

DM DESERT MACHINERY
آليات الصحراء

Perkins Denyo AIRMAN Cummins LINZ ELECTRIC LEROY SOMER DSE ComAp
ABB LS Schneider Electric

AIRMAN GENERATOR

60 KVA (48 KW)

(JAP)



SPECIFICATIONS

OF

DIESEL GENERATOR SET

Model: SDG60S-3A6

AIRMAN[®]

HOKUETSU INDUSTRIES CO., LTD.

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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°C ~ +40°C
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 °C
Humidity	30%
Atmospheric pressure	100kPa

1-5 Strong point

The second exhaust gas restriction

Super low noise 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

2. Specification

2-1 Dimensions & Weight

Model name	SDG60S-3A6	
Overall length	Approx.	2,090 mm
Overall width	Approx.	860 mm
Overall height	Approx.	1,220 mm
Net dry mass	Approx.	1,120 kg
Operating mass	Approx.	1,260 kg

Allowable inclination of the machine below 5°

2-2 Capacity for Water, Oil, and Battery

Cooling water capacity	15	Liters
Fuel tank capacity	135	Liters
Lubricating oil capacity	14	Liters
Battery	80D26R-MF x 1	

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	50/60 kVA (40/48 kW)	
	Voltage	200/220 V	400(380)/440 V
Current		144 / 157 A	72.2(76) / 78.7
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	
Connection		Star Connection	

3-2 Rise of Temperature

When the ambient temperature is 40°C, 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 $\pm 0.5\%$ from full load to no load.

4 Diesel Engine

4-1

Maker	ISUZU MOTORS LIMITED
Model	BB-4BG1T
Type	Water-cooled 4 cycle, direct injection turbocharged
No. of cylinder	4
Bore dia. × stroke	105 mm × 125 mm
Total displacement	4.329 L (4,329 cc)
Compression ratio	17 : 1
Rated output	48.1 kW / 1,500 min ⁻¹ (65.4 ps / 1,500rpm) 57.4 kW / 1,800 min ⁻¹ (78.0 ps / 1,800rpm)
Dry weight	368 kg
Charging generator	12V, 35A
Starter motor	12V, 2.5 kW
Air cleaner	Dry type
Diesel fuel	Cetane Value over 45
Lubricating oil	CD class, SAE 10W-30

4-2 Fuel consumption (reference value)

Frequency	50 / 60 Hz
Full load	11.3 / 13.5 L/Hr
75% load	8.6 / 10.6 L/Hr

5. Protection

	Engine stop	Breaker trip	Warning lamp on	Actuating
Engine oil pressure	○	○	○	Engine oil pressure drop Actuating pressure 0.1 MPa
Engine water temp.	○	○	○	Engine water temp. rise Actuating temp. 105 °C
Over speed	○	○	○	Engine speed rise abnormally operating speed : 2,070min ⁻¹
Over current, Short circuit		○		Over current and Short circuit
Leakage		○	○	Leakage Actuating current 30mA
Battery			○	not charging
Air filter			○	clogging of air filter

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

6 Control Panel

6-1 Control panel for A.C. generator

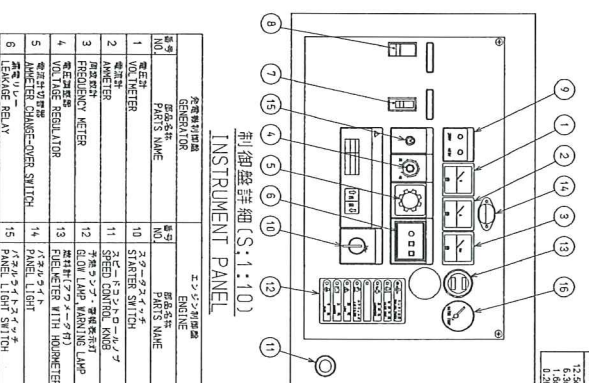
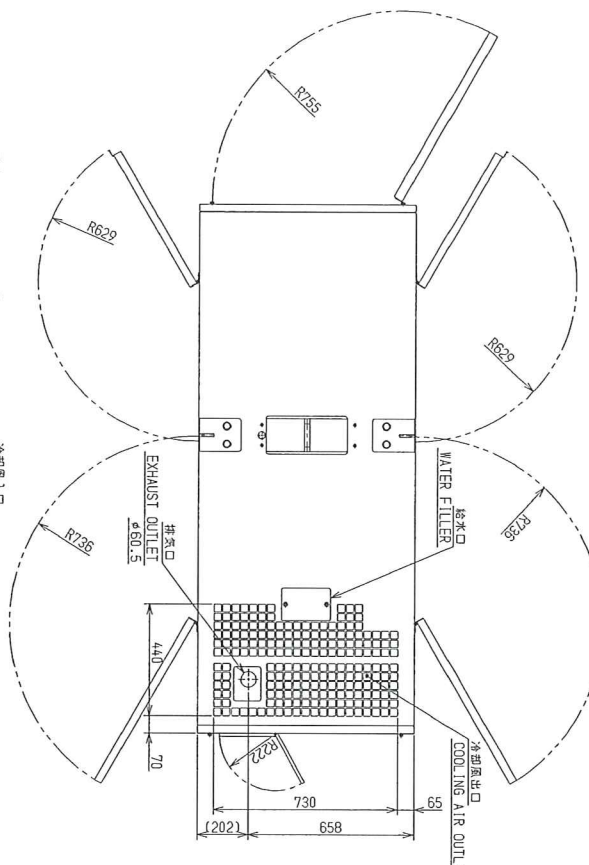
1) Voltmeter	1pc.
2) Ammeter	1pc.
3) Frequency meter	1pc.
4) Voltage regulator	1pc.
5) Ammeter change-over switch	1pc.
6) Leakage relay	1pc.
7) Circuit breaker	1pc.
8) Circuit breaker to single phase	1pc.
9) Output indicator lamp (200V - 400V)	1pc.

6-2 Control panel for engine

1) Starter switch	1pc.
2) Speed control knob	1pc.
3) Glow lamp/warning lamp	1pc.
4) Fuelmeter with hourmeter	1pc.
5) Coolant temperature gauge	1pc.
6) Panel light	1pc.
7) Panel light switch	1pc.

※Warning lamps

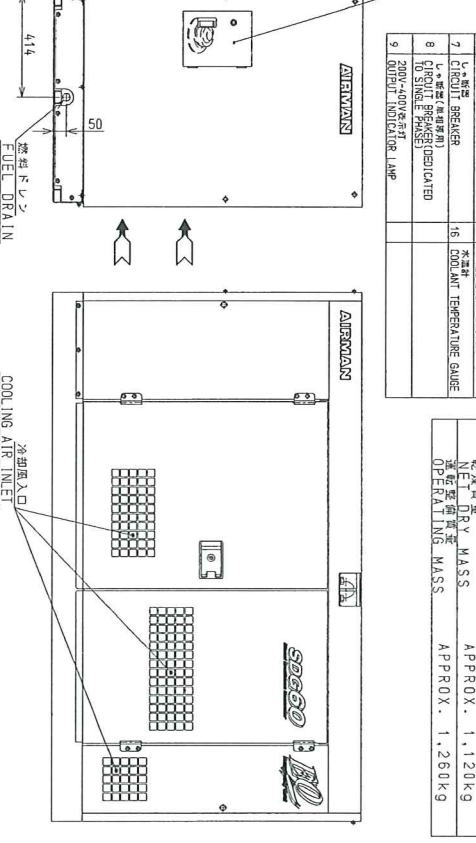
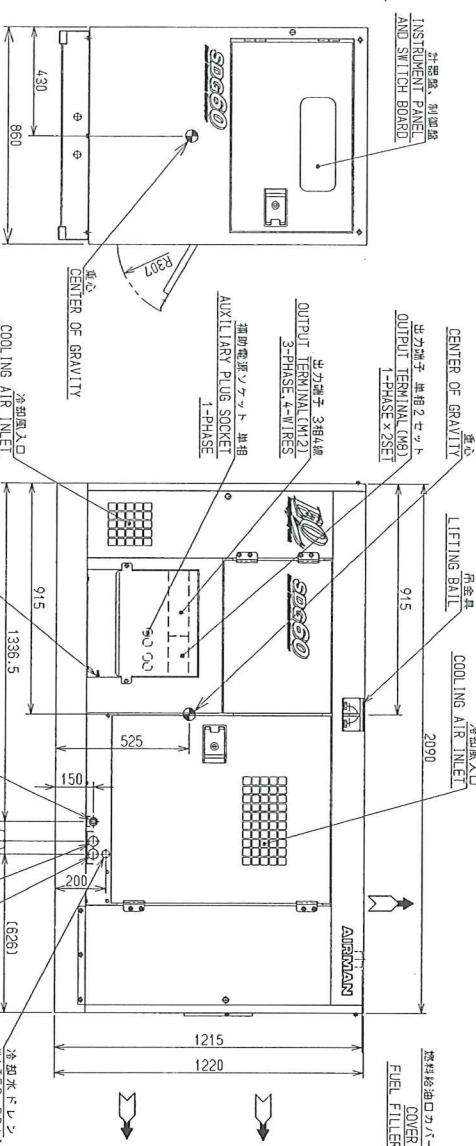
Engine oil pressure drop Engine water temperature rise Leakage Not charging Air filter clogging	1 set
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制御盤詳細(S:110)

発電機制御盤		エンジン制御盤	
番号	部品名称	番号	部品名称
1	発電機	10	スタータスイッチ
2	アムメータ	11	スピードコントロール
3	回転速度メータ	12	充電電圧調整器
4	電圧調整器	13	燃料計
5	アムメータ	14	パルスライト
6	リレー	15	パルスライト
7	電路ブレーカ	16	冷却温度計
8	電路ブレーカ		
9	出力インジケータ		

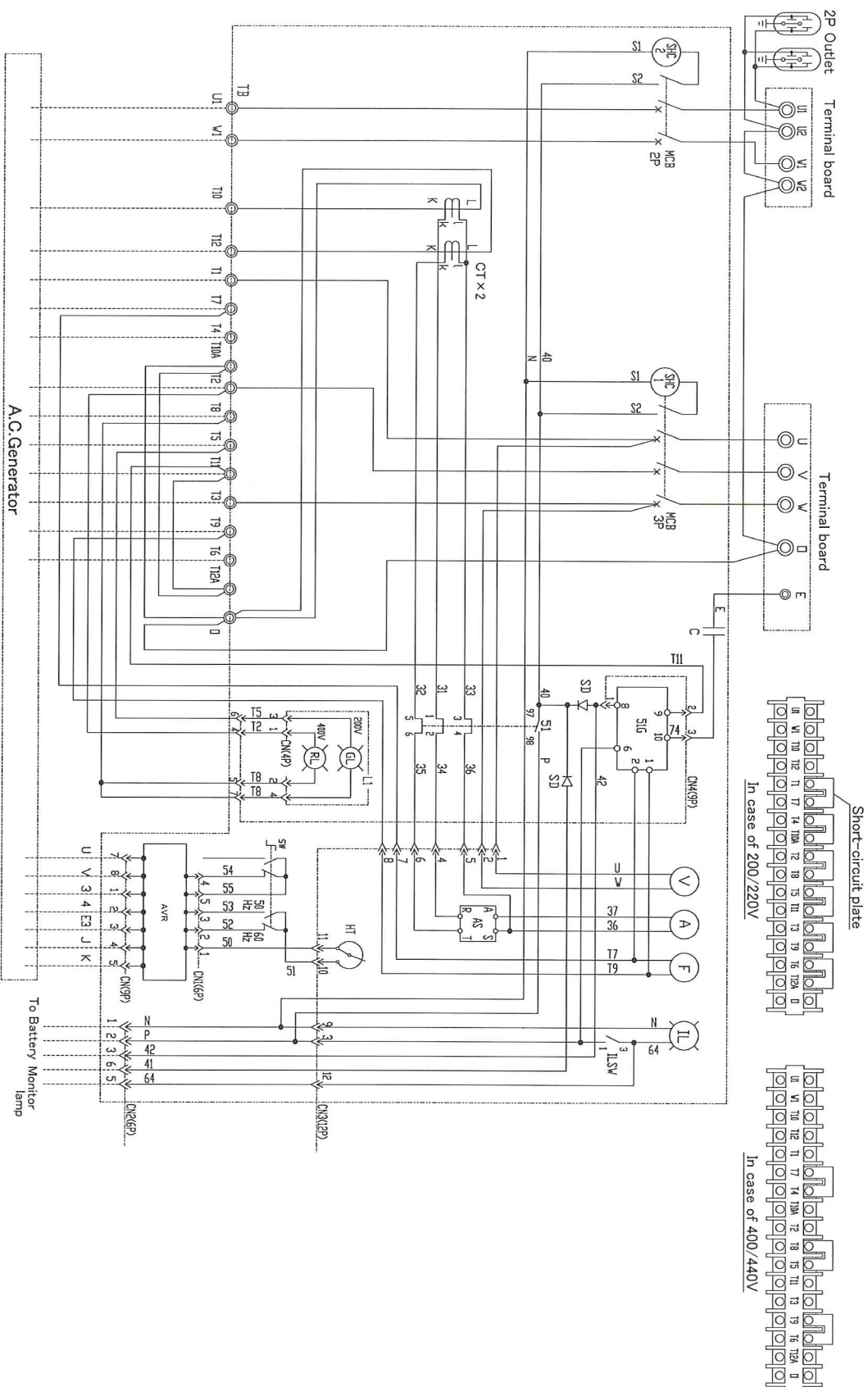
PARTS. NO.		10463 71500	
MODEL	TH7-2001	同定書型	
PHASES	3相, 4線式	相数	
POWER FACTOR	90%	電力因数	
FREQUENCY	50/60Hz	周波数	
VOLTAGAGE	50/60kVA(40/48kW)	定格容量	
VOLTAGAGE	200/220V	電圧	
VOLTAGAGE	144/157A	電流	
VOLTAGAGE	72.2/78.7A	電流	
RENDER	1500/1800 rpm	回転速度	
RENDER	7.5/9.25kVAx2	定格容量	
RENDER	100/110V	電圧	
MODEL	BB-4861T	同定書型	
TYPE	水冷却式, 直巻巻き, トーボ形	冷却方式	
TYPE	4-CYCLE, WATER-COOLED	サイクル	
TYPE	DIRECT INJECTION, TURBO CHARGED	燃料供給	
NUMBER OF CYLINDER	4	気筒数	
NUMBER OF CYLINDER	4.329 l	総排気量	
NET DRY MASS	APPROX. 1,120kg	乾燥質量	
OPERATING MASS	APPROX. 1,260kg	運転質量	



項目	部品名称	数量	単位	備考
1	フレーム	1	個	
2	ボトムプレート	1	個	
3	側板	2	個	
4	前面板	1	個	
5	後面板	1	個	
6	燃料タンク	1	個	
7	水タンク	1	個	
8	制御盤	1	個	
9	燃料フィルタ	1	個	
10	水フィルタ	1	個	
11	燃料戻り管	1	個	
12	水戻り管	1	個	
13	燃料戻り管	1	個	
14	水戻り管	1	個	
15	燃料戻り管	1	個	
16	水戻り管	1	個	

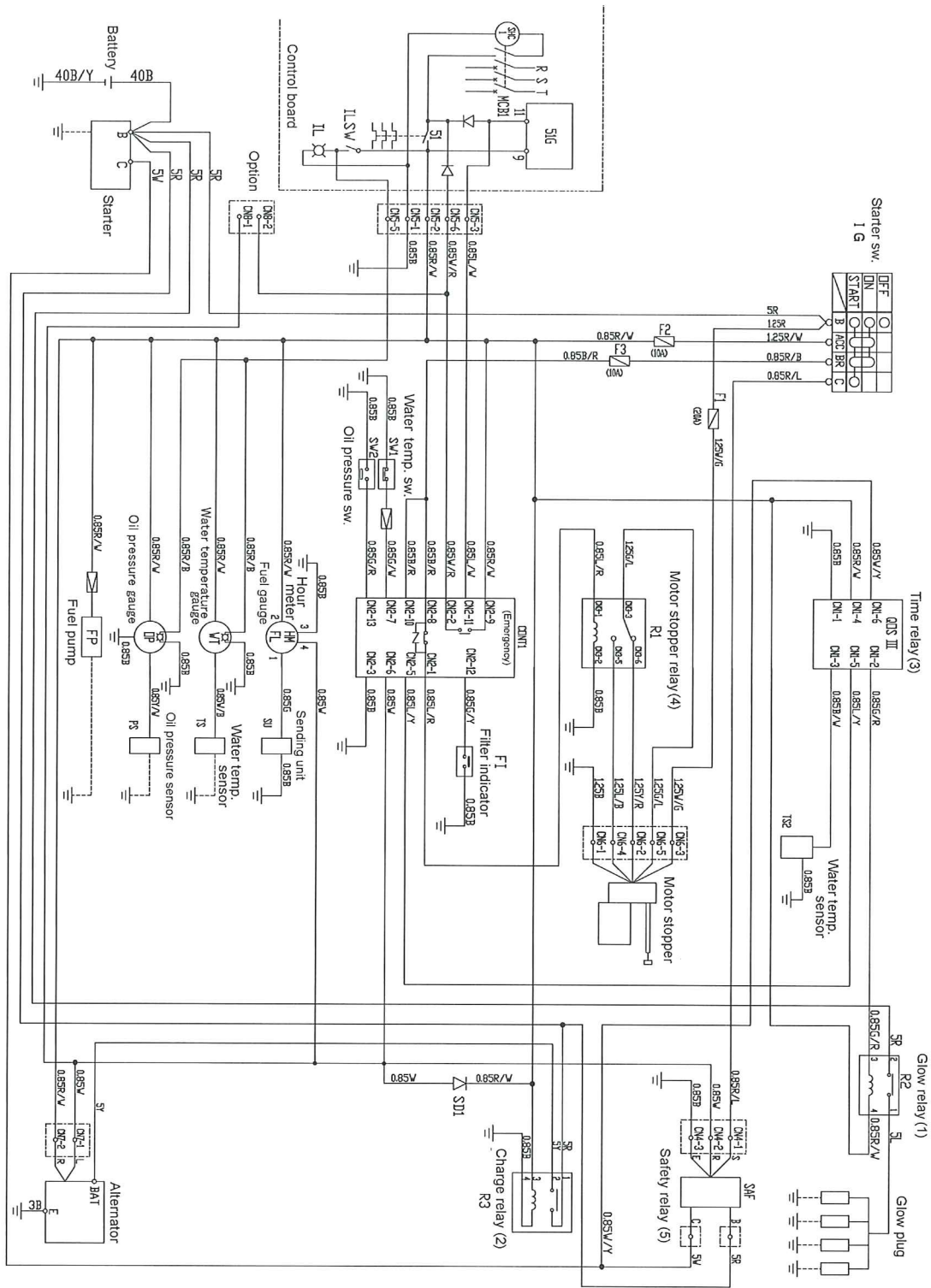
9. Wiring Diagram

9.1 Generator Wiring Diagram

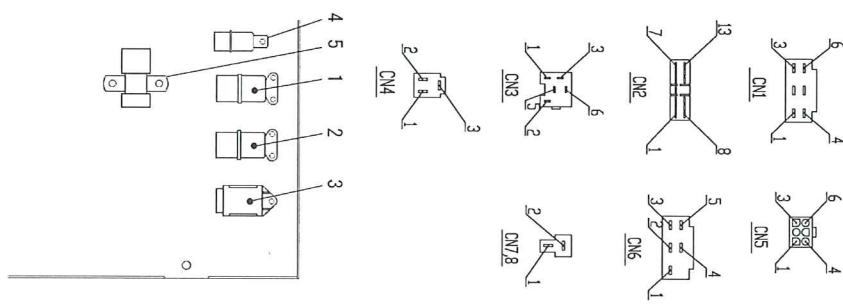


9. Wiring Diagram

9.2 Engine Wiring Diagram



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



Relay arrangement diagram