

ディーゼル機関仕様書

ENGINE SPECIFICATIONS

機関型式	公式呼称 4JJ1 (Turbocharger)
Engine Model	Base Model
	社内呼称 BU-4JJ1TYGV-01
	Model No.
納入先	一般輸出
Customer	EXPORT
搭載機種	発電機
Application	Gene-set
添付図面	E3-1040-023-1
Drawing No.	
(3D Data Code)	

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 BU-4JJ1TYGV-01

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 (Turbocharger)	社内呼称:	BU-4JJ1TYGV-01
用途 Application	Base Model 4JJ1 (Turbocharger)	Model No.	BU-4JJ1TYGV-01
機関型式 Engine type	発電機 Gene-set		
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	: エアクリナー、サイレンサー付 With air cleaner and exh. silencer
EU;ISO15550	* Intake restriction -2.45kPa or less at 1800rpm * Exhaust restriction 13.3kPa or less at 1800rpm (使用燃料: JIS2号軽油相当)

定格出力 Rated Output	: 50.0±3% kW / 1800 min ⁻¹
常用出力 Continuous rating	: 43.0±5% kW / 1500 min ⁻¹
燃料消費率(常用出力) S.F.C at Continuous rating	: 43.0±3%Nm / 1800 min ⁻¹
無負荷最高回転速度 No load max. speed	: 36.0±5%Nm / 1500 min ⁻¹
無負荷最低回転速度 Low idle speed	: 217±5% g/kw.h (at 1800min ⁻¹)
	: 212±5% g/kw.h (at 1500min ⁻¹)
	: 1800±20 min ⁻¹
	: 1500±20 min ⁻¹
	: 1000±20 min ⁻¹

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 884 mm × 全幅 748 mm × 全高 846.6 mm (ファン付) L 884 x W 748 x H 846.6 (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-吐出し-7枚羽根
Type of fan	Dia. 550 mm - Blower type - 7 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	---

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Power Take Off Power Take Off	なし None
許容傾斜角度 Allowable inclination angle	フライホイール側から見て 前下がりに: 0.26rad 後ろ下がりに: 0.26rad 左下がりに: 0.26rad 右下がりに: 0.26rad 0.26 rad.(15deg) for all directions viewed from flywheel
各種容量 Capacity	
油量 Lubrication oil	MAX: 約 15.0 L MIN: 約 11.0 L (オイルパン内容量) 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 Cooling water	約 6.0 L (エンジンのみ) Approx 6.0 L (Engine only)
その他 Others	---
整備諸元 Maintenance data	
弁整備諸元 Valve clearance and adjustment	項目 : 弁スキマ : 開弁時期 : 閉弁時期 Valve Valve clearance Valve timing: open Valve timing: close 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 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 Injection timing	全域電子制御式 Electrical control
噴射開始圧力 Initial injection pressure	---
圧縮圧力 Compressive pressure	3.0 MPa (エンジン回転: 200 min ⁻¹ において) (At engine speed 200 min ⁻¹)
参考諸元 Reference data	
水温調節装置 Thermostat	開き始め (大気圧において) : 85.0 °C Initial opening temperature at atmospheric pressure: 85.0 degrees C ストローク 10.0 mm以上になる温度 : 92.0 °C Temperature at valve lift of 10.0 mm and over: 92.0 °C
塗装色 Painting color	クリア塗装 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 Clear, except for cooling fan, electrical part connectors, and labels
出荷時充填潤滑油 Lubricating oil at delivery	出荷時オイル無し There is no engine oil when engine deliver from Isuzu factory.
推奨充填潤滑油 Recommended lubrication oil	APIグレード* CD, CE, CF, CF-4 or ACEAグレード* B2/B3, E2/E3 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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Engine Specifications

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Model No.

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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	右側(F/W側から見て) Right hand (Viewed from Flywheel)
9	WATER OUTLET PIPE	左側(F/W側から見て) Left hand (Viewed from Flywheel)
10	COOLING FAN	Φ550-7-吐出し dia.550-7 blades-Blower
11	POWER TAKE OFF	なし None

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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	898098-0770	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;ELECTRIK	1	
13	582550-0290	RELAY;FUEL PUMP	1	
14	897217-7780	SENSOR;MAP	1	
15	894402-5000	SWITCH ASM;STARTER	1	
16	894369-0210	Gasket;Exhaust	1	

Rev.

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ENGINE SPECIFICATIONS

Engine Model	Base Model :	4JJ1 (Turbocharger)
	Model No. :	BU-4JJ1TYGV-01
Customer	EXPORT	
Application	Gene-set	
Drawing No.	E3-1040-023-1	
(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. BU-4JJ1TYGV-01

Rev. 0

Manufacturer	ISUZU MOTORS LIMITED	
Engine Model	Base Model: 4JJ1 (Turbocharger)	Model No.: BU-4JJ1TYGV-01
Application	Gene-set	
Emission regulation	EPA Interim Tier-4 / 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	

Test conditions	Standard atmospheric condition
<div style="border: 1px solid black; padding: 2px;"> Conforming standard JPN;JIS D0006-1 US;SAEJ1349 EU;ISO15550 </div>	Break-in time 30 hrs
	With AC generator, without cooling fan
	With air cleaner and exh. silencer
	* Intake restriction -2.45kPa or less at 1800rpm
	* Exhaust restriction 13.3kPa or less at 1800rpm
	Fuel : JPN: JIS-NO.2

Rated Output	: 50.0±3% kW / 1800 min ⁻¹ : 43.0±5% kW / 1500 min ⁻¹
Continuous rating	: 43.0±3%Nm / 1800 min ⁻¹ : 36.0±5%Nm / 1500 min ⁻¹
S.F.C at Continuous rating	: 217±5% g/kw.h (at 1800min ⁻¹) : 212±5% g/kw.h (at 1500min ⁻¹)
No load max. speed	: 1800±20 min ⁻¹ : 1500±20 min ⁻¹
Low 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. 320 kg
Dimensions	L 884 x W 748 x H 846.6 (With cooling fan)
Firing order	1 - 3 - 4 - 2
Rotating direction	Clockwise viewed from cooling fan
Valve device	Overhead valve

Engine Specifications

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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 - Blower type - 7 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 deviceWith (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 None

Flange type ---
Speed ratio ---
Spline number of teeth ---

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Rev. 0

Allowable inclination angle 0.26 rad.(15deg) 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. BU-4JJ1TYGV-01

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	COOLING FAN	dia.550-7 blades-Blower
11	POWER TAKE OFF	None

Engine Specifications

Model No. BU-4JJ1TYGV-01

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Loose parts

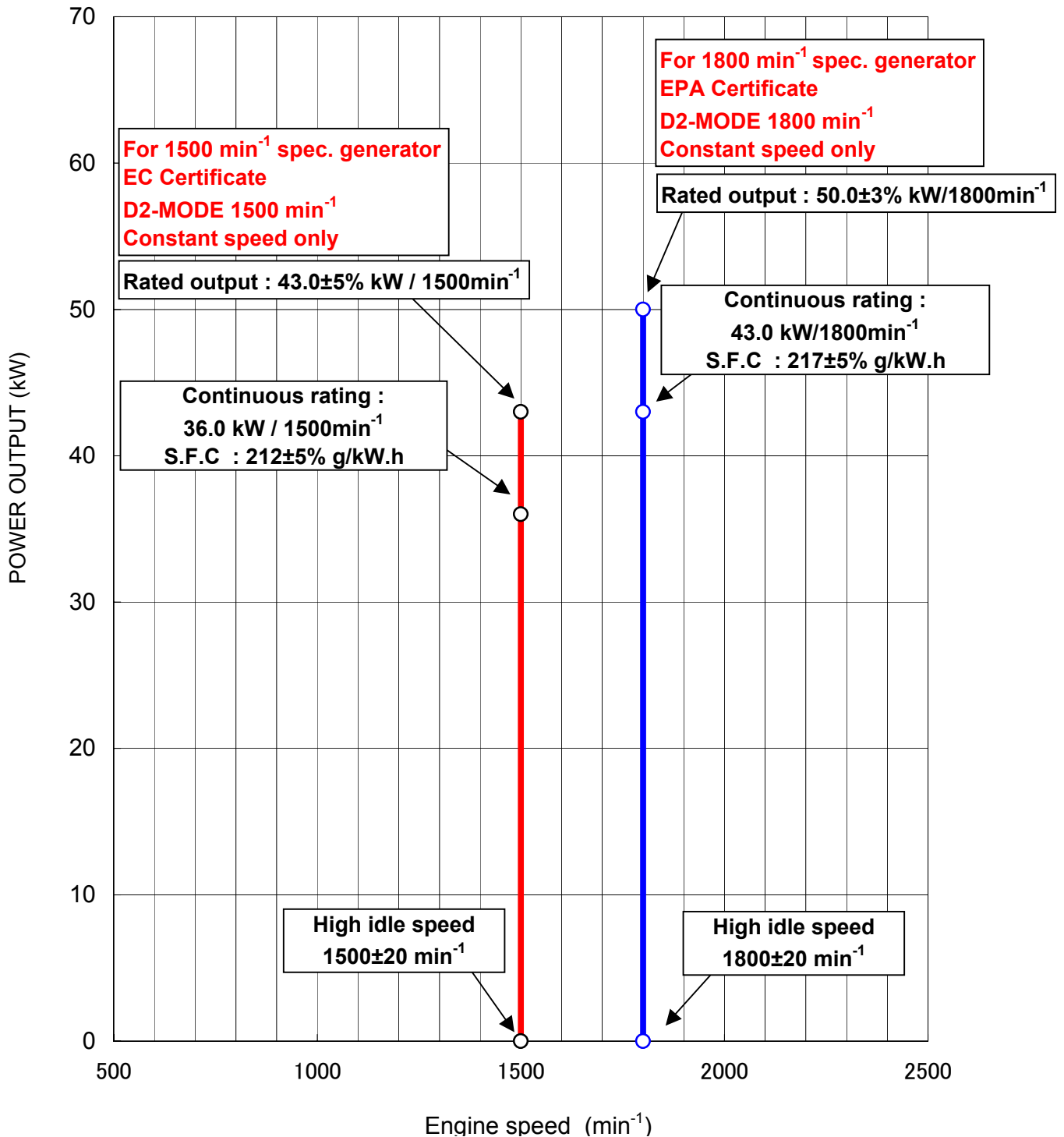
No.	Parts No.	Item	Qty	Remarks
1	582550-0290	RELAY	1	
2	894248-1610	RELAY;STARTER	1	
3	582550-0290	RELAY;STARTER CUT	1	
4	897011-9490	RELAY;GLOW PLUG	1	
5	812146-8300	SENSOR;TEMP, INLET PIPE	1	
6	898098-0770	CONTROL UNIT;ENGINE	1	
7	897383-4270	PIPE ASM;FUEL	4	
8	109675-0951	BOLT;EYE,FUEL PIPE	4	
9	109630-0860	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	894402-5000	SWITCH ASM;STARTER	1	
16	894369-0210	Gasket;Exhaust	1	



Preliminary

**BU-4JJ1TYGV-01 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 : BU-4JJ1TYGV-01

Application : Gene-set

Rev. No.	IS No.	Date	Page	Item	Previous	Current	Description (Reason of change)
0	IS-08-139-0	3.Sep.08		For confirmation of prototype engine specifications			