

Technical Data

1100 Series

1104C-44TAG1

79,0 kWm @ 1500 rev/min
88,9 kWm @ 1800 rev/min

Diesel Engine Electropak

Basic technical data

Number of cylinders ... 4
 Cylinder arrangement ... vertical in-line
 Cycle ... four stroke
 Induction system ... turbocharged, air-to-air charge cooled
 Compression ratio ... 18-23 : 1
 Bore ... 105 mm
 Stroke ... 127 mm
 Cubic capacity ... 4,4 litres
 Direction of rotation ... anti-clockwise when viewed from flywheel
 Firing order ... 1, 3, 4, 2

Estimated total weight (fan to flywheel housing)

-dry ... 401 kg

Overall dimensions (Electropak)

-height ... 966 mm
 -length ... 1259 mm
 -width (includes mounting brackets) ... 721 mm

Moments of inertia (mk²)

-engine rotational components ... 0,162 kgm²
 -flywheel ... 1,31 kgm²

Centre of gravity (fan to flywheel housing)

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

Performance

Note: All data based on operation to ISO/TR14396, BS5514, ISO3046/1 and DIN 6271 standard reference conditions.

-all ratings certified to within ... ±5%

Cyclic irregularity at rated power with 1,31 kgm² flywheel

- @ 1500 rev/min ... 0,029
 - @ 1800 rev/min ... 0,017

Test conditions

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

Sound level

Estimated sound power level for bare engine
 without inlet and exhaust at 1 metre @ 1500 rev/min ... 101 dB(A)
 without inlet and exhaust at 1 metre @ 1800 rev/min ... 104 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.

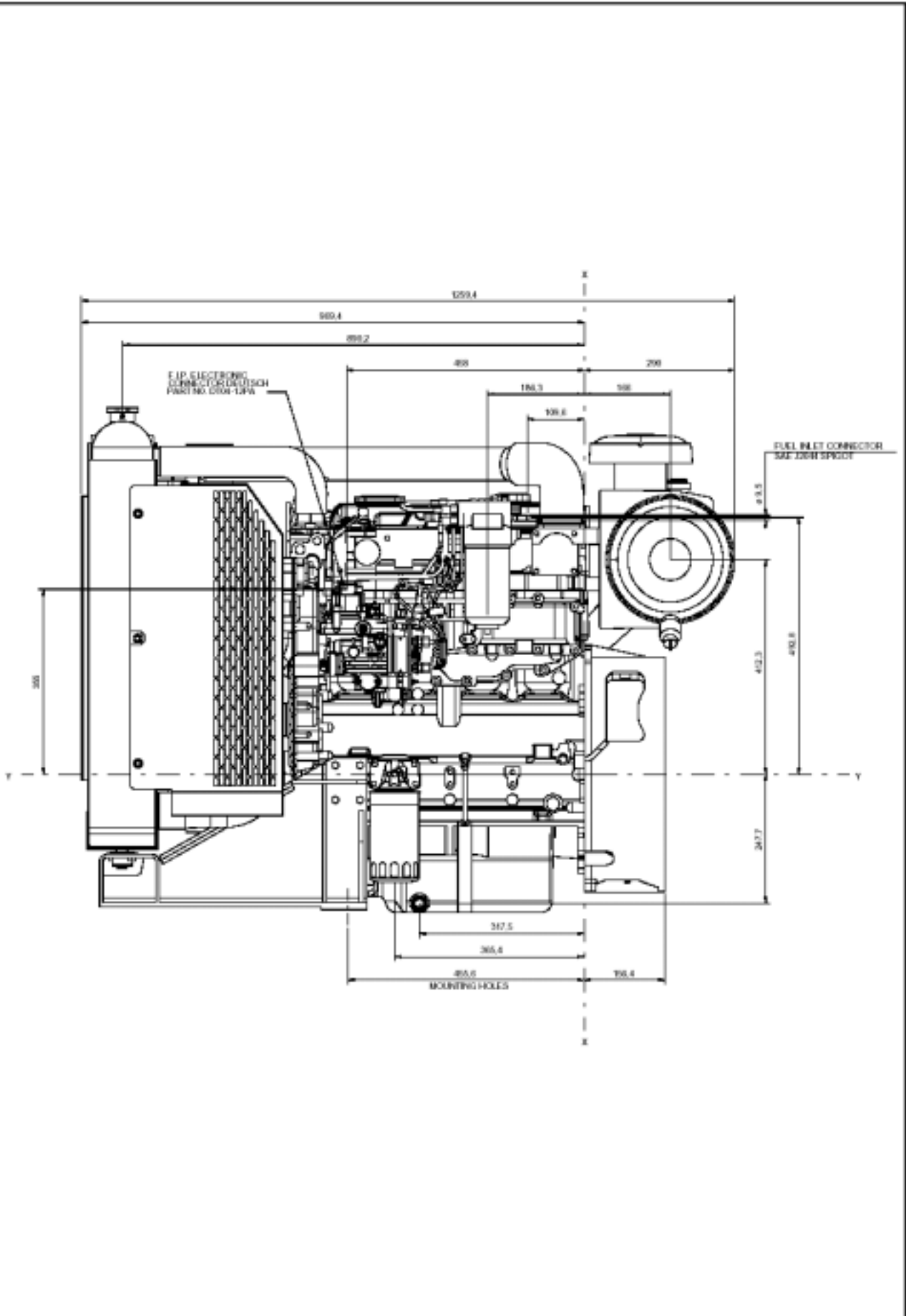
Emissions capability: Certified against the requirements of EU2007 legislation for non-road mobile machinery, powered by constant speed engines (EU 97/68/EC Stage II).

General installation

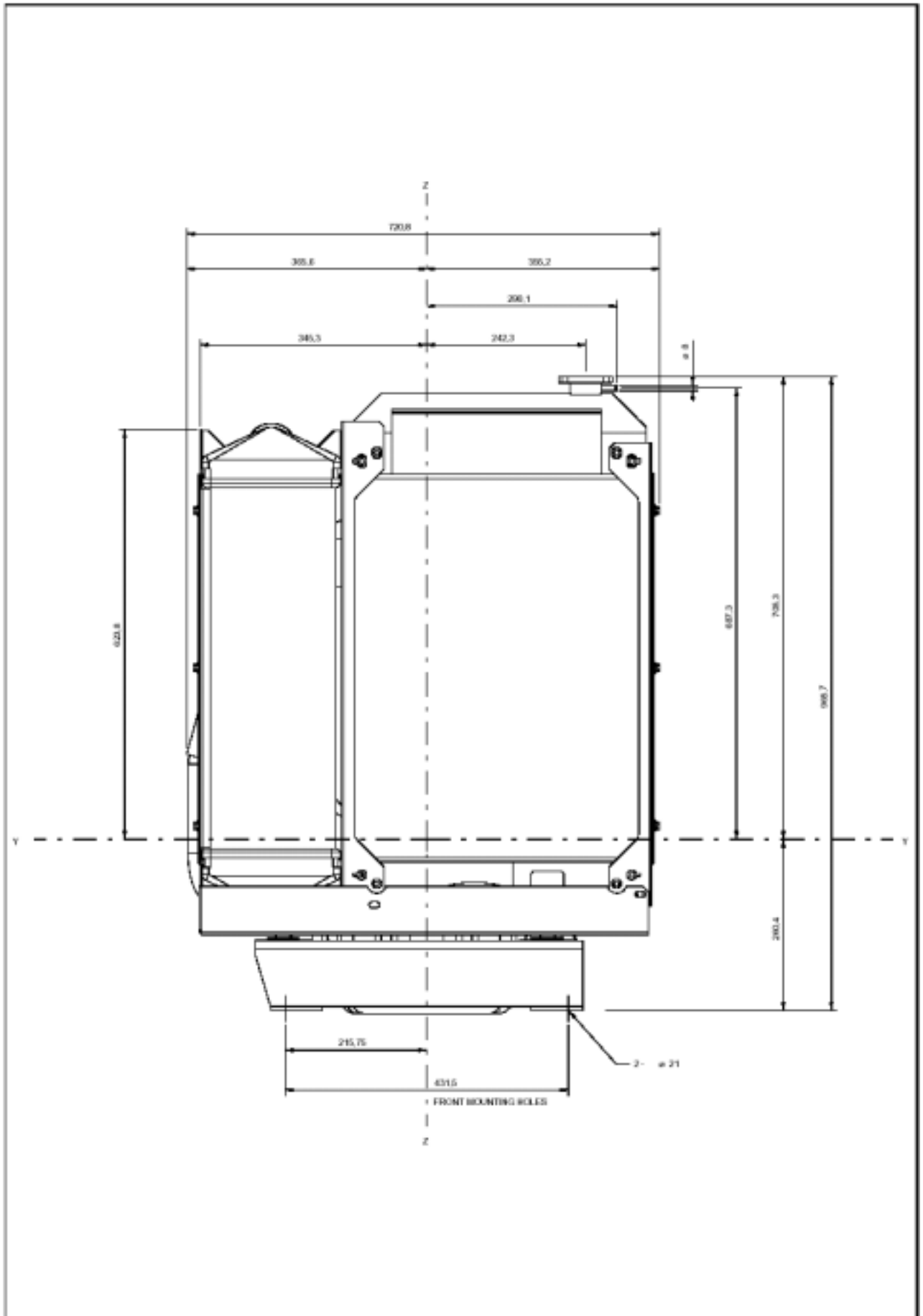
Designation	Units	Prime	Stand-by	Prime	Stand-by
		50 Hz		60 Hz	
Gross engine power	kWb	75	82.5	85,5	94,0
Brake mean effective pressure	kPa	1363	1500	1295	1424
Engine coolant flow (against 35 kPa restriction)	l/min	142		170	
Cooling fan air flow (200 kPa external restriction)	m ³ /min	165.6		225.6	
Combustion air flow (at STP)	m ³ /min	5.28	5.52	7.20	7.45
Exhaust gas flow (Max.)	m ³ /min	12.9	13.7	16.1	16.5
Exhaust gas temperature in manifold Max.	°C	491	489	447	476
Overall thermal efficiency (nett)	%	39,8	37,2	36,2	36,6
Typical genset electrical output (0.8 pf 25 °C)	kWe	64,4	71,1	72,4	80,0
	kVa	80,4	88,8	90,5	100,0
Assumed alternator efficiency	%	90		90	
Energy balance					
Energy in fuel	kWt	179,7	212,4	221,9	242,9
Energy in power output (gross)	kWb	75,0	82,5	85,5	94,0
Energy to cooling fan	kWm	3,5		5,1	
Energy in power output (nett)	kWm	71,5	79,0	80,4	88,9
Energy to exhaust	kWt	55,8	69,3	72,7	79,4
Energy to coolant and oil	kWt	35,9	44,5	46,7	51,0
Energy to radiation	kWt	5,3	6,5	6,9	7,5
Energy to charge cooler	kWt	7,7	9,6	10,1	11,0

Caution: 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.

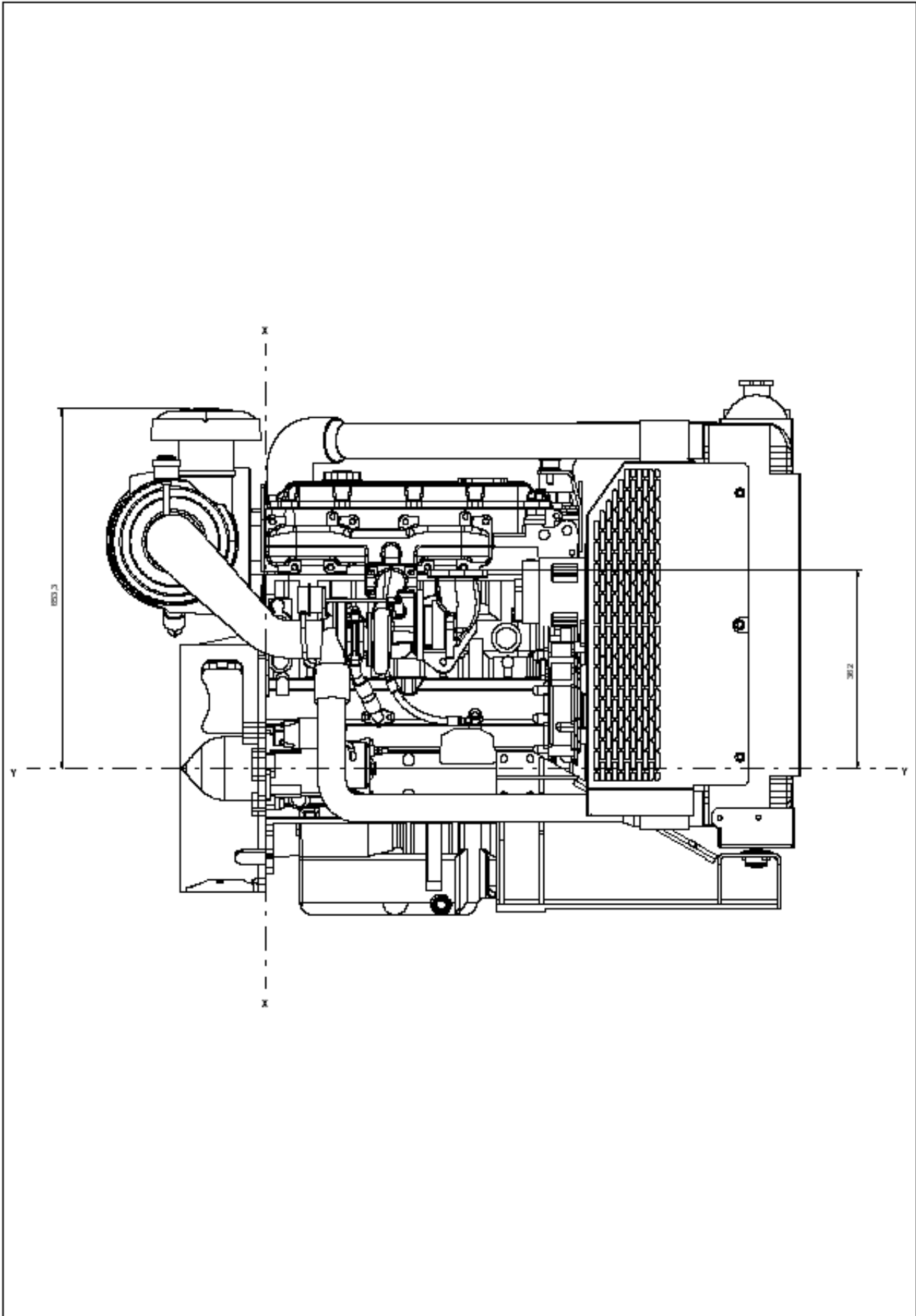
1104C-44TAG1 Electropak - left side view



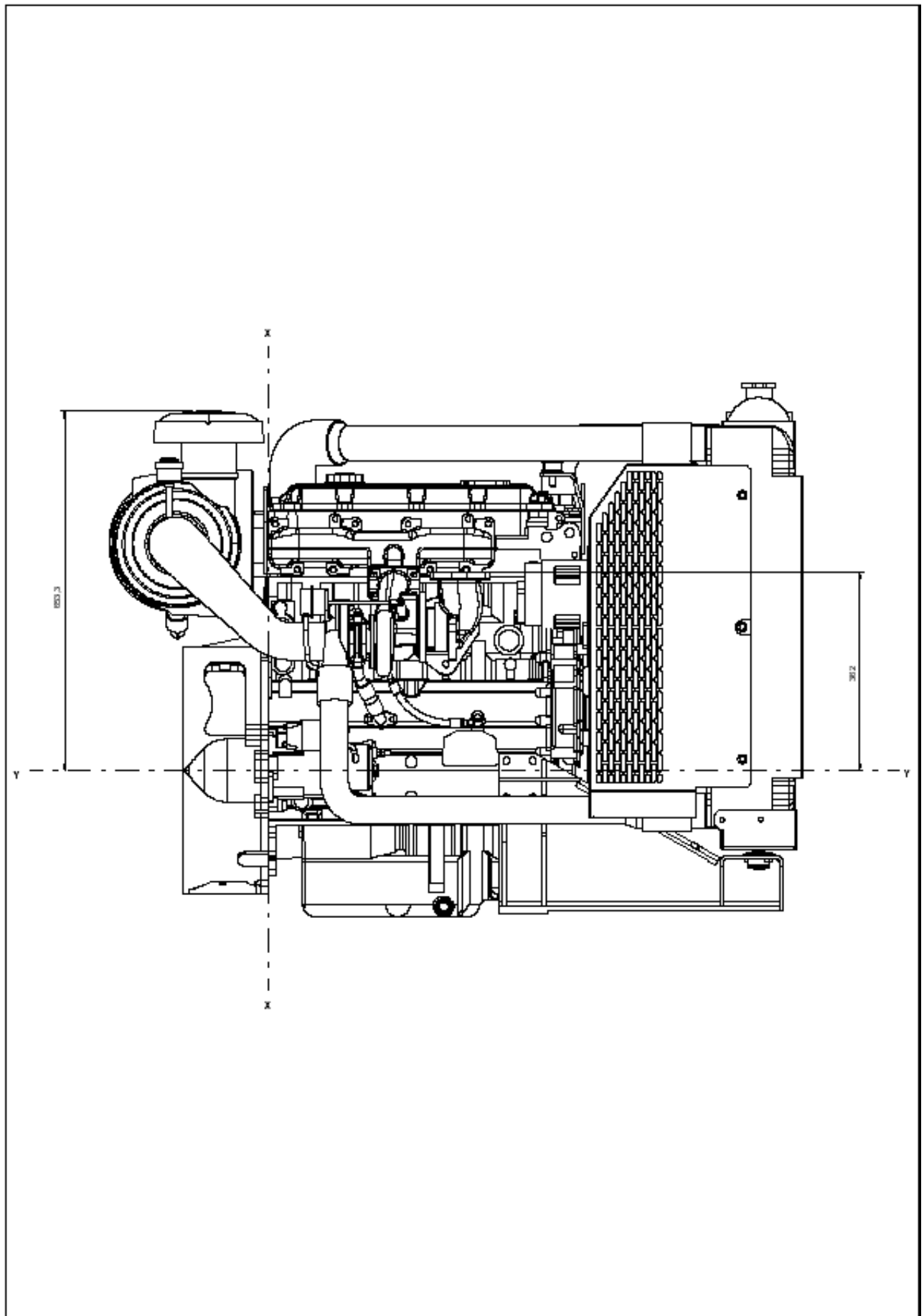
1104C-44TAG1 ElectropaK - front view



1104C-44TAG1 Electropak - right side view



1104C-44TAG1 ElectropaK - right side view



Cooling system

Radiator

- face area ... 0,25 m²
- rows and materials ... 38 aluminium
- matrix density and material ... 9.4 aluminium fins per inch
- width of matrix ... 439 mm
- height of matrix ... 570 mm
- pressure cap setting ... 100 kPa

Fan

- diameter ... 559 mm
- drive ratio ... 1:1
- number of blades ... 10
- material ... composite
- type ... pusher

Coolant

Total system capacity

- with radiator ... 12,6 litres
- without radiator ... 7,0 litres
- Maximum top tank temperature ... 110 °C
- Temperature rise across engine (rating dependent) ... 6,6 - 7,0 °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/24V options
- starter motor ... 12V/24V options

Cold start recommendations

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

Battery selection

Commercial ref. number	Perkins code	Battery minimum performance	
		BS 3911	S.A.E. J537
643	A	440	660
647	B	510	770
069	D	340	540
655	E	570	810

Minimum cranking speed ... 80 rev/min

Exhaust system

Maximum back pressure

- @ 1500 rev/min ... 12 kPa
- @ 1800 rev/min ... 15 kPa
- Exhaust outlet size ... 64 mm

Induction system

Maximum air intake restriction

- clean filter ... 5 kPa
- dirty filter ... 8 kPa
- air filter type ... 2 stage cyclonic/paper element

Fuel system

- Type of injection ... direct
- Fuel injection pump ... rotary
- Fuel atomiser ... multi-hole
- Nozzle opening pressure ... 29,0 MPa

Fuel lift pump

- flow ... 120 - 150 litres/hour
- pressure ... 30 - 75 kPa
- Maximum suction head ... 17 kPa (1.7 m)
- Maximum static pressure head ... 10 kPa (1.0 m)
- Governor type ... Perkins LCS electronic governor
- Speed control to ... ISO 8528, G3

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 ... 45 min

Fuel consumption litres/hour

Speed	Power Rating			
	110%	100%	75%	50%
50 Hz	20.3	18.6	14.3	9.8
60 Hz	24.1	22.0	17.0	11.7

Lubrication system

Lubricating oil capacity total system.. 8,0 litres
Maximum sump capacity... 7,0 litres
Minimum sump capacity 5,5 litres

Maximum engine operating angles

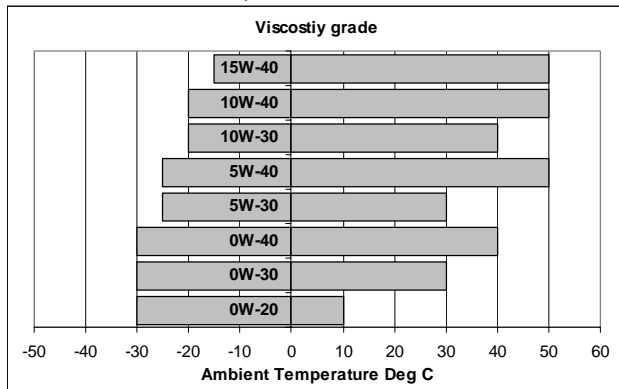
-front up, front down, right side or left side 30°

Lubricating oil pressure

-relief valve opens. 415 - 470 kPa
-at maximum no-load speed.. . . . 276 - 414 kPa
Normal oil temperature.. . . . 100 °C
Max continuous oil temperature 125 °C
Oil consumption at full load as a % of fuel consumption... . . . 0.15%

Recommended S.A.E. viscosity

A single or multi grade oil must be used which conforms to API-CC/SE or CCMC-D1, see illustration below:



Mountings

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



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