2806A-E18TTAG4

685 kWm (Gross) @ 1500rpm
793 kWm (Gross) @ 1800rpm

2800 Series

Basic technical data

Number of cylinders 6
Cylinder arrangement . . . . . Vertical inline
Cycle . . . . . 4 stroke
Induction system . . . . . Turbocharged, air-to-air charge cooling
Compression ratio 14:1
Bore . . . . . 145 mm
Stroke . . . . . 183 mm
Displacement . . . . . 18.1 litres
Direction of rotation (when viewed from flywheel) . . . . Counter clockwise
Firing order (number 1 cylinder furthest from flywheel) 1, 5, 3, 6, 2, 4

Weight of ElectropaK

Dry (estimated) . . . . . 2361 kg
Wet (estimated) . . . . . 2477 kg

Overall dimensions, ElectropaK

Height . . . . . 2126 mm
Length . . . . . 2538 mm
Width . . . . . 1691 mm

Centre of gravity, ElectropaK

Forward from rear of block (dry) . . . . . 607 mm
Above crankshaft centre line (dry) . . . . . 238 mm

Moments of inertia (Mk²)

Engine rotational components . . . . . 1.67 kgm²
Flywheel . . . . . 1.92 kgm²

Cyclic irregularity for engine standby power

At 110% 0.293

Ratings

Steady state speed capability at constant load . . . . . <1.5%

Performance

Average sound pressure level for bare engine
Without inlet and exhaust at 1 metre (50Hz) . . . . . 103.5 dB(A)
Without inlet and exhaust at 1 metre (60Hz) . . . . . TBD dB(A)

Note: All data based on operation to ISO 3046/1:2002 standard reference conditions.

Note: For engines operating in ambient conditions other than the standard reference conditions stated below, a suitable derate must be applied.

Note: Derate tables for increased ambient temperature and/or altitude are available, please contact Perkins Applications Department.

Test conditions

Air temperature . . . . . 25°C
Barometric pressure . . . . . 100 kPa
Relative humidity 30%
Air inlet restriction at maximum power (nominal) . . . . . 5 kPa
Exhaust back pressure at maximum power (nominal) . . . . . 8.5 kPa
Aftercooler restriction at maximum power (nominal) . . . . . 12 kPa
Fuel temperature (inlet pump) . . . . . 40°C
All ratings certified to within . . . . . ±3%

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General installation

Designation	Units	1500 rpm		1800 rpm	
		Prime (50 Hz)	Standby (50 Hz)	Prime (60 Hz)	Standby (60 Hz)
Gross engine power	kWb	623	685	720	793
Gross BMEP	kPa	2779	3057	2680	2948
Mean piston speed	m/s	9.2		11	
ElectropaK nett engine power	kW	595	657	675	748
Engine coolant flow against 85 kPa restriction	litres/min	382		485	
Combustion air flow	kg/h	3513	3778	4551	4718
Combustion air flow (air inlet)	m³/min	52	57	68	71
Exhaust gas flow (maximum) at atmospheric pressure	m³/min	119	128	148	157
Exhaust gas temperature (turbo out maximum)	°C	461	465	433	455
Overall thermal efficiency	%	38	38	37.5	37.5
Typical generator set electrical output (0.8 pf 25°C)	kWe	565	624	642	710
	kVA	706	780	802	888
Assumed alternator efficiency	%	95			

Energy balance

Designation	Units	1500 rpm		1800 rpm	
		Prime (50 Hz)	Standby (50 Hz)	Prime (60 Hz)	Standby (60 Hz)
Energy in fuel	kWt	1580	1744	1921	2115
Energy in power output (gross)	kWb	623	685	720	793
Energy to cooling fan	kWm	27.6		45.0	
Energy in power output (nett)	kWm	595	657	675	748
Energy to aftercooler	kWt	177	194	264	287
Energy to coolant and oil	kWt	176	193	195	216
Energy to radiation	kWt	91	100	120	132
Energy to exhaust	kWt	515	572	621	687

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Cooling system

Total coolant capacity

ElectropaK (with radiator) ... 109.5 Litres
ElectropaK (without radiator) ... 20.8 Litres
Maximum top tank temperature ... 97°C
Maximum static pressure head on pump ... 125 kPa
Temperature rise across engine ... 3°C
Maximum permissible external system resistance (50 Hz) ... 85 kPa
Maximum permissible external system resistance (60Hz) ... 95 kPa
Thermostat operation range ... 81°C to 92°C

Radiator

Radiator face area ... 1.496 m²
Material and number of rows ... 1 Row, Aluminium
Material and fins per inch ... 8.5
Width of matrix ... 1651 mm
Height of matrix ... 1610 mm
Pressure cap setting ... 103 kPa

Fan

Type ... Pusher
Diameter ... 1142 mm
Number of blades ... 6
Material ... Composite
Drive ratio ... 0.92:1
Airflow at rated speed (50 Hz) ... 852 m³/min
Airflow at rated speed (60 Hz) ... TBD 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 to cooling airflow and resultant minimum airflow					
Ambient clearance 50% Glycol		Duct allowance (Pa)		m³/sec	
50 (Hz)	60 (Hz)	50 (Hz)	60 (Hz)	50 (Hz)	60 (Hz)
55	TBD	125	125	14.2	TBD

Fuel system

Type of injection ... Unit injection
Fuel injection pump ... Not applicable
Fuel injector ... MEUI
Nozzle opening pressure ... 38 MPa
Maximum particle size ... 2 microns
Fuel lift pump type ... Mechanical
Flow ... 420 litres/hr
Pressure ... 700 kPa
Maximum suction head ... -27 kPa
Maximum static pressure head ... 3.7 m
Maximum fuel temperature at lift pump inlet ... 79ºC
Maximum fuel filter service interval ... 500 hours
Governor type ... Electronic
Speed control conforms to ... ISO 8528-5 class G3 steady state

Fuel specification

USA Fed Off Highway ... Low Sulfur Diesel ≤ 500 PPM Sulfur
Europe Off Highway ... Low Sulfur Diesel ≤ 500 PPM Sulfur

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

Fuel consumption

Power rating %	623 kWm@1500 rpm Prime		720 kWm @ 1800 rpm Prime	
	g/kWh	litres/hr	g/kWh	litres/hr
25	210	45	214	56
50	196	76	197	90
75	191	108	198	130
100	195	145	206	178
110	195	160	206	196

Cold start recommendations

Minimum battery cold cranking amps

Minimum starting temperature	Grade of engine lubrication oil	SAEJ537 Cold Cranking amps	Starting Aids
-5°C	15W40	1400	Jacket Water Heater to 45°C
-10°C	15W40	1400	Jacket Water Heater to 45°C
-15°C	15W40	1400	Jacket Water Heater to 45°C
-20°C	15W40	1400	Jacket Water Heater to 45°C
-25°C	15W40	1400	Jacket Water Heater to 45°C

Notes:

- for cable sizes see applications and installation manual
- jacket water heater needed below 0°C

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Lubrication system

Total system capacity

Minimum oil capacity in sump ... 56.0 litres
Maximum oil capacity in sump ... 68.0 litres
Maximum oil temperature (continuous operation) ... 97°C
Maximum oil temperature (intermittent operation) ... 110°C

Lubricating oil pressure

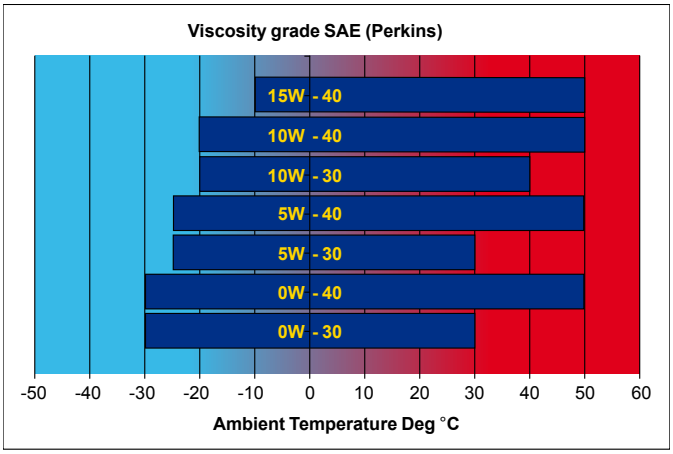
Relief valve opens ... 620 kPa
Minimum oil pressure ... 275 kPa
At maximum no-load speed ... 420 kPa
Oil flow at rated speed (1500 rpm) ... 174 litres/min
Oil flow at rated speed (1800rpm) ... 209 litres/min

Maximum engine operating angles

Front up, front down, right side or left side ... 7°

Recommended SAE viscosity

A multigrade oil which conforms to API-CH4 must be used, see illustration below:



Induction system

Maximum air intake restriction

Clean filter ... 3.7 kPa
Dirty filter ... 6.2 kPa
Air filter type ... Dry/paper

Exhaust system

Exhaust outlet size ... 139.7 mm
Minimum back pressure ... Not applicable
Maximum back pressure ... 10 kPa

Electrical system

Alternator ... 50 amps/24 volts
Starter motor ... 9 kW/24 volts
Number of teeth on the flywheel ... 113
Number of teeth on starter pinion ... 12
Engine stop method ... Ground switch

Engine mounting

Maximum static bending moment at rear face of block ... 287.9 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 maximum after engine starts to crank)			
Description	**Unit**	**50 Hz**	**60 Hz**
% of Prime power		42	41
Transient frequency deviation	%	9.60	9.70
Frequency recovery	sec	2.6	2.6

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

Engine block temperature ... 42°C
Ambient temperature ... 17°C
Governing mode ... 0%
Alternator inertia ... 10.41 kgm²
Under frequency roll off (UFRO) point set to ... 49.8 Hz
LAM on/off ... Off

All tests were conducted using and engine installed and services to Perkins Engines Company Limited recommendations.

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