GOLDEN MAJD Co.

450 - 500S

Rating @ 0.8 PF		Prime rating	Stand-by rating
Voltage *1	Freq. *2	PT 450 *3	PT 500S *4
400 V	50 Hz	455.0 KVA	500.0 KVA
480 V	60 Hz	510.6 KVA	574.0 KVA

The above ratings represent the generating set capability guarantied within ±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 - **PT450** 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 - **PT500S** 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 2506A-E15TAG1	
Cylinders	6; vertical in-line	
Aspiration	Turbocharged & A/A charge cooled	
Combustion	Direct injection	
Cooling System	Water cooled	
Displacement	15.2 L	
Oil consumption	0.1 % of fuel consumption	
Lube oil capacity	62 L	
Coolant capacity	58 L	
Governor	Electronic	
Emissions regulations	TA Luft compliant	
Speed	1500 rpm	1800 rpm
Fuel Consumption PT450	95 L/H	102 L/H
Fuel Consumption PT500S	104 L/H	116 L/H
Radiator Cooling Air Flow	660 m^3/min	822 m^3/min
Max Exhaust Gas Flow	81 m /min	105 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 47.2 S5	
Regulation	± 0.5 %	
International protection	IP23	
Insulation class	H	
Terminals	12	
Frequency	50 Hz	60 Hz
Coolant Air Flow	0.9 m^3/s	1.1 m^3/s

Shipping Data			
Length	Width	Height	Weight
3750 mm	1120 mm	2150 mm	3650 kg

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

ISO 9001 : 2000
Certificate Number: CC1680-009512,009912

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2500 Series

2506A-E15TAG1

Diesel Engine – ElectropaK
Non-Emissions compliant

435 kWm at 1500 rpm
490 kWm at 1800 rpm

The 2500 Series engine has been developed using the latest engineering techniques and builds on the strengths of the already very successful 2000 Series family and addresses today's uncompromising demands within the power generation industry. Developed from a proven heavy-duty industrial base these products offer superior performance and reliability.

The 2506A-E15TAG1 is a turbocharged and air-to-air charge-cooled, 6 cylinder diesel engine. Its premium features provide exceptional power-to-weight ratio resulting in exceptional fuel consumption.

The overall performance and reliability characteristics make this the prime choice for today's power generation industry.

Economic Power

- Mechanically operated unit fuel injectors with advanced electronic control, combined with carefully matched turbocharging, give excellent fuel atomisation which leads to exceptional low fuel consumption.

Reliable Power

- Developed and tested using the latest engineering techniques and finite element analysis for high reliability.
- Low oil usage and low wear rates.
- High compression ratio ensures clean rapid starting in all conditions.
- Support comes from a worldwide network of 4,000 distributors and dealers.

Compact, Clean and Efficient Power

- Exceptional power to weight ratio and compact size gives optimum power density for ease of installation and more cost effective transportation.
- Designed to provide excellent service access for ease of maintenance.

This engine does not comply with harmonized international regulated emissions limits.

Engine Speed (rev/min)	Type of Operation	Typical Generator Output (Net)		Engine Power			
				Gross		Net	
		kVA	kWe	kWm	bhp	kWm	bhp
1500	Baseload power*	350	280	328	440	304	421
	Prime power	455	364	419	562	396	531
	Standby power	500	400	459	615	435	583
1800	Prime power	500	400	471	631	435	583
	Standby power	563	450	527	706	490	657

The above ratings represent the engine performance capabilities to conditions specified in ISO 8528/1, ISO 3046/1:1986, BS 5514/1.
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 ASTM D975 D2. Lubricating oil: 15W40 to API CI4.
Rating Definitions
Baseload Power: Power available for continuous full load operation. Overload of 10% permitted for 1 hour in every 12 hours operation.
Prime Power: Power available at variable load with a load factor not exceeding 80% of the prime power rating. Overload of 10% is permitted for 1 hour in every 12 hours' operation.
Standby Power: Power available in the event of a main power network failure up to a maximum of 500 hours per year of which up to 300 hours may be run continuously. Load factor may be up to 100% of standby power. No overload is permitted.
* Baseload ratings indicated are under development and will be available later.

Publication No. 1841/09/06 Produced in England

2500 Series

2506A-E15TAG1

Standard ElectropaK Specification

Air inlet
- Mounted air filter

Fuel system
- Mechanically actuated electronically controlled unit fuel injectors with full authority electronic control
- Governing to ISO 8528-5 class G3 with isochronous capability
- Replaceable ‘Ecoplus’ fuel filter elements with primary filter/water separator
- Fuel cooler

Lubrication system
- Wet sump with filler and dipstick
- Full-flow replaceable ‘Ecoplus’ filter
- Oil cooler integral with filter header

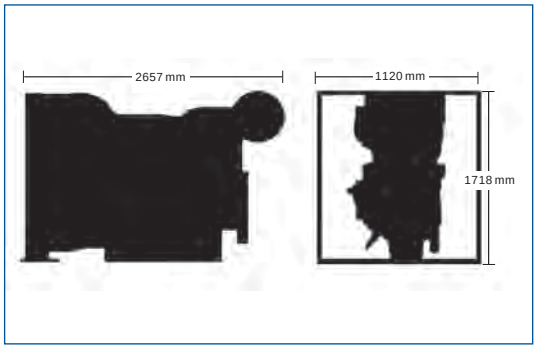
Cooling system
- Gear-driven circulating pump
- Mounted belt-driven fan
- Radiator supplied loose incorporating air-to-air charge cooler
- System designed for ambients up to 50ºC

Electrical equipment
- 24 volt starter motor and 24 volt 70 amp alternator with DC output
- ECM mounted on engine with wiring looms and sensors
- 3 level engine protection system

Flywheel and housing
- High inertia flywheel to SAE J620 size 14
- SAE $^{1}/_{2}$ flywheel housing

Mountings
- Front engine mounting bracket

Optional Equipment
- 110 volt/240 volt immersion heater
- Additional speed sensor
- Temperature and pressure sensors for gauges
- Air filter rain hood
- Twin starters/facility for second starter
- Tool kit
- Additional manuals
- Closed circuit crankcase ventilation system



Fuel Consumption				
Engine Speed	1500 rev/min		1800 rev/min	
	g/kWh	l/hr	g/kWh	l/hr
Standby	202	108	206	126
Prime power	203	99	205	112
75% of prime power	210	77	207	85
50% of prime power	219	53	224	61

General Data

Number of cylinders	6
Cylinder arrangement	Vertical in-line
Cycle	4 stroke
Induction system	Turbocharged and air-to-air charge cooled
Combustion system	Direct injection
Cooling system	Water-cooled
Bore and stroke	137 mm x 171 mm
Displacement	15.2 litres
Compression ratio	16:1
Direction of rotation	Anti-clockwise, viewed on flywheel
Total lubrication system capacity	62 litres
Total coolant capacity	58 litres
Dimensions	Length 2657 mm Width 1120 mm Height 1718 mm
Dry weight (electropak)	1,633 kg

Final weight and dimensions will depend on completed specification

Perkins®

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Distributed by

Publication No. 1841/09/06 Produced in England

LEROY SOMER®

3782 en - 06.2007 / d

Alternators
LSA 47.2 - 4 Pole

Electrical and mechanical data

Common data

Insulation class	H	Excitation system	SHUNT (12 wire)	A R E P or PMG
Winding pitch	2/3 (N° 6 or N° 6S)	A.V.R. model	R 250	R 448
Terminals	12 (N° 6) / 6 (N° 6S)	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 < 1,5 % - on load < 2 %	
Overspeed	2250 min^{-1}	Waveform : NEMA = TIF (**)	< 50	
Air flow	0,9 m^3/s (50Hz) / 1,1 (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		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.			3 ph.			3 ph.			3 ph.		
12 wire	Y		380V	400V	415V	380V	400V	415V	380V	400V	415V	380V	400V	415V
	Δ		220V	230V	240V	220V	230V	240V	220V	230V	240V	220V	230V	240V
	YY			200V			200V			200V			200V	
	47.2 VS2	kVA		**365**			330			405			**420**	
		kW		***292***			*264*			*324*			***336***	
	47.2 S4	kVA		**410**			370			430			**450**	
		kW		***328***			*296*			*344*			***360***	
	47.2 S5	kVA		**455**			405			471			**500**	
		kW		***364***			*324*			*377*			***400***	
	47.2 M7	kVA		**500**			465			545			**570**	
		kW		***400***			*372*			*436*			***456***	
	47.2 M8	kVA		**550**			500			575			**600**	
		kW		***440***			*400*			*460*			***480***	
	47.2 L9	kVA		**600**			535			630			**660**	
		kW		***480***			*428*			*504*			***528***	
6 wire	Y		380V	400V	415V	380V	400V	415V	380V	400V	415V	380V	400V	415V
	Δ		220V	230V	240V	220V	230V	240V	220V	230V	240V	220V	230V	240V
	47.2 L9*	kVA		**600**			535			630			**660**	
		kW		***480***			*428*			*504*			***528***	

Ratings 60 Hz - 1800 R.P.M.

kVA / kW - PF = 0,8

	Duty		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.				3 ph.				3 ph.				3 ph.			
12 wire	Y		380V	416V	440V	480V	380V	416V	440V	480V	380V	416V	440V	480V	380V	416V	440V	480V
	Δ		220V	240V			220V	240V			220V	240V			220V	240V		
	YY			208V	220V	240V		208V	220V	240V		208V	220V	240V		208V	220V	240V
	47.2 VS2	kVA	424	454	456	**456**	394	410	410	410	451	483	500	511	469	500	518	**530**
		kW	339	363	365	**365**	315	328	328	328	361	386	400	409	375	400	414	**424**
	47.2 S4	kVA	450	480	500	**512**	396	442	442	465	475	513	533	550	500	530	550	**581**
		kW	360	384	400	**410**	317	354	354	372	380	410	426	440	400	424	440	**465**
	47.2 S5	kVA	475	510	531	**570**	441	473	493	518	503	543	566	592	527	562	585	**625**
		kW	380	408	425	**456**	353	378	394	414	402	434	453	474	422	450	468	**500**
	47.2 M7	kVA	562	610	625	**625**	523	566	581	590	600	651	669	680	625	668	690	**700**
		kW	450	488	500	**500**	418	453	465	472	480	521	535	554	500	534	552	**560**
	47.2 M8	kVA	562	610	630	**690**	523	566	587	632	600	651	672	729	625	671	705	**750**
		kW	450	488	504	**552**	418	453	470	506	480	521	538	583	500	537	564	**600**
	47.2 L9	kVA	602	661	685	**750**	556	609	634	675	643	707	734	780	667	728	763	**825**
		kW	482	529	548	**600**	445	487	507	540	514	566	587	624	534	582	610	**660**
6 wire	Y		380V	416V	440V	480V	380V	416V	440V	480V	380V	416V	440V	480V	380V	416V	440V	480V
	Δ		220V	240V			220V	240V			220V	240V			220V	240V		
	47.2 L9*	kVA	602	661	685	**750**	556	609	634	675	643	707	734	780	667	728	763	**825**
		kW	482	529	548	**600**	445	487	507	540	514	566	587	624	534	582	610	**660**

* AREP excitation only

COMPACT (Big Range)

A larger type of the compact enclosure that is used in tigh spaces and almost having the same look. The difference between the two is mainly the number of the doors and the silenced exhaust system which is mounted externally.

GHADDAR
MACHINERY Co. S.A.L.

YOUR POWER PARTNER

Charasteristics:

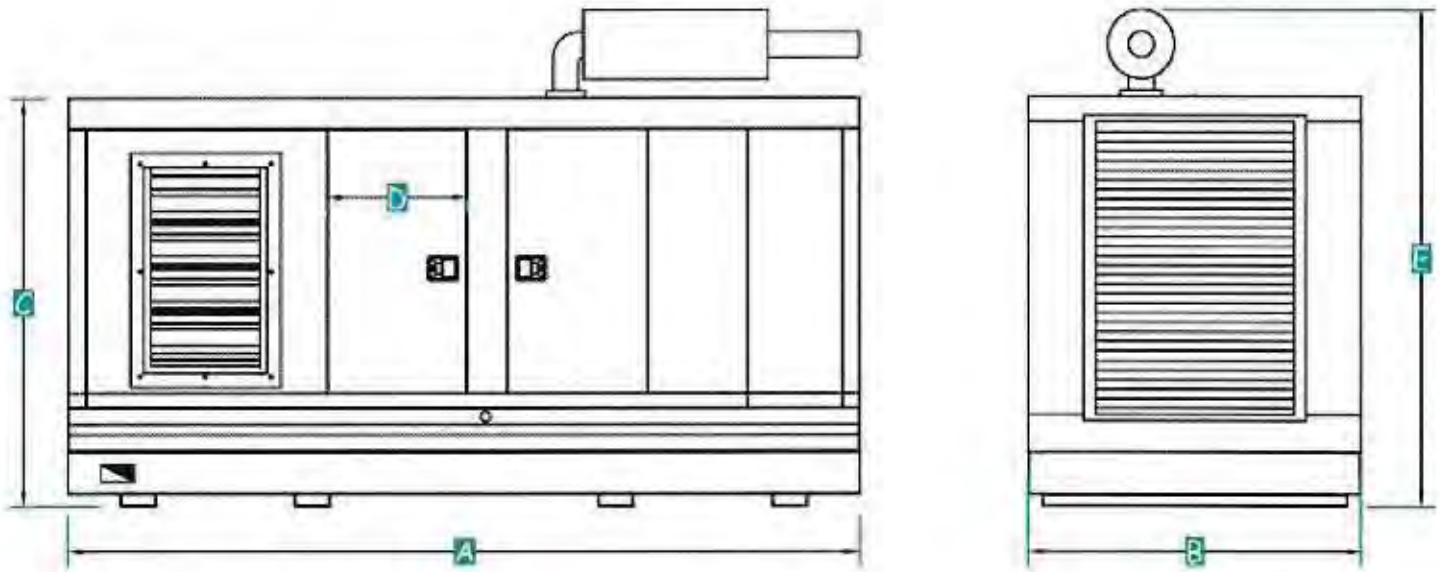
> Body and components made of steel painted with highly corrosive synthetic gloss.
> Stainless steel locks and hinges.
> Two large doors on each side for easy maintenance access.
> Lube oil pipe can be reached externally to allow easy drainage.
> Special viewing window for the control panel in a lockable door.
> Lifting points on the base frame.
> Fuel fill and battery are secured through lockable doors.
> Exhaust silencing system mounted externally.
> Emergency stop push button installed on the exterior of the enclosure (optional).

Range
200 - 800 KVA

ISO 9001 :2000
QMI REGISTERED
IQNet CERTIFIED MANAGEMENT SYSTEM
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
1306C-E87TAG3	200	79.7	82.4	76.2	78.3	71.2	73.6	82.6	85.3	79.1	81.2	74.1	76.5
1306C-E87TAG6	250	79.7	82.4	76.2	78.3	71.2	73.6	82.6	85.3	79.1	81.2	74.1	76.5
2206A-E13TAG2	355	81.2	83.9	77.7	79.8	72.7	75.1	84.1	86.8	80.6	82.7	75.6	78
2206A-E13TAG3	410	81.2	83.9	77.7	79.8	72.7	75.1	84.1	86.8	80.6	82.7	75.6	78
2806C-E16TAG1	450	81.9	84.6	78.4	80.5	73.4	75.8	85	87.7	81.5	83.6	76.5	78.9
2806C-E16TAG2	500	81.9	84.6	78.4	80.5	73.4	75.8	85	87.7	81.5	83.6	76.5	78.9
2806C-E18TAG1	550	83.1	86	79.6	82.9	74.6	77.2	86.3	89.2	82.8	86.1	77.8	80.4
2806C-E18TAG2	625	83.1	86	79.6	82.9	74.6	77.2	86.3	89.2	82.8	86.1	77.8	80.4
4006C-23TAG2A	725	83.8	86.7	80.3	83.6	75.3	77.9	87.3	90.2	83.8	87.1	78.8	81.4
4006C-23TAG3A	800	84.1	87.6	80.6	84.5	75.6	78.8	87.5	91	84	87.9	79	82.2



Dimensions

Generating Set	Powertech	A: mm	B: mm	C: mm	D: mm	E: mm
Engine model	KVA					
1306C-E87TAG3	200	4150	1800	2250	735	2570
1306C-E87TAG6	250	4150	1800	2250	735	2570
2206A-E13TAG2	355	4750	2000	2350	729	2850
2206A-E13TAG3	410	4750	2000	2350	729	2850
2506A-E15TAG1	450	5250	2000	2350	822	2850
2506A-E15TAG2	500	5250	2000	2350	822	2850
2806C-E18TAG1	550	5500	2200	2470	822	2920
2806C-E18TAG2	625	5500	2200	2470	822	2920
4006C-23TAG2A	725	5750	2200	2470	822	2920
4006C-23TAG3A	800	5750	2200	2470	822	2920