

# QAS 60 S5

## Mobile Generator



### Standard Scope of Supply

The Atlas Copco **QAS 60 S5** generator is a prime power, sound attenuated, mobile generator. It is powered by a FPT Stage V liquid-cooled, four-cylinder diesel engine. The units consist of an alternator, diesel engine, cooling system, electrical distribution and control systems - all enclosed within a sound attenuated enclosure fabricated from powder coated steel.

Special attention has been given to the overall product quality, user friendliness, ease of serviceability, and economical operation to ensure best in class total cost of ownership.

The QAS range is feature-packed and comes with the ruggedness and reliability you demand from a generator. However, some features set the QAS apart – they help operators to meet their sustainability targets while enabling significant business advantages.

These generators feature an innovative design that meets the strictest environmental regulations and helps end-users to optimize their operational performance. Thanks to their high resilience in fast and easy connection, these models are unrivaled when it comes to flexibility. The QAS range is “Plug-and-Play” (multiple sockets, power locks, terminal board), features easy fast connections for fuel and urea (fuel valve, automatic refueling system, automatic urea transfer system), Fleetlink Telemetry, and a simple paralleling capability. Your need for power can be ever changing.

QAS range’s modular design focuses on connecting multiple generators most simply– making an installation that optimizes efficiency. Also, the built-in Power Management System (PMS) enables the optimization of fuel consumption and expands the generators’ lifetime.

### Standard Features

- Compact, sound attenuated, corrosion resistant, with single point lifting and 110% fluid containment
- Heavy Duty alternator with AREP+ excitation, 3-phase Digital AVR D350 and additional grade protection
- Easy service with long run filters and 600-hour service intervals
- FPT F34 Stage V engine
- DOC+DPF-exhaust after treatment
- Earth Leakage Relay
- Emergency Stop
- Dual Frequency
- Remote signal Start / Stop

### Benefits

- Extremely durable and environmentally sensitive, designed to be used for everything from the oil field to special event power
- Start-up power for the most demanding sites with 270% over load starting capabilities
- Heavy duty oil, air and fuel filters extend the maintenance interval to 600 hours for reduced total cost of ownership
- Proven engine platform with high reliability and durability
- No SCR, no AdBlue
- Indirect contact protection for user safety
- External, recessed emergency stop for increased safety
- Improve genset versatility with possibility of 60Hz application
- Allows connection as a critical back-up unit via a 2-wire dry contact connection in the distribution panel

## Technical Data<sup>1</sup>

Generator	Units	QAS 60 S5
Rated frequency (1)	Hz	50   60
Rated voltage (2)	V	400   480
Prime power (PRP)	kVA / kW	60/48   59/47
Rated standby power (ESP)	kVA / kW	60/48   59/47
Power factor cos φ		0,8
Rated current (PRP)	A	86   71
Single step load capability (G2) acc. ISO-8528/5	%	100   100
Operating temperature (min/max)	°C	-15 / 50
Alternator Model		LEROY SOMER TAL 042H
Rated output (ESP 27°C   40°C)	kVA	66   80
Degree of protection / insulation class		IP 23 / H
Excitation type / AVR model		AREP+ / D350
Sound power level (LwA)	dB(A)	90
Sound pressure level (LpA) at 7m	dB(A)	62

Engine	Units	QAS 60 S5
Model		FPT F34TEVP01
Emission compliance		Stage V
Speed	rpm	1500   1800
Rated net power (with fan)	kW <sub>m</sub>	54   53,6
Aspiration		Turbocharged and air-to-air aftercooled
Speed control		Electronic
Number of cylinders		4L
Coolant		Parcool
Swept volume	l	3,4
Exhaust gas after treatment system		EGR+DOC+DPF
Combustion system		Direct Injection
Capacity of oil sump : - Initial fill	l	8
Capacity of cooling system	l	58
Maximum permissible load factor during 24h period	%	70
Electrical system (DC)	V	12
Battery Capacity (Cold Cranking Amps)		

Fuel System	Units	QAS 60 S5
Fuel Consumption @ 0% load	l/h	1.9
Fuel Consumption @ 50% load	l/h	7.1
Fuel Consumption @ 75% load	l/h	9.8
Fuel Consumption @ 100% load	l/h	13.0
Fuel Type		Diesel
Fuel Tank Capacity	l	220
Fuel Autonomy @ 75% load <sup>8</sup>	h	22
Fuel Autonomy @ 100% load <sup>8</sup>	h	17
DEF Tank Capacity	l	N/A

1 All ratings are at a reference condition of 0' altitude and 25°C

2 Please see receptacle voltage configuration in Power Distribution section on page #5

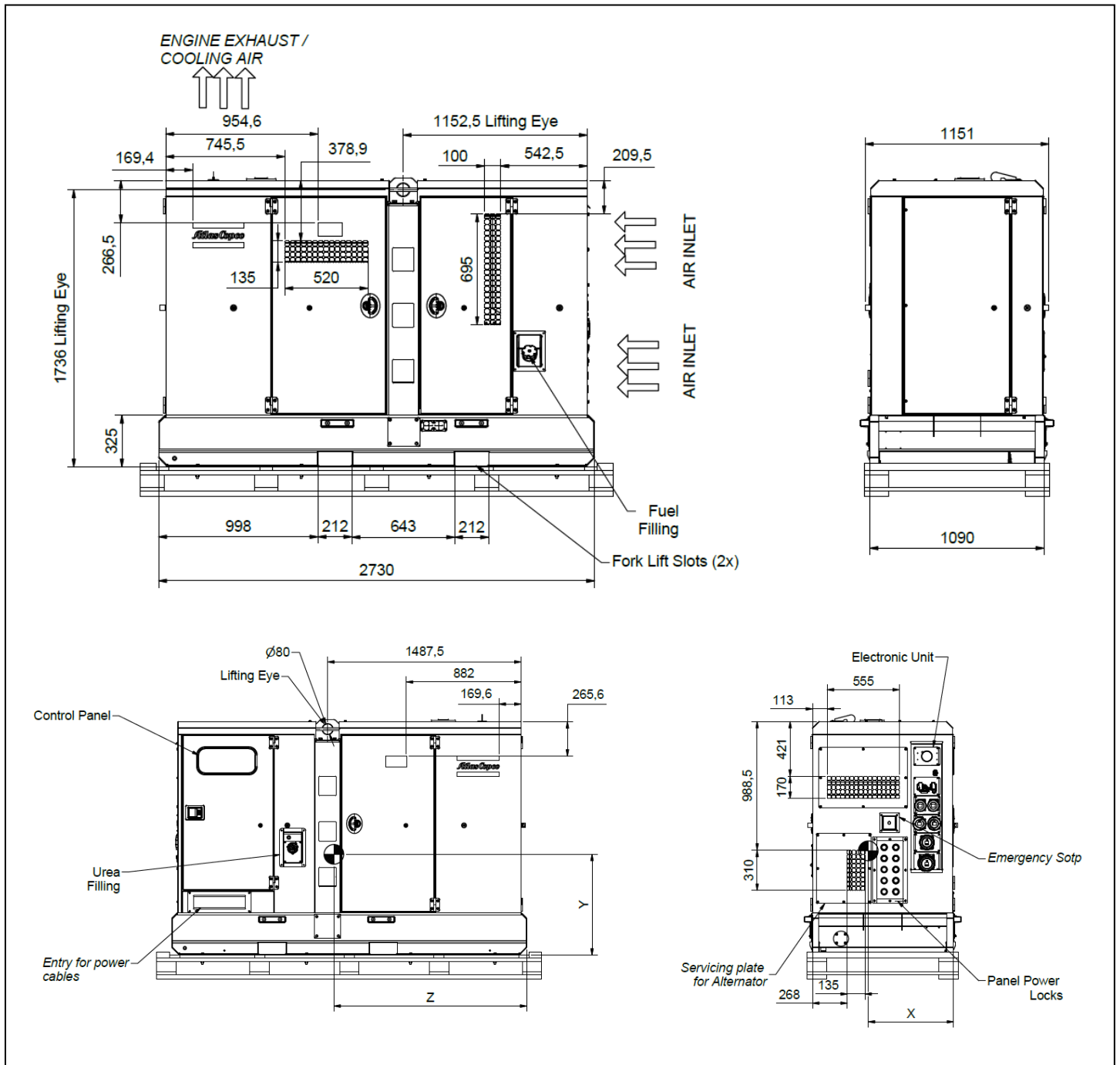
3 Engine oil to meet CJ-4 (low ash oil)

4 Please see "Derate Table" for altitude and temperature calculations on

5 Engine and emissions require the use of Ultra Low Sulfur Diesel in accordance to ASTM-D975 Grade No.1-D S15 & No.2-D S15

Dimensions

Drawing



**Weight - Wet (ready to operate)**

Net / Wet mass

**Units**

kg

**QAS 60 S5**

1670 / 1870

**Dimensions**

Standard fuel tank (L x W x H)

m

2.73 x 1.1 x 1.795

Main Data

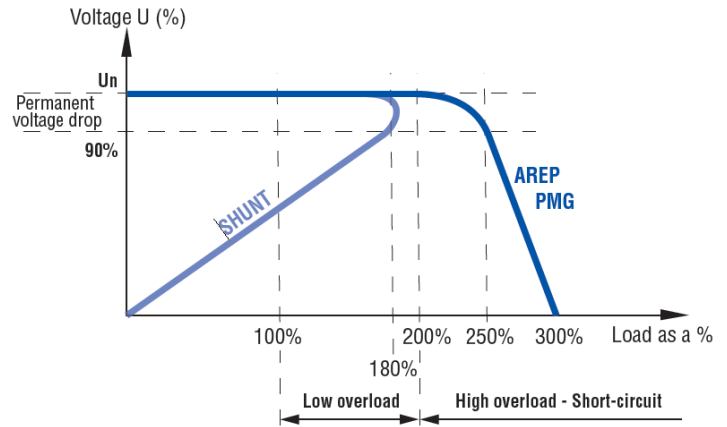
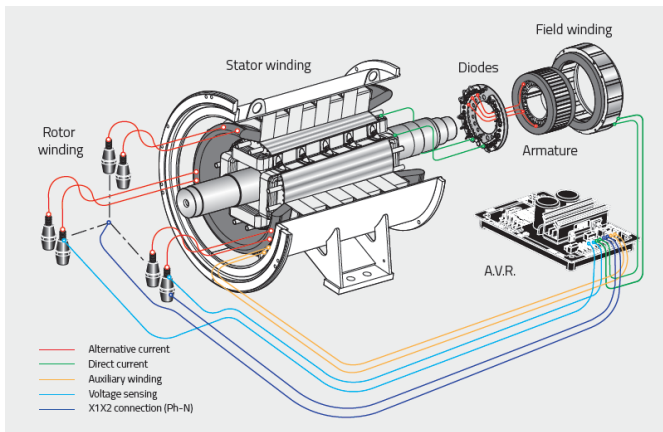
Alternator

The Leroy Somer TAL alternators are designed for heavy duty continuous applications, with system 2 winding protection and Leroy Somer's AREP+ excitation system.

- AREP+ Excitation for superior motor starting capabilities
- System 2 (relative humidity >95%) protection
- 4 pole brushless design with single bearing, Class H insulation and IP23 rating
- Voltage regulation +/- 1%
- Full Load acceptance of prime power rating

The new AREP+ system by Leroy-Somer uses the output voltage of the main stator as supply voltage and a single auxiliary winding inserted in selected slots of the main stator for booster effect. The combination of these two sources is then used to power the regulator, thus combining the power of a traditional SHUNT system with the reliability and control level of an AREP system. Under the same conditions, more power is taken to supply the regulator, which improves the excitation capabilities.

The AREP+ system improves the electrical performance of equipped machines, especially during transient short circuit, load shedding or load impact phases. As a result, the starting kVA performances are improved by up to 30% depending on generator model (vs a standard AREP system). This level of performance is decisive when generators are used to start electric motors. The AREP+ system gives the alternator a high short circuit capability



Performance @ Altitude and High Ambient Conditions

When using at altitude and high ambient conditions the engine and alternator will de-rate as per chart below.

derating factor %		temperature (°C)											
		0	5	10	15	20	25	30	35	40	45	50	
height (m)	0	100	100	100	100	100	100	100	100	100	100	100	98
	500	100	100	100	100	100	100	100	100	100	100	100	98
	1000	100	100	100	100	100	100	100	100	100	100	100	98
	1500	97	97	97	97	97	97	97	97	97	97	97	95
	2000	94	94	94	94	94	94	94	94	94	94	94	92
	2500	91	91	91	91	91	91	91	91	91	91	91	89
	3000	88	88	88	88	88	88	88	88	88	88	88	86

## Power Distribution

The cubicle incorporates all power distribution, controls, sensing and protection devices.

- ✓ Current transformer x 3 (1 each leg)
- ✓ Single main breaker w/shunt trip
- ✓ Individual breakers for each socket
- ✓ Sockets panel located on outside of unit for easy access
- ✓ Terminal board for hard wiring
- ✓ PowerLocks external quick connect
- ✓ External emergency stop switch (recessed)
- ✓ Neutral bonded to Ground with a removable bonding link accessible in the control cubicle

## Sockets and Power locks panel



Five Slots of sockets available (only 4 if the genset has a synchronizing/paralleling controller)

In each slots several sockets can be selected from the below list.

- ✓ CEE 5P 125A 400V
- ✓ CEE 5P 63A 400V -
- ✓ CEE 5P 32A 400V
- ✓ CEE 5P 16A 400V
- ✓ Single phase 3P 16A CEE 230V
- ✓ Single phase 3P 32A CEE 230V
- ✓ Single phase 3P 16A PIN 230V
- ✓ Single phase 3P 16A RIM 230V

It is also available an individual earth leakage protection per socket or type A or type B.

Sockets can also be combined with 1 or 2 rows of 400Amps Power locks.

## Controller - Standard

The QAS 60 S5 comes equipped with a Qc1212 control module. This is a fully diagnostic ECU controller with large 3" display, that is intuitive and easy to operate with all functions conveniently at your fingertips. The controller also manages the engine ECU operating system, and several safety warnings and shut downs on various parameters (listed below).

The controller is powered by a main On/Off switch located next to display.

### Qc1212 Controller Functionality:

#### Home Page (displayed while running, scrolling every 3seconds)

- ✓ Generator voltage (ph-ph)

#### Status Page

- ✓ Generator voltage (ph-N)
- ✓ Generator voltage (ph-ph)
- ✓ Generator frequency
- ✓ Generator kw
- ✓ Generator power factor
- ✓ Generator amperage

#### Generator Page

- ✓ Generator current (A)
- ✓ Generator earth current
- ✓ Generator load (kW)
- ✓ Generator load (kVA)
- ✓ Generator power factor
- ✓ Generator load (kVAR)
- ✓ Generator load (kWh, kVAh, kVArh)
- ✓ Generator phase sequence
- ✓ Dual mutual status

#### Event Page

- ✓ Displays the last 15 events

#### Remote Start/Stop

- ✓ Automatic start/stop via 2 wire dry contact connection

#### Operational Buttons

- ✓ Start button
- ✓ Stop button
- ✓ Automatic mode (external remote start)
- ✓ Up/Down arrows

#### Info Page

- ✓ Model number
- ✓ USB identification number
- ✓ Configured engine type
- ✓ Module's date and time
- ✓ Scheduler setting

#### Engine Page

- ✓ Engine speed
- ✓ Oil pressure
- ✓ Coolant temperature
- ✓ Engine battery volts
- ✓ Run Time
- ✓ Oil Temperature
- ✓ Fuel Temperature
- ✓ Turbo Pressure
- ✓ Fuel Pressure
- ✓ Fuel Consumption
- ✓ Fuel Used
- ✓ Fuel Level
- ✓ Auxiliary Sensors
- ✓ Engine Maintenance Due
- ✓ Engine ECU Link

#### Engine DTC Page

- ✓ This page contains any active Diagnostic Trouble Codes that the engine ECU is currently generating. These alarms are conditions detected by the engine ECU and displayed on the DSE controller.



## Controller - Optional

As an option, The QAS 60 S5 comes with the Qc4004 controller with a capacitive touch screen. This is a fully diagnostic ECU controller with large 7" diagonal (800 x 480 pixel) touch screen display that is intuitive and easy to operate with all functions conveniently at your fingertips. The controller also manages the engine ECU operating system, and a number of safety warnings and shut downs on various parameters.

Additionally, our Power Management System (PMS) enables the optimization of fuel consumption and expands the generator lifetime. PMS manages the quantity of generators running in parallel with load demand, starting and stopping units in line with increases or decreases in load. This ensures the demand on each generator remains at a level which optimizes fuel consumption. This also eliminates the need for generators to run with low load levels, which can cause engine damage and shorten the life expectancy of the equipment.

### Qc4004 Controller Benefits:

#### Modular Plant Capacity

- ✓ The Qc4004 controller allows up to 32 generators to be coupled in parallel to fit the power requirement of any application.

#### Remote communication capability

- ✓ The Qc4004 supports serial communication protocols including Modbus (RS-485, USB, and TCP/IP) and Profibus allowing you to supervise and control your genset/plant remotely.

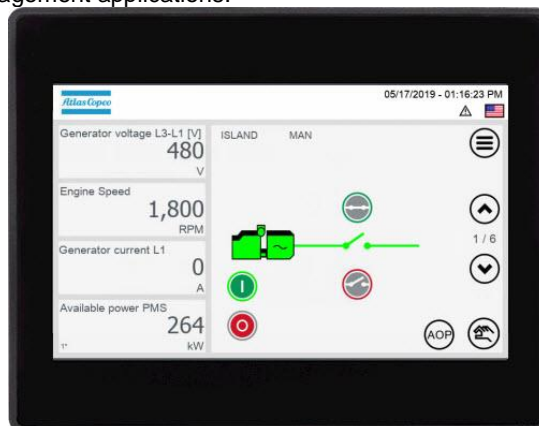
#### User friendly rental interface

- ✓ Rental companies will benefit from the standardized user interfaces. The controller has been designed with ease of operation in mind, and rental companies can easily set and lock parameters to ensure full protection of their equipment.

### Available Modes:

- ✓ **Island mode** - Power plant with synchronizing generators or a stand-alone generator. Also applicable in critical power plants.
- ✓ **Automatic Mains Failure** - Critical power/emergency standby plants, black start generator.
- ✓ **Fixed power** - Power plant with fixed kW set point (including building load).
- ✓ **Peak shaving** - Power plant where generator supplies peak load demand paralleled to the mains.
- ✓ **Load takeover** - Plant mode where the load is moved from mains to generator, for example peak demand periods or periods with risk of power outages.
- ✓ **Mains power export** - Power plant with fixed kW set point (excluding building load).
- ✓ **Remote maintenance** - Used when the generator must supply the load while a distribution transformer is disconnected for service. (as an additional option)

\* All modes are configurable, and it is possible to change the plant mode on the fly both in single and in power management applications.





## Engine

### FPT

FPT Stage V, turbo charged, intercooled, four-cylinder, liquid-cooled diesel engine provides ample power to operate the generator continuously at full-load.

The engine has Exhaust Gas Recirculation Valve, Diesel Oxidation Catalyst and Diesel Particulate Filter to meet with European Stage V emission directive.

All functionality of the engine is monitored automatically on the controller.

The engine has the capability to start the generator at -15°C with standard scope of supply. Cold weather option is available for machine starting for down to -25°C.

The engine operates on a 12V negative ground electrical system with a charging alternator and lockable battery cut-off switch.

The cooling system is suitably designed for continuous operation in ambient conditions up to 40°C with canopy door closed.

### Fuel System

The fuel tank provides safe diesel storage while eliminating tank corrosion contaminants from being introduced to your fuel system. With integrated fuel water separator and filter, the system is designed to help maintain clean and trouble-free diesel supply to the engine for reliable trouble-free operation.

- ✓ Pad-lockable diesel fill cap
- ✓ Fuel / Water separator
- ✓ Fuel pre-filter
- ✓ Fuel level sensor
- ✓ Low fuel shut down feature
- ✓ External fuel connections w/3-way valve and quick couplings

### Scheduled maintenance

Standard equipped with filters sized and designed to allow 600-hour service intervals under normal operating conditions. Extended time between services reduces down time and total cost of ownership of the unit over its lifetime.

#### 600 Hour Service Interval:

- ✓ Oil filter
- ✓ Fuel filter
- ✓ Fuel / water separator

#### 1200 Hour Service Interval:

- ✓ Air filter
- ✓ Oil filter
- ✓ Fuel filter
- ✓ Fuel / water separator

NOTE: Site specific operating conditions such as; poor fuel quality and low load profile may require more frequent service intervals.

## Enclosure & Frame

The generator enclosure is designed for extreme applications to provide superior performance and reliability.

The enclosure is fabricated from coated steel which is powder coated for corrosion resistance. The enclosure and frame are fully sealed from the radiator to the back of the unit, providing a true 110% containment of all fluids.

- ✓ Zinc rich primer, powder coated enclosure
- ✓ Heavy duty base frame
- ✓ 110% fluid containment
- ✓ Superior level of rain ingress protection and design features
- ✓ Pad-lockable doors and fuel cap
- ✓ Engine fluid plumbed to exterior of frame for ease of service
- ✓ Central lifting point
- ✓ Sound dampening material and design to allow quiet operation



## Options available

- Oil drain pump
- Coolant heater
- Cold weather
- High capacity fuel tank
- External Fuel Tank Connections
- Automatic refueling system
- Battery Charger
- Trailer homologated

## Benefits

- Make easiest and fastest the oil draining process % over load starting capabilities
- Maintain engine temperature at optimal level in order to improve load acceptance.
- Allows to use and start the genset in lower temperature condition
- Ability to provide extended running hours without external tank
- Ability to provide extended running hours with external fuel tank
- Ability to provide extended running hours maintaining the day tank at optimal level with external fuel tank
- Insures the batteries are always ready for starting
- Allows towing of the genset to construction site

## Manufacturing & Environmental Standards

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The **QAS 60 S5** is manufactured following stringent ISO 9001 regulations, and by a fully implemented Environmental Management System fulfilling ISO 14001 requirements.

Attention has been given to ensure minimum negative impact to the environment.

The **QAS 60 S5** meets current European Stage V directive.

## Supplied Documentation

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The unit is delivered with documentation regarding:

- Hard copies of the Engine Manual, alternator manual, wiring diagram in English, Atlas Copco Operators Safety and Instruction Manual
- CE certificate and Test certificate