

## 4000 Series

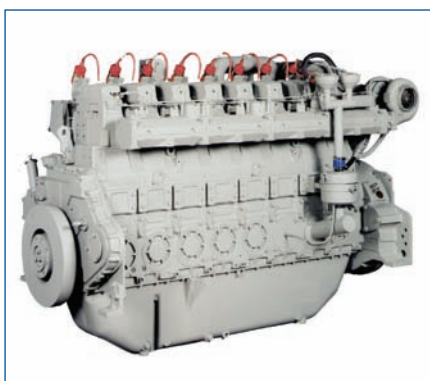
### 4006-23TRS1

### 4006-23TRS2

#### Spark Ignited Gas Engine

322 kWm at 1500 rpm

393 kWm at 1500 rpm



#### Economic power

- Utilises advanced combustion technology to deliver durable and reliable power.
- High commonality of components with other engines in the 4000 Series family for reduced stocking levels.
- Individual large valve cylinder heads with matched deep bowl pistons for greater swirl, achieve high mechanical efficiency.

#### Reliable power

- Developed and tested using the latest engineering techniques.
- Piston temperatures controlled by an advanced gallery jet cooling system.
- Extended durability and reduced servicing with extended component life add benefit of the reduced whole life cost.

#### Compact, clean and efficient power

- Exceptional power-to-weight ratio and compact size give optimum power density for ease of transportation and installation.
- In excess of 40% mechanical efficiency.
- Designed to provide excellent service access for ease of maintenance.
- Engines to comply with major international standards.
- All engines in the 4000 Series family are capable of meeting the NOx requirements of TA Luft.

Developed from a proven engine range that offers superior performance and reliability, the 4006-23TRS is designed to meet the future demands of the power generation industry for clean, efficient gas fuelled engines.

The 4006-23TRS 6-cylinder spark ignition gas engine offers high performance, dependability and reliability whilst meeting the market's increasingly stringent emission requirements.

The 4006-23TRS is a turbocharged, air to water charge cooled, 6 cylinder inline engine, designed for operation on a wide range of methane based gases. Its premium features and design provide economic and durable operation as well as exceptional mechanical efficiency and power-to-weight ratio, whilst offering improved emissions. The overall performance and reliability characteristics make this the prime choice for today's power generation industry.

Engine Speed (rev/min)	Type of Operation	Typical Generator Output (Gross)	
		kWe	Gross Engine Power kWm
4006-23TRS1	Continuous Operating Power	307	322
4006-23TRS2	Continuous Operating Power	375	393

The above ratings represent the engine performance capabilities to conditions specified in ISO 8528/1, ISO 3046/1:1986, BS 5514/1. Derating may be required for conditions outside these; consult Perkins Engines Company Limited.

Generator powers are typical and are based on an average alternator efficiency and a power factor (cos.  $\theta$ ) of 1.

Fuel specification: Natural gas having a Lower Calorific Value of 34.71 MJ/m<sup>3</sup>.

#### Rating Definitions

Continuous Operating Power: Power available for true Base load, rating as defined in ISO 8528/1, BS 5514/1 – No overload permitted.

All information in this document is substantially correct at time of printing and may be altered subsequently

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# 4000 Series

## 4006-23TRS1&2

### Spark Ignited Gas Engine Electronit/Cogen Specification

#### Air inlet and exhaust

- Mounted air filter – replaceable cartridge type
- Dry exhaust manifolds
- Exhaust manifold shielding (supply on Cogen only)
- High efficiency turbocharger

#### Governing, gas and ignition system

- Air/Fuel mixer with zero pressure regulator and mixture adjustment screw
- Metal braided flexible gas connection
- Altronic 800 'C' Series ignition system with individual cylinder ignition coils, spark plugs
- Digital governing system, governing to ISO8528-5 class G2

#### Lubrication system

- Gear driven, externally mounted lubricating oil pump
- Wet sump with filler and dipstick
- Full-flow replaceable canister type oil filters
- Jacket water cooled shell and tube oil cooler/stabiliser
- Closed circuit crankcase ventilation system – natural gases only

#### Cooling system

- Pressurised jacket water cooling system, gear-driven jacket water circulating pump – supply on Electronit only
- Air to water charge cooler, pipe work - supply on Electronit only
- Jacket water thermostatic control - supply on Electronit only

#### Electrical equipment

- 24 volt starter motor
- 24 volt 70 amp battery charging alternator with integral voltage, regulator and activating switch – supply on Electronit only
- High coolant temperature
- Low oil pressure switch
- High manifold pressure switch
- Digital knock detection (supply on TRS2 only)

#### Flywheel and Housing

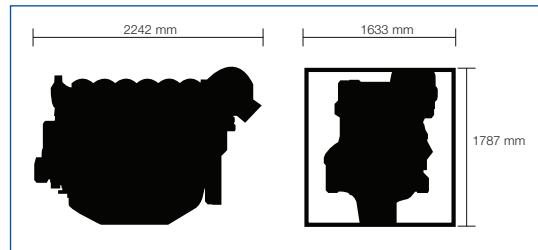
- High inertia flywheel to SAE J620 Size 14
- SAE 'O' flywheel housing

#### Mountings

- Front and rear engine mounting support

#### Literature

- User's Handbook and Parts Manual



### General Data

Number of cylinders	6
Cylinder arrangement	Vertical in-line
Cycle	4 stroke
Induction system	Turbocharged and air-to-water charge cooled
Combustion system	Spark ignited
Cooling system	Water cooled
Bore and stroke	160 x 190 mm
Displacement	22.92 litres
Compression ratio	12.0:1
Direction of rotation	Anti-clockwise viewed on flywheel
Total lubrication system capacity	122.7 litres
Total coolant capacity	36 litres
Length	2242 mm *2242
Width	1633 mm *1418
Height	1787 mm *1787
Dry weight	2,420 kg
*Cogeneration unit	

### Optional Equipment

- Engine specification suitable for running on landfill gas, digester gas, biogas and coal bed mine gas. (please contact Perkins Engines Company Limited for details and limitations)
- 220 / 240 Volt thermostatically controlled immersion heater
- Three way thermostatic valve for charge cooler cooling circuit
- Mechanically driven water pump for charge cooler circuit
- Exhaust temperature monitoring
- Tool kit
- Additional manuals

Designation	Cogeneration unit		Electro unit	
	TRS1	TRS2	TRS1	TRS2
Fuel Consumption gross at 1500 rev/min	kj/kw	kj/kw	kj/kw	kj/kw
Continuous Baseload Rating	2.55	2.49	2.58	2.52
75% of Prime Power Rating	2.63	2.57	2.66	2.60
50% of Prime Power Rating	2.84	2.73	2.87	2.76
25% of Prime Power Rating	3.88	3.35	3.91	3.38

Fuel consumption figures are for TA Luft compliant engines at ISO 8528/1 in "Cogen" engine specification, running on British natural gas with LCV 34.71 MJ/Sm<sup>3</sup>



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