

Perkins based INDUSTRIAL GAS ENGINES

Technical Data ElectropaK NG KVT-E22SI QECM

Gas Engine

Basic technical data

Number of cylinders 4
 Cylinder arrangement Vertical, In line
 Cycle 4 stroke, spark ignition
 Induction system Naturally aspirated
 Compression ratio 12.1:1
 Bore 84 mm (3.30 in)
 Stroke 100 mm (3.94 in)
 Cubic capacity 2,216 litres
 Direction of rotation Anti-clockwise viewed on flywheel
 Firing order 1, 3, 4, 2
 Cylinder 1 Furthest from flywheel
 Total weight of electro unit (engine only)
 - estimated total weight (dry) 242 kg
 - estimated total weight (wet) 251 kg

Overall dimensions

-height 840 mm
 -length 915 mm
 -width 477 mm

Moments of inertia (mk²)

-engine flywheel 2,55 kgm²

Centre of gravity

	Unit	Wet	Dry
Forward from rear of block	mm (in)	TBA	TBA
Above centre line of block	mm (in)	TBA	TBA
Offset to Rhs of centre line	mm (in)	TBA	TBA

Performance

All data based on operation to ISO 14396, ISO 3046/1 standard reference conditions.
 Speed variation at constant load ISO 8528 G2 (Mech) ± 5 %

Test conditions

-air temperature 25 °C (77 °F)
 -barometric pressure 100 kPa (29.5 in hg)
 -relative humidity 30%
 -natural gas LCV 31,65MJ/Nm³

Cooling system

Radiator
 -weight (dry) 10 Kg
 -face area 0,167 m² (2.97 ft²)
 -rows and materials 2 rows aluminium
 -matrix density and material aluminium 14,5 fins/inch
 -width of matrix 334.2 mm (13.2 in)
 -height of matrix 500.0 mm (19.7 in)
 -pressure cap setting 90 kPa (13.05 lb/in²)

Fan

-diameter 320 mm (12.6 in)
 -drive ratio 1.25:1
 -number of blades 7
 -material Plastic
 -type Pusher

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 (115 °F) if a canopy is fitted with an air flow restriction of up to 0, 125 kPa. 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 Koninklijke van Twist Technical Service Department.

General installation

Designation	Units	Type of operation and application
		50 Hz
Gross engine power	kW	19.0
Mean piston speed	m/s	6.35
ElectropaK net engine power	kW	18.5
Engine coolant flow (coolant pump ratio 1.25:1)	l/min	51
Fuel consumption	Nm ³ /hr	7.0
Combustion air flow	kg/min	1.3
Exhaust gas temperature (max)	°C	650
Cooling fan air flow (zero duct allowance)	m ³ /min	40.2
Typical Genset Electrical output (0.8pf 25 °C)	kWe	17.3
	kVA	21.6
Assumed alternator efficiency	%	93.3

Note: Cooling fan air flow (zero duct allowance) at 50 Hz Stand-by assumes 1.25:1 fan ratio and 120 kPa restriction

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Coolant

Total system capacity
-with radiator7 litres
-without radiator3,6 litres
Maximum top tank temperature 110 °C (230 °F)
Maximum permissible external system resistance 35 kPa
Thermostat operation range.....82 - 93 °C (180 - 199 °F)
Recommended coolant immersion heater ratingTBA kW
Recommended coolant:
50% ethylene glycol with a corrosion inhibitor (BS 658 :1992 or MOD AL39) and 50% clean fresh water.

Exhaust system

Maximum permitted back pressure of the complete exhaust system is 10.2 kPa
Exhaust outlet size 42 mm (1.65 in)

Fuel system

Recommended fuel: Natural Gas LHV at 31.6 MJ/m³. Other fuels may be used, for example landfill or digester gas. Ratings will vary from those shown.

Where fuels other than Natural Gas are being considered it is imperative that a full gas analysis (including details of any solid or liquid components) be obtained. Reference should be made to KVT Gas B.V. to determine suitability. Gas supplies must be filtered to the same standard as the engine intake air (i.e. Maximum particle size not to exceed 50 microns).

Gas supply pressure 1,5 kPa to 5 kPa at full rated flow
Carburettor typeWoodward Venturi EFR

Installation of gas supply and shut off valves to be in accordance with local regulations.

Ignition system

Primary systemWoodward
Primary voltage 12 volts
Polarity Negative earth
Spark plug gap 0,7 mm
Ignition timing 28° BTDC

Electrical system

Type Insulated return
Starter motor 12 volts
Starter motor power2 kW
Number of teeth on flywheel..... 126
Number of teeth on starter motor 10
Minimum cranking speed 120 rev/min

Lubrication system

Lubricating oil capacity

Total system..... 10,6 litres
Minimum8,9 litres
Maximum engine operating angles
-front up, front down, right side or left side. 35° continuous
Sump drain plug tapping size. ¾ in x 16 UNF
Shutdown switch setting (where fitted)60 - 90 kPa

Lubricating oil pressure

-relief valve opens352 - 448 kPa (51.1 – 64.9 lbf/in²)
Maximum continuous oil temperature (in rail) 125 °C (257 °F)
Oil consumption at full load as a % of fuel consumption:.....0,15%

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