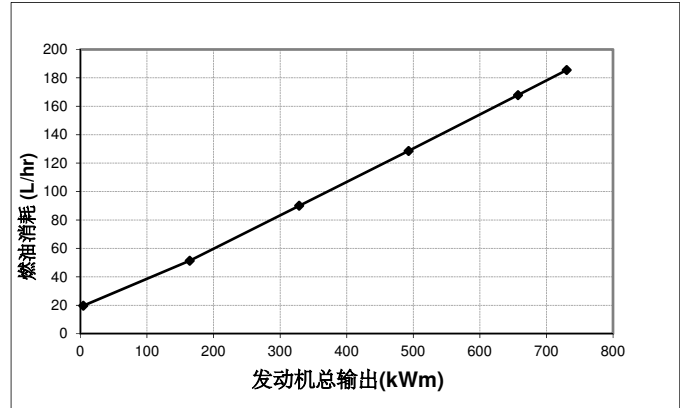


	发动机性能数据 康明斯公司 印第安纳哥伦布 47202-3005 http://www.cummins.com		G-驱		日期		
			QSK38-G8 60555		2019/05/21		
				特征编号	CPL	版本	
				D233042GX03	3570	1	
压缩比	15.0:1		排量	2301 in ³ (37.7 L)			
燃油系统	Cummins MCRS		进气方式	涡轮增压, 低温中冷			
后处理	-		排放认证	EPA Tier 2			

发动机转速	备用功率		常用功率		持续功率	
	kWm	bhp	kWm	bhp	kWm	bhp
rpm						
1500	730	979	657	881	591	793

发动机燃油消耗 @ 1500 rpm

输出功率			燃油消耗			
%	kWm	bhp	kg/kWm-hr	lb/bhp-hr	L/hr	US gal/hr
备用功率						
100	730	979	0.216	0.355	185	48.9
常用功率						
100	657	881	0.217	0.357	168	44.3
75	493	661	0.222	0.365	129	33.9
50	329	441	0.233	0.383	90	23.8
25	164	220	0.266	0.437	51	13.6
持续功率						
100	592	793	0.219	0.360	152	40.2

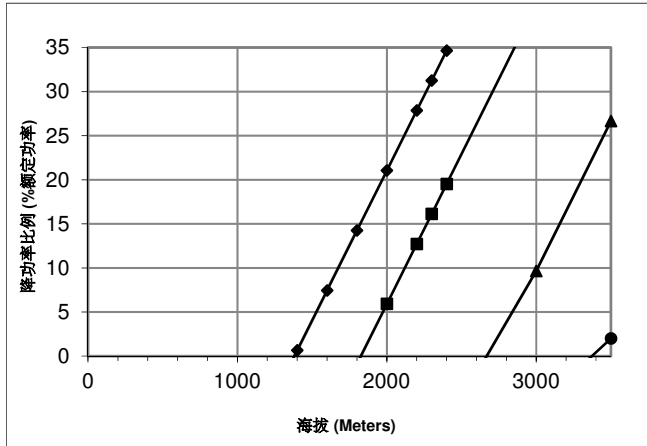


数据如有更改, 恕不另行通知

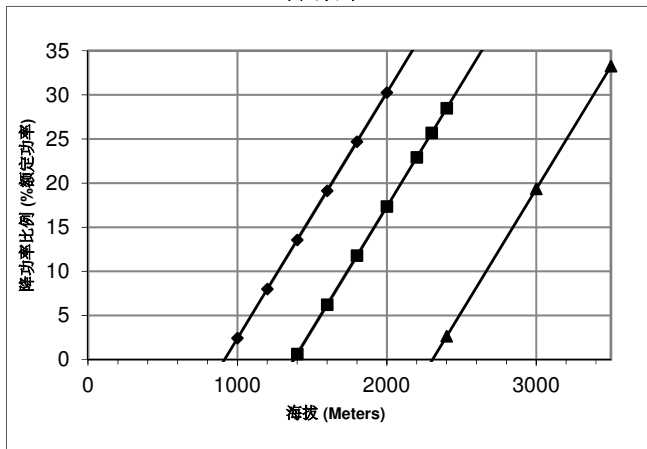
<p>以下准则阐明了确保C驱动发动机应用于交流发电机组的正确使用规范。备用功率标定:适用于在市电停电期间提供应急电源。该标定无超负荷能力,且该备用功率标定不能与市电并网运行。此标定的发动机应安装在有效电网覆盖区域内,备用功率标定的发动机按平均负荷率为80%来使用,一年不超过200小时。在备用功率点使用时每年不超过25小时。备用功率标定的发动机只能在断电时作为应急电源使用。电网预先通知的断电不属于应急电源使用范畴。常用功率标定:是可以替代商业电网电力来使用的功率。常用功率必须按下列两种类型之一来使用:</p> <p>无时限运行常用功率:按常用功率标定的发动机,可有效地变负荷无时限使用。在每250小时的运行周期内,可变负荷的均值不能超过所标定常用功率的70%。在一年内,100%常用功率的整个运行时间不超过500小时。在12小时运行周期内,有1小时有效超负荷10%的能力。在一年内,超负荷10%运行的整个时间不超过25小时。限时运行常用功率:限时常用功率在不变负荷应用中可以使用有限的小时数。它适用于预先通知的断电情况,如电网限电。在功率决不会超过常用功率标定的前提下,每年内可与市电并网运行750小时。但客户应该意识到,长期高负荷运行将缩短发动机寿命。一年内并网运行超过750小时时,请按持续功率标定运行。持续功率标定:可以恒定按100%标定负荷、无时限连续使用的功率。按此标定的发动机无超负荷能力。</p>	<p>如需发电输出数据,请参见应用工程公告AEB 10.47。</p> <p>上述代表发动机整体性能数据的获得和修正均是基于ISO-3046标准规定的标准条件:大气压力100 kPa (29.53 in Hg),海拔 [110 m (361 ft)],进气温度25 °C (77 °F),相对湿度30%,使用标准2#柴油或符合ASTM D2的柴油。降功率数据是基于-15 in H₂O的进气阻力和2 in Hg的排气背压给定的。</p> <p>降功率数据是基于-15 in H₂O的进气阻力和2 in Hg的排气背压给定的。</p> <p>燃油消耗数据是基于比重为0.85kg/l(7.1 lbs/US gal)的No.2柴油而得到的。功率输出曲线是基于发动机带燃油系统、水泵和机油泵试验时获得的,而不包括交流发电机、风扇、其它选用设备和被驱动的部件。</p>
<p>数据状态: 产品 公差: +/- 5% 总工程师: Tom Mcgibbon</p>	

1,500 rpm 降功率曲线

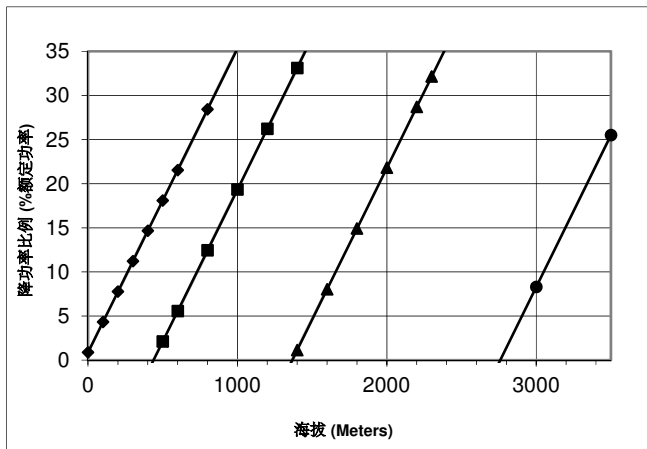
备用功率



常用功率



持续功率



- ◆ 131 °F (55 °C)
- 122 °F (50 °C)
- ▲ 104 °F (40 °C)
- 77 °F (25 °C)

在高海拔和高环境温度下的运行:

对 **备用功率** 在超过上图的环境条件时, 海拔每升高1000 ft (305 m), 再降低功率10.2%, 大气温度每升高18 °F (10 °C), 再降低功率30.3%。

对 **常用功率** 在超过上图的环境条件时, 海拔每升高1000 ft (305 m), 再降低功率8.4%, 大气温度每升高18 °F (10 °C), 再降低功率25.8%。

对 **持续功率** 在超过上图的环境条件时, 海拔每升高1000 ft (305 m), 再降低功率10.3%, 大气温度每升高18 °F (10 °C), 再降低功率32%。

整机数据

安装图号	4954124		
发动机型式	四冲程; V型; 12 缸		
进气方式	涡轮增压, 低温中冷		
缸径x 行程	in x in (mm x mm)	6.26 x 6.26	(159 x 159)
排量	in ³ (L)	2301	(37.7)
压缩比	15.0:1		
干重(大约)	lbm (kg)	8433	(3825)
湿重(大约)	lbm (kg)	9039	(4100)
后处理重量(大约)	lbm (kg)	N/A	(N/A)
旋转部件的转动惯量			
带飞轮 FW 6074 , SAE 00	in • lbf • sec ² (kg • m ²)	92.0	(10.4)
重心至缸体后端面的距离	in (mm)	31.54	(801)
重心在曲轴中心线上方	in (mm)	6.81	(173)

发动机悬置安装

在缸体后端面处允许的最大弯矩	lb • ft (N • m)	4500	(6101)
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排气系统

允许最大的静弯矩@ 排气口法兰	lb • ft (N • m)	N/A	(N/A)
备用功率最大背压, 涡轮出口处 (1500/1800rpm)	in Hg (kPa)	2.1 / N/A	(7 / N/A)

进气系统

最大进气阻力			
带普通空气滤清器和清洁的滤芯	in H ₂ O (kPa)	15	(3.7)
带重型空气滤清器和清洁的滤芯	in H ₂ O (kPa)	N/A	(N/A)
带脏滤芯	in H ₂ O (kPa)	25	(6.2)

冷却系统**水套/ 高温回路要求**

发动机外部最大冷却水阻力 (1500/1800 rpm)	psi (kPa)	10.0 / N/A	(68.9 / N/A)
在指定的发动机外部阻力的情况下, 发动机冷却水流量:			
2.5 psi 流动阻力时 (1500/1800 rpm)	US gpm (L/m)	274 / 1037	(336 / 1272)
在最大外部流动阻力时 (1500/1800 rpm)	US gpm (L/m)	209 / 791	(284 / 1075)
冷却液容量- 仅发动机	US gal (L)	28.0	(106)
海平面高度压力盖允许的最小压力	psi (kPa)	11	(76)
发动机曲轴中心线上方冷却系统的最大静压头高度	ft (m)	60	(18.3)
顶部水箱允许的最高温度-备用/常用功率	°F (°C)	219 / 212	(104 / 100)
节温器温度调节范围	°F (°C)	180 - 201	(82 - 94)
进气歧管最高温度-警告/停用	°F (°C)	N/A / N/A	(N/A / N/A)

低温回路 (LTC) 要求

发动机外部最大冷却水阻力 (1500/1800 rpm)	psi (kPa)	10.0 / N/A	(68.9 / N/A)
在指定的发动机外部阻力的情况下, 中冷器冷却液的流量:			
2.5 psi 流动阻力时 (1500/1800 rpm)	US gpm (L/m)	137 / 519	(168 / 636)
最大外部流动阻力时 (1500/1800 rpm)	US gpm (L/m)	116 / 439	(150 / 568)
进入LTC的最高冷却液温度@ 77°F (25°C) 环境温度时	°F (°C)	120	(49)
进入LTC的最高冷却液温度 @			
极限环境条件下, 备用/常用	°F (°C)	N/A / N/A	(N/A) / (N/A)
节温器温度调节范围	°F (°C)	115 - 135	(46 - 57)
冷却液容量- 中冷器	US gal (L)	6	(22.7)
空空中冷器要求			
空空中冷器与OEM空空中冷管道之间允许的最大压降 (1500/1800 rpm)	in Hg (kPa)	N/A / N/A	(N/A / N/A)
进气歧管最大温差 (进气歧管相对环境温度)	Δ°F (Δ°C)	N/A	(N/A)

润滑系统

机油压力@最小怠速时	psi (kPa)	20	(138)
机油压力@控制转速时	psi (kPa)	50 - 70	(344.7 - 482.6)
最高机油温度	°F (°C)	248	(120)
机油盘 OP6125的机油容量: 低 - 高	US gal (L)	37.0 - 44.0	(140.1 - 166.6)
系统总容量(带复合机油滤清器)	US gal (L)	45.0	(170.3)

燃油系统

允许的最大供油阻力@ 燃油泵入口处 (干净/脏滤芯)	in Hg (kPa)	5.0 / 10.0	(16.9 / 34)
喷雾器回油管路允许的最大阻力 (包括摩擦阻力和静压)	in Hg (kPa)	10	(34)
最高进油温度	°F (°C)	160	(71)
最大供油流量 (1500/1800 rpm)	US gph (L/hr)	159	(602 / N/A)
最大回油流量 (1500/1800 rpm)	US gph (L/hr)	94	(356 / N/A)

电气系统

系统电压	volts	24	N/A
最低推荐电池容量			
冷态 @ 0 °F (-18 °C)	CCA	1800	N/A
起动电路允许的最大电阻	ohm	0.002	N/A
系统最大电流	Amps	N/A	N/A

冷起动力

无辅助冷起动			
最小起动速度	rpm	150	
无辅助冷起动的最低环境温度	°F (°C)	10	(-12.2)

性能数据

		备用		常用		持续	
			50 Hz		50 Hz		50 Hz
发动机控制转速	rpm		1500		1500		1500
发动机怠速	rpm		700-900		700-900		700-900
发动机输出总功率	bhp (kWm)		979 (730)		881 (657)		N/A (N/A)
平均有效压力	psi (kPa)		225 (1549)		202 (1394)		N/A (N/A)
摩擦损失功率	hp (kWm)		115 (86)		115 (86)		N/A (N/A)
进气流量	ft ³ /min (L/sec)		2545 (1201)		2346 (1107)		N/A (N/A)
排气温度	°F (°C)		835 (446)		824 (440)		N/A (N/A)
排气流量	ft ³ /min (L/sec)		5939 (2803)		5469 (2581)		N/A (N/A)
空燃比			31		32		N/A
散失到环境中的热量	BTU/min (kWm)		4265 (75)		3867 (68)		N/A (N/A)
散失到水套中的热量	BTU/min (kWm)		8303 (146)		7734 (136)		N/A (N/A)
散失到排气中的热量	BTU/min (kWm)		42311 (744)		39012 (686)		N/A (N/A)
* 散失到燃油中的热量	BTU/min (kWm)		398 (7)		398 (7)		N/A (N/A)
散失到中冷器中的热量	BTU/min (kWm)		9270 (163)		7620 (134)		N/A (N/A)
增压空气流量	lb/min (kg/min)		183 (83)		170 (77)		N/A (N/A)
增压器压气机出口压力	psi (kPa)		27 (183)		23 (160)		N/A (N/A)
增压器压气机出口温度	°F (°C)		334 (168)		309 (154)		N/A (N/A)

* 这是散失到燃油的最大热量。

噪声排放

频率 (Hz)		63	125	250	500	1000	2000	4000	8000	Overall
声功率 dB(A) ¹²³										
1500 rpm	发动机 ⁴	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
50 Hz	排气 ⁵	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A


1. 所引用的试验数据来自单台发电机组试验, 不构成任何特定发动机性能的保证。数据取决于仪器、测量和发动机间的可变性。

2. 试验参考程序ISO 3744和ANSI S12.34-1998 (如适用)。

3. 所有数据均为“A”加权, 四舍五入至最近的 dB。

4. 带“典型散热器和风扇”的发动机, 声功率 (dB)。

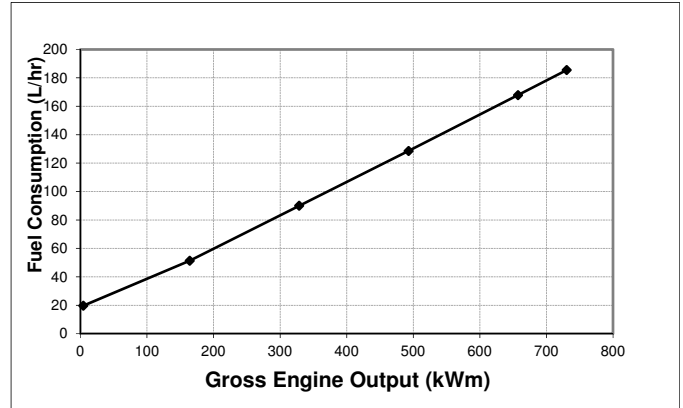
5. 距开放烟囱1米处的发动机排气, 声压 (dB)。

	Engine Performance Data Cummins Inc. Columbus, Indiana 47202-3005 http://www.cummins.com		G-Drive		Date 21-May-19		
			QSK38-G8 60555		Configuration D233042GX03	CPL 3570	Revision 1
Compression Ratio	15.0:1		Displacement	2301 in ³ (37.7 L)			
Fuel System	Cummins MCRS		Aspiration	Turbocharged and Low Temperature Aftercooled			
Aftertreatment	-		Emission Certification	EPA Tier 2			

Engine Speed	Standby Power		Prime Power		Continuous Power	
rpm	kWm	bhp	kWm	bhp	kWm	bhp
1500	730	979	657	881	591	793

Engine Fuel Consumption @ 1500 rpm

Output Power			Fuel Consumption			
%	kWm	bhp	kg/kWm-hr	lb/bhp-hr	L/hr	US gal/hr
Standby Power						
100	730	979	0.216	0.355	185	48.9
Prime Power						
100	657	881	0.217	0.357	168	44.3
75	493	661	0.222	0.365	129	33.9
50	329	441	0.233	0.383	90	23.8
25	164	220	0.266	0.437	51	13.6
Continuous Power						
100	592	793	0.219	0.360	152	40.2



Data Subject to Change Without Notice

These guidelines have been formulated to ensure proper application of generator drive engines in A.C. generator set installations. **STANDBY POWER RATING:** Applicable for supplying emergency power for the duration of the utility power outage. No overload capability is available for this rating. Under no condition is an engine allowed to operate in parallel with the public utility at the Standby Power rating. This rating should be applied where reliable utility power is available. A Standby rated engine should be sized for a Max of an 80% average load factor and 200 hours of operation per year. This includes less than 25 hours per year at the Standby Power rating. Standby ratings should never be applied except in true emergency power outages. Negotiated power outages contracted with a utility company are not considered an emergency. **PRIME POWER RATING:** Applicable for supplying electric power in lieu of commercially purchased power. Prime Power applications must be in the form of one of the following two categories: **UNLIMITED TIME RUNNING PRIME POWER:** Prime Power is available for an unlimited number of hours per year in a variable load application. Variable load should not exceed a 70% average of the Prime Power rating during any operating period of 250 hours. The total operating time at 100% Prime Power shall not exceed 500 hours per year. A 10% overload capability is available for a period of 1 hour within a 12-hour period of operation. Total operating time at the 10% overload power shall not exceed 25 hours per year. **LIMITED TIME RUNNING PRIME POWER:** Limited Time Prime Power is available for a limited number of hours in a non-variable load application. It is intended for use in situations where power outages are contracted, such as in utility power curtailment. Engines may be operated in parallel to the public utility up to 750 hours per year at power levels never to exceed the Prime Power rating. The customer should be aware, however, that the life of any engine will be reduced by this constant high load operation. Any operation exceeding 750 hours per year at the Prime Power rating should use the Continuous Power rating. **CONTINUOUS POWER RATING:** Applicable for supplying utility power at a constant 100% load for an unlimited number of hours per year. No overload capability is available for this rating.

Reference AEB 10.47 for determining Electrical Output.

Data shown above represent gross engine performance capabilities obtained and corrected in accordance with ISO-3046 conditions of 100 kPa (29.53 in Hg) barometric pressure [110 m (361 ft) altitude], 25 °C (77 °F) air inlet temperature, and relative humidity of 30% with No. 2 diesel or a fuel corresponding to ASTM D2.

Derates shown are based on -15 in H₂O air intake restriction and 2 in Hg exhaust back pressure.

The fuel consumption data is based on No. 2 diesel fuel weight at 0.85 kg/L (7.1 lbs/US gal). Power output curves are based on the engine operating with fuel system, water pump and lubricating oil pump; not included are battery charging alternator, fan, optional equipment and driven components.

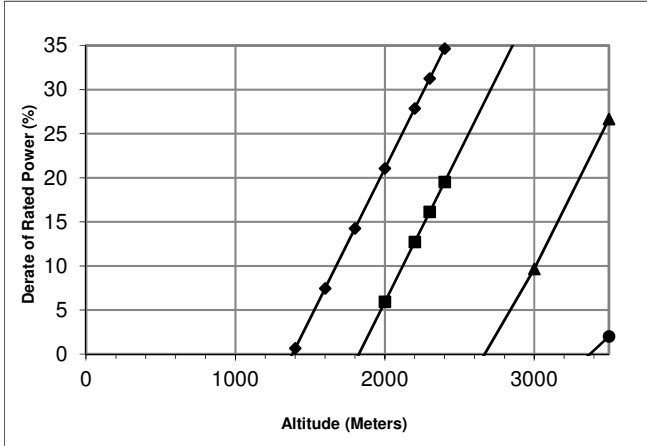
Data Status : Production

Tolerance : +/- 5%

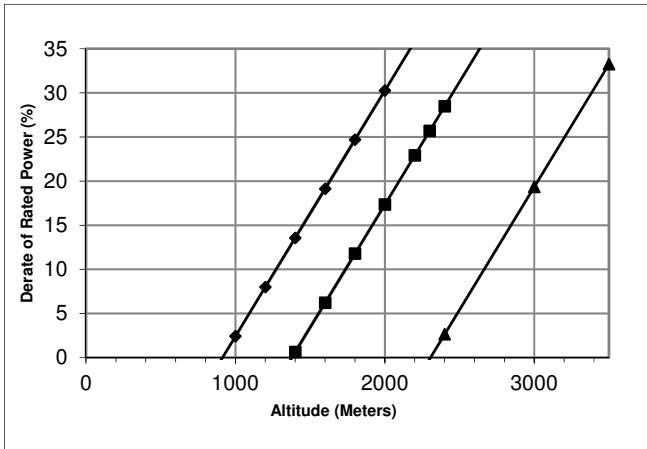
Chief Engineer: Tom Mcgibbon

1,500 rpm Power Derate Curves

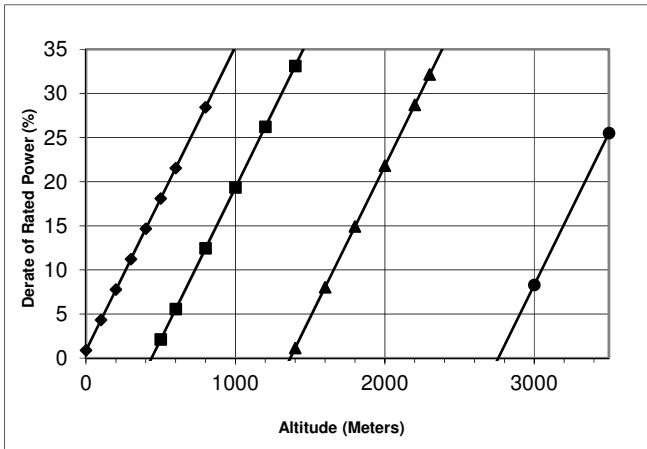
Standby Power



Prime Power



Continuous Power



- ◆ 131 °F (55 °C)
- 122 °F (50 °C)
- ▲ 104 °F (40 °C)
- 77 °F (25 °C)

Operation At Elevated Temperature And Altitude:

For **Standby Operation** above these conditions, derate by an additional 10.2% per 1,000 ft (305 m), and 30.3% per 18 °F (10 °C).

For **Prime Operation** above these conditions, derate by an additional 8.4% per 1,000 ft (305 m), and 25.8% per 18 °F (10 °C).

For **Continuous Operation** above these conditions, derate by an additional 10.3% per 1,000 ft (305 m), and 32% per 18 °F (10 °C).

General Engine Data

Installation Drawing Number	4954124		
Type	Four Cycle; Vee; 12 Cylinder		
Aspiration	Turbocharged and Low Temperature Aftercooled		
Bore x Stroke	in x in (mm x mm)	6.26 x 6.26	(159 x 159)
Displacement	in ³ (L)	2301	(37.7)
Compression Ratio	15.0:1		
Dry Weight (Approximate)	lbm (kg)	8433	(3825)
Wet Weight (Approximate)	lbm (kg)	9039	(4100)
Aftertreatment Weight (Approximate)	lbm (kg)	N/A	(N/A)
Moment of Inertia of Rotating Components			
with FW 6074 Flywheel, SAE 00	in • lbf • sec ² (kg • m ²)	92.0	(10.4)
Center of Gravity from Rear Face of Block	in (mm)	31.54	(801)
Center of Gravity Above Crankshaft Centerline	in (mm)	6.81	(173)

Engine Mounting

Max Bending Moment at Rear Face of Block	lb • ft (N • m)	4500	(6101)
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Exhaust System

Max Allowable Static Bending Moment @ Exhaust Outlet Flange	lb • ft (N • m)	N/A	(N/A)
Max Back Pressure, Standby Power, Turbo Outlet (1500/1800rpm)	in Hg (kPa)	2.1 / N/A	(7 / N/A)

Air Induction System

Max Intake Air Restriction			
With Normal Duty Air Cleaner and Clean Filter Element	in H ₂ O (kPa)	15	(3.7)
With Heavy Duty Air Cleaner and Clean Filter Element	in H ₂ O (kPa)	N/A	(N/A)
With Dirty Filter Element	in H ₂ O (kPa)	25	(6.2)

Cooling System**Jacket Water/ High Temperature Circuit Requirements**

Max Coolant Friction Head External to Engine (1500/1800 rpm)	psi (kPa)	10.0 / N/A	(68.9 / N/A)
Engine Water Flow at Stated Friction Head External to Engine:			
2.5 psi Friction Head (1500/1800 rpm)	US gpm (L/m)	274 / 1037	(336 / 1272)
Maximum Friction Head (1500/1800 rpm)	US gpm (L/m)	209 / 791	(284 / 1075)
Coolant Capacity - Engine	US gal (L)	28.0	(106)
Minimum Pressure Cap Rating at Sea Level	psi (kPa)	11	(76)
Max Static Head of Coolant Above Crankshaft Centerline	ft (m)	60	(18.3)
Max Coolant (Top Tank) Temperature for Standby/Prime Power	°F (°C)	219 / 212	(104 / 100)
Thermostat (Modulating) Range	°F (°C)	180 - 201	(82 - 94)
Max Intake Manifold Temp Warning/Shutdown	°F (°C)	N/A / N/A	(N/A / N/A)

Low Temperature Circuit (LTC) Requirements

Max Coolant Friction Head External to Engine (1500/1800 rpm)	psi (kPa)	10.0 / N/A	(68.9 / N/A)
Aftercooler Water Flow at Stated Friction Head External to Engine:			
2.5 psi Friction Head (1500/1800 rpm)	US gpm (L/m)	137 / 519	(168 / 636)
Maximum Friction Head (1500/1800 rpm)	US gpm (L/m)	116 / 439	(150 / 568)
Max Coolant Temp into LTC @ 77°F (25°C) Ambient	°F (°C)	120	(49)
Max Coolant Temperature into LTC @			
Limiting Ambient Conditions for Standby/Prime Power	°F (°C)	N/A / N/A	(N/A) / (N/A)
Thermostat (Modulating) Range	°F (°C)	115 - 135	(46 - 57)
Coolant Capacity - Aftercooler	US gal (L)	6	(22.7)

Charge Air Cooler Requirements

Max Allowable Pressure Drop Across Charge Air Cooler and OEM CAC piping (1500/1800 rpm)	in Hg (kPa)	N/A / N/A	(N/A / N/A)
Max Intake Manifold Temp. Differential (Ambient to IMT)	Δ°F (Δ°C)	N/A	(N/A)

Lubrication System

Oil Pressure at Minimum Idle Speed	psi (kPa)	20	(138)
Oil Pressure at Governed Speed	psi (kPa)	50 - 70	(344.7 - 482.6)
Max Oil Temperature	°F (°C)	248	(120)
Oil Capacity with OP6125: Low - High	US gal (L)	37.0 - 44.0	(140.1 - 166.6)
Total System Capacity (With Combo Filter)	US gal (L)	45.0	(170.3)

Fuel System

Max Fuel Supply Restriction at Fuel Pump Inlet (clean/dirty filter)	in Hg (kPa)	5.0 / 10.0	(16.9 / 34)
Max Allowable Head on Injector Return Line (Consisting of Friction Head and Static Head)	in Hg (kPa)	10	(34)
Max Fuel Inlet Temperature	°F (°C)	160	(71)
Max Supply Fuel Flow (1500/1800 rpm)	US gph (L/hr)	159	(602 / N/A)
Max Return Fuel Flow (1500/1800 rpm)	US gph (L/hr)	94	(356 / N/A)

Electrical System

System Voltage	volts	24	N/A
Minimum Recommended Battery Capacity			
Cold Soak @ 0 °F (-18 °C)	CCA	1800	N/A
Max Starting Circuit Resistance	ohm	0.002	N/A
Max Current Draw of the System	Amps	N/A	N/A

Cold Start Capability

Unaided Cold Start			
Minimum Cranking Speed	rpm	150	
Minimum Ambient Temp for Unaided Cold Start	°F (°C)	10	(-12.2)

Performance Data

		STANDBY		PRIME		CONTINUOUS	
			50 Hz		50 Hz		50 Hz
Governed Engine Speed	rpm		1500		1500		1500
Engine Idle Speed	rpm		700-900		700-900		700-900
Gross Engine Power Output	bhp (kWm)		979 (730)		881 (657)		N/A (N/A)
Brake Mean Effective Pressure	psi (kPa)		225 (1549)		202 (1394)		N/A (N/A)
Friction Power	hp (kWm)		115 (86)		115 (86)		N/A (N/A)
Intake Air Flow	ft ³ /min (L/sec)		2545 (1201)		2346 (1107)		N/A (N/A)
Exhaust Gas Temp	°F (°C)		835 (446)		824 (440)		N/A (N/A)
Exhaust Gas Flow	ft ³ /min (L/sec)		5939 (2803)		5469 (2581)		N/A (N/A)
Air:Fuel Ratio			31		32		N/A
Radiated Heat to Ambient	BTU/min (kWm)		4265 (75)		3867 (68)		N/A (N/A)
Heat to JW Radiator	BTU/min (kWm)		8303 (146)		7734 (136)		N/A (N/A)
Heat to Exhaust	BTU/min (kWm)		42311 (744)		39012 (686)		N/A (N/A)
* Heat to Fuel	BTU/min (kWm)		398 (7)		398 (7)		N/A (N/A)
Heat to Aftercooler Radiator	BTU/min (kWm)		9270 (163)		7620 (134)		N/A (N/A)
Charge Air Flow	lb/min (kg/min)		183 (83)		170 (77)		N/A (N/A)
Turbo Comp Outlet Pressure	psi (kPa)		27 (183)		23 (160)		N/A (N/A)
Turbo Comp Outlet Temp	°F (°C)		334 (168)		309 (154)		N/A (N/A)

* This is the maximum heat rejection to fuel.

Noise Emissions

Frequency (Hz)		63	125	250	500	1000	2000	4000	8000	Overall
Sound Power dB(A) ¹²³										
1500 rpm	Engine ⁴	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
50 Hz	Exhaust ⁵	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

1. The test figures quoted are from a single gen-set test and do not constitute a guarantee of performance for any particular engine. The data is subject to instrumentation, measurement, and engine to engine variability.

2. Test reference procedures ISO 3744 and ANSI S12.34-1998 as applicable.

3. All data are "A" weighted and are rounded to the nearest dB.

4. Engine with "typical Radiator and fan", Sound Power (dB).

5. Engine Exhaust at 1 Meter from open stack, Sound Pressure (dB).