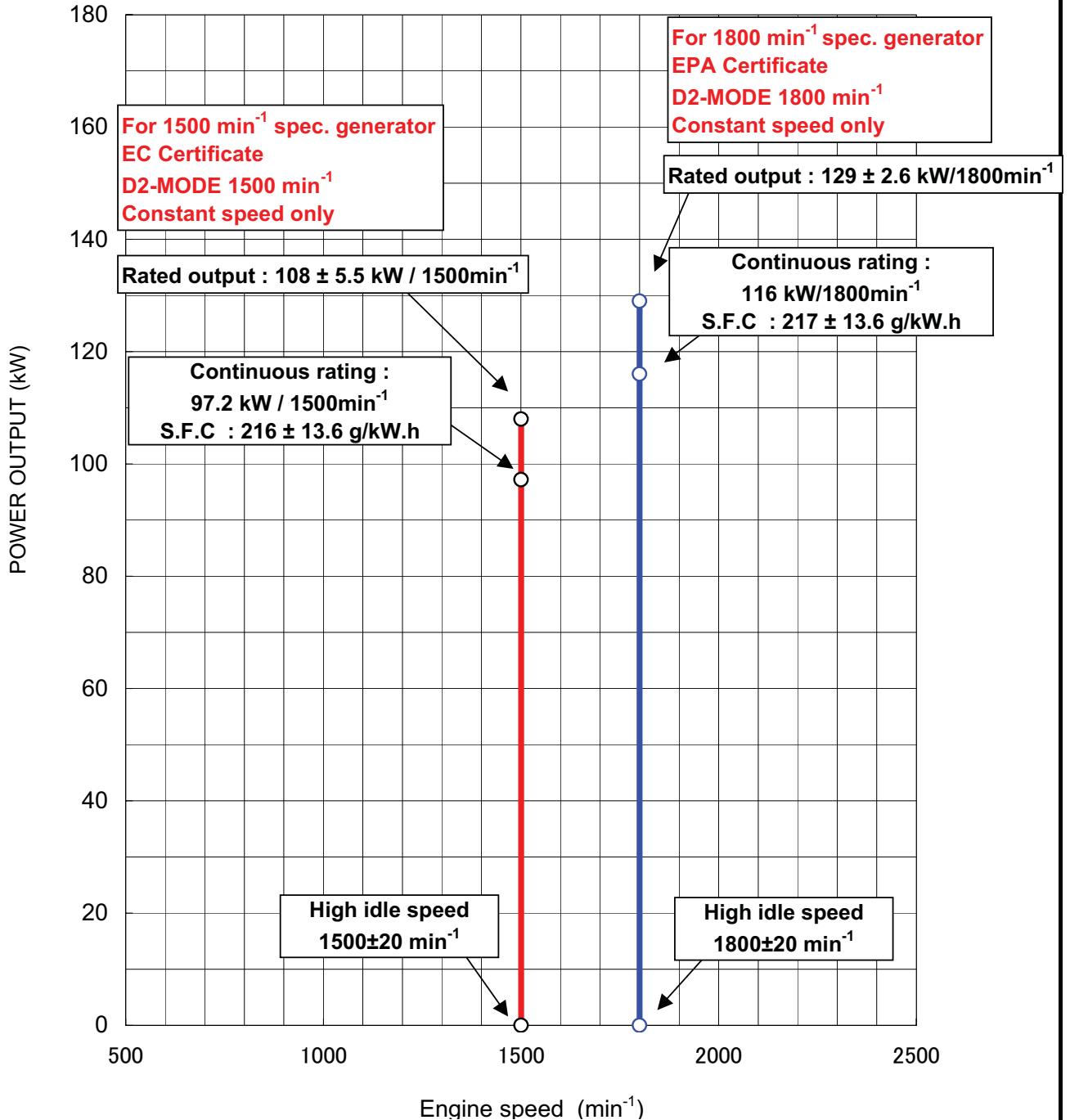
Loose parts

No.	Parts No.	Item	Qty	Remarks
1	898077-7821	ECM	1	
2	812146-8300	SENSOR;Inlet air temp.	1	
3	897324-3861	OIL FILTER ASM	1	
4	898013-9863	FILTER ASM;MAIN, FUEL	1	
5	897383-4270	PIPE ASM;FUEL	4	
6	109630-0860	PACKING;FUEL PIPE	8	
7	109675-0951	BOLT;EYE	4	
8	897217-7780	SENSOR;Barometrical press.	1	
9	114145-1840	GASKET;Exhaust pipe	1	
10	898068-2750	FEED PUMP ASM;Electric	1	
11	898075-8551	FILTER ASM;PRE, FUEL	1	
12	897173-9510	RELAY;GLOW	1	
13	582550-0290	RELAY;MAIN	1	
14	582550-0290	RELAY;STARTER CUT	1	
16	582550-0290	RELAY;FUEL PUMP	1	
17	894402-5000	SWITCH ASM;STARTER	1	



**BI-4HK1XYGV-02 Target performance curve
FOR GENERATOR-SET**

Condition	JIS D0006 / SAE J1349 / ISO15550
Temp.	Standard
Test hour	30Hr
Cooling fan	Without
Air cleaner	With (Intake restriction : 2.45kPa at 1800rpm)
Exh.silencer	With(Exhaust restriction : 13.3kPa at 1800rpm)
Generator	With (No load)



Engine specifications Revision chart

Customer : EXPORT

Engine Model : BI-4HK1XYGV-01

Application : Generator

Rev. No.	IS No.	Date	Page	Item	Previous	Current	Description (Reason of change)
0	IS-08-170-0	29.Oct.08		For confirmation of prototype engine specifications			