1206A-E70TTAG3

248.5 kW Gross @ 1500 rpm
238.6 kW Gross @ 1800 rpm

ElectropaK

1200 Series

Basic technical data

Number of cylinders	6
Cylinder arrangement	Inline
Cycle	4 stroke
Induction system	Twin turbocharged, aftercooled
Compression ratio	15.8:1
Bore	105 mm
Stroke	135 mm
Displacement	7.01 litres
Direction of rotation (viewed from flywheel)	Anticlockwise
Firing order (cylinder 1 furthest from flywheel)	1, 5, 3, 6, 2, 4

Weight of ElectropaK

Dry (estimated)	797 kg
Wet (estimated)	832 kg

Overall dimensions of ElectropaK

Height	1426 mm
Length	1878 mm
Width	949 mm

Centre of gravity of Electropak

Wet, forward from rear of block	476 mm
Wet, above centre line of block	199 mm

Moments of inertia (mk^2)

Engine rotational components (excluding flywheel)	0.43 kgm^2
Flywheel and starter ring	1.26 kgm^2

Operation

Default running speed for switchable engines	1500 rpm
Steady state stability at constant load	ISO 8528-5 Class G3
All ratings certified to within	±3%
Cyclic irregularity for standby engine (110%)	0.11

Notes:

- Perkins maintains ISO9001:2000 certified quality management systems for engine test facilities to assure accurate calibration of test equipment
- all data based on operation to ISO 3046-1:2002 standard reference conditions
- for engines operating at increased ambient temperate and/or altitude conditions please refer to the relevant derate tables
- all data is subject to a tolerance of ±5% excluding the stated power delivery tolerance
- unless otherwise stated all measurements and limits are quoted for Standby power conditions
- please refer to the relevant Operation and Maintenance Manual (OMM) for engine servicing details including coolant, fuel, oil and Diesel Exhaust Fluid (DEF) requirements where applicable
- for additional product information please contact Perkins Applications Engineering

Optional document version control

This document should be used as reference guide for installation purposes and where required can be submitted as part of business tender submissions. The table below may be used upon request to validate that this Technical Data Sheet is the latest version available.

Project name/tender name	Date	Perkins authorised sign

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General installation

Designation	Units	Type of application			
		50 Hz @ 1500 rpm		60 Hz @ 1800 rpm	
		Prime	Standby	Prime	Standby
Gross engine power output	kW	226.8	248.5	216.8	238.6
Gross BMEP	kPa	2587	2834	2061	2268
Mean piston speed	m/s	6.8		8.1	
Nett mechanical power output	kW	217.4	239.1	200.6	222.4
Combustion air flow	m^3/min	13.7	15.6	13.6	14.3
Exhaust gas temperature at turbocharger outlet	°C	492	522	443	501
Exhaust gas flow at conditions stated above	m^3/min	30.6	34.1	28.7	31.6
Overall thermal efficiency (gross)	%	39.4	37.9	39.4	38.4
Typical generator set electrical output (0.8pf)	kWe	200	220	180	200
	kVA	250	275	225	250
Assumed alternator efficiency	%	92.0	92.0	89.5	89.5

Reference conditions for technical data

Air temperature 25ºC

Barometric pressure ..... 101 kPa

Relative humidity 10.7%

Fuel temperature (inlet pump) 40ºC

Energy balance[1]

Designation	Units	Type of application			
		50 Hz @ 1500rpm		60Hz @ 1800 rpm	
		Prime	Standby	Prime	Standby
Energy in fuel	kWt	576.0	656.4	550.8	621.1
Energy in power output (gross)	kW	226.8	248.5	216.8	238.6
Energy to cooling fan and battery charging alternator	kWm	9.4		16.2	
Energy to exhaust[2]	kWt	240.8	284.6	223.5	254.3
Energy to charge air	kWt	47.0	55.8	42.7	46.6
Energy to coolant radiator	kWt	114.5	127.7	121.1	135.3
Energy to radiation (atmosphere)[3]	kWt	28.8	32.8	27.5	31.0

Rating definitions

Prime power

Unlimited hours usage with an average load factor of 80 percent of the published Prime power over each 24-hour period.
A 10 percent overload is available for 1 hour in every 12 hours operation.

Standby power

Limited to 500 hours usage with an average load factor of 100 percent of the published Standby power rating over each 24-hour period.
Up to 300 hours of annual usage may be run continuously. No overload is permitted.

Footnotes:

1. Data included in the energy balance table should not be used for combined heat and power (CHP) purposes.
2. Not to be utilised for heat recovery, does include energy input from combustion air.
3. Includes heat rejected to fuel via return to tank flow.

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Cooling system

ElectropaK coolant capacity (with radiator) . . . . . 32.3 litres
Engine coolant capacity (without radiator) . . . . . 13.2 litres
Maximum top tank temperature 112ºC
Maximum static pressure head on pump . . . . . 250 kPa
Coolant temperature rise across engine 8ºC
Thermostat operation range (closed to fully open) . . . . . 82 to 93ºC
Water temperature switch or alarm setting 108ºC

Specifications	Units	50 Hz @ 1500 rpm	60 Hz @ 1800 rpm
Engine coolant flow at maximum restriction	litres/min	260	310
Engine coolant circuit - maximum allowed restriction	kPa	17	22
Charge air cooler restriction at full load (maximum)	kPa	10	10
Compressor outlet temperature at standard 25ºC test condition	ºC	229.1	209.8
Compressor outlet pressure at standard 25ºC test condition	kPa	298.9	262.2
Charge air cooler outlet temperature at standard 25ºC test condition	ºC	50	47

Radiator

Radiator face area . . . . . 0.444 m^2
Core material . . . . . Aluminium
Number of rows 57
Fins per inch 10
Width of matrix . . . . . 555 mm
Height of matrix . . . . . 800 mm
Pressure cap setting . . . . . 110 kPa

Fan type

Fan type . . . . . Mechanical, fixed
Configuration . . . . . Pusher
Diameter (tip to tip) . . . . . 724 mm
Number of blades 7
Material . . . . . Composite
Drive ratio 1.33:1

Duct allowance

		Units	50 Hz @ 1500 rpm			60 Hz @ 1800 rpm		
Duct allowance[4]		Pa	0	120	200	0	120	200
Ambient clearance[5]	Prime	ºC	54	51	50	57	54	53
	Standby		40	40	40	54	51	50
Resultant minimum airflow		m^3/sec	4.3	4.1	4.0	5.3	5.1	5.0

Fuel system

Fuel injection pump . . . . . Common rail
Fuel injector type . . . . . Electronic
Filtration media size . . . . . 4 µm
Fuel lift pump type . . . . . Electric
Maximum low-pressure system fuel flow rate . . . . . 270 litres/hr
Maximum low-pressure system pressure . . . . . 400 kPa
Pressure measured at ELP inlet . . . . . -20 to +15 kPa
Fuel return restriction . . . . . 20 kPa
Maximum fuel temperature at regulator return 75ºC
Fuel return flow rate to fuel cooler . . . . . 207 litres/hr
Governor type . . . . . Electronic
Fuel cooler included[6] . . . . . Yes

Fuel specification

Recommended fuel conformity . . . . . EN590 / ASTM D975
Maximum sulphur in fuel limit . . . . . Refer to OMM Fluids Manual

Fuel consumption[7]

Prime load condition %	226.8 kW @ 1500 rpm Prime	216.8 kW @ 1800 rpm Prime
	g/kWh	g/kWh
110 (standby)	220	217
100	212	212
75	205	209
50	205	217
25	231	262

Load acceptance[8]

The engine speed governing complies with the requirements of classification 3 and 4 of ISO 8528-12 and to G2 operating limits stated under ISO 8528-5.

Footnotes:

4. Maximum additional cooling airflow restriction.
5. Ambient clearance allows for 0°C rise above ambient temperature at fan.
6. Where fuel cooler is provided, component details can be found on GA drawing.
7. For conversion to litres/hr use the following formula with the correct fuel density:

$$\frac{\text{SFC (kg/kWh)}}{\text{Fuel density (kg/litre)}} \times \text{Power (kW)} = \text{Fuel Consumption (litres/hr)}$$

8. Please contact Perkins Applications Engineering for any further information.

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Lubricating system

Total system capacity

Maximum sump capacity (maximum dipstick mark) ..... 16 litres
Minimum sump capacity (minimum dipstick mark) ..... 13 litres
Maximum oil temperature (continuous operation) ..... 125°C
Maximum oil temperature (intermittent operation) ..... 135°C

Lubricating oil

Relief valve opening pressure ..... 545 to 595 kPa
Minimum oil pressure ..... 300 kPa
Oil pressure at maximum no load speed ..... 700 kPa
Oil flow at rated speed ..... 70 litres/min
Oil consumption ..... 0.08% of fuel
Oil grade ..... API-CH-4 or ACEA E5

Maximum engine operating angles

Front up, front down ..... 30°
Right side up, right side down ..... 30°

Induction system

Maximum air intake restriction (clean filter) ..... 3 kPa
Maximum air intake restriction (dirty filter) ..... 8 kPa
Maximum temperature rise to air filter ..... 5°C
Air filter type ..... Dry
Number of air filters 1

Exhaust system

Number of exhaust outlets 1
Exhaust outlet diameter ..... 65.5 mm
Exhaust outlet flange size and type ..... 75.35 mm pipe OD
Maximum back pressure at turbocharger outlet
@ 1500 rpm ..... 30 kPa
@ 1800 rpm ..... 25 kPa

Electrical system

Alternator output voltage ..... 12 V
Alternator output current ..... 100 amps
Starter motor input voltage ..... 12 V
Starter motor power draw ..... 4.2 kW
Number of teeth on flywheel 134
Number of teeth on starter pinion 13
Minimum average cranking speed ..... 100 rpm
Engine stop method ..... Electronic

Engine mounting

Maximum static bending moment at rear face of block ..... 1130 Nm
Maximum static bending moment for exhaust outlet (for muffler design) ..... 4 Nm

Cold start recommendations[9]

Minimum starting temperature	Engine oil grade	Minimum battery cold cranking amps with glow plugs	Minimum battery cold cranking amps without glow plugs
°C		CCA	CCA
10	15W40	950	950
0	15W40	950	950
-5	15W40	950	950
-10	15W40	950	950
-15	10W30	1650	N/A
-20	10W30	1650	N/A
-25	5W30	1900	N/A
Maximum battery cold cranking amps (CCA)		2400	2400

Noise data

Noise data of the ElectropaK, this excludes exhaust outlet noise except where specifically stated, measured in a semi-anechoic environment. Measurements taken in accordance with ISO 6798-1:2020.

ElectropaK

Average sound pressure level[10,11] (L_{pA}) at 1m (dBA)	
50 Hz @ 1500 rpm	60 Hz @ 1800 rpm
113.0	117.0

Footnotes:

9. Cold cranking amps as per SAEJ537.
10. Sound pressure reference level: 20 µPa.
11. Average 1m sound pressure level to sound Power conversion add 15.1 dB.

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