GRW165P

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 noiseemissions together with easy-to-use and easy access for maintenance make these generator sets theideal solution for Rental companies.

Power Rating		
Frequency	Hz	50
Voltage	V	400
Phases	№	3
Power factor	cos ϕ	0.8
Standby power LTP	kVA	165.00
Standby power LTP	kW	132.00
MAX current	A	238
Prime power PRP	kVA	150.00
Prime power PRP	kW	120.00
NOMINAL current	A	217

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
Phases	№	3
Power factor	cos ϕ	0.8
Standby power LTP	kVA	165.00
Standby power LTP	kW	132.00
MAX current	A	414
Prime power PRP	kVA	150.00
Prime power PRP	kW	120.00
NOMINAL current	A	377

Power supply 60Hz 480V Three Phase (with supplement DFS)		
Frequency	Hz	60
Voltage	V	480
Phase and connection	№	3
Power factor	cos ϕ	0.8
Standby power LTP	kVA	187.77
Standby power LTP	kW	150.22
MAX current	A	226
Prime power PRP	kVA	169.81
Prime power PRP	kW	135.85
NOMINAL current	A	204

Power supply 60Hz 208V Three Phase (with supplement VSS)		
Frequency	Hz	60
Voltage	V	208
Phase and connection	№	3
Power factor	cos ϕ	0.8
Standby power LTP	kVA	179.00
Standby power LTP	kW	143.20
MAX current	A	497
Prime power PRP	kVA	163.00
Prime power PRP	kW	130.40
NOMINAL current	A	452

Engine specifications		
Engine manufacturer		Perkins
Model		1106D-E70TAG2
Engine cooling system		Water
Nr. of cylinder and disposition		6 in line
Displacement	cm³	7010
Aspiration		Turbocharged
Speed governor		Electronic
Oil capacity	l	17.5
Lube oil consumption @ PRP (max)	%	0.1
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	229.6
[50Hz] Specific fuel consumption @ 100% PRP	g/kWh	216.5
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	231.4
[60Hz] Specific fuel consumption @ 100% PRP	g/kWh	214.6

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

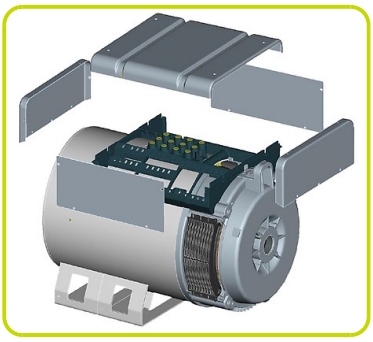
- Mounted radiator
- Thermostatically-controlled system with belt driven coolant pump and pusher fan

Alternator Specifications		
Brand		LEROY SOMER
Model		LSA 44.3 L10
Type		Brushless
Class		H
IP protection		23
Winding insulation		Protection System 2
Poles		4
Winding leads		12
Voltage regulation system		Electronic
Standard AVR		R 438
Voltage tolerance	%	1

SPECIALLY ADAPTED TO APPLICATIONS
The LSA 44.3 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 438



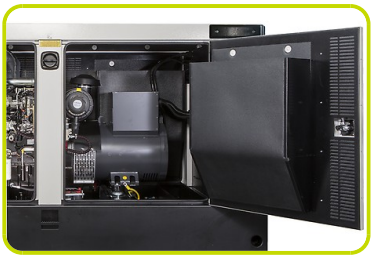
REINFORCED MECHANICAL STRUCTURE
- Compact rigid assembly to better withstand generator vibrations.
- Steel frame and terminal box.
- Aluminium flanges and shields.
- single-bearing designed to be suitable for heat engines.
- Half-key balancing bearing.
- Permanently greased bearing (20 000h).

PROTECTION SYSTEM SUITED TO THE ENVIRONMENT
- The LSA 44.3 is IP 23.
- Winding Protection Standard: for clean environments with relative humidity ≤ 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 44.3 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 44.3 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 zinced metal sheet, with access doors on each side with high quality gaskets and lockable handles for easy maintenance and service.

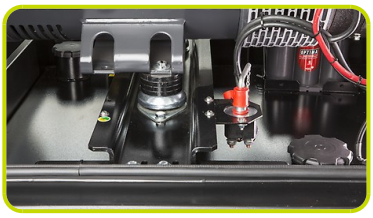


SUPERSILENT
Soundproofing by means washable and fireproof soundproofing material, to get noise attenuation - max 75B(A)@1m.
Exaust silencer integrated in the genset shape with flat rain flap.

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 bunded, 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.

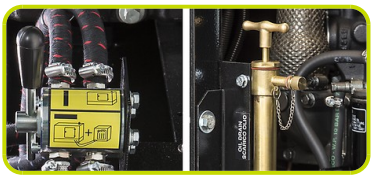
FUEL TANK
Integrated metal fuel tank complete with double fuel refiling point (one each side)

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 LIGHTHING
Internal ligthing 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	2660
Fuel tank material		Metal
Fuel tank capacity	l	940

Autonomy		
[50Hz] Fuel consumption @ 100% PRP	l/h	34.97
[50Hz] Fuel consumption @ 75% PRP	l/h	28.17
[50hz] Running time @ 75% PRP	h	33.37
[50Hz] Running time @ 100% PRP	h	26.88
[60Hz] Fuel consumption @ 75% PRP	l/h	32.77
[60Hz] Fuel consumption @ 100% PRP	l/h	39.75
[60hz] Running time @ 75% PRP	h	28.68
[60Hz] Running time @ 100% PRP	h	23.65

Noise level 50Hz (2000-14)		
Guaranteed noise level (LWA)	dB(A)	96
Noise pressure level @ 1 mt	dB(A)	78
Noise pressure level @ 7 mt	dB(A)	67

Installation data		
[50Hz] Exhaust gas flow @ PRP	m³/min	24
[50Hz] Exhaust gas temperature @ LTP	°C	513
[60Hz] Exhaust gas flow @ PRP	m³/min	28.77
[60Hz] Exhaust gas temperature @ LTP	°C	450

Control panel availability	
MANUAL CONTROL PANEL	MCP
AUTOMATIC CONTROL PANEL	ACP
MODULAR PARALLEL PANEL	MPP

MCP - Manual Control Panel

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

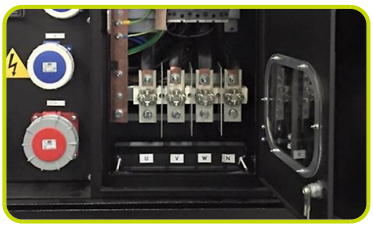
CONTROL SECTION
• ON/OFF selector switch
• Emergency push button
• Differential protection with internal switch
• 5A Battery charger.
• Potentiometer for voltage adjustment (internal)
• Alternator AVR (single plug wiring)
• Internal lighting with automatic switch on control section door

• Control unit InteliNanoNT Plus
- Biggest LCD screen
- Generating set voltage (3 phases).
- Generating set frequency.
- Generating set current (1 phases).
- Battery voltage, Service time and Running hours indication
- Remote start/stop from external signal

Protection:
- Low fuel level
- Battery charger failure
- low oil pressure
- high engine temperature

• Extra Instrumentation (analogue)
- Voltmeter with selector switch (3 phases)
- Ammeters (n.3)
- Hours-counter
- 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 (SOCOMEC 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

• Two wires facility for remote start/stop		√
• Plug for auxiliary power supply		√
• Sochet Kit		:
3P+N+T 400V 125A	n	1
3P+N+T 400V 63A	n	1
3P+N+T CEE 400V 32A	n	1
3P+N+T CEE 400V 16A	n	1
2P+T CEE 230V 16A	n	1
230V 16A SCHUKO	n	1
Each socket with its own circuit breaker		√
Common differential protection for three phase sockets		√
Each single phase provided with earth fault protection		√

ACP - Automatic Control Panel

Mounted on the genset, complete with digital control unit (AC-03) 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 (SOCOMEC 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	n	1
3P+N+T 400V 63A	n	1
3P+N+T CEE 400V 32A	n	1
3P+N+T CEE 400V 16A	n	1
2P+T CEE 230V 16A	n	1
230V 16A SCHUKO	n	1
Each socket with its own circuit breaker		√
Common differential protection for three phase sockets		√
Each single phase provided with earth fault protection		√

MPP - Modular Parallel Panel

Mounted on the genset, complete with digital control unit InteliVision5 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 InteliVision5 (5,7" Colour TFT display 320×240 pixels)

Majors Measures Available:

- Generating set: Voltage, Current, Frequency, Hours-counter
- Generating set Power: kVA, kW, kVAr, Cos φ, kWh, kVAh.
- Mains: Voltage, Current, Frequency, kW, kVAr, 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, Mulitple parallel genset Island application.
- Pushbuttons: start/stop, fault reset, up/down/page/enter selection.
- Acoustic alarm.

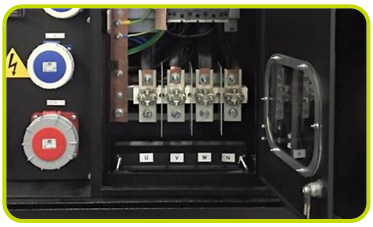
Protection:

- 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 (SOCOMEC 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.



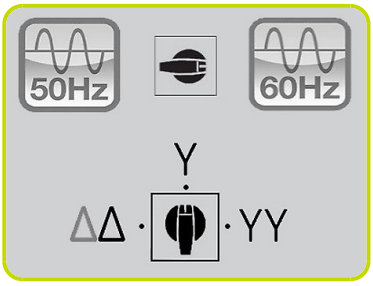
SOCKET SECTION

• Multi-pin connectors for paralle running		√
• Multipin connector for LTS		√
• Two wires facility for remote start/stop		√
• Plug for auxiliary power supply		√
• Sochet Kit		:
3P+N+T 400V 125A	n	1
3P+N+T 400V 63A	n	1
3P+N+T CEE 400V 32A	n	1
3P+N+T CEE 400V 16A	n	1
2P+T CEE 230V 16A	n	1
230V 16A SCHUKO	n	1
Each socket with its own circuit breaker		√
Common differential protection for three phase sockets		√
Each single phase provided with earth fault protection		√

Supplements:		
Only Available when order		:

GENSET CONTROL EQUIPMENT

Dual Frequency Switch (50/60Hz)	Y400/230V 50Hz Y480/277V 60Hz	DFS
Voltage Selector Switch 2 postions (only with ACP/MPP and DFS)	Y400/230V 50Hz Y480/277V 60Hz YY208/120V 60Hz	VSS1
Voltage Selector Switch 3 postions (only with ACP/MPP and DFS)	Y400/230V 50Hz Δ230V 3P 50Hz Y480/277V 60Hz YY208/120V 60Hz	VSS2
Voltage Selector Switch 2 postions (only with ACP/MPP and DFS)	Y400/230V 50Hz Δ230V 3P 50Hz Y480/277V 60Hz	VSS4



ELECTRICAL OPTION

Remote control trough IL-NT-GPRS + ANTENNA Available for	(ACP)	RCG 16
Free Voltage Contacts with module IL-NT-EFCPM2 + IR-B8 relay board	(ACP)	TLP 6
Remote control trough with InternetBridge-NT	(only with MPP)	RCG 13
Free Voltage Contacts with module IGS-PTM +IR-B8 relay board	(only with MPP)	TLP 4
Differential Protection type B		ADI-B
Insulation Monitoring Device (Replace standard differential protection)		IMD
Socket Section Customized		SPKS

MECHANICAL OPTION

Pre-heating system	PHS
Quick Fit Fuel connectors	QFC
Quick Fit Connectors inside the canopy	QFC1
Water Separator Filter	WSP
Heavy-DUTY Air Filter	HDF
Hot Parts Protections	HPP
Exhaust Spark Arestor ATEX certified	ESA
Air Shut-Off Valve	ASV
Galvanized Sliding Skid	GGS
Baseframe Bumpers	BFB

Accessories	
Items available as accessory equipment	:
RTR-B Road Trailer with Drawbar Height-Adjustable	•
RTR - Road Trailer	•
STR - Site trailer	•

LTS - LOAD TRANSFER SWITCH - Accessories ACP

Automatic under-load change-over (AC22, AC23) from and to any of positions "1", "0", "2" both electrical and manual (emergency change-over), transfer function with direct transition from position "1" to position "2" and vice versa.
• Safety: locking by padlock preventing any electrical or manual operation, key lock for the selection of electrical or manual operation.- Quick operating time from pos. "1" to "2" and vice versa.
• Easy and fast electrical connections by means of terminal blocks of quick connection type.
• Conformity to standards: IEC 60947-1 IEC 60947-3, CEI EN 60947-1 / CEI EN 60947-3IEC 439-1, CEI EN 60439-1IEC 204-1, CEI EN 60204-1, VDE 0660 Teil 107