



Generator engineered and designed to work in a wide variety of applications where temporary power supply is needed. Versatility, high efficiency, high structural resistance, high degree of protection and low noise emissions together with easy-touse and easy access for maintenance make these generator sets the ideal solution for Rental companies.

#### Power Rating

Frequency	Hz	50
Voltage	V	400/231
Power factor	cos $\phi$	0.8
Phases		3
Standby power LTP	kVA	178.82
Standby power LTP	kW	143.06
MAX current	A	258
Prime power PRP	kVA	161.97
Prime power PRP	kW	129.58
MAX current	A	234


**400V**


#### 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.

**Power supply 50Hz 230V Three Phase (with supplement VSS)**

Frequency	Hz	50
Voltage	V	230
Power factor	cos $\varphi$	0.8
Phases		3
Standby power LTP	kVA	178.82
Standby power LTP	kW	143.06
MAX current	A	449
Prime power PRP	kVA	161.97
Prime power PRP	kW	129.58
MAX current	A	407

**Power supply 60Hz 480V Three Phase (with supplement DFS)**

Frequency	Hz	60
Voltage	V	480
Power factor	cos $\varphi$	0.8
Phases		3
Standby power LTP	kVA	200.39
Standby power LTP	kW	160.31
MAX current	A	241
Prime power PRP	kVA	160.31
Prime power PRP	kW	145.07
MAX current	A	218

**Power supply 60Hz 208V Three Phase (with supplement VSS)**

Frequency	Hz	60
Voltage	V	208
Power factor	cos $\varphi$	0.8
Phases		3
Standby power LTP	kVA	200.61
Standby power LTP	kW	160.49
MAX current	A	557
Prime power PRP	kVA	181.53
Prime power PRP	kW	145.22
MAX current	A	504



<b>Engine specifications</b>		
Engine manufacturer		Perkins
Model		1106D-E70TAG3
Engine cooling system		Water
Nr. of cylinder and disposition		6 in line
Displacement	cm <sup>3</sup>	7010
Aspiration		Turbocharged
Speed governor		Electronic
Oil capacity	l	17.5
Coolant capacity	l	21
Electric circuit	V	12
VERSION SWITCHABLE [50/60Hz]		YES
ENGINE DATA	Hz	50
[50Hz] Operating Speed-Nominal	rpm	1500
[50Hz] Exhaust emission level		Stage IIIA
[50Hz] Specific fuel consumption @ 75% PRP	g/kWh	223.2
[50Hz] Specific fuel consumption @ 100% PRP	g/kWh	212.2
ENGINE DATA	Hz	60
[60Hz] Operating Speed-Nominal	rpm	1800
[60Hz] Exhaust emission optimized for EPA tier (EPA)		Tier 3
[60Hz] Specific fuel consumption @ 75% PRP	g/kWh	231.7
[60Hz] Specific fuel consumption @ 100% PRP	g/kWh	212.1



### 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 Switchable		
Brand	LEROY SOMER	
Model	LSA 46.2 M3	
Type	Brushless	
Class	H	
IP protection	23	
Winding insulation	Protection System 2	
Poles	4	
Winding leads	12	
Voltage regulation system	Electronic	
Standard AVR	R 450	
Voltage tolerance	%	0.5



### SPECIALLY ADAPTED TO APPLICATIONS

The LSA 46.2 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.
- Voltage range:
  - 50 Hz: 220 V - 240 V and 380 V - 415 V
  - 60 Hz: 208 V - 240 V and 380 V - 480 V
- 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 450

### REINFORCED MECHANICAL STRUCTURE

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

### PROTECTION SYSTEM SUITED TO THE ENVIRONMENT

- The LSA is IP 23.
- Winding Protection Standard: for clean environments with relative humidity  $\leq$  95%, including indoor marine environments.
- Winding Protection System 2: reinforced insulation for tropical environment (abrasive atmosphere), rental (except for coastal area), relative humidity  $>$  95%

### COMPLIANT WITH INTERNATIONAL STANDARDS

The LSA alternator conforms to the main international standards and regulations:

- IEC 60034, NEMA MG 1.32-33, ISO 8528-3, CSA / UL 1146 (UL 1004 on request), marine regulations, etc.

It can be integrated into a CE marked generator.

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

## Genset Equipment Rental

### CANOPY

Canopy painted in RAL9016 made up of modular panels with 1000h+ tested salt spray resistant zinc metal sheet, with access doors on each side with high quality gaskets and lockable handles for easy maintenance and service.

### SUPERSILENT

Soundproofing by means washable and fireproof soundproofing material, to get noise attenuation - max 78dB(A)@1m.

Exhaust silencer integrated in the genset shape with flat rain flap.

### BASE FRAME

Heavy duty base guarantees the highest standards of durability and resistance, painted using a high quality powder coating process (1000+h tested salt spray resistance).

Fully bundled, able to retain 110% of all the sets fluids, the base frame is provided with integrated fork pockets and pull bar for easy maneuverability and site positioning.

### FUEL TANK

Integrated metal fuel tank complete with double fuel refiling point (one each side)

### LEAK PROOF TRAY WITH DETECTOR SENSOR

Fluid leak check in the leak proof tray

### FUEL VALVE (6 WAY)

System designed for use the fuel from external tank and increase the autonomy of the generator

### LUBE OIL DRAIN PUMP

Makes it easier to the engine oil change

### SINGLE LIFTING POINT

Access easy by rung and handle incorporated (available on both sides)

### PLASTIC BUMPER

Protections for the transport and stocking

### MANUAL BATTERY SWITCH

### EARTH ROD

Earth stock with cable fixed inside the genset

### INTERNAL LIGHTING

Internal lighting with switch: for control operations or maintenance engine/alternator.

### DOCS HOLDER

Box intenal for documents, manuals and electrical drawings



Dimensional data		
Length (L)	mm	3460
Width (W)	mm	1200
Height (H)	mm	2050
Dry weight	kg	2820
Fuel tank material	kg	Metal
Fuel tank capacity	l	940



Autonomy		
[50Hz] Fuel consumption @ 75% PRP	l/h	29.72
[50Hz] Fuel consumption @ 100% PRP	l/h	37.42
[50Hz] Running time @ 75% PRP	h	31.63
[50Hz] Running time @ 100% PRP	h	25.12
[60Hz] Fuel consumption @ 75% PRP	l/h	35.13
[50Hz] Fuel consumption @ 100% PRP	l/h	42.17
[60Hz] Running time @ 75% PRP	h	26.76
[60Hz] Running time @ 100% PRP	h	22.29



Noise level Rent 50Hz (2000-14)		
Guaranteed noise level (LWA)	dB(A)	96
Noise pressure level @ 7	dB(A)	78
Guaranteed noise level (LWA)	dB(A)	67



Installation data		
[50Hz] Exhaust gas flow @ PRP	m <sup>3</sup> /min	26.4
[50Hz] Exhaust gas temperature @ LTP	°C	491
[60Hz] Exhaust gas flow @ PRP	m <sup>3</sup> /min	30.57
[60Hz] Exhaust gas temperature @ LTP	°C	440



Control panel availability	
AUTOMATIC CONTROL PANEL	ACP
MODULAR PARALLEL PANEL	MPP

**ACP - Automatic Control Panel**

Mounted on the genset, complete with digital control unit (AMF 26P) for monitoring, control and protection of the generating set, protected through doors with lockable handle.

**CONTROL SECTION**

- ON/OFF selector switch
- Emergency push button
- Differential protection with internal switch
- 5A Battery charger.
- Potentiometer for voltage adjustment (internal)
- Alternator AVR (single plug wiring)
- Internal lighting with automatic switch on control section door
- Control unit ( AC-03)
- Generating set: Voltage, Current, Frequency.
- Generating set Power (kVA - kW - kVAR - Cos φ).
- Mains: voltage.
- Hours-counter.
- Battery voltage.
- Engine speed r.p.m.
- Fuel level (%), Engine temperature, Oil Pressure

Comand 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.
- Acoustic alarm.
- RS232 Communication port.

Protections:

- Engine protections: low fuel level, low oil pressure, high engine temperature,
- Genset protection: under/over voltage, overload, under/over battery voltage, battery charger failure.
- Extra Instrumentation (analogue)
- Engine water temperature
- Engine oil pressure
- Fuel level meter
- Mechanical hour counter

**POWER SECTION**

- It integrates 4 poles modular circuit breaker suitably rated with thermal and magnetic overloads.
- Large and robust busbar (SOCOMEK Type 2) with cables passage opening from the bottom for easy power cable connection.
- Provided with safety switch to trip circuit breaker if operator open the power section door to operate on the bus bar.

**SOCKET SECTION**

- Multipin connector for LTS
- Two wires facility for remote start/stop
- Plug for auxiliary power supply
- Sochet Kit
  - 3P+N+T 400V 125A
  - 3P+N+T 400V 63A
  - 3P+N+T CEE 400V 32A
  - 3P+N+T CEE 400V 16A
  - 2P+T CEE 230V 16A
  - 230V 16A SCHUKO
- Each socket with its own circuit breaker
- Common differential protection for three phase sockets
- Each single phase provided with earth fault protection



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**MPP - Modular Parallel Panel**

Mounted on the genset, complete with digital control unit IntelliVision5 for monitoring, control, protection and load sharing for both single and multiple gen-sets operating in standby or parallel modes (up to 32 gen-sets in island).

**CONTROL SECTION**

- ON/OFF selector switch
- Emergency push button
- Differential protection with internal switch
- 5A Battery charger.
- Potentiometer for voltage adjustment (internal)
- Alternator AVR (single plug wiring)
- Internal lighting with automatic switch on control section door
- Control Unit IntelliVision5 (5,7" Colour TFT display 320x240 pixels)

**Majors Measures Available:**

- Generating set: Voltage, Current, Frequency, Hours-counter
- Generating set Power: kVA, kW, kVA<sub>r</sub>, Cos φ, kWh, kVAh.
- Mains: Voltage, Current, Frequency, kW, kVA<sub>r</sub>, Cos φ.
- Engine: Speed (r.p.m.), Temperature, Oil Pressure
- Fuel level, Battery voltage

**Comand and Others:**

- Operation modes: OFF, AMF function, Single Parallel to mains Island application, Single Parallel to Mains AMF application, Multiple parallel genset Island application.
- Pushbuttons: start/stop, fault reset, up/down/page/enter selection.
- Acoustic alarm.

**Protection:**

- 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
- Others: overcurrent, shortcircuit, reverse power, Earth fault
- Extra Instrumentation (analogue)
- Engine water temperature
- Engine oil pressure
- Fuel level meter
- Mechanical hour counter

**POWER SECTION**

- It integrates 4 poles motorized moulded case circuit breaker suitably rated with thermal and magnetic overloads
- Large and robust busbar (SOCOMEK Type 2) with cables passage opening from the bottom for easy power cable connection.
- Provided with safety switch to trip circuit breaker if operator open the power section door to operate on the bus bar.

**SOCKET SECTION**

- Multi-pin connectors for parallel running
- Multipin connector for LTS
- Two wires facility for remote start/stop
- Plug for auxiliary power supply
- Sochet Kit
  - 3P+N+T 400V 125A
  - 3P+N+T 400V 63A
  - 3P+N+T CEE 400V 32A
  - 3P+N+T CEE 400V 16A
  - 2P+T CEE 230V 16A
  - 230V 16A SCHUKO
- Each socket with its own circuit breaker
- Common differential protection for three phase sockets
- Each single phase provided with earth fault protection



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