

Rating @ 0.8 PF		Prime rating	Stand-by rating
Voltage ^{*1}	Freq. ^{*2}	PT80 ^{*3}	PT88S ^{*4}
400 V	50 Hz	80.0 KVA	88.0 KVA
480 V	60 Hz	91.3 KVA	100.3 KVA

The above ratings represent the generating set capability guaranteed within $\pm 3\%$ at the references 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 - **PT80** 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 - **PT88S** 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 1104A-44TG2	
Cylinders	4; vertical in-line	
Aspiration	Turbocharged	
Combustion	Direct injection	
Cooling System	Water cooled	
Displacement	4.4 L	
Oil consumption	0.15 % of fuel consumption	
Lube oil capacity	8 L	
Coolant capacity	13 L	
Governor	Mechanical	
Emissions regulations	Non-compliant	
Speed	1500 rpm	1800 rpm
Fuel Consumption PT75	18.7 L/H	22.3 L/H
Fuel Consumption PT85S	20.5 L/H	24.4 L/H
Radiator Cooling Air Flow	89.0 m ³ /min	111.0 m ³ /min
Max Exhaust Gas Flow	13.3 m ³ /min	16.0 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 CG4 (15W/40).
- The coolant should be 50% antifreeze and 50% fresh water.

Alternator Technical Data

Model	Leroy Somer LSA 43.2 L8	
Regulation	$\pm 0.5\%$	
International protection	IP23	
Insulation class	H	
Terminals	12	
Frequency	50 Hz	60 Hz
Coolant Air Flow	0.27 m ³ /s	0.32 m ³ /s

Shipping Data

Length	Width	Height	Weight
2050 mm	770 mm	1300 mm	1000 kg

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





1100 Series

1104A-44TG2

Diesel Engine - ElectropaK

73 kWm at 1500 rpm

90 kWm at 1800 rpm



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 4.4 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

- Total worldwide service is provided through a network of 4,000 distributors and dealers.
- TIPSS - The Integrated Parts and Support System enables customers to specify and order parts electronically as well as service engines with on-line guides and service tools.

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 1104A-44TG2 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.

Engine Speed (rev/min)	Type of Operation	Typical Generator Output (net)		Engine Power			
		kVA	kWe	Gross		Net	
				kWm	bhp	kWm	bhp
1500	Prime power	80.0	64.0	73.4	98.4	71.9	96.4
	Standby power	88.0	70.4	80.7	108.2	79.1	106.1
1800	Prime power	91.3	73.0	84.5	113.3	82.0	109.9
	Standby power	100.3	80.3	93.0	124.7	90.2	121.0

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. ϕ) 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.

1100 Series

1104A-44TG2

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 10/111/2
- SAE 3 flywheel housing

Mountings

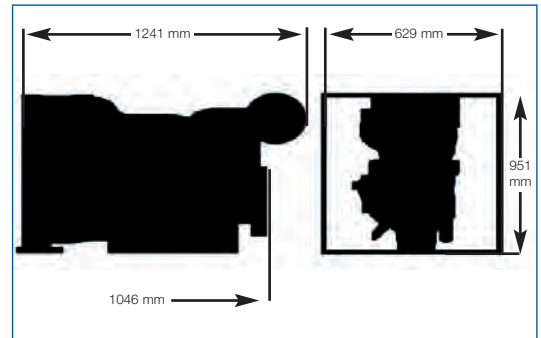
- Front engine mounting bracket

Literature

- User's Handbook

Optional equipment

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



Engine Speed	Fuel Consumption			
	1500 rev/min		1800 rev/min	
	g/kWh	l/hr	g/kWh	l/hr
At standby power	TBA	20.5	TBA	24.4
At prime power	TBA	18.7	TBA	22.3
At 75% of prime power	TBA	14.0	TBA	16.9
At 50% of prime power	TBA	9.7	TBA	11.9

General Data

Number of cylinders	4 vertical in-line
Bore and stroke	105 x 127 mm
Displacement	4.4 litres
Aspiration	Turbocharged
Cycle	4 stroke
Combustion system	Direct injection
Compression ratio	17.25:1
Rotation	Anti Clockwise (view from flywheel)
Cooling system	Water-cooled
Total lubrication system capacity	8.0 litres
Total coolant capacity	13.0 litres
Dimensions	Length 1241 mm
Width	629 mm
Height	951 mm
Dry weight (approx.)	463 kg

Final weight and dimensions will depend on completed specification.



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Distributed by



Alternators
LSA 43.2 - 4 Pole
Electrical and mechanical data

Common data

Insulation class	H	Excitation system	SHUNT	A R E P or PMG
Winding pitch	2/3 (bob 6)	A.V.R. model	R 250	R 438
Terminals	12	Voltage regulation (*)	± 0,5 %	± 0,5 %
Drip proof	IP 23	Sustained short-circuit current	-	300% (3 IN) : 10s
Altitude	≤ 1000 m	Total harmonic TGH / THC (**)	at no load < 2 % - on load < 2 %	
Overspeed	2250 min ⁻¹	Waveform : NEMA = TIF	< 50	
Air flow	0,27 m ³ /s (50Hz)/ 0,32 (60Hz)	Wave form : I.E.C. = THF	< 2 %	

(*) Steady state duty. (**) Total harmonic 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		
43.2 S1	kVA	35	35	35	35	24	33	33	33	33	22	40	40	40	40	26	45	45	45	45	27
	kW	28	28	28	28	19	26	26	26	26	18	32	32	32	32	21	36	36	36	36	22
43.2 S15	kVA	40	40	40	40	28	36	36	36	36	26	44	44	44	44	30	47	47	47	47	31
	kW	32	32	32	32	22	29	29	29	29	21	35	35	35	35	24	38	38	38	38	25
43.2 S25	kVA	45	45	45	45	31	43	43	43	43	29	49	49	49	49	33	52	52	52	52	34
	kW	36	36	36	36	25	34	34	34	34	23	39	39	39	39	26	42	42	42	42	27
43.2 S35	kVA	50	53	52	47	33	45	48	47	42	30	53	56	55	50	35	55	58	57	53	36
	kW	40	42	42	38	26	36	38	38	34	24	42	45	44	40	28	44	46	45	42	29
43.2 M45	kVA	56	60	60	60	35	51	53	53	53	32	59	63	63	63	37	62	66	66	66	38
	kW	45	48	48	48	28	41	42	42	42	26	47	50	50	50	30	50	53	53	53	30
43.2 L65	kVA	67	70	69	68	41	61	62	63	62	38	71	74	73	73	43	74	77	76	75	45
	kW	53	56	55	55	33	49	50	50	50	30	57	59	58	58	34	59	62	61	60	36
43.2 L8	kVA	78	80	78	76	48	71	73	71	70	45	83	84	83	83	53	86	88	86	84	54
	kW	62	64	63	61	38	57	58	57	56	36	66	67	66	66	42	69	70	69	67	43

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		
43.2 S1	kVA	44	44	44	44	28	40	40	40	40	25	50	50	50	50	29	56	56	56	56	30
	kW	35	35	35	35	22	32	32	32	32	20	40	40	40	40	23	45	45	45	45	24
43.2 S15	kVA	50	50	50	50	31	45	45	45	45	28	54	55	55	55	33	56	59	59	59	34
	kW	40	40	40	40	25	36	36	36	36	22	43	44	44	44	26	45	47	47	47	27
43.2 S25	kVA	51	54	56	56	35	47	50	50	50	32	54	58	59	59	37	56	60	62	62	38
	kW	41	43	45	45	28	38	40	40	40	26	43	46	47	47	30	45	48	50	50	30
43.2 S35	kVA	53	58	60	66	36	49	53	55	59	34	57	61	64	69	39	59	63	66	73	40
	kW	42	46	48	53	29	39	42	44	47	27	46	49	51	55	31	47	50	53	58	32
43.2 M45	kVA	57	62	64	71	39	53	57	59	64	36	62	66	69	75	42	64	68	71	78	43
	kW	46	50	51	57	31	42	46	47	51	29	50	53	55	60	34	51	54	57	62	34
43.2 L65	kVA	67	72	75	83	45	62	66	69	74	42	72	77	80	87	48	74	80	84	91	50
	kW	54	58	60	66	36	50	53	55	59	34	58	62	64	70	38	59	64	67	73	40
43.2 L8	kVA	80	85	88	95	53	73	78	81	87	49	86	91	95	102	57	88	95	99	107	59
	kW	64	68	70	76	42	58	62	65	70	39	69	73	76	82	46	70	76	79	86	47

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 through the outlet and inlet attenuators.
- > Lube oil pipe can be reached externally to allow easy drainage.
- > Fuel fill and battery are secured through 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

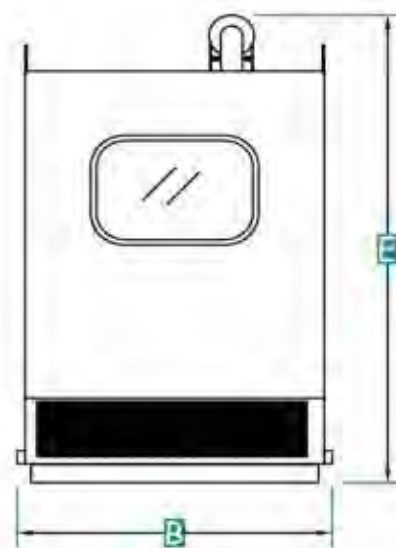
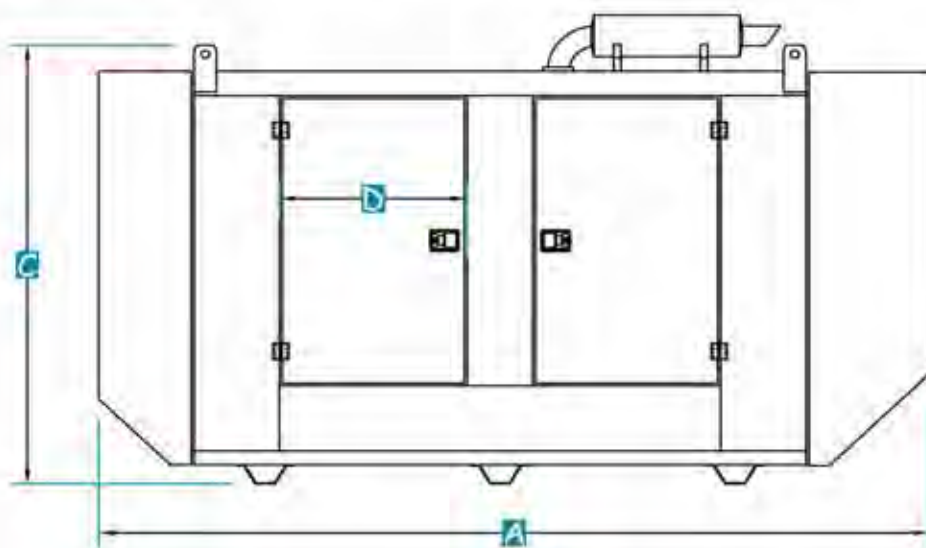
9 - 250 KVA



Certificate Numbers. CC1680-009512. 009912

Sound Pressure Levels (dBA)

Generating Set	Powertech	50 Hz						60 Hz					
		1 m		3 m		7 m		1 m		3 m		7 m	
		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