1206A-E70TTAG3

248.5 kWm (Gross) @ 1500 rpm
238.6 kWm (Gross) @ 1800 rpm

1200 Series

ElectropaK

Basic technical data

Number of cylinders	6
Cylinder arrangement	Vertical, inline
Cycle	4 stroke DI
Induction system	Twin turbo charge cooled
Compression ratio	15.8:1
Bore	105 mm
Stroke	135 mm
Displacement	7.01 litres
Direction of rotation when viewed from flywheel	Anticlockwise
Firing order	1, 5, 3, 6, 2, 4
Estimated total weight including radiator support brackets	
Dry	797 kg
Wet	832 kg

Overall dimensions of ElectropaK

Height, including radiator support brackets	1426 mm
Length, front of radiator to rear of air cleaner	1878 mm
Width	949 mm

Moments of inertia (MK²)

Engine rotational components	0.4269 kgm²
Flywheel	1.26 kgm²

Centre of gravity

Forward from rear of block	476 mm
Above centre line of block	199 mm

Performance

Cyclic irregularity for engine standby power	
At 110%	0.11
Ratings	
Steady state speed stability at constant load	± 0.25 %
Average sound pressure level for bare engine (excluding inlet and exhaust noise) at 1 metre	113dB(A) @1500rpm
Average sound pressure level for bare engine (excluding inlet and exhaust noise) at 1 metre	117dB(A) @1800rpm

Notes:

- all data based on operation to ISO 3046/1:2002 standard reference conditions.
- for engines operating in ambient conditions other than the standard reference conditions stated below, a suitable derate must be applied
- derate tables for increased ambient temperature and/or altitude are available, please contact Perkins Applications Department.

Test conditions

Air temperature	25°C
Barometric pressure	101 kPa
Relative humidity	10.7%
Air inlet restriction at maximum power	5 kPa
Exhaust back pressure at maximum power (turbo outlet)	
1500 rpm	30 kPa
1800 rpm	25.1 kPa
Fuel temperature (inlet pump)	40°C
All ratings certified to within	± 3%

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General installation

Designation	Units	Engine speed @ 1500 rpm		Engine speed @ 1800 rpm	
		Prime (50Hz)	Standby (50Hz)	Prime (60Hz)	Standby (60Hz)
Gross engine power	kWb	226.8	248.5	216.8	238.6
Gross BMEP	kPa	2588.6	2836.7	2062.2	2269.7
Mean piston speed	m/s	6.75		8.1	
ElectropaK nett engine power	kW	217.8	239.5	201.8	223.6
Engine coolant flow against 35 kPa restriction	litres/min	249		300	
Combustion air flow	kg/h	981.4	1117.4	975.4	1024.0
Combustion air flow	m^3/min	13.7	15.6	13.6	14.3
Exhaust gas flow (maximum) at atmospheric pressure	m^3/min	30.62	34.12	28.65	31.56
Exhaust gas temperature (maximum) TC out	°C	492	522	443	501
Overall thermal efficiency	%	39.4	37.9	39.4	38.4
Typical Generator sets electrical output (0.8pf 25ºC)	kWe	200	220	180	200
	kVA	250	275	225	250
Assumed alternator efficiency	%	92		89.5	

Energy balance

Designation	Units	Engine speed @ 1500 rpm		Engine speed @ 1800 rpm	
		Prime (50Hz)	Standby (50Hz)	Prime (60Hz)	Standby (60Hz)
Energy in fuel	kWt	576	656.4	550.8	621.1
Energy in power output (gross)	kWb	226.8	248.5	216.8	238.6
Energy to cooling fan	kWm	9		15	
Energy in power output (nett)	kWm	217.8	239.5	201.8	223.6
Energy to exhaust (Not to be utilised for heat recovery, does include energy input from combustion air.)	kWt	240.8	284.6	223.5	254.3
Energy to ACC coolant	kWt	47	55.8	42.7	46.6
Energy to coolant radiator	kWt	114.5	127.7	121.1	135.3
Energy to radiation (atmosphere) Includes heat rejected to fuel (via return to tank flow)	kWt	28.8	32.8	27.5	31

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Cooling system

Total coolant capacity

ElectropaK (with radiator) ... 25 litres
ElectropaK (without radiator) ... 13.7 litres
Maximum top tank temperature ... 112°C
Maximum static pressure head on pump ... 70 kPa
Temperature rise across engine ... 8°C
Maximum permissible external system resistance ... 11.2°C (275kVa), 9.6°C (200 kWe)
Thermostat operation range ... 82-93°C

Radiator

Radiator face area ... 0.444 m²
Material and number of rows ... Aluminium 57
Material and fins per inch ... 10
Width of matrix ... 550 mm
Height of matrix ... 800 mm
Pressure cap setting ... 100 kPa

Fan

Type ... Pusher Fan
Diameter ... 724 mm
Number of blades ... 7
Material ... Heramid & Steel
Drive ratio ... 1.33:1
Airflow at rated speed ... 4.42 m³/min

Recommended coolant

Recommended coolant: 50% anti freeze / 50% water.

For details of recommended coolant specifications, please refer to the Operation and Maintenance Manual (OMM) for this engine model.

Duct allowance

Maximum additional restriction (duct allowance) to cooling airflow and resultant minimum airflow			
Power	**Ambient clearance °C**	**Duct allowance (Pa)**	**m³/sec**
250 kVA (50Hz)	50	200	4.42
275 kVA (50Hz)	40	200	4.42
200 kWe (60Hz)	50	200	5.62

Fuel system

Type of injection ... Common Rail
Fuel injection pump ... Denso HP4
Fuel injector ... Denso G3S
Nozzle opening pressure ... 5 MPa
Maximum particle size ... 4 Microns
Fuel lift pump type ... Brushless Electric
Flow/hour ... 3.5 Litres/hour @ 200 kPa
Maximum low pressure system pressure
Pressure measured at ELP inlet ... - 20 to +15 kPa
Maximum fuel temperature at fuel regulator return ... 75°C
Maximum fuel filter service interval ... 500 hours
Governor type ... Electronic ECM
Speed control conforms to ... N/A

Fuel specification

USA Fed Off Highway ... ASTM D975
Europe Off Highway ... EN590

Note: For further information on fuel specifications and restrictions, refer to the OMM fuels section for this engine model.

Fuel consumption

Power rating %	226.8kW/1500 rpm Prime	
	g/kWh	litres/hr
25	231.4	15.6
50	205.3	27.7
75	204.9	41.5
100	211.9	57.2
110	220.3	64.5

Power rating %	216.6kW/1800 rpm Prime	
	g/kWh	litres/hr
25	262.4	17
50	217.1	28.1
75	208.9	40.5
100	211.5	54.6
110	217.1	61.7

Cold start recommendations

Minimum battery cold cranking amps

Air temperature/oil viscosity limit	With glow plugs 12V AZF and P5		Without glow plugs 12V AZF	
-5°C	15W40	950	15W40	950
-10°C	15W40	950	15W40	950
-15°C	10W40	1650	15W40	(1)
-20°C	10W40	1650	10W40	(1)
-25°C	5W30	1900	5W30	(1)
Maximum battery CCA		2400		2400

Note: Glow plugs needed below -10°C.
Note: For cable sizes see Applications and Installation Manual.

1. Must use glow plugs.

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Lubrication system

Total system capacity

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

Lubricating oil pressure

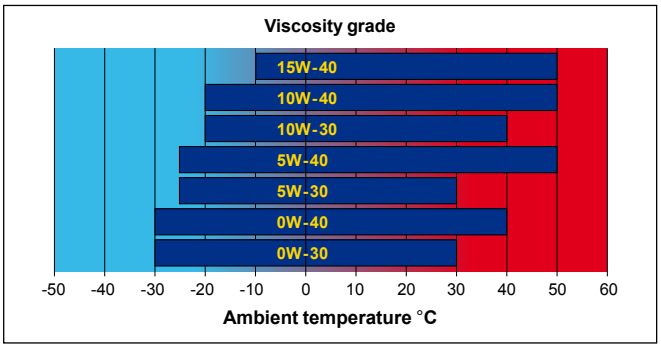
Relief valve opens..... 545-595 kPa
Minimum oil pressure.....300 kPa
At maximum no-load speed .....700 kPa
Oil flow at rated speed..... 70 litres/min
Oil consumption at full load rated speed.....0.08% of fuel

Maximum engine operating angles

Front up, front down, right side or left side..... 30°

Recommended SAE viscosity

A single or multigrade oil conforming to API-CH-4 or ACEA E5 must be used.



Induction system

Maximum air intake restriction of engine

Clean filter.....3 kPa
Dirty filter.....8 kPa

Exhaust system

Exhaust outlet size.....76.3 mm
Maximum back pressure (exhaust elbow outlet) .....7 kPa

Electrical system

Alternator.....100 amps/12 volts
Starter motor..... 5 kW/12 volts
Number of teeth on flywheel.....134
Number of teeth on starter pinion.....13
Engine stop method.....ECM

Engine mounting

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

Load acceptance

The figures below comply with the requirements of classification 3 and 4 of ISO 8528-12 and G2 operating limits stated in ISO 8528-5.

Initial load application: When engine reaches rated speed (15 seconds after engine starts to crank)					
Description	Units	Prime power		Standby power	
		60 Hz	50 Hz	60 Hz	50 Hz
Prime power	%	67	60	67	55
Load	kWm	138	131	138	131
Frequency recovery	Seconds	0.7	0.95	0.7	0.95

The figures shown in the table above were obtained under the following test conditions:

Engine block temperature ... . 90°C
Ambient temperature ... . 25°C
Governing mode ... .0 %
Alternator inertia ... .2.93 kgm²
Under frequency roll off (UFRO) point set to ... 20 %volt/10 %Frequency
LAM on/off . ... off

Note: All tests were conducted using an engine installed and serviced to Perkins Engines Company Limited recommendations.

Note: Derate curves for altitude and humidity can be found in the relevant Derate Chart.

Note: The latest versions of general arrangement drawings should be requested from the Perkins Applications Department.

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