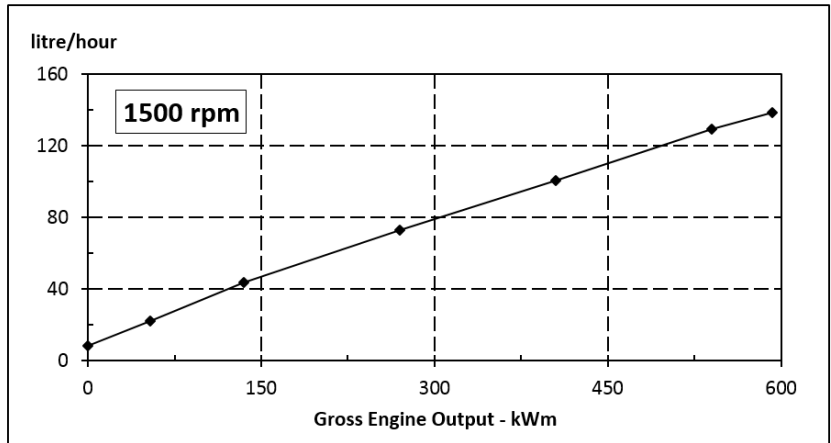
	康明斯公司 印第安纳哥伦布 47202-3005 发动机性能数据单	发动机型号: QSK19-G6	曲线: FR4624	G-驱 QSK 1
		发动机关键零件清单: CPL : 4382	日期: 2014/11/25	
压缩比: 15.8 : 1		排量: 18.9 litre (1150 in³)		
燃油系统: Cummins MCRS		进气方式: 涡轮增压, 空空冷		
排放认证: CPCB2				

发动机转速	备用功率		常用功率		持续功率	
RPM	kWm	bhp	kWm	bhp	kWm	bhp
1500	592	794	540	724	N/A	N/A

发动机性能数据 @ 1500 rpm

输出功率			燃油消耗			
%	kWm	bhp	kg/ kWm·h	lb/ bhp·h	litre/ hour	US gal/ hour
备用功率						
100	592	794	0.199	0.328	138.6	36.6
常用功率						
100	540	724	0.204	0.335	129.6	34.2
75	405	543	0.211	0.346	100.5	26.6
50	270	363	0.229	0.378	72.7	19.2
25	135	181	0.275	0.452	43.7	11.5
持续功率						
100	N/A	N/A	N/A	N/A	N/A	N/A



单位换算: (litres = US Gal x 3.785) (US Gal = litres x 0.2642)

数据如有更改, 恕不另行通知

以下准则阐明了确保G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:
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。

如需发电输出数据, 请参见应用公告AEB 10.47。

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 10/15 in H₂O 的进气阻力和 2 in Hg 的排气背压给定的 @ 1500/1800 rpm。

燃油消耗数据是基于比重为0.85kg/(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。

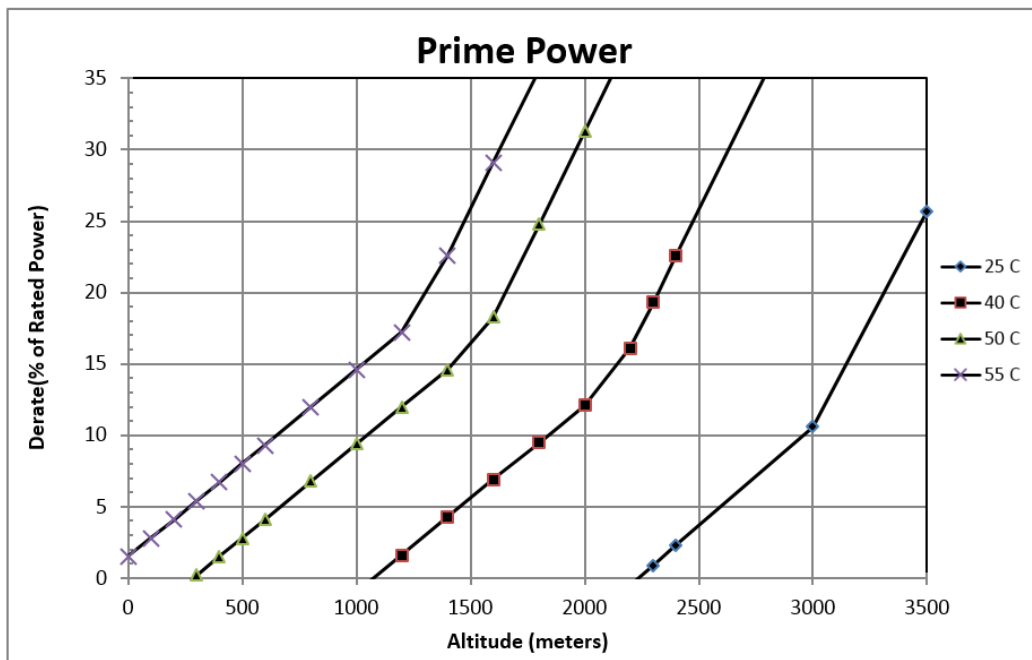
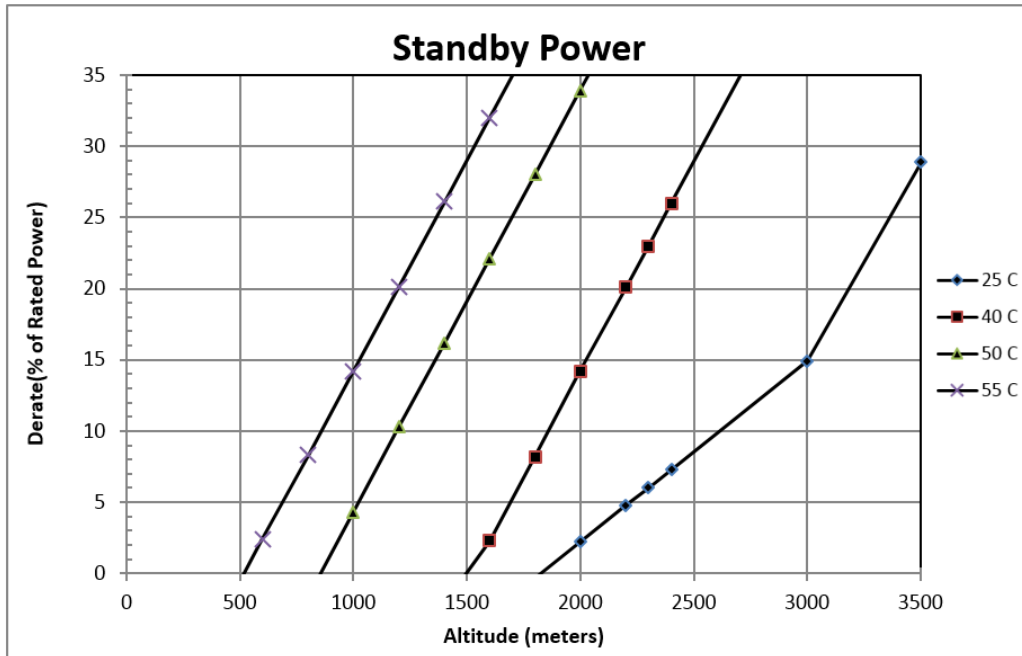
数据状态: --小批量--

数据公差: ± 5%

总工程师:



QSK19-G6
1500 rpm 降功率曲线



在高海拔和高环境温度下的运行:

在超过上图的环境条件时:

对 **备用功率**, 海拔每升高300米 (1000英尺), 再降低功率 8.9%, 大气温度每升高10°C (18°F), 再降低功率 19.8%。

对 **常用功率**, 海拔每升高300米 (1000英尺), 再降低功率 9.7%, 大气温度每升高10°C (18°F), 再降低功率 21.7%。

康明斯公司

发动机数据单

发动机型号: QSK19-G6

特征编号: D193103GX03

数据单: FR4624

日期: 2014/11/25

安装图

• 风扇飞轮: N.A.

CPL号

• 发动机关键零件清单: 4382

整机数据

发动机型式	直列; 六缸; 柴油机
进气方式	涡轮增压, 空空中冷
缸径 x 行程	6.25 x 6.25 (159 x 159)
排量	1150 (18.9)
压缩比	15.8 : 1
干重(大约)	
发动机带风扇飞轮	4348 (1972)
湿重(大约)	
发动机带风扇飞轮	4568 (2072)
旋转部件的转动惯量	
• 带飞轮 FW 4016	195 (8)
重心至缸体后端面的距离	24 (598)
重心在曲轴中心线上方	11 (282)
后轴承允许的最大静态负载	2000 (907)

发动机悬置安装

在缸体后端面处允许的最大弯矩	1000 (1356)
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排气系统

最大排气背压	2 (6.77)
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进气系统

最大进气阻力	
• 带脏滤芯	25 (6)
• 带干净滤芯	15 (4)

冷却系统

水套回路要求

冷却液容量—仅发动机	11 (42)
冷却液的最大静压在发动机曲轴中心线以上	60 (18)
标准节温器温度调节范围	180 - 202 (82 - 94)
最小压力盖压力	7 (15)
顶部水箱允许的最高温度 - 备用/常用功率	219/212 (104/100)
发动机外部最大冷却水阻力	5 (35)

空空中冷器要求

发动机进气与进气歧管间的最大温升 - 1500rpm	49 (25)
增压器出口至进气歧管的最大压降 - 1500rpm	3 (10)
进气歧管最高温度 @ 环境温度77 °F (25 °C) 时 - 1500rpm	122 (50)
压气机出口最高温度	433 (223)
发动机保护的最大进气歧管温度 (停机阈值)	185 (85)

润滑系统

机油压力 @ 怠速时	20 (138)
@ 控制转速时	70 (483)
最高机油温度	250 (121)
带标准机油盘的机油容量: 低 - 高	16 - 19 (64 - 72)
系统总容量 (包含复合滤清器)	22 (84)

燃油系统

喷油系统型式.....	Cummins MCRS	
至输油泵允许的最大供油阻力(干净/脏滤芯)..... — in Hg (kPa)	5/9 (17/30)	
喷油器回油管路上允许的最大压力(由摩擦阻力和静压组成)..... — in Hg (kPa)	10 (34)	
至喷油泵的最大燃油流量..... — US gph (litre/hr)	102 (387)	
最大回油流量..... — US gph (litre/hr)	65 (244)	
最高进油温度..... — °F (°C)	160 (71)	

电气系统

起动马达(重载, 正极离合)..... — volt	24
电池充电系统, 负极接地..... — ampere	35
起动电路允许的最大电阻..... — ohm	0.002
最低推荐电池容量	
• 冷态 @ 10 °F 至 32 °F (-12 °C 至 0 °C)..... — °F CCA	900

冷起动力

NFPA 110 冷起动的最低环境温度(冷却液温度为 90°F时)..... — °F (°C)	N.A.	(N.A.)
无辅助冷起动的最低环境温度..... — °F (°C)	N.A.	(N.A.)

性能数据

- 所有数据均基于:
- 发动机带燃油系统、水泵、机油泵、空滤器和消声器时试验获得的, 而不包括交流发电机、风扇、其它选用设备和被驱动的部件。
 - 测试时使用符合ASTM D975标准的2#柴油
 - ISO 3046, 第1部分, 标准参考条件:
 大气压力: 100 kPa (29.53 in Hg) 进气温度: 25 °C (77 °F)
 海拔: 110 m (361 ft) 相对湿度: 30%

任意恒载下的稳态稳定带..... — %	+/-	0.25
估计的典型的机组自由场声压级:		
不含排气噪声; 在额定工况, 距离 7.5 m (24.6 ft)处; @1500 rpm..... — dBA		N.A.
在排气管出口中心线水平面上距离1米处朝上45°方向的排气噪声..... — dBA		123

发动机控制转速..... rpm	
发动机怠速..... rpm	
发动机输出总功率..... hp (kW)	
平均有效压力..... psi (kPa)	
活塞平均速度..... ft/min (m/s)	
摩擦损失功率..... hp (kW)	
在一定外部阻力的情况下的发动机冷却水流量:	
• 在1 psi 的流动阻力时..... US gpm (litre/s)	
• 在最大外部流动阻力时..... US gpm (litre/s)	

	备用功率		常用功率	
	60 hz	50 hz	60 hz	50 hz
发动机控制转速..... rpm	N/A	1500	N/A	1500
发动机怠速..... rpm	N/A	700 - 900	N/A	700 - 900
发动机输出总功率..... hp (kW)	N/A N/A	794 (592)	N/A N/A	724 (540)
平均有效压力..... psi (kPa)	N/A N/A	358 (2471)	N/A N/A	325 (2242)
活塞平均速度..... ft/min (m/s)	N/A N/A	1565 (8)	N/A N/A	1565 (8)
摩擦损失功率..... hp (kW)	N/A N/A	57 (43)	N/A N/A	57 (43)
在一定外部阻力的情况下的发动机冷却水流量:				
• 在1 psi 的流动阻力时..... US gpm (litre/s)	N/A N/A	128 (485)	N/A N/A	128 (485)
• 在最大外部流动阻力时..... US gpm (litre/s)	N/A N/A	118 (447)	N/A N/A	118 (447)
进气流量..... cfm (litre/s)	N/A N/A	1566 (739)	N/A N/A	1502 (709)
排气温度..... °F (°C)	N/A N/A	921 (494)	N/A N/A	918 (492)
排气流量..... cfm (litre/s)	N/A N/A	4188 (1978)	N/A N/A	3987 (1883)
空燃比..... air : fuel	N/A	26: 1	N/A	27: 1
散失到环境中的热量..... BTU/min (kW)	N/A N/A	3254 (57)	N/A N/A	2947 (52)
散失到水套冷却液中的热量..... BTU/min (kW)	N/A N/A	11108 (195)	N/A N/A	8826 (155)
散失到排气中的热量..... BTU/min (kW)	N/A N/A	27541 (484)	N/A N/A	24606 (433)
散失到 *燃油中的热量..... BTU/min (kW)	N/A N/A	407 (7.15)	N/A N/A	368 (6.47)
散失到中冷器中的热量..... BTU/min (kW)	N/A N/A	7825 (138)	N/A N/A	7316 (129)
增压空气流量..... lb/min (kg/min)	N/A N/A	116 52.4	N/A N/A	110 49.9
增压器压气机出口压力..... in Hg (kPa)	N/A N/A	81 (274)	N/A N/A	76 (257)
增压器压气机出口温度..... °F (°C)	N/A N/A	418 (214)	N/A N/A	404 (207)


发动机数据

进气流量..... cfm (litre/s)	
排气温度..... °F (°C)	
排气流量..... cfm (litre/s)	
空燃比..... air : fuel	
散失到环境中的热量..... BTU/min (kW)	
散失到水套冷却液中的热量..... BTU/min (kW)	
散失到排气中的热量..... BTU/min (kW)	
散失到 *燃油中的热量..... BTU/min (kW)	
散失到中冷器中的热量..... BTU/min (kW)	
增压空气流量..... lb/min (kg/min)	
增压器压气机出口压力..... in Hg (kPa)	
增压器压气机出口温度..... °F (°C)	

* 这是散失到燃油的最大热量。

N.A. - Not Available不可用
 N/A - Not Applicable to this Engine不适用
 TBD - To Be Determined待定

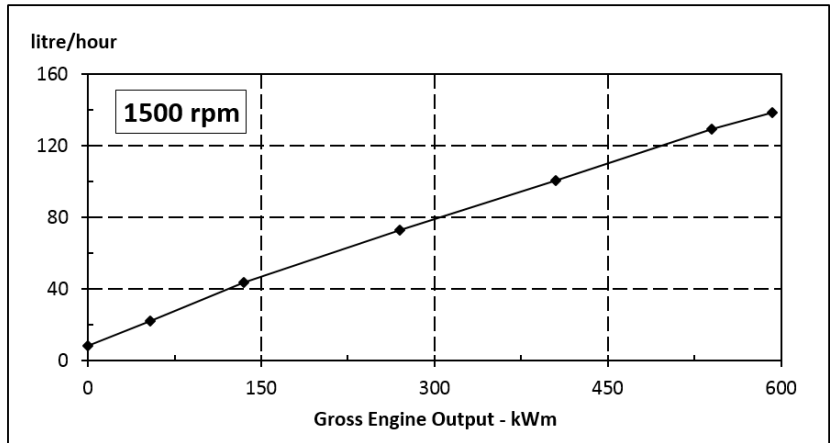
发动机型号: **QSK19-G6**
 数据单: **FR4624**
 日期: **2014/11/25**

	Cummins Inc. Columbus, Indiana 47202-3005 ENGINE PERFORMANCE DATASHEET	Basic Engine Model: QSK19-G6	Curve Number: FR4624	G-DRIVE QSK 1
		Engine Critical Parts List: CPL : 4382	Date: 25 NOV 14	
Compression Ratio : 15.8 : 1		Displacement : 18.9 litre (1150 in³)		
Fuel System : Cummins MCRS		Aspiration : Turbocharged and Charge Air Cooled		
Emission Certification : CPCB2				

Engine Speed	Standby Power		Prime Power		Continuous Power	
RPM	kWm	bhp	kWm	bhp	kWm	bhp
1500	592	794	540	724	N/A	N/A


Engine Performance Data @ 1500 rpm

OUTPUT POWER			FUEL CONSUMPTION			
%	kWm	bhp	kg/ kWm·h	lb/ bhp·h	litre/ hour	US gal/ hour
STANDBY POWER						
100	592	794	0.199	0.328	138.6	36.6
PRIME POWER						
100	540	724	0.204	0.335	129.6	34.2
75	405	543	0.211	0.346	100.5	26.6
50	270	363	0.229	0.378	72.7	19.2
25	135	181	0.275	0.452	43.7	11.5
CONTINUOUS POWER						
100	N/A	N/A	N/A	N/A	N/A	N/A

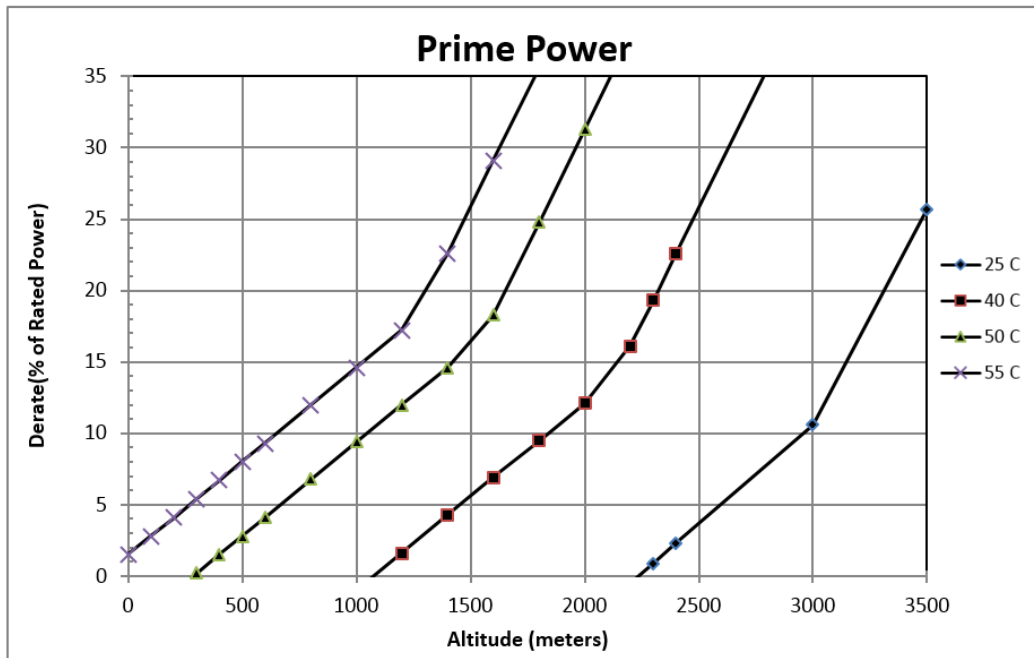
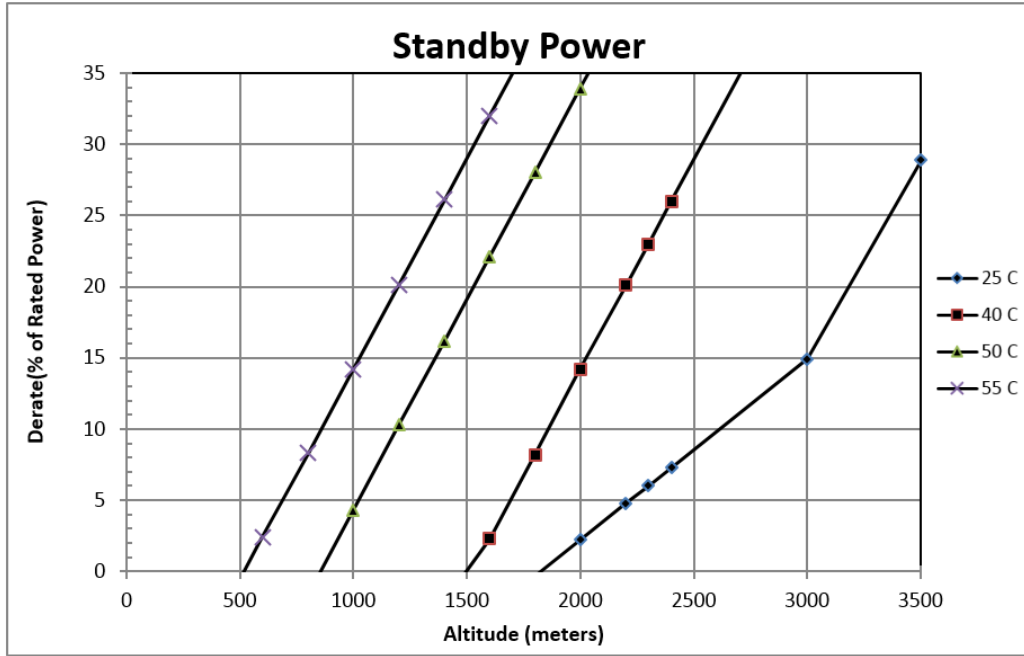


CONVERSIONS:(litres = US Gal x 3.785) (US Gal = litres x 0.2642)

Data Subject to Change Without Notice

<p>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 maximum 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.</p>	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 H ₂ O 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/litre (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: --Limited Production-- Data Tolerance: ± 5% Chief Engineer: 

QSK19-G6
1500 rpm Derate Curves



Operation at Elevated Temperature and Altitude:

For **Standby** operation above these conditions, derate by an additional 8.9% per 1,000 ft (300 m), and 19.8% per 18 delta deg F (10 delta deg C)
 For **Prime** operation above these conditions, derate by an additional 9.7% per 1,000 ft (300 m), and 21.7% per 18 delta deg F (10 delta deg C)

Cummins Inc.
Engine Data Sheet

ENGINE MODEL : QSK19-G6

CONFIGURATION NUMBER : D193103GX03

DATA SHEET : FR4624

DATE :25 NOV 14

INSTALLATION DIAGRAM

• Fan to Flywheel: N.A.

CPL NUMBER

• Engine Critical Parts List: 4382

GENERAL ENGINE DATA

Type	Inline 6-Cylinder Diesel		
Aspiration	Turbocharged & Charge Air Cooled		
Bore x Stroke	6.25 x 6.25	(159 x 159)	
Displacement	1150	(18.9)	
Compression Ratio	15.8 : 1		
Dry Weight (Approximate), Fan to Flywheel Engine	4348	(1972)	
Wet Weight (Approximate), Fan to Flywheel Engine	4568	(2072)	
Moment of Inertia of Rotating Components • with FW 4016 Flywheel	195	(8)	
Center of Gravity from Rear Face of Block	24	(598)	
Center of Gravity Above Crankshaft Centerline	11	(282)	
Maximum Static Loading at Rear Main Bearing	2000	(907)	

ENGINE MOUNTING

Maximum Bending Moment at Rear Face of Block	1000	(1356)	
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EXHAUST SYSTEM

Maximum Back Pressure	2	(6.77)	
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AIR INDUCTION SYSTEM

Maximum Intake Air Restriction • with Dirty Filter Element	25	(6)	
• with Clean Filter Element	15	(4)	

COOLING SYSTEM

Jacket Water Circuit Requirements

Coolant Capacity — Engine Only	11	(42)	
Maximum Static Head of Coolant Above Engine Crank Centerline	60	(18)	
Standard Thermostat (Modulating) Range	180 - 202	(82 - 94)	
Minimum Pressure Cap	7	(15)	
Maximum Top Tank Temperature for Standby / Prime Power	219/212	(104/100)	
Maximum Coolant Friction Head External to Engine	5	(35)	

Charge Air Cooler Requirements

Maximum Temp. Rise Between Engine Air Intake and Intake Manifold - 1500rpm	49	(25)	
Maximum Air Pressure Drop from Turbo Air Outlet to Intake Manifold - 1500rpm	3	(10)	
Maximum Intake Manifold Temperature @ 77 °F (25 °C) Ambient - 1500rpm	122	(50)	
Maximum Compressor Outlet Temperature	433	(223)	
Maximum Intake Manifold Temperature for Engine Protection (Shut Down Threshold)	185	(85)	

LUBRICATION SYSTEM

Oil Pressure @ Idle Speed	20	(138)	
@ Governed Speed	70	(483)	
Maximum Oil Temperature	250	(121)	
Oil Capacity with OP Standard Oil Pan : Low - High	16 - 19	(64 - 72)	
Total System Capacity (Including Combo Filters)	22	(84)	

FUEL SYSTEM

Type Injection System	Cummins MCRS
Maximum Restriction at Lift Pump(clean/dirty filter)..... — in Hg (kPa)	5/9 (17/30)
Maximum Allowable Head on Injector Return Line (Consisting of Friction Head and Static Head) — in Hg (kPa)	10 (34)
Maximum Fuel Flow to Injector Pump — US gph (litre/hr)	102 (387)
Maximum Return Fuel Flow — US gph (litre/hr)	65 (244)
Maximum Fuel Inlet Temperature — °F (°C)	160 (71)

ELECTRICAL SYSTEM

Cranking Motor (Heavy Duty, Positive Engagement)	— volt	24
Battery Charging System, Negative Ground	— ampere	35
Maximum Allowable Resistance of Cranking Circuit	— ohm	0.002
Minimum Recommended Battery Capacity		
• Cold Soak @ 10 °F to 32 °F (-12 °C to 0 °C)	— °F CCA	900

COLD START CAPABILITY

Minimum Ambient Temperature for NFPA 110 Cold Start (90 degree °F Coolant Temperature)	— °F (°C)	N.A.	(N.A.)
Minimum Ambient Temperature for Unaided Cold Start	— °F (°C)	N.A.	(N.A.)

PERFORMANCE DATA

- All data is based on:
- Engine operating with fuel system, water pump, lubricating oil pump, air cleaner and exhaust silencer; not included are battery charging alternator, fan, and optional driven components.
 - Engine operating with fuel corresponding to grade No. 2-D per ASTM D975.
 - ISO 3046, Part 1, Standard Reference Conditions of:

Barometric Pressure : 100 kPa (29.53 in Hg)	Air Temperature : 25 °C (77 °F)
Altitude : 110 m (361 ft)	Relative Humidity : 30%

Steady State Stability Band at Any Constant Load	— %	+/-	0.25
Estimated Free Field Sound Pressure Level of a Typical Generator Set; Excludes Exhaust Noise; at Rated Load and 7.5 m (24.6 ft); @1500 rpm	— dBA		N.A.
Exhaust Noise at 1 m Horizontal from Centerline of Exhaust Pipe Outlet Upwards at 45°	— dBA		123

Governed Engine Speed	rpm
Engine Idle Speed	rpm
Gross Engine Power Output	hp (kW)
Brake Mean Effective Pressure	psi (kPa)
Piston Speed	ft/min (m/s)
Friction Horsepower	hp (kW)
Engine Water Flow at Stated Friction Head External to Engine:	
• 1 psi Friction Head	US gpm (litre/s)
• Maximum Friction Head	US gpm (litre/s)

STANDBY POWER				PRIME POWER			
60 hz		50 hz		60 hz		50 hz	
N/A	N/A	1500		N/A	N/A	1500	
N/A	N/A	700 - 900		N/A	N/A	700 - 900	
N/A	N/A	794	(592)	N/A	N/A	724	(540)
N/A	N/A	358	(2471)	N/A	N/A	325	(2242)
N/A	N/A	1565	(8)	N/A	N/A	1565	(8)
N/A	N/A	57	(43)	N/A	N/A	57	(43)
N/A	N/A	128	(485)	N/A	N/A	128	(485)
N/A	N/A	118	(447)	N/A	N/A	118	(447)
N/A	N/A	1566	(739)	N/A	N/A	1502	(709)
N/A	N/A	921	(494)	N/A	N/A	918	(492)
N/A	N/A	4188	(1978)	N/A	N/A	3987	(1883)
N/A	N/A	26: 1		N/A	N/A	27: 1	
N/A	N/A	3254	(57)	N/A	N/A	2947	(52)
N/A	N/A	11108	(195)	N/A	N/A	8826	(155)
N/A	N/A	27541	(484)	N/A	N/A	24606	(433)
N/A	N/A	407	(7.15)	N/A	N/A	368	(6.47)
N/A	N/A	7825	(138)	N/A	N/A	7316	(129)
N/A	N/A	116	52.4	N/A	N/A	110	49.9
N/A	N/A	81	(274)	N/A	N/A	76	(257)
N/A	N/A	418	(214)	N/A	N/A	404	(207)

Engine Data

Intake Air Flow	cfm (litre/s)
Exhaust Gas Temperature	°F (°C)
Exhaust Gas Flow	cfm (litre/s)
Air to Fuel Ratio	air : fuel
Radiated Heat to Ambient	BTU/min (kW)
Heat Rejection to Jacket Coolant	BTU/min (kW)
Heat Rejection to Exhaust	BTU/min (kW)
Heat Rejected to *Fuel	BTU/min (kW)
Charge Air Cooler Heat Rejection	BTU/min (kW)
Charge Air Flow	lb/min (kg/min)
Turbocharger Compressor Outlet Pressure	in Hg (kPa)
Turbocharger Compressor Outlet Temperature	°F (°C)

* This is the maximum heat rejection to fuel.

N.A. - Not Available
N/A - Not Applicable to this Engine
TBD - To Be Determined

ENGINE MODEL : QSK19-G6
DATA SHEET : FR4624
DATE : 25 NOV 14