

20L



ENERGY

[Stoic.]

56100042

Rev: 1

General Engine Data³

Type	Inline 4-cycle			
Number of cylinders	6			
Aspiration	Charge Cooled Forced Induction			
Firing Order	1 - 5 - 3 - 6 - 2 - 4			
Rotation Viewed from Flywheel	Counter-Clockwise			
Bore	in	mm	5.9	150
Stroke	in	mm	7.3	185
Displacement	in ³	L	1196.0	19.6
Compression Ratio	10.5:1			
Exhaust Manifold Type	Water cooled			
Turbo Exhaust Outlet Pipe Size	in	mm	4.56 - 4.88	116 - 124
Catalyst Inlet Size	ANSI Class 150 Flange, 5" Pipe			
Catalyst Dp	in-H ₂ O	kPa	33	8.3
Maximum Allowable Exhaust Back Pressure	in-Hg	kPa	4.4	15
Maximum Fuel System Pressure	psi	kPag	1.0	6.9
Maximum Operating pressure to EPR	in-H ₂ O	kPa	11	2.7
Minimum Operating pressure to EPR	in-H ₂ O	kPa	7	1.7
Minimum Gas Supply Pipe Size ⁵	1-1/4" NPT			
Maximum Pressure Drop Across CAC	psi	kPa	1.7	12.0
Maximum Allowable Intake Restriction	Clean Air Filter	in-H ₂ O	kPa	12.1
	Dirty Air Filter	in-H ₂ O	kPa	24.9
Spark Plug Part Number	Bosch R66857			
Standard Spark Plug Gap ¹⁰	in	mm	0.020	0.5
Spark Plug Coil - Primary Resistance	Ohms 0.59Ω ± 10%			
Battery Voltage	Volts 24			
Starter Motor Power	HP	kW	11.4	8.5

Flywheel housing	SAE No. 1			
Flywheel	No. 14			
Dry Weight (Fan to Flywheel)	lb	kg	4642	2110
Wet Weight (Fan to Flywheel)	lb	kg	4853	2206
CG From Flywheel Housing Rear Face	in	mm	30.9	786
CG Above Crank Centerline	in	mm	2.1	53
Max Bending Moment @ Rear of Block	lbf-ft	N-m	-	-
Moment of Inertia About Roll Axis	lbf-ft ²	kg-m ²	-	-
Oil Specification		SAE 15W-40 Low Ash Gas engine oil (.25-.5% by wt), API CD/CF or higher		
Engine Oil Capacity ⁸	Min	qts	L	51
	Max	qts	L	66
ECU Oil Pressure Warning ⁶	psi	bar	45	3
ECU Oil Pressure Shut Down ⁶	psi	bar	40	2.8
Oil Pressure Operating Range	Idle	psi	bar	35 - 63
	Rated	psi	bar	40-125
Max Allowable Oil Temperature	°F	°C	239	115
Coolant Capacity (Engine only)	gal	L	11.1	42
Coolant Capacity (Radiator only)	gal	L	22.5	85
Radiator Weight (Dry)	lb	kg	1144	520
Thermostat Operating Temperature Range ⁹	Cracking	°F	°C	176
	Full Open	°F	°C	198
ECU Coolant Temp Warning	°F	°C	205	96
ECU Coolant Temp Shutdown	°F	°C	216	102
40°C Ambient Capable ¹¹	Pass			
Max External Coolant Friction Head	psi	kPa	7	50
CAC Rise Above Ambient Specified	°F	°C	37.8	21

Performance Data 60Hz^{3,5}

Nominal Engine Speed	RPM		1800	
Mean Piston Speed	ft/min	m/s	2184	11.1
RPM Range (Min-Max) ISO 8528-5 G1	RPM		1778 - 1823	
Charging Alternator Voltage	Volts		28	
Charging Alternator Current	Amps		70	
Total Engine Coolant Flow	gal/min	L/min	176	666
Cooling Fan Power ¹¹	HP	kW	13	10
Cooling Fan Speed	RPM		1512	
Cooling Fan Air Flow ¹¹	SCFM	m ³ /min	28169	798

Performance Data 50Hz^{3,5}

Nominal Engine Speed	RPM		1500	
Mean Piston Speed	ft/min	m/s	1820	9.25
RPM Range (Min-Max) ISO 8528-5 G1	RPM		1477 - 1519	
Charging Alternator Voltage	Volts		28	
Charging Alternator Current	Amps		70	
Total Engine Coolant Flow	gal/min	L/min	211	800
Cooling Fan Power ¹¹	HP	kW	36	27
Cooling Fan Speed	RPM		1260	
Cooling Fan Air Flow ¹¹	SCFM	m ³ /min	20290	575

Standby			NG 60Hz		NG 50Hz		LP 60Hz		LP 50Hz	
Power Rating ^{1,2,3,4} Per ISO 3046	HP	kWm	684	510	570	425	416	310	402	300
MEP (@ rated Load on NG)	psi	bar	252	17.3	252	17.3	153	10.5	178	12.2
Fuel Consumption ^{3,4,7}	lb/hr	kg/hr	229	104	186	84	177	80.3	162	74
BSFC	lb/(hp-hr)	g/(kW-hr)	0.335	204	0.326	199	0.425	259	0.403	246
Turbine Outlet Temperature	°F	°C	1388	753	1360	738	1265	685	1254	679
Exhaust Mass Flow (entire engine)	lb/hr	kg/hr	4031	1832	3268	1485	2862	1301	2627	1194
Exhaust Flow at Turbine Outlet Conditions	ACFM	m ³ /min	3172	90	2542	72	2103	60	1915	54

Air Induction System⁵

Combustion Air required (entire engine)	lb/hr	kg/hr	3802	1728	3082	1401	2685	1221	2465	1120
Combustion Air Volume Required (entire engine)	ACFM	m ³ /min	787	22	638	18	556	16	510	14
Compressor Outlet Temperature ²	°F	°C	295	146	235	113	270	132	255	124

Thermal Balance⁵

Total Fuel	BTU/min	kW	78737	1385	63837	1123
Mechanical Power	BTU/min	kW	29003	510	24169	425
Heat Rejected to Cooling Water at Rated Load	BTU/min	kW	24511	431	19552	344
Heat Rejection CAC at Rated Power	BTU/min	kW	3094	54	1638	29
Heat Rejection to Exhaust (LHV to 150C)	BTU/min	kW	17959	316	14684	258
Engine Radiated Heat	BTU/min	kW	4129	73	3787	67

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 a heat value of 47.88 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 125°F at radiator.

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Type	Inline 4-cycle				Flywheel housing	SAE No. 1					
Number of cylinders	6				Flywheel	No. 14					
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Firing Order	1 - 5 - 3 - 6 - 2 - 4				Wet Weight (Fan to Flywheel)	lb	kg	4853	2206		
Rotation Viewed from Flywheel	Counter-Clockwise				CG From Flywheel Housing Rear Face	in	mm	30.9	786		
Bore	in	mm	5.9	150	CG Above Crank Centerline	in	mm	2.1	53		
Stroke	in	mm	7.3	185	Max Bending Moment @ Rear of Block	lbf-ft	N-m	-	-		
Displacement	in ³	L	1196.0	19.6	Moment of Inertia About Roll Axis	lbf-ft ²	kg-m ²	-	-		
Compression Ratio	10.5:1				Oil Specification	SAE 15W-40 Low Ash Gas engine oil (.25-.5% by wt), API CD/CF or higher					
Exhaust Manifold Type	Water cooled										
Turbo Exhaust Outlet Pipe Size	in	mm	4.56 - 4.88	116 - 124	Engine Oil Capacity ⁸	Min	qts	L	51	48	
Catalyst Inlet Size	ANSI Class 150 Flange, 5" Pipe					Max	qts	L	66	62	
Catalyst Dp	in-H ₂ O	kPa	33	8.3	ECU Oil Pressure Warning ⁶		psi	bar	45	3	
Maximum Allowable Exhaust Back Pressure	in-Hg	kPa	4.4	15	ECU Oil Pressure Shut Down ⁶		psi	bar	40	2.8	
Maximum Fuel System Pressure	psi	kPag	1.0	6.9	Oil Pressure Operating Range	Idle	psi	bar	35 - 63	2.4 - 4.3	
Maximum Operating pressure to EPR	in-H ₂ O	kPa	11	2.7		Rated	psi	bar	40-125	2.8 - 8.6	
Minimum Operating pressure to EPR	in-H ₂ O	kPa	7	1.7	Max Allowable Oil Temperature		°F	°C	239	115	
Minimum Gas Supply Pipe Size ⁵	1-1/4" NPT				Coolant Capacity (Engine only)		gal	L	11.1	42	
Maximum Pressure Drop Across CAC	psi	kPa	1.7	12.0	Coolant Capacity (Radiator only)		gal	L	22.5	85	
Maximum Allowable Intake Restriction	Clean Air Filter	in-H ₂ O	kPa	12.1	Radiator Weight (Dry)		lb	kg	1144	520	
	Dirty Air Filter	in-H ₂ O	kPa	24.9	Thermostat Operating		Cracking	°F	°C	176	80
Spark Plug Part Number	Bosch R66857				Temperature Range ⁹		Full Open	°F	°C	198	92
Standard Spark Plug Gap ¹⁰	in	mm	0.020	0.5	ECU Coolant Temp Warning		°F	°C	205	96	
Spark Plug Coil - Primary Resistance	Ohms		0.59Ω ± 10%		ECU Coolant Temp Shutdown		°F	°C	216	102	
Battery Voltage	Volts		24		40°C Ambient Capable ¹¹		Pass				
Starter Motor Power	HP	kW	11.4	8.5	Max External Coolant Friction Head		psi	kPa	7	50	
					CAC Rise Above Ambient Specified		°F	°C	37.8	21	

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Cooling Fan Speed	RPM		1260	
Cooling Fan Air Flow ¹¹	SCFM	m ³ /min	20290	575

Prime			NG 60Hz		NG 50Hz		LP 60Hz		LP 50Hz	
Power Rating ^{1,2,3,4} Per ISO 3046	HP	kWm	603	450	570	425	416	310	402	300
MEP (@ rated Load on NG)	psi	bar	222	15.3	252	17.3	153	10.5	178	12.2
Fuel Consumption ^{3,4,7}	lb/hr	kg/hr	201	91	186	84	177	80.3	162	74
BSFC	lb/(hp-hr)	g/(kW-hr)	0.333	203	0.326	199	0.425	259	0.403	246
Turbine Outlet Temperature	°F	°C	1363	739	1360	738	1265	685	1254	679
Exhaust Mass Flow (entire engine)	lb/hr	kg/hr	3539	1609	3268	1485	2862	1301	2627	1194
Exhaust Flow at Turbine Outlet Conditions	ACFM	m ³ /min	2752	78	2542	72	2103	60	1915	54

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Combustion Air required (entire engine)	lb/hr	kg/hr	3338	1517	3082	1401	2685	1221	2465	1120
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Compressor Outlet Temperature ²	°F	°C	260	127	235	113	270	132	255	124

Thermal Balance⁵

Total Fuel	BTU/min	kW	69131	1216	63837	1123
Mechanical Power	BTU/min	kW	25591	450	24169	425
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