

GOLDEN MAJD Co.



Rating @ 0.8 PF		Prime rating	Stand-by rating
Voltage ¹	Freq. ²	PT 60 ³	PT 66S ⁴
400 V	50 Hz	60.0 KVA	66.0 KVA
480 V	60 Hz	69.8 KVA	75.0 KVA

The above ratings represent the generating set capability guaranteed within $\pm 3\%$ at the reference conditions equivalent to those specified in ISO 8528/1, ISO 3046/1 and BS 5514/1

NOTES

- 1 - The applicable voltage is 380V to 415V for 50Hz applications and 380V to 480V for 60Hz applications.
- 2 - This generating set is of switchable speed of 1500rpm/1800 rpm.
- 3 - PT60 is the prime power rating of the generating set, where a variable load and unlimited hours usage are applied on the generating set with an average load factor of 80% of the prime rating over each 24 hour period. Noting that a 10% overload is available for 1 hour in every 12 hours operation.
- 4 - PT66S is a standby power rating of the generating set, where a variable load limited to an annual usage up to 500 hours is applied, with 300 hours of which may be continuous running. Noting that no overload is permitted.

Engine Technical Data		
Model	Perkins 1103A-33TG2	
Cylinders	3; vertical in-line	
Aspiration	Turbocharged	
Combustion	Direct injection	
Cooling System	Water cooled	
Displacement	3.30 L	
Oil consumption	0.15 % of fuel consumption	
Lube oil capacity	8.30 L Max	
Coolant capacity	10.20 L	
Governor	Mechanical	
Emissions regulations	TA-Luft(1986)	
Speed	1500 rpm	1800 rpm
Fuel Consumption PT60	13.9 L/H	16.6 L/H
Fuel Consumption PT66S	15.4 L/H	18.2 L/H
Radiator Cooling Air Flow	89.0 m ³ /min	111 m ³ /min
Max Exhaust Gas Flow	10.1 m ³ /min	11.8 m ³ /min

The above performance data are valid as per the following specs:

- Diesel Fuel is according to BS2869 Class A2 or equivalent.
- Lubricating oil is according to API CH4 (15W/40).
- The coolant should be 50% antifreeze and 50% fresh water.

Alternator Technical Data		
Model	Leroy Somer LSA 42.3L9	
Regulation	$\pm 0.5\%$	
International protection	IP23	
Insulation class	H	
Terminals	12	
Frequency	50 Hz	60 Hz
Coolant Air Flow	0.10 m ³ /s	0.13 m ³ /s

Shipping Data			
Length	Width	Height	Weight
1700 mm	770 mm	1250 mm	820 kg

All information given in this leaflet is correct at the time of printing but it may be changed subsequently by the company



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1100 Series 1103A-33TG2 Diesel Engine – Electropak

59.3 kWm at 1500 rpm
67.5 kWm at 1800 rpm

Building upon Perkins proven reputation within the power generation industry, the 1100 Series range of Electropak engines now fit even closer to customers needs.

In the world of power generation success is only gained by providing more for less. With the 1103A-33TG2 Perkins has engineered even higher levels of reliability, yet lowered the cost of ownership.

1100A units are designed for territories that do not require compliance to EPA or EU emissions legislation. These units are able to meet TA luft legislation.

Compact, efficient power

- 1100 Series is the result of an intensive period of customer research that has guided the development of the range
- The new 3.3 litre cylinder block ensures bore roundness is maintained under the pressures of operation. It also ensures combustion and mechanical noise is lowered
- A new cylinder head has re-established Perkins mastery of air control

Quality by design

- Product design and Class A manufacturing improvements enhance product reliability while maintaining Perkins legendary reputation for durability

Cost effective power

- Compact size and low noise
- Lower fuel consumption and oil use
- 500 hour service intervals
- 2 year warranty

Product support

- Perkins actively pursues product support excellence by ensuring our distribution network invest in their territory – strengthening relationships and providing more value to you, our customer
- Through an experienced global network of distributors and dealers, fully trained engine experts deliver total service support around the clock, 365 days a year. They have a comprehensive suite of web based tools at their fingertips covering technical information, parts identification and ordering systems, all dedicated to maximising the productivity of your engine
- Throughout the entire life of a Perkins engine, we provide access to genuine OE specification parts and service. We give 100% reassurance that you receive the very best in terms of quality for lowest possible cost .. wherever your Perkins powered machine is operating in the world



Engine Speed (rev/min)	Type of Operation	Typical Generator Output (Net)		Engine Power			
				Gross		Net	
		kVA	kWe	kWm	bhp	kWm	bhp
1500	Prime Power	60.0	48.0	55.0	73.8	53.8	72.1
	Standby Power	66.0	52.8	60.5	81.1	59.3	79.5
1800	Prime Power	68.1	54.5	63.3	84.9	61.2	82.1
	Standby Power	75.1	60.1	69.6	93.3	67.5	90.5

The above ratings represent the engine performance capabilities to conditions specified in ISO 8528/1, ISO 3046/1:1986, BS5514/1. Derating may be required for conditions outside these; consult Perkins Engines Company Limited.

Generator powers are typical and are based on an average alternator efficiency and a power factor (cos. θ) of 0.8. Fuel specification: BS 2869: Part 2 1998 Class A2 or DIN EN 590. Lubricating oil: 15W40 to API CG4.

Rating Definitions

Prime Power: Variable load. Unlimited hours usage with an average load factor of 80% of the published prime power over each 24 hour period. A 10% overload is available for 1 hour in every 12 hours of operation. Standby Power: Variable load. Limited to 500 hours annual usage, up to 300 hours of which may be continuous running. No overload is permitted.

Photographs are for illustrative purposes only and may not reflect final specification.

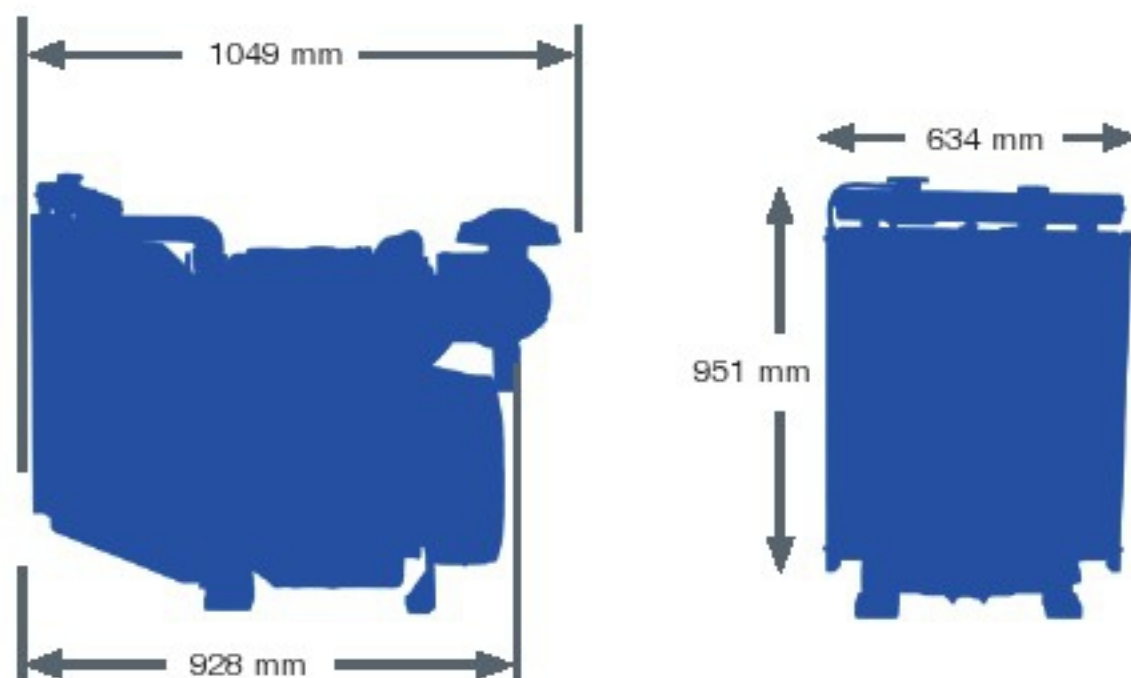
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Perkins®

THE HEART OF EVERY GREAT MACHINE

1100 Series 1103A-33TG2 Diesel Engine – Electropak

59.3 kWm at 1500 rpm
67.5 kWm at 1800 rpm



Standard Electropak specification

Air inlet

- Mounted air filter

Fuel system

- Rotary type pump
- Ecoplus fuel filter

Lubrication system

- Wet sump with filler and dipstick
- Spin-on oil filter

Cooling system

- Thermostatically controlled system with gear-driven circulation pump and belt-driven pusher fan
- Mounted radiator and piping

Electrical equipment

- 12 volt starter motor and 12 volt 65 amp alternator with DC output
- 12 volt shutdown solenoid energised to run

Flywheel and housing

- High inertia flywheel to SAE J620 Size 10/11½
- SAE 3 flywheel housing

Mountings

- Front engine mounting bracket

Literature

- User's Handbook

Optional equipment

- Woodward electronic governor (LCG2)
- Workshop manual
- Parts book

Option groups

A selection of optional items is available to enable the customer to prepare a specification precisely matched to the needs.

Fuel Consumption				
Engine Speed	1500 rev/min		1800 rev/min	
	UK g/hr	l/hr	UK g/hr	l/hr
Standby	3.3	15.4	4.0	18.2
Prime Power	3.0	13.9	3.6	16.6
75% of Prime Power	2.2	10.4	2.7	12.5
50% of Prime Power	1.5	7.2	1.9	8.8

General data

Number of cylinders	3 vertical in-line
Bore and stroke	105 x 127 mm
Displacement	3.3 litres
Aspiration	Turbocharged
Cycle	4 stroke
Combustion system	Direct injection
Compression ratio	17.25:1
Rotation	Anti-clockwise viewed from flywheel
Cooling system	Water-cooled
Total lubrication system capacity	7.9 litres
Total coolant capacity	10.2 litres
Dimensions – Length	1049 mm
Width	634 mm
Height	951 mm
Dry weight (approx)	420 kg

Final weight and dimensions will depend on completed specification

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 **Perkins®**
THE HEART OF EVERY GREAT MACHINE



Low Voltage alternators - 4 pole
LSA 42.3

25 to 60 kVA - 50 Hz / 31.5 to 75 kVA - 60 Hz

Electrical and mechanical data

Low Voltage alternators 4 pole 3-phase **PARTNER**

LSA 42.3

25 to 60 kVA - 50 Hz / 31.5 to 75 kVA - 60 Hz

SPECIALLY ADAPTED TO APPLICATIONS

The LSA 42.3 alternator is designed to be suitable for typical generator applications, such as: backup, marine applications, rental, telecommunications, etc.

COMPLIANT WITH INTERNATIONAL STANDARDS

The LSA 42.3 alternator conforms to the main international standards and regulations:

- IEC 60034, NEMA MG 1.22, ISO 8528-3, CSA / UL on request, marine regulations, etc.

It can be integrated into a CE marked generator.

The LSA 42.3 is designed, manufactured and marketed in an ISO 9001 environment and ISO 14001.

TOP OF THE RANGE ELECTRICAL PERFORMANCE

- Class H insulation.
- Standard 12 wire re-connectable winding, 2/3 pitch, type no. 6.
- Voltage range:
 - 50 Hz: 220 V - 240 V and 380 V - 415 V (440 V)
 - 60 Hz: 208 V - 240 V and 380 V - 480 V
- High efficiency and motor starting capacity.
- Other voltages are possible with optional adapted windings:
 - 50 Hz: 440 V (no. 7), 500 V (no. 9), 690 V (n°10)
 - 60 Hz: 380 V and 416 V (no. 8), 600 V (no. 9)
- R 791 interference suppression conforming to standard EN 55011 group 1 class B standard for European zone (CE marking).

REINFORCED MECHANICAL STRUCTURE USING FINITE ELEMENT MODELLING

- Compact rigid assembly to better withstand generator vibrations.
- Steel frame.
- Aluminium flanges and shields.
- Two-bearing and single-bearing versions designed to be suitable for commercially-available heat engines.
- Half-key balancing two bearing.
- Permanently greased bearings (20 000h).
- Direction of rotation : clockwise and anti-clockwise (without derating).

EXCITATION AND REGULATION SYSTEM SUITED TO THE APPLICATION

Excitation system				Regulation options				
Voltage regulator	SHUNT	AREP	PMG	Current transformer for paralleling	Mains paralleling	3-phase sensing	3-phase sensing for mains paralleling unbalanced	Remote voltage potentiometer
R220	Std	-	-	-	-	-	-	-
R438	-	Std	Std	C.T.	R726*	R731*	R734*	√
R450	Option	Option	Option	C.T.	R726*	R731*	R734*	√
D510C*	Option	Option	Option	C.T.	included	included	contactor factory	√

* Steel terminal box mounting only

√: Possible mounting

COMPACT AND DESIGN TERMINAL BOX

- Easy access to the AVR (lid) and to the connections.
- 8 way terminal block for reconnecting the voltage.
- Predrilled holes for cable gland.
- Steel terminal box in option.

PROTECTION SYSTEM SUITED TO THE ENVIRONMENT

- The LSA 42.3 is IP 23.
- Standard winding protection for clean environments with relative humidity ≤ 95%, including indoor marine environments.
- Options:
 - filters on air inlet : derating 5%,
 - filters on air inlet and air outlet (IP 44) : derating 10%,
 - winding protection for harsh environments and relative humidity greater than 95%,
 - space heaters,
 - thermal protection for stator windings,
 - height fixing : H = 225 mm (option) with the order.



Low Voltage alternators 4 pole 3-phase **PARTNER**

LSA 42.3

25 to 60 kVA - 50 Hz / 31.5 to 75 kVA - 60 Hz

General characteristics

Insulation class	H	Excitation system	SHUNT	AREP or PMG
Winding pitch	2/3 (wdg 6)	AVR type	R 220	R 438
Number of wires	12	Voltage regulation (*)	± 0.5 %	± 0.5 %
Protection	IP 23	Short-circuit current	-	300% (3 IN): 10 s
Altitude	≤ 1000 m	Totale Harmonic distortion THD (**) in no-load : < 2% according to IEC		
Overspeed	2250 min ⁻¹	Totale Harmonic distortion THD (**) on linear load : < 4% according to IEC		
Air flow	0.10m ³ /s, 50 Hz - 0.13m ³ /s, 60 Hz	Waveform: NEMA = TIF (**) < 50		

(*) Steady state. (**) Total harmonic distortion between phases, no-load or on-load (non-distorting).

Ratings 50 Hz - 1500 R.P.M.

kVA / kW - P.F. = 0.8																					
Duty/T °C		Continuous duty/40 °C					Continuous duty/40 °C					Stand-by/40 °C					Stand-by/27 °C				
Class/T °K		H/125 °K					F/105 °K					H/150 °K					H/163 °K				
Phase		3 ph.			1 ph.	3 ph.			1 ph.	3 ph.			1 ph.	3 ph.			1 ph.				
Y		380V	400V	415V	440V	ΔΔ	380V	400V	415V	440V	ΔΔ	380V	400V	415V	440V	ΔΔ	380V	400V	415V	440V	ΔΔ
Δ		220V	230V	240V		230V	220V	230V	240V		230V	220V	230V	240V		230V	220V	230V	240V		230V
YY					220V					220V					220V					220V	
42.3 VS1	kVA	25			24.5	15	22.8			22.3	13.7	26.5			26	15.9	27.5			27	16.5
	kW	20			19.6	12	18.2			17.9	10.9	21.2			20.8	12.7	22			21.6	13.2
42.3 VS2	kVA	27			26	16.2	24.6			23.6	14.7	28.9			27.6	17.3	30			28	18
	kW	21.6			20.8	13	19.7			18.9	11.8	23.1			22.1	13.9	24			22.9	14.4
42.3 VS3	kVA	32			30	19.2	29.1			27.3	17.5	34			31.8	20.4	35.2			33.0	21.1
	kW	25.6			24	15.4	23.3			21.8	14	27.1			25.4	16.3	28.2			26.4	16.9
42.3 S4	kVA	35			30.6	22	32			27.9	20	37.1			32.5	23.3	38.5			33.7	24.2
	kW	28			24.5	17.6	25.5			22.3	16	29.7			26	18.7	30.8			27.0	19.4
42.3 S5	kVA	40			35	25	36.4			31.9	22.8	42.4			37.1	26.5	45			38.5	28.1
	kW	32			28	20	29.1			25.5	18.2	33.9			29.7	21.2	36			30.8	22.5
42.3 M7	kVA	45			39	27	41			35.5	24.6	48.2			41.3	28.9	50			42.9	30
	kW	36			31.2	21.6	32.8			28.4	19.7	38.5			33.1	23.1	40			34.3	24
42.3 M8	kVA	50			43	30	45.5			39.1	27.3	53			45.6	31.8	55			47.3	33
	kW	40			34.4	24	36.4			31.3	21.8	42.4			36.5	25.4	44			37.8	26.4
42.3 L9	kVA	60			51.6	36	54.6			47.0	32.8	63.6			54.7	38.2	66			56.8	40
	kW	48			41.3	28.8	43.7			37.6	26.2	50.9			43.8	30.5	52.8			45.4	32

Ratings 60 Hz - 1800 R.P.M.

kVA / kW - P.F. = 0.8																					
Duty/T°C		Continuous duty/40°C					Continuous duty/40°C					Stand-by/40°C					Stand-by/27°C				
Class/T°K		H/125°K					F/105°K					H/150°K					H/163°K				
Phase		3 ph.			1 ph.		3 ph.			1 ph.		3 ph.			1 ph.		3 ph.			1 ph.	
Y		380V	416V	440V	480V	ΔΔ	380V	416V	440V	480V	ΔΔ	380V	416V	440V	480V	ΔΔ	380V	416V	440V	480V	ΔΔ
Δ		220V	240V			240V	220V	240V			240V	220V	240V			240V	220V	240V			240V
YY			208V	220V	240V			208V	220V	240V			208V	220V	240V			208V	220V	240V	
42.3 VS1	kVA	29.1	31.3	31.5	31.5	18.9	26.5	28.4	28.7	28.7	17.2	30.8	33.1	33.4	33.4	19.8	32	34.4	34.7	34.7	20.8
	kW	23.3	25	25.2	25.2	15.1	21.2	22.8	22.9	22.9	13.7	24.7	26.5	26.7	26.7	15.9	25.6	27.5	27.7	27.7	16.6
42.3 VS2	kVA	29.9	31.9	33.8	33.8	19.2	26.9	29	30.7	30.7	17.5	31.4	33.8	35.8	35.8	20.2	32.5	35.1	37.5	37.5	21.1
	kW	23.7	25.5	27	27	15.4	21.5	23.2	24.6	24.6	14.0	25.1	27.1	28.6	28.6	16.2	26	28.1	30	30	16.9
42.3 VS3	kVA	34.5	38	40	40	22.8	31.4	34.6	36.4	36.4	20.7	36.6	40.3	42.4	42.4	23.9	38	41.8	44	44	25.1
	kW	27.6	30.4	32	32	18.2	25.1	27.7	29.1	29.1	16.6	29.3	32.2	33.9	33.9	19.1	30.4	33.4	35.2	35.2	20.0
42.3 S4	kVA	37.5	40.3	42.9	43.8	24.2	33.4	36.6	39.0	39.8	22.0	39	42.7	45.4	46.4	25.4	40.4	44.3	47.2	48.1	26.6
	kW	30	32.2	34.3	35	19.3	26.8	29.3	31.2	31.9	17.6	31.2	34.1	36.4	37.1	20.3	32.3	35.4	37.7	38.5	21.2
42.3 S5	kVA	42	46	49	50	27.6	38.2	41.9	44.6	45.5	25.1	44.5	50	51.9	53	29.0	46.2	50.6	53.9	55	30.4
	kW	33.6	36.8	39.2	40	22.1	30.6	33.5	35.7	36.4	20.1	35.6	40	41.6	42.4	23.2	37	40.5	43.1	44	24.3
42.3 M7	kVA	46	50	53.5	56.5	30	41.9	45.5	48.7	51.4	27.3	48.8	53	56.7	59.9	31.5	50.6	55	58.9	62.5	33.0
	kW	36.8	40	42.8	45.2	24	33.5	36.4	38.9	41.1	21.8	39	42.4	45.4	47.9	25.2	40.5	44	47.1	50	26.4
42.3 M8	kVA	51.5	56.5	59.5	62.5	33.9	46.9	51.4	54.1	57	30.8	54.6	60	63.1	66.3	35.6	56.7	62.5	65.5	68.8	37.3
	kW	41.2	45.2	47.6	50	27.1	37.5	41.1	43.3	45.5	24.7	43.7	48	50.5	53	28.5	45.3	50	52.4	55	29.8
42.3 L9	kVA	59	65	69	75	39	53.7	59.2	62.8	68.3	35.5	62.5	68.9	73.1	79.5	41.0	64.9	71.5	75.9	82.5	42.9
	kW	47.2	52.0	55.2	60	31.2	43.0	47.3	50.2	54.6	28.4	50.0	55.1	58.5	63.6	32.8	51.9	57.2	60.7	66.0	34.3

COMPACT

This type is specially designed for the most tight spaces where other types fail to be installed. With its modern design that uses the latest technologies in fabrication and paint, this enclosure is considered to be GHADDAR MACHINERY Co.'s best selling type ever.

Charasteristics:

- > Body and components made of steel with heat-treated highly corrosive powder coating.
- > Stainless steel locks and black zinc die-cast hinges.
- > One large door on each side to allow easy access for maintenance purposes.
- > Lube oil pipe can be reached externally to allow easy drainage.
- > Radiator fill access through a special rubber cap on the top of the enclosure.
- > Special viewing window for the control panel in a lockable door.
- > Lifting points on the base frame.
- > Exhaust silencing system in the interior of the enclosure.
- > Fuel fill and battery are secured through lockable doors.
- > Emergency stop push button mounted on the exterior of the enclosure (optional).



GHADDAR
MACHINERY Co. S.A.L.



Range

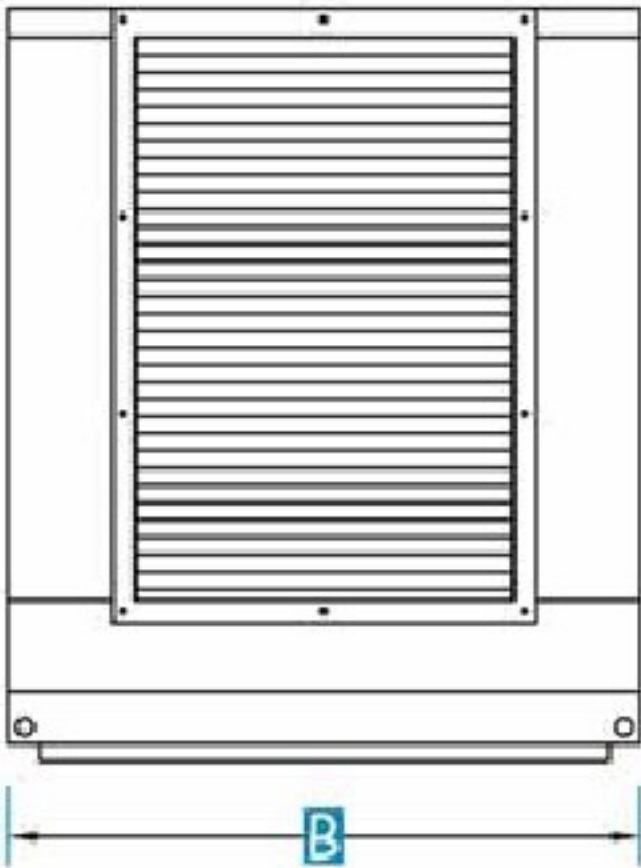
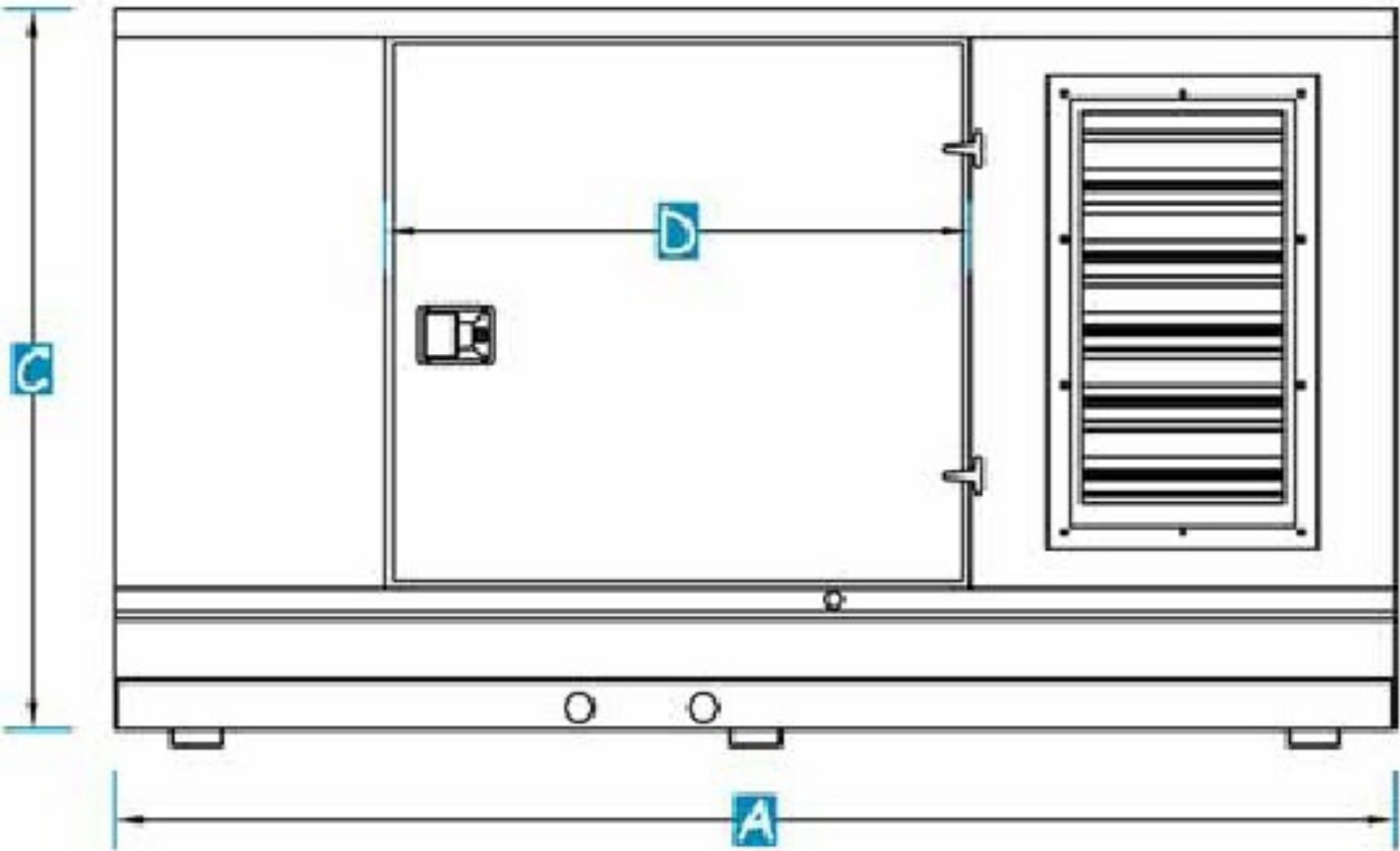
9 - 60 KVA



Certificate Numbers: CC1680-009512, 009912

Sound Pressure Levels (dBA)

		50 Hz						60 Hz					
		1 m		3 m		7 m		1 m		3 m		7 m	
Generating Set	Powertech	0%	100%	0%	100%	0%	100%	0%	100%	0%	100%	0%	100%
Engine model	KVA	Load	Load	Load	Load	Load	Load	Load	Load	Load	Load	Load	Load
403C-11G	9	72.5	73.8	69.5	70.8	64.5	65.8	74.2	75.5	71.2	72.5	66.2	67.5
403C-15G	13	72.5	73.8	69.5	70.8	64.5	65.8	74.2	75.5	71.2	72.5	66.2	67.5
404C-22G	20	72.5	73.8	69.5	70.8	64.5	65.8	74.2	75.5	71.2	72.5	66.2	67.5
1103A-33G	30	74.7	76.2	71.2	72.7	66.2	67.7	76.6	78.1	73.1	74.6	68.1	69.6
1103A-33TG1	45	73.3	74.8	69.8	71.3	64.8	66.3	75.2	76.7	71.7	73.2	66.7	68.2
1103A-33TG2	60	73.3	74.8	69.8	71.3	64.8	66.3	75.2	76.7	71.7	73.2	66.7	68.2



Dimensions

Generating Set	Powertech	A: mm	B: mm	C: mm	D: mm
Engine model	KVA				
403C-11G	9	2000	900	1260	876
403C-15G	13	2000	900	1260	876
404C-22G	20	2000	900	1260	876
1103A-33G	30	2270	1100	1310	1020
1103A-33TG1	45	2270	1100	1310	1020
1103A-33TG2	60	2270	1100	1310	1020