

Technical Data

1100 Series

Diesel Engine Electropak

1104C-44G1

G1 42,8 kWm @ 1500 rev/min

G1 47,9 kWm @ 1800 rev/min

Basic technical data

Number of cylinders ... 4
 Cylinder arrangement ... Vertical in-line
 Cycle ... Four stroke
 Induction system ... Naturally Aspirated
 Compression ratio ... 19,3 : 1
 Bore ... 105 mm
 Stroke ... 127 mm
 Cubic capacity ... 4,4 litres
 Direction of rotation ... Anti-clockwise viewed from flywheel
 Firing order ... 1, 3, 4, 2

Estimated total engine weight

Fan to flywheel housing - dry ... 386 kg

Overall dimensions

-height ... 951,2 mm
 -length ... 1162,4 mm
 -width (includes mounting brackets) ... 622,1 mm

Moments of inertia (mk²)

-flywheel ... 1,14 kgm²

Centre of gravity

Fan to flywheel housing
 -forward from rear of block ... 227,2
 -above centre line of block ... 160,4
 -offset to RHS of centre line ... 8,1

Performance

Note: All data based on operation to ISO/TR14396, ISO3046/1 standard reference conditions.

-all ratings certified to within ... $\pm 5\%$
 Speed variation at constant load ... $\pm 0.5\%$

Test conditions

-air temperature ... 25 °C
 -barometric pressure ... 100 kPa
 -relative humidity ... 30%

Sound level

Average sound pressure level for bare engine without inlet and exhaust at 1 metre

Electronic governor @ 1500 rev/min ... 102,7 dB(A)

Electronic governor @ 1800 rev/min ... 104,4 dB(A)

If the engine is to operate in ambient conditions other than those of the test conditions, suitable adjustments must be made for these changes. For full details, contact Perkins Technical Service Department.

For details of load acceptance values, contact the Applications Department at Perkins Engines Company Limited, Stafford.

Emission capability: At 1500 rev/min only, this engine complies with TA Luft (1986) NOx limits of 4000 mg/nm³.

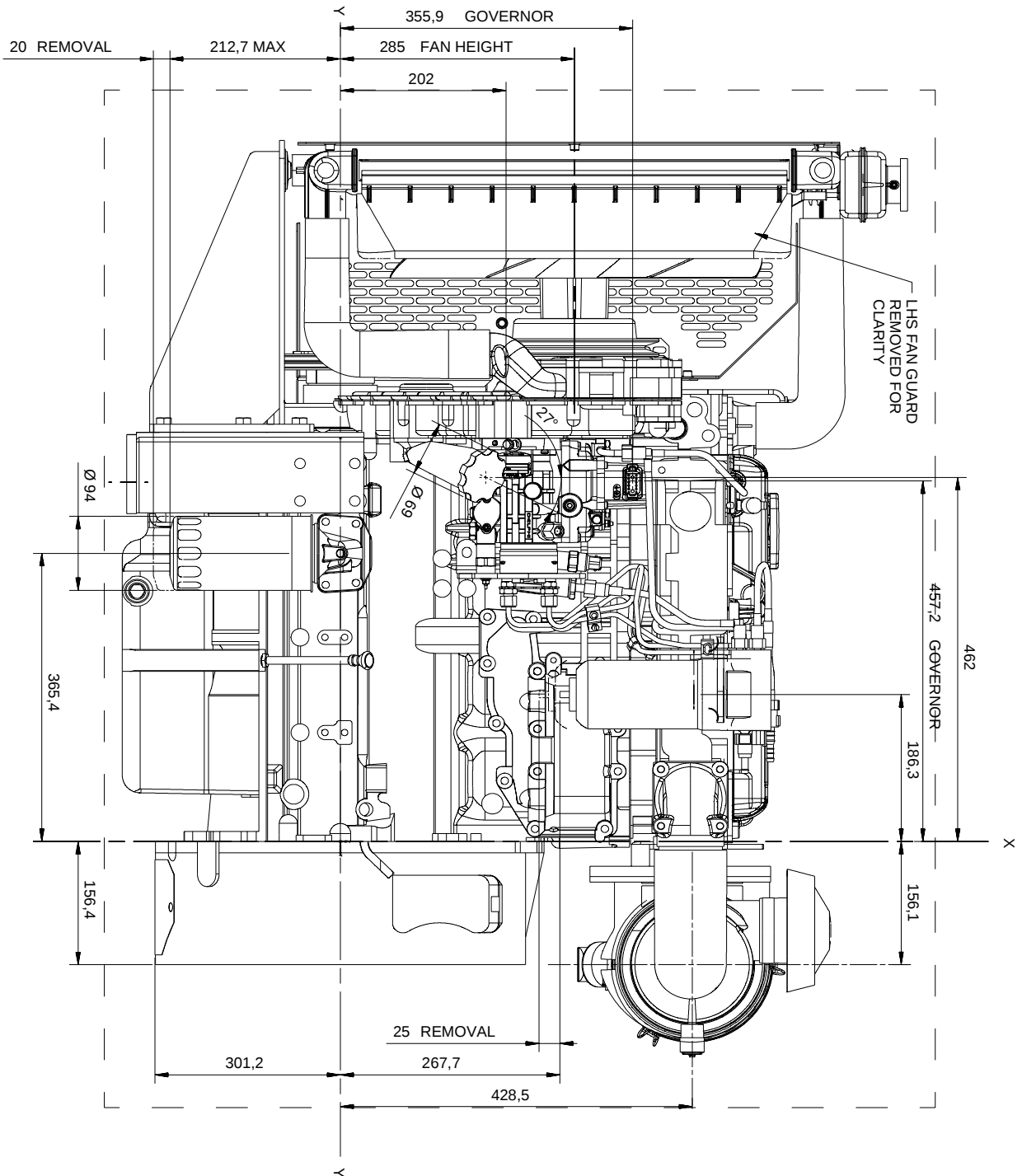
Note: This engine does not comply with any harmonised EU or EPA constant speed emissions legislation.

General installation 1104C-44G1

Designation	Units	Prime	Stand-by	Prime	Stand-by
		50Hz		60Hz	
Gross engine power	kWb	39,5	43,5	44,5	49
Brake mean effective pressure	kPa	713	796	638	749
Engine coolant flow 35 kPa system restriction	l/min	142	142	170	170
Combustion air flow	m³/min	2,92	2,84	3,60	3,58
Exhaust gas flow (max)	m³/min	6,96	7,63	8,80	9,58
Exhaust gas temperature (max)	°C	545	598	560	629
Cooling fan air flow (200 kPa External Restriction)	m³/min	58,2	58,2	81,6	81,6
Overall thermal efficiency (nett)	%	36,7	36,6	36,2	36,0
Typical genset electrical output (0,8pf 25 °C)	kWe	34,9	38,5	39,1	43,1
	kVA	43,7	48,2	48,8	53,9
Assumed alternator efficiency	%	90			
Energy balance					
Energy in fuel (Fuel heat of combustion)	kWt	106	117	120	133
Energy to power output (gross)	kWb	39,5	43,5	44,5	49
Energy to fcooling fan	kWm	0,7		1,1	
ElectropaK net engine power	kWm	38,8	42,8	43,4	47,9
Energy to coolant and lubricating oil	kWt	24	27	26	29
Energy to exhaust	kWt	35	38	43	47
Heat to radiation	kWt	7,5	8,5	6,5	8

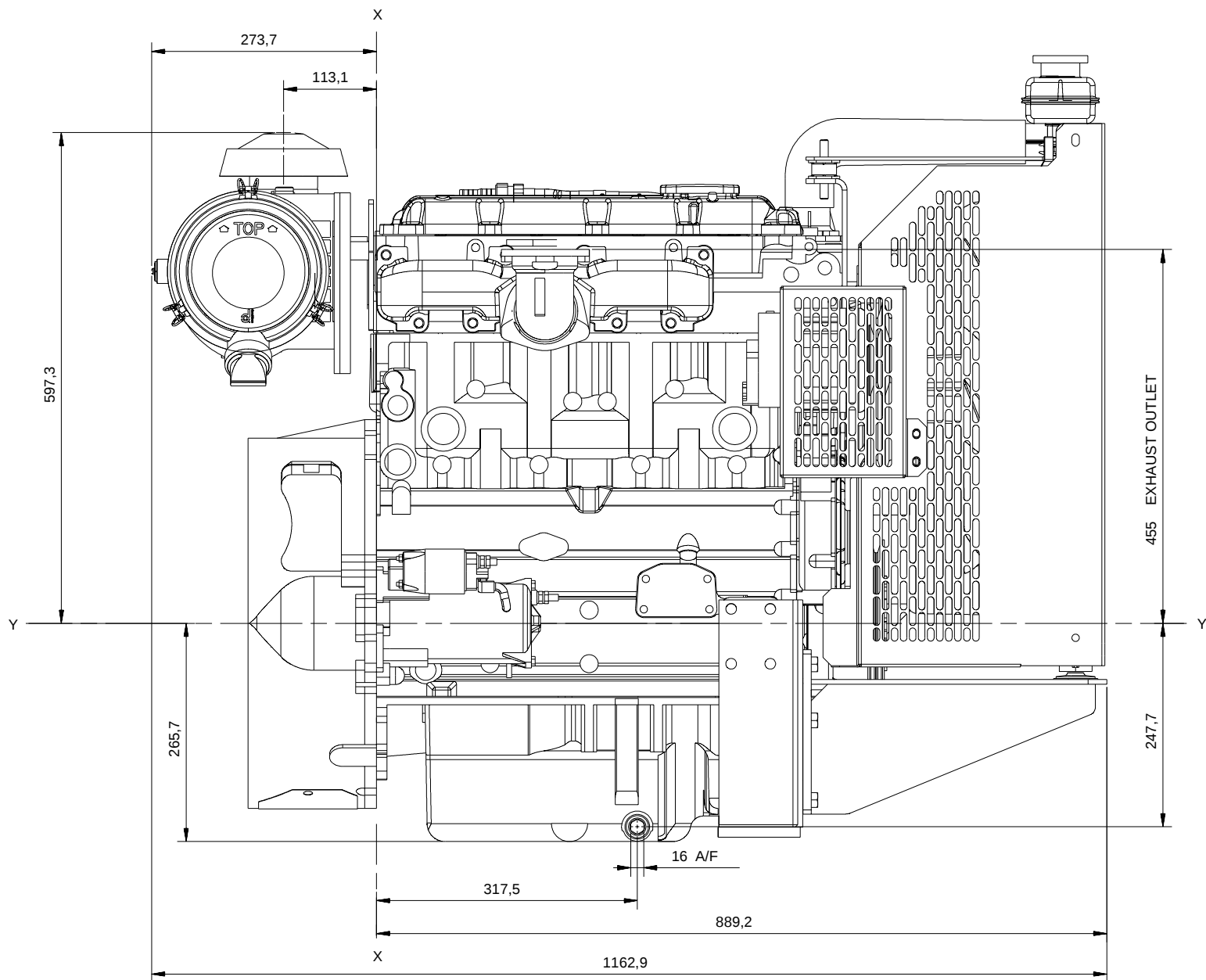
The airflows shown in this table will provide acceptable cooling for an open power unit operating in ambient temperatures of up to 53 °C or 46 °C. if a canopy is fitted. If the power unit is to be enclosed totally, a cooling test should be done to check that the engine cooling is acceptable. If there is insufficient cooling, contact Perkins Technical Service Department.

1104C-44G1- left side view

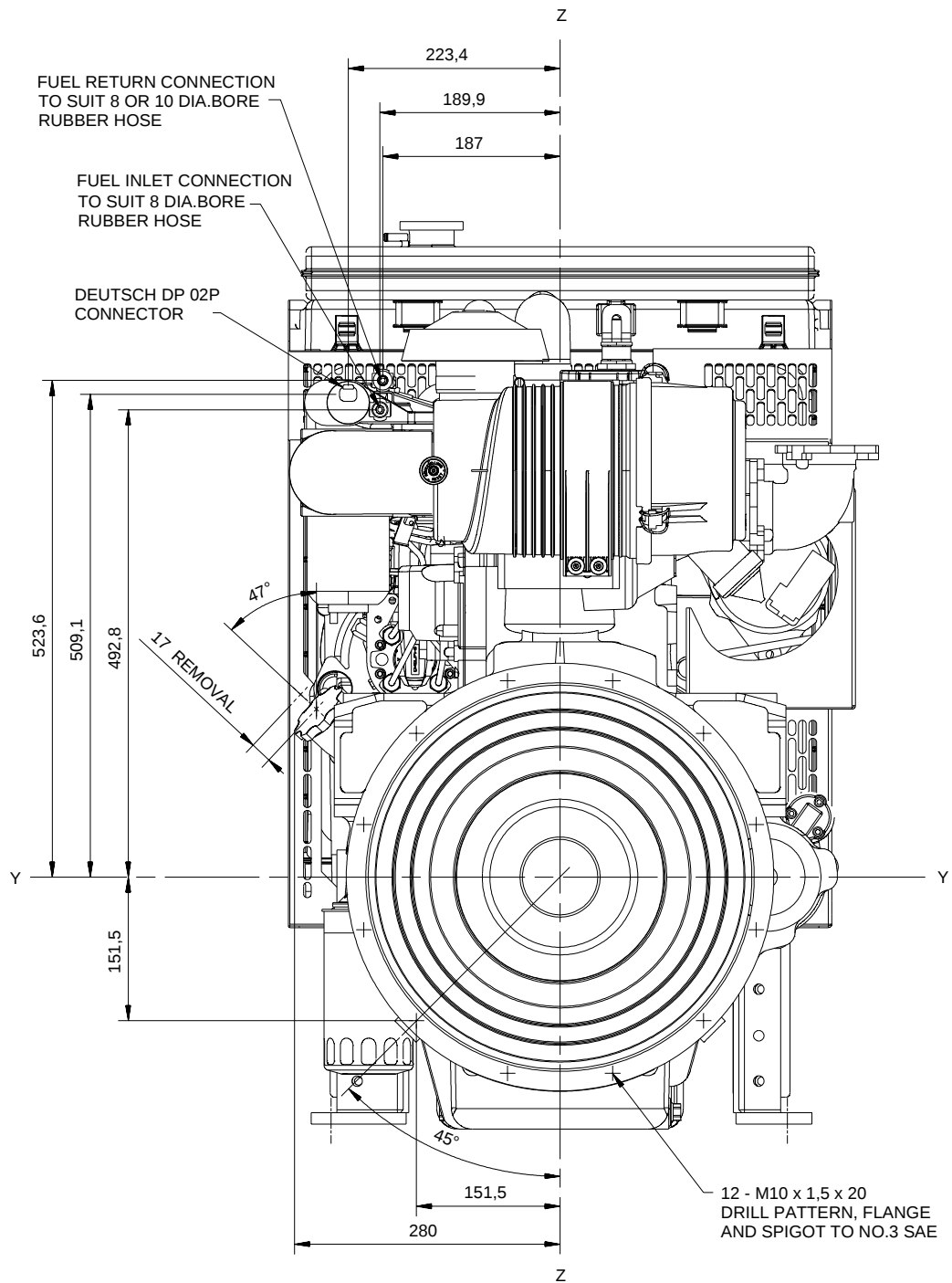


Technical drawing of a mechanical assembly, likely a pump or motor, showing a top view and a side view. The top view includes dimensions: 622,6 (total width), 336 (distance from left edge to center), 185,5 (distance from center to right edge), 135,5 (distance from center to a specific feature), 524,2 (distance between header plates), 526,2 (width of the core area), 272 (width of the base), 127,2 (distance from center to base edge), 298 (height of the main body), 286 (height of the base), 12 (height of the base flange), 674,5 (total height), 690,9 (height to the top of the main body), and 951,2 (total height). The side view shows a cross-section of the assembly with a central core and surrounding housing. The text "OVER CORE" is visible in the top view.

1104C-44G1- right side view



1104C-44G1- rear view



Cooling system

Radiator

- face area... 0,28 m²
- rows and materials ... 54 Aluminium
- matrix density and material... 12,7 Aluminium fins/Inch
- width of matrix... 526 mm
- height of matrix . 524 mm
- pressure cap setting . 107 kPa

Fan

- diameter ... 457 mm
- drive ratio ... 1 :1
- number of blades.. 7
- material ... Composite
- type ... Pusher

Coolant

- Total system capacity
- with radiator ... 12,8 litres
- without radiator . 7.0 litres
- Maximum top tank temperature . 110 °C
- Thermostat operation range... 82 - 93 °C
- Recommended coolant:
- 50% ethylene glycol with a corrosion inhibitor (BS 658 :1992 or MOD AL39) and 50% clean fresh water.

Electrical System

- type ... Negative ground
- alternator... 12V
- starter motor . 12V

Cold start recommendations

- Minimum cranking speed ... 100 rpm

Starter specification

Starter motor type	Minimum starting temperature	Minimum battery type for SAE lubricating oil viscosity			
		15W	10W	5W	0W
12 volt 3.0 kW	°C				
	-5	1 x A			
	-15		1 x A		
	-20			1 x B	
	-25				1 x B

Battery specifications

Commercial ref number	Perkins Code	Battery minimum performance		
		BS 3911	SAE J537	DIN 43539.2
643	A	440	660	400
647	B	510	770	465
069	D	340	540	300
655	E	570	810	490

Exhaust system

- Maximum back pressure . 15 kPa
- Exhaust outlet size .. 64 mm

Fuel system

- Type of injection ... Direct
- Fuel injection pump . Rotary
- Fuel atomiser... Multi-hole
- Nozzle opening pressure ... 29,0 MPa

Fuel lift pump

- flow/hour. 120 - 150 litres/hour
- pressure . 30 - 75 kPa
- Maximum suction head (with clean filter)
... 17 kPa at 1.7 m using 8 mm dia bore pipe
- Maximum static pressure head
... 30 kPa at 2.0 m using 8 mm dia bore pipe

Governor type

- Electronic governor . L Series Electronic Governor
- Electronic governor speed control to... ISO 8528, G3
- Mechanical governor speed control to ... ISO 8528, G2

Fuel specification

- Fuel specification
- USA Fed Off Highway EPA2D 89.330-96
- Density (kg/l @ 15°C)... 0,835/0855
- Viscosity (mm²/s @ 40 °C) .. 2,0/4.5
- Sulphur content ... 0.2% Max.
- Cetane number ... 45min

Fuel consumption litres/hour

Power rating				
Speed	110%	100%	75%	50%
1500	11,7	10,6	7,8	5,4
1800	13,4	12,1	9,2	6,5

Induction system

Maximum air intake restriction

- clean filter. 3 kPa
- dirty filter 6,6 kPa
- air filter type 2 stage cyclonic/paper element

Lubrication system

Lubricating oil capacity:

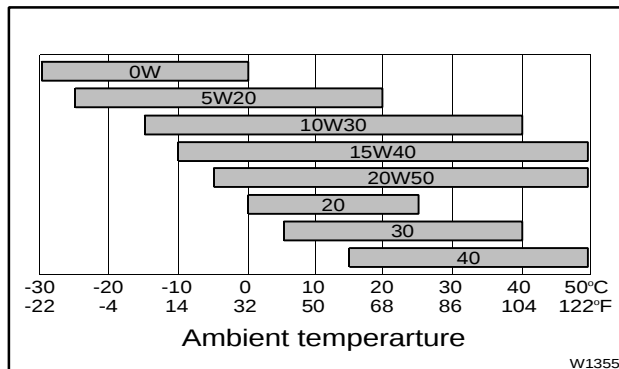
- Total system... .. 7,0 litres
- Minimum 5,5 litres
- Maximum engine operating angles
- front up, front down, right side or left side 30°

Lubricating oil pressure

- at rated speed.. ... minimum 250 kPa
- Normal oil temperature.. ... 110 °C
- Max continuous oil temperature 125 °C
- Oil consumption at full load as a % of fuel consumption... .. 0.15%

Recommended SAE viscosity

A single or multigrade oil must be used which conforms to API-CG4/CH4 or ACEA-E3/E5, see illustration below:



Mountings

- Maximum static bending moment:
- at rear face of block... .. 791Nm



Perkins Engines Company Limited

Peterborough PE1 5NA United Kingdom

Telephone +44 (0) 1733 583000

Fax +44 (0) 1733 582240

www.perkins.com

All information in the document is substantially correct at the time of printing but may be subsequently altered by the company.

Distributed by