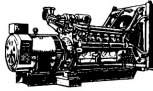


PROUDLY 100% AUSTRALIAN OWNED

**MACFARLANE
GENERATORS**



ESTABLISHED 1949

VICTORIA (HEAD OFFICE) REC: 691

136 Fairbank Road, Clayton South, VIC 3169 Ph: 03 9544 4222 Fax: 03 9543 7138

NEW SOUTH WALES BRANCH REC: 261624C

1 St. James Place, Seven Hills, NSW 2147 Ph: 02 9899 6699 Fax: 02 9899 8048

QUEENSLAND BRANCH REC: 72635

31 South Pine Road, Brendale, QLD 4500 Ph: 07 3205 6333 Fax: 07 3205 6344

PO Box 5176, Clayton, VIC 3168 www.macfarlanegenerators.com.au info@macgen.com

Macfarlane Generators PTY. LTD. ACN 006 849 074 ABN 74 006 849 074

GSW22P (ALT. LS)



Main Features

Frequency	Hz	50
Voltage	V	230
Power factor	cos ϕ	1
Phase and connection		1

Power Rating

Standby power LTP	kVA	17.60
Standby power LTP	kW	17.60
Prime power PRP	kVA	16.00
Prime power PRP	kW	16.00

Ratings definition (According to standard ISO8528 1:2005)

PRP - Prime Power:

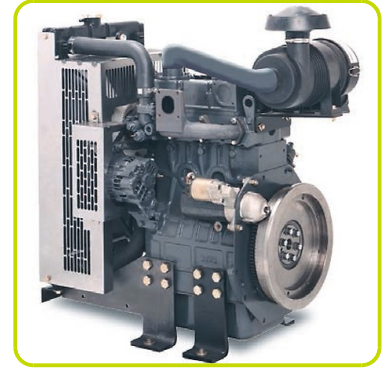
It is defined as being the maximum power which a generating set is capable of delivering continuously whilst supplying a variable electrical load when operated for an unlimited number of hours per year under the agreed operating conditions with the maintenance intervals and procedures being carried out as prescribed by the manufacturer. The permissible average power output over 24 h of operation shall not exceed 70 % of the prime power.

LTP - Limited-Time running Power:

It is defined as the maximum power available, under the agreed operating conditions, for which the generating set is capable of delivering for up to 500 h of operation per year (whose no more than 300 for continuative use) with the maintenance intervals and procedures being carried out as prescribed by the manufacturers. No overload capability is available.

Engine specifications

Engine manufacturer	Perkins	
Model	404A-22G1	
[50Hz] Exhaust emission level	Unregulated	
Engine cooling system	Water	
Nr. of cylinder and disposition	4 in line	
Displacement	cm ³	2216
Aspiration	Natural	
Speed governor	Mechanical	
Prime gross power PRP	kW	18.7
Maximum gross power LTP	kW	20.6
Oil capacity	l	10.6
Coolant capacity	l	7
Fuel	Diesel	
Specific fuel consumption @ 75% PRP	g/kWh	238
Specific fuel consumption @ PRP	g/kWh	237
Starting system	Electric	
Starting engine capability	kW	2
Electric circuit	V	12



Engine Equipment

Standards

The above ratings represent the engine performance capabilities to conditions specified in ISO 8528/1, ISO 3046/1:1986, BS 5514/1

Fuel system

Rotary type pump

Lube oil system

Wet steel sump with filler and dipstick

Filter

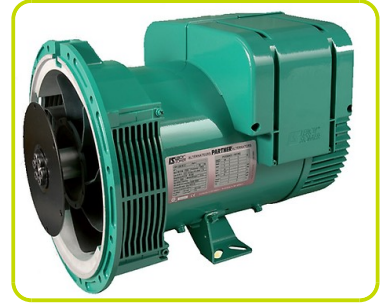
- Fuel filter
- Air filter
- Oil filter

Cooling system

- Mounted radiator
- Thermostatically-controlled system with belt driven coolant pump and pusher fan

Alternator Specifications

Brand	Leroy Somer	
Model	LSA40 M5	
Voltage	V	230
Frequency	Hz	50
Power factor	cos ϕ	1
Poles	4	
Type	Brushless	
Voltage regulation system	Electronic	
Standard AVR	R221	
Voltage tolerance	%	2
Efficiency @ 75% load	%	88.2
Class	H	
IP protection	23	



SPECIALLY ADAPTED TO APPLICATIONS

The LSA 40 alternator is designed to be suitable for typical generator applications, such as: backup, marine applications, rental, telecommunications, etc.

TOP OF THE RANGE ELECTRICAL PERFORMANCE

- Class H insulation.
- Standard 12 wire re-connectable winding, 2/3 pitch, type no. 6.
- High efficiency and motor starting capacity.
- R 791 interference suppression conforming to standard EN 55011 group 1 class B standard for European zone (CE marking).

EXCITATION AND REGULATION SYSTEM

- Excitation system: AREP
- Voltage A.V.R.: R 221

REINFORCED MECHANICAL STRUCTURE

- Compact rigid assembly to better withstand generator vibrations.
- Steel frame.
- Aluminium flanges and shields.
- single-bearing designed to be suitable for heat engines.
- Half-key balancing

PROTECTION SYSTEM SUITED TO THE ENVIRONMENT

- The LSA 40 is IP 23.
- Winding Protection for clean environments with relative humidity \leq 95%, including indoor marine environments.

COMPLIANT WITH INTERNATIONAL STANDARDS

The LSA 40 alternator conforms to the main international standards and regulations: - IEC 60034, NEMA MG 1.32-33, ISO 8528-3, CSA C22.2 n°100-14, UL 1146 (UL 1004 on request), marine regulations, etc.

It can be integrated into a CE marked generator.

The LSA 40 is designed, manufactured and marketed in an ISO 9001 environment and ISO 14001.



Genset equipment

BASE FRAME MADE OF WELDED STEEL PROFILE, COMPLETE WITH:

- Anti-vibration mountings properly sized
- Welded support legs



PLASTIC FUEL TANK WITH THE FOLLOWING COMPONENT:

- Filler neck
- Air breather (ventilation pipe)
- Minimum fuel level sensor



OIL DRAINING PIPE WITH CAP:

- Oil draining facilities



ENGINE COMPLETE WITH:

- Battery
- Liquids (no fuel)

CANOPY:

- Soundproof canopy made up of modular panels, realized with zinc-coated steel as treatment against corrosion and aggressive conditions, properly fixed and sealed allowing a full weatherproof enclosure.
- Easy access to the genset for maintenance purposes thanks to: Wide lateral access doors fixed by stainless steel hinges and provided with plastic lockable handles and internal perforated galvanized steel-sheet; Detachable panels, with screw holes protected by rubber tap.
- Control panel protection door provided with suitable window and lockable handle.
- Lateral air inlet opening properly protected and soundproofed. Exhaust air outlet from the roof, trough wet section protected by proper grid.
- Single detachable lifting eye placed on the roof.



SOUNDPROOF:

- Noise attenuation thanks to soundproofing material (rock wool)
- Efficient residential silencer placed inside the canopy



Dimensional data

Length	(L) mm	1800
Width	(W) mm	850
Height	(H) mm	1380
Dry weight	Kg	780
Fuel tank capacity	l	130



Autonomy

Fuel consumption @ 75% PRP	l/h	3.58
Fuel consumption @ 100% PRP	l/h	4.72
Running time @ 75% PRP	h	36.31
Running time @ 100% PRP	h	27.54

Noise level

Guaranteed noise level (LWA)	dB(A)	95
Noise pressure level @ 7 mt	dB(A)	66



Installation data

Total air flow	m ³ /min	5.05
Exhaust gas flow @ PRP	m ³ /min	3.64
Exhaust gas temperature @ LTP	°C	445

Data Current

Battery capacity	Ah	60
MAX current	A	76.52
Circuit breaker	A	75

Control panel availability

MANUAL CONTROL PANEL	MCP
AUTOMATIC CONTROL PANEL	ACP

MCP - Manual control panel

Mounted on the genset and complete of: analogue instrumentation, control, protection of the generating set, protected through door with lockable handle.

INSTRUMENTATION (ANALOGUE)

- Voltmeter (1 phase)
- Ammeter (1 phase)
- Hours-counter

COMMANDS

- Start/stop selector switch with key (Glow plugs preheating function also included).
- Emergency stop button installed on canopy side.

PROTECTION WITH ALARM

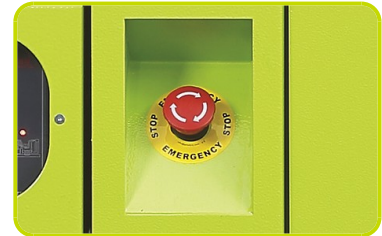
- Low fuel level
- Battery charger failure
- low oil pressure
- high engine temperature
- Earth Fault.

PROTECTIONS WITH SHUTDOWN

- Low fuel level
- Battery charger failure
- low oil pressure
- high engine temperature.
- Circuit breaker protection: III poles
- Emergency stop button

OTHERS

- Panel protected through door with lockable handle.



OUT PUT PANEL MCP

Power cables connection to Circuit Breaker.

ACP - Automatic control panel

Mounted on the genset, complete with digital control unit for monitoring, control and protection of the generating set, protected through door with lockable handle.

DIGITAL INSTRUMENTATION

- Generating set voltage (3 phases).
- Mains voltage.
- Generating set frequency.
- Generating set current (3 phases).
- Battery voltage.
- Power (kVA - kW - kVAr).
- Power factor Cos ϕ .
- Hours-counter.
- Engine speed r.p.m.
- Fuel level (%).
- Engine temperature (depending on model)

COMMANDS AND OTHERS

- Four operation modes: OFF - Manual starting - Automatic starting - Automatic test.
- Pushbutton for forcing Mains contactor or Genset contactor.
- Push-buttons: start/stop, fault reset, up/down/page/enter selection.
- Remote starting availability.
- DC system disconnection switch.
- Acoustic alarm.
- Automatic battery charger.
- RS232 Communication port.
- Settable PASSWORD for protection level.

PROTECTIONS WITH ALARM

- Engine protections: low fuel level, low oil pressure, high engine temperature.
- Genset protections: under/over voltage, overload, under/over frequency, starting failure, under/over battery voltage

PROTECTIONS WITH SHUTDOWN

- Engine protections: low fuel level, low oil pressure, high engine temperature,
- Genset protection: under/over voltage, overload, under/over battery voltage, battery charger failure.
- Circuit breaker protection: III poles.
- Earth Fault included in the control unit.

OTHERS PROTECTIONS

- Emergency stop button.
- Panel protected through door with lockable handle.



OUT PUT PANEL ACP

Plinth row for connection from ACP to LTS panel.	✓
Power cables connection to Circuit Breaker.	✓

The information is aligned with the Data file at the time of download. Printed on 10/10/2016 (ID 3882)

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