

Technical Data

1100 Series

Electropak

1104C-44TAG2

Used for 100kVA generator

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

Designation	Units	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 with 35 kPa system restriction	l/min	142		170	
Combustion air flow	m ³ /min	6,01	6,27	7,75	7,80
Exhaust gas flow Max.	m ³ /min	15,2	16,3	18,4	20,4
Exhaust gas temperature Max.	°C	514	543	517	574
Cooling fan air flow (200 kPa external restriction)	m ³ /min	165,6	165,6	225,6	225,6
Overall thermal efficiency nett	%	39,5	39,6	36,9	36,9
Typical GenSet electrical output (0,8pf @ 25 °C)	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	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.

Performance

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

All ratings certified to within ±5%
 Speed variation at constant load ± 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%

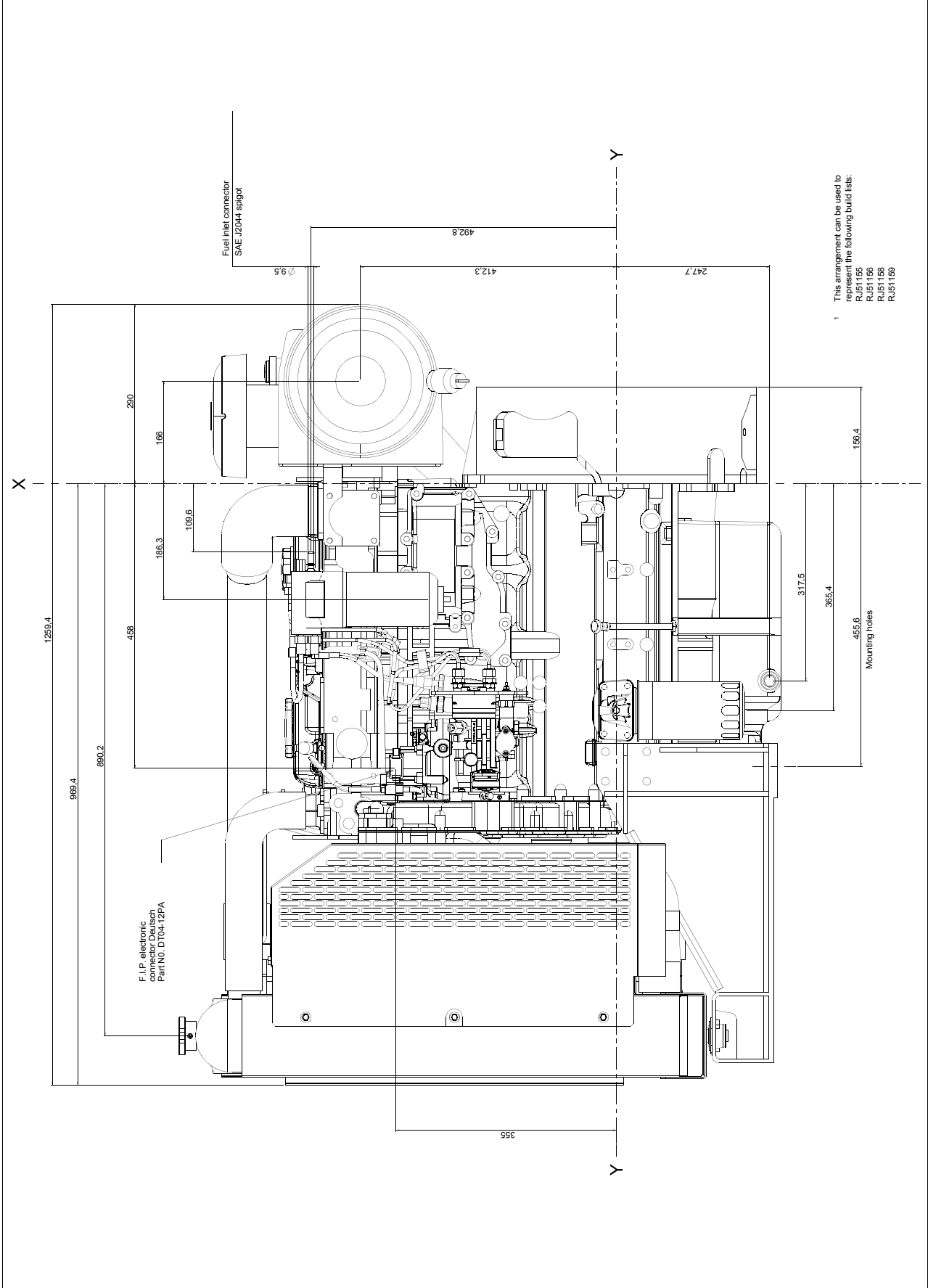
Sound level

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.

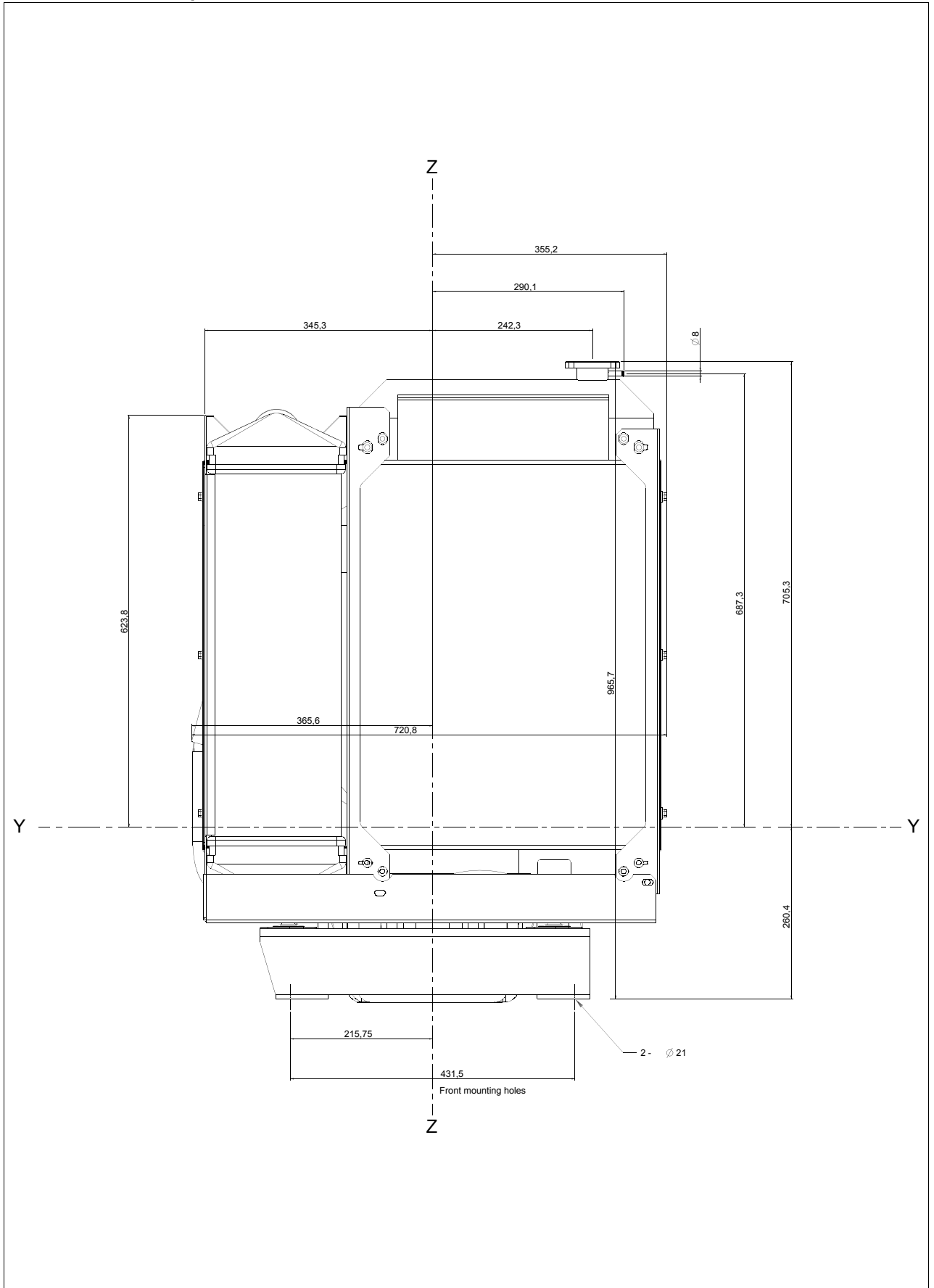
For full details, contact Perkins Technical Service Department.

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

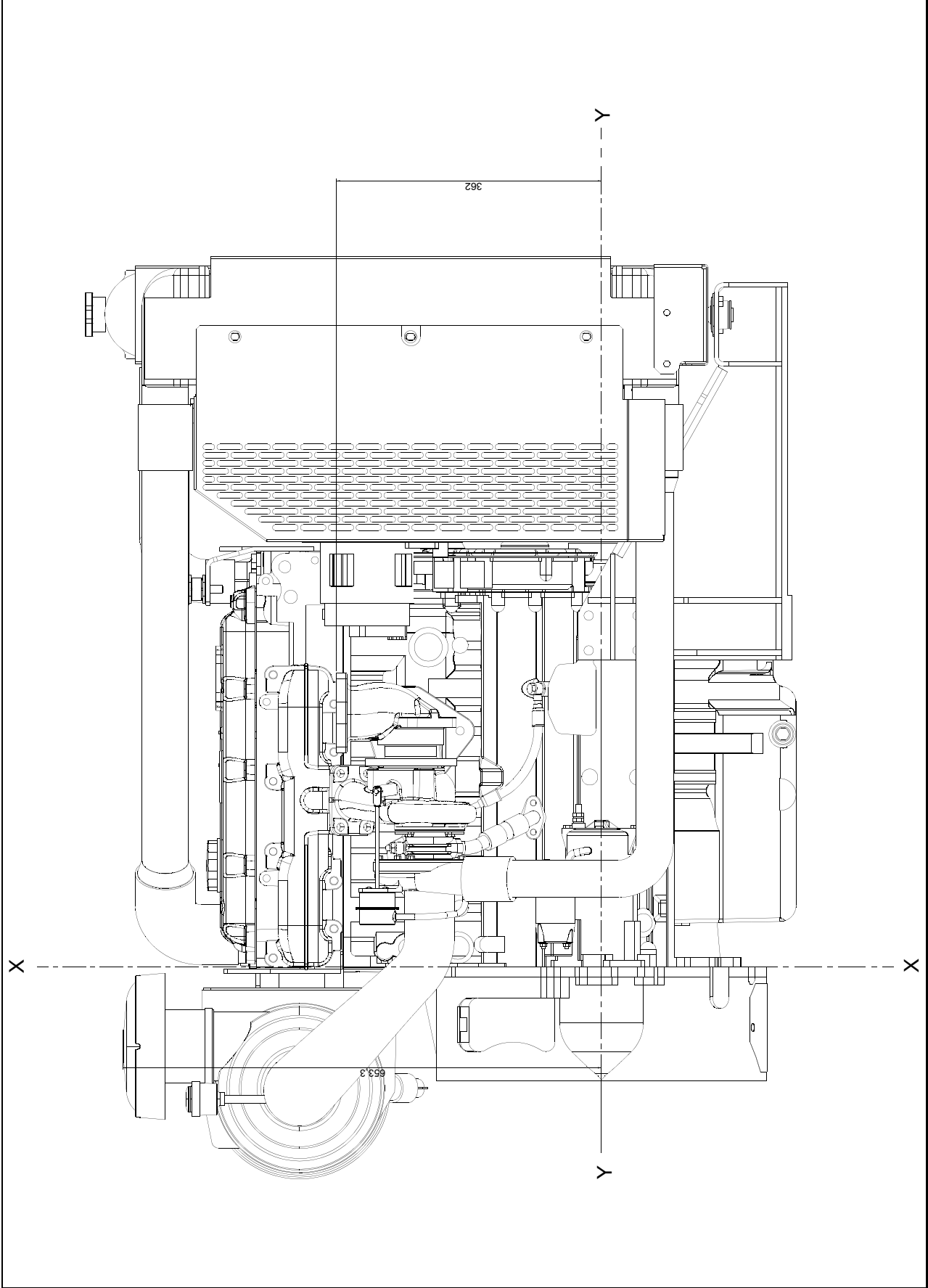
1104-44TAG2 ElectropaK, left side view



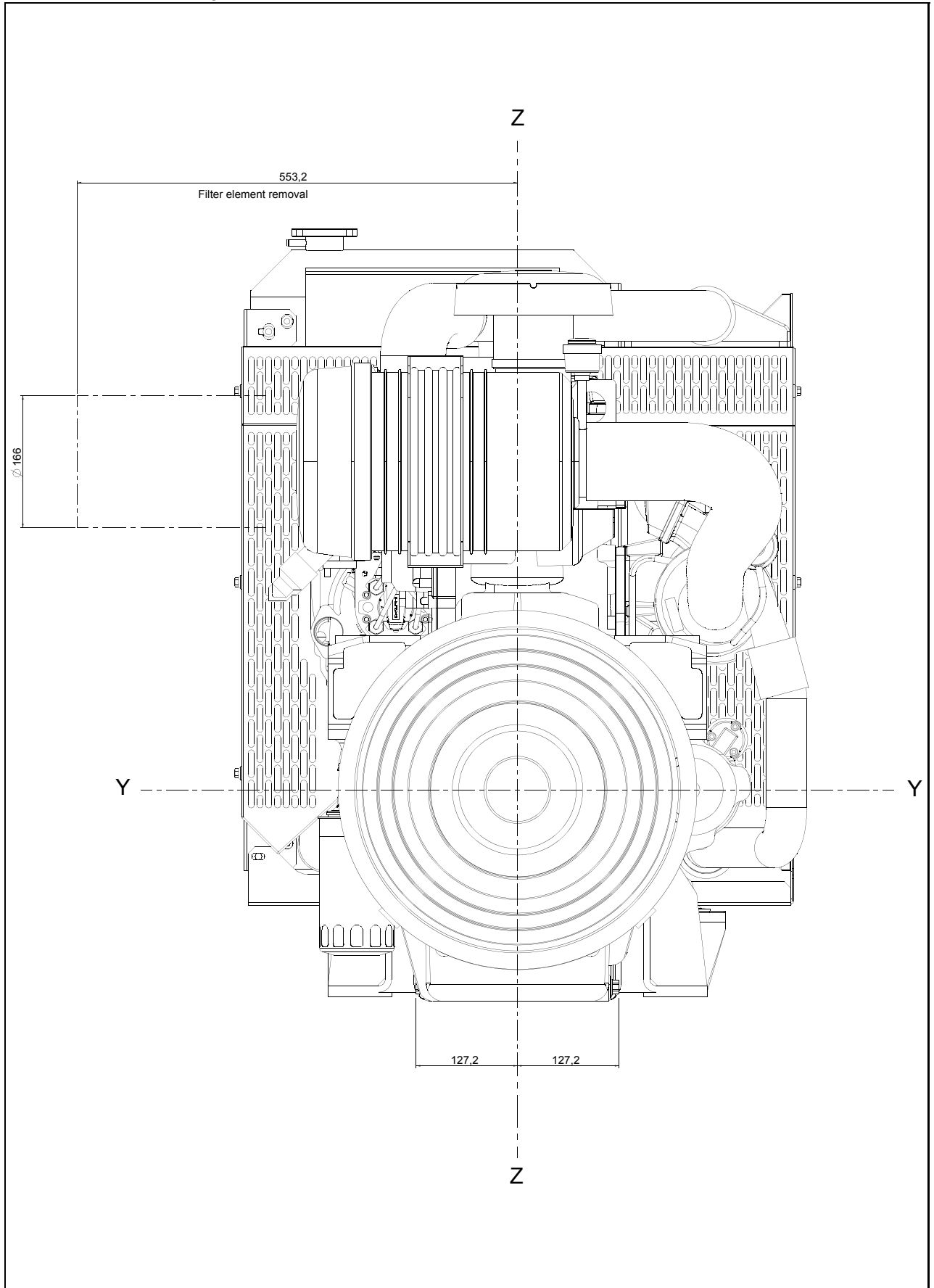
1104C-TAG2 ElectropaK, front view



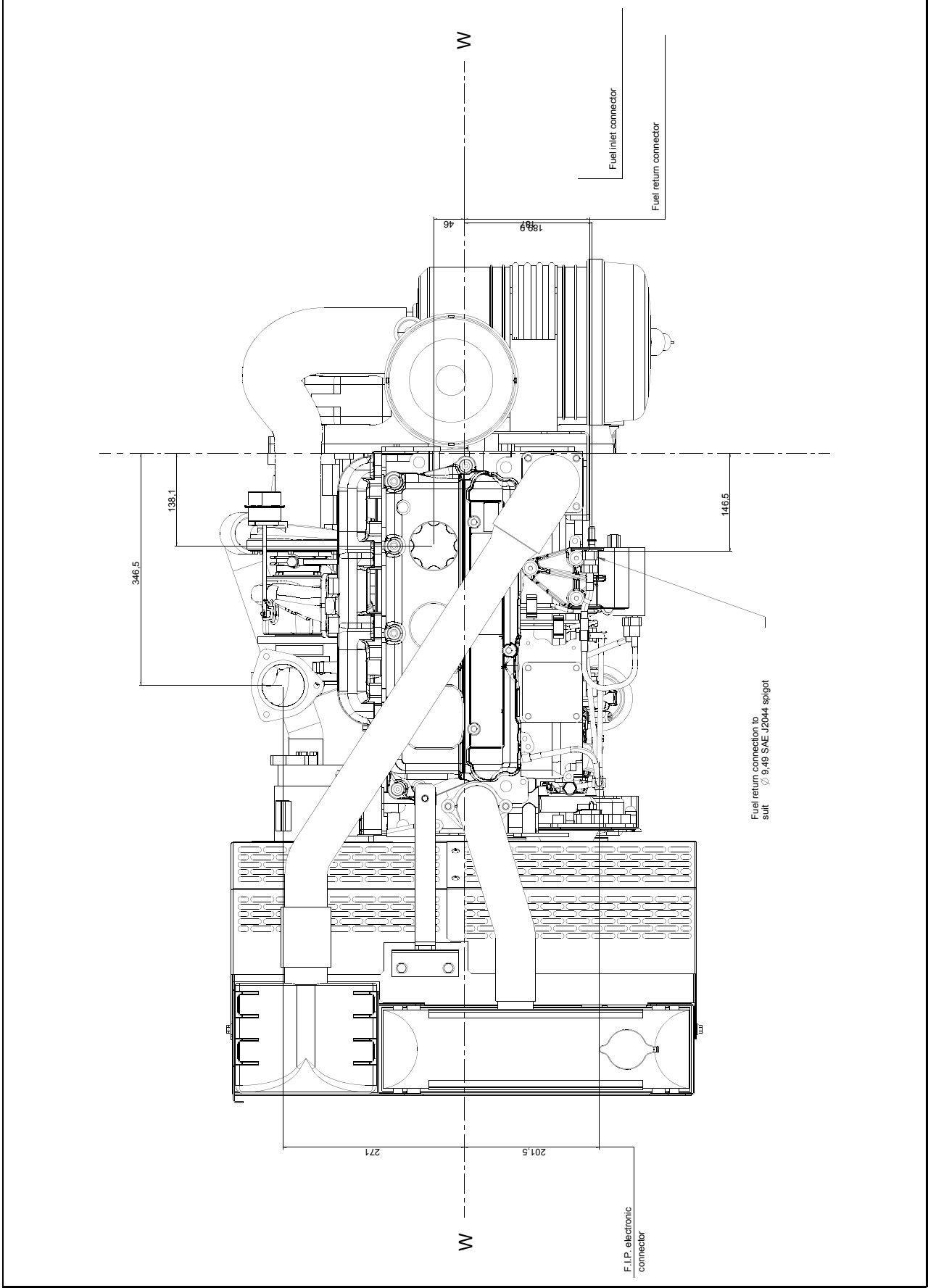
1104-44C TAG2 ElectropaK, right side view



1104C-44TAG2 ElectropaK, rear view



1104C-44TAG2 Electropak, plan view



Cooling system

Radiator

-face area	0,25 m ²
-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
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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 selection

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

Induction system Starter motor specifications

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
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 (mm ² /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%
60 Hz	29,7	26,9	20,2	14,1
50 Hz	24,9	22,6	17,1	11,8

Lubrication system

Lubricating oil capacity
 Total system.....8,0 litres
 Sump capacity
 -maximum7 litres
 -minimum5,5 litres

Maximum engine operating angles

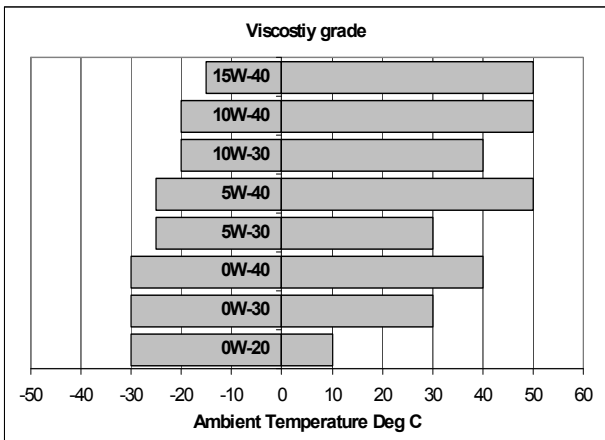
-front up, front down, right side or left side.30°

Lubricating oil pressure

-relief valve opens.....415 - 470 kPa
 -at maximum no-load speed276 - 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

@ Perkins

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