

LWA LIQUID COOLED SLOW SPEED GENSETS

LWA 10(A)*, LWA 15(A), LWA 20(A), LWA 27(A)

LISTER PETTER P TYPE ALTERNATOR

50 Hz; 1500 r/min; power outputs: 6.1-22.4 kVA

60 Hz; 1800 r/min; power outputs: 7.4-28.6 kVA

LIQUID COOLED GENERATING SETS WITH ELECTRONIC CONTROL MODULE

BASIC CHARACTERISTICS

- 50 Hz, 1500 r/min or 60 Hz, 1800 r/min
- Lister Petter Alpha Series liquid cooled, direct and indirect injection diesel engine (2, 3 or 4 cylinders)
- naturally aspirated or turbocharged
- open set (LWA) or acoustic set (LWAA)

STANDARD FEATURES

- control system with electronic digital control module
- single bearing, 4-pole brushless alternator
- 44 litre [LWA10(A),15(A)] and 66-litre [LWA20(A),27(A)] polypropylene fuel tank with contents gauge
- zirconium phosphated powder coated base plate with forklift pockets
- bunded base retaining 110% of all fluids
- anti vibration mountings
- 12V starter battery and leads
- mechanical governing
- emergency stop button (lock-down type)
- pusher fan
- operators' handbook
- electrical diagrams

OPEN SETS ONLY

- engine mounted exhaust silencer

ACOUSTIC SETS ONLY

- acoustic canopy
- residential exhaust silencer
- 2 off roof mounted lifting eye bolt fixings
- external emergency stop button
- tough ripple effect paint finish
- earth straps on service doors
- large side door for easy service access
- document pocket in access door



OPEN GENSET (LWA)



ACOUSTIC GENSET (LWAA)

ALTERNATOR SPECIFICATION

- single bearing, 4-pole brushless alternator
- solid state AVR with $\pm 1.5\%$ voltage regulation as standard
- class H insulation on the rotor and stator
- IP23 protection class

CONTROL CUBICLE

All LWA and LWAA sets have a vibration-isolated control cubicle, which has the following features:

- electronic digital control module with monitoring/control facility and warning indicators
- automatic shutdown protection
- emergency stop button (lock-down type) – open sets only
- AC output circuit breaker with over-current protection
- DC circuit control switch and overload circuit breaker

The control module gives digital readouts of:

- generator voltage (phase-to-phase and phase-to-neutral)
- generator current (each phase displayed separately)
- generator output frequency
- mains voltage (phase-to-phase and phase-to-neutral) AMF sets only
- mains frequency (each phase displayed separately) AMF sets only
- engine speed
- engine coolant temperature
- battery voltage
- engine hours run

The control module has indicators for:

- over speed / under speed
- emergency stop
- failure to start
- battery charger failure

Automatic shutdown occurs under:

- low engine oil pressure
- high engine temperature
- over speed / under speed
- failure to start after three attempts

MANUAL/REMOTE START SETS

These sets have the flexibility of either manual or remote automatic operation:

- manual operation is by START and STOP push-buttons on the control module
- remote operation is achieved by connecting a 2-wire circuit to the relevant terminals on the control module and is activated by setting the control module to AUTO

AUTOMATIC MAINS FAILURE SETS (AMF)**AMF control system integral with control cubicle**

The AMF specification provides that in the event of a mains failure the generating set will automatically operate to supply the electrical load. In addition to the standard features automatic mains failure sets have the following features:

- mains monitoring unit to control set operation
- load-transfer contactors, mechanically and electrically interlocked (rated for set output)
- indicator for mains-on-load or plant-on-load
- control module timer circuits set to delay start, delay transfer back to mains and delay stop to allow for engine cool down
- solid state automatic battery charger that maintains charge when set is not running

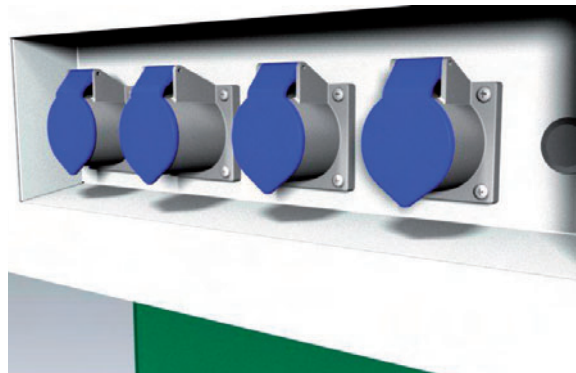
OPTIONAL ITEMS

- integral residential exhaust silencer as fitted to acoustic gensets (open sets only)
- remote residential exhaust silencer for plant room installations (open sets only)
- acoustic canopy kit (including residential silencer kit) for retro-fitting to open sets
- AMF system with remote mounted ATS panel
- sand filter unit, high efficiency, labyrinth type complete with washable dust element (all acoustic gensets)
- rodent mesh
- integral dummy loads (various ratings)
- industrial electrical output sockets
- automatic solid-state 4-Amp battery charger (standard on AMF gensets)

ACOUSTIC SET OPTIONS



Sand Filter Unit



Industrial Electrical Output Sockets



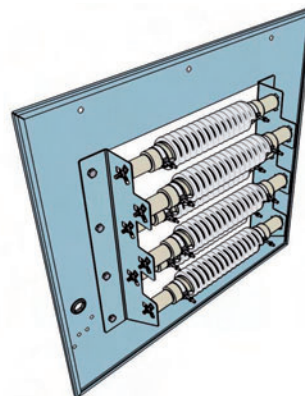
Rodent Mesh



Large service doors showing fold-down front panel on cubicle and external emergency stop button



Roof Mounted Lifting Eye Bolt Fixings



Internal Dummy Load Unit (various rating)

POWER OUTPUTS ³ TO ISO 8528-1 AND EMISSIONS COMPLIANCE

50 Hz, 1500 r/min							60 Hz, 1800 r/min									
Model	Engine	Rating	Single Phase		Three Phase		Model	Engine	Rating	Single Phase		Three Phase				
			220V *	230V *	240V *	380/220V *				400/230V *	415/240V *	220 or 110V *	230 or 115V *	240 or 120V *	220/127 *	230/133 *
			kVA	kWe	kVA	kWe				kVA	kWe	kVA	kWe	kVA	kWe	
LWA 10(A)	LPW2	PRP ¹	6.1	6.1	8.1	6.5	LWA 10(A)	LPW2	PRP ¹	7.4	7.4	9.9	7.9			
		ESP ²	6.3	6.3	8.5	6.8			ESP ²	7.8	7.8	10.3	8.2			
	LPWS2	PRP ¹	6.1	6.1	8.1	6.5		LPWS2	PRP ¹	7.4	7.4	9.9	7.9			
		ESP ²	6.3	6.3	8.5	6.8			ESP ²	7.8	7.8	10.3	8.2			
LWA 15(A)	LPW3	PRP ¹	9.3	9.3	12.5	10.0	LWA 15(A)	LPW3	PRP ¹	11.4	11.4	15.3	12.2			
		ESP ²	9.8	9.8	13.0	10.4			ESP ²	12.0	12.0	16.0	12.8			
	LPWS3	PRP ¹	9.3	9.3	12.5	10.0		LPWS3	PRP ¹	11.4	11.4	15.3	12.2			
		ESP ²	9.8	9.8	13.0	10.4			ESP ²	12.0	12.0	16.0	12.8			
LWA 20(A)	LPW4	PRP ¹	12.5	12.5	16.8	13.4	LWA 20(A)	LPW4	PRP ¹	15.7	15.7	19.5	15.6			
		ESP ²	13.1	13.1	17.6	14.1			ESP ²	16.4	16.4	20.5	16.4			
	LPWS4	PRP ¹	12.5	12.5	16.8	13.4		LPWS4	PRP ¹	15.7	15.7	19.5	15.6			
		ESP ²	13.1	13.1	17.6	14.1			ESP ²	16.4	16.4	20.5	16.4			
LWA 27(A)	LPWT4	PRP ¹	15.8	15.8	21.4	17.1	LWA 27(A)	LPWT4	PRP ¹	20.3	20.3	27.3	21.8			
		ESP ²	16.5	16.5	22.4	17.9			ESP ²	21.3	21.3	28.6	22.9			
	LPWST4	PRP ¹	15.8	15.8	21.4	17.1		LPWST4	PRP ¹	20.3	20.3	27.3	21.8			
		ESP ²	16.5	16.5	22.4	17.9			ESP ²	21.3	21.3	28.6	22.9			

* Other voltages are available on request

3. Power outputs are based on new Lister Petter P type alternators. Mecc Alte alternators are available as an option, ratings may differ. Power Factor (pf). Single phase 1.0 pf; three phase 0.8 pf.

RATINGS DEFINITIONS, TO ISO 8528-1

Standard Reference Conditions

A Lister Petter generating set is designed to operate in the following ISO 3046 environmental reference conditions

Barometric pressure	100 kPa
Relative humidity	30%
Ambient air temperature at the Inlet manifold	25°C

1. Prime Power (PRP)

This rating is for the supply of the maximum power which a generating set is capable of delivering continuously whilst supplying a variable electrical load when operated for an unlimited number of hours per year.

The permissible average power output over 24 hours of operation shall not exceed 70 % of the PRP unless otherwise agreed by Lister Petter Power Systems Limited.

2. Emergency Standby Power (ESP)

Emergency standby power is defined as the maximum power available during a variable electrical power sequence, for which a generating set is capable of delivering in the event of a utility power outage or under test conditions for up to 200 h of operation per year.

The permissible average power output over 24 hours of operation shall not exceed 70 % of the ESP unless otherwise agreed by Lister Petter Power systems Limited.

The actual average power output shall be below or equal to the permissible average power output as defined for ESP.

The above ratings are subject to the following ISO 3046 standard operating conditions, the use of fuel to BS EN 590 Class A1 or A2, lubricating oils of the correct performance specification and viscosity classification and that the maintenance intervals and procedures are carried out as prescribed by Lister Petter Power Systems Limited.

Derating

For non-standard site conditions, reference should be made to relevant BS, ISO & DIN standards.

APPROXIMATE FUEL CONSUMPTION

Values refer to litres/hour			50 Hz	60 Hz
Genset	Engine	Load	1500 r/min	1800 r/min
LWA 10(A)	LPW2	100%	1.9	2.3
		75%	1.5	1.8
	LPWS2	100%	2.1	2.5
		75%	1.6	2.0
LWA 15(A)	LPW3	100%	2.8	3.4
		75%	2.2	2.7
	LPWS3	100%	3.1	3.7
		75%	2.4	2.9
LWA 20(A)	LPW4	100%	3.8	4.6
		75%	2.9	3.6
	LPWS4	100%	4.1	5.0
		75%	3.2	3.9
LWA 27(A)	LPWT4	100%	4.9	6.0
		75%	3.7	4.6
	LPWST4	100%	5.5	7.1
		75%	4.1	5.3

Key to Emissions Compliance

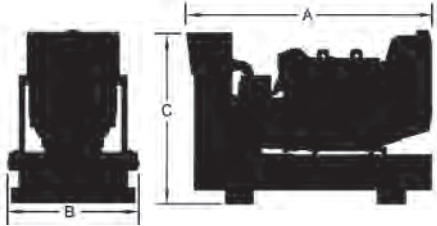
EU Stage 3A only	
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SOUND PRESSURE ⁴

LWAA (acoustic sets), 75% load at 7m											
50 Hz, 1500 r/min						60 Hz, 1800 r/min					
Engine Type											
LPW2/3	LPW4	LPWT4	LPWS2/3	LPWS4	LPWST4	LPW2/3	LPW4	LPWT4	LPWS2/3	LPWS4	LPWST4
64 dBA	64 dBA	62 dBA	63 dBA	64 dBA	61 dBA	65 dBA	66 dBA	63 dBA	64 dBA	66 dBA	61 dBA

4. LWA series gensets do not comply with noise directive 2000/14/EC.

APPROXIMATE DIMENSIONS

		Open Gensets			
		LWA 10	LWA 15	LWA 20	LWA 27
Length (A)	mm	1106	1216	1436	1436
	in	43.5	47.9	56.5	56.5
Width (B)	mm	698	698	698	698
	in	27.5	27.5	27.5	27.5
Height (C)	mm	992	992	992	992
	in	39.0	39.0	39.0	39.0

		Acoustic Gensets			
		LWA 10A (SF*)	LWA 15A (SF*)	LWA 20A (SF*)	LWA 27A (SF*)
Length (A)	mm	1390 (1500)	1500 (1610)	1675 (1775)	1675 (1775)
	in	54.7 (59.1)	59.1 (63.4)	65.9 (69.9)	65.9 (69.9)
Width (B)	mm	705	705	705	705
	in	27.8	27.8	27.8	27.8
Height (C)	mm	1070	1070	1070	1070
	in	42.1	42.1	42.1	42.1

* Length and weight with sand filter fitted

APPROXIMATE WEIGHT

LPW & LPWS Engines											
		LWA Open Sets					LWAA Acoustic Sets				
		LWA 10	LWA 15	LWA 20	LWA 27 (LPWT4)	LWA 27 (LPWST4)	LWA 10A (SF*)	LWA 15A (SF*)	LWA 20A (SF*)	LWA 27A (LPWT4)	LWA 27A (LPWST4)
Dry weight	kg	374	395	434	444	462	428 (438)	488 (498)	541 (551)	551	569
	lb	825	871	957	979	1019	944 (966)	1076 (1098)	1193 (1215)	1215	1254

A comprehensive range of options allows you to select a specification that matches your requirements. Please ask your Lister Petter Power Systems distributor (see panel below).

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DISTRIBUTOR ADDRESS

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