GSW170V

Main Features		
Frequency	Hz	50
Voltage	V	400
Power factor	cos ϕ	0.8
Phase		3

Power Rating		
Standby power LTP	kVA	164.00
Standby power LTP	kW	131.20
Prime power PRP	kVA	154.94
Prime power PRP	kW	123.95

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.

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Engine specifications		
Engine manufacturer		Volvo
Model		TAD731GE
[50Hz] Exhaust emission level		Stage II
Engine cooling system		Water
Nr. of cylinder and disposition		6 in line
Displacement	cm³	7150
Aspiration		Turbocharged intercooled
Speed governor		Mechanical
Prime gross power PRP	kW	138
Maximum gross power LTP	kW	153
Oil capacity	l	20
Lube oil consumption @ PRP (max)	%	0.10
Coolant capacity	l	23.8
Fuel		Diesel
Specific fuel consumption @ 75% PRP	g/kWh	216
Specific fuel consumption @ PRP	g/kWh	215
Starting system		Electric
Starting engine capability	kW	9
Electric circuit	V	12

ENGINE EQUIPMENT

Standards

The engine performance corresponds to ISO 3046, BS 5514 and DIN 6271. Power output guaranteed within 0 to +2% att rated ambient conditions at delivery. Ratings are based on ISO 8528. Engine speed governing in accordance with ISO 3046/IV, class A1 and ISO 8528-5 class G3

Engine and block

• Optimized cast iron cylinder block with optimum distribution of forces
• Drop forged steel connecting rods
• Keystone top compression rings for long service life
• Replaceable valve guides and valve seats

Fuel system

• Washable fuel prefilter with water separator
• Fine fuel filter of disposable type
• Rotary low-pressure fuel pump

Lubrication system

• Rotary displacement oil pump driven by the crankshaft
• Deep centre oil sump – Oil filler on top – Oil dipstick, short in front
• Integrated full flow oil cooler, side-mounted– Integrated full flow oil cooler, side-mounted

Cooling system

• Belt driven, maintenance-free coolant pump with high degree of efficiency
• Efficient cooling with accurate coolant control through a water distribution duct in the cylinder block
• Reliable thermostat with minimum pressure drop

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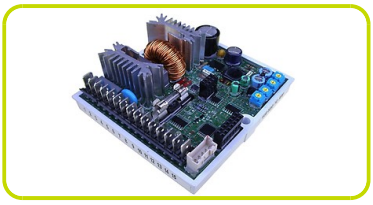
Alternator Specifications		
Alternator		Mecc Alte
Model		ECP34-2L
Voltage	V	400
Frequency	Hz	50
Power factor	cos ϕ	0.8
Poles		4
Type		Brushless
Standard AVR		DSR
Voltage tolerance	%	1
Efficiency @ 75% load	%	93.5
Class		H
IP protection		23

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 ±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.

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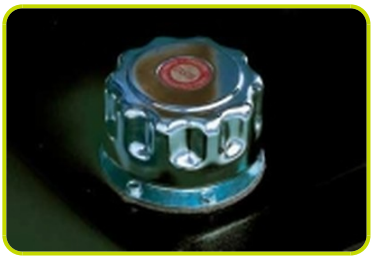
Genset equipment

BASE FRAME MADE OF WELDED STEEL PROFILE, COMPLETE WITH:

- Steel base frame with support legs
- Anti-vibration mountings properly sized
- Grounding point to connect all metal parts of the generating set

FUEL TANK WITH THE FOLLOWING COMPONENT:

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



PROTECTIONS:

- Moving and rotating parts protection against accidental contacts.

ENGINE COMPLETE WITH:

- Battery
- Liquids (no fuel)

EXHAUST (Standard):

- Industrial silencer (loose)

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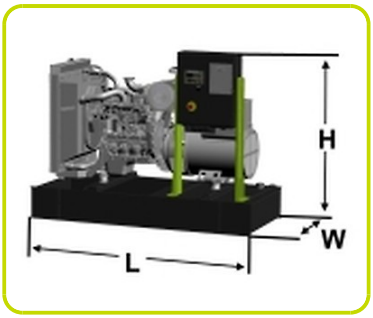
Dimensional data		
Length	(L) mm	2600
Width	(W) mm	1000
Height	(H) mm	1743
Dry weight	Kg	1704
Fuel tank capacity	l	240
Fuel tank material		Metal



Autonomy		
Fuel consumption @ 75% PRP	l/h	26.85
Fuel consumption @ 100% PRP	l/h	35.32
Running time @ 75% PRP	h	8.94
Running time @ 100% PRP	h	6.80

Installation data		
Exhaust gas flow @ PRP	m³/min	27.5
Exhaust gas temperature @ LTP	°C	540

Electrical Data		
Battery capacity	Ah	140
MAX current	A	236.72
Circuit breaker	A	250

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

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MCP - Manual control panel

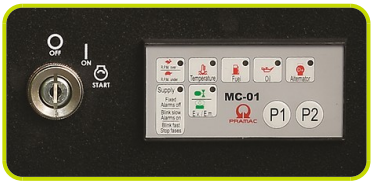
Mounted on the genset and complete of: instrumentation, control, protection of the generating set.

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



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

OUT PUT PANEL MCP

Power cables connection to Circuit Breaker.	√

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ACP - Automatic control panel

Mounted on the genset, complete with digital control unit for monitoring, control and protection of the generating set.

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.

OUT PUT PANEL ACP

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

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MPP - Modular parallel panel

Mounted on the genset, complete with digital control unit IG-NTC 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).

DIGITAL INSTRUMENTATION (through IG-NTC control unit)
- Mains: voltage, Intensity, Frequency.
- Mains kW - kVAr -Power factor Cos f.
- Generating set voltage (3 phases).
- Generating set frequency.
- Generating set current (3 phases).
- Generating set Power (kVA - kW - kVAr).
- Generating set Power factor Cos f.
- Generating set kWh and kVAh.
- Battery voltage.
- Hours-counter.
- Engine speed r.p.m.
- Fuel level (%).
- Engine temperature (depending on model).
- Oil pressure (depending on model).

COMMAND AND OTHERS
- Graphical display 128x64 pixels.
- Operation modes: OFF - AMF function - Single Parallel to mains Island application - Single Parallel to Mains AMF application - Multiple parallel genset Island application.
- Pushbutton for forcing Mains Breaker/contactor or Genset Breaker/contactor.
- Push-buttons: start/stop, fault reset, up/down/page/enter selection.
- Multiple parallel and Power Management operation with digital load AVR sharing.
- Automatic synchronizing and power control (via speed goveroner or ECU)
- Baseload Import/Export and Peak shaving
- Voltage and PF control (AVR).
- Configurable digital I/O (12/12) and analogue inputs (3).
- Integrate PLC programmable functions.
- Event-based history (up to 500records).
- Selectable measurement range 120/277V and 0-1/0-5A.
- Remote starting and Blocking signal availability.
- DC system disconnection switch.
- Acoustic alarm.
- Automatic battery charger.
- 2xRS232/RS485/USB Comunication ports.
- Settable PASSWORD for protection level.

PROTECTION WITH ALARM AND SHUTDOWN
- 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

OTHERS PROTECTION:
- Circuit breaker protection: IV poles Motorized.
- Emergency stop button.

OUT PUT PANEL MPP

Multi-pin connectors (in and out) for parallel with other generators	n	2
Connecting cable with 2 connectors multipin (length 10m)	n	1
External terminal board		ETB

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Supplements:	
To be ordered with the equipment	:

CONTROL PANEL SUPPLEMENT

RCG - Various supplements for remote controls - available for models:	ACP MPP
TLP - Various supplements for remote signals - available for models:	ACP MPP
ADI - Adjustable Differential Intensity - available only for models:	ACP
TIF - IV Poles Circuit Breaker instead of III - available for models:	ACP MCP

GENSET EQUIPMENT

AFP - Automatic Fuel Pump	ACP MPP

ENGINE SUPPLEMENTS

PHS - Coolant Pre-Heating System - available for models:	ACP MPP
EEG - Engine Electronic Governor	•

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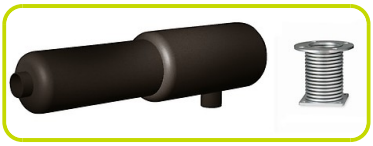
Accessories

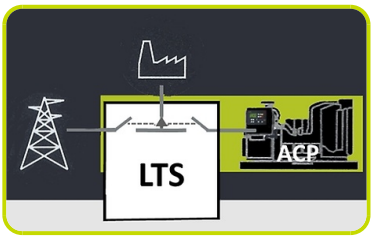
Items available as accessory equipment

FEC - Flexible Exhaust Compensator Bellow and flanges

RES - Residential silencer



LTS - Load Transfer Switch [Accessories for ACP Automatic Control Panel]



The Load Transfer Switch (LTS) panel operates the power supply changeover between the generator and the Mains in backup applications, guarantying the feeding to the load within a short period of time.
It consists of a standalone cabinet which can be installed separate from the generating set. The logic control of the power supply changeover is operated by means of the Automatic Control Panel (ACP) mounted on the generating set, so therefore none logic device is required on the LTS panel.

LTS Type ATyS_D:

- Box type: steel enclosures
- Installation mode: Wall mounted <400A; Floor Standing =>630A
- Door: Hinged door closed with double barb locking.
- Ingress Protection: IP43
- Gland Plates: Removable on the top & bottom side
- Connections: Bottom/Bottom
- Motor unit
- Gland Plates: Removable on the top & bottom side
- Connections: Bottom/Bottom
- Motor unit
- Switch position indicator
- Auto/Manual cover selector
- Housing for manual handle
- Padlocking mechanism
- Two side by side mounted load break switches
- Poles 4
- Double coils self-powered
- Voltage (coils): 208/277VAC (Tolerance+/-20% 166/333VAC)
- Frequency 50 & 60HZ
- Interface ATyS D10, fixed on the door for the status indication: Two lights to indicate the voltage presence of the grid and the diesel generator; Two lights for the switch position; Functionality mode (auto/manual) and cover protection IP65.
- *Compliant with IEC 60947-3, EN 61439-6-1 and GB 14048-11*

LTS SUPPLEMENTS AVAILABLE ON REQUEST:

- ***ESB -*** *Emergency Stop Button (installed on the panel front)*
- ***APP*** *- Additional IPXXB Protection (internal plexiglass)*

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