

4008 TAG1A

644 - 882 kWm (Gross) @ 1500 rpm

4008 TAG2A

715 - 985 kWm (Gross) @ 1500 rpm

Electropak

4000

Series

Basic technical data

Number of cylinders	8
Cylinder arrangement	In line
Cycle	4 stroke, compression ignition
Induction system	Turbocharged
Compression ratio	13.6:1 nominal
Bore	160 mm
Stroke	190 mm
Cubic capacity	30.561 litres
Direction of rotation	Anticlockwise viewed on flywheel
Firing order	1, 4, 7, 6, 8, 5, 2, 3
Cylinder 1	furthest from flywheel

Weight of Electropak

Temperate

Dry	4270 kg
Wet	4558 kg

Tropical

Dry	4320 kg
Wet	4618 kg

Overall dimensions

Temperate

Height	2067 mm
Length	3852 mm
Width	2046 mm

Tropical

Length	3711 mm
Width	2046 mm

Moments of inertia

Engine	9.60 kgm ²
Flywheel	6.02 kgm ²

Cyclic irregularity, engine/flywheel Prime power

4008TAG1A	1:195
4008TAG2A	1:180

Ratings

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

Operating point

Engine speed	1500 rpm
Static injection timing	See engine number plate
Cooling water exit temperature	< 98°C

Fuel data

To conform to BS2869 class A2 or BS EN590.

Performance

Estimated sound pressure level 1500 rpm 108 / 109 dB(A)

Note: All data based on operation to ISO 3046/1, BS 5514 and DIN 6271 standard reference conditions.

Note: For engines operating in ambient conditions other than the standard reference conditions stated below, a suitable derate must be applied.

Note: Derate tables for increased ambient temperature and/or altitude are available, please contact Perkins Applications Department.

Test conditions

Air temperature	25°C
Barometric pressure	100 kPa
Relative humidity	30%
Air inlet restriction at maximum power (nominal)	2.5 kPa
Exhaust back pressure (nominal)	3 kPa

Note: For test conditions relevant to data on load acceptance, refer to Perkins Applications Department.

General installation

4008TAG1A - Temperate

Designation	Units	Baseload power	Prime power	Standby power
Gross engine power	kWb	644	805	882
Fan power	kWm		27	
ElectropaK nett engine power	kWm	617	778	855
Gross BMEP	kPa	1660	2070	2270
Combustion air flow	m ³ /min	58	69.4	74
Exhaust gas temperature after turbo (max.)	°C	405	425	440
Exhaust gas flow (max.) at atmospheric pressure	m ³ /min		183	
Boost pressure ratio	-	2.9	3.45	3.65
Mechanical efficiency	%	88	91	92
Overall thermal efficiency (nett)	%	43.6	43	42
Friction power and pumping losses	kWm		57.5	
Mean piston speed	m/s		9.5	
Engine coolant flow (minimum)	litres/s		10	
Typical Genset electrical output 0.8pf 25°C (100 kPa)	kWe	586	739	812
	kVA	733	923	1015
Assumed alternator efficiency	%		95	

4008TAG1A - Tropical

Designation	Units	Baseload power	Prime power	Standby power
Gross engine power	kWb	644	805	882
Fan power	kWm		38	
ElectropaK nett engine power	kWm	606	767	844
Gross BMEP	kPa	1660	2070	2270
Combustion air flow	m ³ /min	58	69.4	74
Exhaust gas temperature after turbo (max.)	°C	405	425	440
Exhaust gas flow (max.) at atmospheric pressure	m ³ /min		183	
Boost pressure ratio	-	2.9	3.45	3.65
Mechanical efficiency	%	88	91	92
Overall thermal efficiency (nett)	%	43.6	43	42
Friction power and pumping losses	kWm		58	
Mean piston speed	m/s		9.5	
Engine coolant flow (minimum)	litres/s		10	
Typical Genset electrical output 0.8pf 25°C (100 kPa)	kWe	576	728	802
	kVA	720	911	1002
Assumed alternator efficiency	%		95	

4008TAG2A - Temperate

Designation	Units	Baseload power	Prime power	Standby power
Gross engine power	kWb	719	899	985
Fan power	kWm	27		
ElectropaK nett engine power	kWm	692	872	958
Gross BMEP	kPa	1850	2320	2540
Combustion air flow	m ³ /min	64	75	80.5
Exhaust gas temperature after turbo (max.)	°C	405	438	465
Exhaust gas flow (max.) at atmospheric pressure	m ³ /min	200		
Boost pressure ratio	-	3.18	3.7	4
Mechanical efficiency	%	90	92	92
Overall thermal efficiency (nett)	%	44.2	43.8	43.4
Friction power and pumping losses	kWm	72		
Mean piston speed	m/s	9.5		
Engine coolant flow (minimum)	litres/s	10		
Typical Genset electrical output 0.8pf 25°C (100 kPa)	kWe	657	828	910
	kVA	821	1035	1138
Assumed alternator efficiency	%	95		

4008TAG2A - Tropical

Designation	Units	Baseload power	Prime power	Standby power
Gross engine power	kWb	719	899	985
Fan power	kWm	38		
ElectropaK nett engine power	kWm	681	861	947
Gross BMEP	kPa	1850	2320	2540
Combustion air flow	m ³ /min	64	75	80.5
Exhaust gas temperature after turbo (max.)	°C	405	438	465
Exhaust gas flow (max.) at atmospheric pressure	m ³ /min	200		
Boost pressure ratio	-	3.18	3.7	4
Mechanical efficiency	%	90	92	92
Overall thermal efficiency (nett)	%	44.2	43.8	43.4
Friction power and pumping losses	kWm	72		
Mean piston speed	m/s	9.5		
Engine coolant flow (minimum)	litres/s	10		
Typical Genset electrical output 0.8pf 25°C (100 kPa)	kWe	647	818	900
	kVA	809	1022	1125
Assumed alternator efficiency	%	95		

Note: Not to be used for CHP design purposes. (Indicative figures only). Consult Perkins Engines Company Limited. Assumes complete combustion.

Rating definitions

Baseload power

Unlimited hours usage with an average load factor of 100% of the published Baseload Power. No overload is permitted on Baseload Power.

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 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 hour period. Up to 300 hours of annual usage may be run continuously. No overload is permitted on Standby Power.

Energy balance

4008TAG1A - Temperate

Designation	Units	Baseload power	Prime power	Standby power
Energy in fuel	kWt	1544	1957	2191
Energy in power output (gross)	kWb	644	805	882
Energy to cooling fan	kWm	27	27	27
Energy in power output (nett)	kWm	617	778	855
Energy to exhaust	kWt	492	606	712
Energy to coolant and oil	kWt	245	300	313
Energy to radiation	kWt	30	70	91
Energy to charge coolers	kWt	133	176	193

4008TAG1A - Tropical

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Energy in fuel	kWt	1544	1957	2191
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Energy to coolant and oil	kWt	245	300	313
Energy to radiation	kWt	30	70	91
Energy to charge coolers	kWt	133	176	193

4008TAG2A - Temperate

Designation	Units	Baseload power	Prime power	Standby power
Energy in fuel	kWt	1733	2209	2498
Energy in power output (gross)	kWb	719	899	985
Energy to cooling fan	kWm	27	27	27
Energy in power output (nett)	kWm	692	872	958
Energy to exhaust	kWt	548	698	807
Energy to coolant and oil	kWt	273	332	349
Energy to radiation	kWt	40	80	100
Energy to charge coolers	kWt	153	200	257

4008TAG2A - Tropical

Designation	Units	Baseload power	Prime power	Standby power
Energy in fuel	kWt	1733	2209	2498
Energy in power output (gross)	kWb	719	899	985
Energy to cooling fan	kWm	38	38	38
Energy in power output (nett)	kWm	681	861	947
Energy to exhaust	kWt	548	698	807
Energy to coolant and oil	kWt	273	332	349
Energy to radiation	kWt	40	80	100
Energy to charge coolers	kWt	153	200	257

Note: Not to be used for CHP design purposes. (Indicative figures only). Consult Perkins Engines Company Limited. Assumes complete combustion.

Cooling system

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

Nominal jacket water pressure in crankcase 170 kPa

The following is a guide based on ambient air conditions of 52°C on a Perkins supplied radiator.

Total coolant capacity

Engine only 48 litres
 ElectropaK (engine/radiator):
 Temperate..... 143 litres
 Tropical..... 149 litres
 Pressure cap setting 69 kPa
 Fan Incorporated in radiator

Diameter

Temperate..... 1214 mm (pusher)
 Tropical..... 1400 mm (pusher)

Ambient cooling clearance (open ElectropaK prime power) based on air temperature at fan 3°C above ambient.

Maximum additional restriction (duct allowance) to cooling airflow (Prime power applications) and resultant minimum airflow.

	Ambient clearance 50% glycol	Duct allowance mm H ₂ O	Min airflow m ³ /sec
4008TAG1A - Temperate	41°C	24	18.25
4008TAG1A - Tropical	50°C	20	20.8
4008TAG2A - Temperate	35°C	25	18.25
4008TAG2A - Tropical	50°C	18	22.5

Coolant pump speed 1.4 x e rpm
 Method of drive Gear driven
 Maximum static pressure head on pump above engine crank centre line 70 kPa
 Maximum external permissible restriction to coolant pump flow 20 kPa
 Thermostat operating range 71-85°C
 Shutdown switch setting 101°C rising
 Coolant immersion heater capacity..... 4 kW x 1

Jacket cooling water data	Units	
Coolant flow 4008TAG1A/2A	litres/s	10
Coolant exit temperature (max.)	°C	98
Coolant entry temperature (min.)	°C	70
Coolant entry temperature (max.)	°C	86

Lubrication system

Recommended lubricating oil to conform with the specification of API CG4 15W/40.

Lubricating oil capacity

Sump maximum 153 litres
 Sump minimum..... 127 litres
 Lubricating oil temperature maximum to bearings..... 105°C

Lubrication oil pressure

At 80°C temperature to bearing gallery (minimum) 0.34 MPa

Oil consumption Prime power

4008TAG1A

Oil consumption Prime power	Units	
After running-in ¹	g/kWhr	0.5
Oil flow rate from pump	litres/s	3.7

1. Typical after 250 hours

4008TAG2A

Oil consumption Prime power	Units	
After running-in ¹	g/kWhr	0.52
Oil flow rate from pump	litres/s	3.7

1. Typical after 250 hours

Sump drain plug tapping size G1
 Oil pump speed and method of drive 1.4 x e rpm, gear driven
 Shutdown switch setting 1.93 bar falling

Normal operating angles

Front and rear 5°
 Side tilt 10°

Fuel system

Recommended fuel to conform to: BS2869 1998 Class A2 or BS EN590
 Type of injection system..... Direct injection
 Fuel injection pump..... Combined unit injector
 Fuel injector Combined unit injector
 Fuel injector opening pressure..... 234 bar
 Fuel lift pump Tuthill TCH 1-054
 Delivery/hour at 1500 rpm..... 660 litres
 Heat retained in fuel to tank..... 4.5 kW
 Temperature of fuel at lift pump to be less than 58°C
 Fuel lift pump pressure..... 300 kPa
 Fuel lift pump maximum suction head..... 2.5 m
 Fuel lift pump maximum pressure head see Installation Manual
 Fuel filter spacing..... 10 microns
 Governor type Electronic
 Torque at the governor output shaft..... 0.917 kgm
 Static injection timing See engine number plate
 Tolerance on fuel consumption To ISO 8528-1 1993

Fuel consumption Gross

4008TAG1A - Temperate

Designation	g/kWh	litres/hr
At Standby Max power rating	210	218
At Prime Power rating	206	195
At Continuous Baseload rating	203	154
At 75% of Prime Power rating	201	143
At 50% of Prime Power rating	207	98
At 25% of Prime Power rating	217	52

4008TAG1A - Tropical

Designation	g/kWh	litres/hr
At Standby Max power rating	210	218
At Prime Power rating	206	195
At Continuous Baseload rating	203	154
At 75% of Prime Power rating	201	143
At 50% of Prime Power rating	207	98
At 25% of Prime Power rating	217	52

4008TAG2A - Temperate

Designation	g/kWh	litres/hr
At Standby Max power rating	209	240
At Prime Power rating	206	215
At Continuous Baseload rating	206	172
At 75% of Prime Power rating	207	162
At 50% of Prime Power rating	213	111

4008TAG2A - Tropical

Designation	g/kWh	litres/hr
At Standby Max power rating	209	240
At Prime Power rating	206	215
At Continuous Baseload rating	206	172
At 75% of Prime Power rating	207	162
At 50% of Prime Power rating	213	111

Note: All figures in the tables above are based on gross mechanical output, for fuel consumption based on electrical output of the generating set contact your OEM.

Induction system

Maximum air intake restriction of engine

Clean filter... 127 mm H₂O
 Dirty filter... 380 mm H₂O
 Air filter type... cylinder paper pleat

Exhaust system

Maximum back pressure for total system

4008TAG1A... 947 mm H₂O
 4008TAG2A... 816 mm H₂O
 Exhaust outlet flange size... 2 x 152 mm

For recommended pipe sizes see the Installation Manual.

Electrical system

Type... Insulated return
 Alternator... 24 volts with integral regulator
 Alternator output... 55 amps, 28 volts at 20°C ambient
 Starter motor... 24 volts
 Starter motor power... 8.2 kW
 Number of teeth on flywheel... 190
 Number of teeth on starter motor... 12
 Minimum cranking speed (0°C)... 120 rpm
 Pull-in current of starter motor solenoid... 30 amps at 24 volts
 Hold-in current of starter motor solenoid... 9 amps at 24 volts
 Engine stop solenoid... 24 volts
 Pull-in current of stop solenoid... 60 amps at 24 volts
 Hold-in current of stop solenoid... 1.1 amps at 24 volts

Engine mounting

Position of centre of gravity (wet engine) forward from rear face of crankcase... 900 mm
 Engine vertical centre line above crankshaft centre line... 140 mm
 Maximum additional load applied to flywheel due to all rotating components... 650 Kg

Starting requirements

Temperature range down to 0°C (32 °F)

Oil... API CG4 15W/40
 Starter... 1 x 24 volts
 Battery... 2 x 12 volts x 178 Ah
 Max breakaway current... 1400 amps
 Cranking current... 750 amps
 Aids... Not necessary
 Starter cable size... 70 mm²
 Maximum length... 6 m

Note: Battery capacity is defined by the 20 hour rate at 0°C.

Note: The oil specification should be for the minimum ambient temperature as the oil will not be warmed by the immersion heater.

Note: Breakaway current is dependant on battery capacity available. Cables should be capable of handling transient current which may be up to double the steady cranking current.

Load acceptance (cold)

4008TAG1A

Initial load acceptance when engine reaches rated speed (15 seconds maximum after engine starts to crank)				2nd load application immediately after engine has recovered to rated speed (5 seconds after initial load application)			
Prime power %	Load kWm nett / kWe	Transient frequency deviation %	Frequency recovery time seconds	Prime power %	Load kWm nett / kWe	Transient frequency deviation %	Frequency recovery time seconds
64	493 / 469	≤ -10	5	36	274 / 259	≤ -10	5

4008TAG2A

Initial load acceptance when engine reaches rated speed (15 seconds maximum after engine starts to crank)				2nd load application immediately after engine has recovered to rated speed (5 seconds after initial load application)			
Prime power %	Load kWm nett / kWe	Transient frequency deviation %	Frequency recovery time seconds	Prime power %	Load kWm nett / kWe	Transient frequency deviation %	Frequency recovery time seconds
57	490 / 466	≤ -10	5	43	371 / 352	≤ -10	5

The above complies with the requirements of Classification 3 & 4 of ISO 8528-12 and G2 operating limits stated in ISO 8528-5.

The above figures were obtained under test conditions as follows:

Engine block temperature	45°C
Alternator efficiency	96%
Minimum ambient temperature	10°C

Isochronous governing

Under frequency roll off (UFRO) set to

Typical alternator inertia

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

The information given on this Technical Data Sheet is for standard engines and for guidance only. For ratings other than shown contact the Applications Department.

Noise Data

Noise levels

The figures for total noise levels are typical for an engine running at Prime power rating in a semi-reverberant environment and measured at a distance of one metre from the periphery of the engine..

Octave analysis

The following histograms show an octave band analysis at the position of the maximum noise level.

Total noise levels

Sound pressure level re: -20×10^{-6} pa
 Speed 1500 rpm Ambient noise level 79 dB(A)

4008TAG1A / 4008TAG2A

POSITION 1		
Temperate	103 dB(A)	4008TAG1A
	104 dB(A)	4008TAG2A
Tropical	105 dB(A)	4008TAG1A
	105 dB(A)	4008TAG2A

POSITION 2		
Temperate	108 dB(A)	4008TAG1A
	109 dB(A)	4008TAG2A
Tropical	109 dB(A)	4008TAG1A
	109 dB(A)	4008TAG2A

POSITION 3		
Temperate	108 dB(A)	4008TAG1A
	109 dB(A)	4008TAG2A
Tropical	109 dB(A)	4008TAG1A
	110 dB(A)	4008TAG2A

POSITION 4		
Temperate	107 dB(A)	4008TAG1A
	108 dB(A)	4008TAG2A
Tropical	108 dB(A)	4008TAG1A
	108 dB(A)	4008TAG2A

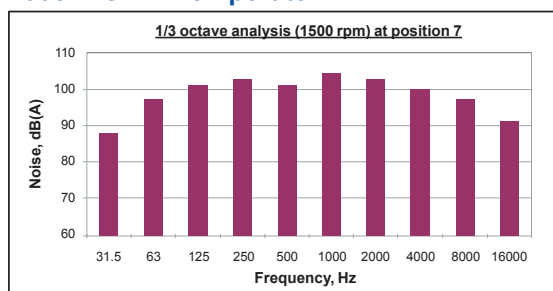
POSITION 5		
Temperate	107 dB(A)	4008TAG1A
	108 dB(A)	4008TAG2A
Tropical	107 dB(A)	4008TAG1A
	109 dB(A)	4008TAG2A

POSITION 6		
Temperate	108 dB(A)	4008TAG1A
	109 dB(A)	4008TAG2A
Tropical	109 dB(A)	4008TAG1A
	110 dB(A)	4008TAG2A

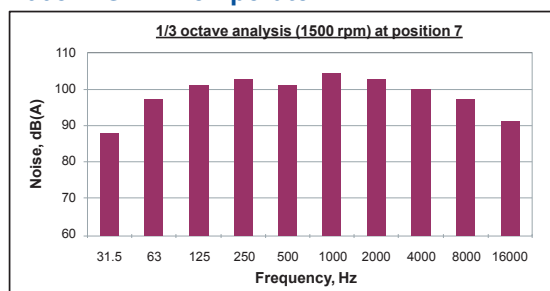
POSITION 7		
Temperate	108 dB(A)	4008TAG1A
	109 dB(A)	4008TAG2A
Tropical	110 dB(A)	4008TAG1A
	110 dB(A)	4008TAG2A



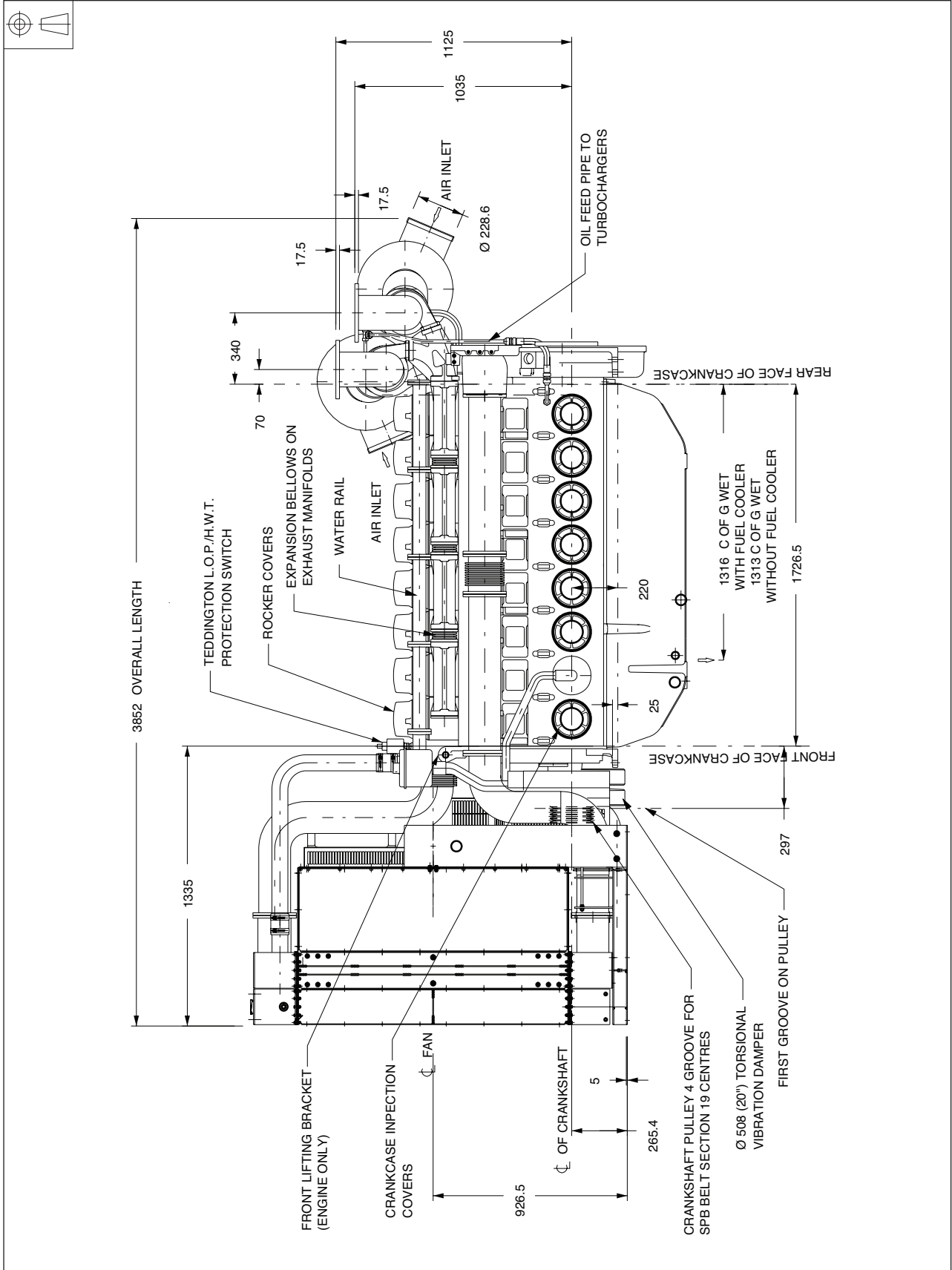
4008TAG1A - Temperate



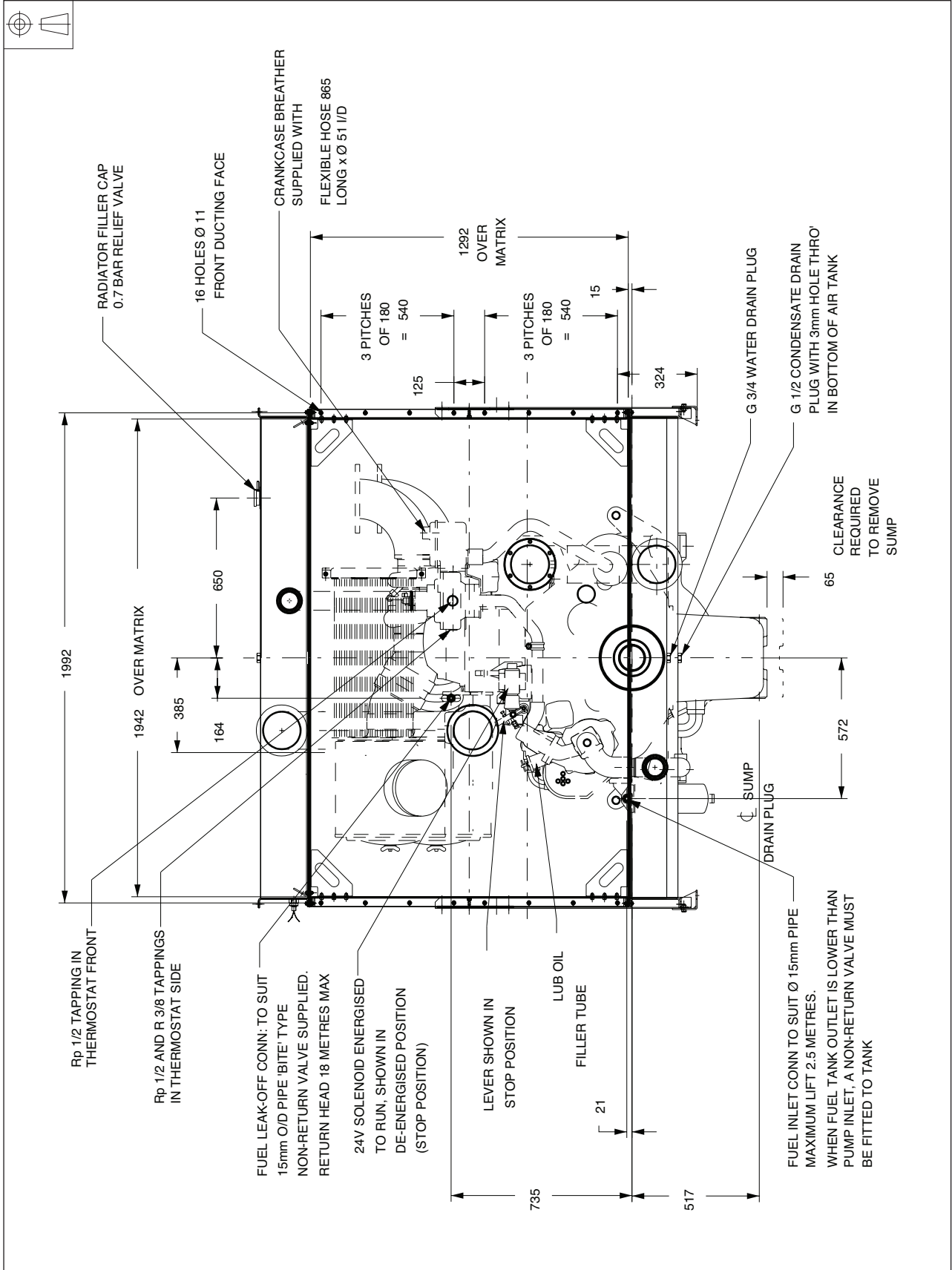
4008TAG2A - Temperate



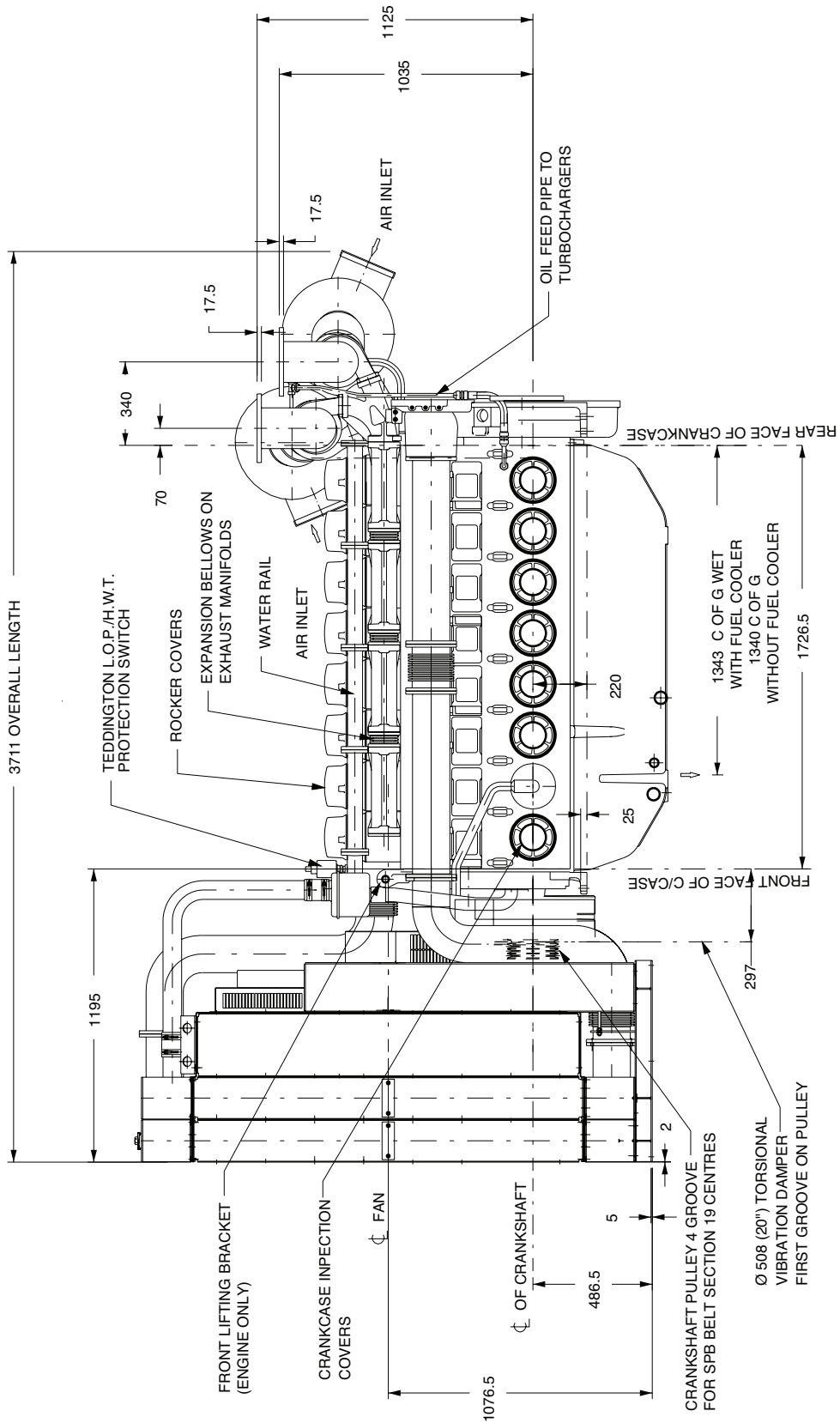
4008TAG1A and 4008TAG2A - Left side view (Temperate)



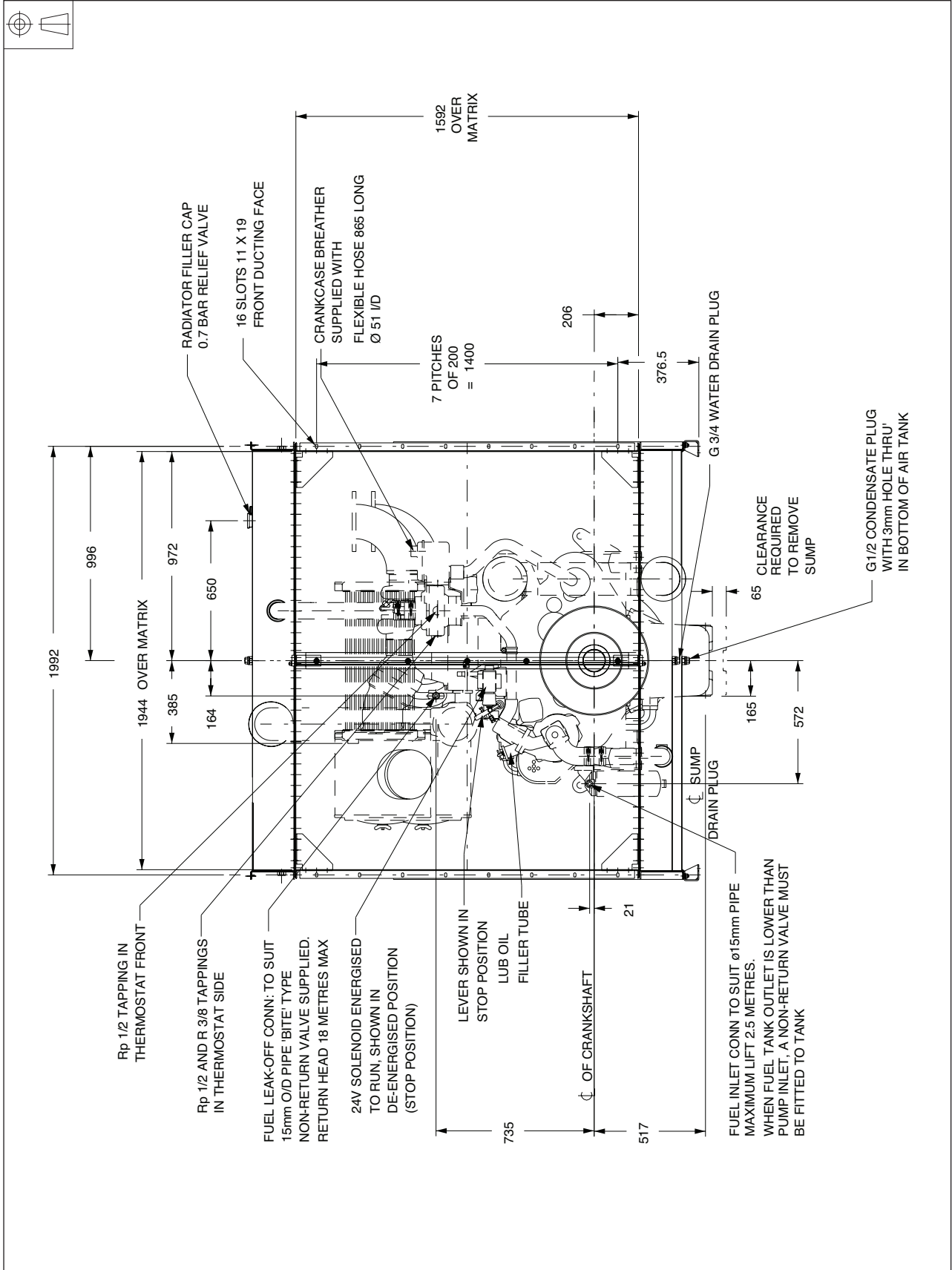
4008TAG1A and 4008TAG2A - Front view (Temperate)



4008TAG1A and 4008TAG2A - Left side view (Tropical)



4008TAG1A and 4008TAG2A - Front view (Tropical)



4008TAG1A and 4008TAG2A - Rear view (Tropical)

