

4006-23TAG4

886 kWm (Gross) @ 1800 rpm

4000

Series

Electropak

Basic technical data

Number of cylinders	6
Cylinder arrangement	Vertical, Inline
Cycle	4 stroke, compression ignition
Induction system	Turbocharged
Compression ratio	13.6:1 nominal
Bore	160 mm
Stroke	190 mm
Cubic capacity	22.921 litres
Direction of rotation	Anticlockwise viewed on flywheel
Firing order	1, 5, 3, 6, 2, 4
Cylinder 1	Furthest from flywheel

Weight of Electropak (engine only)

Dry	2524 kg
Wet	2663 kg

Overall dimensions of Electropak

Height	2125 mm
Length	2927 mm
Width	1689.5 mm

Moments of inertia

Engine	4.59 kgm ²
Flywheel	6.02 kgm ²

Cyclic irregularity for engine standby power

4006-23TAG4 (1800 rpm)	1:96
------------------------	------

Ratings

Steady state speed stability at constant load $\pm 0.25\%$
Electrical ratings are based on average alternator efficiency and are for guidance only (0.8 power factor being used).

Operating point

Engine speed	1800 rpm
Static injection timing	Refer to engine nameplate
Cooling water exit temperature	98°C maximum

Fuel data

To conform to BS2869 class A2.

Performance

Estimated sound pressure level: 1800 rpm	113 dB(A)
---	-----------

Note: All data based on operation to ISO 3046/1, BS 5514 and DIN 6271 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)	2.5 kPa
Exhaust back pressure (nominal)	7 kPa
Fuel temperature (inlet pump)	58°C maximum

Note: For test conditions relevant to data on load acceptance, refer to Perkins Applications Department.

General installation

4006-23TAG4

Designation	Units	60 Hz 1800 rpm		
		Baseload power	Prime power	Standby power
Gross engine power	kWb	651	805	886
Fan power	kWm	44		
ElectropaK nett engine power	kWm	607	761	842
Gross BMEP	kPa	2080	2311	2568
Combustion air flow	m³/min	70	80	80
Exhaust gas temperature after turbo (maximum)	°C	500		
Exhaust gas flow (maximum) at atmospheric pressure	m³/min	220		
Boost pressure ratio	-	3.4	3.6	3.8
Overall thermal efficiency (nett)	%	40	40	37
Mean piston speed	m/s	11.4		
Engine coolant flow (minimum)	litres/s	12		
Cooling fan airflow	m³/min	1140		
Typical Genset electrical output 0.8pf 25°C (100 kPa)	kWe	572	722	800
	kVA	714	900	1000

Note: The above data is based on 43.0 MJ/kg calorific value for diesel conforming to specification BS2869 Class A2.

Rating definitions

Baseload power

Unlimited hours usage with an average load factor of 100% of the published baseload power. No overload is permitted on baseload power.

Prime power

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

Standby power

Limited to 500 hours annual usage with an average load factor of 80% 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 on standby power.

Energy balance

Designation	Units	1800 rpm		
		Baseload	Prime	Standby
Energy in fuel	kWt	1613	2031	2365
Energy in power output (gross)	kWb	644	805	886
Energy to cooling fan	kWm	44		
Energy in power output (nett)	kWm	600	747	842
Energy to exhaust	kWt	564	692	792
Energy to coolant and oil	kWt	178	243	308
Energy to radiation	kWt	65	81	95
Energy to chargecoolers	kWt	162	224	284

Cooling system

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

Nominal jacket water pressure in crankcase 170 kPa
 Maximum top temperature (standby) 98°C
 Maximum static pressure head on pump 70 kPa
 Draw down capacity 22 litres
 Maximum permissible restriction to coolant pump flow 20 kPa
 Thermostat operating range 71 - 85°C

Ambient cooling clearance (open ElectropaK prime power) based on air temp at fan 3°C above ambient.

Maximum additional restriction (duct allowance) to cooling airflow. (standby power) and resultant minimum airflow		
Ambient clearance: inhibited coolant	Duct allowance kPa	Minimum airflow m ³ /sec
1800 rpm	1800 rpm	1800 rpm
34°C	0.2	20

Radiator

Face area 1.496 m²
 Rows and materials 1 row, Aluminium

Material and gills per inch

Jacket water 12 gills/inch, Aluminium
 Charge air section 12 gills/inch, Aluminium

Width and height of matrix

Height 1651 mm
 Width 1610 mm
 Weight (dry) radiator 480 kg
 Total coolant capacity 120 litres
 Pressure cap setting 103 kPa

Coolant jacket data	Units	1800 rpm
Coolant flow	litres/s	12
Coolant exit temperature (maximum)	°C	98
Coolant entry temperature (minimum)	°C	70

Chargecooler, integral with radiator

Face area 1.126 m²

Coolant pump

Speed and method of drive 1.4 x e rpm, gear driven

Fan

Type Engine mounted
 Speed (1800) 1404 rpm
 Diameter 1.2 m
 Number of blades:
 1800 rpm steel fan 8
 Drive ratio 0.78:1

Lubrication system

Recommended lubricating oil to conform with the specification of API CG4 15W/40.

Lubricating oil capacity

Sump maximum 113.4 litres
 Sump minimum 90.7 litres

Lubrication oil pressure at rated speed

Minimum 240 kPa
 Oil relief valves open 300 kPa
 Oil filter spacing 40 microns
 Sump drain plug tapping size G1
 Oil pump speed and method of drive 1.4 x e rpm, gear driven

Oil pump flow

1800 rpm 4.4 litres/seconds
 Oil consumption as a percentage of full load fuel consumption less than 0.25%

Normal operating angles

Front and rear 5°
 Side tilt 10°

Electrical system

Type Insulated return
 Alternator 55 amps, 28 volts, at 20 °C ambient
 Starter motor 7.5 kW
 Number of teeth on flywheel 190
 Number of teeth on starter motor 12
 Minimum cranking speed 120 rpm
 Pull in current of starter motor solenoid 30 amps at 24 volts
 Hold in current of starter motor solenoid 9 amps at 24 volts
 Engine stop solenoid 24 volts
 Pull in current of stop solenoid 60 amps at 24 volts

Starting requirements

Temperature range		
To 10 °C (50 °F)	Oil:	CG4 15w/40
	Starter:	1 x 24 volts
	Battery	2 x 12v x Ah 143
	Maximum breakaway Current	1000 amps
	Cranking current	600 amps
	Aids	Not required

Note: The battery capacity is defined by the 20 hour rate at 0 °C.

Note: The oil specification should be for the minimum ambient temperature as the oil will not be warmed by the immersion heater.

Note: The breakaway current is dependant on the battery capacity available. Cables should be capable of handling the transient current which may be up to double the steady cranking current.

Fuel system

Recommended fuel to conform to BS2869 1998 Class A1, A2
 Type of injection system Direct injection
 Fuel injector Combined unit injector
 Injector pressure
220 ATS (NOP) 1400 bar maximum operating pressure
 Delivery at 1800 rpm 810 litres/hour
 Fuel delivery pump pressure250 kPa
 Fuel lift pump maximum suction head2.5 metres
 Fuel return maximum pressure head see manual
 Fuel filter spacing 10 microns
 Governor type Electronic

Fuel consumption gross (best SFC)

4006-23TAG4	g/kWh	litres/hour
	1800	1800
Standby	223	233
Prime	211	200
Baseload	210	159
75% prime	207	147
50% prime	204	129

Note: All figures based on assumed density of 0.85, gross mechanical output. For fuel consumption based on electrical output of the generating set contact your OEM.

Induction system

Maximum air intake restriction of engine

Clean filter 1.25 kPa
 Dirty filter 3.7 kPa
 Air filter type Dry, paper

Exhaust system

Exhaust outlet size (internal) 2 x 152.4 mm

Exhaust back pressure for total system

TAG4 6 kPa

Note: For recommended pipe sizes see the Installation Manual.

Engine mounting

Maximum additional load applies to flywheel due to all rotating components650 kg

Position of engine centre of gravity (wet):

Forward of the rear face of the crankcase 625 mm

Above the crankshaft centre line 140 mm

Load acceptance (cold)

At 1800 rpm

Engine type	Initial load acceptance when engine reaches rated speed (15 seconds maximum after engine starts to crank)				2nd load application immediately after engine has recovered to rated speed (5 seconds after initial load application)			
	Prime power %	Load kWm nett/kWe	Transient frequency deviation %	Frequency recovery time seconds	Prime power %	Load kWm nett/kWe	Transient frequency deviation %	Frequency recovery time seconds
4006-23TAG4	61	483/454	≤ -10	5	39	272/221	≤ -10	5

The above complies with requirements of Classification 3 & 4 of ISO 8528-12 and G2 operating limits stated in ISO 8528-5.

The above figures were obtained under test conditions as follows:

Engine block temperature 45 °C

Alternator efficiency 94 %

Minimum ambient temperature 10 °C

Isochronous governing

Under frequency roll off (UFRO) set to 1 Hz below rated frequency

Typical alternator inertia 20 kgm²

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

The information given on this Technical Data Sheet is for standard engines, and for guidance only. For ratings other than shown contact the Applications Department.

Noise data

Noise levels

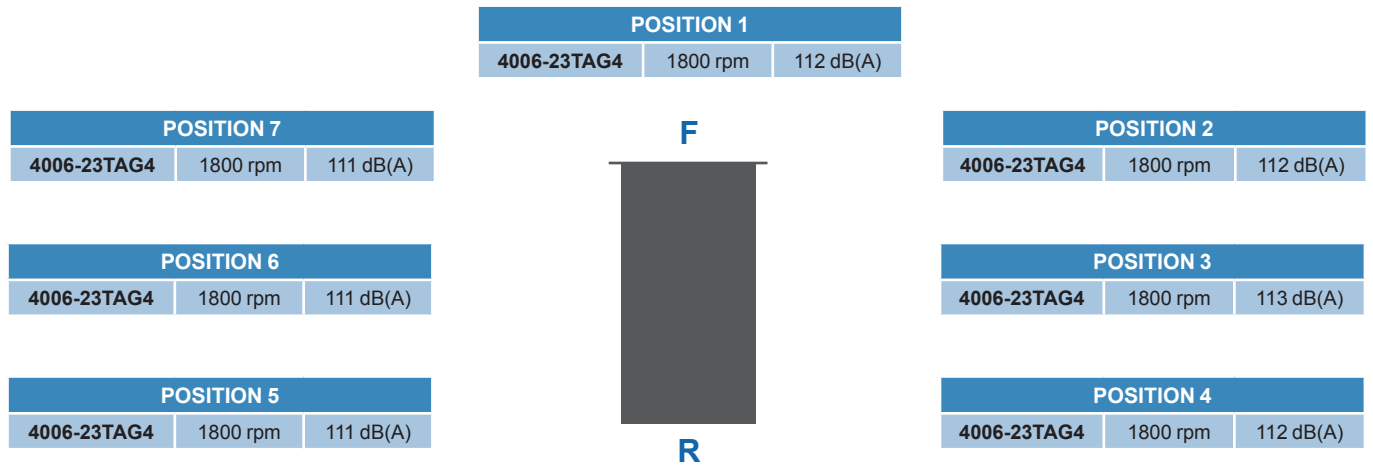
The figures for total noise levels are typical for an engine running at Prime power rating in a semi-reverberant environment and measured at a distance of one metre from the periphery of the engine.

Octave analysis

The following histograms show an octave band analysis at the position of the maximum noise level.

Total noise levels

Sound pressure level re: -20×10^{-6} pa
 Speed 1800 rpm Ambient noise level 63 dB(A)
 Raw exhaust noise level 124 dB(A)



4006-23TAG4

