

2806D-E18TAG1A

2800

China III and India CPCBII

Series

Basic technical data

Number of cylinders	6
Cylinder arrangement	Vertical inline
Cycle	4 stroke
Induction system	Turbocharged, air-to-air charge cooling
Combustion system	Direct injection diesel
Compression ratio	18.0:1
Bore	145 mm
Stroke	183 mm
Cubic capacity	18.1 litres
Direction of rotation	Anti clockwise when viewed from flywheel
Firing order (number 1 cylinder furthest from flywheel)	1, 5, 3, 6, 2, 4
Estimated total weight (dry)	2079 kg

Overall dimensions, ElectropaK

Height	1805 mm
Length (air cleaner fitted)	2408 mm
Width	1455 mm

Moments of inertia

Engine	2.48 kgm ²
Flywheel	1.92 kgm ²

Centre of gravity, ElectropaK

Forward from rear of block (dry)	550 mm
Above crankshaft centre line (dry)	250 mm

Cyclic irregularity

1500 rev/min	1.54
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Performance

Steady state speed capability at constant load - G2	+ 0.25%
All ratings certified to within	±3%

Note: All data based on operation to ISO 3046-1/1, BS5514 and DIN 627 standard reference conditions.

Note: All data based on 42584 MJ/kg calorific value for diesel conforming to specification BS2869 Class A2.

Sound level

Sound pressure level (exhaust piped away, cooling pack and air cleaner fitted)	108 dB(A)
1500 rev/min	108 dB(A)

Test conditions

Air temperature	25°C
Barometric pressure	100 kPa
Relative humidity	30%
Fuel temperature (inlet pump)	40°C

Note: 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 India CPCBII legislation for genset application, powered by constant speed engines.

General installation

Designation	Units	Prime power	Standby power
		50 Hz @ 1500 rev/min	
Gross engine power	kWb	540	593
Fan power	kWm	9.0	
Restriction losses/other losses	kWm	9.0	10.0
ElectropaK nett engine power	kWm	522	574
Gross BMEP	kPa	2385	2644
Combustion air flow	m ³ /min	40.2	41.1
	kg/hr	2846	2918
Exhaust gas flow, wet (maximum)	m ³ /min	518	531
	kg/hr	108.5	110.5
Exhaust gas temperature after turbo	°C	2956	2945
Boost pressure ratio		3.5	3.6
Overall thermal efficiency (nett)	%	41.0	40.0
Mean piston speed	m/s	9.0	
Engine coolant flow	l/min	6.1	
Cooling fan air flow	m ³ /min	408	
Typical generator set electrical output (0.8 pf)	kWe	480	528
	kVA	600	660
Assumed alternator efficiency	%	92	

Rating definitions

Prime power

Variable load. Unlimited hours usage with an average load of 70% of the published prime power rating. A 10% overload is available for 1 hour in every 12 hour of operation.

Standby power

Variable load. Limited to 500 hours annual usage up to 300 hours of which may be continuous running. No overload is permitted.

Emissions capability

- China III
- India CPCBII (prime rating only)

Energy balance

Designation	Units	Prime power	Standby power
		50 Hz @ 1500 rev/min	
Energy in fuel	kWt	1309	1438
Energy in power output (at shaft)	kWb	522	574
Energy to coolant	kWb	156	176
Energy to exhaust	kWt	451	496
Energy to ACC	kWt	125	131
Energy to cooling fan	kWt	9.0	
Energy to restrictions/other losses	kWm	9.0	10.0
Energy to radiation	kWt	37	42

Note: The above data is based on 42,770 kJ/kg calorific value for diesel conforming to specification BS2869 Claas A2.

Cooling system radiator (including charge cooler)

Face area	0.81 mm ²
Number of rows and materials	4 row, Aluminium
Matrix density and material	11 fins per inch, Aluminium
Width of matrix	1455 mm
Height of matrix	1761 mm
Weight of radiator (dry)	156 kg
Pressure cap setting (minimum)	70 kPa

Coolant pump

Speed @ 1500 rev/min	1620 rev/min
Drive method	Gear driven

Fan

Diameter	955 mm
Drive ratio	0.8:1
Number of blades	9
Material	Composite
Type	Pusher
Cooling fan air flow @ 1500 rev/min	374 m ³ /min

Coolant

Total system capacity	55.6 litres
Maximum top tank temperature	107°C
Temperature rise across engine	10°C
Maximum pressure in engine cooling circuit	70 kPa
Maximum permissible external system resistance	30 kPa
Maximum static pressure head on pump	30 kPa
Coolant flow against 30 kPa restriction	
1500 rev/min	5.3 litres/sec
Thermostat operation range	87 to 98°C

Note: For details of recommended coolant specifications, refer to the Operation and Maintenance Manual for this engine model.

Duct allowance

Maximum additional restriction (duct allowance) to cooling airflow and resultant minimum airflow			
Engine speed rev/min	Ambient clearance inhibited coolant °C	Duct allowance Pa	m ³ /min
1500	56	125	374

Electrical system

Type	24 volts negative earth
Alternator	20 SI
Alternator voltage	24 volts
Alternator output	45 amps
Starter motor type	50 MT
Starter motor voltage	24 volts
Starter motor power	9 kW
Number of teeth on the flywheel	113
Number of teeth on starter pinion	11
Minimum cranking speed	115 rev/min
Starter solenoid maximum	
Pull-in current @ 25°C	49 amps
Hold-in current @ 25°C	7 amps

Cold start recommendations

Minimum required cranking speed over TDC 60 rpm

	Down to -10°C	Down to -25°C
SAE grade Oil	15W40/ API CH4	0W30/ API CH4
Starter	24 volts	
Battery	2x 12 V 128 Ah	
Maximum breakaway current	1400 amps	1400 amps
Cranking current	700 amps	600 amps
Starting Aids (ECM controlled)	None	Block heater to 45°C

Notes:

- battery capacity is defined by the 20 hour rate at 0°C
- the oil specification should be for the minimum ambient temperature as the oil will not be warmed by the immersion heater
- breakaway current is dependent on the battery capacity available. Cables should be capable of handling transient current twice that of cranking current

Exhaust system

Maximum back pressure - 1500 rev/min	7 kPa
Exhaust outlet, internal diameter	203 mm

Fuel system

Injection systemMEUI
 Injector typeMEUI
 Governor typeElectronic
 Governing conforms toISO8528-5 Class G2
 Injector pressure.....200 MPa

Fuel lift pump

Lift pump typeGear driven
 Lift pump delivery - 1500 rev/min370 litres/min
 Lift pump delivery pressure621 kPa
 Maximum suction head at pump inlet3 m
 Maximum static pressure head4 m
 Maximum fuel inlet temperature79°C
 Fuel filter spacing primary10 microns
 Fuel filter spacing secondary2 microns

Fuel specification

Recommended fuel to conform BS2869 1998 Class A2 or BSEN590

Note: For further information on fuel specifications and restrictions, refer to the OMM, "Fluid Recommendations" for this engine model.

Fuel consumption BSFC

Load	2806D-E18TAG1A - 1500 rev/min	
	g/kWh	litres/hr
Standby	204	142.4
Prime	204	129.6
75% Prime	213	101.8
50% Prime	219	69.6

Note: Note: All figures based on gross engine power and assumed fuel density of 0.85kg/l.

Induction system

Maximum air intake restriction

Clean filter3.7 kPa
 Dirty filter6.2 kPa
 Air filter typePaper element - 18 inch diameter

Lubrication system

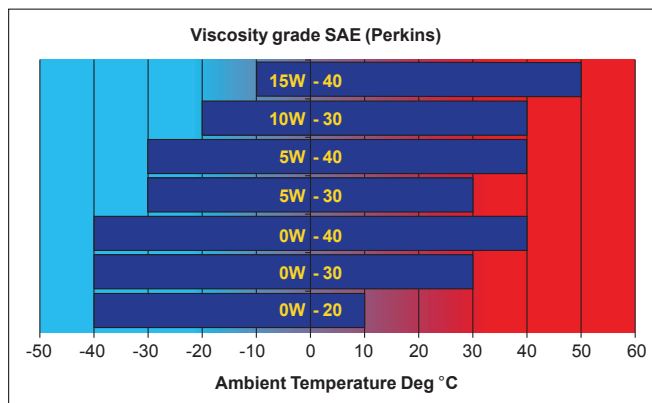
Maximum total system oil capacity71.0 litres
 Minimum oil capacity in sump56.0 litres
 Maximum oil capacity in sump61.0 litres
 Maximum engine operating angles -
 front up, front down, right side, left side7°

Lubricating oil

Oil flow @ 1500 rev/min174 litres/min
 Oil pressure at bearings (1500 rev/min)375 kPa
 Oil pressure at bearings (minimum)250 kPa
 Oil temperature (continuous operation)113°C
 Oil consumption at full load as a % of fuel consumption0.15%
 Oil filter screen spacing30 microns
 Sump drain plug tapping1 1/8 NPTF

Recommended SAE viscosity

A multigrade oil must be used which conforms to EMALRG-1 or API CH-4 viscosity grade must be used, see illustration below:



Mountings

Maximum static bending moment at rear face of block1356 Nm

Load acceptance (cold)

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

The below figures were obtained under the following test conditions:

Minimum engine block temperature38°C
 Ambient temperature15°C
 Governing modeIsochronous
 Alternator efficiency94.5%
 Alternator inertia8.65 kgm²
 Under frequency roll off (UFRO) point set to48 Hz
 UFRO rate set to2% voltage / 1% frequency
 LAM on/offon

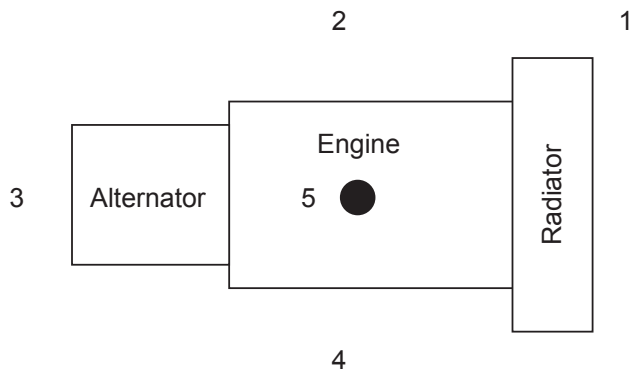
All tests were conducted using an engine which was installed and serviced to Perkins Engines Company Limited recommendations.

Description	Units	50 Hz
% of Prime power	%	65
Load (nett)	kWm	310
Transient frequency deviation	%	9.7
Frequency recovery time	Seconds	2

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 Department, Perkins Engines Stafford, ST16 3UB United Kingdom.

Noise data

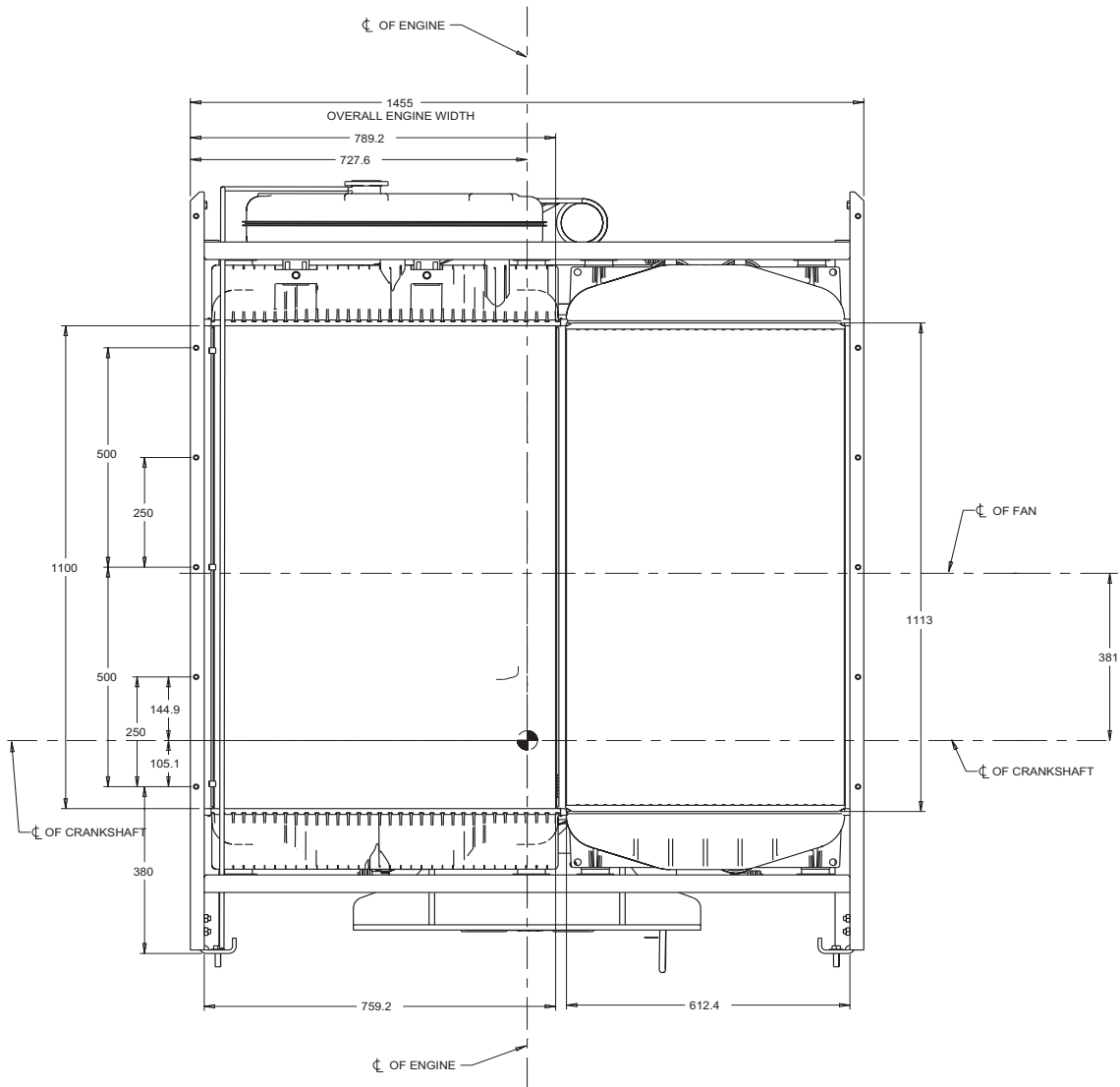
Measuring positions



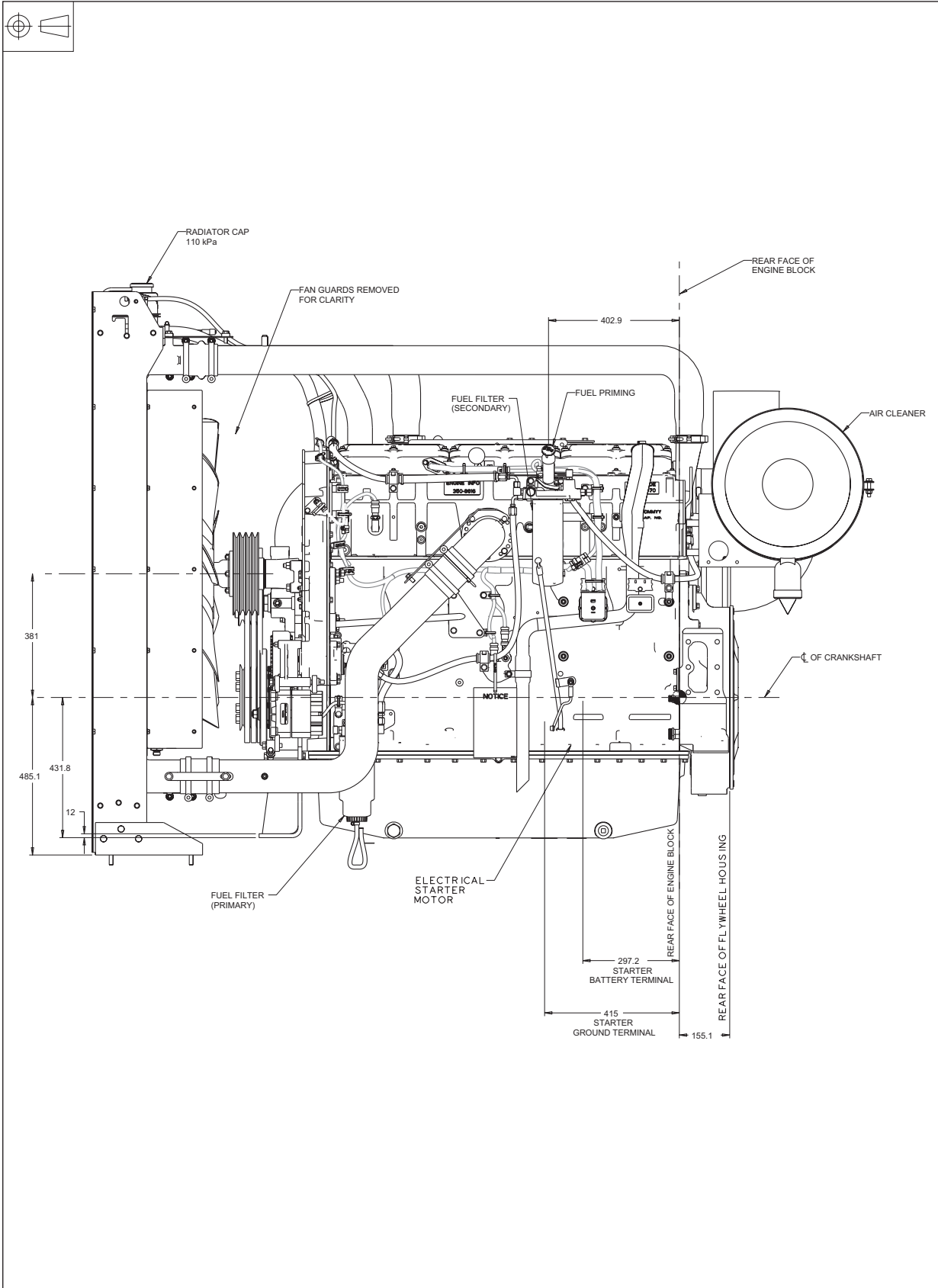
Genset free field SPL, dB

PRIME	Octave band A-weighted								dBA
	63	125	250	500	1K	2K	4K	8K	
1	68.6	79.9	86.7	93.9	97.1	95.9	93.2	95.0	102.4
2	73.1	79.1	89.4	93.6	98.8	99.7	98.8	103.7	107.1
3	68.3	78.0	84.4	86.8	87.6	84.5	82.9	89.2	94.3
4	69.6	79.0	87.0	94.9	96.8	99.1	101.7	109.9	111.1
5	68.3	77.1	90.4	95.3	98.3	100.2	103.5	108.3	110.5
	70.0	78.7	88.1	93.7	97.0	98.1	99.8	105.9	
Average FF SPL @ 1 metre, dBA:									108.0

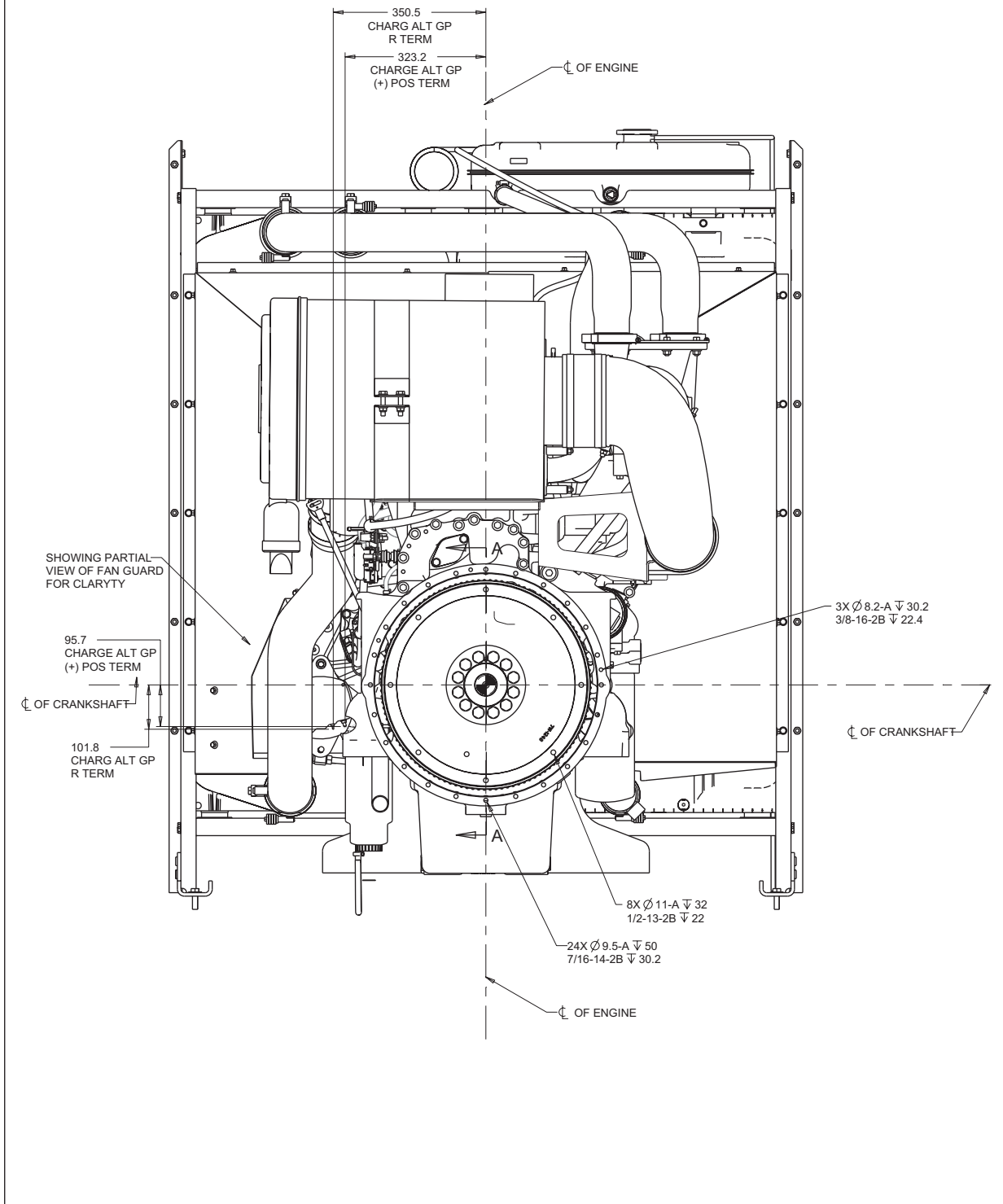
2806D-E18TAG1A - Front view



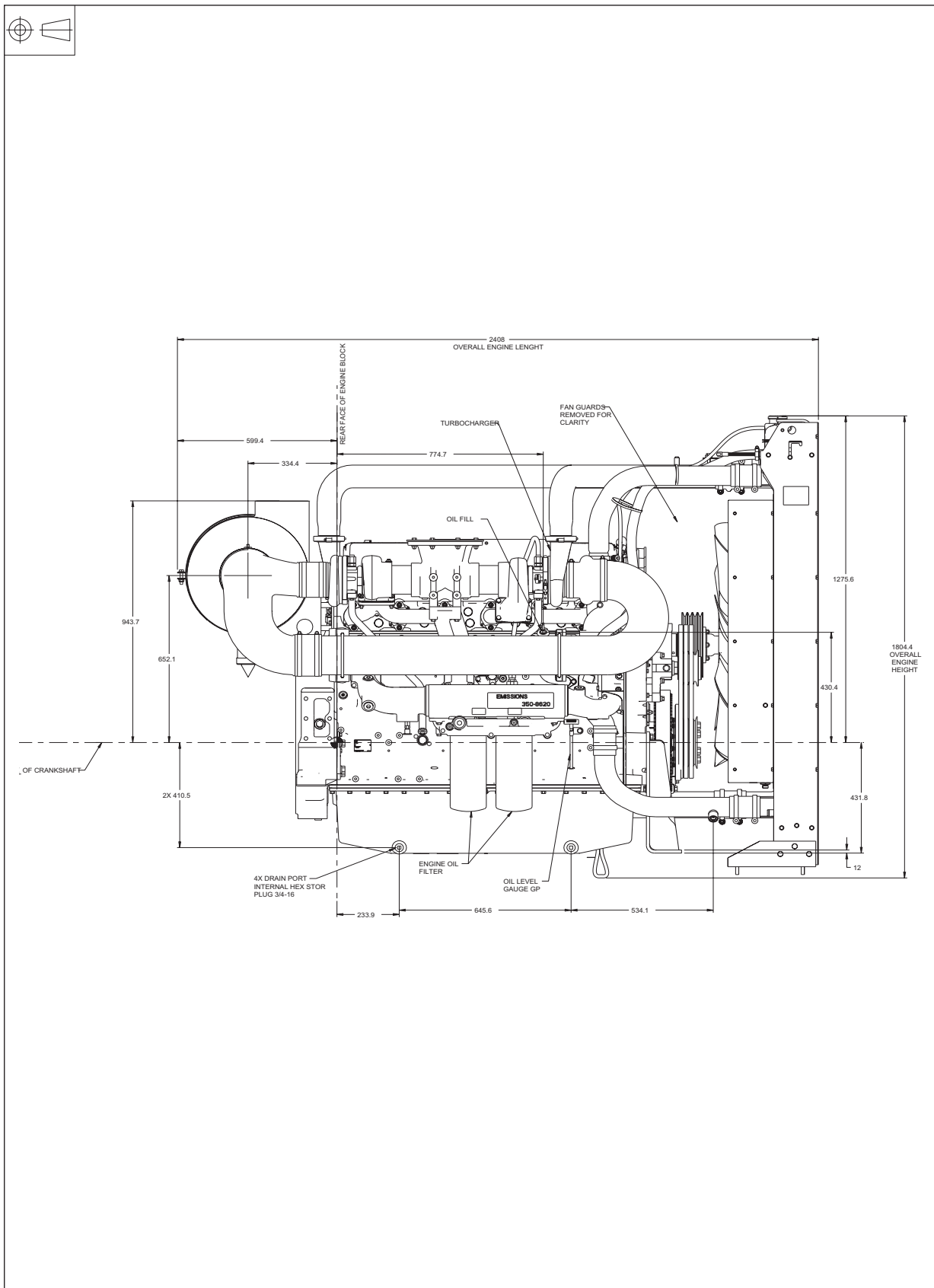
2806D-E18TAG1A - Left side view



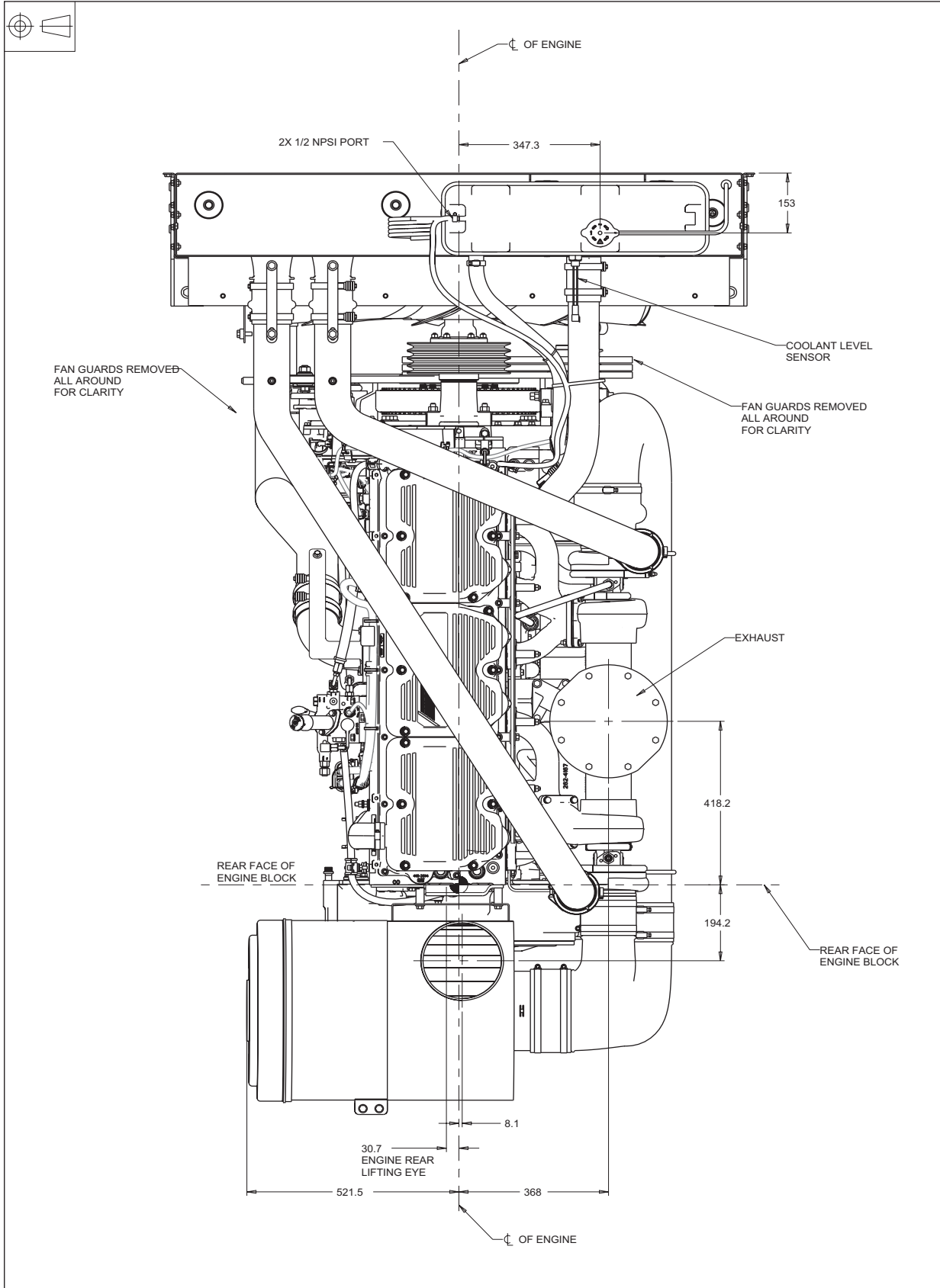
2806D-E18TAG1A - Rear view



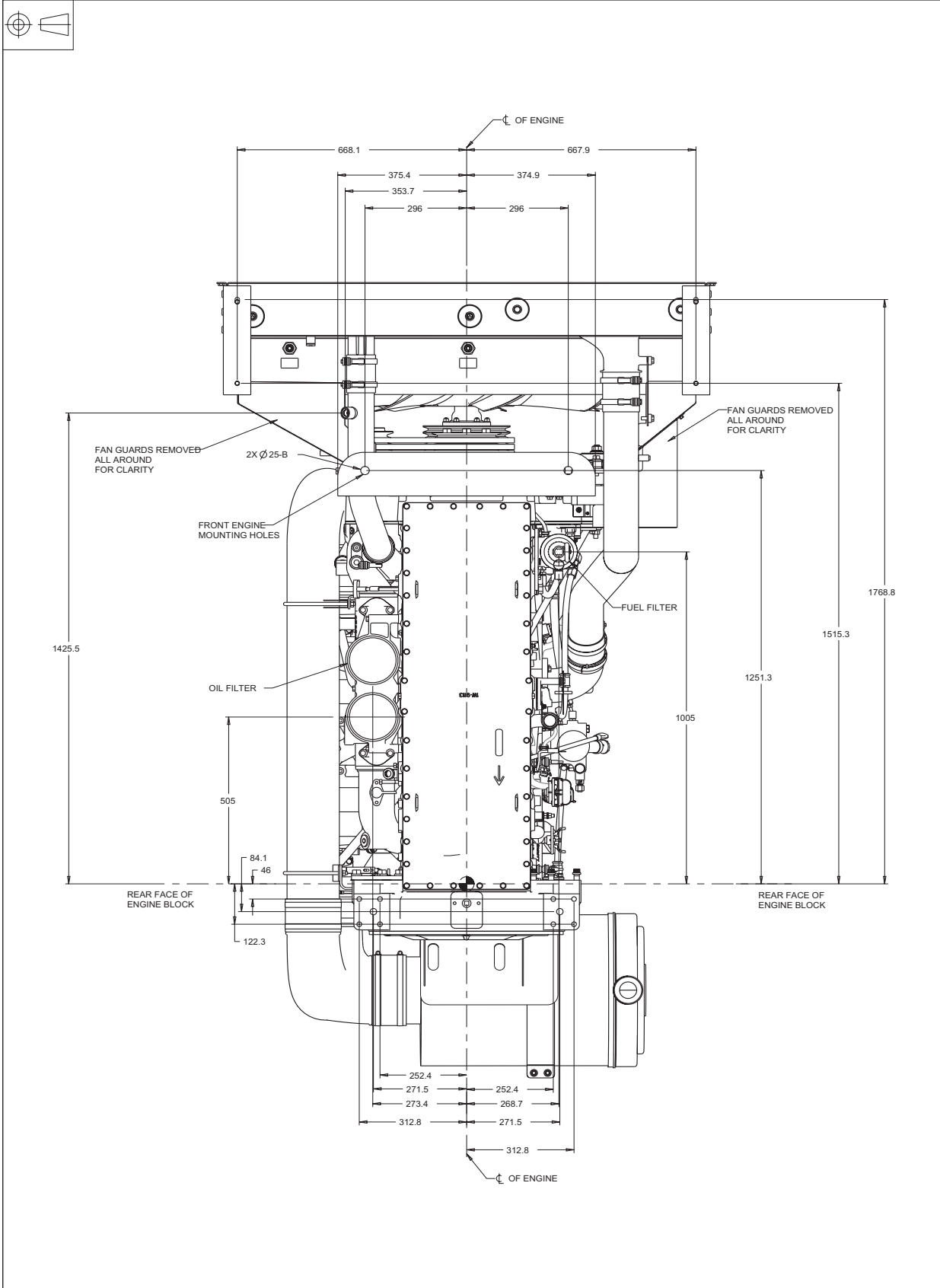
2806D-E18TAG1A - Right side view



2806D-E18TAG1A - Top view



2806D-E18TAG1A - Bottom view



2806D-E18TAG1A - Components detail view

