

Technical Data

1100 Series

Diesel Engine Electropak

1104C-44TAG2

99,5 kWm @ 1500 rev/min

112,4 kWm @ 1800 rev/min

Basic technical data

Number of cylinders ... 4
 Cylinder arrangement ... 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 ... Anticlockwise viewed on flywheel
 Firing order ... 1, 3, 4, 2

Estimated total weight (fan to flywheel housing)

-Dry ... 401

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

General installation

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 ... $\pm 0.5\%$

Cyclic irregularity at rated power

-with 1,31 kgm² flywheel (1500 rev/min) ... 0,029
 -with 1,31 kgm² flywheel (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.

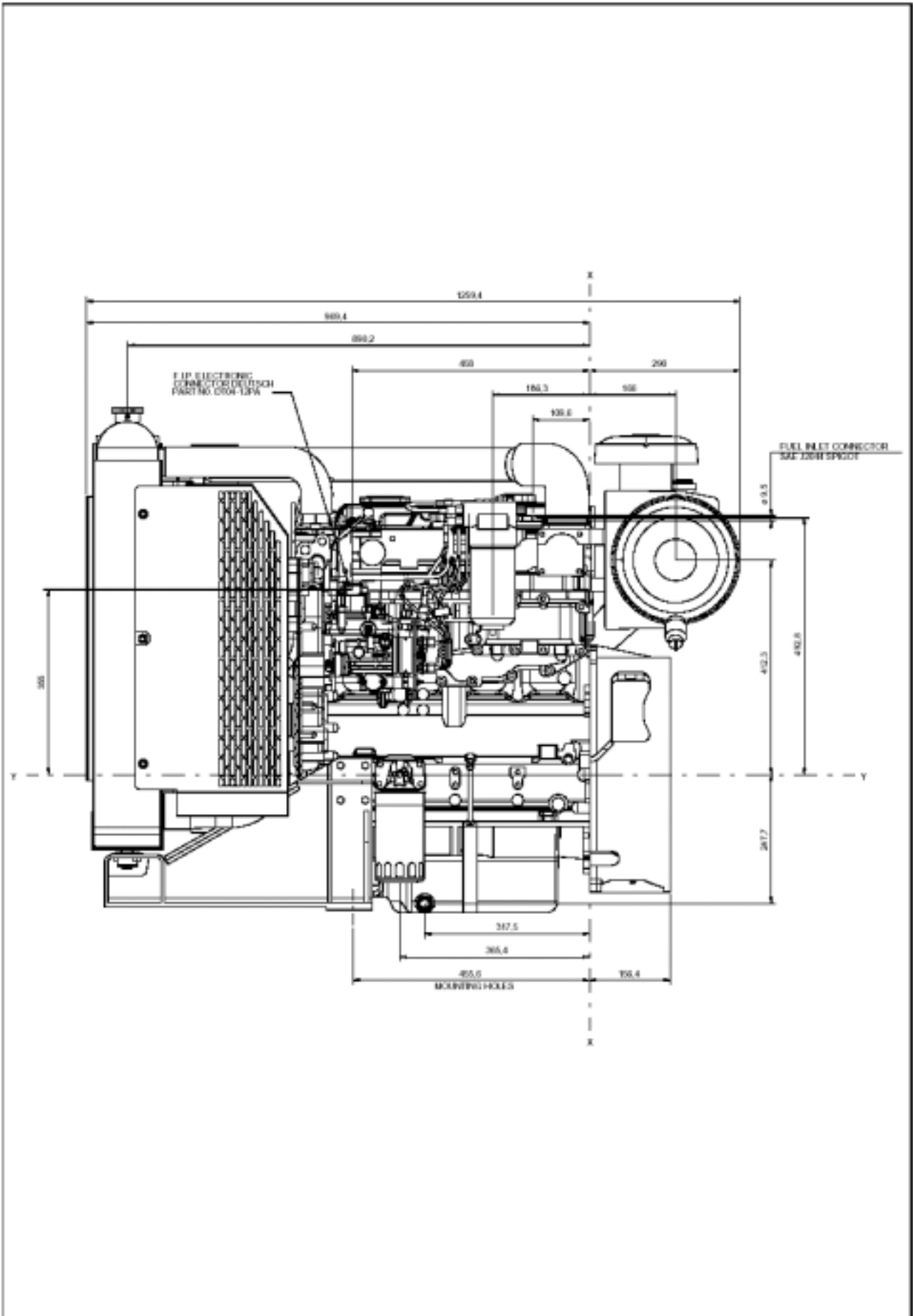
For full details, contact Perkins Technical Service Department.

Emissions capability: Certified against the requirements of EU2007 legislation for non-road mobile machinery, powered by constant speed engines (EU97/68/EC Stage II).

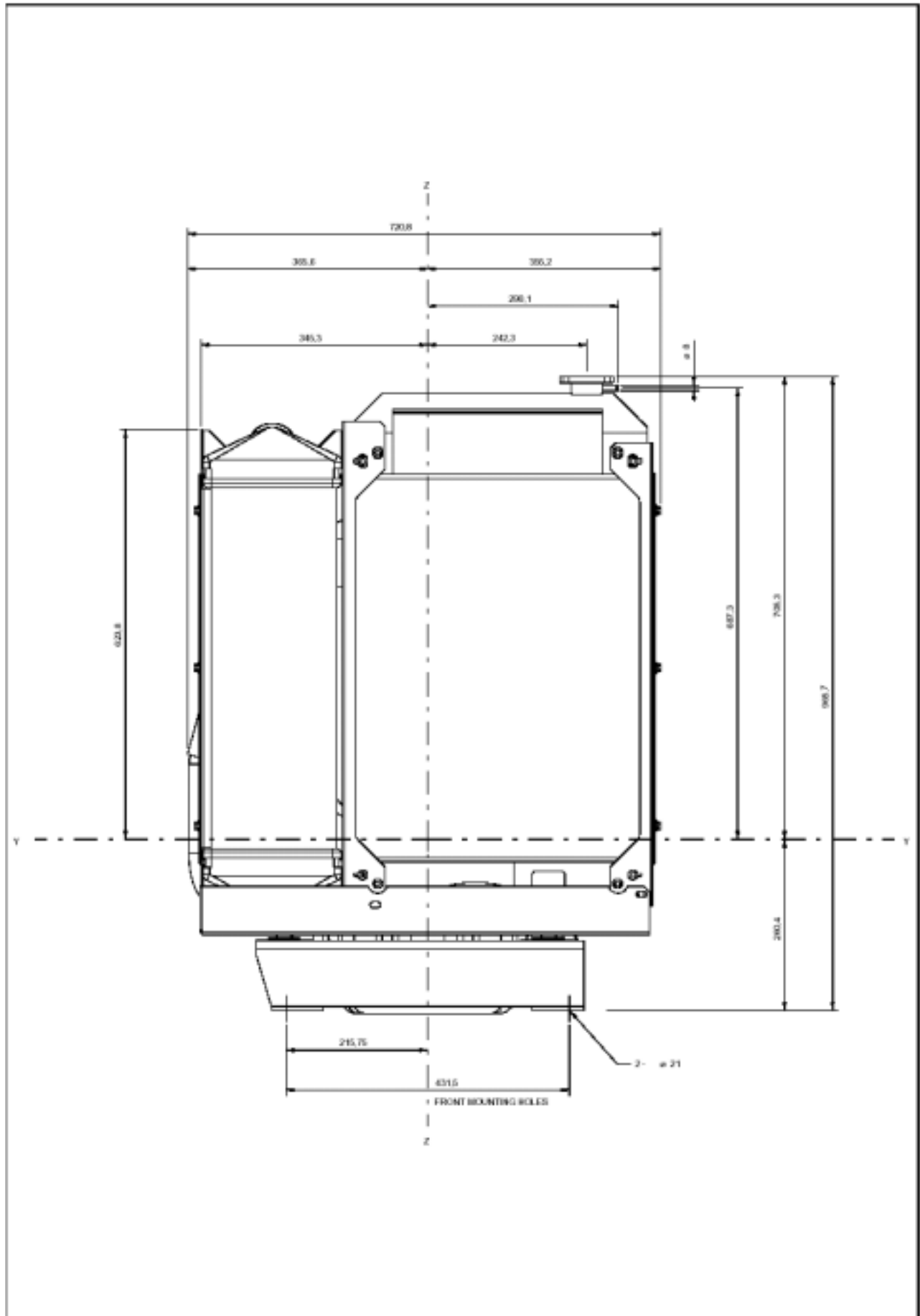
Designation	Units	Type of operation and application			
		Prime	Stand-by	Prime	Stand-by
		50 Hz	50 Hz	60 Hz	60 Hz
Gross engine power	kWb	93,6	103	106,8	117,5
Brake mean effective pressure	kPa	1702	1873	1618	1780
Engine coolant flow 35 kPa system restriction	l/min	142		170	
Combustion air flow	m³/min	6,01	6,27	7,75	7,80
Exhaust gas flow (max)	m³/min	15,2	16,3	18,4	20,4
Exhaust gas temperature (max)	°C	514	543	517	574
Cooling fan air flow (200kPa External Restriction)	m³/min	165,6	165,6	225,6	225,6
Overall thermal efficiency (net)	%	39,5	39,6	36,9	36,9
Typical GenSet electrical output (0,8pf)	kWe	81,4	89,6	91,5	101,2
	kVA	101,4	111,9	114,4	126,5
Assumed alternator efficiency	%	90		90	
Energy balance					
Energy in fuel (Fuel heat of combustion)	kWt	228,1	251	275,2	304,4
Energy to power output (gross)	kWb	93,6	103,0	106,8	117,5
Energy to cooling fan	kWm	3,5		5,1	
Energy to power output (nett)	kWm	90,1	99,5	101,7	112,4
Energy to coolant and lubricating oil	kWt	46,1	50,7	57,7	64,0
Energy to exhaust	kWt	71,7	78,9	89,8	99,7
Energy to radiation	kWt	6,8	7,5	8,5	9,4
Energy to charge cooler	kWt	9,9	10,9	12,4	13,8

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.

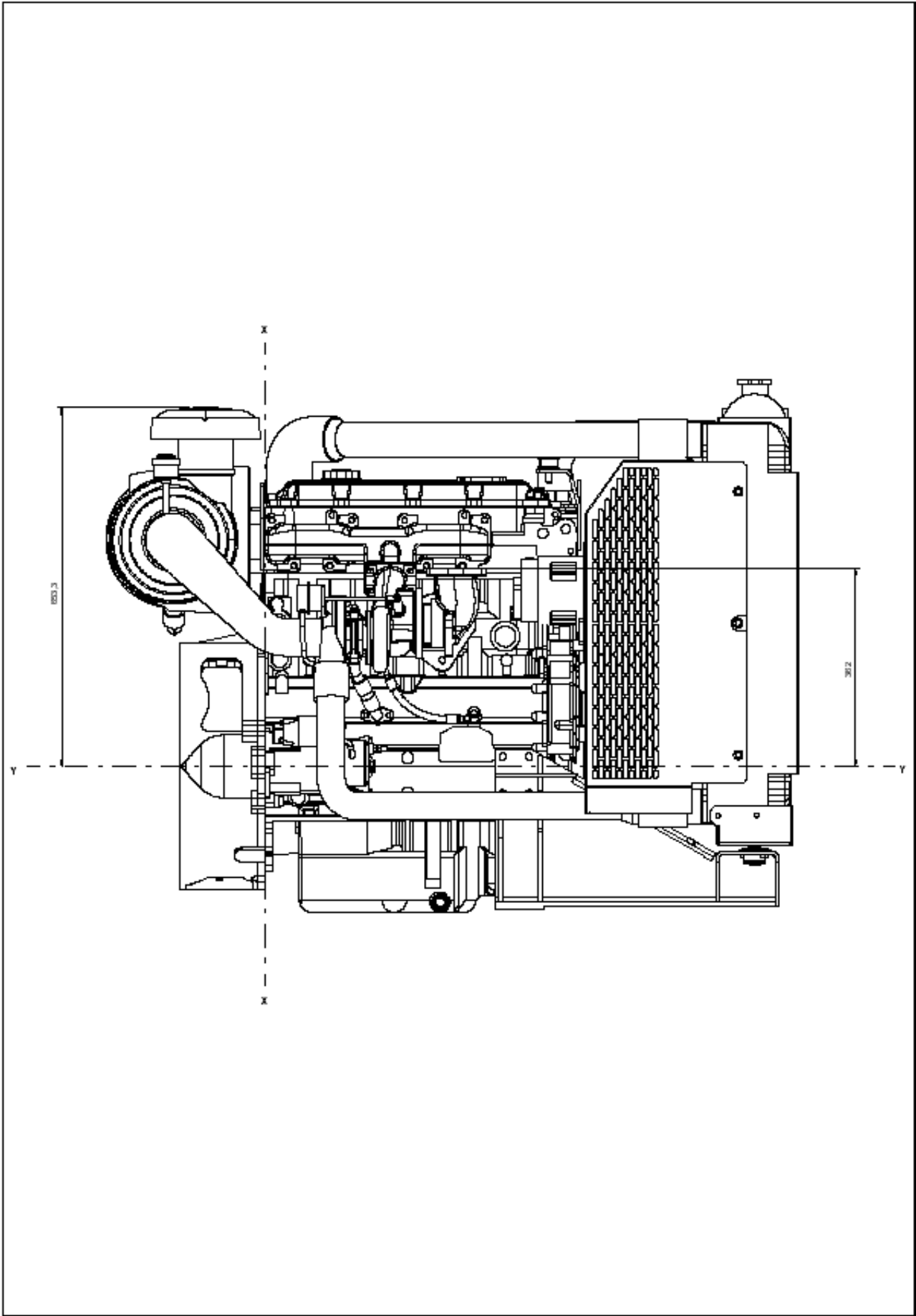
1104-44TAG2 ElectropaK, left side view



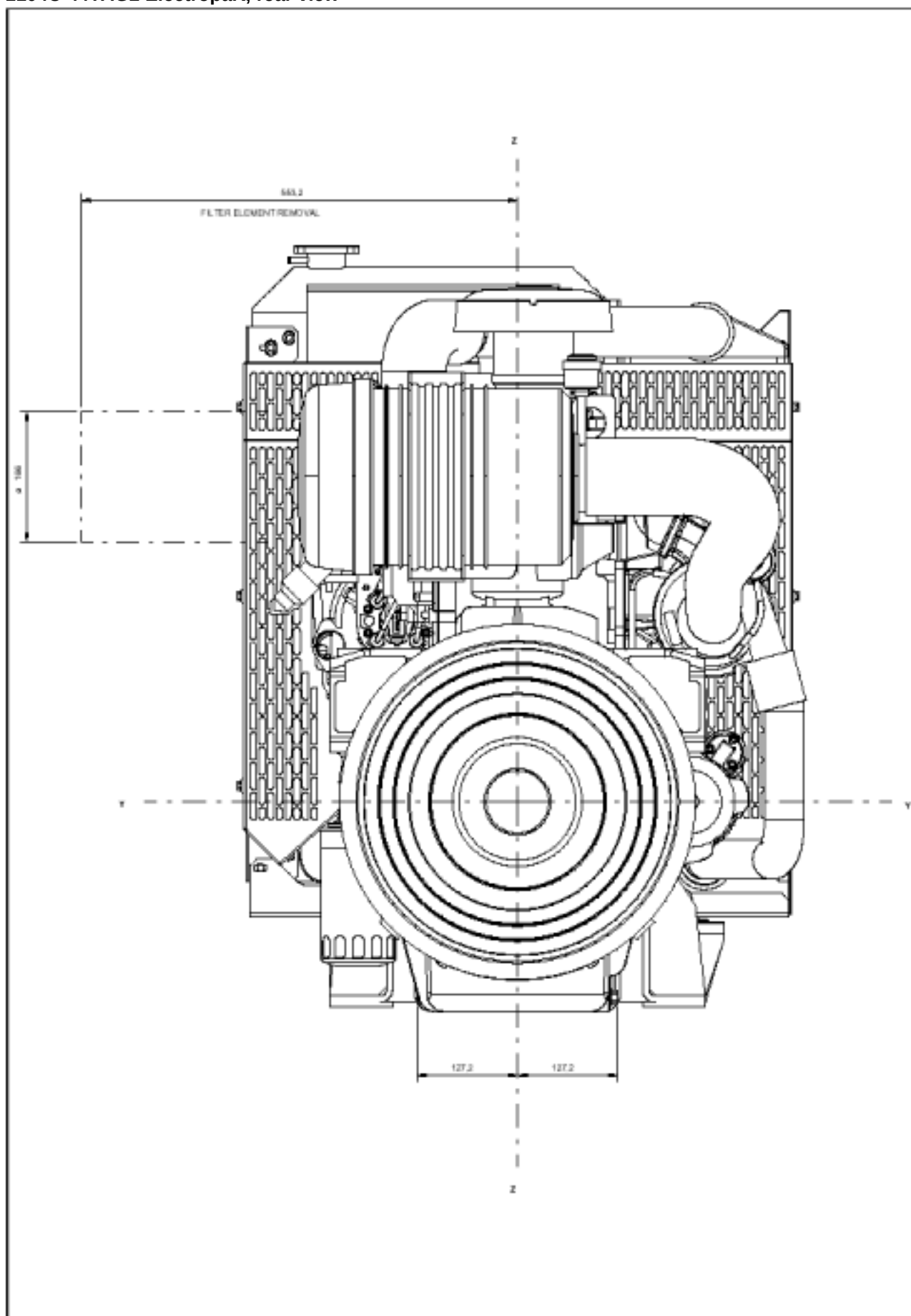
1104C-TAG2 Electropak, front view



1104-44C TAG2 ElectropaK, right side view



1104C-44TAG2 ElectropaK, rear 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
- 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

Minimum cranking speed ... 80 rev/min

Starter motor specifications

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 B			
	-15	1 X B			
	-20		1 X B		
	-25				1 X B

Battery specification

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

Exhaust system

- Maximum back pressure @ 1500 rev/min... 18 kPa
- Maximum back pressure @ 1800 rev/min... 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. 120 - 150 litres/hour
 - pressure . 30 - 75 kPa
- Maximum suction head ... 17 kPa
- Maximum static pressure head ... 10 kPa
- 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

Power Rating				
Speed	110%	100%	75%	50%
60 Hz	29,7	26,9	20,2	14,1
50 Hz	24,9	22,6	17,1	11,8

Induction system

Maximum air intake restriction

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

Lubrication system

Lubricating oil capacity

Total system... .. 8,0 litres

Sump capacity

- maximum 7 litres
- minimum 5,5 litres

Maximum engine operating angles

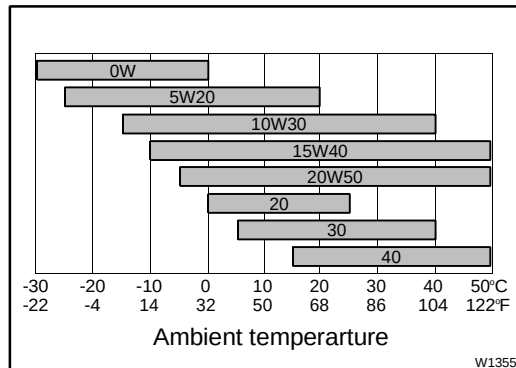
- front up, front down, right side or left side 30°

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 SAE viscosity

A single or multigrade 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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