

# ディーゼル機関仕様書

## ENGINE SPECIFICATIONS

機関型式 Engine Model	公式呼称 4JJ1 (Intercooler turbo) Base Model
	社内呼称 AI-4JJ1XYBW-02 Model No.
納入先 Customer	一般輸出 EXPORT
搭載機種 Application	一般動力 General power
添付図面 Drawing No. ( 3D Data Code )	E3-1040-018-1

Symbol	Date	変更歴 Revision Record	Issue No.
0	2008-9-3	試作仕様確認用として作成 For confirmation of prototype engine specifications.	

## ディーゼル機関仕様書

社内呼称 AI-4JJ1XYBW-02

変更経歴 Rev.

## Engine Specifications

Model No.

0

製造業者名 Manufacturer	いすゞ自動車株式会社 ISUZU MOTORS LIMITED		
機関名称 Engine Model	公式呼称: 4JJ1 (Intercooler turbo)	社内呼称:	AI-4JJ1XYBW-02
用途 Application	Base Model 4JJ1 (Intercooler turbo)	Model No.	AI-4JJ1XYBW-02
機関型式 Engine type	一般動力 General power		
気筒数 - 径 × 行程 No. of cylinders-bore x stroke	4サイクル水冷頭上弁式直列、間接噴射式 Four cycle, water cooled, overhead valve, vertical in-line, direct injection type		
総行程容積 Total piston displacement	4 - 95.4 mm x 104.9 mm		
圧縮比 Compression ratio	2.999 L		
機関性能 Engine performance	17.5 17.5 to 1		
	: 仕様値 Rating		

試験条件 Test conditions	: 大気標準状態 Standard atmospheric condition
準拠規格 Conforming standard	: すり合わせ充分 Break-in time 30 hrs
JPN;JIS D0006-1	: ACジェネレーター付、ファン無 With AC generator, without cooling fan
US;SAEJ1349	: エアクリーナー、サイレンサー付 With air cleaner and exh. silencer
EU;ISO15550	* Intake restriction -2.45kPa or less * Exhaust restriction 13.3kPa or less (使用燃料: JIS 2号軽油相当)

定格出力 Rated Output	: 95.0±3% kW / 2500 min <sup>-1</sup>
最大トルク Maximum Torque	: 408±5%Nm / approx. 2000 min <sup>-1</sup>
燃料消費率(定格出力) Fuel consumption at rated.	: 207±5% g/kw.h
無負荷最高回転速度 No load max. speed	: 2500±10 min <sup>-1</sup>
無負荷最低回転速度 Low idle speed	: 800±10 min <sup>-1</sup>

使用燃料 Type of fuel	軽油 (JIS 2号軽油相当) Diesel fuel only ( JPN:JIS-NO.2, US:ASTM-2D, EU:EN590 )
機関乾燥質量 Engine dry weight	約 320 kg Approx. 320 kg
機関寸法 Dimensions	全長 977 mm × 全幅 739 mm × 全高 842 mm (ファン付) L 977 x W 739 x H 842 ( With cooling fan )
着火順序 Firing order	1 - 3 - 4 - 2
回転方向 Rotating direction	ファン側からみて時計方向 Clockwise viewed from cooling fan
弁装置 Valve device	頭上カム軸式 (OHV) Overhead valve

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過給装置	付
Supercharging device	With
過給方式	排気ターボ
Supercharging system	Exhaust turbocharger
駆動方式	---
Driving system	---
潤滑方式	強制潤滑式(油冷式)
Lubricating system	Full forced pressure feed type (Oil cooled & water-cooled type)
製造業者名	IHI LTD.
Manufacturer	IHI LTD.
名称	RHF5形 (ウエストゲート無)
Name of type	RHF5 without waste gate
燃料装置	
Fuel device	
噴射ポンプ	
Injection pump	
製造業者名	(株) デンソー
Manufacturer	Denso corporation
名称	コモンレール式 HP3型
Name of type	Common rail HP3 type
プランジャー	2 - 径 8.5 mm X カムリフト 8.8 mm (燃料油潤滑式)
Plunger	2 - Diameter 8.5 mm x Stroke 8.8 mm (Lubricated by fuel oil)
噴射ノズル	
Injection nozzle	
製造業者名	(株) デンソー
Manufacturer	Denso corporation
名称	電気式多孔インジェクター (G2タイプ)
Name of type	Electrical multi-hole type
噴射時期調整機	電子制御式
Fuel injection time regulator	Electrical controlled
製造業者名	---
Manufacturer	---
名称	---
Name of type	---
燃料供給ポンプ	付
Fuel feed pump	With
製造業者名	(株) デンソー
Manufacturer	Denso corporation
名称	ロータリー式 (燃料油潤滑式)
Name of type	Rotary type(Lubricated by Fuel oil)
燃料濾過器	付
Fuel filter	With
濾過方式	濾紙式(プライミングポンプ、セジメンター付)
Filtering system	Paper element type (With priming pump and water separator)
製造業者名	和興産業(株)
Manufacturer	WAKOU INDUSTRY CO. LTD
名称	カートリッジ型
Name of type	Cartridge type
调速機	
Governor	
调速方式	電子式全速制御
Speed control system	Electrical variable speed control
潤滑方式	---
Lubricating system	---
製造業者名	(株) トランストロン
Manufacturer	TRANSTRON Inc.
名称	電子制御式
Name of type	Electrical control type

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## 潤滑装置

Lubricating device

潤滑方式

強制循環式

Lubricating system

Full forced pressure feed type

潤滑ポンプ

Lubricating pump

型式

ギヤポンプ

Type of pump

Gear pump

駆動方式

クランクギア駆動

Driving system

Crank gear driven

油圧調整装置

ピストンバネ式

Oil pressure regulating device Piston - spring type

油圧指示装置

油圧センサ付

Oil pressure indicating device With engine oil pressure sensor

潤滑油濾過器

Oil filter

濾過方式

全流濾紙式

Filtering system

Full flow paper element

製造業者名

日本ドナルドソン(株)

Manufacturer

Nippon Donaldson, Ltd

潤滑油冷却器

Oil cooler

冷却方式

水冷内蔵式

Cooling system

Water cooled type (Built-in Engine)

製造業者名

東京濾器(株)

Manufacturer

TOKYO ROKI CO., LTD

## 冷却装置

Cooling device

冷却方式

水冷式

Cooling system

Pressurized water forced circulation type

冷却ファン

Cooling fan

形式

径 550-吸込み-8枚羽根(N型)

Type of fan

Dia. 550 mm - Suction type - 8 blades

駆動方式

ベルト駆動 プーリ比=クランク/ファン= 123 / 120 = 1.03

Driving system

Belt driven by crankshaft, speed ratio: 1.03

水ポンプ

Water pump

形式

渦巻式

Type of pump

Impeller type

駆動方式

ベルト駆動

Driving system

Belt driven by crankshaft pulley

水温調節装置

Thermostat

方式

ワックスペレット式

Regulating system

Wax-pellet type

製造業者名

富士精工(株)

Manufacturer

Fuji Bellows Co., Ltd.

水温指示装置

水温センサ付

Water temperature indicating device

With (water temp. sensor)

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空 気 清 浄 器	---
Air cleaner	---
方 式	---
Cleaning system	---
製造業者名	---
Manufacturer	---
始 動 装 置	
Starting device	
電動機	
Starting motor	
製造業者名	(株)デンソー
Manufacturer	Denso corporation
名称	リダクション型
Name of type	Reduction type
電圧	12V
Voltage	12V
出力	2.5kW
Output	2.5kW
停 止 装 置	燃料遮断 (電子制御による)
Engine stop device	Fuel cut (Electronic controlled)
予 熱 装 置	有 (QOS- II グロープラグ)
Preheating device	With Glow plug (QOS- II)
充 電 ( 点 灯 ) 発 電 機	
Alternator	
方式	交流式
Generating system	A/C type
製造業者名	(株)日立製作所
Manufacturer	HITACHI Ltd.
電圧	12V
Voltage	12V
出力	110A
Output	110A
駆動方式	ベルト駆動
Driving system	Belt driven by crankshaft pulley
充 電 自 動 調 整 器	
Regulator	
方式	IC式(発電機に内蔵)
Regulating system	Built-in IC regulator
製造業者名	(株)日立製作所
Manufacturer	HITACHI Ltd.
充放電指示方式	---
Charging discharging indicating system:	---
時 間 計	なし
Hour meter	Without
方式	---
System	---
製造業者名	---
Manufacturer	---
取付位置	---
Fitting position	---
駆動方式	---
Driving system	---
回転比	---
Speed ratio	---
定格運転速度目盛	---
Rated speed indicator	---

# ディーゼル機関仕様書

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社内呼称 AI-4JJ1XYBW-02  
Model No.変更経歴 Rev.  
0

Power Take Off	付
Power Take Off	With
許容傾斜角度	フライホイール側から見て
Allowable inclination angle	前下がりに: 0.61rad 後ろ下がりに: 0.61rad 左下がりに: 0.61rad 右下がりに: 0.61rad 0.61 rad.(35deg) for all directions viewed from flywheel
各種容量	
Capacity	
油量	MAX: 約 15.0 L MIN: 約 11.0 L (オイルパン内容量)
Lubrication oil	MAX : approx. 15.0 L MIN : approx. 11.0 L (Oil pan only)
空気清浄器	---
Air cleaner	---
噴射ポンプ室	---
Injection pump	---
調速器室	---
Governor	---
冷却水	約 6.0 L (エンジンのみ)
Cooling water	Approx 6.0 L (Engine only)
その他	---
Others	---
整備諸元	
Maintenance data	
弁整備諸元	項目 : 弁スキマ : 開弁時期 : 閉弁時期
Valve clearance and adjustment	Valve Valve clearance Valve timing: open Valve timing: close
Valve clearance and adjustment	吸気弁 : 冷間時 0.15 mm : 上死点前 0.23 rad(13deg) : 下死点後 0.72 rad(41deg) Inlet 0.15 mm at cold 0.23 rad(13deg) BTDC 0.72 rad(41deg) ABDC
Valve clearance and adjustment	排気弁 : 冷間時 0.15 mm : 下死点前 0.91 rad(52deg) : 上死点後 0.10 rad(5.7deg) Exhaust 0.15 mm at cold 0.91 rad(52deg) BBDC 0.10 rad(5.7deg) ATDC
噴射時期	全域電子制御式
Injection timing	Electrical control
噴射開始圧力	---
Initial injection pressure	---
圧縮圧力	3.0 MPa (エンジン回転: 200 min <sup>-1</sup> において)
Compressive pressure	(At engine speed 200 min <sup>-1</sup> )
参考諸元	
Reference data	
水温調節装置	開き始め (大気圧において) : 85.0 °C
Thermostat	Initial opening temperature at atmospheric pressure: 85.0 degrees C
Thermostat	ストローク 10.0 mm以上になる温度 : 92.0 °C
Thermostat	Temperature at valve lift of 10.0 mm and over: 92.0 °C
塗装色	クリア塗装
Painting color	但し、クーリングファンは白色、機械側接続部及び電装品端子、ラベル類は除く
Painting color	Clear, except for cooling fan, electrical part connectors, and labels
出荷時充填潤滑油	出荷時オイル無し
Lubricating oil at delivery	There is no engine oil when engine deliver from Isuzu factory.
推奨充填潤滑油	APIグレード* CD, CE, CF, CF-4 or ACEAグレード* B2/B3, E2/E3
Recommended lubrication oil	API Grade CD, CE, CF, CF-4 or ACEA Grade B2/B3, E2/E3
Recommended lubrication oil	* Please refer to "Engine Instruction Manual" for details.

ディーゼル機関仕様書  
Engine Specifications

社内呼称 AI-4JJ1XYBW-02  
Model No.

変更経歴 Rev.  
0

仕様概要: 本エンジンの主な特殊仕様は下記の通り。

Dress Level

No.	部品名称 Item	概要 Description
1	HOUSING ; FLYWHEEL	SAE#3 SAE#3
2	FLYWHEEL	SAE 11.5 & 10 Combined type SAE 11.5 & 10 Combined type
3	OIL LEVEL GAUGE	エンジン右側面 Engine RH attached
4	AC GENERATOR	日立製作所 A/C 12V-110A HITACHI A/C 12V-110A
5	STARTER	デンソー 12V-2.5kW Denso corporation 12V-2.5kW
6	FUEL FILTER	付き リモートタイプ With (remote type)
7	OIL FILTER	付き、エンジン右側面 With (Engine RH attached)
8	WATER INLET PIPE	右横向き(F/W側から見て) Right hand (Viewed from Flywheel)
9	WATER OUTLET PIPE	左横向き( F/W側から見て) Left hand (Viewed from Flywheel)
10	AIR INLET	左側後向き( F/W側から見て) Left hand (Viewed from Flywheel)
11	COOLING FAN	Φ550-8-吸込み dia.550-8 blades-Suction
12	POWER TAKE OFF	付 With

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## Engine Specifications

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付属納入部品 (エンジン本体に取り付かずに納入される部品)

Loose parts

No.	部品番号 Parts No.	部品名称 Item	個数 Qty	備考 Remarks
1	582550-0290	RELAY	1	
2	894248-1610	RELAY;STARTER	1	
3	582550-0290	RELAY;STARTER CUT	1	
4	897011-9490	RELAY;GLOW PLUG	1	
5	812146-8300	SENSOR;TEMP, INLET PIPE	1	
6	898086-2380	CONTROL UNIT;ENGINE	1	
7	897383-4270	PIPE ASM;FUEL	4	
8	109675-0951	BOLT;EYE,FUEL PIPE	4	
9	109630-0860	PACKING;FUEL PIPE	8	
10	898074-2911	FILTER ASM;FUEL	1	
11	898075-8551	FILTER;PRE,FUEL	1	
12	898068-2750	FEED PUMP ASM;ELECTRIC	1	
13	582550-0290	RELAY;FUEL PUMP	1	
14	897217-7780	SENSOR;MAP	1	
15	894369-0210	Gasket;Exhaust	1	



Rev.

0

## ENGINE SPECIFICATIONS

Engine Model	Base Model :	4JJ1 (Intercooler turbo)
	Model No. :	AI-4JJ1XYBW-02
Customer	EXPORT	
Application	General power	
Drawing No.	E3-1040-018-1	
( 3D Data Code )		

Symbol	Date	Revision Record	Issue No.
0	2008-9-3	For confirmation of prototype engine specifications.	
		:	:
		:	:
		:	:
		:	:
		:	:

ISUZU MOTORS LIMITED  
Powertrain Business Dept.

Manager : Nobuhiro Shimizu

Prepared : Koji Ogawa



## Engine Specifications

Model No. AI-4JJ1XYBW-02

Rev. 0

Manufacturer	ISUZU MOTORS LIMITED	
Engine Model	Base Model: 4JJ1 (Intercooler turbo)	Model No.: AI-4JJ1XYBW-02
Application	General power	
Emission regulation	EPA Tier-3 / EC Stage-III A	
Engine type	Four cycle, water cooled, overhead valve, vertical in-line, direct injection type	
No. of cylinders-bore x stroke	4 - 95.4 mm x 104.9 mm	
Total piston displacement	2.999 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
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With AC generator, without cooling fan
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With air cleaner and exh. silencer
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* Intake restriction -2.45kPa or less
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* Exhaust restriction 13.3kPa or less
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Fuel : JPN: JIS-NO.2
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Rated Output	: 95.0±3% kW / 2500 min-1
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Maximum Torque	: 408±5%Nm / approx. 2000 min-1
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Fuel consumption at rated.	: 207±5% g/kw.h
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No load max. speed	: 2500±10 min-1
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Low idle speed	: 800±10 min-1
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Type of fuel	Diesel fuel only ( JPN:JIS-NO.2, US:ASTM-2D, EU:EN590 )
Engine dry weight	Approx. 320 kg
Dimensions	L 977 x W 739 x H 842 ( With cooling fan )
Firing order	1 - 3 - 4 - 2
Rotating direction	Clockwise viewed from cooling fan
Valve device	Overhead valve

## Engine Specifications

Model No. AI-4JJ1XYBW-02

Rev. 0

**Supercharging device**

Supercharging system	With Exhaust turbocharger
Driving system	---
Lubricating system	Full forced pressure feed type (Oil cooled & water-cooled type)
Manufacturer	IHI LTD.
Name of type	RHF5 without waste 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
Filtering system	Paper element type (With priming pump and water separator)
Manufacturer	WAKOU INDUSTRY 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

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

Type of fan Dia. 550 mm - Suction type - 8 blades

Driving system Belt driven by crankshaft, speed ratio: 1.03

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 (water temp. sensor)  
#REF!

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**Air cleaner**

Cleaning system ---  
Manufacturer ---

**Starting device**

Starting motor  
Manufacturer Denso corporation  
Name of type Reduction type  
Voltage 12V  
Output 2.5kW

**Engine stop device** Fuel cut (Electronic controlled)

**Preheating device** With Glow plug (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**

With  
Maximum torque 130Nm  
Speed ratio 1 : 1  
Rotation Counterclockwise(Viewed from Engine front)  
Flange type SAE B type  
Spline number of teeth 13  
Diametric pitch 16/32  
Pressure angle 30 degrees

## Engine Specifications

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**Allowable inclination angle** 0.61 rad.(35deg) for all directions viewed from flywheel

**Capacity**

Lubrication oil MAX : approx. 15.0 L MIN : approx. 11.0 L (Oil pan only)  
 Air cleaner ---  
 Injection pump ---  
 Governor ---  
 Cooling water Approx 6.0 L (Engine only)  
 Others ---

**Maintenance data**

Valve clearance and adjustment	Valve	Valve clearance	Valve timing: open	Valve timing: close
	Inlet	0.15 mm at cold	0.23 rad(13deg) BTDC	0.72 rad(41deg) ABDC
	Exhaust	0.15 mm at cold	0.91 rad(52deg) BBDC	0.10 rad(5.7deg) ATDC

Injection timing Electrical control  
 Initial injection pressure ---  
 Compressive pressure 3.0 MPa (At engine speed 200 min-1)

**Reference data**

Thermostat Initial opening temperature at atmospheric pressure: 85.0 degrees C  
 Temperature at valve lift of 10.0 mm and over: 92.0 °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**

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

## Engine Specifications

Model No.

AI-4JJ1XYBW-02

Rev. 0

## Dress Level

No.	Item	Description
1	HOUSING ; FLYWHEEL	SAE#3
2	FLYWHEEL	SAE 11.5 & 10 Combined type
3	OIL LEVEL GAUGE	Engine RH attached
4	AC GENERATOR	HITACHI A/C 12V-110A
5	STARTER	Denso corporation 12V-2.5kW
6	FUEL FILTER	With (remote type)
7	OIL FILTER	With (Engine RH attached)
8	WATER INLET PIPE	Right hand (Viewed from Flywheel)
9	WATER OUTLET PIPE	Left hand (Viewed from Flywheel)
10	AIR INLET	Left hand (Viewed from Flywheel)
11	COOLING FAN	dia.550-8 blades-Suction
12	POWER TAKE OFF	With

## Engine Specifications

Model No. AI-4JJ1XYBW-02

Rev. 0

## Loose parts

No.	Parts No.	Item	Qty	Remarks
1	582550-0290	RELAY	1	
2	894248-1610	RELAY;STARTER	1	
3	582550-0290	RELAY;STARTER CUT	1	
4	897011-9490	RELAY;GLOW PLUG	1	
5	812146-8300	SENSOR;TEMP, INLET PIPE	1	
6	898086-2380	CONTROL UNIT;ENGINE	1	
7	897383-4270	PIPE ASM;FUEL	4	
8	109675-0951	BOLT;EYE,FUEL PIPE	4	
9	109630-0860	PACKING;FUEL PIPE	8	
10	898074-2911	FILTER ASM;FUEL	1	
11	898075-8551	FILTER;PRE,FUEL	1	
12	898068-2750	FEED PUMP ASM;ELECTRIC	1	
13	582550-0290	RELAY;FUEL PUMP	1	
14	897217-7780	SENSOR;MAP	1	
15	894369-0210	Gasket;Exhaust	1	

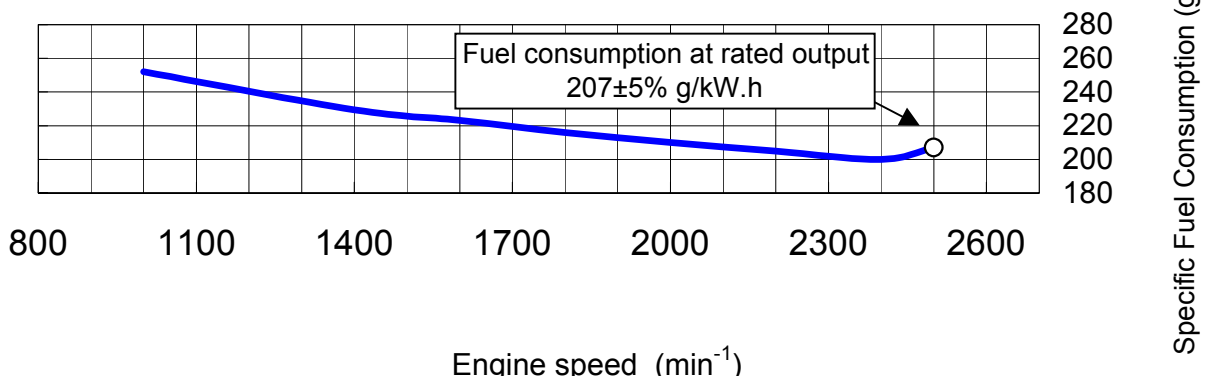
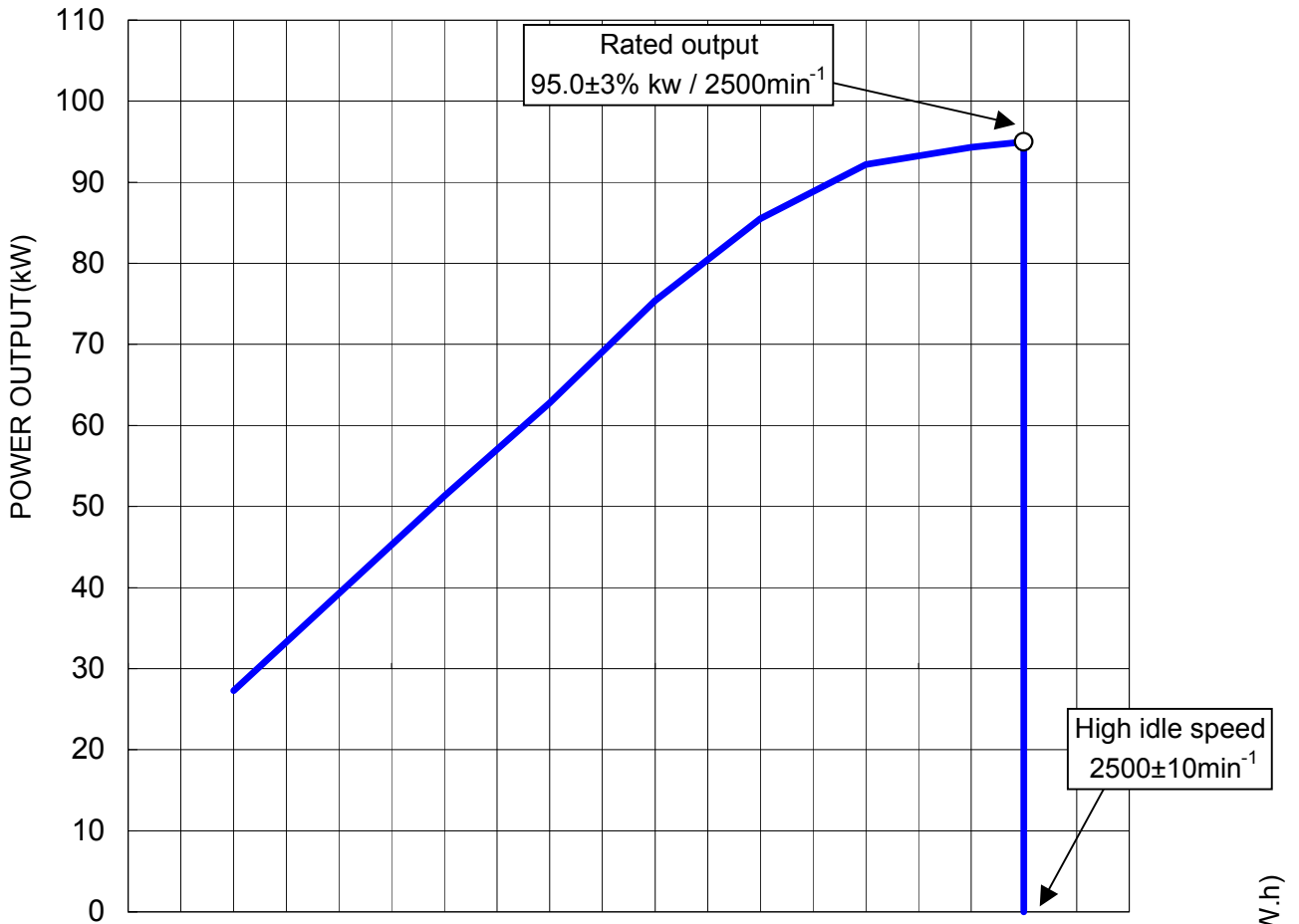
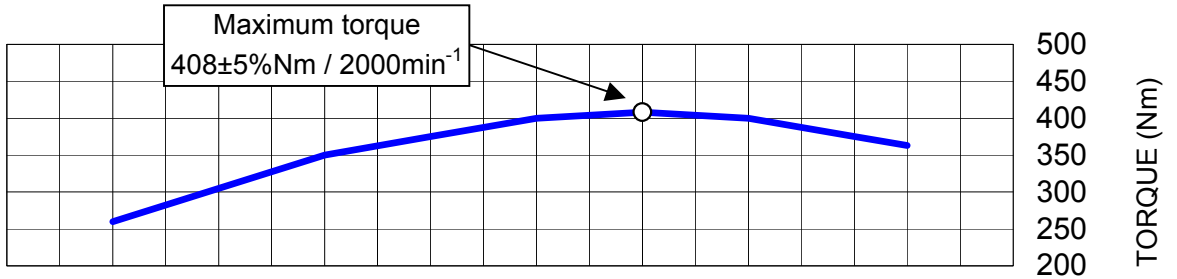




Preliminary

AI-4JJ1XYBW-01 & 02 Target performance curve FOR GENERAL POWER

Test condition	JIS D0006 / SAE J1349 / ISO15550
Ambient temp.	25 deg.C
Test hour	30Hr
Cooling fan	Without ( Fan disengaged)
Air cleaner	With (Intake restriction 2.45 kPa)
Exh.silencer	With (Exhaust restriction 13.3 kPa)
Generator	With (No load)



## Engine specifications Revision chart

Customer : EXPORT

Engine Model : AI-4JJ1XYBW-02

Application : General power

<b>Rev. No.</b>	<b>IS No.</b>	<b>Date</b>	<b>Page</b>	<b>Item</b>	<b>Previous</b>	<b>Current</b>	<b>Description (Reason of change)</b>
0	IS-08-135-0	3.Sep.08		For confirmation of prototype engine specifications			