

Main Features

| | | |
|----------------------|------------|-----|
| Frequency | Hz | 50 |
| Voltage | V | 400 |
| Power factor | cos ϕ | 0.8 |
| Phase and connection | | 3 |

Power Rating

| | | |
|-------------------|-----|--------|
| Standby power LTP | kVA | 653.03 |
| Standby power LTP | kW | 522.42 |
| Prime power PRP | kVA | 592.91 |
| Prime power PRP | kW | 474.33 |

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

| | | |
|--------------------------------------|--------------------------|--------|
| Brand | Volvo | |
| Model | TAD1642GE | |
| Version | 50 Hz | |
| Exhaust emission level | Stage II | |
| Engine cooling system | Water | |
| Nr. of cylinder and disposition | 6 in line | |
| Displacement | cm ³ | 16120 |
| Aspiration | Turbocharged intercooled | |
| Speed governor | Electronic | |
| Operating Speed-Nominal | rpm | 1500 |
| Continuous gross power COP | kW | 360 |
| Prime gross power PRP | kW | 514 |
| Maximum gross power LTP | kW | 565 |
| Oil capacity | L | 48 |
| Lube oil consumption @ PRP (max) | % | 0.1 |
| Coolant capacity | L | 93 |
| Fuel | Diesel | |
| Specific fuel consumption @ 100% COP | g/kWh | 195 |
| Specific fuel consumption @ 75% PRP | g/kWh | 195 |
| Specific fuel consumption @ PRP | g/kWh | 198 |
| Starting system | Electric | |
| Starting engine capability | kW | 7 |
| Electric circuit | V | 24 |
| Fuel consumption @ 100% COP | L/h | 83.31 |
| Fuel consumption @ 75% PRP | L/h | 89.85 |
| Fuel consumption @ 100% PRP | L/h | 121.16 |



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
- Wet, replaceable cylinder liners
- Crankshaft induction hardened bearing surfaces and fillets with seven bearings for moderate load on main and high-end bearings
- Keystone top compression rings for long service life
- Replaceable valve guides and valve seats
- Tapered connecting rods for increased piston lifetime
- Over head camshaft and four valves per cylinder

Fuel system

- Electronic unit injectors
- Fuel prefilter with water separator and water-in-fuel indicator / alarm
- Fine fuel filter with manual feed pump and fuel pressure switch

Lubrication system

- Full flow oil cooler
- Full flow disposable spin-on oil filter, for extra high filtration
- Gear type lubricating oil pump, gear driven by the transmission

Cooling system

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

Alternator Specifications

| | | |
|-----------------------|--------------|------|
| Brand | Mecc Alte | |
| Model | ECO40-1.5L/4 | |
| Class | H | |
| IP protection | 21 | |
| Poles | 4 | |
| Frequency | Hz | 50 |
| Frequency tolerance | % | 0.5 |
| Voltage tolerance | % | 1 |
| Power factor | cos ϕ | 0.8 |
| Efficiency @ 75% load | % | 94.6 |
| Standard AVR | DER1 | |


Mechanical structure

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

Voltage regulator

Voltage regulation with DER 1. The digital DER 1 is a Digital controlled regulator, based on DSP (Digital Signal Processor) that combines function as Voltage Regulation and Alternator Protections and Diagnostic into a very small single board.

Voltage supply: 40Vac±270Vac

Maximum continuous output current: 4Adc

Frequency range: 12Hz±72Hz

Single phase sensing automatic recognition

Average value of voltage regulation

Voltage regulation range (sensing) from 75Vac to 300Vac

Precision of voltage regulation: ± 1% from no-load to nominal load in static condition, with any power factor and for frequency variations ranging from -5% to +20% of the nominal value.

Precision of voltage regulation: ± 0,5% in stabilized conditions (load, temperature).

Transient voltage drop and overvoltage within ± 15%

Voltage recovery time within ± 3% of the value set, in less than 300 msec.

Underspeed protection with adjustable threshold and slope

Overvoltage and undervoltage alarms

Excitation overcurrent protection with delayed intervention

Alarm conditions storage (type of alarm, number of events, duration of the last event, total time)

Memorization of the regulator operation time


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. PMAUX (optional): Alternator can be equipped with the optional PMAUX (Permanent Magnet Generator) which matches the performance and is capable of supporting both linear and distorted loads.

Insulation / Impregnation

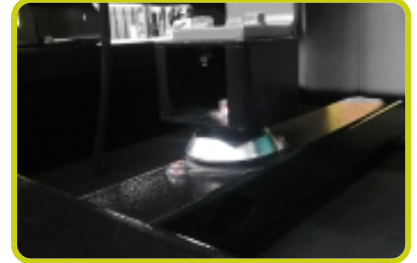
Insulation is of class H standard. Impregnation is made with premium tropicalised epoxy resins by dipping and dripping. High voltage parts are impregnated by vacuum, so the insulation level is always very good. In the high-power models, the stator windings undergo a second insulation process. Grey protection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

Reference standards

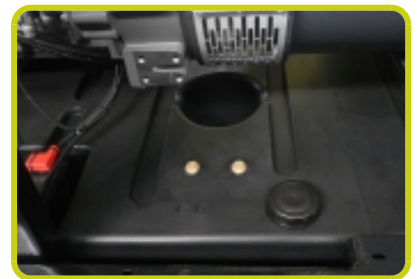
Alternator manufactured according to , and complies with , the most common specification such as CEI 2-3, IEC 34-1, EN 60034-1, VDE 0530, BS 4999-5000, CAN/CSA-C22.2 No14-95-No100-95.

Genset equipment**BASE FRAME MADE OF WELDED STEEL PROFILE, COMPLETE WITH:**

- Anti-vibration mountings properly sized
- Welded or Screwed support legs. (according to canopy size)

**PLASTIC FUEL TANK WITH THE FOLLOWING COMPONENT:**

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

**MANUAL OIL DRAININ PUMP:**

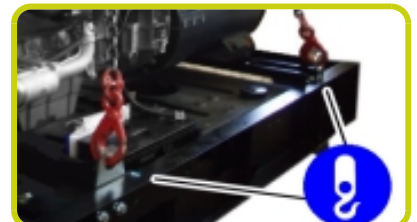
- Oil draining facilities

**ENGINE COMPLETE WITH:**

- Battery
- Liquids (no fuel)

**PROTECTIONS:**

- Moving and rotating parts protection against accidental contacts

**LIFTING:**

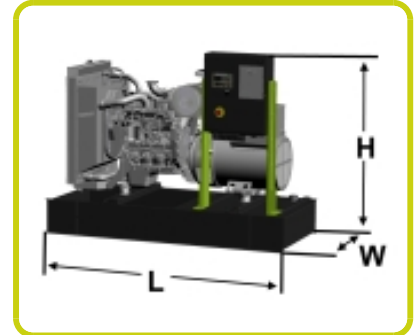
- Lifting points frame structure.

**EXHAUST (STANDARD):**

- Industrial silencer (loose)

Dimensional data

| | | |
|--------------------|--------|------|
| Length | (L) mm | 3500 |
| Width | (W) mm | 1500 |
| Height | (H) mm | 2120 |
| Dry weight | kg | 3680 |
| Fuel tank capacity | L | 636 |

**Autonomy**

| | | |
|-------------------------|---|------|
| Running time @ 75% PRP | h | 7.08 |
| Running time @ 100% PRP | h | 5.25 |

Installation data

| | | |
|-------------------------------|---------------------|--------|
| Total air flow | m ³ /min | 407.00 |
| Exhaust gas flow @ PRP | m ³ /min | 94.4 |
| Exhaust gas temperature @ LTP | °C | 482 |

Data Current

| | | |
|------------------|----|--------|
| Battery capacity | Ah | 180 |
| MAX current | A | 942.59 |
| Circuit breaker | A | 1000 |

Control panel availability

| | |
|-------------------------|-----|
| AUTOMATIC CONTROL PANEL | ACP |
| MODULAR PARALLEL PANEL | MPP |

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 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.

| | |
|--|----------|
| Predisposed for remote control optional: | RCG |
| External Terminal Board (ETB) | Standard |
| Socket kit | Optional |



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 governor 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.
- Setable 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 |
| ETB External terminal board | | ETB |



Supplements:

Only Available when order _____ :

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 |



Socket kit

| | |
|---|-----|
| Kit SKB or Kit SKC (for total n. 4 socket) - available for model: | ACP |
| Individual CB and Earth Fault protection | |
| 400V/63A 3P+N+T CEE | n 1 |
| 400V/32A 3P+N+T CEE | n 1 |
| 230V/16A SCHUKO | n 1 |
| With version SKB: | |
| 400V/16A 3P+N+T CEE | n 1 |
| With version SKC: | |
| 400V/125A 3P+N+T CEE | n 1 |



GENSET EQUIPMENT

| | |
|--|---------|
| LPT - Leak Proof Tray | |
| AFP - Automatic Fuel Pump - available for models: | ACP MPP |
| KRT- Kit Rental for HEI gensets which includes: 3-way fuel valve, battery switch | |

ENGINE SUPPLEMENTS

| | |
|--|---------|
| PHS - Coolant Pre-Heating System - available for models: | ACP MPP |
|--|---------|

Accessories

Items available as accessory equipment

RES - Residential silencer

FEC - Flexible Exhaust Compensator Bellow and flanges

LTS - LOAD TRANSFER SWITCH - Accessories ACP

Load Transfer Switch panel complete with:

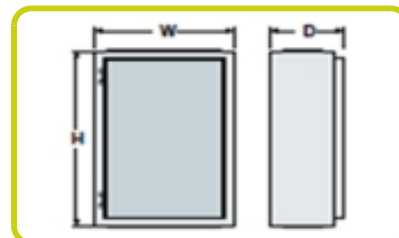
- Two layers motorized change-over switch 4pole made by means of two switch disconnectors mechanically interlocked.
- Automatic under-load change-over (AC22, AC23) from and to any of positions "1", "0", "2" both electrical and manual (emergency change-over), transfer function with direct transition from position "1" to position "2" and vice versa.
- Front display of positions "1", "0", "2" by digital display and mechanical indicator.
- 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 60947-3 IEC 439-1, CEI EN 60439-1 IEC 204-1, CEI EN 60204-1, VDE 0660 Teil 107
- Signalling lamps for MAINS SUPPLY or GENSET SUPPLY.
- Manual selector switch for power supply manual selection: MAINS – AUTO – GENSET



NOMINAL CURRENT & DIMENSIONS PANEL LTS (standard*)

| | | |
|-----------------|--------|------|
| Nominal Current | A | 1000 |
| Width | (W) mm | 1000 |
| Height | (H) mm | 800 |
| Depth | (D) mm | 450 |

* = Available electrical power more



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