

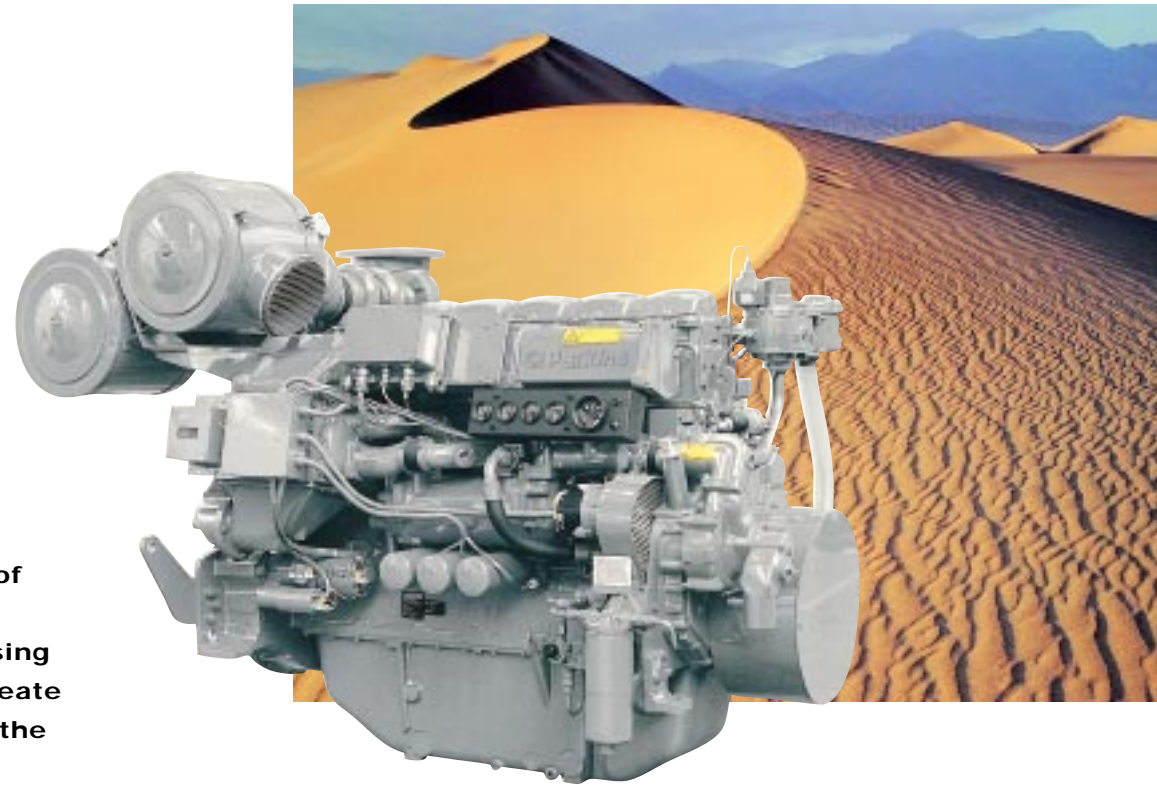
## 4000 Series



*Power that  
pays*



# 4000 Series A new generation of engines



**The Perkins' 4000 Series range of diesel engines was designed in advance of today's uncompromising market place demands and to create a new generation of engines for the 21st century.**

Spanning the power band 446 bhp–2529 bhp (333kW–1886kW) the 4000 Series is a true family of 6 and 8 cylinder in-line and 12 and 16 cylinder Vee engines with a common design concept.

The 4000 series features include exceptional power to weight ratios, commonality of components, low fuel and oil consumptions, low levels of gaseous emissions, overall performance and reliability which set new standards for diesel engines.

The Perkins' 4000 Series has proved itself in the most arduous conditions worldwide, from Greenland to the Arabian Deserts.

**The 4000 Series is the result of a 10 year research programme to develop a new design giving maximum reliability, durability and reduced running costs.**

The latest computer aided design technology was used to help create the new range. Our engineers concentrated on the combustion process to achieve the best fuel efficiency and produce high power in a compact engine.

Central to the 4000 Series is a unique piston and cylinder design which incorporates a unit fuel injector. All 4000 Series engines benefit from this proven design. Individual cam/rocker operated unit injectors achieve high pressures to ensure ultra-fine atomisation and controlled rapid combustion resulting in low smoke and gaseous emissions, while producing high powers per cylinder. The application of unit injection eliminates the need for external high pressure fuel pipes.

The pistons are aluminium alloy and incorporate gallery cooling thus ensuring a thermally stable piston throughout the load and speed range. This feature gives longer life of piston-rings and cylinder liners, while decreasing the risk of potentially harmful carbon deposits.

The upper ring is wedge shaped running in a Ni-resist iron carrier, thus eliminating top ring groove wear and ring sticking after extended periods of running at high powers.

The 4000 Series cylinder and injection system are common throughout the range allowing these engines to achieve the highest power outputs per litre of cylinder capacity.

The range has externally mounted large capacity oil pumps to supply cool pressurised oil to all working surfaces of the engine in addition to the piston cooling jets. Wedge shaped gudgeon pin bosses create large bearing areas, thus enabling high power to be transmitted to robust induction hardened crankshafts.

Each cylinder has an individual four valve head to give optimised air flows to these high specific power engines.

## High power to weight ratio

The 4000 Series engines are noted for achieving high power outputs per cylinder and offering high power to weight ratios. The range provides power outputs normally only associated with much larger engines; their compact size and low weight reduces shipping costs and allows for easier installation. As the number of cylinders for the output is lower than with other engine designs, the 4000 Series offers considerably reduced maintenance downtime and lower parts costs.

## Ease of servicing

Part of the initial design brief for the 4000 Series was to provide excellent service access and ease of maintenance. The individual cylinder heads can, for example, be easily removed. The unit fuel injection system considerably aids reliability and maintains overall engine efficiency while providing an easily serviced system.

The 4000 Series benefits from the worldwide support of the Perkins International dealer network, sophisticated parts support system and the finest trained engineers.

## Proven power

The 4000 Series has been subject to continued research and development using the latest techniques of diesel engine design and engineering practice. The engines are manufactured to the highest quality standards.

At an early stage, advanced computer predictive techniques and finite element analysis were extensively used. Application of such advanced engineering techniques allowed our engineers to optimise component design, to achieve maximum reliability and component life and thereby further contribute to operating efficiency.



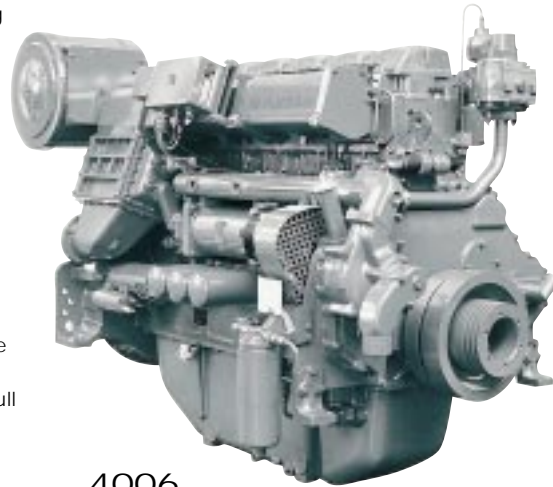
# Premium specification



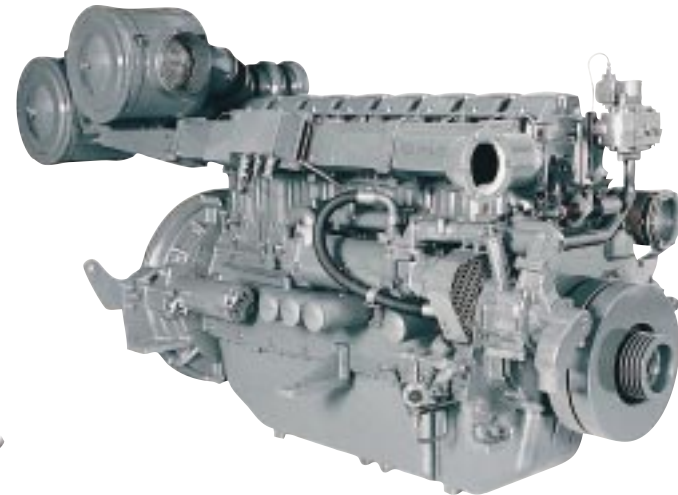
Proven power continued

Later in the development programme, specially constructed test chambers allowed each stage of design and development to be fully tested in rigorous operating conditions, allowing years of simulated usage to be incorporated in basic design decisions. The application of techniques such as photo elastic strain analysis contributed significantly to the success of the development programme.

All engines are fully tested and approved before leaving the Perkins factory and each engine is individually certified as complying with Perkins' quality standards. Since all engines are run before despatch, they can be directly installed on-site and will give full power on installation, without a period of 'bedding-in'.



**4006**  
6 cylinder in-line water cooled diesel engine developing 333-710 kWm net



**4008**  
8 cylinder in-line water cooled diesel engine developing 597-947 kWm net



**4012**  
12 cylinder 60° Vee form water cooled diesel engine developing 576-1423 kWm net



**4016**  
16 cylinder 60° Vee form water cooled diesel engine developing 824-1886 kWm net

## Application

Emission levels are low, typical smoke levels of below 1 Bosch unit being achieved. Coupled with their overall compact size, high power output and low fuel consumption, this makes the 4000 series an exceptional engine range.

Applications typically include: Generating Sets, Pump Sets, Compressor Sets and Stone Crushers.



## Technical data

Premium specification turbocharged, four stroke, water cooled diesel engines. Individual models may be specified with either radiator or heat exchanger cooling, the latter for use in conjunction with remote radiators or cooling towers.

<b>Bore</b>	160mm			
<b>Stroke</b>	190mm			
<b>Compression ratio</b>	13.6:1			
<b>Rotation</b>	Anti-clockwise (When viewed from the flywheel end)			
	<b>4006</b>	<b>4008</b>	<b>4012</b>	<b>4016</b>
<b>Total swept volume (Litres)</b>	22.92	30.56	45.84	61.12
<b>Governing</b>	To ISO 3046/4 A1/BS 5514/4 A1			
<b>Fuel specification</b>	BS 2869 1988 Class A1 + A2 or ASTM D975 No. 2D or equivalent			

**Note** In any proposals involving the use of fuel different from the above specification, an analysis of the proposed fuel should be forwarded to enable Perkins to make recommendations regarding amended maintenance periods for engine and fuel injection equipment.

Full technical data are available on request to cover all aspects of engine specification and performance, installation and application.

## Standard equipment

	4006	4008	4012	4016
Base Engine	★	★	★	★
Fuel Injection System, hand stop control, fuel lift pump and priming pump	★	★	★	★
Electronic Governor	★	★	★	★
Medium Duty Air Cleaners – paper elements	★	★	★	★
24 Volt electrical equipment comprising starter motor, battery charging alternator with low voltage control unit	★	★	★	★
SAE Flywheel and Housing (size dependent on model)	★	★	★	★
Turbochargers	★	★	★	★
Vertical Exhaust Outlets	+	+	+	+
Fuel Oil Filter and Water Separator	★	★	★	★
Lubricating Oil Filters	★	★	★	★
Engine Jacket – Water Oil Cooler/Temperature Stabiliser	★	★	★	★
Thermostats	★	★	★	★
Water Pumps	★	★	★	★
Free End Crankshaft Pulley	+	+	+	+
Crank Case Doors	★	★	★	★
Air to Water Charge Cooler using jacket water	+	+	+	+
Torsional vibration damper to suit most applications	★	★	★	★
Engine protection pack for customer to wire as necessary and comprising a) 24 volt stop solenoid energised to run b) Low oil pressure/high water temperature switch	★	★	★	★
Overspeed Switch with Magnetic Pick-up	★	★	★	★
Induction air shut-off valves			★	★
Engine feet	★	★	★	★
Perkins Engine User's Manuals	★	★	★	★

## Optional equipment

	4006	4008	4012	4016
Tropical Radiator (52°C) with Charge Air Cooler Matrix including water and air pipes, hoses and clips, fan, guards and belts (TAG models)	•	•	•	•
Tropical Radiator (52°C) including water and air pipes, hoses and clips, fan, guards and belts (TWG models)	•	•	•	•
Water pipes, hoses and clips for radiator	•	•	•	•
Heavy-duty air cleaners – paper element with pre-cleaner	•	•	•	•
Changeover lubricating oil filters	•	•	•	•
Changeover fuel oil filters	•	•	•	•
Immersion heater(s) with thermostat	•	•	•	•
Induction air shut-off valves	•	•		



**NB** This list is not exhaustive. Further options may be available to meet particular applications. Please consult Perkins Sales Department.

**Notes** ★ Standard equipment + Standard equipment according to build • Optional equipment





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