OUR PLANTS ARE CERTIFIED RECOGNIZED AS BEING WORTHY OF ISO 9001/14001 CERTIFICATION.

Niigata plant:
Shimo Aozu,Tsubame-shi,Niigata-ken,Japan.

ISO9001 : JQA-0581
ISO14001 : JQA-EM4670

⚠SAFETY

- Operate safely in accordance with proper operation manual.
- To prevent trouble and accidents,perform daily and preventive maintenance checks without fail.

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DISTRIBUTOR :

No.5 En-SDG 09-03 Ⓙ

Engine GENERATOR
SDG series

AIRMAN®

Silent Type
Engine GENERATOR

10.5～800kVA

Engine GENERATOR
SDG series

SDG60S

Ultra Super Silent
SDG45AS

HOKUETSU INDUSTRIES CO., LTD.

Much Quieter, and Much Easier for Operation and Application. So Most Advanced Generator.
AIRMAN SDG Series Engine Generators

It is 35 years since HOKUETSU INDUSTRIES CO., LTD.(AIRMAN) began marketing Brushless Engine Generators as a frontier manufacturer. Now Brushless Type is a common sense .in this market.
At present Ultra Super Silent Engine Generators are being rapidly spread in the market as standard ones for coming next generation. "AIRMAN" Ultra Super Silent Engine Generators SDG Series are the most advanced generators developed with our own Technology as well as a long experience in this field. HOKUETSU INDUSTRIES CO., LTD. ("AIRMAM") is daily doing best efforts to develop and improve the technology for better advanced products with the concept of environmental amenity and "save energy".

Environmental Amenity

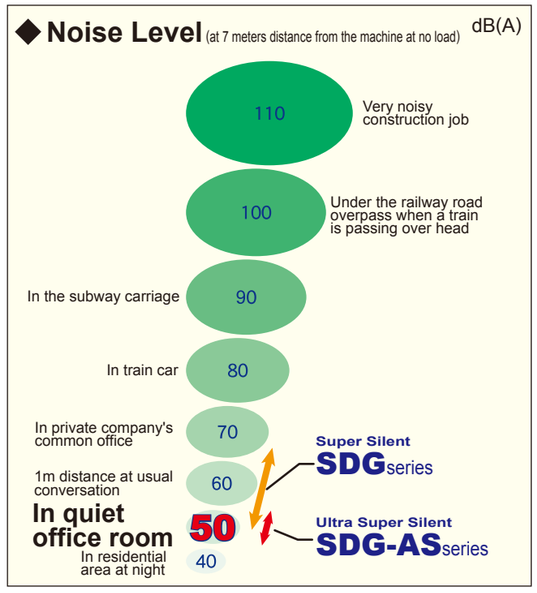
Quietude

Operation sound has been minimized because they are driven by low noise engines, and equipped with large capacity soundproof muffler, and specially designed exhaust system to reduce exhaust noise. Both SDG13S ~60S, 125S,150S, &25AS~150AS are so fully panel-constructed that structural clearance and space are reduced to a minimum. Also the operation noise has been minimized by equipment of combined suction duct.
Further, because the exhaust muffler is specially designed to be supported by a special-designed supporting structure, total vibration of the machine has been reduced.

Super Silent
SDG13S~220S
Ultra Super Silent
SDG25AS~150AS

Silent
SDG300S~800S

Noise Level (at 7 meters distance from the machine at no load) dB(A)



Clean Engine

SDG13S~500S generators are approved by Governmental Authority as "The 2nd Diesel Engine Driven Construction Machinery Exhaust Gas Regulation" excluding SDG610S/800S.

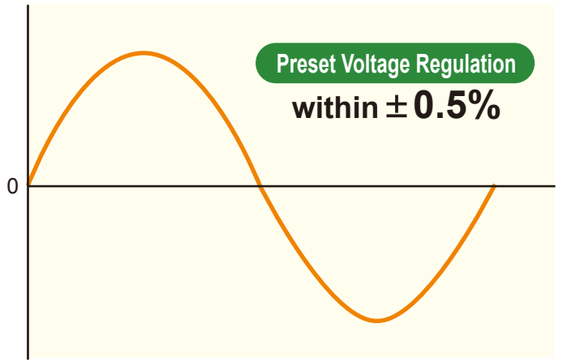
Blowby Gas (SDG13~100)

The generators have been newly designed to circulate the blowby gas inside the machine (PCV system). They are driven by such environmental friendly engine to keep the generator outside as well as the inside from being stained.

High Generating Performance

Better Generating Performance

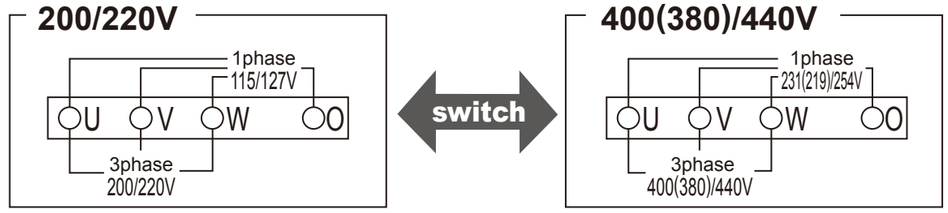
SDG series generators are mounted by such brushless alternator with transient reactance much reduced, and negative phase yield strength more increased and deflection of output wave form minimized due to reinforced damper coil.
Therefore, they are suitably applicable for inverter load, thyrister load, computer control load, lighting load, precision instruments and instrumental devices.



Fully Equipped

Dual Voltage Models

By changing over the short connecting plate in the control panel, the three phase output voltage can be switched to 200/220V from 400(380)/440V and vice versa.
When starting engine, the indication lamp at the operation panel goes on to display the operating voltage immediately.



Continuous Operation available for a long time

A large capacity fuel tank and low fuel consumption engine have made the generators run continuously for a long time.
Also for SDG13S~300S three-way selection valve is provided as a standard equipment to be easily connected to an additional outside fuel tank. One way selection method by one selection lever avoids wrong operation when changing over suction side to return side and vice versa.

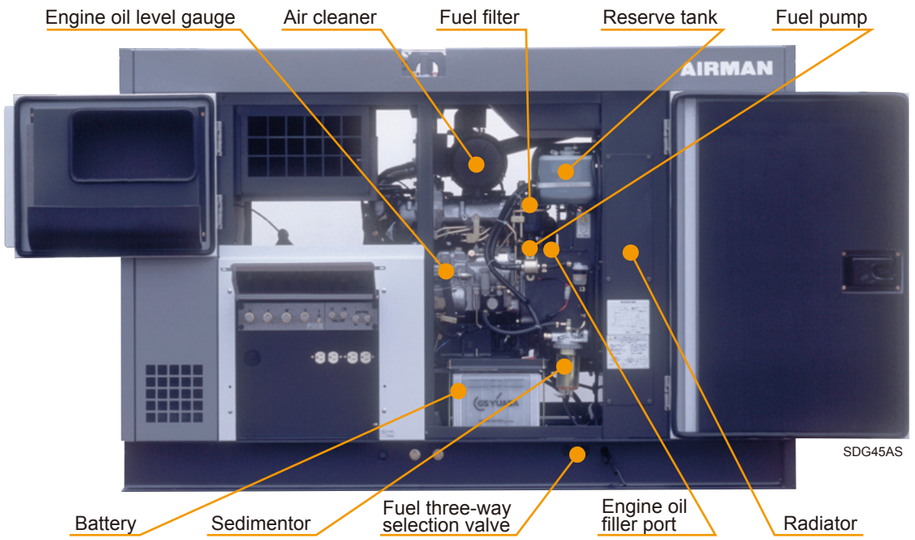
Automatic Air Bleeding System
(available for SDG13~150)

Automatic Air Bleeding Device is equipped to automatically bleed air from fuel line system. So such troublesome job as air bleeding job in case of engine stop due to fuel shortage is not necessary.Supply fuel and turn the key switch to the operation position, and then air in fuel line system is bled.
As for both SDG125S/150S/150AS, it is possible to automatically bleed air by pushing the push button provided at the operation panel.

Parallel Operation (SDG125,150,300 & larger models)

High Accurate Parallel Operation System (CCR cross current prevention device) is provided as a standard equipment. Combined with an accurate AVR(automatic voltage regulator), it is possible to manually perform parallel operation.

Easy Maintenance



◆ Maintenance with Great Ease

Daily inspection such as engine oil and coolant level can be done by opening the right side door. (but excluding SDG610/800).

For SDG45 & 60, one battery of two mounted batteries has been eliminated, thus dedicated to reducing industrial waste and maintenance cost.

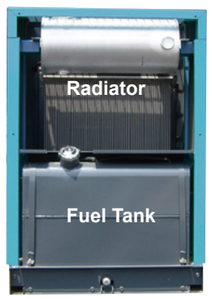
◆Mounting and Demounting Fuel Tank

Mounting and demounting fuel tank has been made easier by making the bottom floor entirely flat. It is easy to clean the interior by removing the fuel tank.

◆ Inspection and Cleaning Radiator

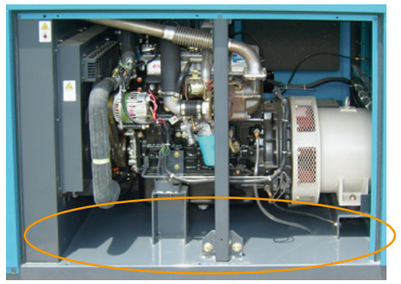
For SDG13~150 inspection of radiator and cleaning radiator can be easily performed by removing both side front covers and dividable fan shrouds.

For SDG300~610, inspection of radiator and cleaning radiator can be easily performed even without removing the cover.



◆ Flat Frame (SDG13~45, 60S, 125S, 150S)

The interior of the machine is flatly constructed so as to be easily cleaned.



◆ Newly-Designed Panel Construction (SDG13~60, 125, 150)

The bonnet is of panel constructed type for easily dismantling and assembling for maintenance.

◆ Maintenance Cycle

unit : per hour

Model	Engine oil	Oil filter	Fuel filter	Air element
SDG13,220	250 ※	500 ※	500	1,000
SDG25,300	250 ※	250 ※	500	1,000
SDG45~150	500 ※	500 ※	500	1,000
SDG400~800	250 ※	250 ※	1,000	1,000

※For the items marked with a asterisk, primary change interval is 50hr.

Operation

◆ Engine Starting Efficiency

For SDG13~150, engine preheating system consists of quick heating glow plug to easily start up engine in low temperature conditions.

SDG220~800 are driven by high start-up engine which exercises great power for earth auger and vibro-hammer operations requiring instant electric flow. Start-up characteristics have been more improved for electric motor start-up as well as turbo charger and governor improved.

◆ Control Panel

Control devices for generator and electrical appliances for engine are concentrated inside the control panel for better maintenance.

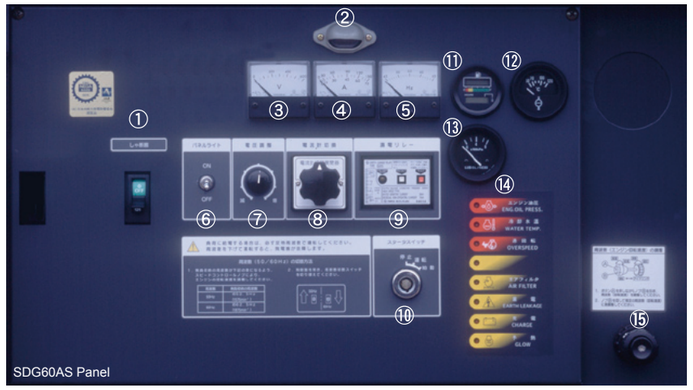
◆ Electronic Governor (SDG13~45, 220 & 400~610)

Stable engine speed can be secured because engine speed is made easier to be adjusted.

It is possible to select frequency and make fine adjustment of engine speed only by moving up and down "Switch for fine adjustment of engine speed". It is also possible easily to perform" Idling⇔Operation" with the slowdown switch.

◆ Temperature Sensing Auto-Idling Device (SDG800)

When engine starts up, it begins automatically idling. Also when starting engine again, it detects engine water (or oil) temperature and so shortens the idling time. Therefore, it is possible to start working more smoothly with less waiting time.



① Three phase circuit breaker
② Panel light
③ Voltmeter
④ Ammeter
⑤ Frequency meter
⑥ Panel light switch
⑦ Voltage regulator
⑧ Current selector switch
⑨ Ground fault circuit interrupter
⑩ Starter switch
⑪ Fuel gauge with hour meter
⑫ Water temperature meter
⑬ Oil pressure gauge
⑭ Warning lamps (For details, see the followings)
⑮ Speed control knob

Safety

◆Completely Monitoring System

For SDG60~150 & 800S, in order to eliminate electric shock when restarting engine, they are provided with a electric circuit as standard equipment to open the breaker in case of engine emergency stop. In case electric shock occurs, the warning lamp goes on and opens the breaker.

Warning Lamps & Emergency Stop

Model	Oil press. Drop	Water temp. rise	Over Speed	Overcurrent, Short-circuit	Electric Leakage	Faulty Battery charging	Air filter Clogging	Fuel level Drop	Oil filter Clogging
SDG13～45 ※2	■	■	■	※1	□※1	■	□	■	–
SDG60～150	■※1	■※1	■※1	※1	□※1	□	□	–	–
SDG220	■	■	■	※1	□※1	□	□	□	–
SDG300	■	■	■	※1	□※1	□	–	□	–
SDG400～610	■	■	■	※1	□※1	□	–	□	□
SDG800 ※3	■※1	■※1	■※1	■※1	■※1	■※1	–	■※1	□

■ Warning lamp goes on and it causes Engine emergency stop
□ Warning lamp goes on
※1 Breaker OFF
※2 For SDG13/25, additional warning lamp for malfunction of RPM sensor, trouble of solenoid sensor, disconnection of coolant temp sensor, short-circuiting of coolant temp sensor, disconnection of alternator L terminal, excessive voltage, and running out of fuel go on and engine to secure engine emergency stop
For SDG45, additional warning lamp for malfunction of RPM sensor, trouble of solenoid sensor, disconnection of coolant temp sensor, short-circuiting of coolant temp sensor, disconnection of alternator L terminal, excessive voltage, running out of fuel, protection of starter, malfunction of sensor power, and disconnection of fuse go on and engine to secure engine emergency stop
※3 For SDG800, additional warning lamps for coolant level drop, overspeed and engine oil level drop go on to secure engine emergency stop and breaker OFF.

SUPER SILENT Series 10.5~220kVA

SDG13S

SDG25S

SDG45S

SDG60S

SDG100S

SDG125S/150S

■SPECIFICATIONS

Model		SDG13S -3B1		SDG25S -3B1		SDG45S -3A8		SDG60S -3A6		SDG100S -3A5		SDG125S -3A6		SDG150S -3A6	
● Generator															
Frequency	Hz	50	60	50	60	50	60	50	60	50	60	50	60	50	60
Rated Output	kVA	10.5	13	20	25	37	45	50	60	80	100	100	125	125	150
Voltage	V	50Hz : 200 or 380 or 400 , 60Hz : 220 or 440(Dual Voltage)													
Power Factor	%	80													
Class of rating		Continuous													
Exciting Method		Brushless (with A.V.R.)													
No. of Phase		3-Phase , 4-Wire													
● Diesel Engine															
Make and Model		Kubota D1503-K3A		Kubota V2403-K3A		Kubota V3800-DI-T-K2B		Isuzu BB-4BG1T		Isuzu DD-6BG1T		Hino J08C-UP		Hino J08C-UD	
No. of Cylinder		3		4		4		4		6		6		6	
Type(4Cycle,Water-Cooled)		Swirl Chamber				Direct Injection,Turbo charged								Direct Injection, Turbo charged,Intercooled	
Total Displacement	L	1.499		2.434		3.769		4.329		6.494		7.961		7.961	
Rated Output	PS(kW)	15.6(11.5)	18.6(13.7)	26(19.1)	32(23.7)	51.7(38.0)	62(45.6)	65.4(48.1)	78(57.4)	100(73.6)	124(91.2)	131(96.3)	153(112.7)	160(118)	190(140)
Speed	rpm	1,500	1,800	1,500	1,800	1,500	1,800	1,500	1,800	1,500	1,800	1,500	1,800	1,500	1,800
Fuel		Diesel Fuel Oil													
Fuel Tank Capacity	L	58		70		100		135		225		250		250	
Fuel Consumption(50/75%Load)	L/hr	1.9/2.4	2.4/3.0	3.0/4.0	3.8/5.0	4.4/6.4	5.5/8.0	6.0/8.6	7.5/10.5	10.2/14.5	13.2/19.0	11.5/16.4	15.3/21.0	14.7/19.4	17.7/24.3
Lublicating Oil Capacity	L	6.5		9.5		13.2		14		18		24.5		24.5	
Cooling Water Capacity	L	5.7		7.0		11		15		24		22		22	
Battery		80D26R×1		80D26R×1		80D26R×1		80D26R×1		95D31R×2		95D31R×2		95D31R×2	
● Dimensions & Weight															
Overall Length	mm	1,480		1,550		1,870		2,090		2,600		2,990		2,990	
Overall Width	mm	650		700		860		860		1,000		1,180		1,180	
Overall Height	mm	950		980		1,220		1,220		1,400		1.480		1.480	
Net Dry Mass	kg	520		610		900		1,120		1,640		2,050		2,180	
Operating Mass	kg	580		680		1,010		1,260		1,870		2,300		2,430	
● Sound Level															
Sound power level in decibels	dB	83		90		87		90		91		92		94	
Sound pressure level ※1	dB(A)	56	57	59	63	57	60	59	63	61	64	63	65	63	66

※For other voltages than above-mentioned ones, contact us.

※1 7m in four directions from machine and at no load

SILENT Series 270~800kVA

SDG220S

SDG300S

SDG400S

SDG500S

■SPECIFICATIONS

Model		SDG220S -3A1		SDG300S -3A1		SDG400S -3A1		SDG500S -3A1		SDG610S -3A1		SDG800S -3A1	
● Generator													
Frequency	Hz	50	60	50	60	50	60	50	60	50	60	50	60
Rated Output	kVA	195	220	270	300	350	400	450	500	554	610	700	800
Voltage	V	50Hz : 200 or 380 or 400 , 60Hz : 220 or 440 (Dual Voltage)											
Power Factor	%	80											
Class of rating		Continuous											
Exciting Method		Brushless (with A.V.R.)											
No. of Phase		3-Phase , 4-Wire											
● Diesel Engine													
Make and Model		Mitsubishi 6D24-TLE2B		Hino K13C-TY		Mitsubishi S6B3-E2PTAA-3		Mitsubishi S6A3-E2PTAA-1		Mitsubishi S6R-PTA		Mitsubishi S12A2-PTA	
No. of Cylinder		6										12	
Type(4Cycle,Water-Cooled)		Direct Injection,Turbo charged,Intercooled											
Total Displacement	L	11.94		12.9		14.6		18.56		24.5		33.9	
Rated Output	PS(kW)	246(181)	270(199)	329(242)	366(269)	420(309)	470(346)	550(405)	635(467)	703(517)	768(565)	919(676)	1,029(757)
Speed	rpm	1,500	1,800	1,500	1,800	1,500	1,800	1,500	1,800	1,500	1,800	1,500	1,800
Fuel		Diesel Fuel Oil											
Fuel Tank Capacity	L	370		490		490		490		580		730	
Fuel Consumption(50/75%Load)	L/hr	22.1/30.9	26.5/36.6	29.8/42.6	36.7/52.0	40.0/56.6	49.3/69.6	51.0/73.0	62.0/87.2	60.2/84.1	72.9/99.2	82.2/113	105/141
Lublicating Oil Capacity	L	37		47		50		80		92		130	
Cooling Water Capacity	L	40		30.4		69		110		113		205	
Battery		150F51×2		150F51×2		180G51×2		180G51×2		180G51×2		180G51×4	
● Dimensions & Weight													
Overall Length	mm	3,840		3,980		4,550		5,270(4,790)		5,173(4,690)		6,235(5,600)	
Overall Width	mm	1,290		1,415		1,415		1,650		1,650		1,950	
Overall Height	mm	1,750		1,790		2,090		2,280		2,400		2,580	
Net Dry Mass	kg	3,530		3,940		5,510		6,810		8,190		11,000	
Operating Mass	kg	3,910		4,410		6,030		7,400		8,860		12,000	
● Sound Level													
Sound power level in decibels	dB	95		99		101		98		101		101	
Sound pressure level ※1	dB(A)	67		69		71		68		72		73	

※ For other voltages than above-mentioned ones, contact us.
※ The overall length in parenthesis of SDG500S~800S shows the size without rain protection hood.
※ Sound pressure level is for reference only, calculated based on sound power level.

※1 7m in four directions from machine and at no load

ULTRA SUPER SILENT Series 20~150kVA


SDG25AS


SDG45AS


SDG60AS


SDG100AS


SDG150AS

■SPECIFICATIONS

Model		SDG25AS -3A6		SDG45AS -3B1		SDG60AS -3A6		SDG100AS -3A6		SDG150AS -3A6	
● Generator											
Frequency	Hz	50	60	50	60	50	60	50	60	50	60
Rated Output	kVA	20	25	37	45	50	60	80	100	125	150
Voltage	V	50Hz : 200 or 380 or 400 , 60Hz : 220 or 440(Dual Voltage)									
Power Factor	A	80									
Class of rating	%	Continuous									
Exciting Method		Brushless (with A.V.R.)									
No. of Phase		3-Phase , 4-Wire									
● Diesel Engine											
Make and Model		Isuzu AA-4LE1		Kubota V3800-DI-T-K2B		Isuzu BB-4BG1T		Isuzu DD-6BG1T		Hino J08C-UD	
No. of Cylinder		4		4		4		6		6	
Type(4Cycle,Water-Cooled)		Swirl Chamber		Direct Injection,Turbo charged						Direct Injection, Turbo charged,Intercooled	
Total Displacement	L	2.179		3.769		4.329		6.494		7.961	
Rated Output	PS(kW)	26(19.1)	32(23.5)	51.7(38.0)	62(45.6)	65(48.1)	78(57.4)	100(73.6)	124(91.2)	163(120)	195(143.3)
Speed	rpm	1,500	1,800	1,500	1,800	1,500	1,800	1,500	1,800	1,500	1,800
Fuel		Diesel Fuel Oil									
Fuel Tank Capacity	L	75		165		170		225		265	
Fuel Consumption(50/75%Load)	L/hr	2.9/3.7	3.6/4.7	4.4/6.4	5.5/8.0	6.0/8.6	7.5/10.6	10.2/14.5	13.2/19.0	14.7/19.4	17.7/24.3
Lublicating Oil Capacity	L	8		13.2		14		18		24.5	
Cooling Water Capacity	L	8.5		11		15		24		22	
Battery		80D26R×1						95D31R×2			
● Dimensions & Weight											
Overall Length	mm	1,570		1,995		2,090		2,700		3,200	
Overall Width	mm	800		950		950		1,140		1,200	
Overall Height	mm	1,050		1,300		1,300		1,500		1.630	
Net Dry Mass	kg	690		1,060		1,280		1,870		2,590	
Operating Mass	kg	765		1,215		1,440		2,100		2,850	
● Sound Level											
Sound power level in decibels	dB	80		82		83		84		87	
Sound pressure level ※1	dB(A)	50	53	51	54	55	56	54	57	55	58

※For other voltages than above-mentioned ones, contact us.

※1 7m in four directions from machine and at no load

MANY OPTIONAL ATTACHMENTS AVAILABLE

Protection against Salt Damage

Generators to be used on seashore are ready to lose insulation resistance and to gather rust. When they are stationed for use on vessel deck and/or near seashore, protection against salt damage type ones are recommendable.

- **Alternator**
  Insulation efficiency is enhanced with coil ends by taping treatment and reinforced vanishing treatment so that it can prevent earlier degradation of insulation.
- **Bonnet and Covers**
  For SDG13S~150S and 25AS~150AS, the interior and exterior of bonnet and frame are painted for protection against salt damage. Also fittings such as bolts and nuts are of stainless steel.
  For SDG220S~SDG800S, air suction port is provided with protection cover against rain entrance, and hinges are of stainless steel. SDG800S is additionally painted for protection against salt damage, and treated by sealer painting and bolts painted for protection.
- **Control Panel, Terminal Plate and Electrical Appliances**
  Interior of control panel, terminal parts and electrical appliances are treated against corrosion.

Auto Fuel Feeding Device

This system is convenient for automatically feeding fuel to the mounted fuel tank from the fuel tank outside. When the fuel level in the fuel tank drops below the predetermined level, a solenoid pump automatically switches on to feed fuel into the built-in fuel tank. Equipped with solenoid pump, it is possible to feed fuel into the tank from a underground tank.

Engine Oil Auto-Feed System

This system automatically feeds engine oil. This is recommendable for a long time continuous operation. Inside the bonnet a sub-tank and a regulator for controlling engine oil quantity are provided. When engine oil level drops below the pre-determined level, this automatically feeds engine oil from the sub-tank.

Automatic Parallel Operation Device

This machine is compactly designed so that this system can be provided inside the machine. This system enables easy automatic and synchronous operation and also load distribution. Troublesome signal lines are not necessary. It monitors synchronous difficulties and reverse flow power so that it secures safety parallel operation.

ATS Panel (Automatic Transfer Switch)

When commercial power stops or enforcedly stops due to demand control, this system automatically starts generator and switches commercial power to generator power.
And further when the commercial power is recovered, it automatically returns to commercial power.
Battery charger is built in.

■Automatic Starting System

This system enables engine to automatically start and stop.

■Slowdown System

This system enables engine to run slow speed when operated at no load, so that fuel consumption is reduced. When loaded, the speed instantaneously returns to rated speed. This system is recommendable for such intermittent loaded jobs such as earth auger and vibro-hammer operation.

■Remote Control Operation

This system enables engine to start and stop, and also start slowdown operation and stop slowdown operation by remote control operation.Indicators for trouble, for rated speed, and low speed are equipped.

■List of Optional Equipment

● : Standard equipment ○ : Option upon manufacture

Model/Item	SDG13	SDG25	SDG45	SDG60	SDG100	SDG125	SDG150	SDG220	SDG300	SDG400	SDG500	SDG610	SDG800
Flange at outlet of muffler	○	○	○	○	○	○	○	○	○	○	○	○	○
3phase 4wire.Single phase 3wire selection	○	○	○	○	–	–	–	–	–	–	–	–	–
Dual voltage (200/400V)	●	●	●	●	●	●	●	●	●	●	●	●	●
200/400V operated simultaneously	–	–	–	–	–	–	–	○	○	○	○	○	○
200mA Leakage relay	–	–	–	–	–	–	–	○	○	○	○	○	○
Protection against salt damage	○	○	○	○	○	○	○	○	○	○	○	○	○
Three way valve Fuel Feed from outside tank	●	●	●	●	●	●	●	●	●	○	○	○	○
Fuel Auto-feed System	○	○	○	○	○	○	○	○	○	○	○	○	○
Engine Oil Auto-Feed System	–	○	○	○	○	○	○	○	○	○	○	○	●
Manual Operated Parallel Operation System	–	–	–	–	–	●	●	○	●	●	●	●	●
Auto-Parallel Operation System	–	–	–	–	–	–	–	○	–	○	○	○	○
Automatic Transfer System	○	○	○	○	○	○	○	○	○	○	○	○	○
Automatic Starting System※	○	○	○	○	○	○	○	○	○	○	○	○	○
Manual Operated Oil Pump	–	–	–	–	–	–	–	○	○	○	●	●	●
Slowdown System	–	–	–	–	–	–	–	○	○	○	○	○	○
Slowdown Device + Remote Control	–	–	–	–	–	–	–	○	○	○	○	○	○
Bearing & Stator Thermometer	–	–	–	–	–	–	–	○	○	○	○	○	○
Engine Oil Temperature Meter	○	○	●	●	●	●	●	○	○	○	○	○	●

※ Built-in charger: SDG13S~150S as option.SDG220S~800S as standard equipment.

Selection of Optimum Generators

Example of AC arc welder

● AC arc welder is in general single phase load. So when a three phase generator is used for single phase load, it shall be equally connected to three phase.

● Three times more generating power is required for single load welding.

Generators are capable of operating following numbers of arc welders.

Model	SDG25		SDG45		SDG60		SDG100		SDG125		SDG150		SDG220		SDG300		SDG400		SDG500		SDG610		SDG800	
Frequency(Hz)	50	60	50	60	50	60	50	60	50	60	50	60	50	60	50	60	50	60	50	60	50	60	50	60
180A	1	1	3	3	3	5	7	8	10	12	13	14	18	20										
200A		1	2	2	3	4	6	6	8	9	10	11	15	16										
250A			2	2	3	3	5	6	7	8	9	10	14	15										
300A					2	2	3	4	5	6	6	7	10	11	14	17	19	21	24	27	30	33	38	42
400A							3	3	3	3	5	5	6	7	9	12	13	14	16	19	21	24	27	30
500A								2	3	3	3	3	5	6	7	10	11	12	13	15	17	18	21	23

Note:Numbers of welders in the above table are for such ones without condensers equipped for reference purpose only. When using generators for extremely low efficientwelders, reduce the numbers of welders. When using generators for AC arc welders equipped with condenser, it is necessary to be very careful for self-exciting phenomena (Output voltage of generator extremely increases in case of no load or light load).
The above table shows the numbers of welders when operating 40%. In case of more Percentage than 40%, reduce the numbers of welders. When using generators for more welders than 2 units , connect evenly it to each welder, not concentrating one unit only.

Example of electric motors
(three-phase squirrel-cage motor)

Engine generators are used for large and small various type electric motors.

In general capacity of electric motor is specified in kW or PS.

This shows motor output capacity, not motor input capacity or not required to operate motor (machine). The relation between motor output and input is shown in the following formula.

1 PS = 0.7355 kW

Efficiency = 85% (three phase induction motor)

Power factor = 0.8 (three phase induction motor)

$$\frac{\text{Output(kW)}}{\text{Efficiency}} = \frac{\text{Output(PS)}}{0.7355 \times \text{Efficiency}} = \text{Input(kW)}$$

$$\frac{\text{Input(kW)}}{\text{Power factor}} = \text{Input(kVA)}$$

Motor starting capacity

Model		SDG13		SDG25		SDG45		SDG60		SDG100		SDG125		SDG150	
Frequency(Hz)		50	60	50	60	50	60	50	60	50	60	50	60	50	60
Generator(kVA)		10	13	20	25	37	45	50	60	80	100	100	125	125	150
Motor capacity	Direct start Simultaneously(kW)	4	4.5	6.5	7.5	12	14	17	19	26	32	35	43	43	51
	Direct start By turns(kW)	7.5	9	15.1	18.8	27.9	34	37.7	45.3	60.4	75.5	75.5	94.4	94.4	113
	λ-Δ start(open)(kW)	6	6.8	9.8	11.3	18	21	22.5	28.5	39	48	52.5	64.5	64.5	76.5
	λ-Δ start(closed)(kW)	7.5	9	15.1	18.8	27.9	34	37.7	45.3	60.4	75.5	75.5	94.4	94.4	113

Model		SDG220		SDG300		SDG400		SDG500		SDG610		SDG800	
Frequency(Hz)		50	60	50	60	50	60	50	60	50	60	50	60
Generator(kVA)		195	220	270	300	350	400	450	500	550	610	700	800
Motor capacity	Direct start Simultaneously(kW)	68	76	91	102	130	145	160	181	180	190	240	260
	Direct start By turns(kW)	147	166	188	226	265	302	340	377	415	453	498	574
	λ-Δ start(open)(kW)	102	114	137	153	195	218	240	272	270	285	360	390
	λ-Δ start(closed)(kW)	147	166	188	226	265	302	340	377	415	453	498	574

※The motor capacities in the above table are only for reference purpose. The generator capacities vary upon instantaneous voltage drop, motor start class, efficiency, old and new type machine.

● The instantaneous voltage drop when motor starts shall be within 30% of mo load voltage.

● Motor starting kVA shall be 7 kVA per one (1) kW.

● Motor efficiency shall be 85% and load 90%.

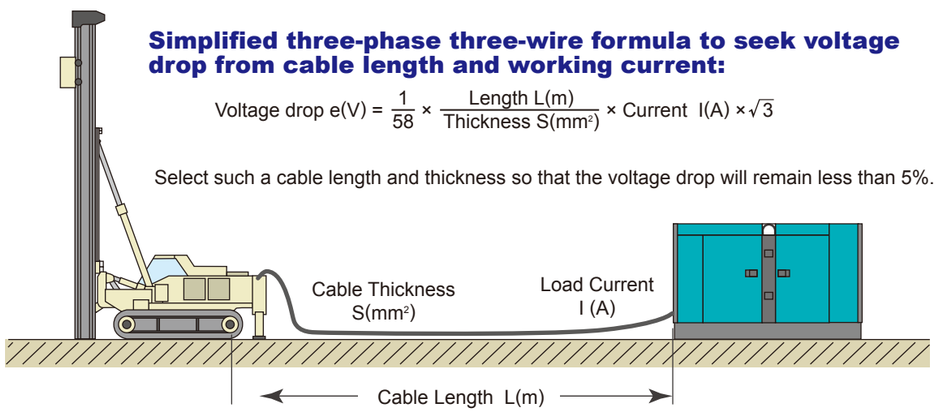
● When operating many motor loads (starting by turns one by one) and total capacity of the loads within the values in the above table, it can operate as many loads as expected. But the total capacity of the motors which are operated first shall be within the capacity at direct start instantaneous start.

● The engine load of the engine complete with turbo-charger sometimes may be influenced by engine net average efficient pressure.

Simplified three-phase three-wire formula to seek voltage drop from cable length and working current:

$$\text{Voltage drop } e(V) = \frac{1}{58} \times \frac{\text{Length } L(m)}{\text{Thickness } S(mm^2)} \times \text{Current } I(A) \times \sqrt{3}$$

Select such a cable length and thickness so that the voltage drop will remain less than 5%.



List of current values at a glance

Unit: ampere (A)

Model		SDG13	SDG25	SDG45	SDG60	SDG100	SDG125	SDG150	SDG220	SDG300	SDG400	SDG500	SDG610	SDG800
50Hz	200V	30.3	57.7	107	144	231	289	361	563	779	1,010	1,299	1,599	2,021
	380V	16.0	30.4	56.2	76.0	122	152	190	296	410	532	684	842	1,064
	400V	15.2	28.9	53.4	72.2	115	144	180	281	390	505	650	800	1,010
60Hz	220V	34.1	65.6	118	157	262	328	394	577	787	1,050	1,312	1,600	2,100
	440V	17.1	32.8	59.0	78.7	131	164	197	289	394	525	656	800	1,050

List of Neutral Point (O terminal) Allowable Power

Model	SDG13		SDG25		SDG45		SDG60		SDG100		SDG125		SDG150	
Frequency(Hz)	50	60	50	60	50	60	50	60	50	60	50	60	50	60
● 200/220V														
Voltage(V)	115	127	115	127	115	127	115	127	115	127	115	127	115	127
Allowable ampere 3 phase average(A) ※1	30.3	34.1	57.7	65.6	107	118	144	157	231	262	289	328	361	394
Output ratio	100 ※2													
Allowable ampere Single phase(A)	30.3	34.1	57.7	65.6	107	118	144	157	115	131	144	164	180	197
Output ratio	100 ※2								100 ※2					
● 400(380)/440V														
Voltage(V)	231 (219)	254	231 (219)	254	231 (219)	254	231 (219)	254	231 (219)	254	231 (219)	254	231 (219)	254
Allowable ampere 3 phase average(A) ※1	15.2 (16.0)	17.1	28.9 (30.4)	32.8	53.5 (56.2)	59.0	72.0 (76.0)	78.5	115 (121.5)	131	144 (158)	164	180 (190)	197
Output ratio	100 ※2													
Allowable ampere Single phase(A)	15.2 (16.0)	17.1	28.9 (30.4)	32.8	53.5 (56.2)	59.0	72.0 (76.0)	78.5	57.0 (60.8)	65.0	72.0 (75.0)	82.0	90.0 (95.0)	98.0
Output ratio	100 ※2								50 ※3					

Model	SDG220		SDG300		SDG400		SDG500		SDG610		SDG800	
Frequency(Hz)	50	60	50	60	50	60	50	60	50	60	50	60
● 200/220V												
Voltage(V)	115	127	115	127	115	127	115	127	115	127	115	127
Allowable ampere 3 phase average(A) ※1	450	462	623	630	808	840	1,039	1,050	1,279	1,280	1,617	1,680
Output ratio	80 ※4											
Allowable ampere Single phase(A)	563	577	779	787	1,010	1,050	1,299	1,312	1,599	1,600	2,021	2,100
Output ratio	100 ※2											
● 400(380)/440V												
Voltage(V)	231 (219)	254	231 (219)	254	231 (219)	254	231 (219)	254	231 (219)	254	231 (219)	254
Allowable ampere 3 phase average(A) ※1	225 (237)	231	312 (328)	315	404 (425)	420	520 (547)	525	640 (673)	640	808 (851)	840
Output ratio	80 ※4											
Allowable ampere Single phase(A)	281 (296)	289	390 (410)	394	505 (532)	525	650 (684)	656	800 (842)	800	1,010 (1,064)	1,050
Output ratio	100 ※2											

※1 When you use single phase with O terminal at the same time for each phase from Model SDG13S/25S/AS to SDG150S/AS,the unbalance of current value for each phase should be kept within 50%.When the current values exceed the limit, please note that the output voltages for each phase may be unbalanced.

※2 Output ratio shows an allowable output figure of the rated current. (Rated output 100% = it is allowable to use the rated current value until 100%.)

※3 Output ratio shows an allowable output figure of the rated current. (Rated output 50% = it is allowable to use the rated current value until 50%.)

※4 Output ratio shows an allowable output figure of the rated current. (Rated output 80% = it is allowable to use the rated current value until 80%.)

Leakage Protection Device and Grounding Method

Leakage Protection Device

This machine is equipped with a leakage relay which detects leakage caused by a defective insulation of working load to prevent an accident such as an electric shock by shutting down the circuit. However, for additional safety, install ground fault circuit interrupter (GFCI) for each load equipment close to the load equipment. The sensitivity current of the leakage relay is 30mA.

Grounding Method

<Procedure>

Connect a lead wire fitted with a ground rod to the leakage relay grounding terminal (E) of the three-phase output terminal board.

1.Connect the generator machine ground terminal of the package to ground.

2.Be sure to ground the package of the load equipment as well.

3.These grounding must be carried out in accordance with local regulations.