

# Technical specifications

## Diesel Prime Gensets

# QES 320

Voltage: 400/230 V

Frequency: 50HZ



Genset Image for illustration purposes only

## TECHNICAL INFORMATION

<b>Standby Power (ESP)</b>	kVA	355
	kW	284
<b>Prime Power (PRP)</b>	kVA	323
	kW	259
<b>Mechanical structure</b>	Soundproofed	
<b>Engine</b>	VOLVO TAD 1341 GE	
<b>Alternator</b>	MECC ALTE ECO38-3L	
<b>Control card</b>	DEEP SEA 7320 MKII	
<b>Measures (L x W x H)</b>	mm	4.580 x 1.570 x 2.235
<b>Empty weight</b>	kg	4.620
<b>Fuel tank</b>	L	590
<b>Acoustic pressure, LpA</b>	dB(A) a 7	70
<b>Acoustic power LwA</b>	dB(A)	97

Voltages	Prime Power (PRP)		Standby Power (ESP)	
	(kVA)	(kW)	(kVA)	(kW)
380/220	323	259	355	284
400/230	323	259	355	284
415/240	323	259	355	284

### Notes:

PRIME POWER: Electrical power data available at a variable load without limits of hours per year. An overload of 10 % is allowed for 1 hour of every 12. In accordance with ISO 8528/1 (2005) – PRP

STANDBY POWER: Electrical power data at variable load in an emergency in accordance with standard ISO 8528/1 (2005) – ESP. Overloads of emergency power are not allowed.

The standard reference conditions are: 25 °C, 100 kPa and 30% relative humidity. Gasoil density: 0.85 g/cm3. Gasoline density: 0.68 g/cm3.

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We reserves the right to modify any characteristic of their equipment without prior warning.

Photographs representing the product range, while able to include options.

Weight and dimensions of a standard generator set.

Non-contractual document

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## GENERAL DESCRIPTION

Specifically developed for the construction and general rental industries, this mobile soundproof generator set is easy to use and straightforward to maintain. The available features & options are designed to fully meet the requirements of generalist construction & rental applications. The controller provides advanced engine monitoring and protection features. Performance and maintenance requirements can also be observed. It's the practical Predictable Power choice.

## ENGINE

13 litre series VOLVO diesel 4 stroke engine, with turbo and rear cooling, with direct injection and engine regulation via electronic management.

<b>Engine brand</b>	VOLVO	<b>Stroke (mm)</b>	158
<b>Model</b>	TAD 1341 GE	<b>Compression ratio</b>	18,1:1
<b>R.P.M.</b>	1.500	<b>Type of regulation</b>	Electronic Mgmt.
<b>Net power (kWm)</b>	275	<b>Engine communication protocol</b>	VOLVO EMS2-2
<b>Fuel</b>	Diesel	<b>Europe exhaust emission</b>	EU2
<b>No. of cylinders</b>	6 L	<b>EPA exhaust emission</b>	EPA2
<b>Engine Capacity (c.c.)</b>	12.780	<b>TA-Luft exhaust emission</b>	TA-Luft 1/2
<b>Bore (mm)</b>	131		

### Cooling System

Cooling of the sleeves using cooling fluid comprised of water and glycol at 50% in a closed circuit driven by the engine pump.

Engine driven exhaust fan, radiator and expansion tank; original from the engine manufacturer.

The circuit is completed with the cooling purge system towards the outside of the bedplate and protections of all running surfaces

<b>Flow of air from fan (m<sup>3</sup>/min)</b>	330	<b>Coolant capacity (l)</b>	44
<b>Cooling type</b>	Water	<b>Design temperature radiator (°C)</b>	55°C
<b>Coolant heater power (W)</b>	1 x 1000W		

### Lubrication System

Gear pump lubrication system driven by the engine and with original engine manufacturer lubricant filtering system.

It is completed by an outward purge circuit by means of a manual purge pump.

<b>Oil capacity (l)</b>	36	<b>Maximum oil consumption (% fuel consumption)</b>	0,0
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### Air intake system

Air intake system for combustion with filtering device and filter change indicator; originals from the engine manufacturer. Intake air cooling after the turbo by means of an air/air exchanger.

<b>Intake air flow (m<sup>3</sup>/min)</b>	23	<b>Air inlet filter type</b>	Medium
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### Exhaust System

The exhaust system consists of aluminized pipes, stainless steel flexible pipes, interior and exterior aluminized steel exhaust silencer that is highly resistant to corrosion and rain cap. Hot part protections are also included.

<b>T<sup>a</sup> gas emission (°C)</b>	405	<b>Inlet diameter (")</b>	6
<b>Gas flow (m3/min)</b>	49	<b>Body diameter (mm)</b>	611
<b>Number of exhaust</b>	1	<b>Exhaust length (mm)</b>	1.350
<b>Outlet diameter (")</b>	7,6	<b>Atenuattion (dB(A))</b>	26

### Start system

Start system that uses an electrical motor, battery, battery disconnecter and battery charge alternator that is driven by the engine itself. The start motor and the battery charge alternator are originals from the engine manufacturer.

Lead acid battery with Spiralcell® recombining technology, sealed structure to prevent leaks, maintenance free, large start-up capacity maintaining the voltage due to its low internal resistance and small volume thanks to its rolled plates design that guarantees it will withstand many discharges with large temperature changes.

<b>Starter voltage system (V)</b>	24	<b>Battery type</b>	2 x 12V 44Ah - 730A
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### Fuel supply system

The fuel system consists of a fuel tank, feed pump, water separator fuel filter including 30 microns filtering element, injection pump and injection nozzles.

The fuel tank is made from plastic to prevent rust and includes a filling connection to the canopy outdoor filling connection, a cleaning hatch and draining plug for easier maintenance. The fuel level is controlled thanks to a fuel level sensor with an analogue gauge mounted in the control cubicle.

<b>Fuel tank capacity (L)</b>	590
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### Fuel consumption panel (range according to the standard configuration)

Load	Prime Power (PRP)		Standby Power (ESP)	
	(l/h)	Range (h)	(l/h)	Range (h)
25%	19	31	21	29
50%	33	17,7	36	16,3
75%	48	12,2	53	11,2
100%	63	9,4	69	8,5

## ALTERNATOR

Mecc Alte alternator with 4 poles, with a lifetime lasting greased bearing, H class insulation, without brushes, 2/3 coil and AVR (Automatic Voltage Regulator)

Protection of all the windings by means of 2-part high quality polyester resin impregnation. The stator windings receive a double impregnation. Final finish with a coat of EG43 varnish.

Excitation system with MAUX auxiliary winding with overload capacity 3 times the nominal current for 20 s.

Joining of engine and alternator through flexible disc coupling.

Regulations:

- CEI 2-3
- IEC 34-1
- EN 60034-1
- VDE 0530
- BS 4999-5000
- CAN/CSA-C22.2 No14-68-No100-95
- ISO 8528:3

Low wave distribution:

- THC < 4%
- THD < 4%
- THF (IEC) < 2%
- TIF (NEMA) < 40

Incorporates electromagnetic emissions suppressor in accordance with standard VDE 0875, class K.

<b>Brand</b>	MECC ALTE	<b>Voltage Stability</b>	±1%
<b>Model</b>	ECO38-3L	<b>Performance at 75% p.f. 0.8 (%)</b>	95
<b>Alternator Power (kVA)</b>	350 / Continuous (H)	<b>Performance at 100% p.f. 0.8 (%)</b>	94
<b>Number of wires</b>	12	<b>Direct subtransient reactance X''d (%)</b>	9,4
<b>IP Alternator</b>	IP 23	<b>Subtransient time constant, T''d (ms)</b>	12,7
<b>Excitation system</b>	MAUX	<b>Zero sequence reactance, Xo (%)</b>	2,2
<b>AVR model</b>	DSR	<b>Short-circuit ratio, Kcc</b>	0,4

## ▪ ELECTRIC PANEL

Circuit Breaker rated current (A)	CVS630F 4P4D 36kA	
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## Control Card

DEEP SEA control plate, DSE 7320 with grid monitor that starts-up the generator set when it detects a failure in the electrical power supply from the grid and sends a signal to the switching panel to switch from the grid position to the group position. Once the power supply has been re-established, it sends an order to the switching panel to transfer the generator set power to the grid and shuts-down the generator set once it has cooled down. It also starts-up the generator set using an external signal.

Also, control plate DSE 7320 checks a large number of parameters of the generator set which allows it to display information, statuses and alarms. If required, it will shutdown the generator set: Due to high coolant fluid temperature, low oil pressure, low coolant fluid level, etc.

Includes a 132x64 pixel LCD screen with lighting, 5 navigation menubuttons, independent operational mode buttons, and alarms and status indicating LEDs.

Communications via USB, RS232, RS485, as well as DSEnet® for system upgrade. Possibility of Ethernet connection (requires a separate module). MODBUS protocol available for client software. Completely configurable using a PC in Windows environment and free Scada type software in real time.

Includes reading and displaying of parameters with RMS values, real time clock, events history log up to 250 events and programming of alarms, events, start-ups and shutdowns.

Operating modes: START-UP, SHUTDOWN, AUTO, MANUAL AND TEST.

### Generator

- Generator voltage (L-N)
- Generator voltage (L-L)
- Generator frequency
- Generator current
- kW
- kVA
- kWh
- kVAh
- Power factor

### Grid

- Grid voltage (L-N)
- Grid voltage (L-L)
- Grid frequency

### Engine

- Turn speed
- Cooling fluid temperature
- Oil pressure
- Hour meter
- Battery voltage
- No. of start-ups
- Fuel level

### Protections

- Start-up fault (generator set shutdown)
- High coolant temperature (alarm and generator set shutdown)
- Low oil pressure (alarm and generator set shutdown)
- Low fuel level (alarm)
- Low cooling fluid level (generator set shutdown)
- Overload (alarm and generator set shutdown)
- Battery voltage high (alarm)
- Battery voltage low (alarm)
- Battery charge alternator failure (alarm)
- Generator low frequency (alarm and shutdown)
- Generator high frequency (alarm and shutdown)
- Generator low voltage (alarm and shutdown)
- Generator high voltage (alarm and shutdown)
- External emergency shutdown (shutdown)
- Engine overspeed (shutdown)
- Maintenance interval (alarm)



## ▪ ATS

Optional cabinet for switching between the grid and the generator set by means of a Socomec brand motorized switch with an integrated mechanical and electrical interlocking device.

Allows for the padlock locking function. Includes a Manual / Automatic mode selector and emergency manual control.

Safety switching for isolating the loads. High dynamic resistance against short-circuits.

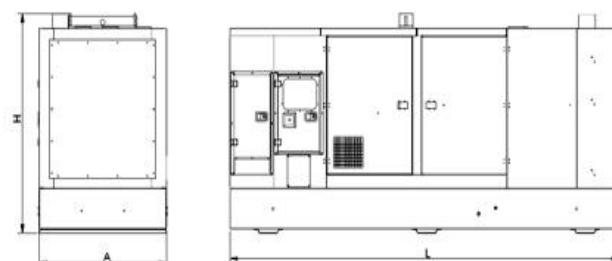
Position indicator with fully visualized cut-off. Stable positions not affected by changes in voltage and mechanical vibrations. External electrical control of the positions and test sequences.

High number of operations. IP54 protection. Connections: Lower/lower.

<b>ATS</b>	4P 630A 160-333V L-N CCM
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## ▪ DIMENSIONS AND WEIGHT

<b>Length, L (mm)</b>	4.580
<b>Width, A (mm)</b>	1.570
<b>Height, H (mm)</b>	2.235
<b>Weight (kg)</b>	4.620



## ▪ PERFORMANCE CLASS

Execution class in accordance with ISO 8528/5 (2005) taking into account the behaviour of the generator set in a permanent mode of operation with different load levels, as well as in a temporary mode of operation due to shocks in the load.

<b>Performance class</b>	G3
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## ▪ REGULATION

The generator set has a CE Marking that includes the following directives:

- 2006/42/EC Machine Safety.
- 2006/95/EC Low Voltage.
- 2004/108/EC Electromagnetic compatibility.
- 97/68/EC Gases and contaminating particles emissions.
- 2005/88/EC Noise emissions of machines outdoors in soundproof generator sets.

Applicable international regulations:

- ISO 8528
- ISO 3046
- BS 5000
- IEC 60034