400 Series

403D-15G

Diesel Engine - ElectropaK

13.2 kWm @ 1500 rev/min
15.8 kWm @ 1800 rev/min
22.2 kWm @ 3000 rev/min

The 400 Series engine family continues to set new standards in the compact engine market. Developed alongside customers to fulfill their needs in the Genset, Compressor, Agricultural and general Industrial markets.

These new ElectropaKs provide compact power, from a robust family of 3 and 4 cylinder diesel engines designed to provide economic and durable operation at Prime and Standby duties, hitting the key power nodes required by the power generation industry.

Powered by your needs

- The 403D-15G ElectropaK is a powerful but quiet 1.5 litre naturally aspirated 3-cylinder compact package

Compact, Clean, Efficient Power

- Design features on the 400D range of ElectropaKs ensures clean rapid starting in all conditions whilst delivering impressive performance with low operating costs in a small, efficient package size

Lower Operating Costs

- Approved for operation on biodiesel* concentrations of up to 20%.
- Oil and filter changes are 500 hours, dependent on load factor.
- Engine durability and reliability, the warranty offering and ease of installation combine to drive down the cost of ownership.

Long-term Power Solution

- The 400D range of ElectropaKs has been designed to fully comply with stringent EU and EPA emissions regulations, providing an emissions compliant power solution for the future *(see 'Perkins Emissions Statement' on page 2)*

World-class Product Support

- Through an experienced global network of distributors and dealers, fully trained engine experts deliver total service support around the clock, 365 days a year. They have a comprehensive suite of web based tools at their finger tips, covering technical information, parts identification and ordering systems, all dedicated to maximising the productivity of your engine.
- Perkins actively pursues product support excellence by insisting our distribution network invest in their territory to provide you with a consistent quality of support across the globe.
- Throughout the entire life of a Perkins engine, we provide access to genuine OE specification parts giving 100% reassurance that you receive the very best in terms of quality for lowest possible cost… wherever your Perkins powered machine is operating in the world.

Engine Speed	Type of Operation	Typical Generator Output (Net)		Engine Power				Low Idle
				Gross		Net		
		kVA	kWe	kWm	bhp	kWm	bhp	
1500	Prime Power	13.0	10.4	12.2	16.4	12.0	16.0	n/a
	Standby Power	14.3	11.4	13.5	18.1	13.2	17.6	n/a
1800	Prime Power	15.8	12.6	14.7	19.7	14.4	19.3	n/a
	Standby Power	17.4	13.9	16.2	21.7	15.8	21.2	n/a
†3000	Prime Power	21.9	17.6	21.7	29.1	20.2	27.1	1600 ± 25
	Standby Power	24.1	19.3	23.9	32.1	22.2	29.8	1600 ± 25

*Subject to conformance with ASTM D6751 and EN14214.

† Regarding gen sets ≥ 3000 rev/min: 'The U.S. EPA has certified this engine as a **constant speed** engine, with engine speed controlled by a solenoid that allows operation only at idle or full power position. The solenoid is a required element of design. **It is the responsibility of the equipment manufacturer to install the proper solenoid**. Installation of this engine in equipment without the required solenoid (or in any manner that allows variable speed operation) is not covered by EPA certification, voids the emissions warranty, and may subject the equipment manufacturer to penalties under U.S. law'.

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 typical alternator efficiencies and a power factor (cos θ) of 0.8.
Fuel specification: BS 2869: Part 2 1998 Class A2 or ASTM D975 D2.
Rating Definitions: Prime Power: Power available at variable load in lieu of a main power network. Overload of 10% is permitted for 1 hour in every 12 hours operation. **Standby (maximum):** Power available at variable load in the event of a main power network failure. No overload is permitted.
Photographs are for illustrative purposes only and may not reflect final specification.

Publication No. 1911/01/10 Produced in England

400 Series

403D-15G

Standard ElectropaK Specification

Air Inlet
- Mounted air filter

Fuel System
- Mechanically governed cassette type fuel injection pump
- Split element fuel filter

Lubrication System
- Wet steel sump with filler and dipstick
- Spin-on full-flow lub oil filter

Cooling System
- Thermostatically-controlled system with belt driven coolant pump and pusher fan
- Mounted radiator, piping and guards

Electrical Equipment
- 12 volt starter motor and 12 volt 65 amp alternator with DC output
- Oil pressure and coolant temperature switches
- 12 volt shut-off solenoid energised to run
- Glow plug cold start aid and heater/starter switch

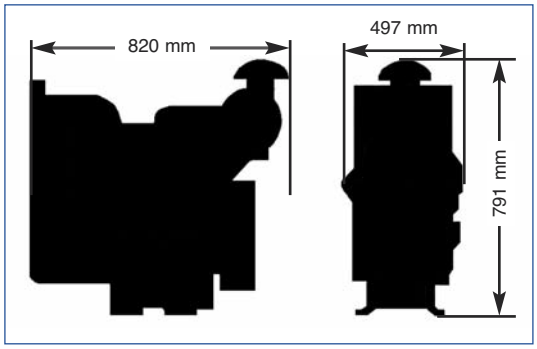
Flywheel and Housing
- 1500/1800 rev/min
- High inertia flywheel to SAE J620 Size 7½ Heavy
- Flywheel housing SAE 4 Long
- 3000 rev/min
- High inertia flywheel to SAE J620 Size 7½ Light
- Flywheel housing SAE 4 Short

Mountings
- Front and rear engine mounting bracket

Optional Equipment
- Workshop manual
- Parts book

Option Groups
A selection of optional items is available to enable you to prepare a specification precisely matched to your needs.

Emissions Statement
- **Constant Speed Engines** for use in Industrial, IOPU and ElectropaK applications: Certified against the requirements of EU Stage IIIA (Directives 97/68/EC, as last amended, for mobile applications); and US EPA Tier 4 Interim (40 CFR Parts 60 for stationary applications and 40 CFR Part 1039 for mobile applications).



Fuel Consumption				
Engine Speed	1500 rev/min		1800 rev/min	
	g/kWh	l/hr	g/kWh	l/hr
Standby	251	4.1	253	4.9
Prime power	248	3.7	250	4.4
75% of prime power	252	2.8	257	3.4
50% of prime power	277	2.0	284	2.5

General Data

Number of cylinders	3
Cylinder arrangement	Vertical in-line
Cycle	4 stroke
Aspiration	Naturally aspirated
Combustion system	Indirect injection
Compression ratio	22.5:1
Bore and Stroke	84 x 90 mm
Displacement	1.496 litres
Direction of rotation	Anti-clockwise viewed on flywheel
Cooling system	Water cooled
Total coolant capacity	6.0 litres
Total lubrication system capacity	6.0 litres
Length	820 mm
Width	497 mm
Height	791 mm
Total weight (dry)	197 kg

Final weight and dimensions will depend on completed specification.

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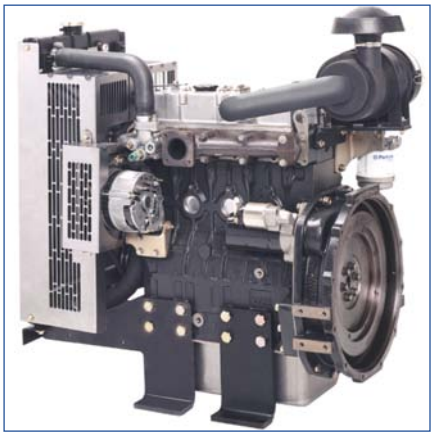

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These new ElectropaKs provide compact power, from a robust family of 3 and 4 cylinder diesel engines designed to provide economic and durable operation at Prime and Standby duties, hitting the key power nodes required by the power generation industry.

400 Series

404D-22G

Diesel Engine - ElectropaK

20.3 kWm @ 1500 rev/min
23.9 kWm @1800 rev/min
33.4 kWm @ 3000 rev/min

Powered by your needs

- The 404D-22G ElectropaK is a powerful but quiet 2.2 litre naturally aspirated 4-cylinder compact package

Compact, Clean, Efficient Power

- Design features on the 400D range of ElectropaKs ensures clean rapid starting in all conditions whilst delivering impressive performance with low operating costs in a small, efficient package size

Lower Operating Costs

- The compact package Size makes Installation and transportation easier and more cost effective
- Operating and maintenance costs are reduced through excellent fuel and oil economy
- Service intervals are set at 500 hours as standard and Perkins provides comprehensive warranty cover for two years, with three years on major engine components. A low usage warranty package is also available

Long-term Power Solution

- The 400D range of ElectropaKs has been designed to fully comply with stringent EU and EPA emissions regulations, providing an emissions compliant power solution for the future

World-class Product Support

- At Perkins we are constantly researching, developing and investing in our products and services. Total worldwide support is provided through a network of distributors and service outlets, providing access to over 50,000 parts and exchange units 24 hours a day, 365 days a year. This support is enhanced by TIPSS (The Integrated Parts and Service System). TIPSS enables customers to electronically specify and order parts as well as service 400 Series engines with online guides and service tools

Emissions statement

- Certified against the requirements of EU2007 (EU 97/68/EC Stage II) and EPA Interim Tier 4 (EPA 40 CFR Part 1039 Interim Tier 4) legislation for non-road mobile machinery, powered by constant speed engines

Engine Speed	Type of Operation	Typical Generator Output (Net)		Engine Power			
				Gross		Net	
		kVA	kWe	kWm	bhp	kWm	bhp
1500	Prime Power	20.0	16.0	18.7	25.1	18.4	24.6
	Standby Power	22.1	17.7	20.6	27.6	20.3	27.2
1800	Prime Power	24.0	19.2	22.0	29.5	21.6	29.0
	Standby Power	26.6	21.3	24.3	32.6	23.9	32.1
3000	Prime Power	33.6	26.9	31.2	41.8	30.2	40.8
	Standby Power	37.2	29.7	34.4	46.1	33.4	44.8

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 typical alternator efficiencies and a power factor (cos θ) of 0.8.

Fuel specification: BS 2869: Part 2 1998 Class A2 or ASTM D975 D2.

Rating Definitions
Prime Power: Power available at variable load in lieu of a main power network. Overload of 10% is permitted for 1 hour in every 12 hours operation.

Standby (maximum): Power available at variable load in the event of a main power network failure. No overload is permitted.
Photographs are for illustrative purposes only and may not reflect final specification.

Publication No. 1912/11/08 Produced in England

400 Series

404D-22G

Standard ElectropaK Specification

Air Inlet
- Mounted air filter

Fuel System
- Mechanically governed cassette type fuel injection pump
- Split element fuel filter

Lubrication System
- Wet steel sump with filler and dipstick
- Spin-on full-flow lub oil filter

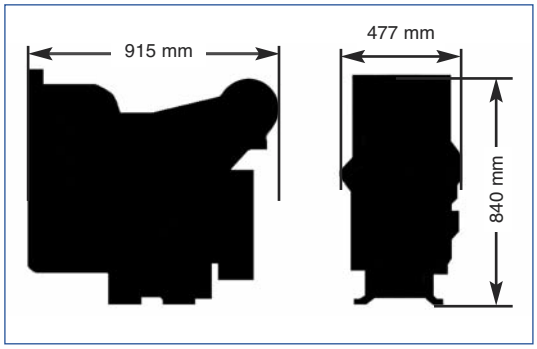
Cooling System
- Thermostatically-controlled system with belt driven coolant pump and pusher fan
- Mounted radiator, piping and guards

Electrical Equipment
- 12 volt starter motor and 12 volt 65 amp alternator with DC output
- Oil pressure and coolant temperature switches
- 12 volt shut off solenoid energised to run
- Glow plug cold start aid and heater/starter switch

Flywheel and Housing
- 1500/1800 rev/min
- High inertia flywheel to SAE J620 Size 7½ Heavy
- Flywheel housing SAE 4 Long
- 3000 rev/min
- High inertia flywheel to SAE J620 Size 7½ Light
- Flywheel housing SAE 4 Short

Mountings
- Front and rear engine mounting bracket

Optional Equipment
- Workshop manual
- Parts book



Fuel Consumption				
Engine Speed	1800 rev/min		1500 rev/min	
	g/kWh	l/hr	g/kWh	l/hr
Standby	235	4.7	244	4.1
Prime power	233	4.3	237	3.7
75% of prime power	240	3.3	238	2.7
50% of prime power	262	2.4	258	2.0

General Data

Number of cylinders	4
Cylinder arrangement	Vertical in-line
Cycle	4 stroke
Aspiration	Naturally aspirated
Combustion system	Indirect injection
Compression ratio	23.3:1
Bore and Stroke	84 x 100 mm
Displacement	2.216 litres
Direction of rotation	Anti-clockwise viewed on flywheel
Cooling system	Water cooled
Total coolant capacity	7.0 litres
Total Lubrication system capacity	10.6 litres
Length	915 mm
Width	477 mm
Height	840 mm
Total weight (dry)	242 kg

Final weight and dimensions will depend on completed specification.

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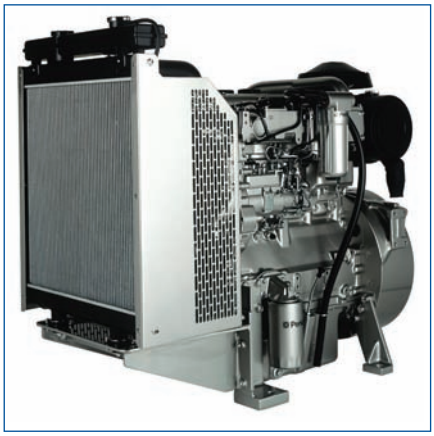

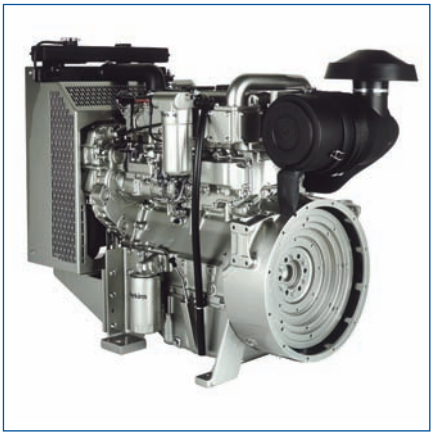

Building upon Perkins proven reputation within the power generation industry, the 1100 Series range of ElectropaK engines now fit even closer to customers needs.

In the world of power generation success is only gained by providing more for less. With the 1103A-33G Perkins has engineered even higher levels of reliability, yet lowered the cost of ownership.

1100A units are designed for territories that do not require compliance to EPA or EU emissions legislation. These units are able to meet TA luft legislation.

1100 Series

1103A-33G

Diesel Engine - ElectropaK

30.4 kWm 1500 rev/min
35.4 kWm 1800 rev/min

Compact, Efficient Power

- 1100 Series is the result of an intensive period of customer research that has guided the development of the range.
- The new 3.3 litre cylinder block ensures bore roundness is maintained under the pressures of operation. It also ensures combustion and mechanical noise is lowered.
- A new cylinder head has re-established Perkins mastery of air control.

Quality by Design

- Product design and Class A manufacturing improvements enhance product reliability while maintaining Perkins legendary reputation for durability.

Cost Effective Power

- Compact size and low noise.
- Lower fuel consumption and oil use.
- 500 hour service intervals.
- Two year warranty.

Product Support

- Perkins actively pursues product support excellence by ensuring our distribution network invest in their territory - strengthening relationships and providing more value to you, our customer
- Through an experienced global network of distributors and dealers, fully trained engine experts deliver total service support around the clock, 365 days a year. They have a comprehensive suite of web based tools at their fingertips covering technical information, parts identification and ordering systems, all dedicated to maximising the productivity of your engine
- Throughout the entire life of a Perkins engine, we provide access to genuine OE specification parts and service. We give 100% reassurance that you receive the very best in terms of quality for lowest possible cost .. wherever your Perkins powered machine is operating in the world

Engine speed rev/min	Operation Type	Typical Generator Output (Net)		Engine Power			
				Gross		Net	
		kVA	kWe	kW	bhp	kW	bhp
1500	Prime Power	30.0	24.0	28.2	37.8	27.7	37.1
	Standby (maximum)	33.0	26.4	31.0	41.6	30.4	40.8
1800	Prime Power	34.9	27.9	33.2	44.5	32.2	43.2
	Standby (maximum)	38.2	30.6	36.5	48.9	35.4	62.5

The above ratings represent the engine performance capabilities to conditions specified in ISO 8528/1, ISO 3046/1:1986, BS5514/1
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. q) of 0.8
Fuel specification: BS 2869: Part 2 1998 Class A2 or DIN EN 590
Lubricating oil: 15W40 to API CG4

Rating Definitions
Prime power: Variable load. Unlimited hours usage with an average load factor of 80% of the published prime power over each 24 hour period. A 10% overload is available for 1 hour in every 12 hours of operation.
Standby power: Variable load. Limited to 500 hours annual usage, up to 300 hours of which may be continuous running. No overload is permitted.

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1100 Series

1103A-33G

Standard ElectropaK Specification

Air inlet
- Mounted air filter

Fuel system
- Rotary type pump
- Ecoplus fuel filter

Lubrication system
- Wet sump with filler and dipstick
- Spin-on oil filter

Cooling system
- Thermostatically-controlled system with gear-driven circulation pump and belt-driven pusher fan
- Mounted radiator and piping

Electrical equipment
- 12 volt starter motor and 12 volt 65 amp alternator with DC output
- 12 volt shutdown solenoid energised to run

Flywheel and housing
- High inertia flywheel to SAE J620 size 10/11½
- SAE 3 flywheel housing

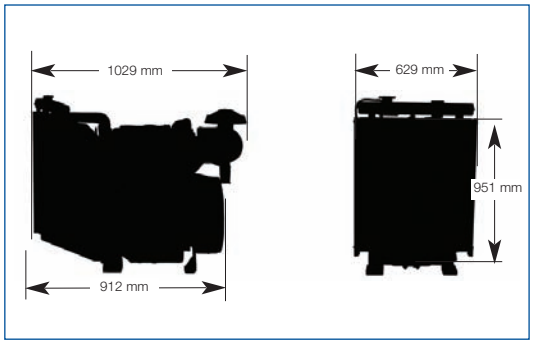
Mountings
- Front engine mounting bracket

Literature
- User's Handbook

Optional equipment
- Woodward electronic governor (LCG2)
- Workshop manual
- Parts book

Option Groups

A selection of optional items is available to enable the customer to prepare a specification precisely matched to the needs.



Fuel Consumption litres/hour Temperate/Tropical				
Engine speed	1500 rev/min		1800 rev/min	
	UK g/hr	l/hr	UK g/hr	l/hr
At standby power	1.73	7.9	2.08	9.5
At prime power	1.56	7.1	1.89	8.6
At 75% of prime power	1.18	5.4	1.45	6.6
At 50% of prime power	0.85	3.9	1.07	4.9

General Data

Number of cylinders	3 vertical in-line
Bore and stroke	105 x 127 mm
Displacement	3.3 litres
Aspiration	Naturally aspirated
Cycle	4 stroke
Combustion system	Direct injection
Compression ratio	19.25:1
Rotation	Anti-clockwise viewed from flywheel
Cooling system	Water-cooled
Total lubrication system capacity	7.9 litres
Total coolant capacity	10.2 litres
Dimensions	Length 1029 mm Width 629 mm Height 951 mm
Dry Weight (approximately)	412 kg

Final weight and dimensions will depend on completed specification.

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