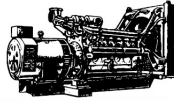


PROUDLY 100% AUSTRALIAN OWNED

**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](http://www.macfarlanegenerators.com.au) info@macgen.com  
Macfarlane Generators PTY. LTD. ACN 006 849 074 ABN 74 006 849 074

**GSW-22P**



### Main Features

Frequency	Hz	50
Voltage	V	400
Power factor	cos $\phi$	0.8
Phase and connection		3

### Power Rating

Standby power LTP	kVA	21.50
Standby power LTP	kW	17.20
Prime power PRP	kVA	20.10
Prime power PRP	kW	16.08

### Ratings definition (According to standard ISO8528 1:2005)

#### PRP - Prime Power:

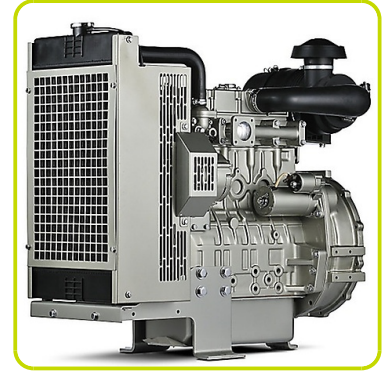
It is defined as being the maximum power which a generating set is capable of delivering continuously whilst supplying a variable electrical load when operated for an unlimited number of hours per year under the agreed operating conditions with the maintenance intervals and procedures being carried out 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	404D-22G	
[50Hz] Exhaust emission level	Stage IIIA	
Engine cooling system	Water	
Nr. of cylinder and disposition	4 in line	
Displacement	cm <sup>3</sup>	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

Alternator	Mecc Alte	
Model	ECP28-M/4	
Voltage	V	400
Frequency	Hz	50
Power factor	cos $\phi$	0.8
Type	Brushless	
Poles	4	
Voltage regulation system	Electronic	
Standard AVR	DSR	
Voltage tolerance	%	1
Efficiency @ 75% load	%	87.8
Class	H	
IP protection	23	

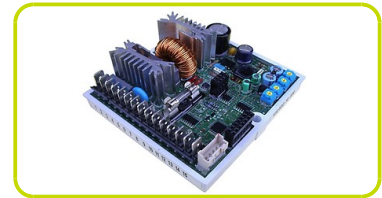


### Mechanical structure

Robust mechanical structure which permits easy access to the connections and components during routine maintenance check-ups.

### Voltage regulator

Voltage regulation with DSR. The digital DSR controls the range of voltage, avoiding any possible trouble that can be made by unskilled personnel. The voltage accuracy is  $\pm 1\%$  in static condition with any power factor and with speed variation between 5% and +30% with reference to the rated speed.



### Windings / Excitation system

Generator stator is wound to 2/3 pitch. This eliminates triplen (3rd, 9th, 15th ...) harmonics on the voltage waveform and is found to be the optimum design for trouble-free supply of non-linear loads. The 2/3 pitch design avoids excessive neutral currents sometimes seen with higher winding pitches. MAUX (Standard): The MAUX MeccAlte Auxiliary Winding is a separate winding within the main stators that feeds the regulator. This winding enables to take an overload of 300% forced current (short circuit maintenance) for 20 seconds. This is ideal for motor starting requirements.

### Insulation / Impregnation

Insulation is of class H standard. Impregnation is made with premium tropicalised epoxy resins by dipping and dripping. High voltage parts are impregnated by vacuum, so the insulation level is always very good. In the high-power models, the stator windings undergo a second insulation process. Grey protection is applied on the main and exciter stator to give enhanced protection.

### Reference standards

Alternator manufactured according to , and complies with , the most common specification such as CEI 2-3, IEC 34-1, EN 60034-1, VDE 0530, BS 4999-5000, CAN/CSA-C22.2 No14-95-No100-95.

## 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 plated 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 screws 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
- Efficient residential silencer placed inside the canopy



### Dimensional data

Length	(L) mm	1800
Width	(W) mm	850
Height	(H) mm	1260
Dry weight	Kg	715
Fuel tank capacity	l	68



### Autonomy

Fuel consumption @ 75% PRP	l/h	3.98
Fuel consumption @ 100% PRP	l/h	5.28
Running time @ 75% PRP	h	17.09
Running time @ 100% PRP	h	12.88

### Noise level

Guaranteed noise level (LWA)	dB(A)	87
Noise pressure level @ 7 mt	dB(A)	58



### Installation data

Exhaust gas flow @ PRP	m <sup>3</sup> /min	3.64
Exhaust gas temperature @ LTP	°C	445

### Data Current

Battery capacity	Ah	70
MAX current	A	31.03
Circuit breaker	A	32

### Control panel availability

AUTOMATIC CONTROL PANEL	ACP
-------------------------	-----

## ACP - Automatic control panel

Mounted on the genset, complete with digital control unit AC03 for monitoring, control and protection of the generating set, protected through door with lockable handle

### DIGITAL INSTRUMENTATION (through AC-03)

- Generating set voltage (3 phases)
- Mains voltage
- Generating set frequency
- Generating set current (3 phases)
- Battery voltage
- Power (kVA - kW - kVAr)
- Power factor Cos  $\phi$
- 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 27/03/2017 (ID 5888)

©2016 | PR INDUSTRIAL s.r.l. | All rights reserved | Image shown may not reflect actual package. Specifications subject to change without notice

