

# 1104C-44TAG2

# 1100

103 kWm @ 1500 rpm  
117.5 kWm @ 1800 rpm (Gross power)

## Diesel Engine Electropak

Series

### Basic technical data

Number of cylinders	4
Cylinder arrangement	Inline
Cycle	4 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 when viewed from flywheel
Firing order	1, 3, 4, 2

### Estimated total weight (fan to flywheel housing)

Dry	401 kg
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### Overall dimensions (Electropak)

Height	966 mm
Length	1259 mm
Width (includes mounting brackets)	721 mm

### Moments of inertia (mk<sup>2</sup>)

Engine rotational components	0.162 kgm <sup>2</sup>
Flywheel	1.31 kgm <sup>2</sup>

### 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, 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 kgm <sup>2</sup> flywheel (1500 rpm)	0.029
With 1.31 kgm <sup>2</sup> flywheel (1800 rpm)	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 rpm	101 dB(A)
Without inlet and exhaust at 1 metre @ 1800 rpm	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 statement

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

## General installation

Designation	Units	50Hz		60 Hz	
		Prime	Standby	Prime	Standby
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 <sup>3</sup> /min	6.01	6.27	7.75	7.80
Exhaust gas flow maximum	m <sup>3</sup> /min	15.2	16.3	18.4	20.4
Exhaust gas temperature maximum	°C	514	543	517	574
Cooling fan air flow (200 kPa external restriction)	m <sup>3</sup> /min	165.6		225.6	
Overall thermal efficiency nett	%	39.5	39.6	36.9	36.9
Typical GenSet electrical output (0.8 pf @ 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

Designation	Units	50Hz		60Hz	
		Prime	Standby	Prime	Standby
Energy in fuel	kWt	228.1	251	275.2	304.4
Energy in power output (gross)	kWb	93.6	103.0	106.8	117.5
Energy to cooling fan	kWm	3.5		5.1	
Energy in 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.

## Cooling system

### Radiator

Face area .....	0.25 m <sup>2</sup>
Rows and material .....	38 aluminium
Matrix density and material .....	9.4 aluminium 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 rpm
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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	15W	10W	5W	0W
	-5	1 X B			
	-15	1 X B			
	-20		1 X B		
	-25				1 X B

### Battery selection

Commercial reference 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 rpm .....	18 kPa
1800 rpm .....	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 injection 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 .....	26 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 <sup>2</sup> /s @ 40°C) .....	2.0/4.5
Sulphur content .....	0.2% maximum
Cetane number .....	45 minimum

### Fuel consumption (SFC)

Speed	Power rating			
	110%	100%	75%	50%
50 Hz	24.9	22.6	17.1	11.8
60 Hz	29.7	26.9	20.2	14.1

## 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

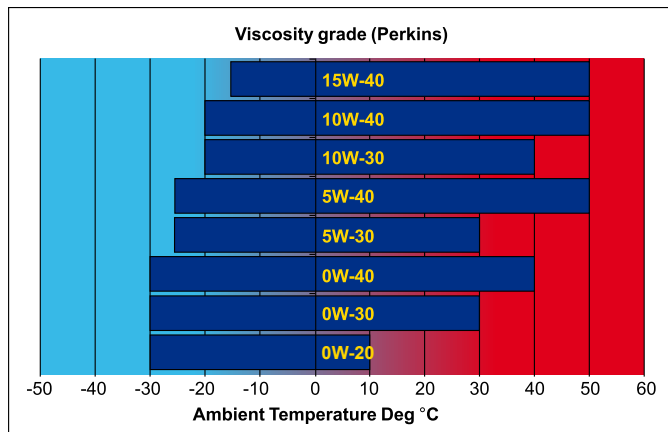
Front up, front down, right side or left side..... 30°

## Lubricating oil pressure

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

## Recommended SAE viscosity

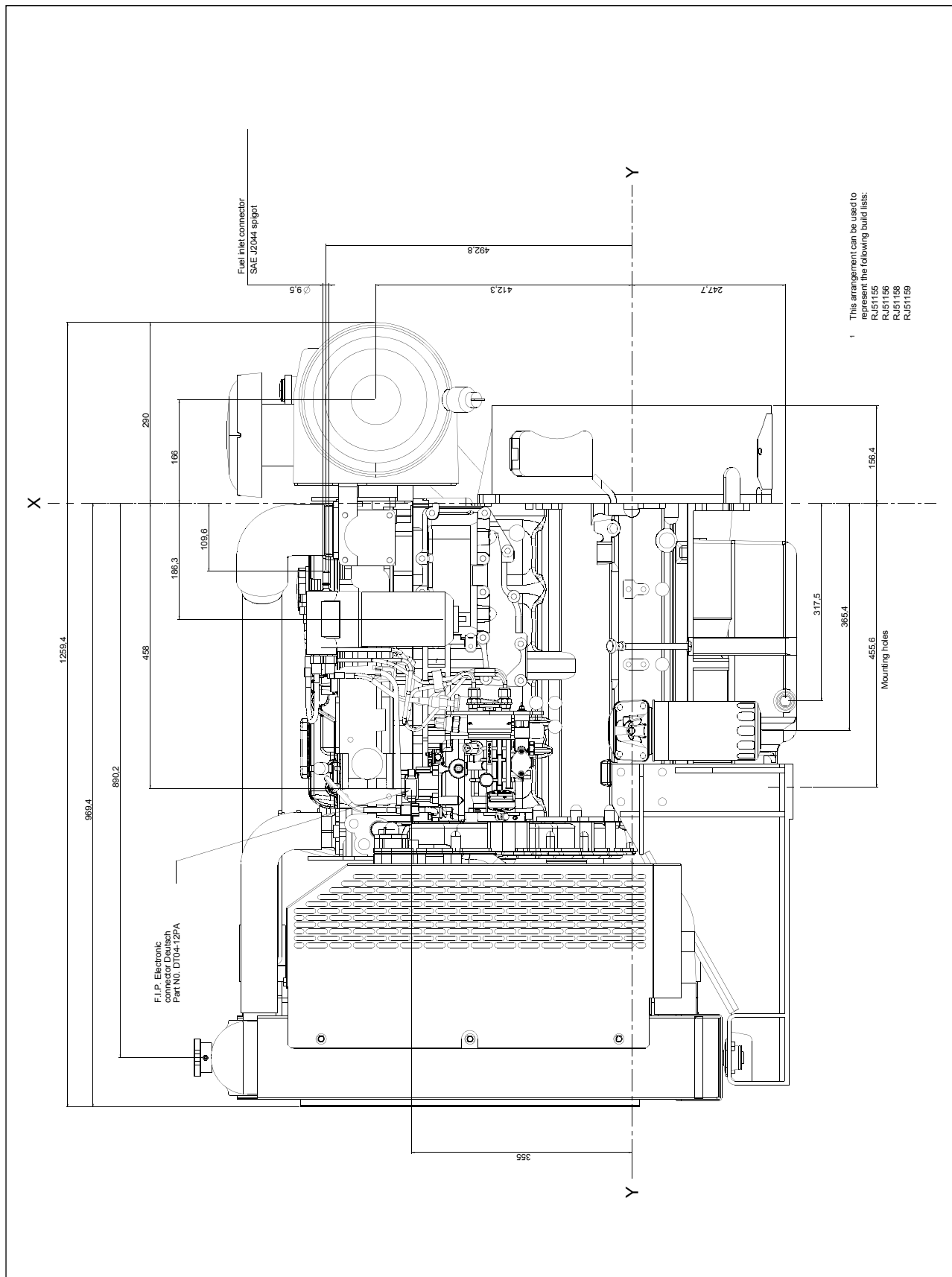
A single or multigrade oil must be used which conforms to API-CC/SE or CCMC-D1, see illustration below:



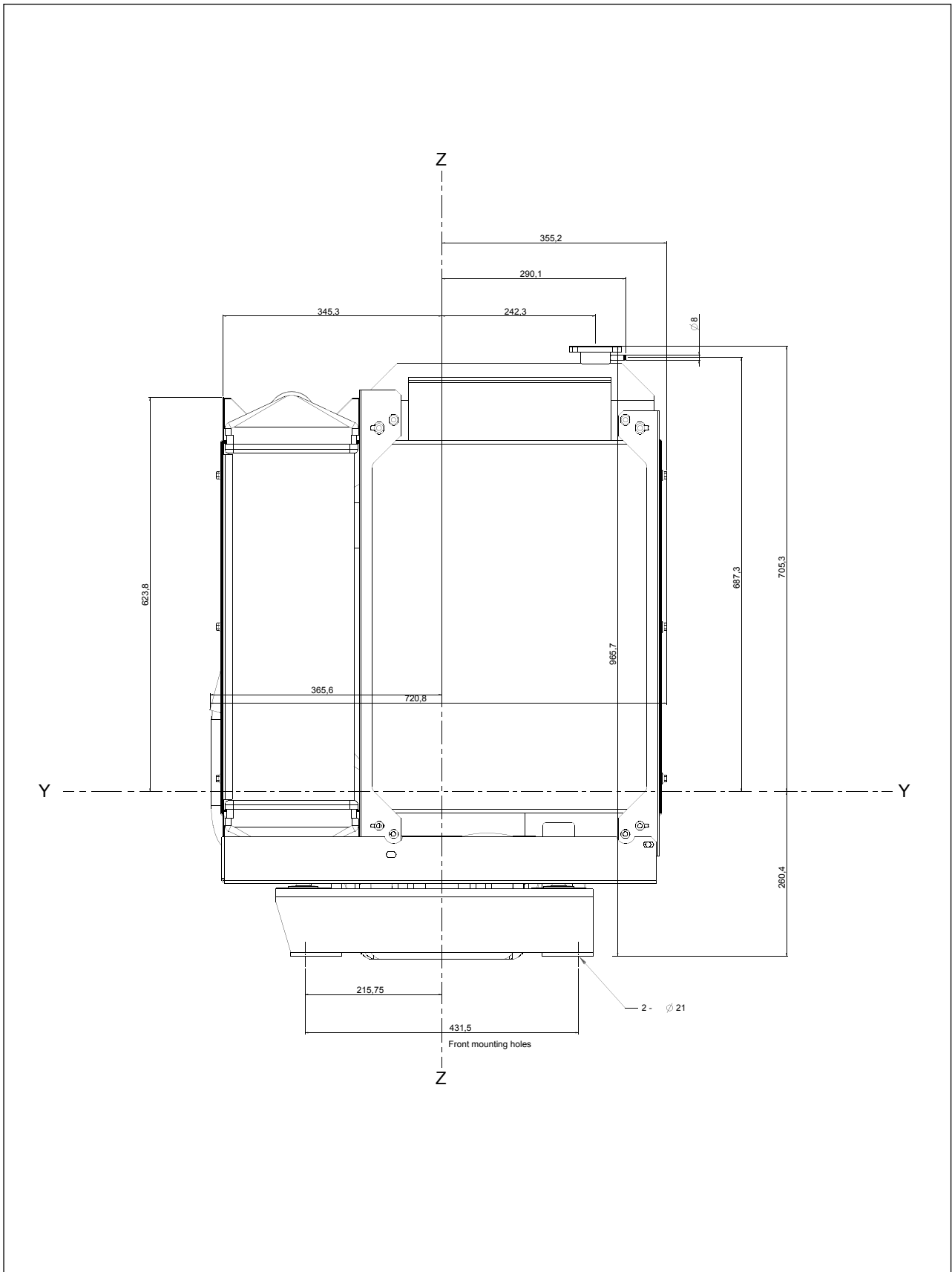
## Mountings

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

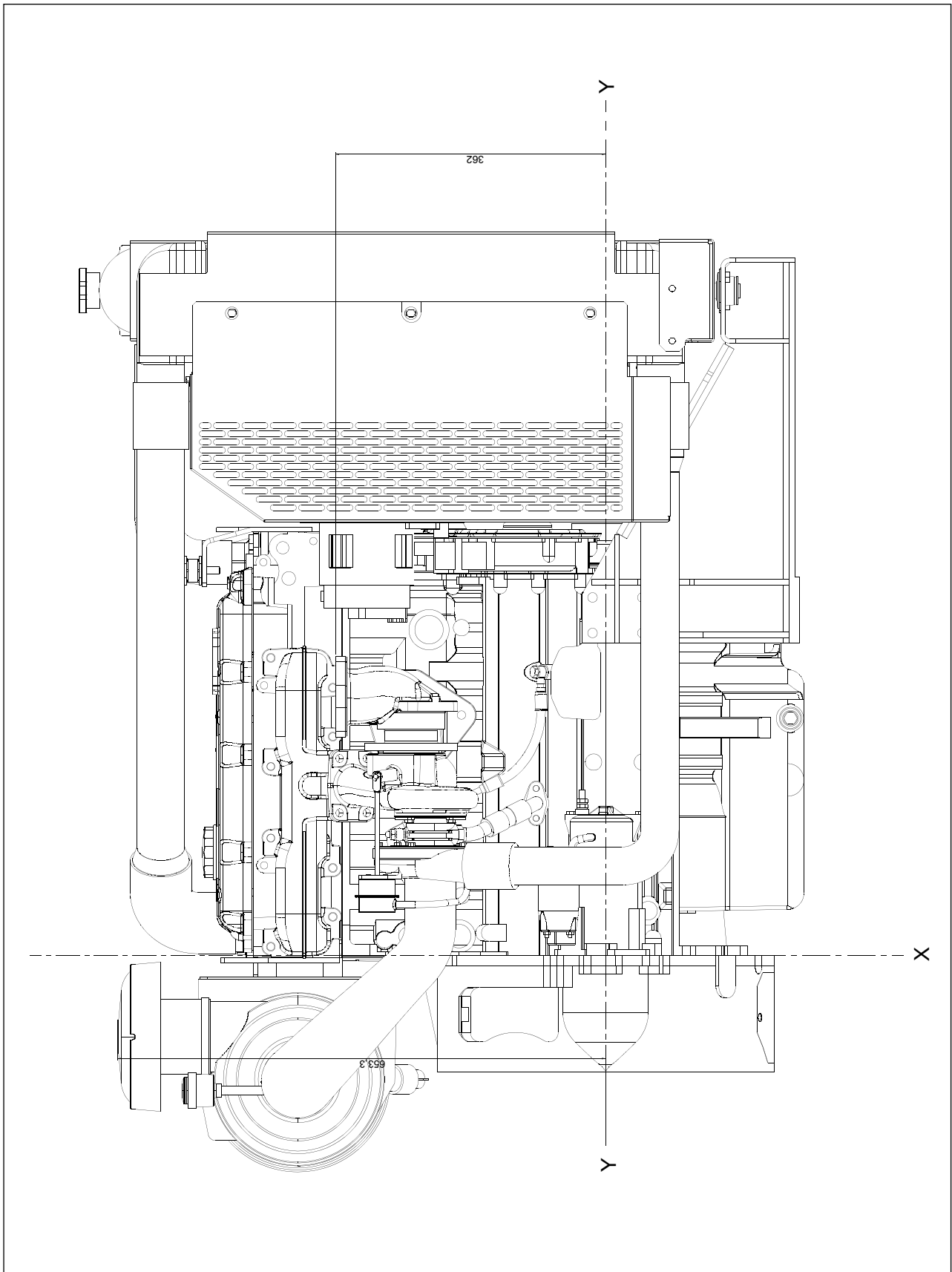
# 1104C-44TAG2 ElectropaK - Left side view



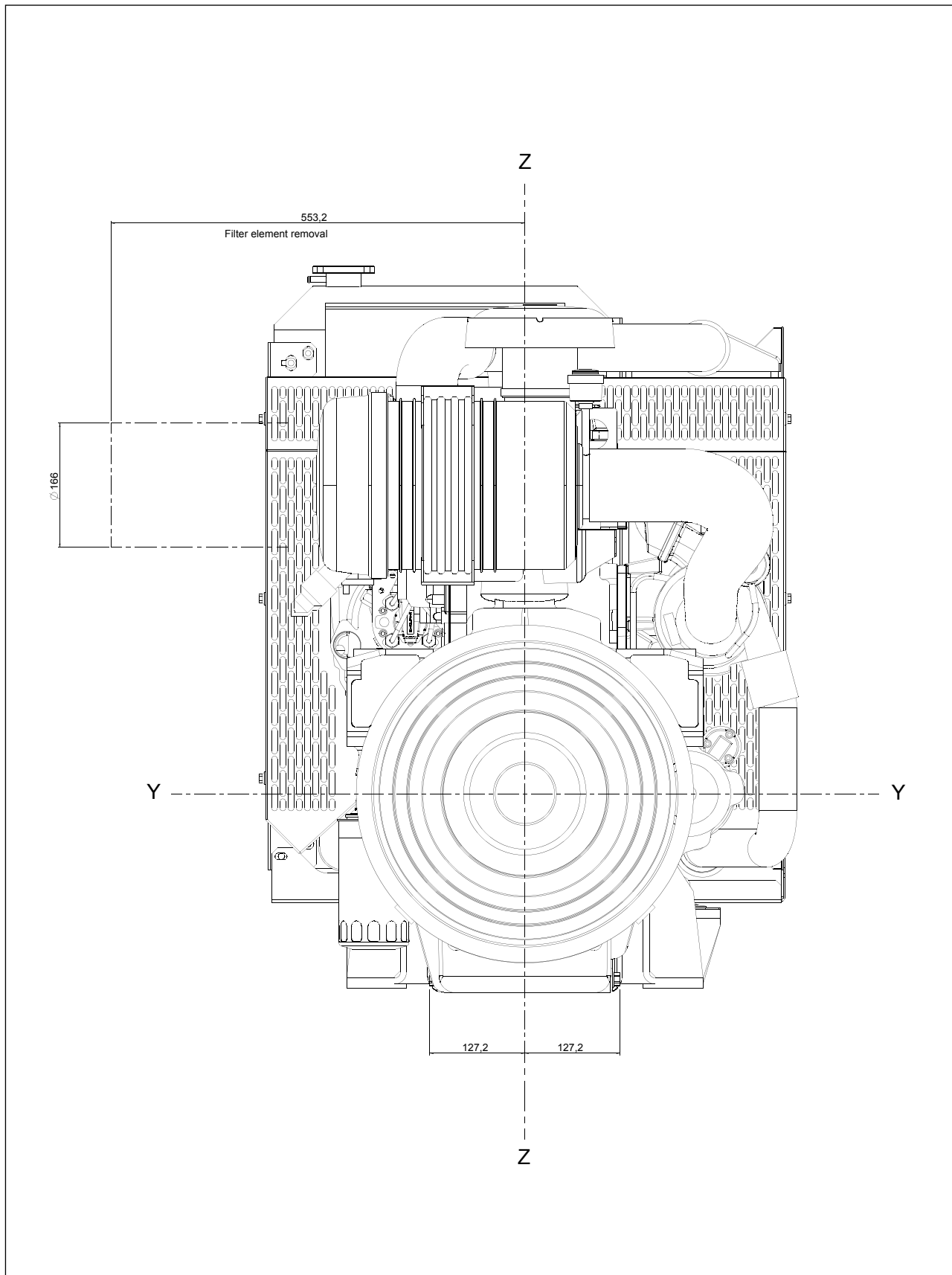
# 1104C-44TAG2 ElectropaK - Front view



# 1104C-44TAG2 ElectropaK - Right side view



# 1104C-44TAG2 ElectropaK - Rear view





# 1104C-44TAG2 ElectropaK - Plan view

