

21.9L



ENERGY

[Stoic.]
56100041 Rev: 1

General Engine Data ³														
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				Engine Oil Capacity ⁸				Min	qts	L	35.0	33.0	
Exhaust Manifold Type	Water Cooled Manifold				Max				qts	L	42.4	40.0		
Turbo Exhaust Outlet Pipe Size	in	mm	2.5	65	ECU Oil Pressure Warning ⁶				psi	kPa	30	207		
Catalyst Inlet Size	in	mm	3.5	89	ECU Oil Pressure Shut Down ⁶				psi	kPa	25	172		
Catalyst Dp	in-H ₂ O	kPa	33.4	8.3	Oil Pressure at 1000 rpm (Idle)				Min	psi	kPa	13	90	
Maximum Allowable Exhaust Back Pressure	in-Hg	kPa	3.0	10.2	Max				psi	kPa	44	300		
Maximum Fuel System Pressure	psi	kPag	1.0	6.9	Max Allowable Oil Temperature				°F	°C	250	121		
Maximum Operating pressure to EPR	in-H ₂ O	kPa	11.0	2.7	Coolant Capacity (Engine only)				gal	L	12	44		
Minimum Operating pressure to EPR	in-H ₂ O	kPa	7.0	1.7	Coolant Capacity (Radiator only)				gal	L	39	146		
Minimum Gas Supply Pipe Size ⁵	2 x 2" NPT				Radiator Weight (Dry)				lb	kg	1597	726		
Maximum Pressure Drop Across CAC	psi	kPa	1.5	10.5	Thermostat Operating				Cracking	°F	°C	160	71	
Maximum Allowable Intake Restriction	Clean Air Filter	in-H ₂ O	kPa	5.0	1.2	Temperature Range ⁹				Full Open	°F	°C	185	85
	Dirty Air Filter	in-H ₂ O	kPa	15.0	3.7	ECU Coolant Temp Warning				°F	°C	219	104	
Spark Plug Part Number	IFR7F-4D				ECU Coolant Temp Shutdown				°F	°C	230	110		
Standard Spark Plug Gap ¹⁰	in	mm	0.015	0.38	50°C Ambient Capable ¹¹				Pass					
Spark Plug Coil - Primary Resistance	Ohms		0.59Ω ± 10%		Max External Coolant Friction Head				psi	kPa	6	40		
Battery Voltage	Volts		24		CAC Rise Above Ambient Specified				°F	°C	16	9		
Starter Motor Power	HP	kW	9.4	7.0										
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 14.5Psi(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