

## ENGINE SPECIFICATIONS

Engine Model	Base Model :	AH-4HK1X (Intercooler turbo)
	Model No. :	AH-4HK1XYBW-02
Customer	EXPORT	
Application	General power	
Drawing No. ( 3D Data Code )	E4-1033-028-0	

Symbol	Date	Revision Record	Issue No.
0	: 22 Sep. 2008	: For confirmation of prototype specification	:
	:	:	:
	:	:	:
	:	:	:
	:	:	:
	:	:	:

ISUZU MOTORS LIMITED  
Powertrain Business Dept.

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## Engine Specifications

Model No. AH-4HK1XYBW-02

Rev. 0

Manufacturer	ISUZU MOTORS LIMITED	
Engine Model	Base Model: 4HK1X Intercooler Turbo	Model No.: AH-4HK1XYBW-02
Application	General power	
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
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Test conditions	Standard atmospheric condition
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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	: 147.0 ± 3 kW / 2100 min <sup>-1</sup>
Maximum Torque	: 686 ± 60 Nm / approx. 1500 min <sup>-1</sup>
Fuel consumption at rated.	: 211 ± 13.6 g/kw.h
No load max. speed	: 2100 ± 20 min <sup>-1</sup>
Low idle speed	: 800 ± 20 min <sup>-1</sup>

Type of fuel	Diesel fuel only ( JPN:JIS-NO.2, US:ASTM-2D, EU:EN590 )
Engine dry weight	Approx. 470 kg
Dimensions	L 1019.6 x W 776 x H 1033.8 (with 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 Dia 650 mm - Suction - 7 Blade

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**

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 Cleaning system ---  
 Manufacturer ---

**Starting device**

Starting motor  
 Manufacturer Nikko Electric Industry Co.,Ltd  
 Name of type Reduction type  
 Voltage 12V  
 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 12V  
 Output 110A  
 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** 0.61 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/cm<sup>2</sup>) (At engine speed 200 min<sup>-1</sup>)

**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

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No.	Item	Description
1	HOUSING ; FLYWHEEL	SAE J617c #3
2	FLYWHEEL	SAE J620 10" & 11.5" Combined type
3	OIL PAN	Rear sump type
4	COOLING FAN	Dia 650mm-Suction-7Blade
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

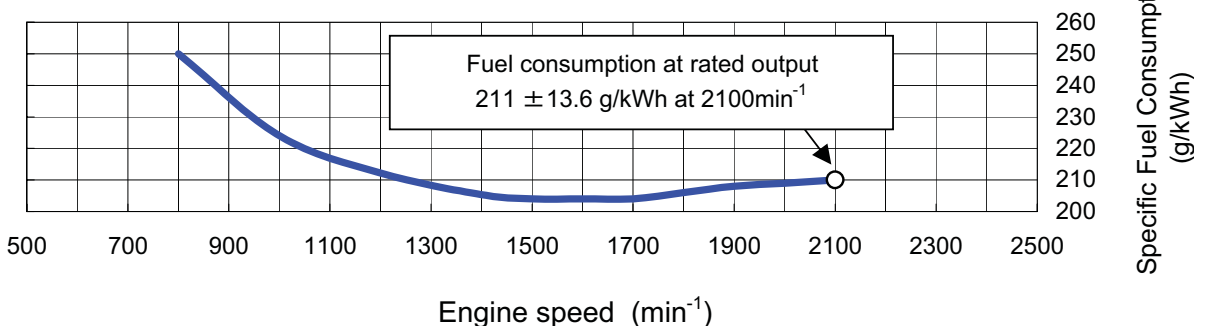
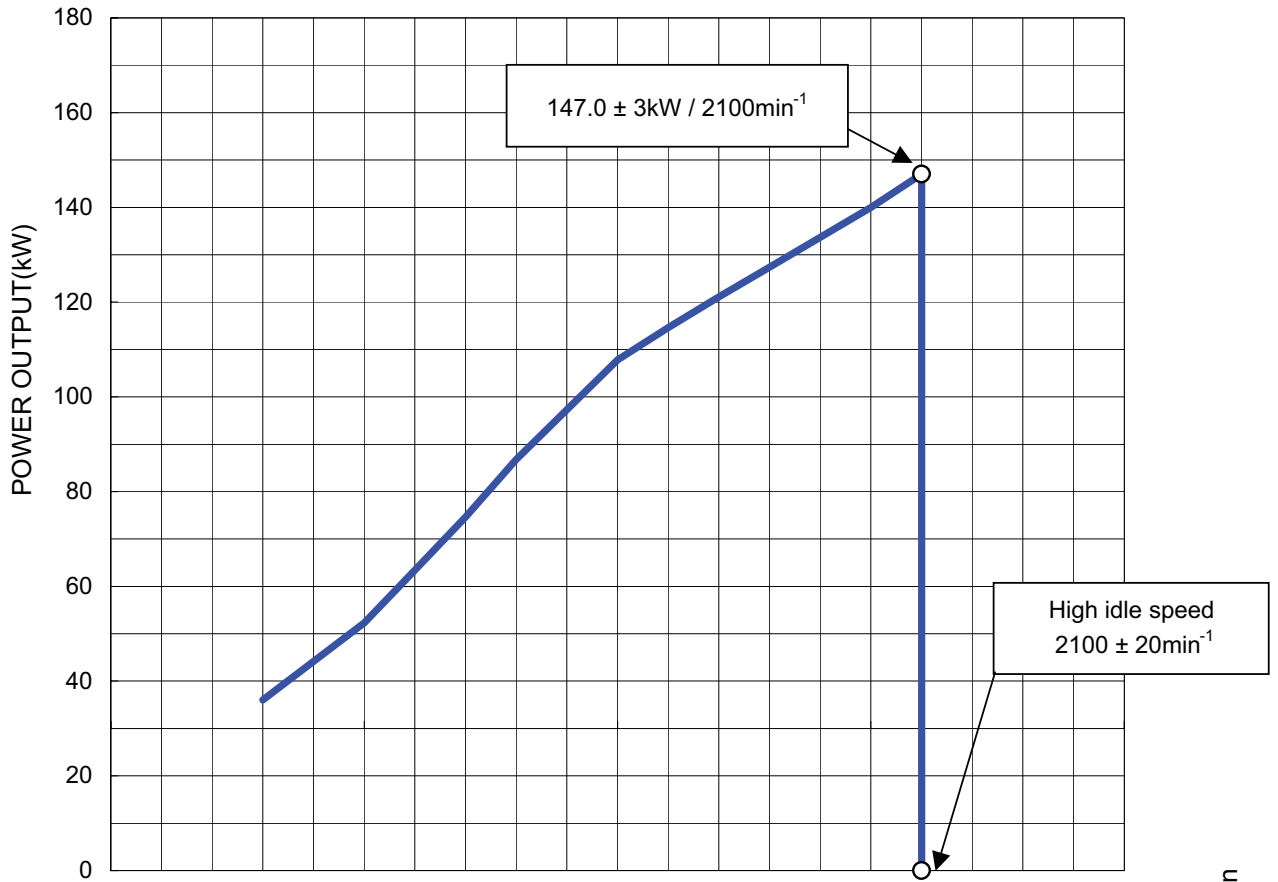
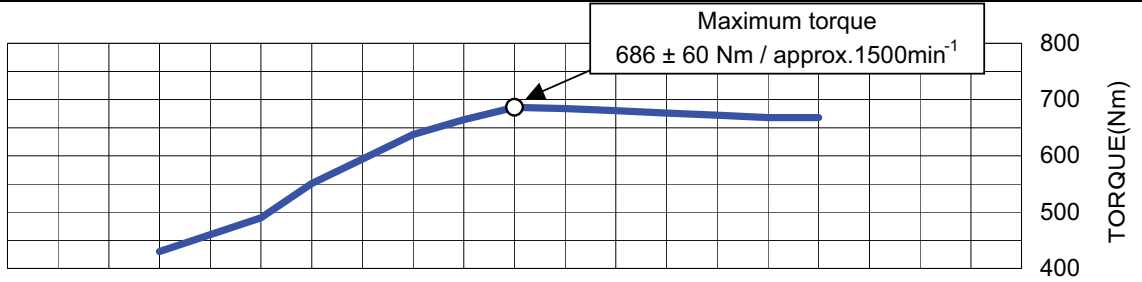
No.	Parts No.	Item	Qty	Remarks
1	898077-7801	ECM	1	
2	812146-8300	SENSOR;Inlet air temp.	1	
3	897324-3861	OIL FILTER ASM	1	
4	898013-9863	FILTER ASM;MAIN, FUEL	1	
5	897383-4270	PIPE ASM;FUEL	4	
6	109630-0860	PACKING;FUEL PIPE	8	
7	109675-0951	BOLT;EYE	4	
8	897217-7780	SENSOR;Barometrical press.	1	
9	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	
15	582553-0444	RELAY;STARTER	1	
16	582550-0290	RELAY;FUEL PUMP	1	
17	894402-5000	SWITCH ASM;STARTER	1	





**AH-4HK1XYBW-02**  
For General power

Condition	JIS D0006 / SAE J1349 / ISO15550
Ambient temp.	25 deg.C
Test hour	30Hr
Cooling fan	Without ( Fan disengaged)
Air cleaner	With (Intake restriction 3.4kPa)
Exh.silencer	With (Exhaust restriction 13.3kPa)
Generator	With (No load)



### Engine specifications Revision chart

Customer : EXPORT

Engine Model : AH-4HK1XYBW-02      Application : General power

Rev. No.	IS No.	Date	Page	Item	Previous	Current	Description (Reason of change)
0	IS-08-147-0	22.Sep.08		For confirmation of prototype engine specifications			