

2806A-E18TAG3

2800

Diesel engine - ElectropaK

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	14.5:1
Bore	145 mm
Stroke	183 mm
Cubic capacity	18.13 litres
Direction of rotation	Anti clockwise when viewed from flywheel
Firing order (number 1 cylinder furthest from flywheel)	1, 5, 3, 6, 2, 4

Total weight ElectropaK

Dry	2050 kg
Wet	2158 kg

Overall dimensions, ElectropaK

Height	1807.5 mm
Length	2545.0 mm
Width	1536.0 mm

Moments of inertia

Flywheel @ 1500 rpm	4.74 kgm ²
Engine @ 1500 rpm	2.31 kgm ²
Flywheel @ 1800 rpm	4.74 kgm ²
Engine @ 1800 rpm	2.70 kgm ²

Cyclic irregularity

For engine/flywheel maximum:

1500 rpm	0.01920
1800 rpm	0.01163

Performance

Note: All data based on operation to ISO 3046/1, BS5514 and DIN 6271 standard reference conditions.

Ratings

Steady state speed capability at constant load ... + 0.25%
Electrical ratings are based on average alternator efficiency and are for guidance only (0.8 power factor being used).

Operation point

Engine speed	1500 rpm
Cooling water exit temperature	88 - 103°C

Fuel data

To conform to ... BS2869 class A2 or BS EN590

Noise

Sound pressure level (exhaust piped away, cooling pack and air cleaner fitted)	
1500 rpm	105.3 dB(A)
1800 rpm	108.0 dB(A)

Note: Noise level represents highest recorded at 1500 and 1800 rpm respectively.

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.

General installation

Designation	Units	Type of operation and application			
		Prime	Standby	Prime	Standby
		50 Hz @ 1500 rpm		60 Hz 1800 rpm	
Gross engine power	kWb	539.7	583.8	617.5	678.2
Fan power	kWm	9		15	
Restriction losses	kWm	9.1	9.8	10.3	11.2
Nett engine power	kWm	522	565	592	652
BMEP gross	kPa	2381	2576	2270	2493
Combustion air flow	m ³ /min	42.3	38.5	47.2	50.5
Exhaust gas temperature (after turbo)	°C	487.8	541.2	517.6	542.8
Exhaust gas flow	m ³ /min	100	98.7	125	135.7
Boost pressure ratio	-	2.9	3.1	3.1	3.4
Overall thermal efficiency (nett)	%	43.4	43.6	40.5	41.65
Friction power and pumping losses	kWm	20		34	
Mean piston speed	m/s	9		11	
Engine coolant flow	l/s	6.1		7.2	
Cooling fan airflow	m ³ /min	702		852	
Typical gen set electrical output 0.8 pf	kWe	480	520	545	600
	kVa	600	650	681	750
Assumed alternator efficiency	%	92			

Rating definitions

Prime power

Variable load. Unlimited hours usage with an average load factor of 80% of the published prime power rating over each 24 hour period. A 10% overload is available for 1 hour in every 12 hours 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 statement

All 2806A ratings are optimised to 'best fuel consumption' and do not comply to Harmonised International Regulation Emission Limits. More information on these statements can be obtained by contacting the applications department at Perkins Engines Company Limited.

Energy balance

Designation	Units	Type of operation and application			
		Prime	Standby	Prime	Standby
		1500 rpm		1800 rpm	
Energy in fuel	kWt	1258	1355	1497	1637
Energy in power (gross)	kWb	540	584	618	678
Energy to fan and restriction losses	kWm	18.1	18.8	25.3	26.2
Energy to coolant and lubricating oil	kWt	141	173	170	177
Energy to exhaust	kWt	434	445	515	583
Energy to charge cooler	kWt	106	114	143	156
Energy to radiation	kWt	38	41	45	49

Cooling system

Recommended coolant: 50% clean water with 50% Perkins ELC.
Where there is no likelihood of ambient temperature below 10°C, clean 'soft' water may be used, treated with 1% by volume of Perkins inhibitor in the cooling system. The inhibitor is available from Perkins.

Nominal jacket water pressure in crankcase280 kPa
Maximum top tank temperature (standby)103°C
Thermostat operating range88 - 98°

Ambient cooling clearance maximum duct allowance and resultant minimum airflow (standby power). Based on air temperature at fan 10°C above ambient.

Duct allowance kPa	Ambient clearance °C	Minimum airflow m³/min	Ambient clearance °C	Minimum airflow m³/min
	1500 rpm		1800 rpm	
0	49	702	54	852
13	46	660	52	804
19	42	630	52	792
25	37	606	51	762

Radiator

Face area 1.75 m²
Number of rows and materials2 row, Aluminium
Fins per inch 15
Height 1260 mm
Width 1390 mm
Total coolant capacity (radiator and engine) 61 litres
Pressure cap setting 70 kPa

Charge cooler, integral with radiator

Face area1.623 m²
Rows and material 1 row, Aluminium
Fins per inch 14
Height 1390 mm
Width 1180 mm

Fan

Diameter955 mm
Drive ratio 0.8:1
Number of blades 9
Material Plastic
Type Pusher

Coolant pump

Speed 1,08 x e rpm
Method of drive Gear driven

Electrical system

Type Insulated return
Alternator output24 volts/70 amps
Starter motor power 9 kW
Number of teeth on flywheel136
Number of teeth on starter motor 11
Minimum cranking speed 115 rpm
Pull-in current of starter motor solenoid 49 amps
Hold-in current of starter motor solenoid 6 amps

Engine management system

Full electronic engine management system controlling:

- speed governing
- air/fuel ratio
- start sequence
- engine protection and diagnostics

Start requirement

Minimum required cranking speed over TDC 60 rpm

	Down to -10°C	Down to -25°C
SAE grade Oil	15W/40API CG4	0W/30API CG4
Starter	24 volts	
Battery	2x12V 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

Induction system

Clean filter3.7 kPa
Dirty filter6.2 kPa
Air filter type Paper element -457 mm diameter

Exhaust system

Maximum back pressure -1500 rpm6.9 kPa
Exhaust outlet, internal diameter202 mm

Note: For recommended pipe sizes, see installation manual.

Fuel system

Injection systemMEUI
 Injector pressure.....200 MPa

Fuel lift pump

Output per hour:
 1500 rpm.....413 litres/hour
 1800 rpm.....457 litres/hour
 Delivery pressure.....600 kPa
 Maximum suction head3 m
 Maximum pressure head4 m

Fuel filtration level

Primary10 µm
 Secondary2 µm

Fuel consumption

Fuel consumption calculated on engine nett rated powers				
Load	1500 rpm		1800 rpm	
	g/kWh	litres/hr	g/kWh	litres/hr
Standby	197	129	208	157
Prime + 10%	198	129	208	157
Prime	198	120	209	144
At 75% of Prime	204	93	202	104
At 50% of Prime	204	62	210	72

Note: Assumed fuel density 0,862 kg/l.

Lubrication system

Lubricating oil capacity

Total system.....62.0 litres
 Sump maximum53.0 litres
 Sump minimum.....45.0 litres

Lubricating oil temperature (sump)

Normal95°C
 Maximum113°C

Lubricating oil pressure

At rated speed420 kPa
 Minimum200 kPa
 Oil relief valve opens610 kPa
 Oil filter spacing30 µm
 Sump drain plug tapping size.....1 in NTPF
 Oil pump speed and method of drive.....1.16 x engine speed, gear
 Oil pump flow 1500/18002.90/3.48 litres/sec
 Oil consumption as a percentage of full load fuel less than0,1%

Recommended SAE viscosity

A single or multigrade oil must be used which conforms to API CG4 or APEA E5.

Normal operating angles

Front and rear7° maximum
 Side tilt7° maximum

Mountings

Maximum static bending moment at rear face of block.....1356 Nm

Load acceptance

The below figures were obtained under test conditions as follows:

Engine block temperature.....45°C
 Minimum ambient temperature.....15°C
 Governing modeIsochronous
 Alternator inertia10.4 kgm²
 Under frequency roll off (UFRO) point set to...1 Hz below rated frequency
 UFRO rate set to2 % voltage/1% frequency
 LAM on/off off

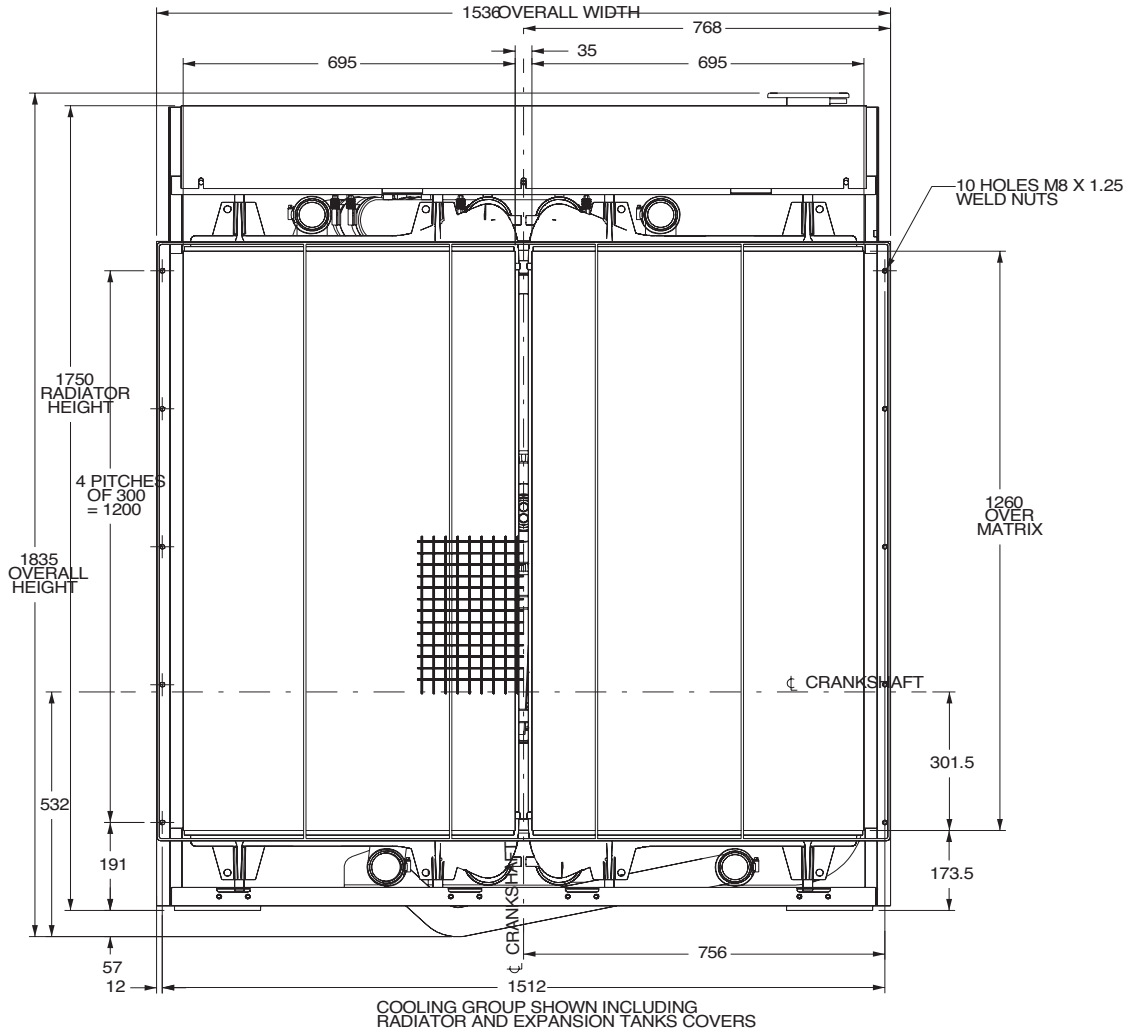
Notes:

- All tests were conducted using an engine installed and serviced to Perkins Engines Company Limited recommendations.
- Applied load is a percentage of generator electrical output using alternator efficiencies as published in the general installation section of this data sheet

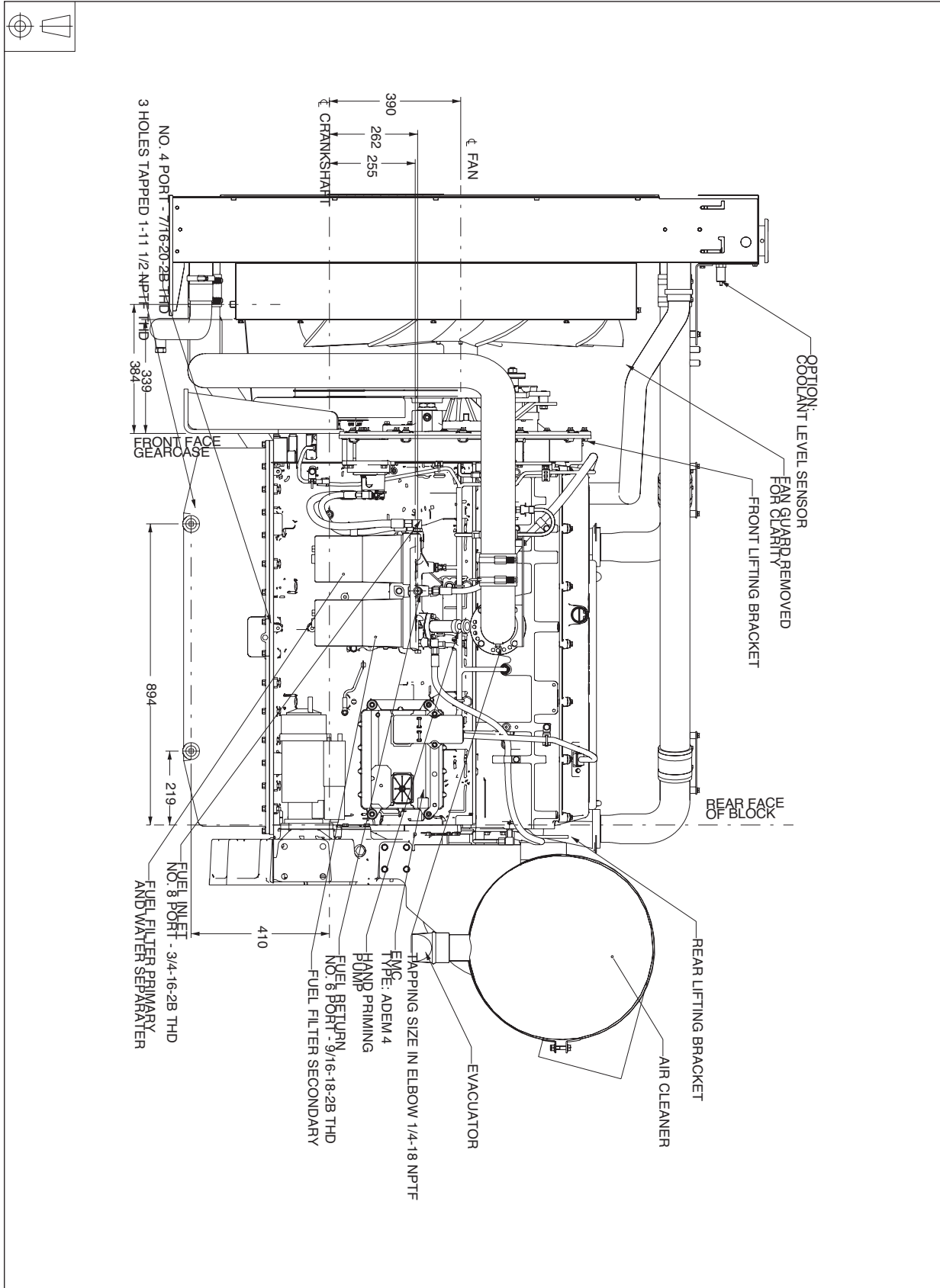
Prime %	1800 rpm			
	Load on		Load off	
	Transient % speed change	Speed recovery time (sec)	Transient % speed change	Speed recovery time (sec)
20	1.6	0.9	1.2	1.2
40	2.8	1.6	2.4	1.4
60	7.0	2.3	3.7	1.7
70	9.5	2.7	4.3	1.8
90	15.1	3.1	5.0	1.9
100	25.4	3.8	6.2	2.1

Note: The information given on Technical Data Sheets is for standard ratings only. For ratings other than shown contact Perkins Engines Company Limited, Stafford. The information given in this document is for guidance only.

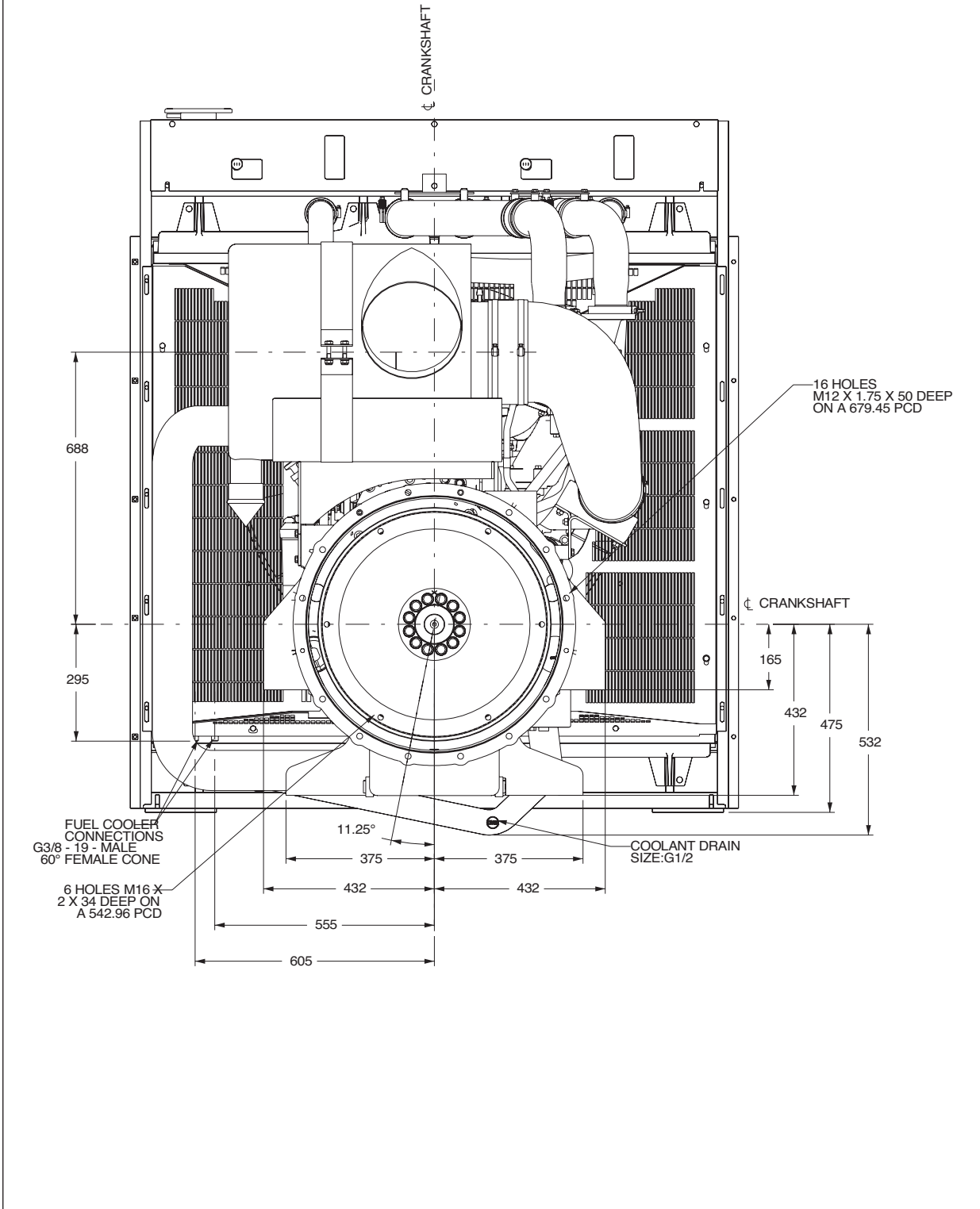
2806A-E18TAG3 - Front view



2806A-E18TAG3 - Left side view



2806A-E18TAG3 - Rear view



2806A-E18TAG3 - Right side view

