

Technical Data

Q3 Series

Gas Engine - Generating Set specification

Basic technical data

Number of cylinders 3
 Cylinder arrangement Vertical in-line
 Cycle Four stroke
 Induction system Turbocharged
 Compression ratio 13 : 1
 Bore 105 mm (4.13 in)
 Stroke 127 mm (4.99 in)
 Cubic capacity 3.3 litres
 Direction of rotation Clockwise view from front
 Firing order 1,2,3

Estimated total weight (including radiator and mounting brackets)

Total weight (engine only)
 -dry 398kg
 -wet 416kg

Overall dimensions

-height 1050mm
 -length 1010mm
 -width (including mounting brackets) 640mm

Moment of inertia (mk²)

Engine rotational components 0.141 kgm²
 Flywheel 1.14 kgm²

General Installation

Q3.3TSI

35.3 kWm @ 1500 rev/min

38.3 kWm @ 1800 rev/min

Centre of gravity (wet)

- forward from rear of block 215mm
 - above centre line of block 120mm
 - offset of RHS of centre line 25mm

Test conditions

Air temperature 25 °C
 Barometric pressure 100 kPa
 Relative humidity 30%

If the engine is to operate in ambient conditions other than those of the test conditions, suitable adjustments must be made for these changes. For full details, contact Quantum Technical Service Department.

Designation	Units	Type of Operation			
		Prime	Stand-by	Prime	Stand-by
		Hz	Hz	Hz	Hz
		1500	1500	1800	1800
Gross engine power	kWm	31.9	36.2	35.1	40.0
Brake mean effective pressure	kPa	773	878	710	807
Engine coolant flow 35 kPa restriction	l/min	48	48	88	88
Combustion air flow	m ³ /min	2.5	2.9	3.1	3.7
Exhaust gas flow (max)	m ³ /min	5.5	6.3	6.6	7.5
Exhaust gas outlet temperature (max at standby)	°C	503	496	486	476.2
Cooling fan air flow (200kPa external restriction)	m ³ /min	53	53	70	70
Overall thermal efficiency (net)	%	35.6	36.4	34.6	35.5
Genset electrical output	kWe	28	32	31	35
	kVA	35	40	39	55
Power factor		0.8	0.8	0.8	0.8
Actual alternator efficiency	%	90.4	90.4	91.8	91.5
Fuel consumption	m ³ /hr	8.8	9.8	9.8	10.9
Energy balance					
Power in fuel (Fuel heat of combustion)	kW	87.1	97.0	96.7	107.8
Power output (gross)	kW	31.9	36.2	35.1	40.0
Power to cooling fan	kW	0.9	0.9	1.7	1.7
Power output (net)	kW	31.0	35.3	33.4	38.3
Power to coolant and lubricating oil	kW	22.2	24.8	26.8	27.4
Power to exhaust	kW	23.5	26.7	27.6	31.3
(Recoverable power, exhaust cooled to 120 °C)	kW	18.6	21.0	21.5	24.0
Power to radiation	kW	9.5	9.2	7.2	9.2

Caution: The airflows shown in this table will provide acceptable cooling for an open power unit operating in ambient temperatures of up to 53 °C (127 °F) or 46 °C (114.8 °F) if a canopy is fitted. If the power unit is to be enclosed totally, a cooling test should be done to check that the engine cooling is acceptable. If there is insufficient cooling, contact Quantum Technical Service Department.

Cooling System

Radiator

- face area 0.28 m²
 - rows and materials single row aluminium
 - matrix density and material 12.5 aluminium fins/inch
 - width of matrix 526 mm
 - height of matrix 524 mm

Fan

- diameter 457mm
 - drive ratio 0.85:1
 - number of blades 7
 - material Composite
 - type Pusher

Coolant

Total system capacity
 - with radiator 10.2 litres
 - without radiator 4.4 litres
 Maximum top tank temperature 105 °C
 Thermostat operating range 82 - 93 °C

Recommended coolant: 50 % ethylene glycol with a corrosion inhibitor (BS 658 : 1992 or MOD AL39) and 50% clean fresh water.

Electrical system

Type Negative ground
 Alternator voltage 12 V
 Starter motor voltage 12 V
 Starter motor power 3.2 kW
 Number of teeth on flywheel 126
 Pull in current of starter motor solenoid 60 amps
 Hold in current of starter motor solenoid 15 amps

Cold start recommendations

Minimum cranking speed 80 rev/min

Battery Requirement

Min. 1 x 643 12V battery (BS3911 440CCA / SAE J537 660CCA)

Exhaust system

Maximum back pressure
 - 1500 rev/min 10 kPa
 - 1800 rev/min 15 kPa
 Exhaust outlet size 56 mm

Fuel System

Type of carburettor CV diaphragm mixer
 Throttle actuator Electrical controlled butterfly
 Gas supply pressure min 25 mbar *
 * For supply pressure below this value, please contact Quantum Technical Dept. for advice.
 Installation of gas supply and shut-off valves to be in accordance with local regulations.

Ignition system

Primary system type Electronic inductive system
 Ignition coils 1 per cylinder

All information in this datasheet is correct at time of print but is subject to change without prior notice.

Fuel Specification

Recommended fuel Natural Gas LHV at 35.66 MJ/m³
 Gas supplies must be filtered to the same standard as the engine intake air ie. maximum particle size not to exceed 5 micron.

Fuel consumption (Sm³/hr)

Speed	Power rating % of prime rating				
	110	100	75	50	25
1500	9.80	8.79	7.12	5.26	3.85
1800	10.89	9.76	7.60	6.12	4.39

Induction system

Maximum air intake restriction

- clean filter 2 kPa
 - dirty filter 4 kPa
 - air filter type Dry

Lubrication system

Lubricating oil capacity

Total system 8.3 litres
 Sump only 6.2 / 7.8 litres (min/max)

Maximum engine operating angles:

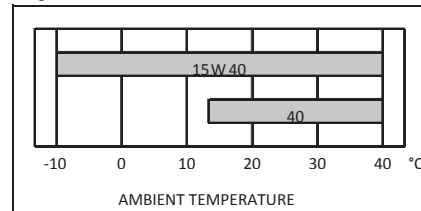
- front up, front down, right side or left side 25°

Lubricating oil pressure

- relief valve opens 415 - 470 kPa
 - at maximum no-load speed 276 - 414 kPa
 Max continuous oil temperature (in rail) 125 °C

Recommended lubricating oils

A single or multigrade oil must be used of low ash type (<0.6 %wt), formulated for natural gas engines. See chart below for temperature range.



Mountings

Maximum static bending moment
 at rear face of block 791Nm

The information given in this document is for guidance only.
 All tests were conducted using an engine installed and services to Quantum ES Ltd recommendations.