DESERT MACHINERY
آليات الصحراء

AIRMAN GENERATOR

45 KVA (36 KW)

(JAP)

SPECIFICATIONS

OF

DIESEL GENERATOR SET

Model : SDG45S-3A8

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 second 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	SDG45S-3A8		
Overall length	Approx.	1,870	mm
Overall width	Approx.	860	mm
Overall height	Approx.	1,220	mm
Net dry mass	Approx.	900	kg
Operating mass	Approx.	1,010	kg

Allowable inclination of the machine below 5°

2-2 Capacity for Water, Oil, and Battery

Cooling water capacity	11	Liters
Fuel tank capacity	100	Liters
Lubricating oil capacity	13.2	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	37/45 kVA (29.6/36.0 kW)	
	Voltage	200 / 220 V	400(380) / 440 V
	Current	107/118 A	53.4(56.2) / 59.0 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	V3800-DI-T-K2B
Type	Water-cooled 4 cycle, direct injection turbocharged
No. of cylinder	4
Bore dia. × stroke	100 mm × 120 mm
Total displacement	3.769 L (3,769 cc)
Compression ratio	19.0 : 1
Rated output	38.0 kW / 1,500 min-1 (51.7PS / 1,500rpm) 45.6 kW / 1,800 min-1 (62 PS / 1,800rpm)
Dry weight	285 kg
Charging generator	12V, 30 A
Starter motor	12V, 3.0 kW
Air cleaner	Dry type
Diesel fuel	Cetane Value over 45
Lubricating oil	CD class over, SAE 10W-30

4-2 Fuel consumption (reference value)

Frequency	50 / 60 Hz
Full load	8.2 / 10.3 L/Hr
75% load	6.4 / 8.0 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 0.05MPa
Engine water temp. (1)	○		○	○	Engine water temp. rise operating temp. : 110℃
Engine water temp. (2)	○		○	○	Not working the water temp. switch operating temp. : 120℃
Over current, Short circuit		○			Over current and Short circuit
Leakage		○	○		Leakage or short circuit occur Actuating current 30mA
Battery	○		○	○	Not charging
Air filter Clogged			○		Air filter clogged
Over speed	○			○	Engine speed rise abnormally operating speed : 2,070min-1
Abnormal of speed sensor	○			○	Sensor have trouble or wiring snapped
Abnormal of solenoid	○			○	Wiring of actuator snapped or short-circuit
Abnormal of water temp. sensor	○			○	Wiring of water temp. short-circuit
Short circuit of water temp. sensor	○			○	Signal wiring of temp. sensor was short-circuit
Snapping alternator L wire	○			○	L wiring of alternator snapped
Over voltage	○			○	Voltage rise abnormally operating voltage : 18 V
Abnormal of power source for sensor	○			○	Sensor of power source was short-circuit
Protect starter	○			○	Starter worked over 12 second continuously
Detect of engine failure	○			○	No problem the engine condition but not start the engine. (ex. not fuel)
Abnormal of controller power source				○	Abnormal of controller power source and can not glow.

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 condition occur.
*2 :Abnormal indicator 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	1pc.
5) Ammeter change-over switch	1pc.
6) Leakage relay	1pc.
7) Circuit breaker	1pc.
8) Circuit breaker to single phase	1pc.
9) Output indicator lamp (200V - 400V)	1pc.
10) Frequency selector switch	1pc.

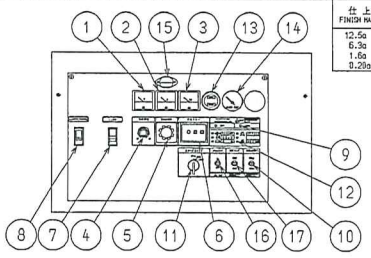
6-2 Control panel for engine

1) Starter switch		1pc.
2) Speed control switch		1pc.
3) Glow lamp/warning lamp		1pc.
4) Coolant temperature gauge		1pc.
5) Fuelmeter with hourmeter		1pc.
6) Panel light		1pc.
7) Panel light switch		1pc.
※ Warning lamps	・Engine oil pressure drop ・Coolant temperature rise ・Not charging ・Air filter clogging ・Abnormal indicating	1 set

基にした図面	10469 10001

仕上精度Ra標準 FINISH MACHINING ACCURACY Ra STD.		
12.5a	(▽	50 Z)
6.3a	(▽▽	25 Z)
1.6a	(▽▽▽	6.3Z)
0.20a	(▽▽▽▽	0.8Z)

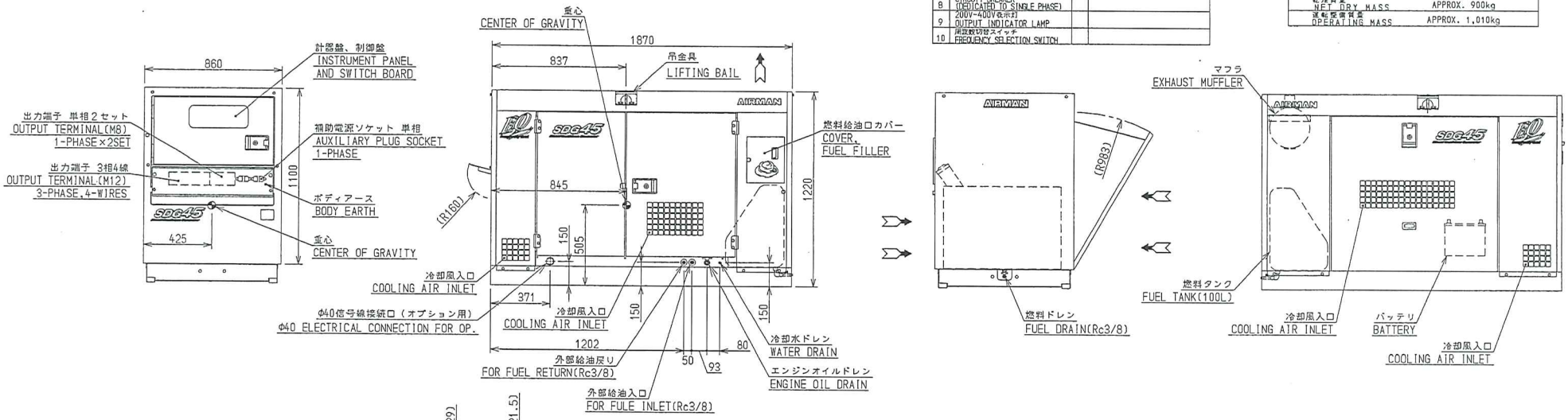
普通寸法差 VARIATION OF TOLERANCE				符号 MARK	年月日 DATE	改訂理由 ALTERATIONS	担当 NAME	承認 APPROVED
をこえ以下 OVER TO INCL.		機械加工 MACHINING	板金加工 PLATE WORK					
	4	± 0.1	± 0.5					
4	16	± 0.2	± 0.8					
16	63	± 0.3	± 1					
63	250	± 0.5	± 1.5					
250	1000	± 0.8	± 2					
1000			± 3					



制御盤詳細(S:1:10)
INSTRUMENT PANEL

発電機制御盤 GENERATOR		エンジン制御盤 ENGINE	
番号 NO.	部品名称 PARTS NAME	番号 NO.	部品名称 PARTS NAME
1	電圧計 VOLTMETER	11	スタータスイッチ STARTER SWITCH
2	電流計 AMMETER	12	予熱ランプ・警報灯(赤) GLOW LAMP,WARNING LAMP
3	周波数計 FREQUENCY METER	13	燃料計(アワメータ付) FUEL METER WITH HOURMETER
4	電圧調整器 VOLTAGE REGULATOR	14	水温計 COOLANT TEMPERATURE GAUGE
5	電流計切替器 AMMETER CHANGE-OVER SWITCH	15	パネルライト PANEL LIGHT
6	漏電リレー LEAKAGE RELAY	16	パネルライトスイッチ PANEL LIGHT SWITCH
7	しゃ断器 CIRCUIT BREAKER	17	調速スイッチ SPEED CONTROL SWITCH
8	しゃ断器(単相専用) CIRCUIT BREAKER (DEDICATED TO SINGLE PHASE)		
9	200V-400V表示灯 OUTPUT INDICATOR LAMP		
10	周波数切替スイッチ FREQUENCY SELECTION SWITCH		

PARTS.NO.		10469 10101
GENERATOR 発電機	名称 MODEL	回転界磁型 TMHR-2001
	相数 PHASES	3相、4線式 3φ,4-WIRES
	力率 POWER FACTOR	80%
	周波数 FREQUENCY	50/60Hz
	交流出力 OUTPUT	37/45kVA(29.6/36kW)
	電圧 VOLTAGE	200/220V / 400/440V
	電流 CURRENT	107/118A / 53.4/59.0A
	回転速度 SPEED	1500/1800 min⁻¹
	単相出力 SINGLE PHASE OUTPUT	6/6.6kVA×2 100/110V
ENGINE エンジン	名称 MODEL	クボタ V3800-DI-T-K2B
	型式 TYPE	水冷4サイクル、直接噴射式、過給機付 4-CYCLE,WATER-COOLED, DIRECT INJECTION, TURBO CHARGED
	気筒数 NUMBER OF CYLINDER	4
	総排気量 TOTAL STROKE VOLUME	3.769 L
	乾燥質量 NET DRY MASS	APPROX. 900kg
	運転整備質量 OPERATING MASS	APPROX. 1,010kg



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

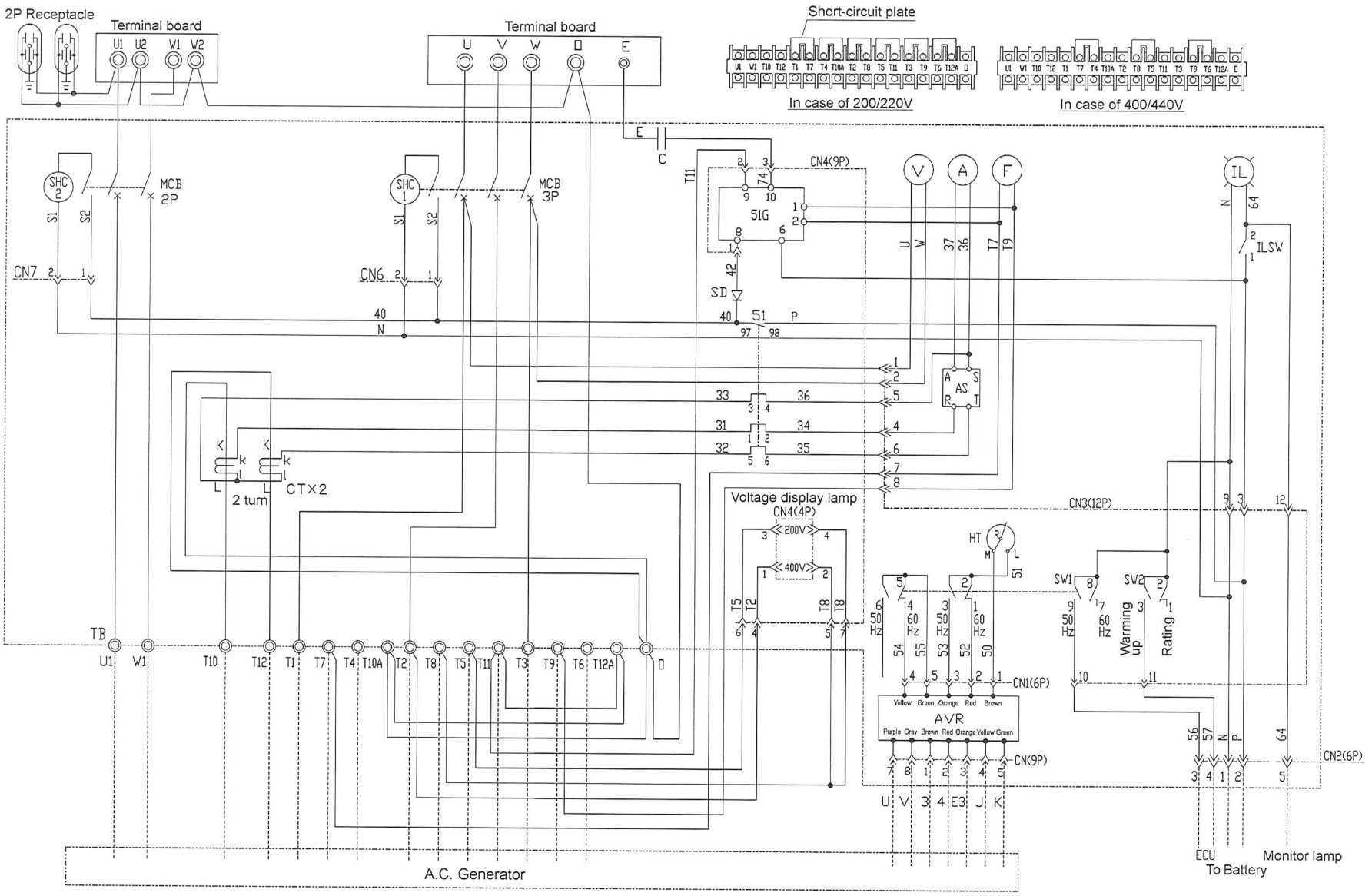
型式 MODEL	SDG45S-3A8	尺度 SCALE	承認 APPROVED	要図 CHECKED	製図 DRAWING	製図日 DATE
材質 MATERIAL	——	1:25			小林(加)	2012.9.20
三角法 THIRD ANGLE PROJECTION		部品名称 PARTS NAME	SILENT SEMI-PORTABLE GENERATOR			
北越工業株式会社 HOKUETSU INDUSTRIES CO.,LTD.		部番(図番) PARTS NO. (DRWG.NO.)	10469 10101			0

(英文輸出仕様)

A-3

9. Wiring Diagram

9.1 Generator Wiring Diagram



A080554E

9. Wiring Diagram

9.2 Engine Wiring Diagram