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Technical Data

1100C Series 1106C-E66TAG2

ElectropaK

Basic technical data

Number of cylinders ... 6
Cylinder arrangement ... In-line
Cycle ... 4 stroke
Induction system ... Turbocharged and air charge cooled
Combustion system ... Direct injection diesel
Compression ratio ... 16,2:1
Bore ... 105 mm
Stroke ... 127 mm
Cubic capacity ... 6,6 litres
Direction of rotation ... anticlockwise when viewed from flywheel
Firing order (number 1 cylinder furthest from flywheel). 1 5 3 6 2 4
Estimated total weight of Electropak (dry). ... 788 kg
Estimated total weight Electropak (wet) ... 822 kg

Overall dimensions - Electropak

-height ... 1140,4 mm
-length (air cleaner fitted) ... 1728,3 mm
-width. ... 779,8 mm

Moments of rotational inertia (mk²)

Engine rotational components ... 0,27 kg m²
Flywheel ... 1,2 kg m²

Centre of gravity - Electropak (wet)

Forward of rear face of cylinder block ... 476,3 mm
Above crankshaft centre line. ... 176,3 mm
Offset to RHS of crankshaft centre line. ... 16,0 mm

Performance

Note: All data based on operation to ISO 3046-1:2002 standard reference conditions.

All ratings certified to within ... ± 3%
Speed variation at constant load ... ± 0,25%

Cyclic irregularity at 110% stand-by power

-1500 rev/min ... 0,033
-1800 rev/min ... 0,023

Test conditions

-air temperature ... 25 °C
-barometric pressure ... 100 kPa
-relative humidity ... 31,5 %
-air inlet restriction at maximum power (nominal) ... 3,8kPa
-exhaust back pressure at maximum power (nominal) ... 15 kPa
-fuel temperature (inlet pump) ... 40 °C

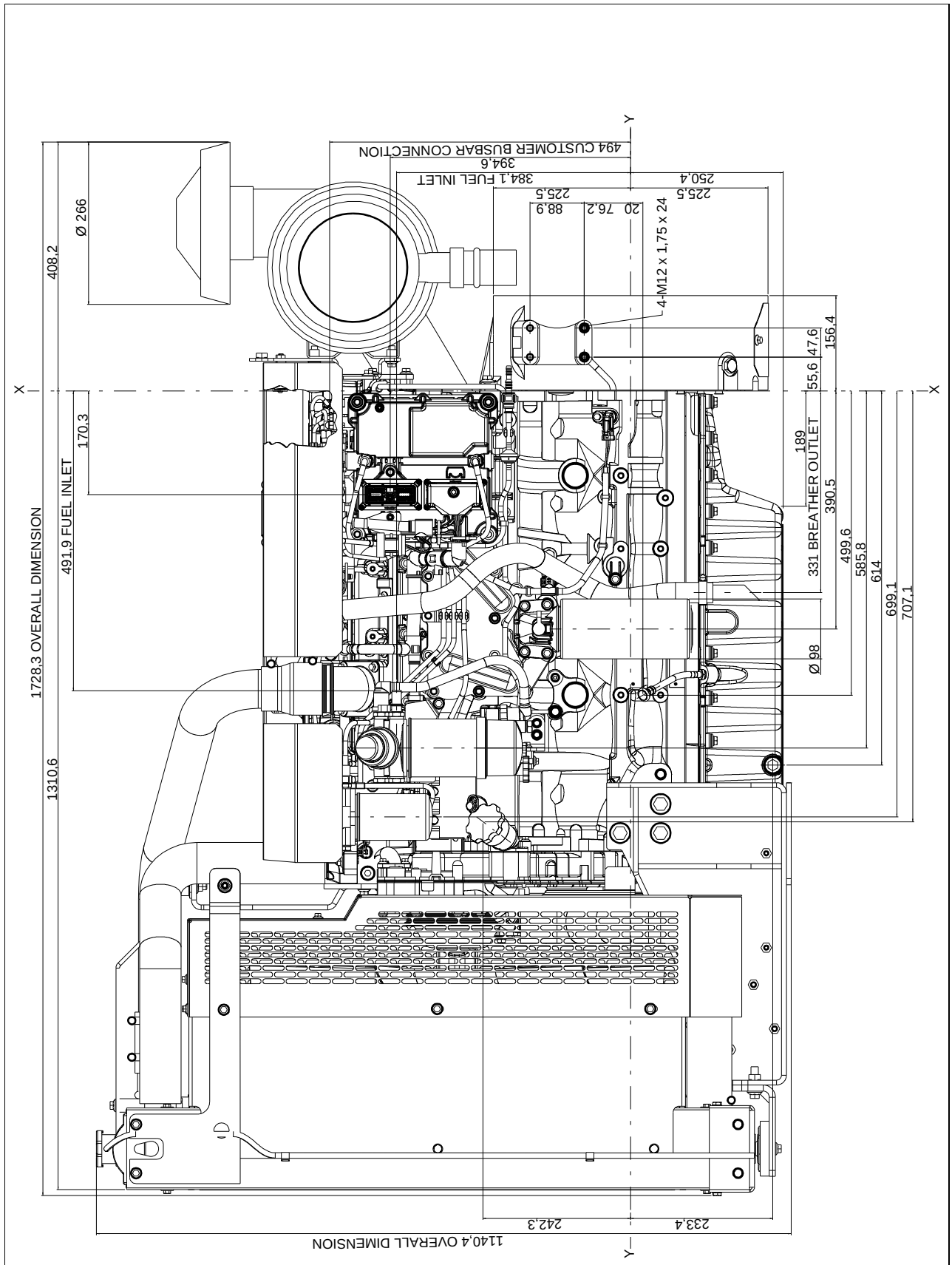
Sound level

Average sound pressure level for ElectropaK at 1 metre:
-@ 1500 rev/min. ... 97,8 db(A)
-@1800 rev/min ... 100,3 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.
Certified against the requirements of EU2007 legislation for non-road mobile machinery, powered by constant speed engines (EU97/68/EC Stage II)

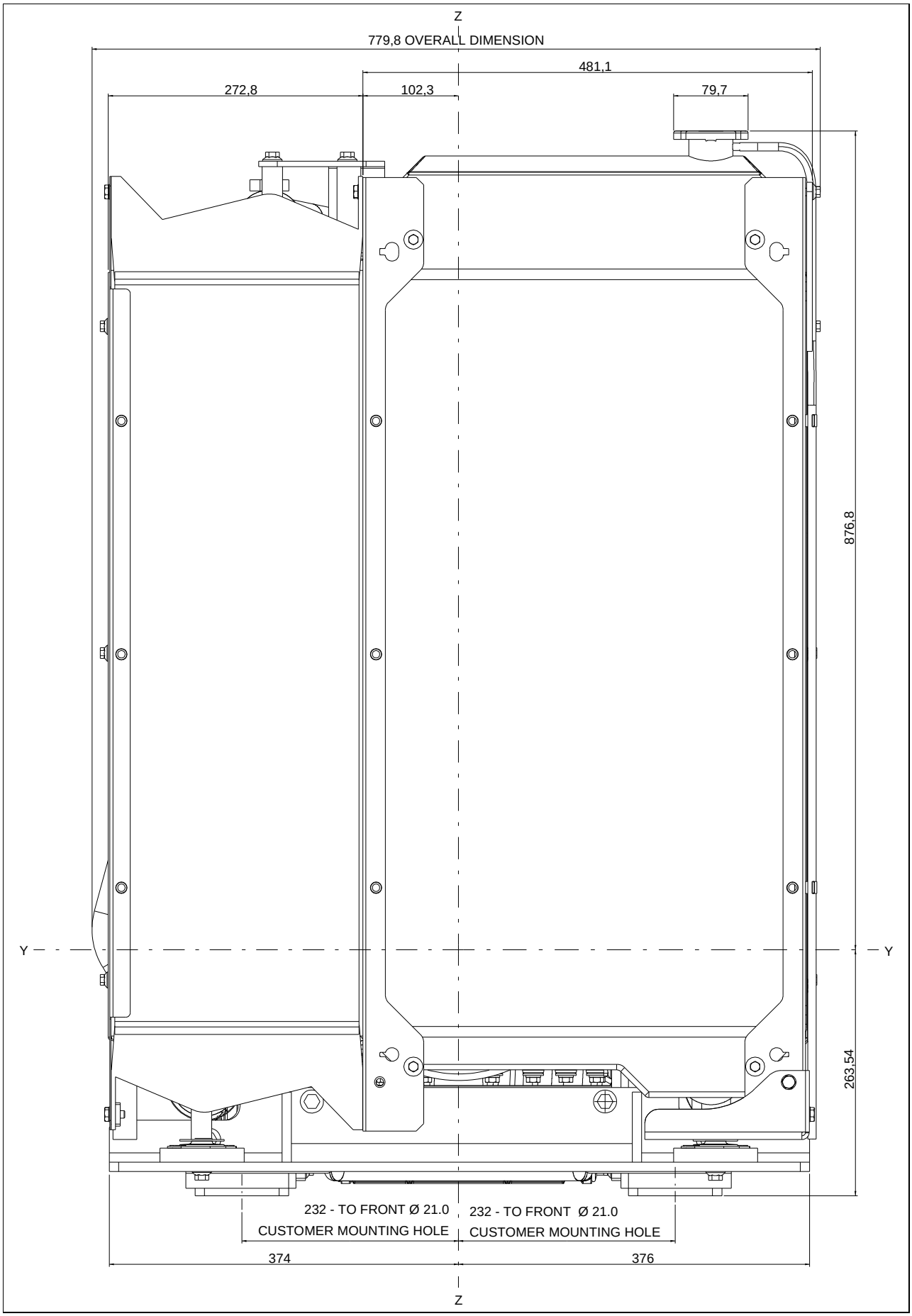
General installation

Designation	Units	Type of operation and application			
		Prime	Standby	Prime	Standby
		50Hz		60Hz	
Gross engine power	kWb	124,0	137,5	144,6	161,5
Electropak nett engine power	kWm	119,5	133,0	138,4	155,3
Brake mean effective pressure	kPa	1252	1390	1461	1633
Engine coolant flow (against 35 kPa restriction)	l/min	140,0		170,0	
Combustion air flow (at STP)	m³/min	8,9	9,4	11,6	12,1
Exhaust gas flow (Max.)	m³/min	23,1	24,4	27,5	28,9
Exhaust gas temperature (Max.) in manifold (after turbocharger)	°C	430	441	477	484
Overall thermal efficiency (nett)	%	38,4	39,1	38,1	40,0
Typical genset electrical output (0.8pf 25 °C)	kWe	109,9	122,4	127,3	142,9
	kVA	137,4	152,9	159,2	178,6
Regenerative power (estimated)	kW	8,8		14,9	
Assumed alternator efficiency	%	92			
Energy balance					
Energy in fuel	kWt	311,3	339,6	361,0	396,5
Energy in power output (gross)	kWb	124,0	137,5	144,6	161,5
Energy to cooling fan	kWm	4,5		6,2	
Energy in power output (nett)	kWm	119,5	133.0	138,4	155,3
Energy to coolant and lubricating oil	kWt	62,8	66,5	67,2	72,2
Energy to exhaust	kWt	98,5	106,1	112,7	121,7
Energy to charge cooler	kWt	16,3	19,1	25,3	28,8
Energy to radiation	kWt	9,7	10,4	11,2	12,3

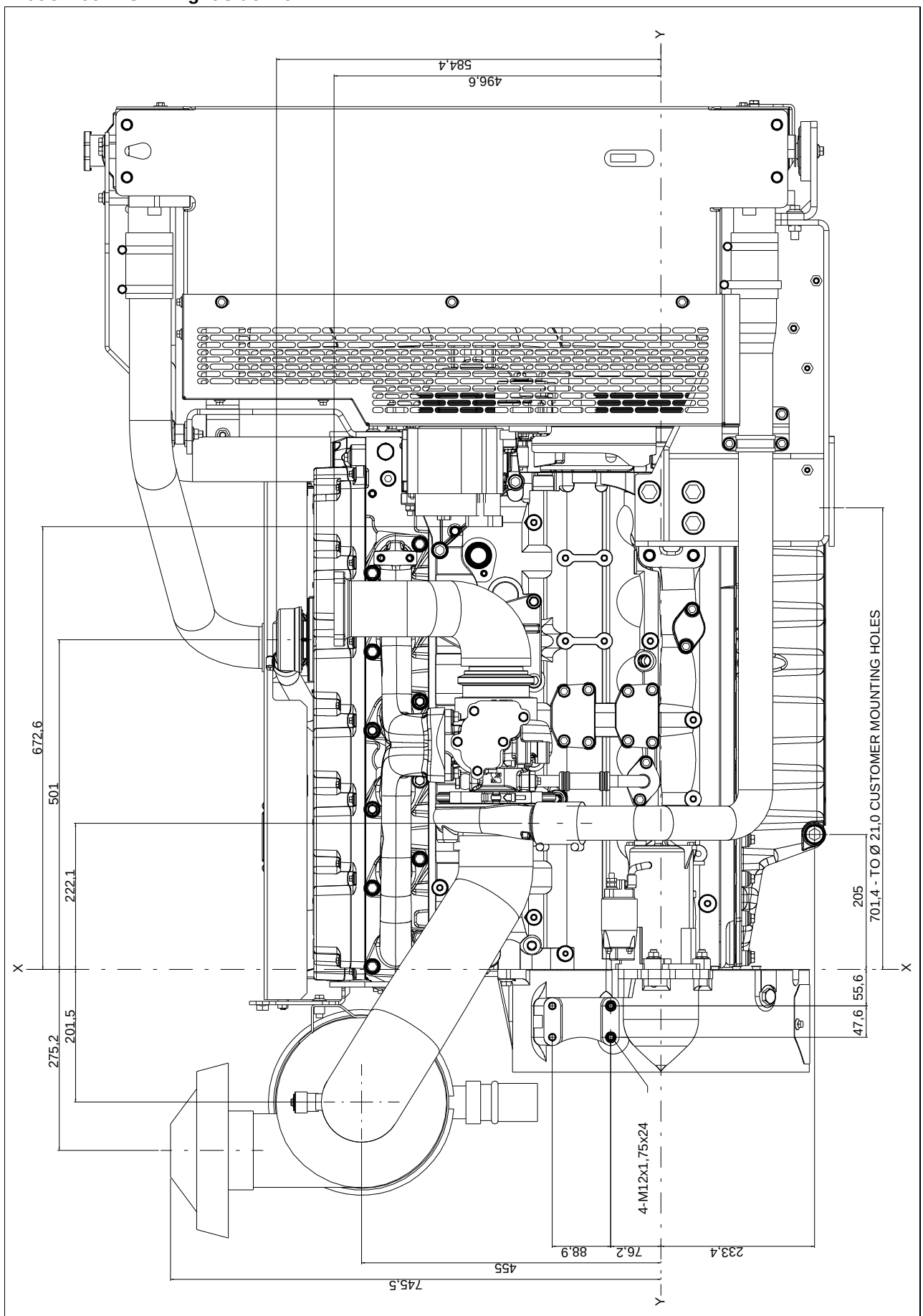
1106C-E66TAG2 - Left side view



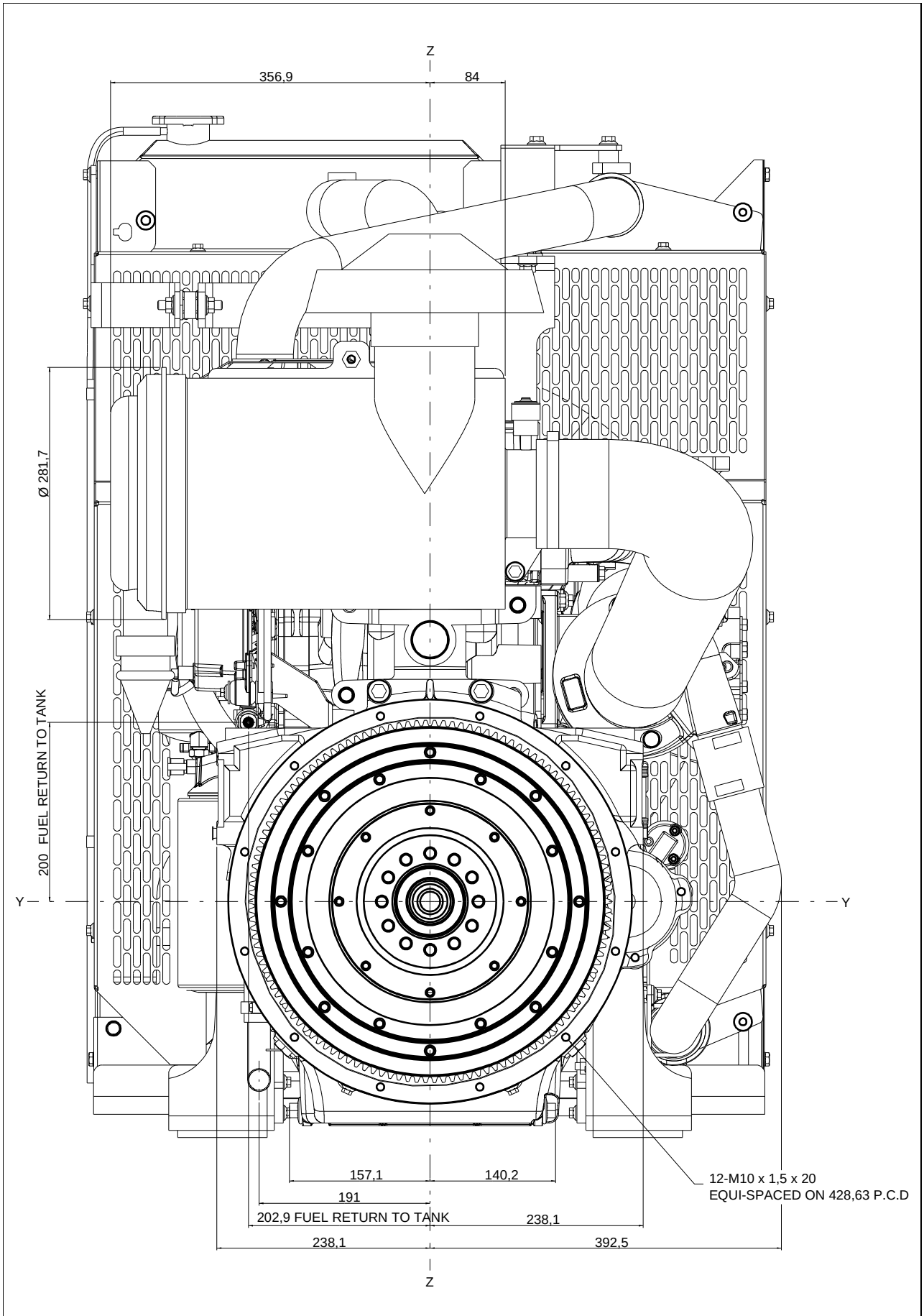
1106C-E66TAG2 - Front view



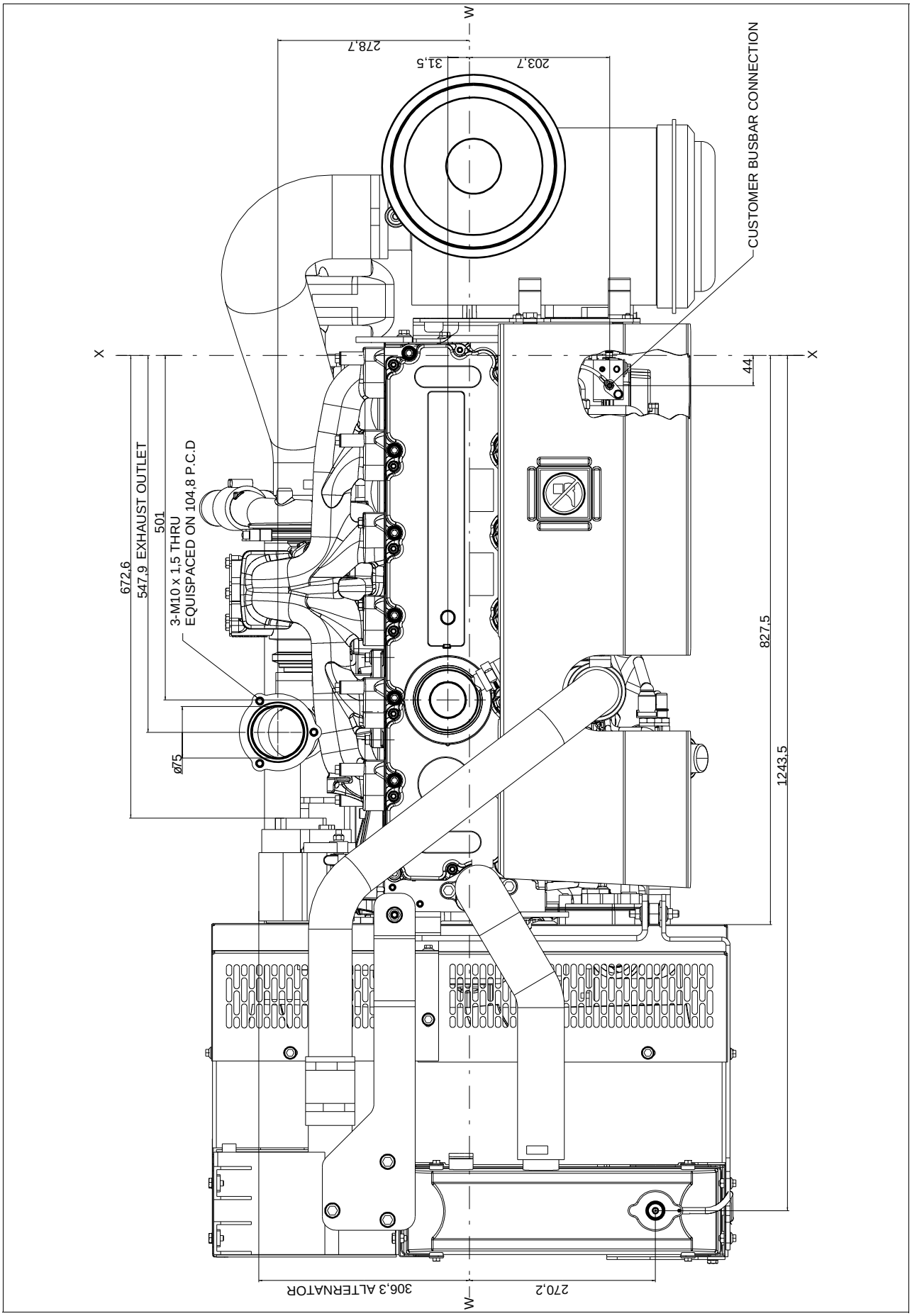
1106C-E66TAG2 - Right side view



1106C-E66TAG2 - Rear view



1106C-E66TAG2 - Plan view



Cooling system

Cooling pack

-overall weight (wet) . ... 71 kg
-overall face area . ... 554760 mm²
-width ... ... 745 mm
-height .. .. 1080 mm

Radiator

Face area . ... 35120 mm²
Number of rows and materials . ... 5 rows, aluminium
Matrix density and material .. .. 10 fins per inch, aluminium
Width of matrix . ... 439 mm
Height of matrix ... ... 800 mm
Pressure cap setting (min) ... ... 100 kPa

Charge cooler

Face area . ... 203560 mm²
Number of rows and materials . ... 2 rows, aluminium
Matrix density and material .. .. 10 fins per inch, aluminium
Width of matrix . ... 258 mm
Height of matrix ... ... 789 mm

Fan

Diameter ... ... 610 mm
Drive ratio.. ... ... 1,2:1
Number of blades.. 7
Material . ... Nylon
Type .. .. Pusher

Coolant

Total system capacity ... ... 21 litres
System drawdown capacity 10%
Engine capacity ... ... 9,5 litres
Maximum top tank temperature ... ... 112 °C
Temperature rise across engine
(Max., rating dependent) .. .. 6,6 to 7,0 °C
Max. permissible external system resistance ... ...35 kPa
Thermostat operation range.. ... ...85 to 95 °C
Shutdown switch setting ... ... 118 °C
Coolant pump method of drive . ... gears
Recommended coolant immersion heater
rating (minimum) ... ... 0,75 kW

Recommended coolant

50% anti freeze / 50% water. For complete details of recommended coolant specifications, refer to the Operation and Maintenance Manual for this engine model

Duct allowance

1106C-E66TAG2 - Maximum additional restriction (Duct allowance to cooling airflow and resultant min. airflow (Standby power)			
Duct allowance with inhibited coolant at 53 °C			
Description	**rev/min**	**kPa**	**m^3/min**
Minimum airflow	1500	0,125	220
	1800	0,125	250
Duct allowance with inhibited coolant at 46 °C			
Description	**rev/min**	**kPa**	**m^3/min**
Minimum airflow	1500	0,200	220
	1800	0,200	250

Electrical system

Alternator ... ... Denso A127i
Alternator voltage .. .. 12 volts
Alternator output ... ... 100 amps
Starter. ... ... AZF
Starter motor voltage . ... 12 volts
Starter motor power ... ... 4 kW
Number of teeth on the flywheel 126
Number of teeth on starter pinion... 10
Pull-in current of starter motor solenoid @ 0°C Max.. ... . 62 amps
Hold-in current of starter motor solenoid @ 0°C Max. ... ..15 amps
Engine stop method .. .. via ECM
Note: All leads rated at 10 amps minimum

Cold start recommendations

Minimum required cranking speed over TDC. ... ... 100 rev/min

Starter Model	At Temp. °C	Oil viscosity Imit	Minimum Battery CCA (Cold Cranking Amps)	
			With glow plugs (SAE)	Without glow plugs
AZF (1)	-5	15W40	750	750
AZF (1)	-10	15W40	850	950
AZF (1)	-15	15W40	1500	**(2)**
AZF (1)	-20	10W	1500	(2)
AZF (1)	-25	5W30	1900	(2)

1. AZF starter - Battery must not exceed 2400 CCA.
2. Glow plugs must be used.

The table above shows the recommended battery sizes against starter model, temperature and oil viscosity and is based on the test results from starting a ‘bare’ engine with batteries at a 75% state of charge and with a cable resistance of 0,0017 Ohms.

Exhaust system

Maximum back pressure
-1500 rev/min . ...10,0 kPa
-1800 rev/min ... ...15,0 kPa
Exhaust outlet, internal diameter ... ... 90 mm

Fuel system

Injection components

Injector ... ... Electronic
Fuel pump CR200

Fuel priming

Priming pump type . ...Manual / electronic
Maximum priming time ... ... 90 seconds

Fuel feed

Maximum fuel flow.. ... ... 1,5 l/min
Maximum suction head at engine fuel pump inlet .. .. 30 kPA
Maximum static pressure head .. ..600 kPa
Fuel temperature at engine fuel pump inlet ... ...80 °C
Tolerance on fuel consumption 3%

Fuel specification

Perkins recommend the use of the following fuel specifications:

- EN590 DERV Grade A, B, C, E, F, Class 0, 1, 2, 3 & 4
- BS2869 Class A2 Off-highway Gas Oil Red Diesel
- ASTM D975, Class 1D and Class 2D

Note: For further information on fuel specifications and restrictions, refer to the OMM Fuels section for this engine model

Fuel consumption

Load	Type of operation and application		Type of operation and application	
	1500 rev/min g/kWhr	1800 rev/min g/kWhr	1500 rev/min l/hr	1800 rev/min l/hr
Standby	206.2	205.0	33.7	39.4
110% prime	209.1	208.0	33.9	39.3
Prime	209.4	208.5	30.9	35.9
75% prime	219.6	216.0	24.3	27.9
50% prime	222.5	226.3	16.4	19.5

Note: based on gross rated power

Induction system

Maximum air intake restriction

-clean filter . ... 5 kPa
-dirty filter ... ... 8 kPa
-air filter type .. .. paper element

Lubrication system

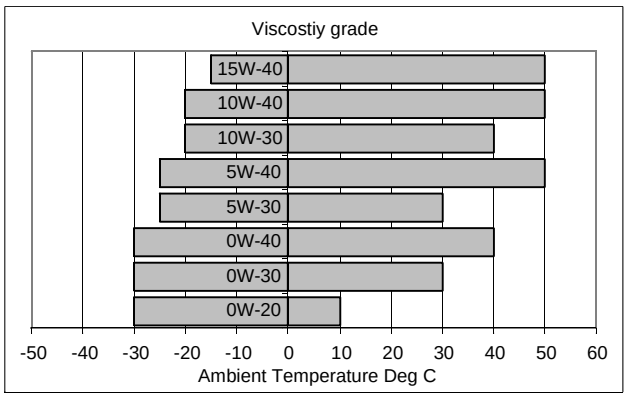
Maximum total system oil capacity ... ... .16,5 litres
Minimum oil capacity in sump ... ... .12,5 litres
Maximum oil capacity in sump ... ... .15,5 litres
Maximum engine operating angles -
front up, front down, right side, left side . ... 25 °
Sump drain plug tapping size. ... ... 3/4 - 16 UNF
Shutdown switch setting (where fitted) .. .. ECM controlled

Lubricating oil

-relief valve opening pressure ... ... 430 kPa
-pressure at maximum speed ... ... 450 kPa
-maximum continuous oil temperature (in rail) .. .. 125 °C
-oil consumption at full load (% of fuel).. ... ... < 0.1

Recommended SAE viscosity

A multi grade oil must be used which conforms to API-CH4/CI4.



Mountings

Maximum static bending moment at
-rear face of block ... ... 1130 Nm
Maximum permissible overhung load
-on the flywheel ... ... Data available 28th Feb.Nm
Maximum bending moment at rear
-of flywheel housing in shock . ... +/- 3000 Nm

Load acceptance (cold engine)

The below complies with the requirements of classification 3 and 4 of ISO 8528-12 and G2 operating limits stated in ISO 8528-5

Initial load application: when engine reaches rated speed (15 seconds maximum after engine starts to crank)			
Descriptor	**Units**	**1500 rev/ min (50 Hz)**	**1800 rev/ min (60 Hz)**
% of Prime Power	%	80	60
Load	kWe	87,9	76,4
Transient frequency deviation	%	≤ 10	≤ 10
Frequency recovery	seconds	5	5

The above figures were obtained under the following test conditions:
-minimum engine block temperature ... ... 26 °C
-ambient temperature .. ..24 °C
-governing mode . ... Isochronous
-alternator inertia . ... 1.32 kgm²
-under frequency roll off (UFRO) point set to .. ... 1 Hz below rated
-UFRO rate set to ... ... 2% voltage / 1% frequency
LAM on/off ... ...off

All tests were conducted using an engine which was installed and serviced to Perkins Engines Company Limited recommendations.
Note: The general arrangement drawings shown in this data sheet are for guidance only. For installation purposes, latest versions should be requested from the Applications Dept., Perkins Engines Stafford, ST16 3UB United Kingdom.

@Perkins®

Perkins Engines Company Limited
Peterborough PE1 5NA United Kingdom
Telephone +44 (0) 1733 583000
Fax +44 (0) 1733 582240
www.perkins.com

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