21.9L

[Stoic.]
56100041 Rev: 1

PSI ENERGY

General Engine Data[5]												
Type	V-type 4 cycle				Flywheel housing			SAE No.1				
Number of cylinders	12				Flywheel			No. 14				
Aspiration	Turbo Charge Air Cooled				Dry Weight (Fan to Flywheel)			lb	kg	3630	1650
Firing Order	1-12-5-8-3-10-6-7-2-11-4-9				Wet Weight (Fan to Flywheel)			lb	kg	5227	2376
Rotation Viewed from Flywheel	Counter Clockwise				CG From Flywheel Housing Rear Face			in	mm	23.7	602
Bore	in	mm	5.0	128	CG Above Crank Centerline			in	mm	7.2	182
Stroke	in	mm	5.6	142	Max Bending Moment @ Rear of Block			lb/ft	N m	8130	6000
Displacement	in^3	L	1336	21.9	Oil Specification			SAE 15W-40 Low Ash Gas engine oil (.25-.5% by wt), API CD/CF or higher			
Compression Ratio	10.5										
Exhaust Manifold Type	Water Cooled Manifold				Engine Oil Capacity[8]		Min	qts	L	35.0	33.0
Turbo Exhaust Outlet Pipe Size	in	mm	2.5	65			Max	qts	L	42.4	40.0
Catalyst Inlet Size	in	mm	3.5	89	ECU Oil Pressure Warning[6]			psi	kPa	30	207
Catalyst Dp	in-H_2O	kPa	33.4	8.3	ECU Oil Pressure Shut Down[6]			psi	kPa	25	172
Maximum Allowable Exhaust Back Pressure	in-Hg	kPa	3.0	10.2	Oil Pressure at 1000 rpm (Idle)		Min	psi	kPa	13	90
Maximum Fuel System Pressure	psi	kPag	1.0	6.9			Max	psi	kPa	44	300
Maximum Operating pressure to EPR	in-H_2O	kPa	11.0	2.7	Max Allowable Oil Temperature			°F	°C	250	121
Minimum Operating pressure to EPR	in-H_2O	kPa	7.0	1.7	Coolant Capacity (Engine only)			gal	L	12	44
Minimum Gas Supply Pipe Size[5]	2 x 2" NPT				Coolant Capacity (Radiator only)			gal	L	39	146
Maximum Pressure Drop Across CAC	psi	kPa	1.5	10.5	Radiator Weight (Dry)			lb	kg	1597	726
Maximum Allowable Intake Restriction — Clean Air Filter	in-H_2O	kPa	5.0	1.2	Thermostat Operating Temperature Range[9]		Cracking	°F	°C	160	71
Maximum Allowable Intake Restriction — Dirty Air Filter	in-H_2O	kPa	15.0	3.7			Full Open	°F	°C	185	85
Spark Plug Part Number	IFR7F-4D				ECU Coolant Temp Warning			°F	°C	219	104
Standard Spark Plug Gap[10]	in	mm	0.015	0.38	ECU Coolant Temp Shutdown			°F	°C	230	110
Spark Plug Coil - Primary Resistance	Ohms		0.59Ω ± 10%		50°C Ambient Capable[11]			Pass			
Battery Voltage	Volts		24		Max External Coolant Friction Head			psi	kPa	6	40
Starter Motor Power	HP	kW	9.4	7.0	CAC Rise Above Ambient Specified			°F	°C	16	9

Performance Data 60Hz[3,5]					Performance Data 50Hz[3,5]				
Nominal Engine Speed	RPM		1800		Nominal Engine Speed	RPM		1500	
Mean Piston Speed	ft/min	m/s	1677	8.5	Mean Piston Speed	ft/min	m/s	1397	7
RPM Range (Min-Max) ISO 8528-5 G1	RPM		1778-1823		RPM Range (Min-Max) ISO 8528-5 G1	RPM		1481-1519	
Charging Alternator Voltage	Volts		24		Charging Alternator Voltage	Volts		24	
Charging Alternator Current	Amps		45		Charging Alternator Current	Amps		45	
Water Pump Speed	RPM		3056		Water Pump Speed	RPM		2547	
Total Engine Coolant Flow	gal/min	L/min	151	570	Total Engine Coolant Flow	gal/min	L/min	125	474
Cooling Fan Power[11]	HP	kW	42	31	Cooling Fan Power[11]	HP	kW	24	18
Cooling Fan Speed	RPM		1440		Cooling Fan Speed	RPM		1200	
Cooling Fan Air Flow[11]	SCFM	m^3/min	39995	1133.0	Cooling Fan Air Flow[11]	SCFM	m^3/min	34276	971

Standby			NG 60Hz HO		NG 60Hz		NG 50Hz		LP 60Hz		LP 50Hz	
Power Rating[1,2,3,4] Per ISO 3046	HP	kWm	764	570	684	510	532	397	472	352	370	276
MEP (@ rated Load on NG)	psi	bar	256	17.7	229	15.8	210	14.5	155	10.7	146	10.0
Fuel Consumption[3,4,7]	lb/hr	kg/hr	264	120	239	109	181	82	187	85	141	64
BSFC	lb/(hp-hr)	g/(kW-hr)	0.346	211	0.349	213	0.340	207	0.395	241	0.381	232
Turbine Outlet Temperature	°F	°C	1244	674	1136	614	981	527	1071	577	1018	548
Exhaust Mass Flow (entire engine)	lb/hr	kg/hr	4699	2136	4249	1932	3182	1447	2951	1341	2240	1018
Exhaust Flow at Turbine Outlet Conditions	ACFM	m^3/min	2980	84	2529	72	1708	48	1686	48	1235	35
Air Induction System[5]												
Combustion Air required (entire engine)	lb/hr	kg/hr	4429	2013	4006	1821	3001	1364	2765	1257	2099	954
Combustion Air Volume Required (entire engine)	ACFM	m^3/min	917	26	829	23	621	18	572	16	434	12
Compressor Outlet Temperature[2]	°F	°C	312	156	362	183	247	120	254	123	198	92
Thermal Balance[5]												
Total Fuel	BTU/min	kW	92836	1632.5	83883	1475	62260	1095	60970	1072	46082	810
Mechanical Power	BTU/min	kW	32415	570	29003	510	22577	397	352	352	276	276
Heat Rejected to Cooling Water at Rated Load	BTU/min	kW	31957	561.9	29345	516	22274	392	22839	402	17461	307
Heat Rejection CAC at Rated Power	BTU/min	kW	4202	73.9	3686	65	2248	40	2009	35	1064	19
Heat Rejection to Exhaust (LHV to 150C)	BTU/min	kW	22697	399.1	20412	359	18238	321	14051	247	9749	171
Engine Radiated Heat	BTU/min	kW	1565	27.5	1437	25	1168	21	2053	36	2112	37

[1] Standby and overload ratings based on ISO 3046 gross flywheel power.

[2] Technical data based on ISO 3046-1 standards of 77°F(25°C), absolute pressure 14.5Psia(100kPa) and 30% relative humidity.

[3] Production tolerances in engines and installed components can account for power variations of ± 5%. Altitude, temperature and excessive exhaust and intake restrictions should be applied to power calculations.

[4] All fuel and thermal calculations unless otherwise noted are done at ISO 3046 rated load using LHV for NG of 48.17 MJ/kg.

[5] All values in the following section are provided for informational purpose only and are non-binding.

[6] >1400RPM.

[7] See PSI Energy Technical Spec. 56300019 - Fuel Standard.

[8] Standard Sump Capacity.

[9] ± 2 degrees Celsius.

[10] ± 0.002" or 0.05mm.

[11] At 1" Static H2O Pressure and 125F @ radiator