

Perkins based INDUSTRIAL GAS ENGINES

Technical Data ElectropaK NG KVT-E70SI

Gas Engine

Basic technical data

Number of cylinders .. 6
 Cylinder arrangement .. Vertical, In line
 Cycle .. 4 stroke, spark ignition
 Induction system .. Naturally aspirated
 Compression ratio .. 11:1
 Bore .. 105 mm
 Stroke .. 135 mm
 Cubic capacity .. 7,0 litres
 Direction of rotation .. Anti-clockwise viewed on flywheel
 Firing order .. 1, 5, 3, 6, 2, 4
 Cylinder 1 .. Furthest from flywheel
 Total weight of electro unit (engine only)
 - estimated total weight (dry) .. 788 kg

Overall dimensions

-height .. 1142 mm
 -length .. 1763 mm
 -width .. 756 mm

Moments of inertia (mk²)

-engine flywheel .. 0.27 kgm²

Centre of gravity

| Wet engine | Unit | Wet engine |
|------------------------------|---------|--------------|
| Forward from rear of block | mm (in) | 476 mm(15,8) |
| Above centre line of block | mm (in) | 176 mm(7,4) |
| Offset to Rhs of centre line | mm (in) | 16 mm(1,6) |

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 .. 31,65 MJ/Nm³

Cooling system

-face area .. 524800mm²
 -rows and materials .. 4 rows Aluminium
 -matrix density and material .. Aluminium 10 fins/inch
 -width of matrix .. 220mm
 -height of matrix .. 789 mm
 -pressure cap setting .. 100 kPa

Fan

-diameter .. 610mm
 -drive ratio .. 1.2:1
 -number of blades .. 7
 -material .. Nylon
 -type .. pusher
 -power @ 1500 rev/min. .. 5kW

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 Kemper en Van Twist Technical Service Department.

General installation

| Designation | Units | Type of operation and application | | | |
|----------------------------------------------------------------------------|---------------------|-----------------------------------|----------|-------|----------|
| | | Prime | Stand-by | Prime | Stand-by |
| | | 50 Hz | 50 Hz | 60 Hz | 60 Hz |
| Gross engine power | kW | 59.4 | 66 | 70 | 78 |
| Mean piston speed | m/s | 6.8 | 6.8 | 8.1 | 8.1 |
| ElectropaK net engine power | kW | 54.4 | 61 | 62 | 70 |
| Engine coolant flow (coolant pump ratio 1.2:1)(against 35 kPa restriction) | l/min | 142 | 142 | 170 | 170 |
| Fuel consumption | Nm ³ /hr | 19.3 | 21.4 | 22.7 | 25.3 |
| Combustion air flow | kg/h | 198.9 | 221 | TBA | TBA |
| Exhaust gas temperature (max) | °C | 665 | 665 | 665 | 665 |
| Cooling fan air flow (zero duct allowance) | m ³ /min | 282 | 282 | TBA | TBA |
| Typical Genset Electrical output (0.8pf 25 °C) | kWe | 50 | 56.1 | 57 | 64 |
| | kVA | 61.2 | 68.6 | 71 | 80 |
| Assumed alternator efficiency | % | 92.0% | | | |

Note: Cooling fan air flow (zero duct allowance) at 60 Hz Stand-by assumes 1.25:1 fan ratio and 120 kPa restriction

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Coolant

Total system capacity
-with radiator21 litres
-without radiator 9.5 litres
Maximum top tank temperature 110 °C
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 4.0 kPa

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 typeIMPCO CA200 mixer

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

Emissions at 100% load (Correlation 5 % O₂)

-NO_x..... mg/Nm³ < 8000
-CO mg/Nm³ < 6500
-Engine surface noise dB (A) 98
-Exhaust sound power level..... dB (A) 120

Ignition system

Primary system Woodward
Primary voltage 12 volts
Polarity Negative earth
Spark plug gap 0,25 mm
Ignition timing 20° BTDC

Electrical system

Type Insulated return
Starter motor 12 volts
Starter motor power 4.2 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

Sump option.....G0100
Minimum Sump capacity..... 12.4 litres
Maximum Sump capacity 149 litres
Maximum engine operating angles
-front up, front down, right side or left side. 2.5 ° continuous
Shutdown switch setting..... 1,0bar normally closed

Lubricating oil pressure

-relief valve opens..... 430 kPa
-at maximum no-load speed 340 kPa
Maximum continuous oil temperature (in rail) 125 °C (257 °F)
Lube oil consumption.....0,03kg/h