



BULLDOG

Genmac provides one-source responsibility for the generating system and accessories.

- All units and components are prototype tested, factory build and production tested. A specific control procedure during the several stages of production ensures long life and reliability.
- Rugged 4 cycle heavy-duty Industrial diesel engine, of primary brands combine a low fuel consumption and excellent transient response.
- Powerful alternators with insulation system of H class and impregnation made with tropicalized epoxy resins, are used as standard.
- Generator set accepts one-step 100% of full load.
- Engine protection controller is supplied with auto start control system and digital instrumentation.
- Heavy-duty built-in anti-vibration insulators assures lower noise and longer components life.
- Protection guards on rotating parts
- 4 lifting eyes are supplied as standard on the canopy
- The Silent version consist of a weather-proof bolted modular pre-painted enclosure (2000/14/CE compliant) with hinged lockable doors, radiator coolant hatch, base mounted radiator coolant and engine oil drain lines. These items affords superior flexibility and ease of maintenance.
- A wide range of accessories is provided on request in order to satisfy the needs of the user and to let the generator work in almost every condition.

**RATINGS**

Model	Voltage	Phase	Hz	Power Factor	Standby KW	Standby KVA	Standby Amps	Prime KW	Prime KVA	Prime Amps	Starting KVA
G20LSM	400/230*	3	50	0.8	16.8	21	30	15.2	19	27.5	N/A

(\*) Factory default connections

**RATING DEFINITION**

**Standby Rating:** Applicable for supplying emergency power for the duration of normal power interruption limited to maximum 500h per year within the following maximum operating time: 100% load 25h per year, 90% load 200h per year.

No overload capability is permitted for this rating. "Limited Time running Power (LTP)" rating conforms to ISO 8528-1.

**Prime Rating:** Applicable for supplying power at a variable load for an unlimited number of hours per year. A 10% overload capability is available for one hour in twelve hours periods. This rating conforms to ISO 8528-1 "Prime Running Power (PRP)".

**STANDARD REFERENCE CONDITIONS:**

The above mentioned power data are calculated with: air temperature of 25°C (77°F); 99kPa of barometric pressure, 100m of altitude a.s.l and 30% of relative humidity. For different conditions please refer to the derating factor's table specific for this engine.


**INSTALLATION AND APPLICATION DATA**

	Units	50 Hz		60 Hz	
		PRP	LTP	PRP	LTP
<b>General</b>	Emission certificates	EU2002-88 STAGE2			
	Noise level (silent version)	dB(a) 7mt		69	
	Rated Speed	rpm		1500	
<b>Engine basic data</b>	Engine Brand - Model	Lombardini – LDW2204			
	Gross Engine Output	hp (KW)	N/A	40.8 (30)	
	Number and arrangement of cylinders	4 vertical in-line			
	Type of air intake	Natural			
	Type of cooling	Water-cooled			
	Total displacement	liters (cu. In.)	2.199 (134.2)		
	Bore x Stroke	mm (in.)	88 (3,46) x 90.4 (3,56)		
	Speed control	Mechanical			
	Speed drop	+- 5%			
<b>Fuel system</b>	Type of fuel	Diesel			
	Maximum Fuel Transfer Pump Lift-	m	0.5		
	Fuel consumption @ 25% load	Liters/h (gal/h)	2.3 (0.61)	2.4 (0.63)	
	Fuel consumption @ 50% load	Liters/h (gal/h)	3.4 (0.90)	3.6 (0.95)	
	Fuel consumption @ 75% load	Liters/h (gal/h)	4.4 (1.16)	4.8 (1.27)	
	Fuel consumption @ 100% load	Liters/h (gal/h)	5.5 (1.45)	6.0 (1.58)	
	Standard fuel tank capacity (open)	Liters (gal)			
	Autonomy @75% load (open)	Hours			
	Standard fuel tank capacity (silent)	Liters (gal)	95 (25)		
Autonomy @75% load (silent)	Hours	22			
<b>Oil</b>	Type of oil (for usage at std reference conditions)	SAE 15W40			
	Total Quantity of oil (including filters)	Liters (qt. )	5.7 (6.02)		
	Maximum Oil consumption	0,025 Kg/h			
<b>Coolant</b>	Type of coolant	Glicole Mixture 50% Antifreeze – 50% demineralized water			
	Total quantity of coolant	Liters (qt)	N/A		
<b>Air system</b>	Air filter type	Dry Element			
	Max. perm. intake vacuum	kPa (in.H2O)	N/A		
	Combustion air flow	m <sup>3</sup> /min (cf/min)	N/A	3.3 (116.5)	
<b>Exhaust system</b>	Exhaust flow	m <sup>3</sup> /min (cf/min)	N/A	128 (4520)	
	Max. permissible exhaust backpressure	kPa	N/A		
	Outlet size diameter	mm	50		
<b>Electrical system</b>	Voltage of electric system	V	12		
	Starter motor capacity	A	N/A		
	Type of battery	Lead acid type			
<b>Alternator</b>	Number of poles	4			
	Number of bearings	1			
	Excitation	Self excited			
	Type of regulation	Compound			
	Voltage accuracy	± 10%			



**STANDARD EQUIPMENTS**

**ENGINE**

- Air Cleaner (Dry-cartridge type)
- Fuel Pump
- Fuel Filter
- Fuel stop solenoid
- Dry Exhaust Manifold
- Coolant Radiator - Unit Mounted
- Electric Starting Motor
- Housing & Flywheel
- Charging Alternator
- Battery Rack & Cables
- First filling of oil and filters
- Glow plugs

**GENERATOR**

- Self-ventilated and drip-proof construction
- Synchronous, Self Exciting , Self Regulating
- Direct Coupled With Flex Disk
- Class H Insulation
- Drip-Proof Construction
- Radio Interference Suppressor EMC Filter

**EXHAUST**

- Built-in Residential Muffler (for Silent generators)
- Rain Cap

**HANDLING**

- Lifting and holding down points

**BASE FRAME**

- Heavy duty fabricated welded base plate with high quality steel.
- Heavy duty rubber anti-vibration mountings
- Integrated fuel tank with drain plug and fuel sender

**ELECTRICAL SYSTEM**

- **Battery (for 50Hz is supplied as standard, for 60Hz is to be ordered separately)**
- Battery rack and cables
- Engine driven battery charger

**CANOPY (for silent units)**

- Nylon hinges
- Heavy duty lockable handles in each door
- Large doors for easy access for service and monitoring
- Coolant refilling specific hatch
- Sound foam UL94HF1 compliant
- Modular bolted assembly after painting.
- Grey RAL 7035 "orange peel" specific powder coat paint for outdoor usage
- Weatherproof sealed joints.
- Cut using high precision laser technology.
- Bent using high precision numeric control technology.
- Glazed acoustic sealed control panel door.
- Fuel filler outside enclosure.
- In base oil and coolant drains

**CONTROL PANEL (see specific section below)**

- AMF controller TE208
- Single phase sensing for voltage and currents
- **Circuit breaker (for 50Hz-230/400V is supplied as standard, for other voltages is to be ordered separately)**
- On/Off button
- Emergency stop button
- External ATS connection board
- EC Conformity in compliance with EN 60439-1

**PACKAGING**

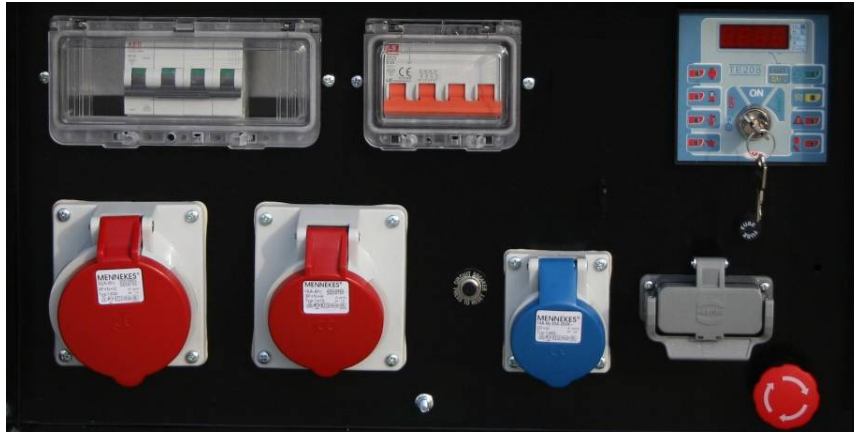
- Nylon filming protection package
- Alternator, Engine and Generating set operator's manual are supplied together with electrical drawings

**PHYSICAL DATA**

	Units	Bulldog G20LSM
Length	mm (in.)	1801 (70.9)
Width	mm (in.)	700 (27.6)
Height	mm (in.)	950 (37.4)
Weight	Kg (lbs)	600 (1320)



## CONTROL PANEL



### CIRCUIT BREAKER

**50Hz – 400V generators** are supplied together with a circuit breaker that permits a thermal protection against overloads and magnetic protection against short-circuit.

For **60Hz or 50Hz-230V** versions the circuit breaker has to be ordered separately indicating the voltage at which the generator has to work. All the generator of this line are fully re-connectable according to the specification indicated in the "RATINGS BOOK"

### AUXILIARY SOCKETS

A special box with 1 three phase 400V 32A socket and 1 three phase 400V 16A socket and 1 single phase 230V 16A socket is supplied in order to ease the fast connection between the generator and the electrical line or between the generator and the loads.

### QUICK CONNECTOR FOR REMOTE START

A 10 pin IP54 female socket is supplied in order to connect easily the generator to an external device for remote start and stop. When not in use the connector is tightly closed with a cap.

### COMMANDER-C208

C208 is controller that includes a sophisticated digital multi-meter, a starting key and an engine protection card with auto-start feature. That can be easily connected to an external ATS with logic.

The main features of the controller are:

- Clear simple and intuitive graphics.
- Quality materials for safe operation and over time life.
- Simple use. Nothing to plan, simply turn the key to start and then everything is managed and controlled by the control unit. A special control avoids attempts to start with the engine already started.
- Simple and direct connection, because the main command relays (start, stop, siren and glow-plus preheating) are already mounted on the unit.
- Checking status of the battery through digital voltmeter.
- Start by signal remote attempts 5 starters, glow-plus pre-heating management and alarm signal in starting failure event. A particular system can start the engine by remote signal with key OFF. This saves to keep the circuit fed unnecessarily to the detriment of battery.

#### Display Informations

- Vdc – Battery voltage
- H – Counting hours
- Vac – Alternator voltage
- A - Ampère
- F – Frequency (Hz)

#### Alarms

- Alternator battery charger
- Fuel reserve
- High temperature engine
- Low oil pressure
- Runaway engine speed
- Emergency Stop
- Glow-plugs pre-heating signal
- Engine started signal



## OPTIONAL EQUIPMENTS

A wide range of optional equipments are available to satisfy all the needs of the installer. Please contact GenMac's sales department for full details of these and other options

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### ENGINE

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- Starting aids (coolant heaters-oil heaters ..)
- Double-stage filters

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### GENERATOR

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- Thermal protections
- Anti-condensation heaters
- Special treatment for usage in marine environmental conditions
- Full power alternator for single phase connection

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### EXHAUST

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- Exhaust adapters
- Extension exhaust hose
- FAP filters

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### ELECTRICAL SYSTEM AND CONTROL PANEL

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- Auxiliary sockets and plugs
- Fuel level meter
- Oil pressure meter
- Water temperature meter
- Generator Monitoring/Remote control of complete system (with analog, GSM or Ethernet connection)
- Automatic Transfer Switches

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### HANDLING AND CANOPY

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- Central lifting hook
- Slow drive trailers
- On-road Trailers
- Bigger Fuel tanks
- Double wall UL compliant fuel tanks
- Precision fuel sender

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### MAINTENANCE

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- Consumable Filters and spares for each maintenance interval

## WARNINGS

- Access to control panel and doors on both sides for inspection and maintenance is required.
- Adequate ventilation on both sides is required.

## WARRANTY

Please refer to GenMac's warranty policy described into WG001 module.

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All Specifications and Materials are subject to change without prior notice.

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