

**OUR HEAD OFFICE AND PLANT ARE CERTIFIED
TO BOTH ISO 9001 AND ISO 14001**

Niigata plant:

Shimo Aozu, Tsubame-city, Niigata-prefecture, 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.

AIRMAN®

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DISTRIBUTOR :

Diesel Engine Generator
For JPN Stage3

AIRMAN®

Diesel Engine Generator SDG series

Output 10.5kVA~400kVA



SDG60L



SDG45LAX

HOKUETSU INDUSTRIES CO., LTD.

Easier Operation and more advanced generator

AIRMAN SDG SERIES

Since 1970, Airman has developed and sold the brush-less generators, our advanced generators, which is developed by our long experience and original technologies, succeeded to spread through our new machines.

Airman will strive to develop our products which has the concept “Environmentally and ECO” friendly day by day.



	Prime kVA	Certified Japanese diesel engine emission control Stage3											
		50Hz 60Hz	10.5 13	20 25	37 45	50 60	80 100	100 125	125 150	200 220	270 300	350 400	
Leak guard	SDG-L												
Large tank leak guard	SDG-LX												
Standard	SDG-3B1												
Oil fence	SDG-7B1												
Ultra Super Silent	SDG-AS-3B1/7B1												
3 and Single phase capable dual output	SDG-LA												
Large tank leak guard/ 3 and Single phase capable dual output/ Able generator	SDG-LAX												

Certified Japanese diesel engine emission control Stage3

Leak guard

SDG- L SERIES

<20~400 kVA>

Large fuel tank mounted Leak guard

SDG- LX SERIES

<10.5~100 kVA>



▶▶ P.07

Certified Japanese diesel engine emission control Stage3

Standard Engine Generator

SDG- 3B1

<10.5~150 kVA>

Oil fence mounted Engine Generator

SDG- 7B1

<80~150 kVA>



▶▶ P.11

Ultra Super Silent Engine Generator

SDG- AS

<20~60 kVA>

Certified Japanese diesel engine emission control Stage3

3/Single Phase capable
multi output

SDG- LA SERIES

<20~100 kVA>

Large fuel tank mounted Leak guard
3/Single Phase capable multi output

SDG- LAX SERIES

<20~100 kVA>



▶▶ P.17

High Performance

Outstanding generation performance

Due to the big drop of Transient Reactance and the reinforcement of the damper winding, we are succeeded to improve our brushless alternator much tolerance dose and few distortion of the wave form. It is suitable for use of inverter, thyristor, PC, lightning, precision instrument, measurement hardware.

Preset Voltage Regulation
within **0.5%**



Portable AC (Alternating current) generator driven by diesel engine

These products must be in accordance with JEM1398 portable generator driven by diesel engine. * JEM1398 : The Japan electrical manufacturers' association regulation.

Cation Electrodeposition Coating

(up to SDG400)

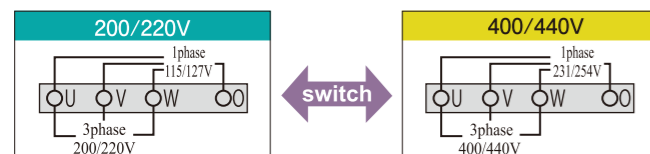
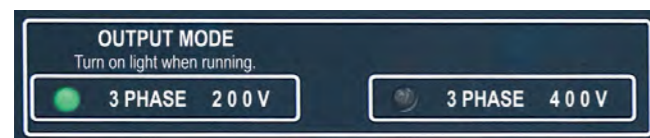
We have adopted the electrodeposition coating, baking finish coating for weather proof, and anti-corrosion and salt pollution.

Dual Voltage: Standard Specification

(From SDG45 to SDG400)

We can convert 200/220V ⇔ 400/440V of 3 phase voltage each other by switching short-circuit plates in the control box.

When the engine is started, the indicator light in the operation box is turn on , and we can recognize the voltage level immediately.



Portable generator facility

These products are certified in accordance with technological standards by N E G A (Nippon Engine Generator Association).



Auto Parallel Operation

(More than SDG150)

By attached controller in the generator, it is synchronized and shared "stop and go running" automatically. And according to the load, Up to 8 units of machines will be operated each other.



Manual Parallel Operation

(From SDG150S to SDG400S)

With our well-controlled AVR (Automatic Voltage Regulator) and CCR (Cross Current Regulator), Machine is controlled by the Manual Parallel Operation.(When they are running, we must always monitor them.)



Big capacity single-phase output

It is attached an standard external connection terminal which can take single phase output in case of SDG25 × 1set, SDG45-SDG150 ×2sets.



Environmental resistance

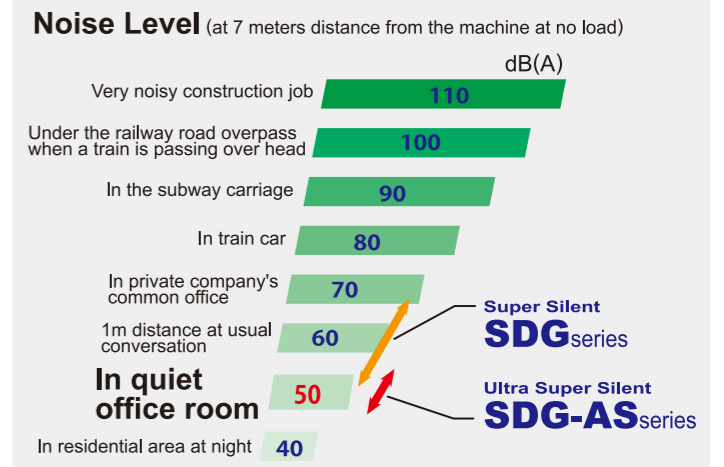
Silences

We are succeeded to be silent by adopting the silent engine, and the high-performance muffler, the special exhaust-duct structure. Furthermore we are succeeded to achieve more silent noise level by adopting the perfect sealed panel and super-silent "intake duct". And we have achieved less vibration by applying the new support method of the muffler.

Super Silent
SDG13S~220S



Super Silent
SDG300S~400S



Compliant with emissions regulations

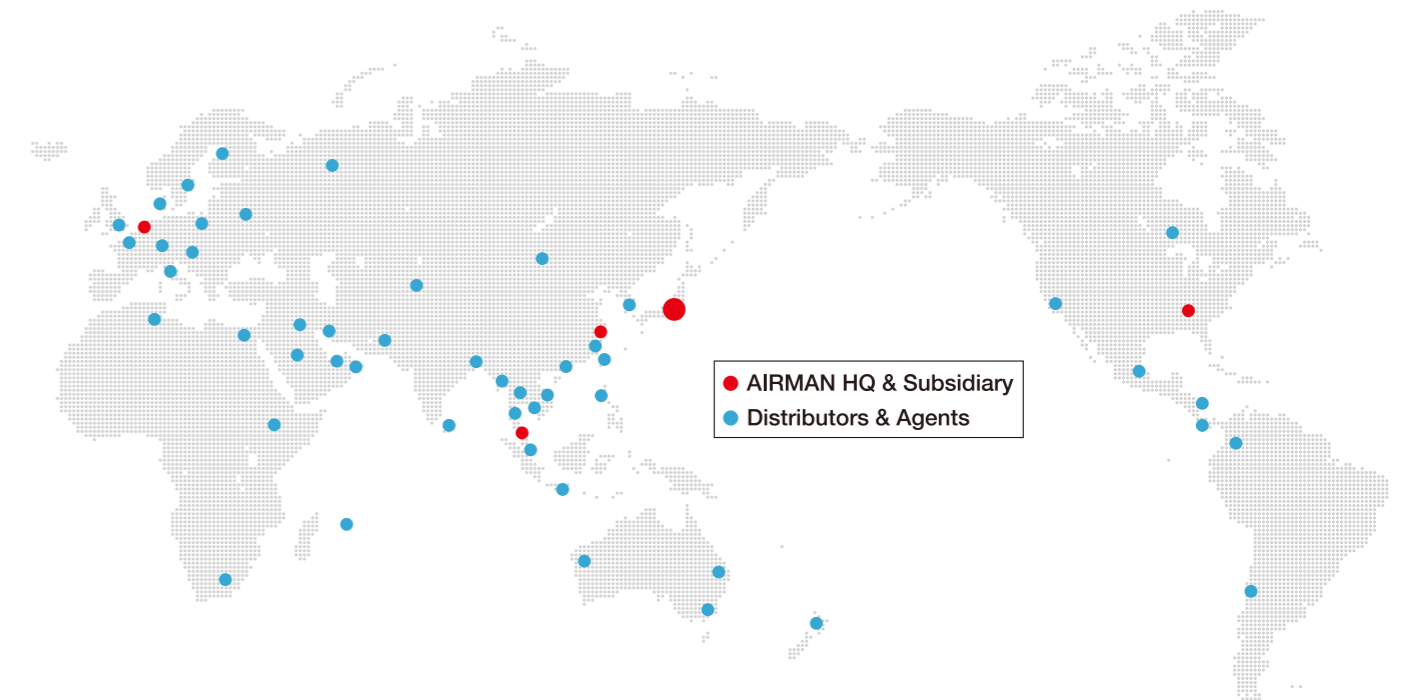
SDG13-400 is applicable for the regulation of Japanese gas emission Stage 3.



Blow-by gas (SDG13~220)

They are applied PCV (Positive crankcase ventilation) system which blow-by gas is recirculated internally to avoid the carbon clogging. They are environmentally friendly engines.

AIRMAN Service network



Easy operation

Quick-start engine

[SDG13- SDG220]

We are applying the quick-heating “glow-plug” for preheat engine. And we succeed to be quick start in low temperature.

[SDG220 – SDG400]

We are mounting the quick-start engine which is improved turbo and governor for using the hand-auger or vibro-hammer.

Electronic Governor

Rotation speed adjustments can be easily and stable engine rotation speed can be obtained.

Frequency changing can be done easily by a switch (idling (warming up gas) ⇄ running)

Control Box

We have developed “one” control panel which is combined engine control and generator control.



- ① 200V,400V signals
- ② Alarm lamp
- ③ Panel light
- ④ Frequency meter
- ⑤ Amp meter
- ⑥ Voltage meter
- ⑦ Voltage controller
- ⑧ 3Phase breaker
- ⑨ Single phase breaker
- ⑩ Water temperature meter
- ⑪ Fuel Meter & Time meter
- ⑫ Electric Leakage Relay
- ⑬ Starter switch
- ⑭ Frequency switching switch
- ⑮ Frequency adjustment switch
- ⑯ Operation Mode switching switch

Safety

Various kinds of safety devices

Over current / short circuit protection device

At overload or short circuit, the circuit breaker will shut off for protecting the generator.

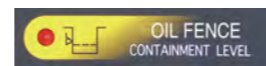
Earth leakage protection device

At the time of electric leakage, the alarm lamp lights up, and the three-phase / single-phase breaker shut off.



Oil Fence Alarm

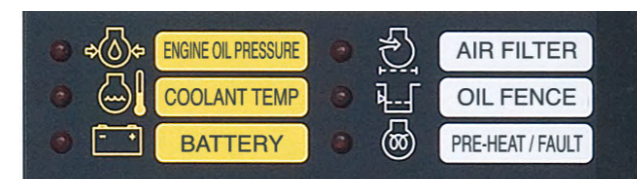
If fuel, oil, water, etc. accumulate in the oil fence by more than a specified amount, it will be announced by an alarm lamp on the monitor.



Main alarm and emergency stop

Model	Over Rotating	Oil level down	Water Temp. High	Charge Failure	Filter Clog	Over Current-Short	Leakage
SDG13~220	■	■	■	■	□	△	△
SDG300/400	■	■	■	□	□	△	△
SDG60/100/150/300	■△	■△	■△	□	□	△	△
SDG220/400	■	■	■	□	□	△	△

■: Alarm lamp on or blink + Engine emergency stop
 □: Alarm Lamp on
 △: Breaker shut down



Easy maintenance

Easy maintenance

Open the right-side doors, and it is easily access for daily checking (ex. Oil check, coolant check).

Maintenance cycle

Item	Engine oil	Oil filter	Fuel filter	Air Element
Model				
SDG13/25	250 *1	500 *1	500	1,000
SDG45~220	500 *1	500 *1	500	1,000
SDG300~400	500 *2	500 *2	500	1,000

*1 First time exchange 50hrs *2 First time exchange 250hrs

Panel structure

The bonnet adopts a piling-up structure based on the panel structure, improving disassembly / assembly at the time of maintenance.

(Exclude SDG100S)

Radiator inspection · cleaning

By removing the front cover and split fan shroud on both sides. Inspecting and cleaning the radiator can be done easily. Larger-sized models ≥ 220 kVA have inspection windows on the front cover makes easier to inspect and clean. In addition, the L / LX / LA / LAX series has mounted an inspection and cleaning door for the radiator cleaning on the front cover.



(Exclude SDG13L/25L)

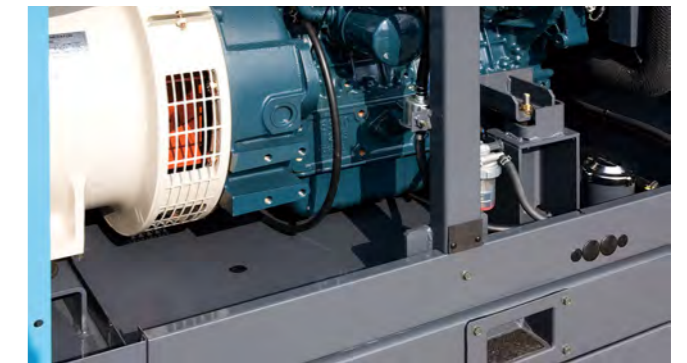


Flat frame

(SDG-3B1/7B1series)

It is a flat frame structure in which the inside of the machine can be cleaned easily.

(Exclude SDG100S/60AS/150AS)



Automatic Air Bleeding System

(SDG13~150)

Automatic Air Bleeding Device is equipped to automatically bleed air from fuel line system. This eliminates the need to prime the fuel system again should the generator be shutdown due to running out of fuel. Simply top up the fuel and turn the key switch to operation position, air in the fuel line system is bled automatically.

As for both SDG125S/150S/150AS, it is possible to automatically bleed air by pushing the push button provided at the operation panel.



Stainless Bolt

We use stainless bolts on front cover and left-side door which have to be removed when performing maintenance to prevent bolts from rusting. Also we reduce the risk of broken bolts on bonnet that might be resulted from knocking by minimizing the bolts' quantity.

SDG-L

Leak guard engine generator

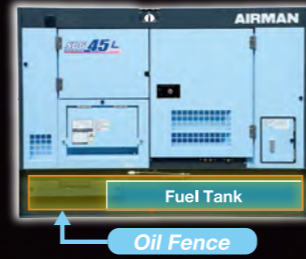
SDG-L

L = Prevent outflow of oil etc. as much as possible.

Prevent as much as possible outflow of oil etc. Oil fence mounted "LEAK GUARD" type

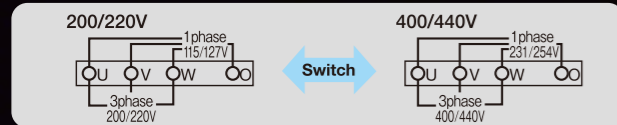
In case of leakage of fuel or oil on the oil fence, it will prevent leakage to the outside as much as possible. Space capacity of the oil fence has secured more than ×100% (fuel + oil + cooling water).

*All oil leaks are not guaranteed.

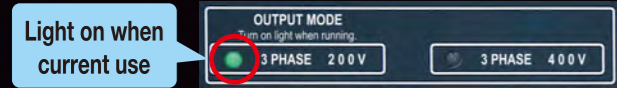


Dual voltage is standard.

3 phase Voltage can switch to 200/220V ⇔ 400/440V
When starting the engine, the three-phase output voltage indicator on the control panel lights and you can see the voltage being used at a glance.

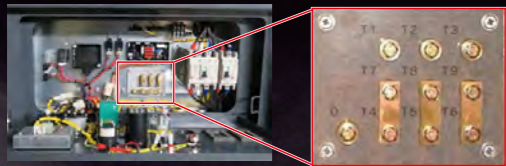


Can see the voltage being used at a glance.



Bus bar type voltage switching board

To switch the voltage of three-phase output (200 / 220V ⇔ 400 / 440V), a bus bar type voltage switching board which can be switched easily is attached.



Considered convenience Total heights below 1,350mm

By setting the total height of the SDG25L/45L/60L to 1350 mm or less.



SDG-LX

Large fuel tank mounted leak guard engine generator

SDG-LX

L = Prevent outflow of oil etc. as much as possible.
+
X = Large fuel tank.

Large fuel tank mounted

Large fuel tank mounted as standard. It makes possible long time operation without external fuel tank.

LEAK GUARD



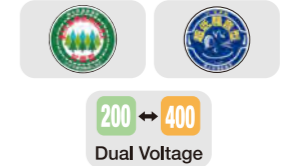
SDG25L-5B1



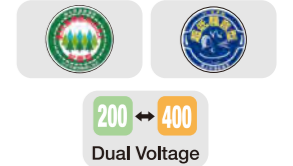
SDG45L-5B2



SDG60L-5B1



SDG100L-5B1



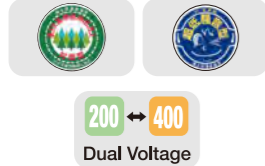
Item	Model	Leak Guard Type								
		SDG25L-5B1		SDG45L-5B2		SDG60L-5B1		SDG100L-5B1		
Generator										
Frequency	Hz	50	60	50	60	50	60	50	60	
Power Supply										
Dual Voltage										
3phase 4wires 400V Class	Prime output	kVA	20	25	37	45	50	60	80	100
	Standby output	kVA	22	27.5	37	45	55	66	88	110
	Voltage	V	400	440	400	440	400	440	400	440
3phase 4wires 200V Class	Prime output	kVA	20	25	37	45	50	60	80	100
	Standby output	kVA	22	27.5	37	45	55	66	88	110
	Voltage	V	200	220	200	220	200	220	200	220
Ampere	A	28.9	32.8	53.4	59.0	72.2	78.7	115	131	
Pole	P	4								
	Power Factor	3-phase 0.8 (lagging) / Single-phase 1.0								
	Diesel Engine									
Model name		KUBOTA V2403-K3A		KUBOTA V3600-T-K3A		ISUZU BJ-4JJ1X		ISUZU BI-4HK1X		
System		4Cylinder, Swirl chamber		4Cylinder, Swirl chamber, Turbo-Charged		4Cylinder, Direct-Injection, Turbo-Charged, Intercooled				
Total displacement	L	2.434		3.62		2.999		5.193		
Rated output	kW	19.1	23.7	35.0	42.5	51.6	61.0	96.3	113.6	
Rated rotation speed	min ⁻¹	1,500	1,800	1,500	1,800	1,500	1,800	1,500	1,800	
Use fuel										
Diesel oil										
Fuel tank capacity	L	70		110		140		250		
Fuel consumption	50% Load	L/hr	3.0	3.8	4.9	6.1	5.7	7.1	9.9	12.8
	70% Load	L/hr	4.0	5.0	6.9	8.4	8.1	10.2	14.5	18.2
Engine Oil volume	L	9.5		13.2		15		20.5		
Coolant water volume	L	7.0		11		13.2		22.2		
Battery × unit		80D26R×1		80D26R×1		95D31R×1		170F51×1		
Weight Dimension										
Length × Width × Hight	mm	1,540×700×1,090		1,850×860×1,350		2,080×1,000×1,350		2,530×1,150×1,580		
Dry(Operating) weight	kg	675 (750)		990 (1,100)		1,200 (1,340)		1,830 (2,080)		
Emission, Noise										
Sound Power level LwA	dB	86	90	84	88	86	89	91		
Sound pressure level (7m 4direction/no load)	dB(A)	59	63	57	60	59	62	60	63	
Emission control		JPN Stage 3								

※ Sound power level is measured at 60Hz, no load and rated speed of revolution.
 ※ Above figures are applied under operation in standard atmosphere conditions as per JIS D0006.
 ※ "Standby Output" rating is applied only under intermittent or emergency operation for approximately 1 hour.

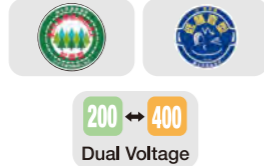
LEAK GUARD



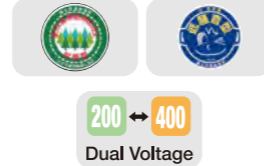
SDG220L-5B1



SDG300L-5B1



SDG400L-5B1



Item		Model	Leak Guard Type					
			SDG220L-5B1		SDG300L-5B1		SDG400L-5B1	
Generator								
Frequency	Hz		50	60	50	60	50	60
Power Supply			Dual Voltage					
3phase 4wires 400V Class	Prime output	kVA	200	220	270	300	350	400
	Standby output	kVA	220	242	297	330	385	440
	Voltage	V	400	440	400	440	400	440
	Ampere	A	289	289	390	394	505	525
3phase 4wires 200V Class	Prime output	kVA	200	220	270	300	350	400
	Standby output	kVA	220	242	297	330	385	440
	Voltage	V	200	220	200	220	200	220
	Ampere	A	577	577	779	787	1,010	1,050
Pole	P		4					
Power Factor			3-phase 0.8 (lagging) / Single-phase 1.0					
Diesel Engine								
Model name			ISUZU BH-6UZ1X	KOMATSU SAA6D125E-5-B	KOMATSU SAA6D140E-5-C			
System			6Cylinder, Direct-Injection, Turbo-Charged, Intercooled					
Total displacement	L		9.839		11.04		15.24	
Rated output	kW		203	230	234	259	310	357
Rated rotation speed	min ⁻¹		1,500	1,800	1,500	1,800	1,500	1,800
Use fuel			Diesel oil					
Fuel tank capacity	L		400		490		490	
Fuel consumption	50% Load	L/hr	22.9	26.5	31.1	35.8	41.5	49.7
	70% Load	L/hr	34.1	37.4	44.7	49.2	57.0	68.1
Engine Oil volume	L		41		61		84	
Coolant water volume	L		47.5		54		67.5	
Battery × unit			170F51×2		170F51×2		225H52×2	
Weight Dimension								
Length × Width × Height	mm		3,550×1,380×1,770		4,000×1,500×1,850		4,500×1,500×2,090	
Dry(Operating) weight	kg		3,250 (3,660)		4,510 (5,020)		5,680 (6,220)	
Emission, Noise								
Sound Power level LwA	dB		90	94	93	98	96	101
Sound pressure level (7m 4direction/no load)	dB (A)		61	65	65	69	67	72
Emission control			JPN Stage 3					

※ Sound power level is measured at 60Hz, no load and rated speed of revolution.
 ※ Above figures are applied under operation in standard atmosphere conditions as per JIS D0006.
 ※ "Standby Output" rating is applied only under intermittent or emergency operation for approximately 1 hour.

LARGE FUEL TANK & LEAK GUARD



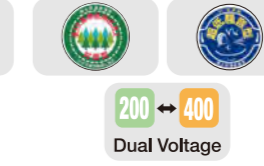
SDG13LX-5B1



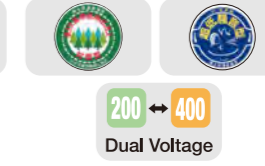
SDG25LX-5B1



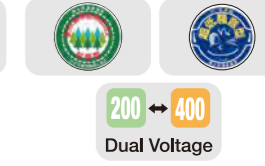
SDG45LX-5B2



SDG60LX-5B1



SDG100LX-5B1



Item		Model	Large fuel tank & Leak Guard Type									
			SDG13LX-5B1		SDG25LX-5B1		SDG45LX-5B2		SDG60LX-5B1		SDG100LX-5B1	
Generator												
Frequency	Hz		50	60	50	60	50	60	50	60	50	60
Power Supply			Three ⇄ Single Phase Alternative Output				Dual Voltage					
3phase 4wires 400V Class	Prime output	kVA	—	—	20	25	37	45	50	60	80	100
	Standby output	kVA	—	—	22	27.5	37	45	55	66	88	110
	Voltage	V	—	—	400	440	400	440	400	440	400	440
	Ampere	A	—	—	28.9	32.8	53.4	59	72.2	78.7	115	131
3phase 4wires 200V Class	Prime output	kVA	10.5	13	20	25	37	45	50	60	80	100
	Standby output	kVA	11.55	14.3	22	27.5	37	45	55	66	88	110
	Voltage	V	200	220	200	220	200	220	200	220	200	220
	Ampere	A	15.15	17.05	57.7	65.6	107	118	144	157	231	262
Single phase 3wires 200V Class/ 100V Class	Prime output	kVA	6.1	7.5	—	—	—	—	—	—	—	—
	Standby output	kVA	6.7	8.25	—	—	—	—	—	—	—	—
	Voltage	V	100	110	—	—	—	—	—	—	—	—
Ampere	A	30.3×2	34.1×2	—	—	—	—	—	—	—	—	
Pole	P		4									
Power Factor			3-phase 0.8 (lagging) / Single-phase 1.0									
Diesel Engine												
Model name			KUBOTA D1503-K3A	KUBOTA V2403-K3A	KUBOTA V3600-T-K3A		ISUZU BJ-4JJ1X	ISUZU BI-4HK1X				
System			3Cylinder, Swirl chamber	4Cylinder, Swirl chamber	4Cylinder, Swirl chamber, Turbo-Charged		4Cylinder, Direct-Injection, Turbo-Charged, Intercooled					
Total displacement	L		1.499		2.434		3.62		2.999		5.193	
Rated output	kW		11.5	13.7	19.1	23.7	35.0	42.5	51.6	61.0	96.3	113.6
Rated rotation speed	min ⁻¹		1,500	1,800	1,500	1,800	1,500	1,800	1,500	1,800	1,500	1,800
Use fuel			Diesel oil									
Fuel tank capacity	L		100		180		355		420		750	
Fuel consumption	50% Load	L/hr	1.8	2.2	3.0	3.8	4.9	6.1	5.7	7.1	9.9	12.8
	70% Load	L/hr	2.3	2.8	4.0	5.0	6.9	8.4	8.1	10.2	14.5	18.2
Engine Oil volume	L		6.5		9.5		13.2		15		20.5	
Coolant water volume	L		6.5		7.0		11		13.2		22.2	
Battery × unit			80D26R×1		80D26R×1		80D26R×1		95D31R×1		170F51×1	
Weight Dimension												
Length × Width × Height	mm		1,390×650×1,160		1,540×700×1,250		1,850×860×1,560		2,080×1,000×1,490		2,530×1,150×1,760	
Dry(Operating) weight	kg		580 (675)		720 (890)		1,070 (1,390)		1,260 (1,630)		1,970 (2,630)	
Emission, Noise												
Sound Power level LwA	dB		81	84	86	90	84	88	86	89	91	
Sound pressure level (7m 4direction/no load)	dB (A)		55	58	59	63	57	60	59	62	60	63
Emission control			JPN Stage 3									

※ Sound power level is measured at 60Hz, no load and rated speed of revolution.
 ※ Above figures are applied under operation in standard atmosphere conditions as per JIS D0006.
 ※ "Standby Output" rating is applied only under intermittent or emergency operation for approximately 1 hour.

SDG-3B1

Standard engine generator

SDG-7B1

Oil fence engine generator

SDG-AS

Ultra-super silent engine generator



SDG-3B1

Standard engine generator

SDG - **3B1**
3B1 = Standard type.

SDG-7B1

Oil fence engine generator

SDG - **7B1**
7B1 = Oil fence mounted type.

It is unnecessary the external fuel tank.

It is little possibility to leak the oil from the connection pipe between generator and external fuel tank.

Drainage disposing is drastically reduced

Drainage disposing is drastically reduced in the oil-fence.

Prevention of inhalation of rainwater

Increase the intake air volume by adopting the special structure of the intake port, it is reduced the negative pressure inside the machine body, and suppress the inhalation of rainwater.



Alarm indication

When the oil fume accumulates in the oil fence, the panel alarm lamp signals and informs you.



Prevention of inhalation of rainwater

We adopted a plug-in type seal used for automobiles and others.



Easy loading and unloading

It is unnecessary to install the external oil-fence and external tank, connecting the fuel pipe.

Special designed body to prevent invasion of rainwater

Rainwater accumulates in the external oil fence when the rain falls, but the oil fence integrated type adopts a body structure that minimizes the soaking of rainwater into the body.

Easy maintenance

Removal of the oil fence part can be done easily by removing the screw of the stud bolt (4-8 pieces). Hanging hooks are equipped as standard on the fuel tank for maintenance.



Prevent water leakage and oil leakage structure

The oil fence part of SDG 13 - 60 adopted a bending type with less welding. In addition, airtight welding is continuously applied to the welded part.



SDG-AS

Ultra-Super silent engine generator

SDG - **AS**
AS = Ultra super silent type.

We have succeeded to reduce the running noise level by mounting the low-noise engine, the big size muffler, the special exhaust duct structure for muffling of exhaust / exhaust air. SDG25S ~ 60S, 150S, 25AS eliminates the gap thoroughly panel structure, and that the combined employing an intake duct, achieving a more quiet running. In addition, the special muffler support structure also reduced overall vibration.

STANDARD



Item	Model	Standard Type								
		SDG13S-3B1		SDG25S-3B1		SDG45S-3B2		SDG45SE-3B2		
Generator										
Frequency	Hz	50	60	50	60	50	60	50	60	
Power Supply		Dual Voltage						Single Voltage		
3phase 4wires 400V Class	Prime output	kVA	10.5	13	20	25	37	45	37	45
	Standby output	kVA	11.55	14.3	22	27.5	37	45	37	45
	Voltage	V	400	440	400	440	400	440	400	440
	Ampere	A	15.15	17.05	28.9	32.8	53.4	59	53.4	59
3phase 4wires 200V Class	Prime output	kVA	10.5	13	20	25	37	45	-	-
	Standby output	kVA	11.55	14.3	22	27.5	37	45	-	-
	Voltage	V	200	220	200	220	200	220	-	-
	Ampere	A	30.3	34.1	57.7	65.6	107	118	-	-
Pole	P	4								
Power Factor		3-phase 0.8 (lagging) / Single-phase 1.0								
Diesel Engine										
Model name		KUBOTA D1503-K3A		KUBOTA V2403-K3A		KUBOTA V3600-T-K3A		KUBOTA V3600-T-K3A		
System		3Cylinder, Swirl chamber		4Cylinder, Swirl chamber		4Cylinder, Swirl chamber, Turbo-Charged				
Total displacement	L	1.499		2.434		3.620		3.620		
Rated output	kW	11.5	13.7	19.1	23.7	35.0	42.5	35.0	42.5	
Rated rotation speed	min ⁻¹	1,500	1,800	1,500	1,800	1,500	1,800	1,500	1,800	
Use fuel		Diesel oil								
Fuel tank capacity	L	58		70		100		100		
Fuel consumption	50% Load	L/hr	1.9	2.4	3.0	3.8	4.9	6.1	4.9	6.1
	70% Load	L/hr	2.4	3.0	4.0	5.0	6.9	8.4	6.9	8.4
Engine Oil volume	L	6.5		9.5		13.2		13.2		
Coolant water volume	L	5.7		7.0		11		11		
Battery × unit		80D26R×1		80D26R×1		80D26R×1		80D26R×1		
Weight Dimension										
Length × Width × Height	mm	1,480×650×950		1,550×700×980		1,870×860×1,220		1,870×860×1,220		
Dry(Operating) weight	kg	520 (580)		610 (680)		910 (1,020)		910 (1,020)		
Emission, Noise										
Sound Power level LwA	dB	80	83	86	90	86	88	86	88	
Sound pressure level (7m 4direction/no load)	dB (A)	55	57	59	63	58	61	58	61	
Emission control		JPN Stage 3								

※ Sound power level is measured at 60Hz, no load and rated speed of revolution.
 ※ Above figures are applied under operation in standard atmosphere conditions as per JIS D0006.
 ※ "Standby Output" rating is applied only under intermittent or emergency operation for approximately 1 hour.

STANDARD



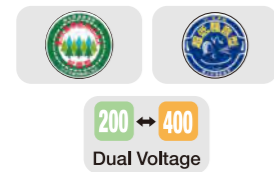
Item	Model	Standard Type								
		SDG60S-3B1		SDG100S-3B1		SDG125S-3B1		SDG150S-3B1		
Generator										
Frequency	Hz	50	60	50	60	50	60	50	60	
Power Supply		Dual Voltage								
3phase 4wires 400V Class	Prime output	kVA	50	60	80	100	100	125	125	150
	Standby output	kVA	55	66	88	110	110	137.5	137.5	165
	Voltage	V	400	440	400	440	400	440	400	440
	Ampere	A	72.2	78.7	115	131	144	164	180	197
3phase 4wires 200V Class	Prime output	kVA	50	60	80	100	100	125	125	150
	Standby output	kVA	55	66	88	110	110	137.5	137.5	165
	Voltage	V	200	220	200	220	200	220	200	220
	Ampere	A	144	157	231	262	289	328	361	394
Pole	P	4								
Power Factor		3-phase 0.8 (lagging) / Single-phase 1.0								
Diesel Engine										
Model name		ISUZU BJ-4JJ1X		ISUZU BI-4HK1X		ISUZU BI-4HK1X		ISUZU BH-6HK1X		
System		4Cylinder, Direct-Injection, Turbo-Charged, Intercooled							6Cylinder, Direct-Injection, Turbo-Charged, Intercooled	
Total displacement	L	2.999		5.193		5.193		7.79		
Rated output	kW	51.6	61.0	96.3	113.6	96.3	113.6	119	142	
Rated rotation speed	min ⁻¹	1,500	1,800	1,500	1,800	1,500	1,800	1,500	1,800	
Use fuel		Diesel oil								
Fuel tank capacity	L	125		220		250		250		
Fuel consumption	50% Load	L/hr	5.7	7.1	8.9	12.3	11.0	15.3	14.9	18.0
	70% Load	L/hr	8.1	10.2	13.2	17.8	16.0	21.8	22.2	24.8
Engine Oil volume	L	15		20.5		20.5		38		
Coolant water volume	L	11.5		21.5		21.5		28.3		
Battery × unit		95D31R×1		170F51×1		170F51×1		95D31R×2		
Weight Dimension										
Length × Width × Height	mm	2,080×1,000×1,220		2,460×1,180×1,380		2,690×1,180×1,380		3,190×1,180×1,470		
Dry(Operating) weight	kg	1,110 (1,240)		1,700 (1,930)		1,820 (2,070)		2,210 (2,480)		
Emission, Noise										
Sound Power level LwA	dB	87	90	88	92	90	92	92	95	
Sound pressure level (7m 4direction/no load)	dB (A)	58	62	60	64	61	64	63	66	
Emission control		JPN Stage 3								

※ Sound power level is measured at 60Hz, no load and rated speed of revolution.
 ※ Above figures are applied under operation in standard atmosphere conditions as per JIS D0006.
 ※ "Standby Output" rating is applied only under intermittent or emergency operation for approximately 1 hour.

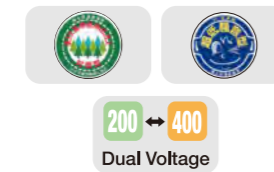
• OIL FENCE MOUNTED



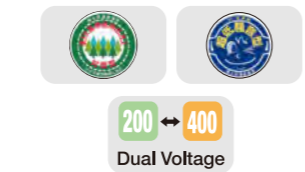
SDG100S-7B1



SDG125S-7B1



SDG150S-7B1



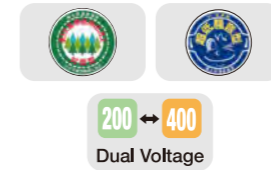
Item	Model	Oil fence mounted Type						
		SDG100S-7B1		SDG125S-7B1		SDG150S-7B1		
Generator								
Frequency	Hz	50	60	50	60	50	60	
Power Supply		Dual Voltage						
3phase 4wires 400V Class	Prime output	kVA	80	100	100	125	125	150
	Standby output	kVA	88	110	110	137.5	137.5	165
	Voltage	V	400	440	400	440	400	440
	Ampere	A	115	131	144	164	180	197
3phase 4wires 200V Class	Prime output	kVA	80	100	100	125	125	150
	Standby output	kVA	88	110	110	137.5	137.5	165
	Voltage	V	200	220	200	220	200	220
	Ampere	A	231	262	289	328	361	394
Pole	P	4						
Power Factor		3-phase 0.8 (lagging) / Single-phase 1.0						
Diesel Engine								
Model name		ISUZU BI-4HK1X		ISUZU BI-4HK1X		ISUZU BH-6HK1X		
System		4Cylinder, Direct-Injection, Turbo-Charged, Intercooled				6Cylinder, Direct-Injection, Turbo-Charged, Intercooled		
Total displacement	L	5.193		5.193		7.79		
Rated output	kW	96.3	113.6	96.3	114.4	119	142	
Rated rotation speed	min ⁻¹	1,500	1,800	1,500	1,800	1,500	1,800	
Use fuel		Diesel oil						
Fuel tank capacity	L	740		740		815		
Fuel consumption	50% Load	L/hr	8.9	12.3	11.0	15.3	14.9	18.0
	70% Load	L/hr	13.2	17.8	16.0	21.8	22.2	24.8
Engine Oil volume	L	20.5		20.5		38		
Coolant water volume	L	21.5		21.5		28.3		
Battery × unit		170F51×1		170F51×1		95D31R×2		
Weight Dimension								
Length × Width × Hight	mm	2,450×1,180×1,830		2,450×1,180×1,830		3,190×1,180×1,880		
Dry(Operating) weight	kg	2,095 (2,750)		2,145 (2,800)		2,725 (3,460)		
Emission, Noise								
Sound Power level LwA	dB	88	91	88	92	93	95	
Sound pressure level (7m 4direction/no load)	dB (A)	60	64	60	64	64	68	
Emission control		JPN Stage 3						

※ Sound power level is measured at 60Hz, no load and rated speed of revolution.
 ※ Above figures are applied under operation in standard atmosphere conditions as per JIS D0006.
 ※ "Standby Output" rating is applied only under intermittent or emergency operation for approximately 1 hour.

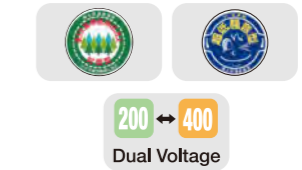
• ULTRA SUPER SILENT



SDG25AS-7B1
SDG45AS-7B1
SDG60AS-7B1



SDG25AS-3B1
SDG45AS-3B1
SDG60AS-3B1



Item	Model	Oil fence mounted & Ultra super silent Type						Ultra super silent type						
		SDG25AS-7B1		SDG45AS-7B1		SDG60AS-7B1		SDG25AS-3B1		SDG45AS-3B1		SDG60AS-3B1		
Generator														
Frequency	Hz	50	60	50	60	50	60	50	60	50	60	50	60	
Power Supply		Dual Voltage												
3phase 4wires 400V Class	Prime output	kVA	20	25	37	45	50	60	20	25	37	45	50	60
	Standby output	kVA	22	27.5	37	45	55	66	22	27.5	37	45	55	66
	Voltage	V	400	440	400	440	400	440	400	440	400	440	400	440
	Ampere	A	28.9	32.8	53.4	59	72.2	78.7	28.9	32.8	53.4	59	72.2	78.7
3phase 4wires 200V Class	Prime output	kVA	20	25	37	45	50	60	20	25	37	45	50	60
	Standby output	kVA	22	27.5	37	45	55	66	22	27.5	37	45	55	66
	Voltage	V	200	220	200	220	200	220	200	220	200	220	200	220
	Ampere	A	57.7	65.6	107	118	144	157	57.7	65.6	107	118	144	157
Pole	P	4												
Power Factor		3-phase 0.8 (lagging) / Single-phase 1.0												
Diesel Engine														
Model name		KUBOTA V2403-K3A	KUBOTA V3800-DI-TK3A	ISUZU BJ-4JJ1X	KUBOTA V2403-K3A	KUBOTA V3800-DI-TK3A	ISUZU BJ-4JJ1X	KUBOTA V2403-K3A	KUBOTA V3800-DI-TK3A	ISUZU BJ-4JJ1X	KUBOTA V2403-K3A	KUBOTA V3800-DI-TK3A	ISUZU BJ-4JJ1X	
System		4Cylinder, Swirl chamber	4Cylinder, Direct-Injection, Turbo-Charged	4Cylinder, Direct-Injection, Turbo-Charged, Intercooled	4Cylinder, Swirl chamber	4Cylinder, Direct-Injection, Turbo-Charged	4Cylinder, Direct-Injection, Turbo-Charged, Intercooled	4Cylinder, Swirl chamber	4Cylinder, Direct-Injection, Turbo-Charged	4Cylinder, Direct-Injection, Turbo-Charged, Intercooled	4Cylinder, Swirl chamber	4Cylinder, Direct-Injection, Turbo-Charged	4Cylinder, Direct-Injection, Turbo-Charged, Intercooled	
Total displacement	L	2.434		3.769		2.999		2.434		3.769		2.999		
Rated output	kW	19.1	23.5	38.0	45.6	51.6	61.0	19.1	23.5	38.0	45.6	51.6	61.0	
Rated rotation speed	min ⁻¹	1,500	1,800	1,500	1,800	1,500	1,800	1,500	1,800	1,500	1,800	1,500	1,800	
Use fuel		Diesel oil												
Fuel tank capacity	L	195		325		400		80		165		170		
Fuel consumption	50% Load	L/hr	3.0	3.8	4.7	5.9	5.7	7.1	3.0	3.8	4.7	5.9	5.7	7.1
	70% Load	L/hr	4.0	5.0	6.5	8.2	8.1	10.2	4.0	5.0	6.5	8.2	8.1	10.2
Engine Oil volume	L	9.5		13.2		15		9.5		13.2		15		
Coolant water volume	L	9		11		11.5		9		11		11.5		
Battery × unit		80D26R×1		80D26R×1		95D31R×1		80D26R×1		80D26R×1		95D31R×1		
Weight Dimension														
Length × Width × Hight	mm	1,570×800×1,380		1,995×950×1,670		2,080×1,080×1,640		1,570×800×1,090		1,995×950×1,300		2,080×1,080×1,300		
Dry(Operating) weight	kg	800 (980)		1,210 (1,500)		1,370 (1,730)		730 (810)		1,060 (1,215)		1,240 (1,400)		
Emission, Noise														
Sound Power level LwA	dB	79	82	79	82	82	85	80	83	79	82	82	86	
Sound pressure level (7m 4direction/no load)	dB (A)	51	54	52	54	54	56	53	56	51	54	55	57	
Emission control		JPN Stage 3												

※ Sound power level is measured at 60Hz, no load and rated speed of revolution.
 ※ Above figures are applied under operation in standard atmosphere conditions as per JIS D0006.
 ※ "Standby Output" rating is applied only under intermittent or emergency operation for approximately 1 hour.

SDG-LA

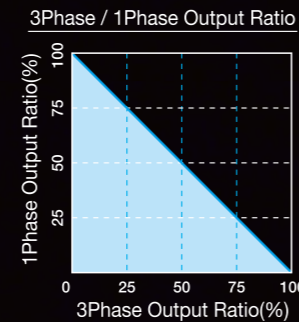
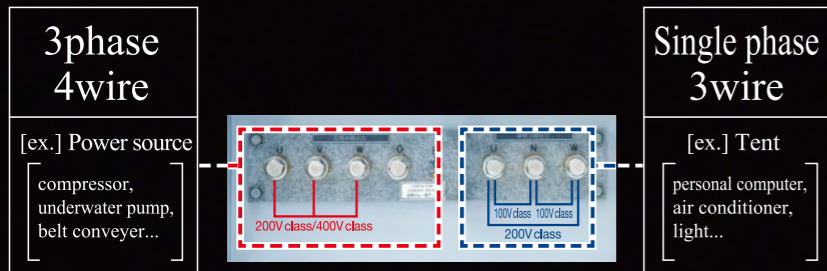
3 and single phase capable multi output leak-guard Able generator

SDG-LA

L = Prevent outflow of oil etc.as much as possible.
+
A = 3P3W / 1P3W Multi output.

3phase4wires /single phase3wires capable multi output / No need to switch

Three-phase 4-wire and single-phase 3 wire can be used at the same time. One unit can handle various power supplies.



Easy checking of power generation status with ammeter

The total current of three phases and single phase can be confirmed with the familiar analog amp meter as before. Allowable current value is listed on the inscription next to ammeter, so it is obvious.



Excellent voltage waveform

Special winding is adopted as additional winding, and even in single phase 3 wire output, it provides high quality electricity with less distortion of waveform. (Patent has already been applied)



Adopted a leakage relay of "selective cutoff method"

Detect whether three-phase or single-phase electric leakage is occurring, and only tripping the circuit breaker with the electric leakage.

SDG-LAX

Large fuel tank mounted leak guard engine generator
3 and single phase capable multi output leak-guard Able generator

SDG-LAX

L = Prevent outflow of oil etc.as much as possible.
+
A = 3P3W / 1P3W Multi output.
+
X = Large fuel tank.

Large fuel tank mounted

Large fuel tank mounted as standard. It makes possible long time operation without external fuel tank.

LEAK GUARD & DUAL OUTPUT



Model		Leak Guard & Dual OutputType								
Item		SDG25LA-5B1		SDG45LA-5B2		SDG60LA-5B1		SDG100LA-5B1		
Generator										
Frequency	Hz	50	60	50	60	50	60	50	60	
Power Supply										
Dual Voltage / Three ⇔ Single Phase Multi Output										
3phase 4wires 400V Class	Prime output	kVA	20	25	37	45	50	60	80	100
	Standby output	kVA	22	27.5	37	45	55	66	88	110
	Voltage	V	400	440	400	440	400	440	400	440
3phase 4wires 200V Class	Prime output	kVA	20	25	37	45	50	60	80	100
	Standby output	kVA	22	27.5	37	45	55	66	88	110
	Voltage	V	200	220	200	220	200	220	200	220
Single phase 3wires 200V Class/ 100V Class	Prime output	kVA	5.8(11.5)	7.2(14.4)	10.7(21.4)	13.0(26.0)	14.4(28.9)	17.3(34.6)	23.5(47.0)	29.0(58.0)
	Standby output	kVA	6.4(12.7)	7.9(15.8)	10.7(21.4)	13.0(26.0)	15.8(31.8)	19.0(38.1)	25.8(51.7)	31.9(63.8)
	Voltage	V	200/100	220/110	200/100	220/110	200/100	220/110	200/100	220/110
Ampere		A	28.9/28.9*2(57.7/57.7*2)	32.8/32.8*2(65.6/65.6*2)	53.4/53.4*2(107/107*2)	59.0/59.0*2(118/118*2)	72.2/72.2*2(144/144*2)	78.7/78.7*2(157/157*2)	117.5/117.5*2(235/235*2)	132/132*2(264/264*2)
Diesel Engine										
Model name		KUBOTA V2403-K3A		KUBOTA V3600-T-K3A		ISUZU BJ-4JJ1X		ISUZU BI-4HK1X		
Weight Dimension										
Length × Width × Height	mm	1,540×700×1,090		1,850×860×1,350		2,080×1,000×1,350		2,530×1,150×1,580		
Dry(Operating) weight	kg	695(770)		1,040(1,150)		1,250(1,390)		1,890(2,140)		
Emission, Noise										
Sound Power level LwA	dB	86	90	84	88	86	89	91		
Sound pressure level (7m 4direction/no load)	dB(A)	59	63	57	60	59	62	60	63	
Emission control JPN Stage 3										
Model		Large fuel tank & Leak Guard & Dual OutputType								
Item		SDG25LAX-5B1		SDG45LAX-5B2		SDG60LAX-5B1		SDG100LAX-5B1		
Generator										
Frequency	Hz	50	60	50	60	50	60	50	60	
Power Supply										
Dual Voltage / Three ⇔ Single Phase Multi Output										
3phase 4wires 400V Class	Prime output	kVA	20	25	37	45	50	60	80	100
	Standby output	kVA	22	27.5	37	45	55	66	88	110
	Voltage	V	400	440	400	440	400	440	400	440
3phase 4wires 200V Class	Prime output	kVA	20	25	37	45	50	60	80	100
	Standby output	kVA	22	27.5	37	45	55	66	88	110
	Voltage	V	200	220	200	220	200	220	200	220
Single phase 3wires 200V Class/ 100V Class	Prime output	kVA	5.8(11.5)	7.2(14.4)	10.7(21.4)	13.0(26.0)	14.4(28.9)	17.3(34.6)	23.5(47.0)	29.0(58.0)
	Standby output	kVA	6.4(12.7)	7.9(15.8)	10.7(21.4)	13.0(26.0)	15.8(31.8)	19.0(38.1)	25.8(51.7)	31.9(63.8)
	Voltage	V	200/100	220/110	200/100	220/110	200/100	220/110	200/100	220/110
Ampere		A	28.9/28.9*2(57.7/57.7*2)	32.8/32.8*2(65.6/65.6*2)	53.4/53.4*2(107/107*2)	59.0/59.0*2(118/118*2)	72.2/72.2*2(144/144*2)	78.7/78.7*2(157/157*2)	117.5/117.5*2(235/235*2)	132/132*2(264/264*2)
Diesel Engine										
Model name		KUBOTA V2403-K3A		KUBOTA V3600-T-K3A		ISUZU BJ-4JJ1X		ISUZU BI-4HK1X		
Weight Dimension										
Length × Width × Height	mm	1,540×700×1,250		1,850×860×1,560		2,080×1,000×1,490		2,530×1,150×1,760		
Dry(Operating) weight	kg	740(910)		1,110(1,430)		1,310(1,680)		2,030(2,690)		
Emission, Noise										
Sound Power level LwA	dB	86	90	84	88	86	89	91		
Sound pressure level (7m 4direction/no load)	dB(A)	59	63	57	60	59	62	60	63	
Emission control JPN Stage 3										

※ () It is the value for "3phase 4wires 200v class / Single 3wires 100v". ※ Sound power level is measured at 60Hz, no load and rated speed of revolution.
※ Above figures are applied under operation in standard atmosphere conditions as per JIS D0006. ※ "Standby Output" rating is applied only under intermittent or emergency operation for approximately 1 hour.

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		
	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	7	10	11	14	17	19	21		
400A							3	3	3	3	5	5	6	7	9	12	13	14	
500A									2	3	3	3	3	5	6	7	10	11	12

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 efficient welders, 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.

$$1 \text{ PS} = 0.7355 \text{ kW}$$

$$\text{Efficiency} = 85\% \text{ (three phase induction motor)}$$

$$\text{Power factor} = 0.8 \text{ (three phase induction motor)}$$

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

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

Motor starting capacity

Model	SDG13		SDG25		SDG45		SDG60		SDG100	
	50	60	50	60	50	60	50	60	50	60
Generator(kVA)	10.5	13	20	25	37	45	50	60	80	100
Motor capacity	Direct start									
	Simultaneously(kW)									
	By turns(kW)									
	λ-Δ start(open)(kW)									
λ-Δ start(closed)(kW)										

Model	SDG125		SDG150		SDG220		SDG300		SDG400	
	50	60	50	60	50	60	50	60	50	60
Generator(kVA)	100	125	125	150	200	220	270	300	350	400
Motor capacity	Direct start									
	Simultaneously(kW)									
	By turns(kW)									
	λ-Δ start(open)(kW)									
λ-Δ start(closed)(kW)										

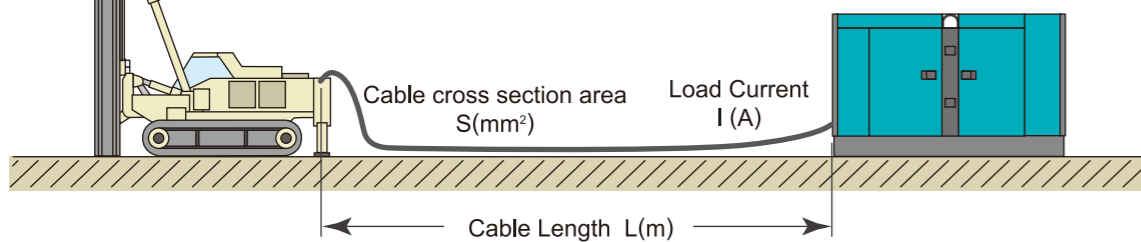
* The motor capacities in the above table are only for reference purpose. The generator capacities vary upon instantaneous voltage drop, motor start class, efficiency, old and new type machine.

- The instantaneous voltage drop when motor starts shall be within 30% of no 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 formula to estimate voltage drop according to cable length and working current:

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

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



List of current values at a glance

Model	Voltage(V)	SDG13	SDG25	SDG45	SDG60	SDG100	SDG125	SDG150	SDG220	SDG300	SDG400
		50	60	50	60	50	60	50	60	50	60
50Hz	200V	30.3	57.7	107	144	231	289	361	563	779	1,010
	380V	16.0	30.4	56.2	76.0	122	152	190	296	410	532
	400V	15.2	28.9	53.4	72.2	115	144	180	281	390	505
60Hz	220V	34.1	65.6	118	157	262	328	394	577	787	1,050
	440V	17.1	32.8	59.0	78.7	131	164	197	289	394	525

Unit: ampere (A)

List of Neutral Point (O terminal) Allowable Power

Model	SDG13		SDG25		SDG45		SDG60		SDG100			
	50	60	50	60	50	60	50	60	50	60		
● 200/220V												
Frequency(Hz)	50		60		50		60		50		60	
Voltage(V)	115	127	115	127	115	127	115	127	115	127	115	127
Allowable ampere 3 phase average(A) *1	24.2	27.3	46.2	52.5	85.6	94.4	115	126	185	210		
Output ratio	80 *4											
Allowable ampere Single phase(A)	30.3	34.1	57.7	65.6	107	118	144	157	231	262		
Output ratio	100 *2											
● 400(380)/440V												
Voltage(V)	231	254	231	254	231	254	231	254	231	254	231	254
Allowable ampere 3 phase average(A) *1	12.2	13.7	24.3	26.2	45.6	47.2	63.0	63.0	96.8	105		
Output ratio	80 *4											
Allowable ampere Single phase(A)	15.2	17.1	30.4	32.8	53.4	59.0	78.7	78.7	121	131		
Output ratio	100 *2											

Model	SDG125		SDG150		SDG220		SDG300		SDG400			
	50	60	50	60	50	60	50	60	50	60		
● 200/220V												
Frequency(Hz)	50		60		50		60		50		60	
Voltage(V)	115	127	115	127	115	127	115	127	115	127	115	127
Allowable ampere 3 phase average(A) *1	231	262	289	315	462	462	390	394	505	525		
Output ratio	80 *4											
Allowable ampere Single phase(A)	289	328	361	394	577	577	390	394	505	525		
Output ratio	100 *2											
● 400(380)/440V												
Voltage(V)	231	254	231	254	231	254	231	254	231	254	231	254
Allowable ampere 3 phase average(A) *1	11.2	13.1	14.4	15.8	24.3	23.1	31.2	31.5	40.6	42.0		
Output ratio	80 *4											
Allowable ampere Single phase(A)	14.4	16.4	18.9	19.7	28.9	28.9	41.0	39.4	53.2	52.5		
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>

1. Connect a lead wire fitted with a ground rod to the leakage relay grounding terminal (E) of the three-phase output terminal board.
2. Connect the generator machine ground terminal of the package to ground.
3. Be sure to ground the package of the load equipment as well.
3. These grounding must be carried out in accordance with local regulations.

