

Perkins based INDUSTRIAL GAS ENGINES

Technical Data ElectropaK NG

KVT E44 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 105 mm (4.13 in)
 Stroke 127 mm (4.99 in)
 Cubic capacity 4,4 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) 475 kg
 - estimated total weight (wet) 500 kg

Overall dimensions

-height 915 mm
 -length 1162 mm
 -width 652 mm

Moments of inertia (mk²)

-engine flywheel 1,14 kgm²

Centre of gravity

	Unit	Wet	Dry
Forward from rear of block	mm (in)	258 (10.16)	251 (9.88)
Above centre line of block	mm (in)	157 (6.18)	146 (5.75)
Offset to Rhs of centre line	mm (in)	23 (0.91)	21 (0.83)

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 0,28 m² (2.97 ft²)
 -rows and materials single row aluminium
 -matrix density and material aluminium 12,7 fins/inch
 -width of matrix 526 mm (20.7 in)
 -height of matrix 524 mm (20.6 in)
 -pressure cap setting 107 kPa (15.5 lb/in²)

Fan

-diameter 457 mm (18 in)
 -drive ratio 1:1
 -number of blades 7
 -material composite
 -type pusher
 -power @ 1500 rev/min 1 kW

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	60 Hz
Gross engine power	kW	52.0	60
Mean piston speed	m/s	6,35	7.62
ElectropaK net engine power	kW	51.0	58
Engine coolant flow (coolant pump ratio 1.25:1)	l/min	143	170
Fuel consumption	Kg/h	13.6	16.2
Combustion air flow	Kg/h	180	214
Exhaust gas temperature (max)	°C	605	615
Cooling fan air flow (zero duct allowance)	m ³ /min	58,2	69.8
Typical Genset Electrical output (0.8pf 25 °C)	kWe	47.4	53.9
	kVA	59.3	67.4
Assumed alternator efficiency	%	93	

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Coolant

Total system capacity

-with radiator 12,8 litres (23.2 UK pints)
-without radiator 7,0 litres (12.3 UK pints)
Maximum top tank temperature 110 °C (230 °F)
Maximum permissible external system resistance 35 kPa
Thermostat operation range..... 82 - 93 °C (180 - 199 °F)
Coolant pump ratio and method of drive gear driven 2:1
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 4 kPa
Exhaust outlet size 64 mm (2.5 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 Kemper en Van Twist 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 type Woodward Venturi EFR

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

Ignition system

Primary system QECM
Primary voltage 12 volts
Polarity Negative earth
Spark plug gap 0,25 mm
Ignition timing 22° BTDC

Electrical system

Type Insulated return
Starter motor 12 volts
Starter motor power 3 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..... 8,0 litres (14.1 UK pints)
Minimum 5,5 litres (9.7 UK pints)
Maximum 7,0 litres (12.3 UK pints)
Maximum engine operating angles
-front up, front down, right side or left side. 25° continuous
Sump drain plug tapping size. ¾ in x 16 UNF
Shutdown switch setting (where fitted) 60 - 90 kPa
Oil pump speed and
method of drive gear driven @ 2 x engine speed
Oil pump flow:
1500 rev/min 42 litres/min
1800 rev/min 51 litres/min

Lubricating oil pressure

-relief valve opens..... 415 - 470 kPa (60 - 68 lbf/in²)
-at maximum no-load speed 276 - 414 kPa (40 - 60 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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