

# Perkins based INDUSTRIAL GAS ENGINES

## Technical Data

### Q6 Series

#### Gas Engine - Generating Set specification

## Q6.71TSI

85.9 kWm @ 1500 rev/min

#### Basic technical data

Number of cylinders... 6  
Cylinder arrangement... Vertical in-line  
Cycle... Four stroke  
Induction system... Turbocharged  
Compression ratio... 13 : 1  
Bore... 105 mm  
Stroke... 135 mm  
Cubic capacity... 7.01 litres  
Direction of rotation... Clockwise view from front  
Firing order... 1,5,3,6,2,4

#### Centre of gravity (wet)

- forward from rear of block... 476mm  
- above centre line of block... 176mm  
- offset of RHS of centre line... 16mm

#### Test conditions

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

#### Estimated total weight (including radiator and mounting brackets)

Total weight (engine only)  
-dry... 740kg  
-wet... 784kg

#### Overall dimensions

-height... 1140mm  
-length... 1660mm  
-width (including mounting brackets)... 800mm

#### Moment of inertia (mk<sup>2</sup>)

Engine rotational components... 0.27 kgm<sup>2</sup>  
Flywheel... 1.2 kgm<sup>2</sup>

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.

#### General Installation

Designation	Units	Type of operation 50Hz	
		Prime	Stand-by
		Hz	Hz
		1500	1500
Gross engine power	kWm	85.9	94.3
Brake mean effective pressure	kPa	2082	2287
Engine coolant flow 35 kPa restriction	l/min	108	108
Combustion air flow	m <sup>3</sup> /min	6.9	7.4
Exhaust gas flow (max)	m <sup>3</sup> /min	14.1	18.5
Exhaust gas outlet temperature (max at standby)	°C	479	466
Cooling fan air flow (200kPa external restriction)	m <sup>3</sup> /min	220	220
Overall thermal efficiency (net)	%	36.1	37.0
Genset electrical output	kWe	76	84
	kVA	95	105
Power factor		0.8	0.8
Actual alternator efficiency	%	93.4	93.4
Fuel consumption	m <sup>3</sup> /hr	22.8	24.5
<b>Energy balance</b>			
Power in fuel (Fuel heat of combustion)	kW	225.5	243
Power output (gross)	kW	85.9	94.3
Power to cooling fan	kW	4.5	4.5
Power output (net)	kW	81.4	89.8
Power to coolant and lubricating oil	kW	53.6	51.4
Power to exhaust	kW	59.9	61.5
(Recoverable power, exhaust cooled to 120 °C)	kW	45.9	46.7
Power to radiation	kW	19	27

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.

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## Cooling System

### Radiator

- face area ..... 0.35 m<sup>2</sup>
- rows and materials ..... 5 row aluminium
- matrix density and material ..... 10 aluminium fins/inch
- width of matrix ..... 745 mm
- height of matrix ..... 1080 mm

### Fan

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

### Coolant

- Total system capacity
  - with radiator ..... 21.0 litres
  - without radiator ..... 9.5 litres
- Maximum top tank temperature ..... 105 °C
- Thermostat operating range ..... 85 - 95 °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 ..... 4.0 kW
- Number of teeth on flywheel ..... 126
- Pull in current of starter motor solenoid ..... 62 amps
- Hold in current of starter motor solenoid ..... 15 amps

### Cold start recommendations

- Minimum cranking speed ..... 100 rev/min

### Battery Requirement

- Min. 2 x 647 12V battery (BS3911 510CCA / SAE J537 770CCA)

### Exhaust system

- Maximum back pressure
  - 1500 rev/min ..... 6.0 kPa
- Exhaust outlet size ..... 90 mm

### Fuel System

- Type of carburettor ..... CV diaphragm mixer
- Throttle actuator ..... Electronical 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/m<sup>3</sup>
- 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 (Sm<sup>3</sup>/hr)

Speed	Power rating % of prime rating				
	110	100	75	50	25
1500	24.53	22.77	18.93	14.59	10.43

## Induction system

### Maximum air intake restriction

- clean filter ..... 3 kPa
- dirty filter ..... 5 kPa
- air filter type ..... Dry

## Lubrication system

### Lubricating oil capacity

- Total system ..... 16.5 litres
- Sump only ..... 12.5 / 15.5 litres (min/max)

### Maximum engine operating angles:

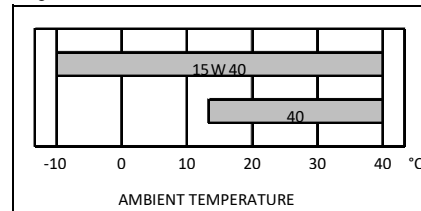
- front up, front down, right side or left side ..... 25°

### Lubricating oil pressure

- relief valve opens ..... 430 kPa
- at maximum no-load speed ..... 450 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 below for temperature range.



### Mountings

- Maximum static bending moment
  - at rear face of block ..... 1130Nm

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.

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