

# Technical Data

## 1300 Series EDi

# 1306C-E87TAG6

ElectropaK

246 kW @ 1500 rev/min

### Basic technical data

Rating code	M433
Number of cylinders	6
Cylinder arrangement	Vertical, in-line
Cycle	Four stroke
Induction system	air to air charged cooled, turbocharged
Compression ratio	16.9:1
Bore	116,6 mm
Stroke	135,9 mm
Cubic capacity	8,7 litres
Direction of rotation	Clockwise, from the front
Firing order	1, 5, 3, 6, 2, 4

### Engine weight

-dry (1), (2)	671 kg
-wet (1), (2)	698 kg
-ElectropaK kit (3)	225 kg
(1) Includes SAE 2 flywheel and flywheel housing	
(2) Without ElectropaK kit	
(3) Includes radiator; fan; fan-guards; starter motor; alternator and air filter assembly. Does not include weight of radiator coolant	

### Overall dimensions (includes ElectropaK kit)

-height	1369 mm
-length	1822 mm
-width (including mounting brackets)	875 mm

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

-engine	0,536 kgf m <sup>2</sup>
-flywheel SAE 2 (option GL08)	1,005 kgf m <sup>2</sup>

### Centre of gravity

Position of centre (dry, base engine)	
-forward from rear of block	480,1 mm
-above centre line of block	185,4 mm
-offset to RHS of centre line	25,4 mm
Position of centre (dry, base engine plus accessories)	
-forward from rear of block	449,6 mm
-above centre line of block	182,9 mm
-offset to RHS of centre line	10,2 mm

### Performance

Data based on ISO/TR14396, SAE J1995 3.1, ISO3046/1, DIN6271	
Engine speed control in accordance with BS5514 pt.4; ISO3046-4 and ISO8528-5	
Cyclic irregularity	
-at 110% stand-by power	0,0253

### Test conditions

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

### Sound level

-bare engine at 1 metre	106 dB(A)
-all ratings certified to within	+3 % to -5 %

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.

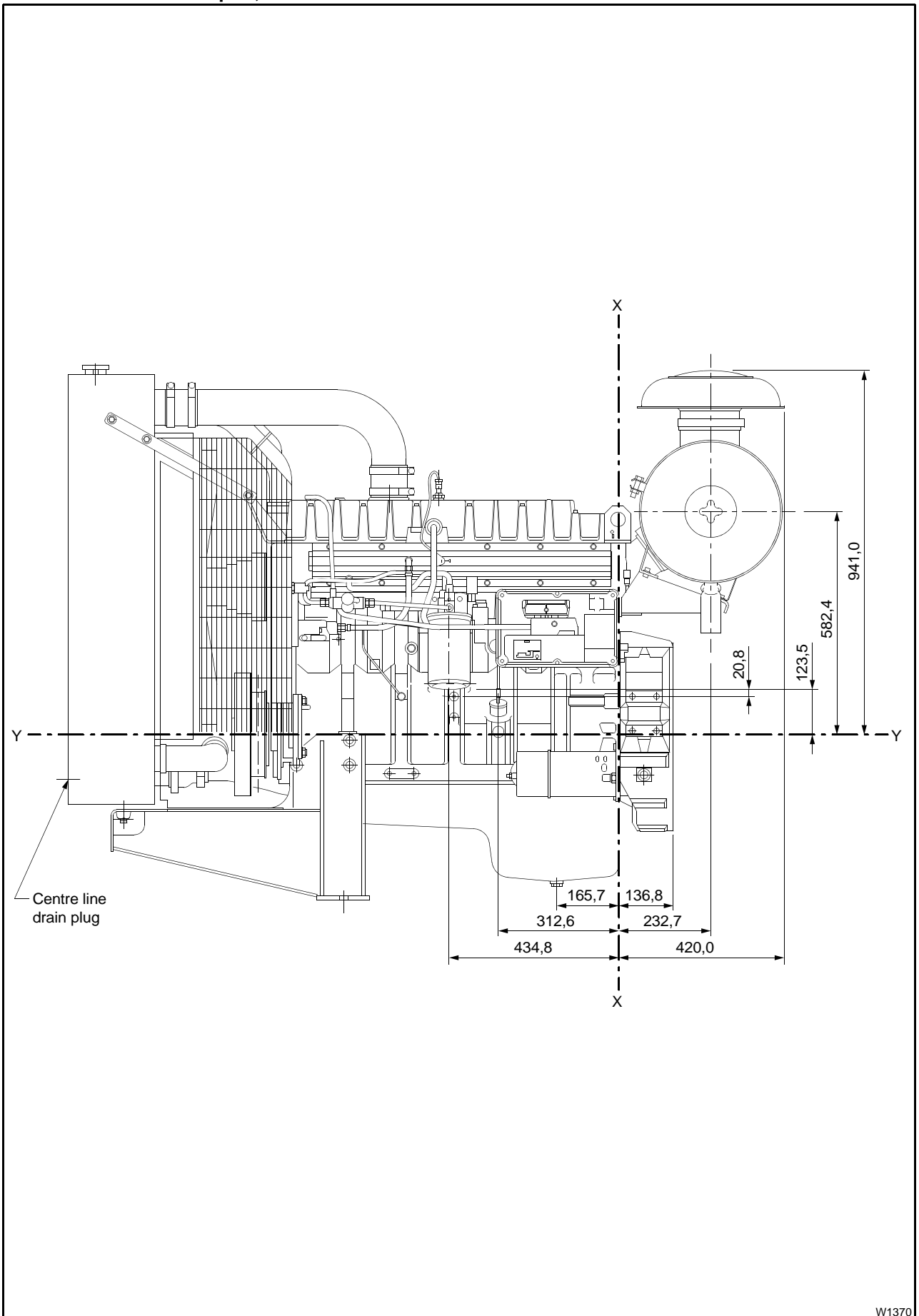
Certified against the requirements of EU2007 legislation for non-road mobile machinery, powered by constant speed engines (EU97/68/EC Stage II)

## General installation

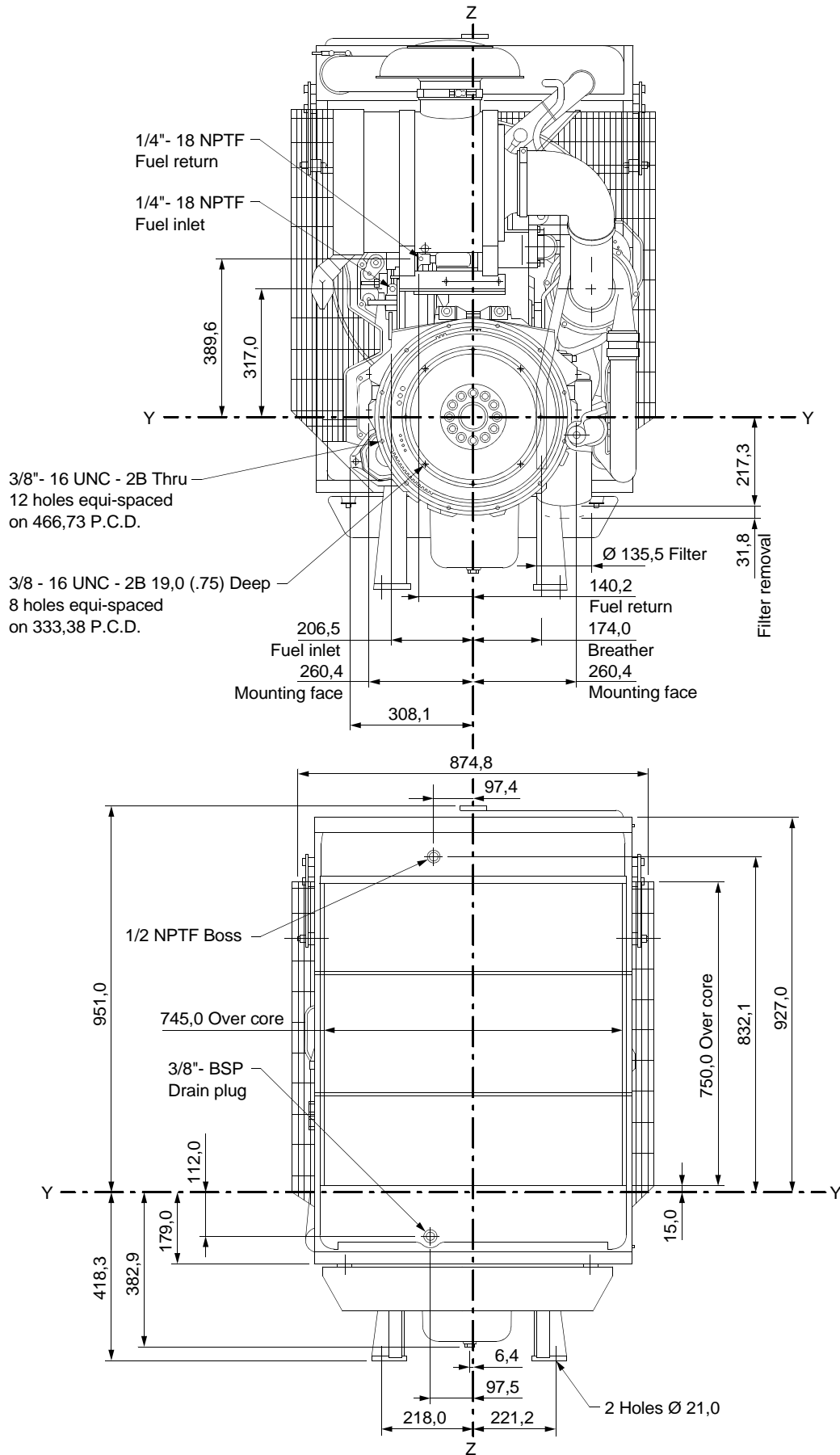
Designation	Units	Type of operation and application		
		Base	Prime	Stand-by
		50Hz	50Hz	50Hz
Gross engine power	kW	204	224	246
Fan power	kW	7	7	7
Brake mean effective pressure	kPa	1875	2058	2261
Mean piston speed	m/s	6,8	6,8	6,8
ElectropaK net engine power	kW	198	217	239
Engine coolant flow	l/min	238	238	238
Combustion air flow	m <sup>3</sup> /min	-	-	16,4
Exhaust gas flow (max)	m <sup>3</sup> /min	-	-	44,5
Exhaust gas temperature (max)	°C	-	-	528
Cooling fan air flow	m <sup>3</sup> /min	375	375	375
Typical Genset electrical output (0.8 pf)	kWe	-	200	220
	kVa	-	250	275
<b>Energy balance</b>				
Energy in fuel (Fuel heat of combustion)	kW	-	529	583
Gross heat to power	kW	-	224	246
Energy to coolant and lubricating oil	kW	-	103	110
Energy to exhaust	kW	-	126	142
Heat to radiation	kW	-	40	44
Heat charge cooler	kW	-	36	41

**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, 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.

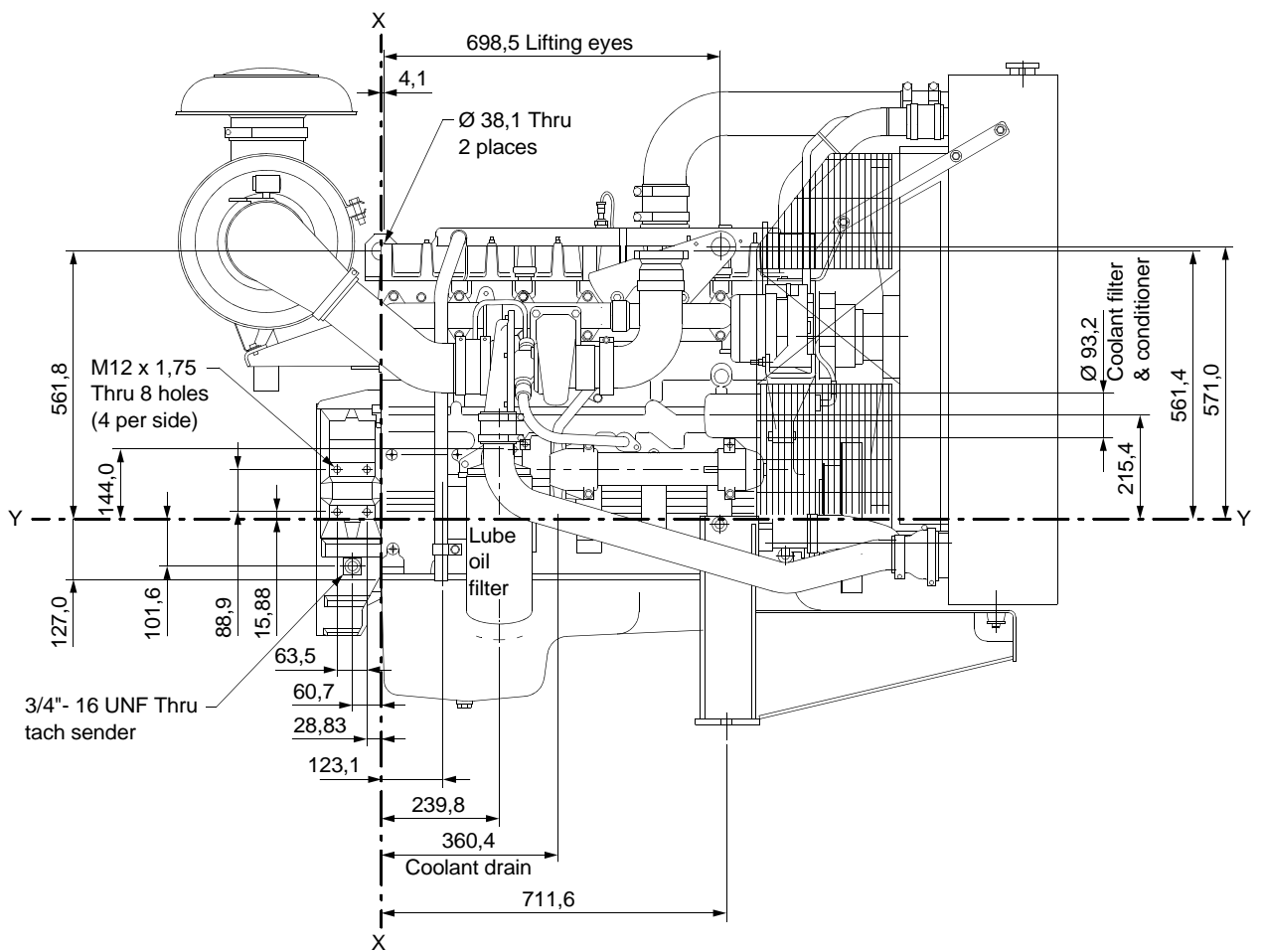
1306C-E87TAG6 ElectropaK, left side view



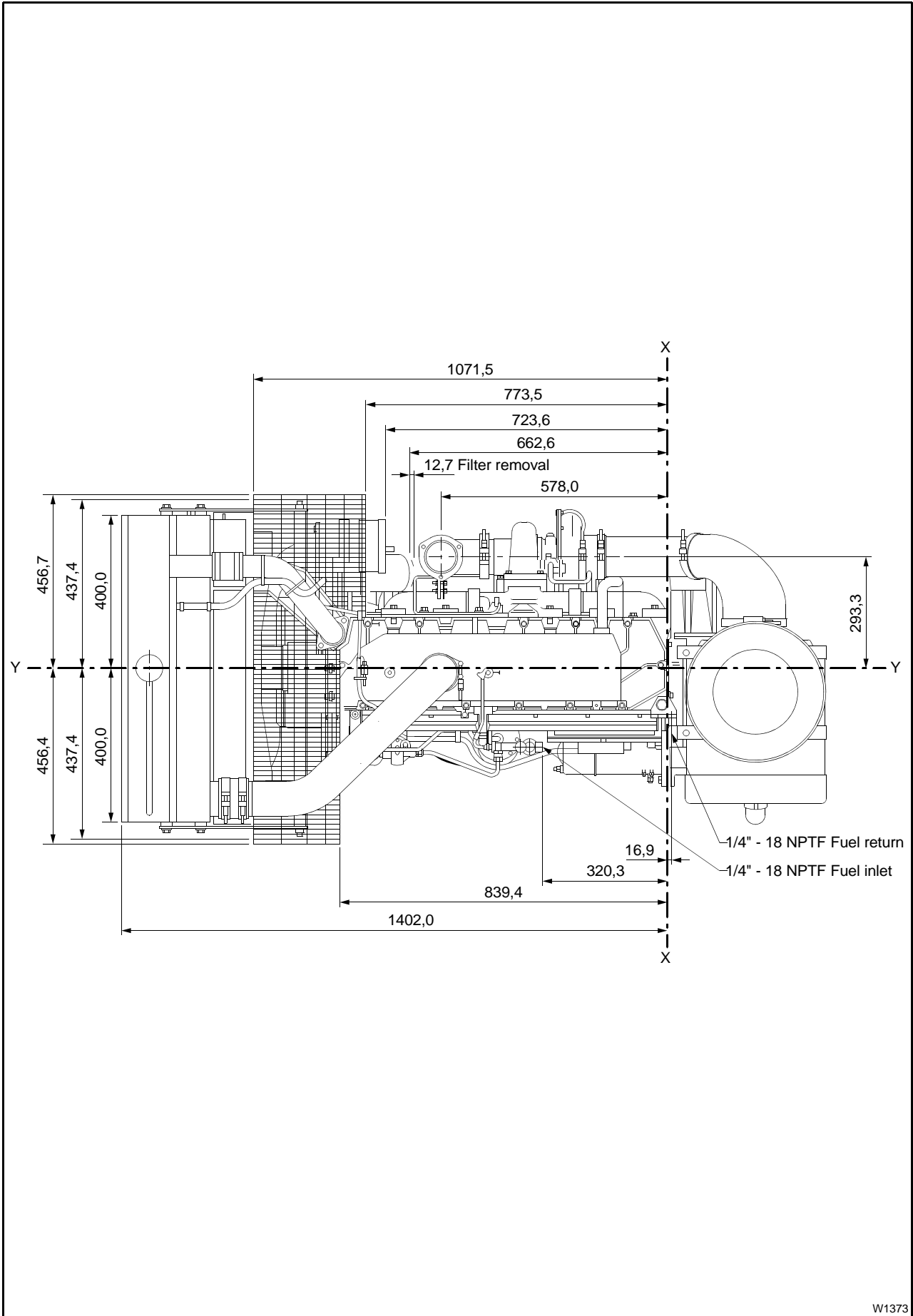
**1306C-E87TAG6 ElectropaK, front and rear views**



1306C-E87TAG6 ElectropaK, right side view



1306C-E87TAG6 ElectropaK, plan view



## Cooling system

### Radiator

-face area .....0,6 m<sup>2</sup>  
 -rows and materials ..... 3, brass  
 -matrix density and material ..... 12, copper  
 -width of matrix ..... 745 mm  
 -height of matrix ..... 750 mm  
 -pressure cap setting .....68,9 kPa  
 Estimated cooling air flow reserve ..... 0,13 kPa

### Fan

-diameter ..... 711,2 mm  
 -drive ratio .....1:2 : 1  
 -number of blades ..... 7  
 -material ..... Plastic  
 -type ..... Pusher

### Coolant

Maximum pressure head at pump ..... 12,95 m  
 Total system capacity  
 -with radiator ..... 37,2 litres  
 -without radiator ..... 12,8 litres  
 -draindown capacity ..... 1,3 litres  
 Maximum top tank temperature ..... 103 °C  
 Minimum temperature to engine ..... 79 °C  
 Temperature rise across engine ..... 5 °C  
 Max permissible external system resistance ..... 35 kPa  
 Thermostat start to open ..... 87,8 °C  
 Thermostat fully open ..... 96,1 °C

## Electrical system

-type ..... Negative ground  
 -alternator ..... 12/24V Lucas AC5R  
 -starter motor ..... 12V Lucas PE129 / 24V Lucas S115

### Cold start recommendations

Minimum cranking speed ..... 130 rev/min

Minimum starting temperature		Grade of engine lubricating oil	Battery specifications			
			BS3911 Cold start amps	SAEJ537 Cold cranking amps	Number of batteries needed	Perkins type
°C	°F					
-15	5	10W	440	660	2	A
-20	4	5W	440	660	2	A

## Exhaust system

Maximum back pressure ..... 10,7 kPa

**Note:** For exhaust pipe details, see chapter five of the Gen Set Manual.

## Fuel system

Type of injection ..... Direct  
 Fuel feed pump ..... Bosch  
 Hydraulic pump ..... Rexroth  
 Fuel atomiser ..... Heui  
 Feed pump operating pressure ..... 417 kPa

### Fuel lift pump

-flow/hour ..... 180 litres/hr  
 -suction depression ..... 14 kPa  
 -pressure ..... 137,9 kPa  
 Maximum suction head ..... 1 m  
 Maximum static pressure head ..... 3 m  
 Maximum fuel pump suction (clean system) ..... 14 kPa  
 Governor type ..... electronic (isochronous or droop capability)  
 -speed control for diesel fuel to conform to ..... BS 2869 Class A2  
 ..... ASTM D975 66T Number 2D

### Fuel specification

Fuel specification	USA Fed Off Highway EPA 2D 89.330-96
Density (kg/l @ 15 °C)	0,845 - 0,85
Viscosity (mm <sup>2</sup> /s @ 40 °C)	2,0 - 3,2
Sulphur Content	0,03 - 0,05%
Cetane Number	40 - 48

### Fuel consumption

-at rated speed ..... 56,9 litres/hr

## Induction system

### Maximum air intake restriction

-clean filter ..... 2,5 kPa  
 -dirty filter ..... 6,22 kPa  
 -air filter type ..... dry paper element  
 Turbocharger type ..... Allied signal

### Lubrication system

#### Lubricating oil capacity

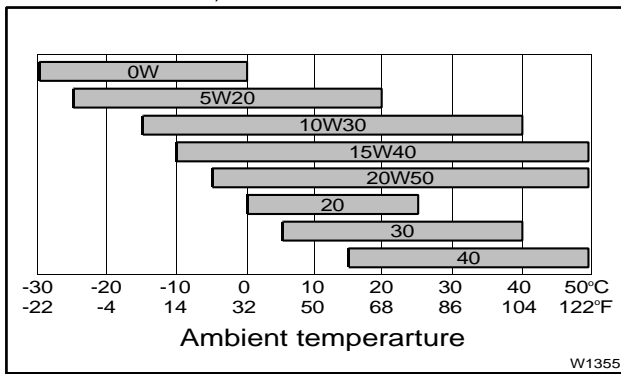
- dry engine with filter .. . . . . .28,3 litres
  - oil change with filter .. . . . . .26,4 litres
  - oil change without filter .. . . . . .22,7 litres
- Maximum engine operating angles  
 -front up, front down, right side or left side. ....30°

#### Lubricating oil pressure

- relief valve opens.. . . . . .552 kPa
  - at low idle (700 rev/min) .. . . . . .103 kPa
  - at high idle speed.. . . . . .276 - 483 kPa
- Normal oil temperature (sump) .. . . . . .121 °C  
 Oil consumption at full load as a % of fuel consumption .... <0,1%

#### Recommended SAE viscosity

A single or multigrade oil must be used which conforms to API-CH-4, API-CG-4 or ACEA E3 (if not available, use only API-CF-4 or ACEA E2) see illustration below:



#### Mountings

- Maximum static bending moment  
 at rear face of block .. . . . . .2644 Nm

# @ Perkins®

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