DESERT MACHINERY
آليات الصحراء

AIRMAN GENERATOR

13 KVA (10 KW)

(JAP)

SPECIFICATIONS

OF

DIESEL GENERATOR SET

Model : SDG13S-3B1

AIRMAN

HOKUETSU INDUSTRIES CO., LTD.

8TH FLOOR SHINJUKU SAN-EI BLDG.
22-2,NISHISHINJUKU 1-CHOME,SHINJUKU-KU,
TOKYO 160-0023 JAPAN
TEL; 81-3-3348-7284
FAX; 81-3-3348-7289

1. GENERAL

1-1 Structure

The generator set is designed direct coupling with brushless type of generator and diesel engine. The A.C. generator and diesel engine are mounted on the robust steel skid frame with radiator, fuel tank and control panel.
It is provided large doors on both sides of unit and constructed to have easy daily maintenance works.
Moreover, it is put large inhalation of air and discharge duct on and make lining for sound absorption inside the unit. It is also installed large discharge silencer to have good effect of soundproof.
All control devices, operating switches and meters are positioned on a control panel so that it is easy to operate.

1-2 Applicable Standards

The generator is designed, manufactured and tested in accordance with the following standards.

JIS	Japanese Industrial Standards
JEM	Standard of the Japan Electrical Manufacturers' Association
JEC	Standard of the Japanese Electrotechnical Committee

1-3 Site Conditions

(Unless otherwise specified the generator shall be able to keep the performances.)

Temperature	-15℃～+40℃
Humidity	below 85%
Altitude	below 1,000m (Above sea level)

1-4 Standard condition

The rated output is assumed to be a value in a standard JIS atmospheric condition.

Atmospheric temp.	25 ℃
Humidity	30%
Atmospheric pressure	100kPa

1-5 Strong point

The third exhaust gas restriction
Super low nise approval (less than 92 dB/sound power level)
Dual voltage switch equipment
(200/220(50Hz/60Hz) 3 Phase and 400/440(50Hz/60Hz) 3 phase)
Leakage protection device standard equipment
Electric governor standard equipment

2. Specification

2-1 Dimensions & Weight

Model name	SDG13S-3B1	
Overall length	Approx.	1,480 mm
Overall width	Approx.	650 mm
Overall height	Approx.	950 mm
Net dry mass	Approx.	520 kg
Operating mass	Approx.	580 kg

Allowable inclination of the machine below 5°

2-2 Capacity for Water, Oil, and Battery

Cooling water capacity	5.7	Liters
Fuel tank capacity	58	Liters
Lubricating oil capacity	7.0	Liters
Battery	80D26R 12V	

2-3 Painting Color

External painting	Peaceful Green Kawakami SP-189
External painting of frame	Charcoal Gray Kansai paint NS-388-X31

3. Generator

3-1 A.C. Generator

		Dual Voltage type	
Type		Revolving field brushless type	
3P, 4W	Output	10.5/13 kVA (8.4/10.4 kW)	
	Voltage	200 / 220 V	400(380) / 440 V
	Current	30.3/34.1 A	15.2(16.0) / 17.1 A
Frequency		50/60 Hz	
No. of phases		3phase 4wire	
No. of poles		4	
Power factor		80%	
Rated revolution		1,500/1,800 min-1 (1,500/1,800 rpm)	
Class of insulation		Class F	
Class of rating		Continuous	
Driving system		Direct coupled to engine	

3-2 Rise of Temperature

When the ambient temperature is 40℃, the temperature of the following components shall be within the limit of the following figure.

Armature winding	105K (105deg)	(Insulation class F)
Field winding	110K (110deg)	(Insulation class F)
Bearing	40K (40deg)	

3-3 Dielectric test

An approximately sine wave form voltage of commercial frequency in the following table shall be applied for one minute.
Appropriate if no trouble takes place in such test.
(not include AVR)

Between armature winding and earth	AC 1500V (one minute)
Between field winding and earth	AC 1500V (one minute)
Between control panel and earth	AC 1500V (one minute)

3-4 Steady state voltage regulation

The steady state voltage regulation shall be maintained between ±0.5% from full load to no load.

4. Diesel Engine

4-1 Specification

Maker	KUBOTA
Model	D1503-K3A
Type	Water-cooled 4 cycle, swirl-chamber
No. of cylinder	3
Bore dia. × stroke	83 mm × 92.4 mm
Total displacement	1.499 L (1,499 cc)
Compression ratio	22.6 : 1
Rated output	11.5 kW / 1,500 min-1 (15.6PS / 1,500rpm) 13.7 kW / 1,800 min-1 (18.6 PS / 1,800rpm)
Dry weight	164 kg
Charging generator	12V, 40 A
Starter motor	12V, 1.4 kW
Air cleaner	Dry type
Diesel fuel	Cetane Value over 45
Lubricating oil	CD class, SAE 10W-30

4-2 Fuel consumption (refernce value)

Frequency	50	/	60	Hz
Full load	2.9	/	3.6	L/Hr
75% load	2.4	/	3.0	L/Hr

5 Protection

	Engine stop	Breaker trip	Warning lamp on ＊1	Warning lamp on ＊2	Actuating
Engine oil pressure	○		○	○	Engine oil pressure drop operating pressure : lower than 0.1MPa
Engine water temp.	○		○	○	Engine water temp. rise operating temp. : 115℃
Overcurrent, Short circuit		○			Overcurrent and Short circuit
Leakage		○	○		Leakage or short circuit occur Actuating current 30mA
Battery	○		○	○	Not charging
Airfilter Clogged			○		Airfilter cloggeed
Overspeed	○			○	Engine speed rise abnormaly operating speed : 2,070min^{-1}
Abnormal of speed sensor	○			○	Senseor have trouble or wiring snapped
Abnormal of solenoid	○			○	Wiring of actuater snapped or short-circuit
Abnormal of water temp. se	○			○	Wiring of water temp. short-circuit
Short circuit of water temp. sensor	○			○	Signal wiring of temp. sensor was short-circuit
Snapping alternater L wire	○			○	L wiring of altenater snapped
Overvoltage	○			○	Voltage riase abnormaly operating voltage : 18 V

The above devices are equipped to protect from each trouble during operation.
The mark ○ means to function for each kind of trouble.

*1 : Warning lamp will turn on when abnormal condtion occur.
*2 :Abnormal indicater lamp will blink when device to inspect failure work.
Blinking pattern will be indicated trouble situation.

6 Control Panel

6-1 Control panel for A.C. generator

1) Voltmeter	1pc.
2) Ammeter	1pc.
3) Frequency meter	1pc.
4) Voltage regulator (with AVR)	1pc.
5) Circuit breaker	1pc.
6) Output indicator lamp	1pc.
7) Frequency selector switch	1pc.

6-2 Control panel for engine

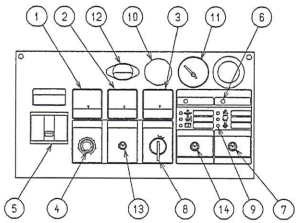
1) Starter switch	1pc.
2) Speed control switch	1pc.
3) Glow lamp/warning lamp	1pc.
4) Coolant temperature gauge	1pc.
5) Hour meter	1pc.
6) Panel light	1pc.
7) Panel light switch	1pc.

※ Warning lamps (1 set)

- Engine oil pressure drop
- Engine water temperature rise
- Not charging
- Air filter clogging
- Abnormal indicating

基にした図面 10466 90001

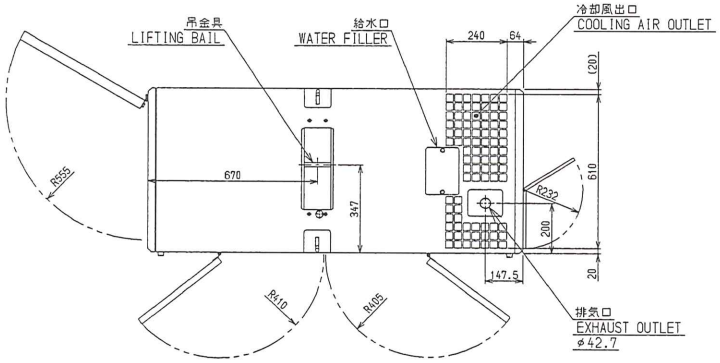
仕上精度 Ra 標準 FINISH MACHINING ACCURACY Ra STD.		普通寸法差 VARIATION OF TOLERANCE			符号 MARK	年月日 DATE	改訂理由 ALTERATIONS	担当 NAME	承認 APPROVED
12.5a	▽ 50 Z	をこえ以下 OVER TO INCL.		機械加工 MACHINING / 板金加工 PLATE WORK					
6.3a	▽▽ 25 Z	0	4	± 0.1 / ± 0.5					
1.6a	▽▽▽ 6.3Z	4	16	± 0.2 / ± 0.8					
0.20a	▽▽▽▽ 0.8Z	16	63	± 0.3 / ± 1					
		63	250	± 0.5 / ± 1.5					
		250	1000	± 0.8 / ± 2					
		1000		/ ± 3					



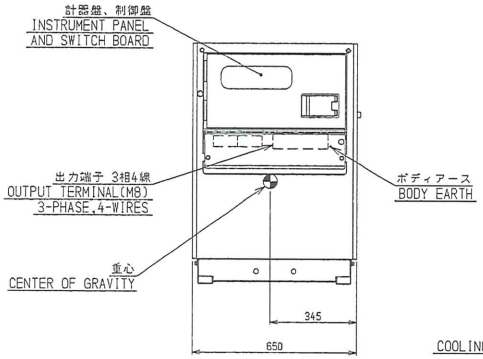
制御盤詳細(S:1:10)

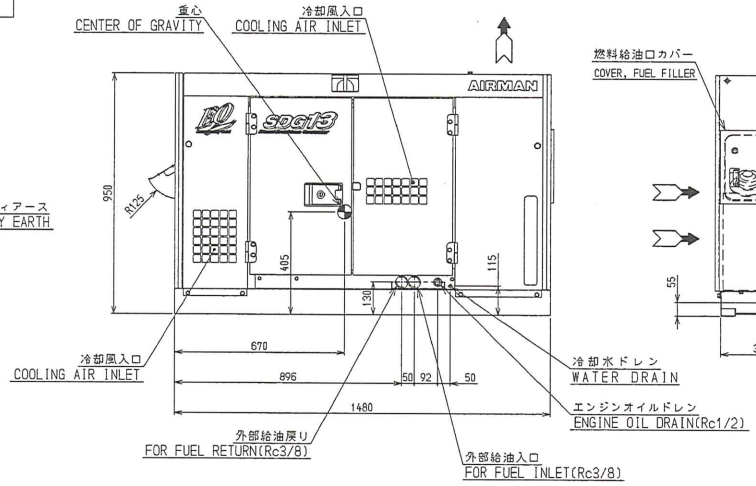
INSTRUMENT PANEL

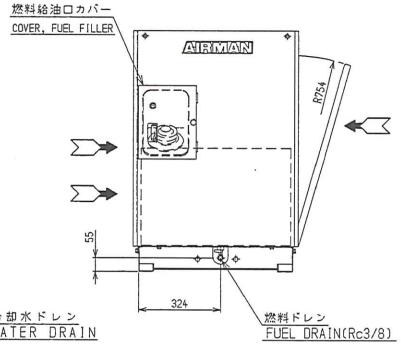
発電機制御盤 GENERATOR 番号 NO.	部品名称 PARTS NAME	エンジン制御盤 ENGINE 番号 NO.	部品名称 PARTS NAME
1	電圧計 VOLTMETER	8	スタータスイッチ STARTER SWITCH
2	電流計 AMMETER	9	予熱ランプ・警報表示灯 GROW LAMP,WARNING LAMP
3	周波数計 FREQENCY METER	10	アワメータ HOUR METER
4	電圧調整器 VOLTAGE REGULATOR	11	水温計 COOLANT TEMPERATURE GAUGE
5	しゃ断器 CIRCUIT BREAKER	12	パネルライト PANEL LIGHT
6	200V-400V表示灯 OUTPUT INDICATOR LAMP	13	パネルライトスイッチ PANEL LIGHT SWITCH
7	周波数切替スイッチ FREQENCY SELECTION SWITCH	14	調速スイッチ SPEED CONTROL SWITCH

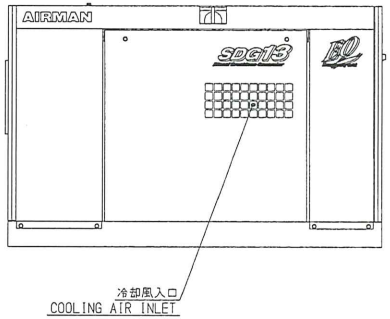


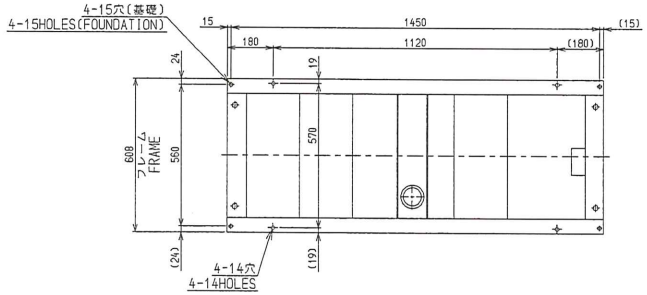
部品番号 PARTS.NO.		10466 90301
発電機 GENERATOR	名称 MODEL	回転界磁型 TWH 18BS
	相数 PHASES	三相4線 3φ,4WIRES
	力率 POWER FACTOR	80%
	交流出力 OUTPUT	10.5/13kVA(8.4/10.4KW)
	電圧 VOLTAGE	200/220V 400/440V
	電流 CURRENT	30.3/34.1A 15.2/17.1A
	周波数 FREQUENCY	50/60Hz
	回転速度 SPEED	1500/1800 min^{-1}
エンジン ENGINE	名称 MODEL	クボタD1503-K3A
	型式 TYPE	水冷4サイクル、渦流室式 4-CYCLE,WATER-COOLED SWIRL CHANBER
	気筒数 NUMBER OF CYLINDER	3
	総排気量 TOTAL STROKE VOLUME	1.499 l
乾燥質量 NET DRY MASS		APPROX. 520kg
運転整備質量 OPERATING MASS		APPROX. 580kg











計算質量 CALCULATING MASS	kg	素材質量 MATERIAL MASS	kg	製品質量 PRODUCT MASS	kg	水圧試験 HYDRAULIC TEST	MPa

見出 INDEX	部品番号 PARTS NO.	部品名称 PARTS NAME	個数 QUANTITY	材質 MATERIAL	備考 REMARKS

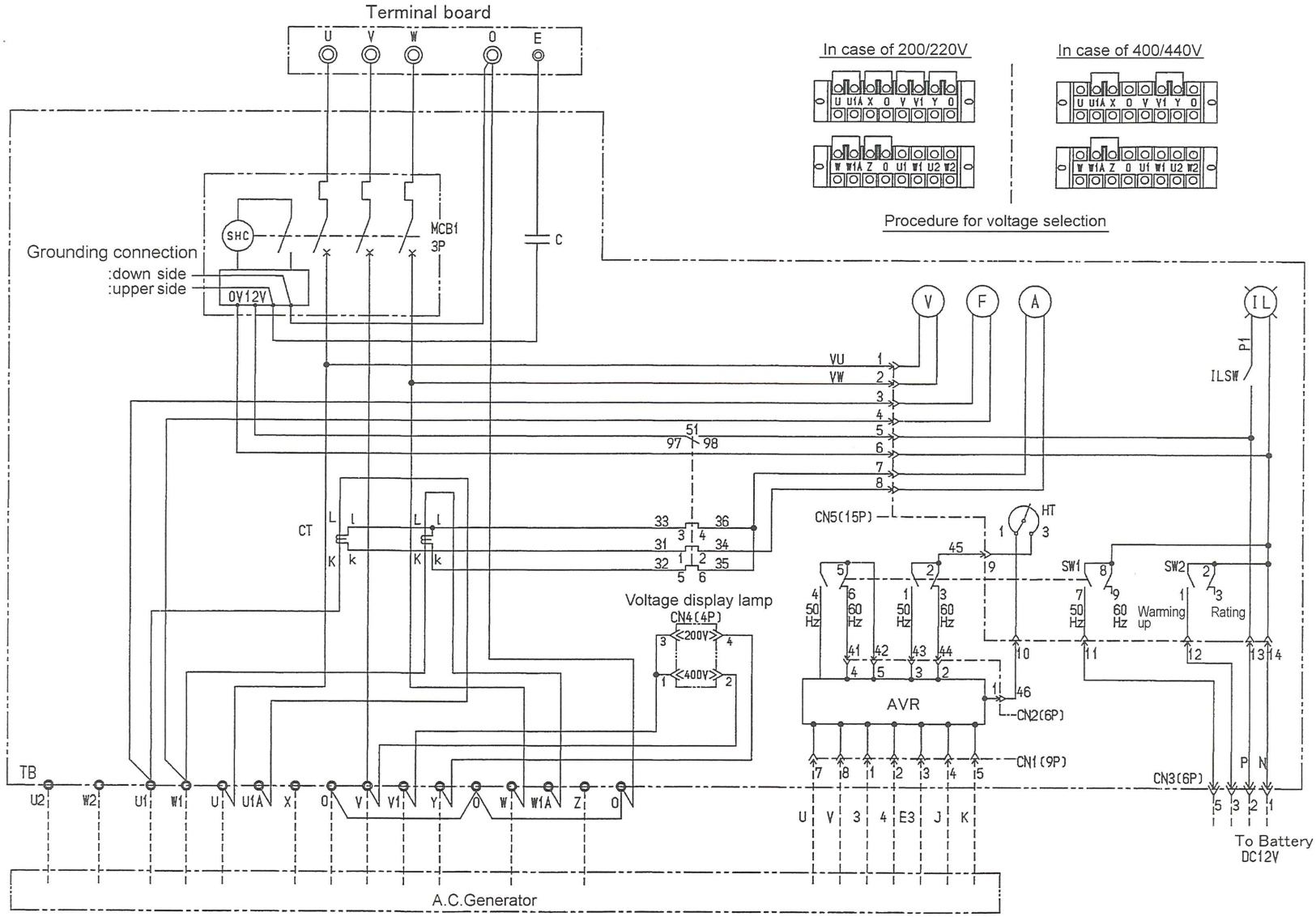
型式 MODEL	SDG13S-3B1	尺度 SCALE	承認 APPROVED	審査 CHECKED	製図 DRAWING	製図日 DATE
材質 MATERIAL	———	1:20			岡	2012. 9.19
三角法 THIRD ANGLE PROJECTION		部品名称 PARTS NAME	SILENT SEMI-PORTABLE GENERATOR			
北越工業株式会社 HOKUETSU INDUSTRIES CO.,LTD.		部番(図番) PARTS NO. (DRWG.NO.)	10466 90301			0

(英文輸出仕様)

A-3

9. Wiring Diagram

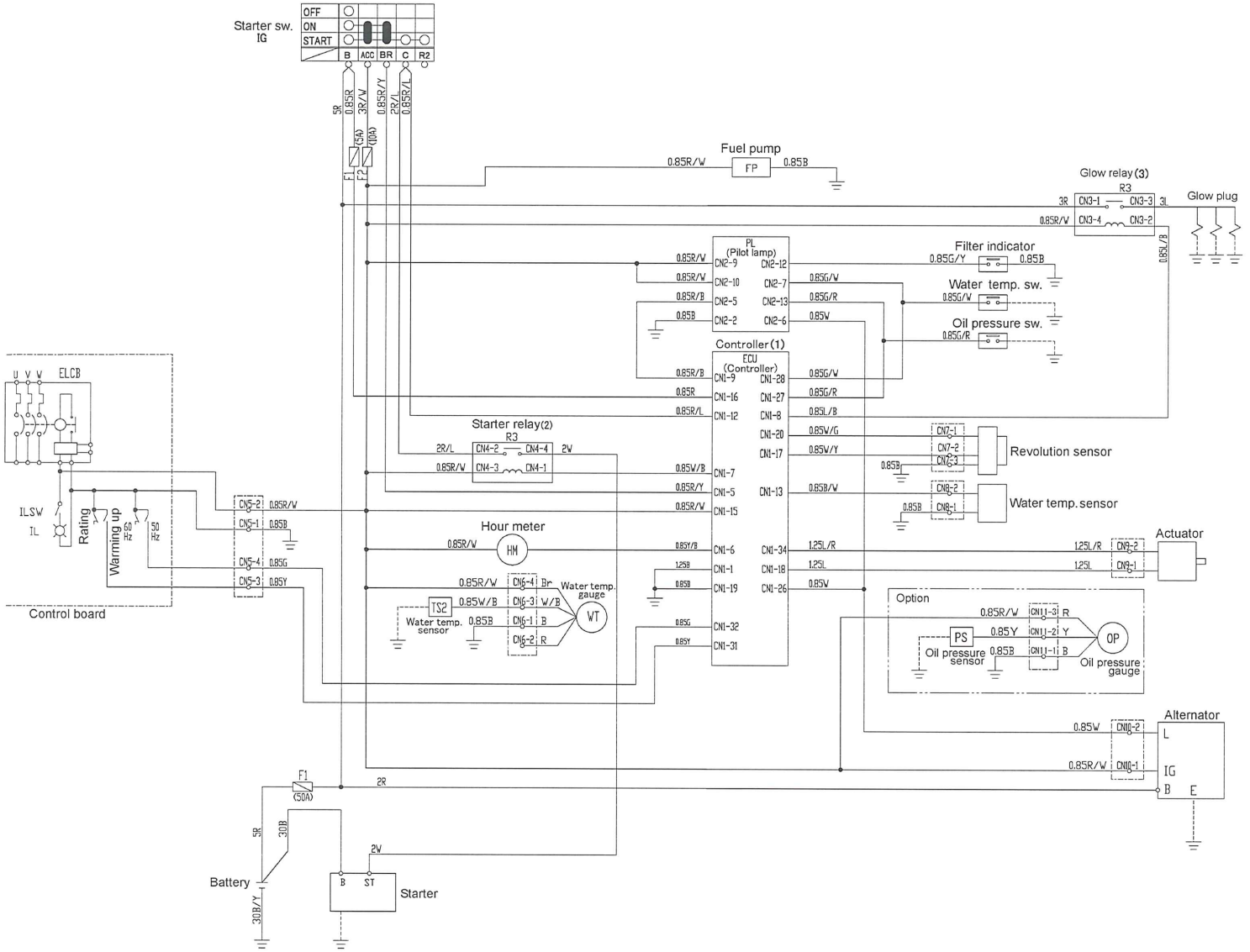
9.1 Generator Wiring Diagram



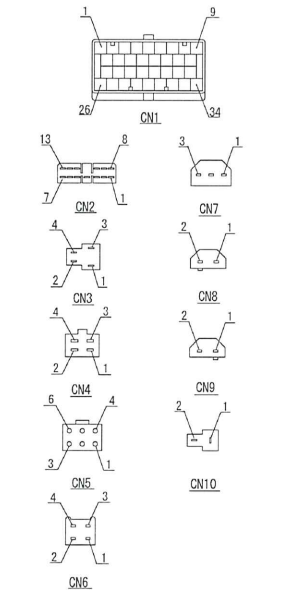
A050257-E

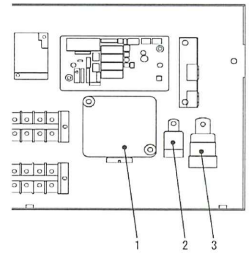
9. Wiring Diagram

9.2 Engine Wiring Diagram



Connector terminal arrangement
The following arrangement is seen from the side of the connector inserting port.





Relay arrangement diagram

A050076-1-E