GOLDEN MAJD Co.

200 - 220S

Rating @ 0.8 PF		Prime rating	Stand-by rating
Voltage *1	Freq. *2	PT200 *3	PT220S *4
400 V	50 Hz	200.0 KVA	223.0 KVA
480 V	60 Hz	232.9 KVA	254.1 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 - **PT200** 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 - **PT220S** 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 1306C-E87TAG3	
Cylinders	6; vertical in-line	
Aspiration	Turbocharged & A/A charge-cooled	
Combustion	Direct injection	
Cooling System	Water cooled	
Displacement	8.7 L	
Oil consumption	0.1 % of fuel consumption	
Lube oil capacity	28.3 L	
Coolant capacity	37.2 L	
Governor	Electronic	
Emissions regulations	EU stage2 & EPA tier2	
Speed	1500 rpm	1800 rpm
Fuel Consumption PT200	45.2 L/H	51.5 L/H
Fuel Consumption PT220S	49.1 L/H	56.9 L/H
Radiator Cooling Air Flow	375 m^3/min	480 m^3/min
Max Exhaust Gas Flow	36.5 m^3/min	48.1 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 46.2 M5	
Regulation	± 0.5 %	
International protection	IP23	
Insulation class	H	
Terminals	12	
Frequency	50 Hz	60 Hz
Coolant Air Flow	0.43 m^3/s	0.51 m^3/s

Shipping Data			
Length	Width	Height	Weight
2700 mm	1000 mm	1720 mm	2100 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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1300 Series EDi

1306C-E87TAG3

Diesel engine - ElectropaK

199 kWm 1500 rev/min
220 kWm 1800 rev/min

The Perkins 1300 Series EDi family of ElectropaK engines has become renowned throughout the power generation industry for the engines' superior performance and reliability.

The 1306-E87TAG3 engine is a turbocharged and air-to-air charge cooled unit, featuring hydraulically-actuated electronically controlled unit injectors (HEUI) with 'full authority' electronic engine management providing reliable,quiet, economic operation supported by the quick starting, fast response and close control demanded by the electrical power generation market.

High Performance Productive Power

- Hydraulically actuated Electronically controlled Unit Injectors – high-pressure fuel injection gives consistent, reliable high performance.
- Constant electronic engine management and monitoring enable precise fuel metering and injection timing to ensure reliable low temperature starting, superb economy with performance and very close governing.

Quiet, Clean Power

- A rigid structure minimises noise transmission and helically cut gears provide quiet power transfer to auxiliaries.
- Forced induction and electronic fuel injection control combine to reduce combustion noise while electronically optimised fuel/air mixing ensures complete combustion resulting in virtually smoke free operation with emissions capability matching current and future emissions legislation.

Durable Power

- A fully balanced induction-hardened steel crankshaft gives smooth performance with minimised bearing loads.
- Oil cooled pistons with keystone top and second rings give longer life while positive rotational valves and roller cam followers reduce wear on valve seats, tappets and cam lobes.

Reliable Power

- Cylinder head coolant is directed to valve bridges and injectors and lubricating oil is cooled in a high efficiency oil cooler, both features enhancing engine reliability.
- Electronic safety shutdown option protects the engine while event and fault warning codes protect operations.

Easy Maintenance

- Electronic diagnostics help to keep the engine at its productive best while enabling the operator to plan maintenance. Oil and filter changes at 450 hours reduce down time.
- All engines are supported by the Perkins worldwide network of 4,000 distributors and dealers.

Engine Speed (rev/min)	Type of Operation	Typical Generator Output (net)		Engine Power			
				Gross		Net	
		kVA	kWe	kWm	bhp	kWm	bhp
1500	Baseload Power	189	151	169	227	164	220
Rating Code	Prime Power	208	166	186	250	180	243
M158	Standby (maximum)	229	183	205	275	199	267
1800	Baseload Power	209	167	188	252	182	244
Rating Code	Prime Power	231	185	207	277	201	269
M160	Standby (maximum)	253	202	227	305	220	296

1500/1800 rev/min switchable ratings are offered for stand-alone non-load sharing gen set applications. Rating code M165 applies.
The above ratings represent the engine performance capabilities to conditions specified in ISO 8528/1, ISO 3046/1:1986, BS5514/1, DIN 6271.

Derating may be required for conditions outside these; consult Perkins Engines Company Limited
Generator powers are typical and are based on an alternator efficiency of 92% and a power factor (cos.) of 0.8 Performance tolerance is ± 5%
Fuel specification: BS 2869: Part 2 1998 Class A2 or ASTM D975 D2
Lubricating oil: 15W40 to ACEA E3 or API CG4

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 (maximum): Power available at variable load 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 continuous. No overload is permitted.

1300 Series EDi

1306-E87TAG3

Standard ElectropaK Specification

Air inlet
- Mounted air filter and turbocharger

Fuel system
- Hydraulically actuated electronically controlled unit fuel injectors with full authority electronic control
- Electronic governing to ISO 3046-4 with stand alone isochronous or load sharing capabilities
- Spin-on fuel filter with pre-filter and hand primer pump

Lubrication system
- Wet rear well steel sump with filler and dipstick
- Full flow spin-on filters
- Tube-type oil cooler thermostatically controlled

Cooling system
- Thermostatically controlled with belt driven circulating pump and 28” belt-driven fan
- Radiator mounted with all guards and pipes
- Air/air charge cooler incorporated in radiator
- Coolant filter/conditioner

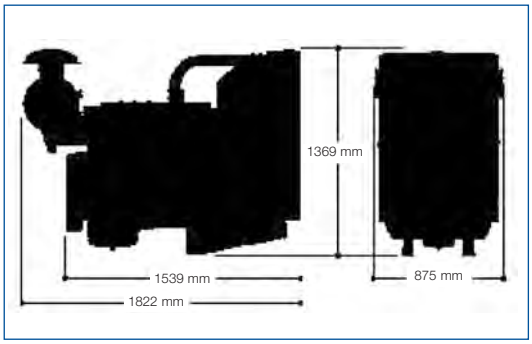
Electrical equipment
- 24 volt starter motor and 24 volt 45 amp alternator with DC output
- Electronic Control Module mounted on engine with wiring looms and sensors
- 3 level engine protection system

Flywheel and housing
- High inertia flywheel to SAE 3 J620 Size 11½
- Cast iron SAE 2 flywheel housing

Mountings
- Front engine mounting bracket

General Data

Number of Cylinders	6
Cylinder Arrangement	Vertical in-line
Cycle	4 stroke
Induction System	Turbocharged, air-to-air chargecooled
Combustion System	Direct injection
Cooling System	Water-cooled
Bore and Stroke	116.6 mm x 135.9 mm
Displacement	8.7 litres
Compression Ratio	16.9:1
Direction of Rotation	Anti-clockwise, viewed on flywheel
Total Lubrication System Capacity	26.4 litres
Total Coolant Capacity	37.2 litres
Dry Weight (Engine)	895 kg
Length	1822 mm
Width	875 mm
Height	1369 mm



Fuel Consumption				
Engine Speed	1500 rev/min		1800 rev/min	
	l/hr	Imp gal/hr	l/hr	Imp gal/hr
At standby rating	49.1	10.8	56.9	12.5
At prime power rating	45.2	9.9	51.5	11.3
At 75% of prime power	35.0	7.7	38.5	8.5
At 50% of prime power	24.0	5.3	26.5	5.8

Optional equipment

- 12 volt starter and alternator
- 12 volt ECM
- Sensor positions for:
  - oil pressure
  - oil temperature
  - coolant temperature
- SAE 1 flywheel housing and flywheel
- Turbocharger exhaust outlet
- User’s handbook and parts manual
- Workshop manual

Perkins®

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Distributed by

LEROY SOMER®

3790 en - 06.2007 / d

Alternators
LSA 46.2 - 4 Pole

Electrical and mechanical data

Common data

Insulation class	H	Excitation system	SHUNT	A R E P or PMG
Winding pitch	2/3 (N° 6)	A.V.R. model	R 250	R 448
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 < 2,5 % - on load < 2,5 %	
Overspeed	2250 min^{-1}	Waveform : NEMA = TIF (**)	< 50	
Air flow	0,43 m^3/s (50Hz)/ 0,51 (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	
46.2 M3	kVA	180	**180**	180	160	104	168	**168**	168	146	97	195	**195**	195	175	110	203	**203**	203	180	114
	kW	*144*	***144***	*144*	*128*	*83*	*134*	***134***	*134*	*116*	*78*	*156*	***156***	*156*	*140*	*88*	*162*	***162***	162	*144*	*91*
46.2 M5	kVA	200	**200**	200	175	116	184	**184**	184	160	108	214	**214**	214	190	123	223	**223**	223	200	127
	kW	160	***160***	*160*	*140*	*93*	*147*	***147***	*147*	*128*	*86*	*171*	***171***	*171*	*152*	*98*	*178*	***178***	*178*	*160*	*102*
46.2 L6	kVA	250	**250**	240	205	141	217	**217**	217	190	131	254	**260**	254	225	150	266	**275**	266	237	156
	kW	200	***200***	*192*	*164*	*113*	*174*	***174***	*174*	*152*	*105*	*203*	***208***	*203*	*180*	*120*	*213*	***220***	*213*	*190*	*125*
46.2 L9	kVA	280	**280**	280	215	154	250	**250**	250	195	142	290	**290**	290	240	165	300	**300**	300	250	170
	kW	224	***224***	*224*	*172*	*123*	*200*	***200***	*200*	*156*	*114*	*232*	***232***	*232*	*192*	*132*	*240*	***240***	*240*	*200*	*136*
46.2 VL12	kVA	315	**315**	300	260	187	276	**276**	260	230	170	327	**327**	310	285	200	341	**341**	325	300	208
	kW	252	***252***	*240*	*208*	*150*	*221*	***221***	*208*	*184*	*136*	*262*	***262***	*248*	*228*	*160*	*273*	***273***	260	240	*166*

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	
46.2 M3	kVA	192	205	220	**228**	128	177	189	198	**210**	119	203	219	228	**244**	136	211	225	237	**255**	141
	kW	*154*	*164*	*176*	***182***	*102*	*142*	*151*	*158*	***168***	*95*	*162*	*175*	*182*	***195***	*109*	*169*	*180*	190	***204***	*113*
46.2 M5	kVA	205	219	230	**250**	136	190	203	211	**225**	126	219	235	245	**262**	145	227	242	252	**273**	151
	kW	*164*	*175*	*184*	***200***	*109*	*152*	*162*	*169*	***180***	*101*	*175*	*188*	*196*	***210***	*116*	*182*	*194*	*202*	***218***	*121*
46.2 L6	kVA	257	276	289	**300**	173	239	255	265	**278**	160	276	295	308	**324**	184	285	304	317	**337**	192
	kW	*206*	*221*	*231*	***240***	*138*	*191*	*204*	*212*	***222***	*128*	*221*	*236*	*246*	***259***	*147*	*228*	*243*	*254*	***270***	*154*
46.2 L9	kVA	296	316	328	**343**	197	273	291	302	**302**	182	313	338	351	**357**	209	326	348	366	**375**	220
	kW	*237*	*253*	*262*	***274***	*158*	*218*	*233*	*242*	***242***	*146*	*250*	*270*	*281*	***286***	*167*	*261*	*278*	*293*	***300***	*176*
46.2 VL12	kVA	333	357	372	**381**	220	309	329	341	**347**	200	359	383	397	**412**	235	370	399	415	**429**	243
	kW	*266*	*286*	*298*	***305***	*176*	*247*	*263*	*273*	***278***	*160*	*287*	*306*	*318*	***330***	*188*	*296*	*319*	332	**343**	*194*

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.

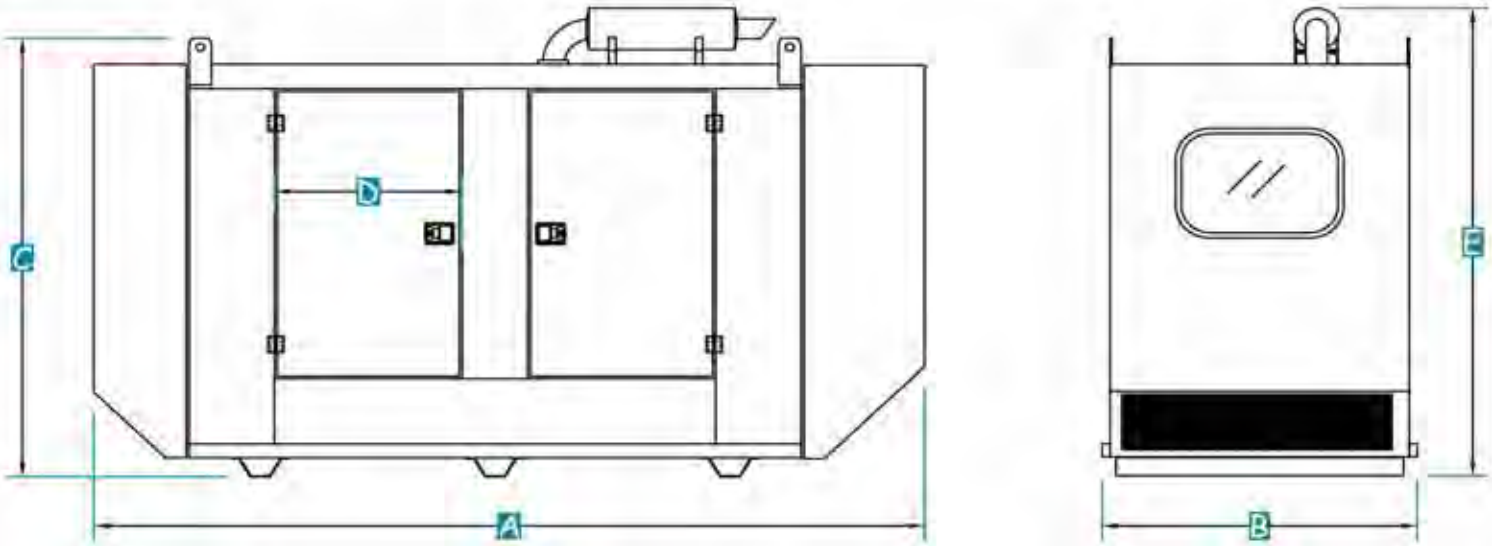
YOUR POWER PARTNER

Range
9 - 250 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
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