

GOLDEN MAJD Co.



Rating @ 0.8 PF		Prime rating	Stand-by rating
Voltage ^{*1}	Freq. ^{*2}	PT 95 ^{*3}	PT 105S ^{*4}
400 V	50 Hz	95.6 KVA	105.2 KVA
480 V	60 Hz	111.0 KVA	121.6 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 range is 380V to 415V for 50Hz applications and 380V to 480V for 60Hz applications.
- 2 - This generating set is of switchable speed of 1500rpm/1800rpm.
- 3 - **PT95** 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 - **PT105S** is the 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 1006TG1A	
Cylinders	6; vertical in-line	
Aspiration	Turbocharged	
Combustion	Direct injection	
Cooling System	Water cooled	
Displacement	5.99 L	
Oil consumption	0.5 % of fuel consumption	
Lube oil capacity	16.1 L	
Coolant capacity	27.7 L	
Governor	Mechanical	
Emissions regulations	Non-compliant	
Speed	1500 rpm	1800 rpm
Fuel Consumption PT95	21.8 L/H	25.8 L/H
Fuel Consumption PT105S	24.1 L/H	28.4 L/H
Radiator Cooling Air Flow	115 m ³ /min	140 m ³ /min
Max Exhaust Gas Flow	15.5 m ³ /min	19.4 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 CG 4 (15W/40).
- The coolant should be 50% antifreeze and 50% fresh water.

Alternator Technical Data		
Model	Leroy Somer LSA 44.2 VS45	
Regulation	$\pm 0.5\%$	
International protection	IP23	
Insulation class	H	
Terminals	12	
Frequency	50 Hz	60 Hz
Coolant Air Flow	0.37 m ³ /s	0.44 m ³ /s

Shipping Data			
Length	Width	Height	Weight
2300 mm	770 mm	1260 mm	1150 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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1000 Series 1006TG1A Diesel Engine – Electropak

92 kWm 1500 rpm
107 kWm 1800 rpm

The Perkins 1000 Series family of Electropak engines are renowned throughout the power generation industry for their superior performance and reliability.

The 1006TG1A is a turbocharged, 6 cylinder, 6 litre engine. Its premium design features provide economic and durable operation offering the ideal characteristics for electrical power generation.

Economic power

- Single side servicing for reduced service time and cost
- Unique Quadram combustion system enables high power output plus low fuel consumption and noise
- Rated speed is changable between 1500 rpm or 1800 rpm allowing standard builds to operate at either 50 Hz or 60 Hz

Clean, efficient power

- Operator and environmentally friendly with low noise, rapid startability and low emissions that satisfy TA Luft requirements

Durable power

- Maximum cooling efficiency is provided by a gear driven water pump and independent fan drive
- Leak free operation is ensured by Viton crankshaft seals and sophisticated controlled swell joints, giving protection in the toughest conditions
- Inserted valve seats, oil spray cooled pistons and compact plate cooler give enhanced engine life

Reliable power

- Suitable for operation in ambient temperatures up to 52°C (46°C if a canopy is fitted)
- Fuelled starting aid for temperatures down to -20°C

Product support

- With highly trained Perkins distributors in thousands of communities in over 180 countries, you are never far away from expert product knowledge, genuine parts and a range of advanced diagnostic technology for keeping your engine in peak condition
- **Warranties and Service Contracts**
We provide one-year warranties for constant speed engines and two-year warranties for variable speed models, as standard. These are supported by multilevel Extended Service Contracts that can be bought additionally

Discover more

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Engine Speed (rpm)	Type of Operation	Typical Generator Output (Net)		Engine Power			
				Gross		Net	
		kVA	kWe	kWm	hp	kWm	hp
1500	Prime Power	90	72	85.5	114.5	83	111
	Standby Power	100	80	94.0	126.0	92	123
1800	Prime Power	108	86	100.5	134.5	98	131
	Standby Power	119	95	110.5	148.0	107	143

All ratings data based on operating under ISO/TR 14396/ISO 8528 conditions using typical fan sizes and drive ratios. For operation outside of these conditions please consult your Perkins contact. Performance tolerance quoted by Perkins is $\pm 5\%$. Electrical ratings assume a power factor of 0.8 and a generator efficiency of 90%. Fuel specification: BS 2869 Part 2 1998 Class A2 or ASTM D975 D2. Lubrication oil: A single or multigrade oil to ACEA E1 E2 or API CD/SD.

Rating Definitions

Prime Power: Power available at variable load in lieu of main power network. An overload of 10% is permitted for 1 hour in every 12 hours of operation.

Standby Power: Power available at variable load in the event of a main power network failure. 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

1000 Series 1006TG1A Diesel Engine – Electropak

92 kWm 1500 rpm
107 kWm 1800 rpm

Standard Electropak specification

Air inlet

- Mounted air filter and turbocharger

Fuel system

- Rotary fuel injection pump
- Mechanical governing – speed control to BS5514 Class A1, ISO 3046-4M3
- Spin-on full flow fuel oil filters and pre-filter
- Cold start aid

Lubrication system

- Flat bottomed aluminium sump
- Spin-on full flow oil filters
- Oil cooler

Cooling system

- Thermostat controlled cooling system with gear driven water pump
- Fan drive and 22" pusher fan
- Radiator (and piping) with fan guards

Electrical system

- 12 volt starter motor and 55 amp alternator
- Oil pressure switch and coolant temperature switch

Flywheel and housing

- Cast iron SAE 3 flywheel housing
- Flywheel to SAE J620 size 11.5

Mountings

- Front engine mountings

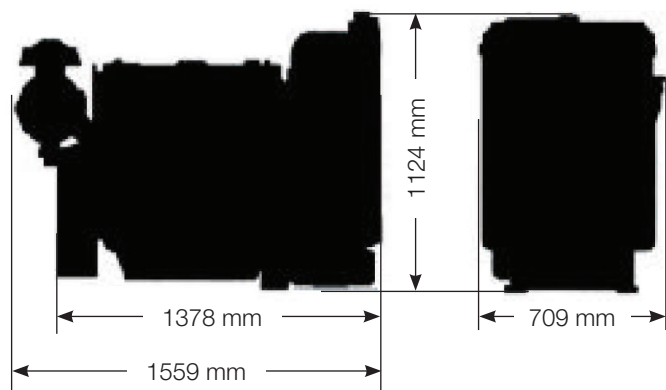
Optional equipment

- 24 volt alternator
- 24 volt starter motor
- Water temperature gauge and sender
- Heater/Starter switch
- Rear engine mountings
- Parts book
- Electronic governor (12 volt only)

Fuel Consumption litres/hour (UK gallons/hour)		
Power Rating %	1500 rpm	1800 rpm
110	24.1 (5.3)	28.4 (6.2)
100	21.8 (4.8)	25.8 (5.7)
75	16.5 (3.6)	19.9 (4.4)
50	11.4 (2.5)	14.0 (3.1)

General data

Number of cylinders 6
Cylinder arrangement Vertical in-line
Cycle 4 stroke
Induction system Turbocharged
Combustion system Direct injection
Cooling system Water-cooled
Bore and stroke 100 x 127 mm (3.9 x 5 in)
Displacement 5.99 litres (365.5 cu in)
Compression ratio 16.0:1
Direction of rotation Anti-clockwise, viewed on the flywheel
Firing order 1,5,3,6,2,4
Total lubrication system capacity 16.1 litres (4.2 US gals)
Coolant capacity (inc. radiator) 27.7 litres (7.3 US gal)
Dimensions – Length 1559 mm (61.4 in)
Width 709 mm (28 in)
Height 1124 mm (44.2 in)
Total weight (dry) 542 kg (1195 lb)
Total weight (wet) 576 kg (1270 lb)
Overall dimensions and weight will depend on final specification



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



90 ... 165 kVA - 50 Hz
115 ... 206 kVA - 60 Hz

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 **LEROY[®]
SOMER**

PARTNER ALTERNATORS

LSA 44.2 - 4 Pole

Electrical and mechanical data

SPECIALLY ADAPTED FOR APPLICATIONS

The LSA 44.2 alternator is designed to be suitable for typical generator applications, such as: backup, standard production, cogeneration, marine applications, rental, telecommunications, etc.

COMPLIANT WITH INTERNATIONAL STANDARDS

The LSA 44.2 alternator conforms to the main international standards and regulations:

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

It can be integrated into a CE marked generator.

The LSA 44.2 is designed, manufactured and marketed in an ISO 9001 environment.

TOP OF THE RANGE ELECTRICAL PERFORMANCE

- Class H insulation.
- Standard 12-wire re-connectable winding, 2/3 pitch, type no. 6.
- Voltage range: 220 V - 240 V and 380 V - 415 V (440 V) - 50 Hz / 208 V - 240 V and 380 V - 480 V - 60 Hz.
- High efficiency and motor starting capacity.
- Other voltages are possible with optional adapted windings:
 - 50 Hz: 440 V (no. 7), 500 V (no. 9), 600 V (no. 22 or 23), 690 V (no. 10 or 52)
 - 60 Hz: 380 V and 416 V (no. 8), 600 V (no. 9).
- Total harmonic distortion HDT < 2%.
- R 791 interference suppression conforming to standard EN 55011 group 1 class B standard for European zone (CE marking).

EXCITATION AND REGULATION SYSTEM SUITED TO THE APPLICATION

Excitation system				Regulation options				
Voltage regulator	SHUNT	AREP	PMG	T.I. Current transformer for paralleling	R 726 Mains paralleling	R 731 3-phase sensing	R 734 3-phase sensing on mains paralleling unbalanced	P Remote voltage potentiometer
R 250	Std	-	-	-	-	-	-	✓
R 438	-	Std	Std	✓	✓	✓	✓	✓
D 510	-	optional	optional	✓	included	included	NA	✓

Voltage regulator accuracy +/- 0.5% - ÷ : possible adaptation - NA : not possible.

PROTECTION SYSTEM SUITED TO THE ENVIRONMENT

- The LSA 44.2 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 protections for harsh environments and relative humidity greater than 95%.
 - Space heaters.
 - Thermal protection for windings and shields.

REINFORCED MECHANICAL STRUCTURE USING FINITE ELEMENT MODELLING

- Compact and rigid assembly to better withstand generator vibrations.
- Steel frame.
- Cast iron flanges and shields.
- Twin-bearing and single-bearing versions designed to be suitable for engines on the market.
- Half-key balancing.
- Greased for life bearings.
- Regreasable bearing option available on SHUNT and AREP versions, not available with PMG.

ACCESSIBLE TERMINAL BOX PROPORTIONED FOR OPTIONAL EQUIPMENT

- Easy access to the voltage regulator and to the connections.
- Possible clusion of accessories for paralleling, protection and measurement.
- 8 way terminal block for reconnecting voltage reconnection.
- D 510 digital AVR adapted to the machine exterior

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Common data

Insulation class	H	Excitation system	SHUNT	A R E P or PMG
Winding pitch Code	2/3 (N° 6)	A.V.R. model	R 250	R 438
TerminalsDrio or	12	Voltage regulation (*)	± 0,5 %	± 0,5 %
Drip proof	IP 23	Sustained short-circuit current	-	300% (3 IN) : 10s
Altitude	≤ 1000 m	Total Harmonic distortion THD (**)	at no load < 2 % - on load < 2%	
Overspeed	2250 min ⁺	Waveform : NEMA = TIF (**)		< 50
Air flow	0,37 m ³ /s (50Hz)/ 0,44 (60Hz)			

(*) Steady state duty. (**) Total harmonic distortion content line to line, at no load or full rated linear and balanced load.

Ratings 50 Hz - 1500 R.P.M.

kVA / kW - Power factor = 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	
44.2 VS3	kVA	90	90	90	90	55	80	80	80	80	50	95	95	95	95	58	100	100	100	100	60
	kW	72	72	72	72	44	64	64	64	64	40	76	76	76	76	46	80	80	80	80	48
44.2 VS45	kVA	105	105	105	105	66	95	95	95	95	62	110	110	110	110	69	116	116	116	116	72
	kW	84	84	84	84	53	76	76	76	76	50	88	88	88	88	55	93	93	93	93	58
44.2 S7	kVA	120	125	120	120	73	110	112	110	110	65	126	131	126	126	77	132	138	132	132	82
	kW	96	100	96	96	58	88	90	88	88	52	101	105	101	101	62	106	110	106	106	66
44.2 S75	kVA	130	135	130	125	83	115	122	115	114	75	138	143	138	132	88	144	150	144	137	93
	kW	104	108	104	100	66	92	98	92	91	60	110	114	110	106	70	115	120	115	110	74
44.2 M95	kVA	150	150	145	125	94	135	135	130	114	87	156	156	150	132	101	165	165	160	137	104
	kW	120	120	116	100	75	108	108	104	91	70	125	125	120	106	81	132	132	128	110	83
44.2 L12	kVA	165	165	165	135	102	150	150	150	123	94	170	170	170	143	109	175	175	175	148	113
	kW	132	132	132	110	82	120	120	120	98	75	136	136	136	114	87	140	140	140	89	90

Ratings 60 Hz - 1800 R.P.M.

kVA / kW - Power factor = 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	
44.2 VS3	kVA	95	100	105	115	65	85	90	95	105	59	100	105	110	120	69	105	110	115	125	72
	kW	76	80	84	92	52	68	72	76	84	47	80	84	88	96	55	84	88	92	100	58
44.2 VS45	kVA	109	117	123	131	74	101	108	113	122	68	117	125	131	138	79	120	129	135	144	81
	kW	87	94	98	105	59	81	86	90	98	54	94	100	105	110	63	96	103	108	115	65
44.2 S7	kVA	126	137	144	155	83	115	123	130	140	77	133	143	151	163	89	139	151	158	170	92
	kW	100	110	115	124	66	92	98	104	112	62	106	114	120	130	71	111	120	126	136	74
44.2 S75	kVA	136	146	155	169	95	122	132	139	152	85	143	154	163	178	100	150	162	172	187	105
	kW	109	117	124	135	76	98	106	111	122	68	114	123	130	142	80	120	130	138	150	84
44.2 M95	kVA	156	167	174	188	104	144	154	160	167	96	167	179	186	196	110	173	185	194	206	115
	kW	125	134	139	150	83	115	123	128	134	77	134	143	149	157	88	138	148	155	165	92
44.2 L12	kVA	169	180	190	206	110	155	165	171	185	102	181	193	200	215	118	187	201	209	225	123
	kW	135	144	152	165	88	124	132	137	148	82	145	154	160	172	94	150	161	167	180	98

PLENUM

This type of enclosures has gained a well known reputation through its relatively medium size and good capabilities for noise reduction. It has a very unique inlet and outlet system and the front and rear attenuators makes it easily accessible for maintenance purposes.

Charasteristics:

- > Body and components made of steel painted with highly corrosive synthetic gloss.
- > Stainless steel locks and hinges.
- > Easy access for the radiator and the control panel throgh the outlet and inlet attenuators.
- > Lube oil pipe can be reached externally to allow easy drainage.
- > Fuel fill and battery are secured throgh lockable doors.
- > Control panel viewing window in the inlet attenuator.
- > Lifting points on the top of the enclosure.
- > Exhaust silencing system in the interior of the enclosure.
- > Large doors for easy maintenance access. (two or four depending on the size).
- > Emergency stop push button mounted on the exterior of the enclosure (optional).



GHADDAR
MACHINERY Co. S.A.L.



Range

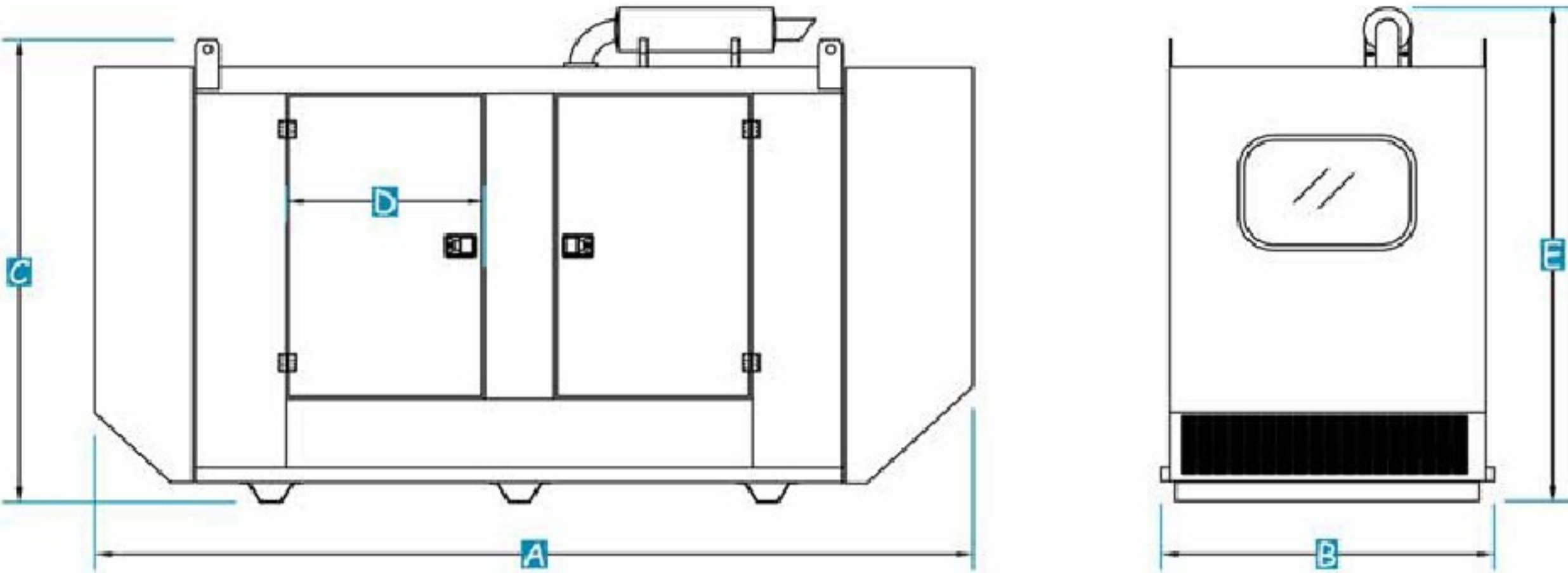
9 - 250 KVA



Certificate Numbers. CC-1680-000512. 000912

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	69.7	71	66.7	68	61.7	63	71.4	72.7	68.4	69.7	63.4	64.7
403C-15G	13	69.7	71	66.7	68	61.7	63	71.4	72.7	68.4	69.7	63.4	64.7
404C-22G	20	69.7	71	66.7	68	61.7	63	71.4	72.7	68.4	69.7	63.4	64.7
1103A-33G	30	71.9	73.4	68.4	69.9	63.4	64.9	73.8	75.3	70.3	71.8	65.3	66.8
1103A-33TG1	45	70.5	72	67	68.5	62	63.5	72.4	73.9	68.9	70.4	63.9	65.4
1103A-33TG2	60	70.5	72	67	68.5	62	63.5	72.4	73.9	68.9	70.4	63.9	65.4
1104A-44TG1	65	70.5	72	67	68.5	62	63.5	72.4	73.9	68.9	70.4	63.9	65.4
1104A-44TG2	80	71.7	73.2	68.2	69.7	63.2	64.4	73.5	75	70	71.5	65	66.2
1006TG1A	95	73.5	75	70	71.5	65	66.2	76	77.5	72.5	74	67.5	68.7
1104C-44TAG2	100	73.5	75	70	71.5	65	66.2	76	77.5	72.5	74	67.5	68.7
1006TG2	105	73.5	75	70	71.5	65	66.2	76	77.5	72.5	74	67.5	68.7
1006TAG1	135	74.7	76.2	71.2	72.7	66.2	67.4	77.2	78.7	73.7	75.2	68.7	69.9
1006TAG2	150	74.7	76.2	71.2	72.7	66.2	67.4	77.2	78.7	73.7	75.2	68.7	69.9
1306C-E87TAG3	200	76.9	79.6	73.4	75.5	68.4	70.8	79.8	82.5	76.3	78.4	71.3	73.7
1306C-E87TAG6	250	76.9	79.6	73.4	75.5	68.4	70.8	79.8	82.5	76.3	78.4	71.3	73.7



Dimensions

Generating Set	Powertech	A: mm	B: mm	C: mm	D: mm	E: mm
Engine model	KVA					
403C-11G	9	2230	1100	1450	834	
403C-15G	13	2230	1100	1450	834	
404C-22G	20	2230	1100	1450	834	
1103A-33G	30	2630	1150	1660	985	
1103A-33TG1	45	2630	1150	1660	985	
1103A-33TG2	60	2630	1150	1660	985	
1104A-44TG1	65	2630	1150	1660	985	
1104A-44TG2	80	2920	1150	1660	640	
1006TG1A	95	3620	1260	1860	872	
1104C-44TAG2	100	3620	1260	1860	872	
1006TG2	105	3620	1260	1860	872	
1006TAG1	135	3620	1260	1860	872	
1006TAG2	150	3620	1260	1860	872	
1306C-E87TAG3	200	4360	1650	2160	860	2480
1306C-E87TAG6	250	4360	1650	2160	860	2480