

Technical Data

Q4 Series

Gas engine – Generating set specification

Q4.4TSI – NG- E

46 kW(m) @1500 RPM

For any further information, please contact the Quantum Team by visiting our website at <https://www.quantumes.com/contact-us/>

Basic technical data

Number of cylinders.....	4
Cylinder arrangement.....	Vertical in-line
Cycle.....	Four stroke
Induction system.....	Turbocharged
Compression ratio.....	12.5:1
Bore.....	105mm
Stroke.....	127mm
Cubic capacity.....	4.4 litres
Direction of rotation.....	Clockwise view from front
Firing order.....	1-3-4-2

Overall dimensions of Epak

Height.....	1200mm
Length.....	1130mm
Width (including mounting brackets).....	630mm

Moments of inertia

Engine longitudinal / horizontal / axial.....	25 / 42 / 25kgm ²
Flywheel.....	1.14kgm ²

Centre of gravity

Forward from rear of block.....	215mm
Above centre line of block.....	120mm
Offset of RHS of centre line.....	25mm

Test conditions

Air temperature.....	25°C
Barometric pressure.....	100kPa
Relative humidity.....	30%

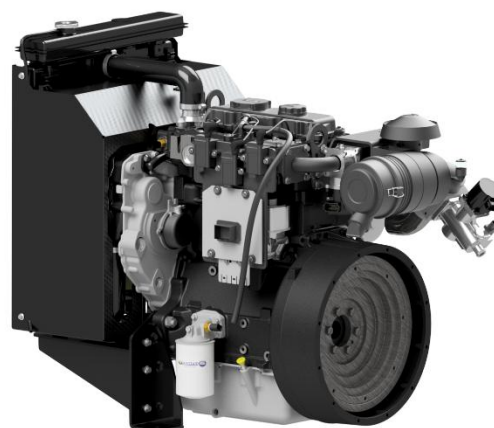
If the engine is to operate in ambient conditions other than those of the test conditions, suitable adjustments must be made for these changes. For full details, contact Quantum Technical Service Department

Estimated total weight

(incl. radiator and mounting brackets)

Total weight (engine only)	
Dry.....	420kg
Wet.....	438kg

Designation	50Hz Operation			60Hz Operation	
	Units	Prime	Stand-by	Prime	Stand-by
Engine speed	RPM	1500	1500	1800	1800
Gross engine power	kWm	46	51	53	58
Brake mean effective pressure (calc.)	kPa	1126	1232	1071	1182
Engine coolant flow 35 kPa restriction	L/min	142	142	170	170
Combustion air flow	m ³ /min	3.8	4.1	4.8	5.2
Exhaust gas flow (max – calc.)	m ³ /min	8.5	9.1	10.8	11.7
Exhaust gas outlet temperature (avg.)	°C	520	522	516	511
Cooling fan air flow (200kPa external restriction)	m ³ /min	89	89	111	111
Overall thermal efficiency (net – calc.)	%	34.4	35.9	33.4	34.3
Typical genset electrical output	kW(e)	40	44	45	50
	kVA	50	55	56	63
Power factor		0.8	0.8	0.8	0.8
Actual alternator efficiency	%	91.4	91.4	91.4	91.4



Sound

Sound pressure level* (cooling pack and air cleaner fitted)

@1500RPM.....	91.4dB(A)
@1800RPM.....	91.9dB(A)

*Sound level values correspond to a diesel configuration. Equivalent gas models are currently unavailable but typically operate at lower noise levels.

Rating Definitions

Prime Power – Unlimited hours usage with an average load factor of 80% of the published Prime power over each 24 hours period. A 10% overload is available for 1 hour in every 12 hours of operation.

Standby power – Limited to 500 hours annual usage with an average load factor of 80% of the published Standby power rating over each 24 hours period. Up to 300 hours of annual usage may be run continuously. No overload is permitted on Standby power

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 (127 °F) or 46 °C (114.8 °F) 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 Quantum Technical Service Department.

Cooling System (radiator)

Face area.....	0.276m ²
Rows and materials.....	single row aluminium
Matrix density and material.....	12.5 aluminium fins/inch
Width of matrix.....	526mm
Height of matrix.....	524mm

Fan

Diameter.....	457mm
Drive ratio.....	1.25 :1
Number of blades.....	7
Material.....	Composite
Type.....	Pusher

Coolant**

Capacity (incl. radiator).....	13.0 litres
Capacity (not incl. radiator).....	7.0 litres
Maximum top tank temperature.....	110°C
Thermostat operating 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 voltage.....	12V
Starter motor voltage.....	12V
Starter motor power.....	3kW
Number of teeth on flywheel.....	126
Pull in current of starter motor solenoid.....	60 amps
Hold in current of starter motor solenoid.....	15 amps

Battery requirement

Min. 1x 12V battery SAEJ537 CCA. 900

Cold start recommendations

Minimum cranking speed.....	105RPM
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Exhaust System

Maximum back pressure (@1500RPM).....	10kPa
Exhaust outlet size.....	64mm

Fuel System

Type or carburetor.....	Mixer / EFR
Throttle Actuator.....	Electronically controlled butterfly
Gas supply pressure.....	Min 17mbar*

*For supply pressure below this value, please contact Quantum Technical Dept. for advice.
Installation of gas supply and shut-off valves to be in accordance with local regulations.

Ignition system

Primary system type.....	Electronic inductive system
Ignition coils.....	1 per cylinder

Low Load Limits

@60-100% of prime rated power.....	No restriction
@30-60% of prime rated power.....	Max. 500h/yr (5hr continuous)
@0-30% of prime rated power.....	10 minutes

*If engine is run at less than 60% of prime rate power, it should be run at full power for at least 1 hour. (Start up and commissioning not included)

Fuel Specification

Recommended fuel – Natural gas with LHV at 35.66MJ/m³ (fuel consumption basis).

Gas supplies must be filtered to the same standard as the engine intake air i.e. maximum particle size to not exceed 5 microns.

Fuel Consumption

Speed (RPM)	% of Prime power (Nm ³ /h)				
	110%	100%	75%	50%	25%
1500	13.53	12.86	10.29	8.13	6.11
1800	15.70	14.52	13.20	9.12	6.72

Induction System (maximum air intake restriction)

Clean filter.....	5kPA
Dirty filter.....	8kPA
Air filter type.....	Dry

Lubrication System (lubricating oil capacity)

Total system.....	8.0 litres
Sump only.....	5.5/7.0 litres (min/max)

Maximum Engine Operating Angles

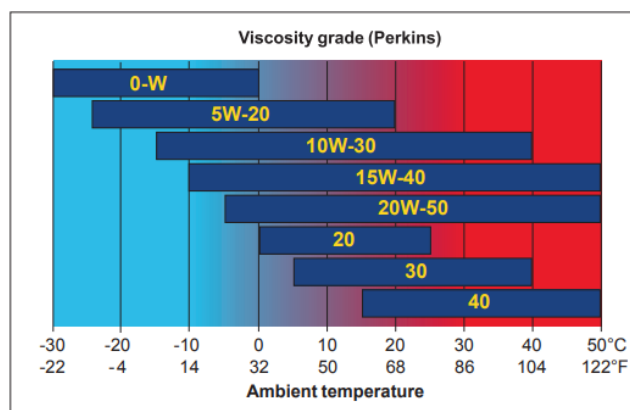
Front up, front down, right side or left side.....	25°
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Lubricating Oil Pressure

Relief valve opens.....	415-470kPa
At maximum no-load speed.....	276-414kPa
Maximum oil temp.....	125°C

Recommended Lubricating Oils

A single or multigrade oil must be used of low ash type (<0.6 %wt), formulated for natural gas engines. See chart below for temperature range.



Mountings

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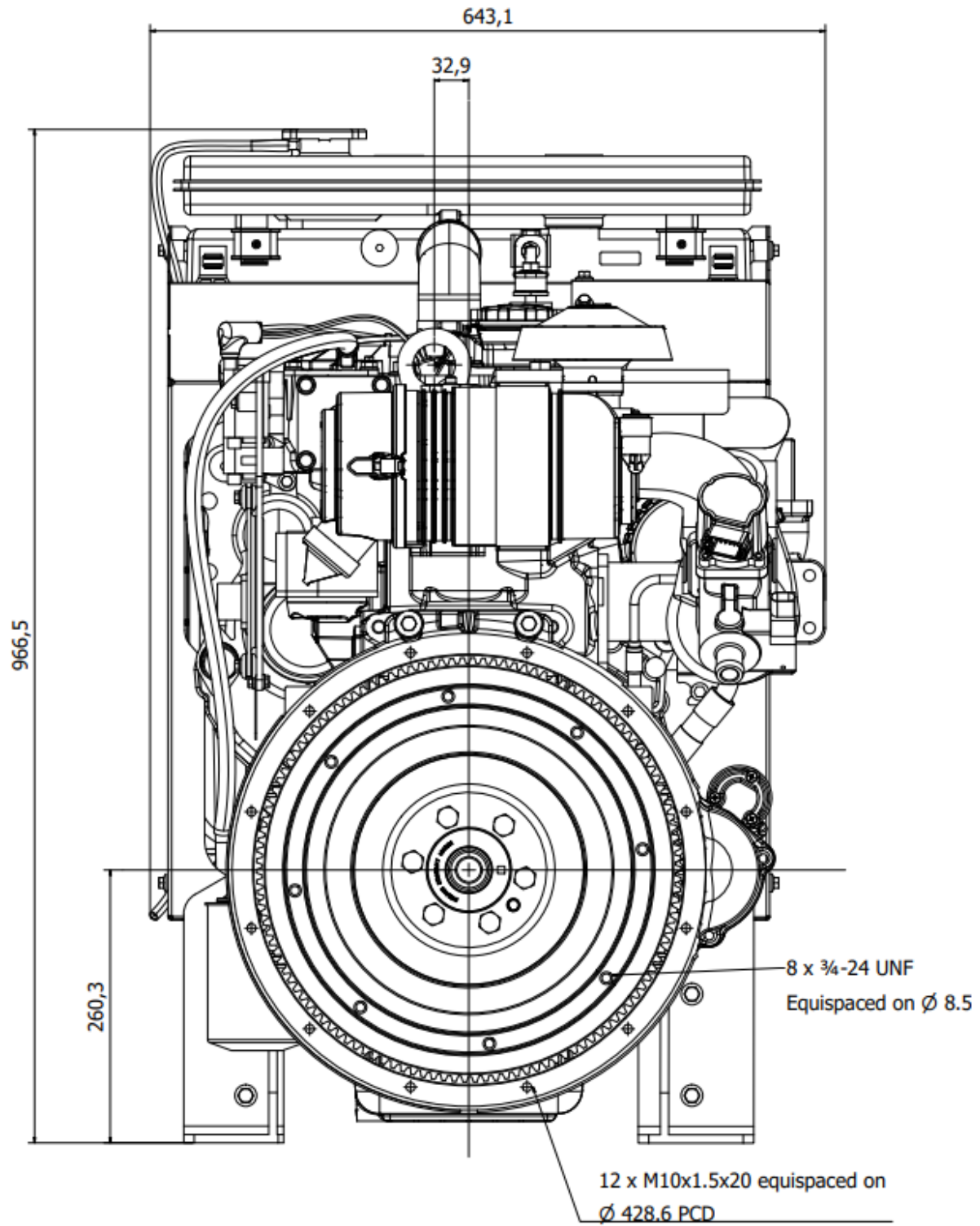
Flywheel and housing

Flywheel housing.....	SAE 3
Flywheel.....	10/11.5

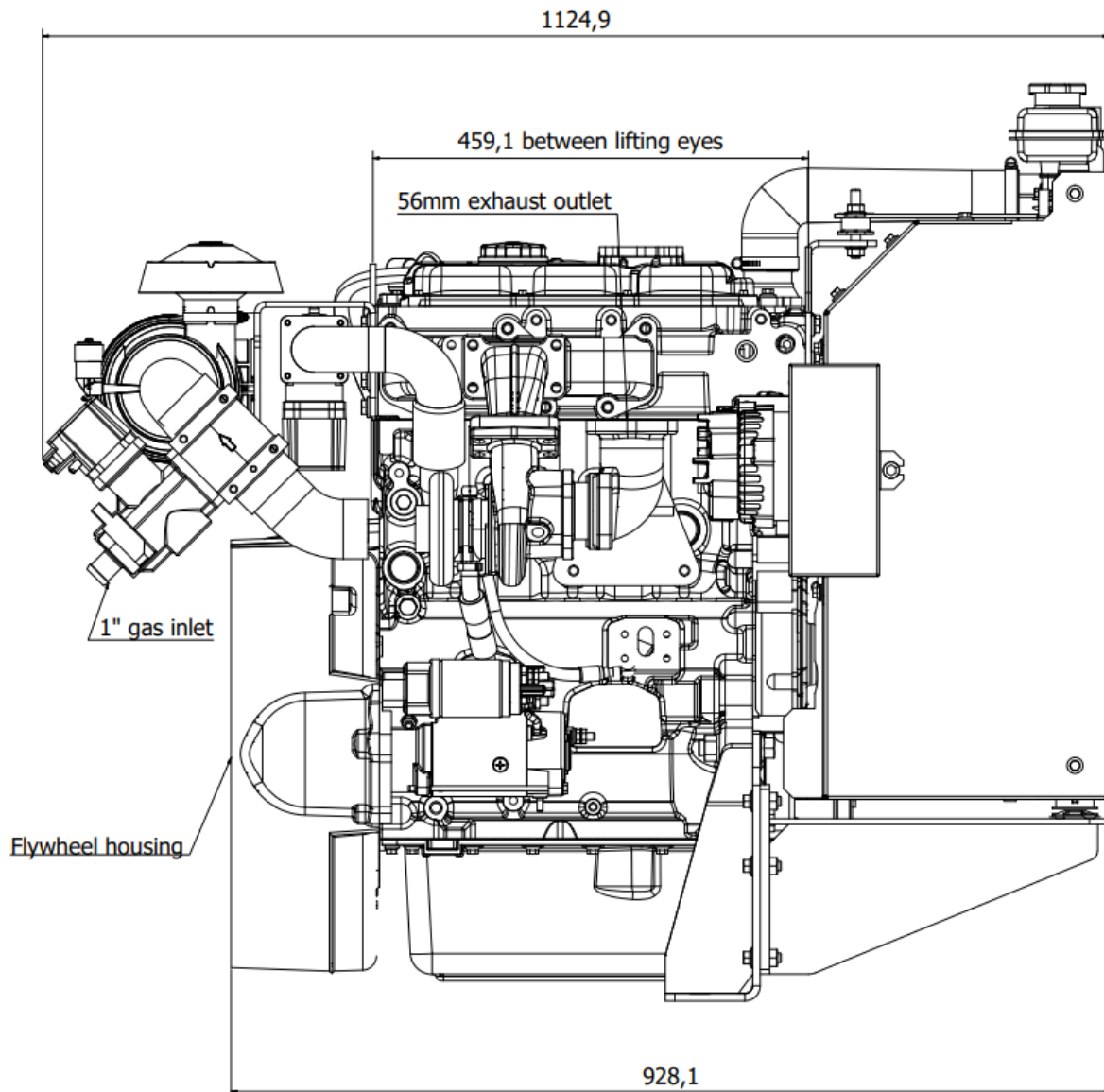
The information given in this document is for guidance only. All tests were conducted using engine installed and services to Quantum ES Ltd recommendations.

All information in this datasheet is correct at time of print but is subject to change without prior notice

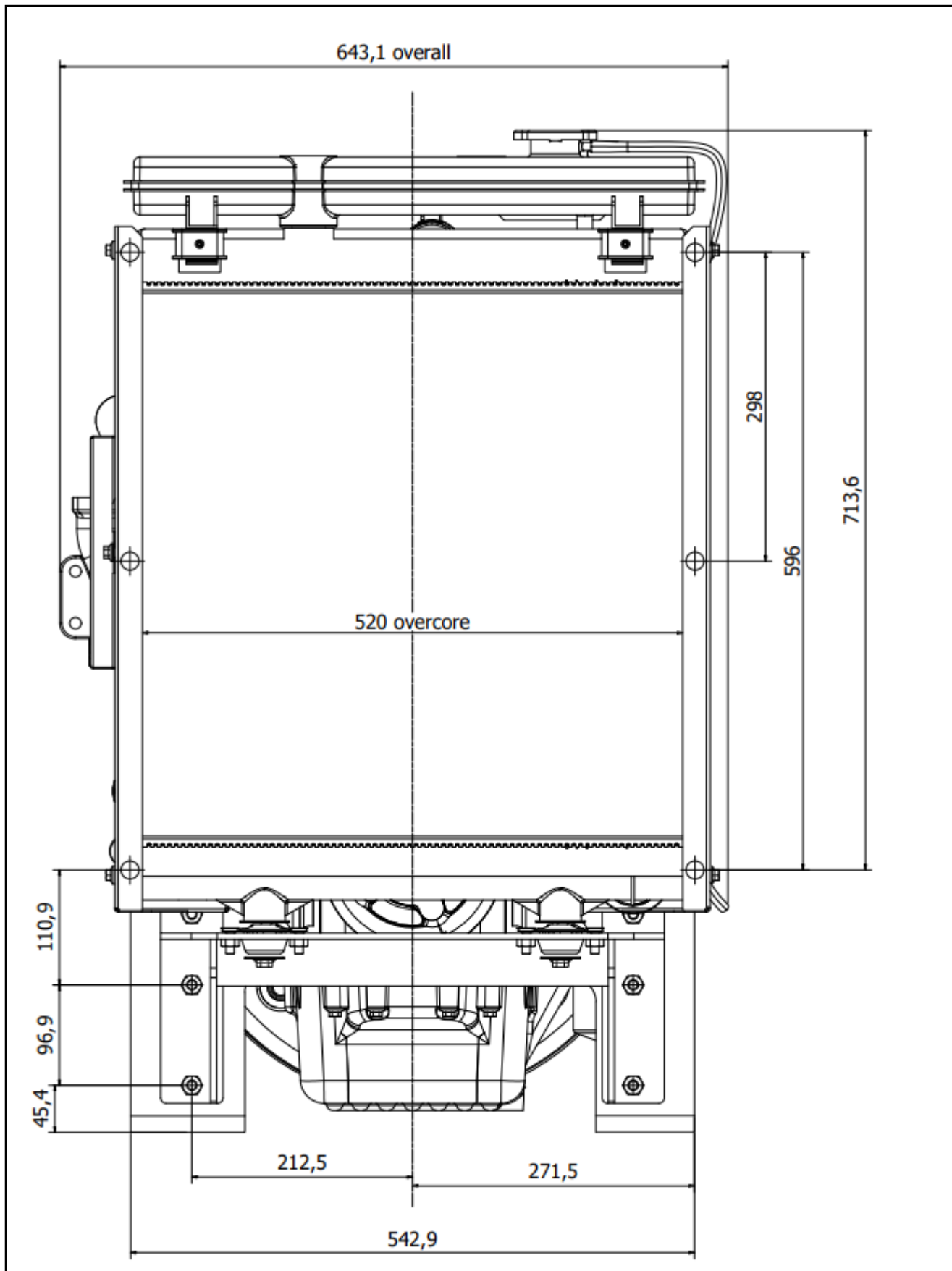
REAR SIDE VIEW



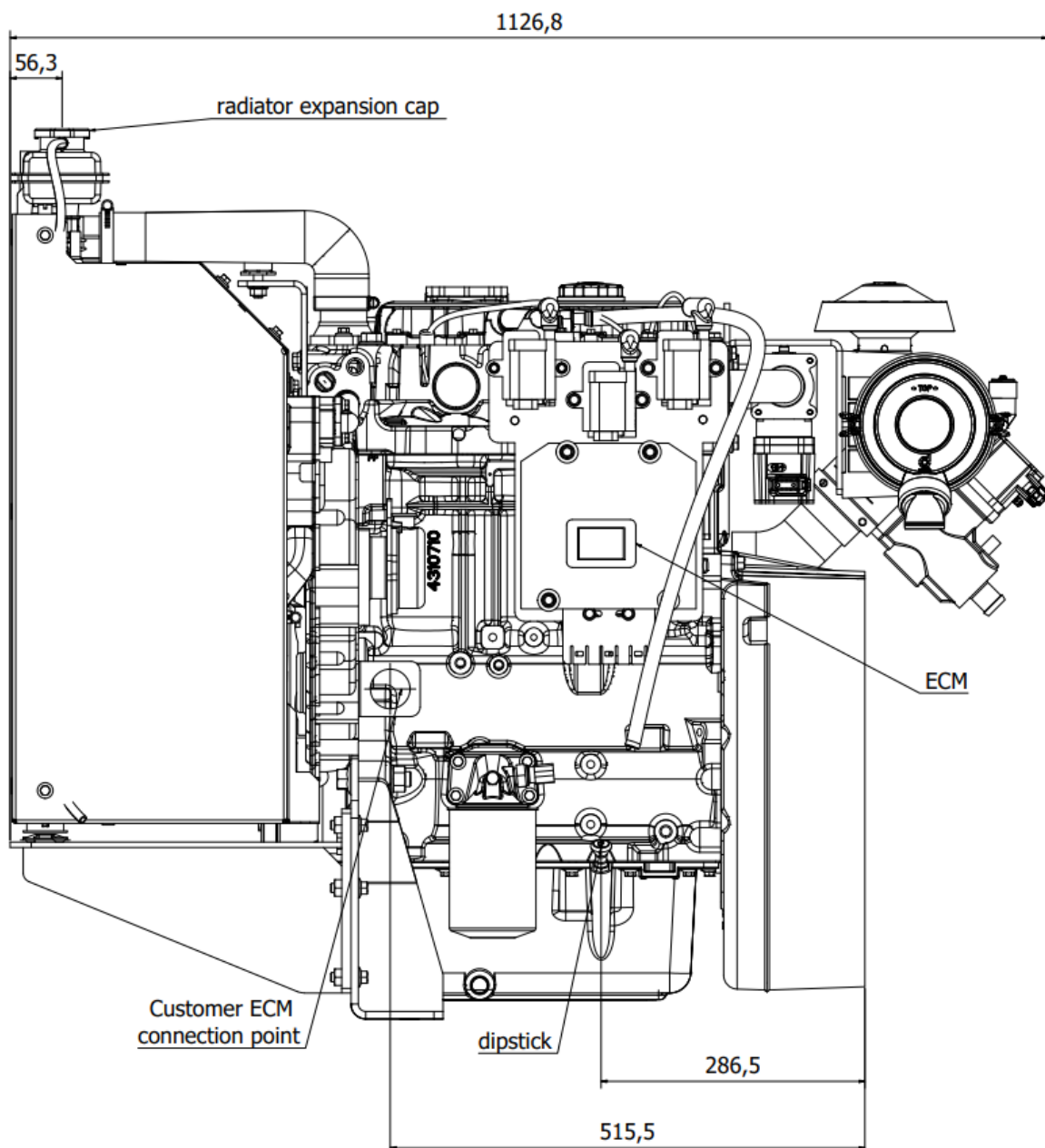
RIGHT SIDE VIEW



FRONT SIDE VIEW



LEFT SIDE VIEW



TOP DOWN VIEW

