

G 驱动发动机功率标定使用准则

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。G 驱动发动机并不是为变速的直流发电机组而设计的，也不是作为直流发电机组的动力来使用。

备用功率标定 是在市电出现异常时作为应急电源使用时的瞬时最大功率。该标定无超负荷能力。且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。

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。

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%。

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

按常用功率标定的发动机，可以无时限运行于不变负荷用途。诸如使用功率低而输出功率受限的场合。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。

参考标准：

以 ISO-3046 为基础的 BS-5514 和 DIN-6271 标准。

环境温度和海拔变化后的修正：

发动机可以在下面的条件下运行，而功率不必进行调整：

转速为 1800r/min 的发动机，海拔高度低于 1500m (5000ft)，环境温度低于 40 °C(104°F)。

转速为 1500r/min 的发动机，海拔高度低于 1000m (3300ft)，环境温度低于 40 °C(104°F)。

发动机超出上述条件运行，海拔高度高于 1525m (5000ft)时，每升高 300m (1000ft)，功率下调 4%；环境温度高于 40°C(104°F)时，每升高 11°C，功率下调 2% (升高 10°F，下调 1%)。



POWER RATING APPLICATION GUIDELINES FOR GENERATOR DRIVE ENGINES

These guidelines have been formulated to ensure proper application of generator drive engines in A.C. generator set installations. Generator drive engines are not designed for and shall not be used in variable speed D.C. generator set applications.

STANDBY POWER RATING is 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.

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

PRIME POWER RATING is 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

UNLIMITED TIME RUNNING PRIME

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 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

LIMITED TIME RUNNING PRIME

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

Reference Standards:

BS-5514 and DIN-6271 standards are based on ISO-3046.

Operation At Elevated Temperature And Altitude:

The engine may be operated at:

1800RPM up to 5,000 ft.(1500m) and 104°F (40°C) without power deration.

1500RPM up to 3,300 ft.(1000m) and 104°F (40°C) without power deration.

For sustained operation above these conditions, derate by 4% per 1,000ft. (300m), and 1% per 10°F (2% per 11°C).



重庆康明斯发动机有限公司

发动机性能曲线

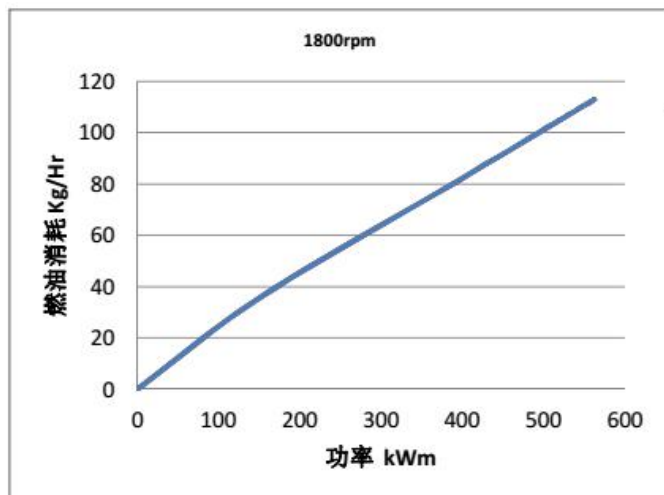
特征编号: D193091DX 发动机型号: KTA19-G3A 性能曲线号: C-4212B CPL 号: 4153 日期: 2012/3/22
 排量: 19L (1150) 进气方 废气涡轮增压, 中冷 功率标定
 缸径 X 行程: 159X159mm(6.25X6.25) 燃油系统: 康明斯 PT 系统 563 kW(754 BHP)@1800r/min
 压缩比: 13.9:1 排放认证: 504 kW(675 BHP)@1500r/min

所有的数据均是基于发动机带燃油泵、水泵、机油泵、空滤器和消声器运转时获得的, 但不包括交流发电机、空压机、风扇、选用设备和驱动件。数据随时可能更改, 恕不另行通知。

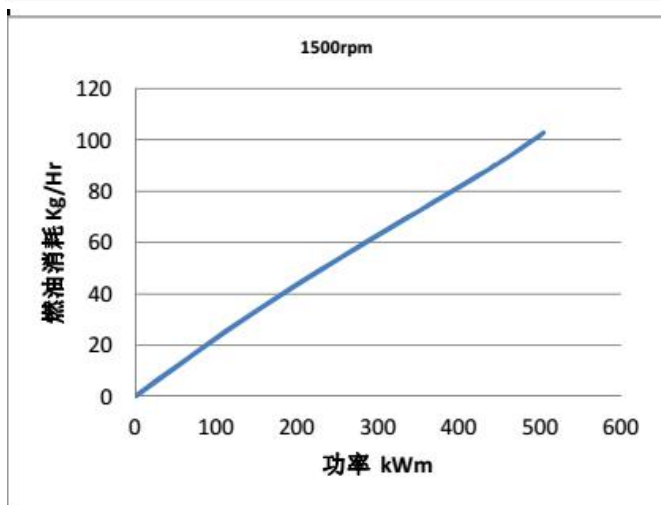
发动机输出功率

发动机转速	备用功率		常用功率		连续功率
BHP	kWm	BHP	kWm	BHP	kWm
1800	754	563	679	504	
1500	675	504	600	448	

燃油消耗



输出功率		燃油消耗	
%	BHP	kWm	Kg/hr
100(备用)	754	563	113.05
100(常用)	679	504	102
75	509	378	78.2
25	170	126	30.6
0	0	0	0



输出功率		燃油消耗	
%	BHP	kWm	Kg/hr
100(备用)	675	504	102.85
100(常用)	600	448	90.95
75	450	336	69.7
50	300	224	48.45
25	150	112	25.5
0	0	0	0

以上所有的数据都是基于或修正至 SAE J1995 标准规定的条件——海拔 90m (300ft.), 大气压力 100kPa (29.61in.Hg), 进气温度 25°C (77°F), 水蒸汽压力 1.0kPa (0.30in.Hg), 使用美国标准 2#柴油。



CHONGQING CUMMINS ENGINE COMPANY LTD.

CONSTRUCTION PERFORMANCE CURVE

CONFIGURATION:D193091DX02

BASIC ENGINE MODEL:KTA19-G3A

CURVE NUMBER:C-4212B

CPL No.:4153

DATE: 2012/3/31

Displacement: 19L (1150)

Aspiration: Turbocharged, Aftercooled RATING:

BoreXStroke: 159X159mm (6.25X6.25

Fuel Syste Cummins PT 754 BHP(563 kW)@1800r/min

ompression Rati 13.9:1

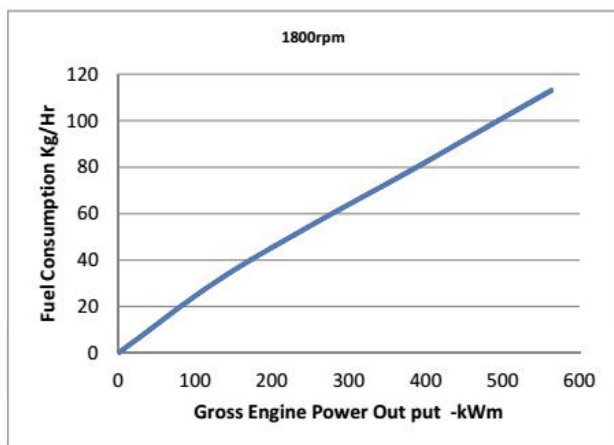
Emission Certification: 675 BHP(504 kW)@1500r/min

All data is based on the engine operating with fuel system, water pump, and 20 in. H₂O(4.98kPa) inlet air restriction with 5.8 in.(147mm) inner diameter, and with 2 in. Hg(7kPa) exhaust restriction with 8 in.(203mm) inner diameter; not included are alternator, fan, optional equipment and driven components. Coolant flows and heat rejection data based on coolant as 50% ethylene glycol/50% water. All data is subject to change without notice

Engine Power

Engie Speed	Stand_By		Prime		Continues	
	BHP	kWm	BHP	kWm	BHP	kWm
1800	754	563	679	504		
1500	675	504	600	448		

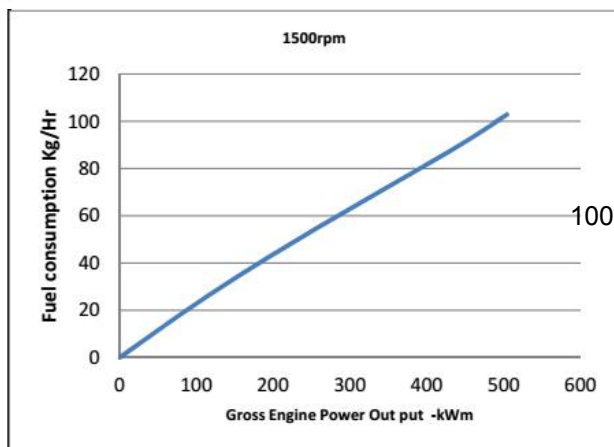
Fuel Consumption



Power

Fuel

%	BHP	kWm	Kg/hr
100(Stand_by)	754	563	113.05
100(Prime)	679	504	102
75	509	378	78.2
50	340	252	55.25
25	170	126	30.6
0	0	0	0



Power

Fuel

%	BHP	kWm	Kg/hr
100(Stand_by)	675	504	102.85
100(Prime)	600	448	90.95
75	450	336	69.7
50	300	224	48.45
25	150	112	25.5
0	0	0	0

Curves shown above represent gross engine performance capabilities obtained and corrected in accordance with SAE J1995 conditions of 29.61 in. Hg(100kPa) barometric pressure [300ft.(91m)

Ititude] 77deg F (25 deg C) inlet temperature, and 0.30 in. Hg(1kPa) water vapor pressure with No.2 diesel fuel.



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发动机数据单

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日期: 2012/3/22

V 1.0

发动机型号: KTA19-G3A

参考信息:

备用功率:	563 kW	504 kW	特征编号	D193091DX02
	@1800r/min	@1500r/min		
	754 BHP	675 BHP	PL	4153
常用功率:	507 kW	448 kW	据单号	DS-4212B
	@1800r/min	@1500r/min		
	679 BHP	600 BHP	能曲线号	C-4212B

整机数据

机型.....	四冲程、直列、六缸
进气方式.....	废气涡轮增压, 中冷
缸径—mm(in.)×冲程—mm(in.).....	159×159 6.25×6.25)
排量—L(in ³)	19 (1150)
压缩比	13.9:1
发动机干重	
风冷带飞轮—kg(lb).....	1690 (3725)
热交换器—kg(lb).....	2676 (5900)
发动机湿重	
风冷带飞轮—kg(lb).....	1760 (3880)
热交换器—kg(lb).....	2858 (6300)
运动零件相对于曲轴中心线的转动惯量 (不包括飞轮) —kg·m ² (lbm.ft ²).....	1.82 (43.2)
·飞轮选用件 FW 4001 —kg·m ² (lbm.ft ²).....	7.16 (170.0)
·飞轮选用件 FW 4006 —kg·m ² (lbm.ft ²).....	8.39 (199.0)
质心至飞轮壳后端的距离(FH4018) mm(in).....	721 28.4)
质心在曲轴中心线上方—mm(in).....	229 (9.0)
后端主轴承允许的最大静载荷—kg(lb).....	907 (2000)
发火顺序.....	1-5-3-6-2-4

发动机悬置安装

在缸体后端面处的最大允许弯矩—N·m(lb.ft).....	1356 (1000)
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排气系统

最大允许排气背压—kPa(in.Hg).....	10 (3)
标准容许的排气管直径—mm(in).....	127 (5)

进气系统

允许的最大进气阻力

脏滤芯—kPa(in. H ₂ O).....	6.23 (25)
干净普通滤芯—kPa(in.H ₂ O).....	2.49 (10)
干净重型滤芯—kPa(in.H ₂ O).....	3.73 (15)

冷却系统

冷却液容量

仅发动机—L(U.S.Gal).....	30.3 (8.0)
包含热交换器 HX 4073 (不包含膨胀水箱) — L(U.S.Gal).....	66.2 (17.5)
包含热交换器包含膨胀水箱和低温中冷系统— L(U.S.Gal).....	111.7 (29.5)

海平面高度压力盖允许的最小压力—kPa(PSI).....	48 (7)
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外循环水最大阻力 1800rpm —kPa(PSI).....	68.9 (10.0)
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1500rpm —kPa(PSI).....	55.2 (8.0)
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冷却系统外部最大压力损失 —kPa(PSI).....	34.5 (5.0)
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热交换器 HX 4073 中的生水在 32℃ (90°F) 时的最小流量—L/min(GPM).....	204 (54)
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热交换器 HX 4073 中的生水最大进水压力—kPa(PSI).....	345	(50)
顶部水箱允许的最高温度(备用/常用)—℃(°F)	104/100	(220/212)
标准节温器温度调节范围—℃(°F).....	82-93	(180-200)
最大冷却液静压(不使用压力盖)—kPa(PSI).....	103	(15)
最小冷却液补水能力—L(U.S.Gal).....	6.1	(1.6)
生水泵最大进水阻力—mm Hg(in. Hg)	254	(10)
生水泵最大吸程—m(ft.).....	4.6	(15)
生水泵最大扬程—m(ft.).....	20.5	(67.3)
允许的最小补水速率—L/min(U.S.GPM).....	18.9	(5)
允许的最大首次补水时间—min.....	5	
允许的最小冷却液膨胀体积占系统容积—%.....	5	
允许的最大排气时间—min.....	25	

润滑系统

机油压力

低怠速时(最小)—kPa(PSI).....	138	(20)
额定转速时—kPa(PSI).....	345-483	(50-70)
额定转速时的机油流量—L/min(U.S.GPM).....	151	(40)
允许的最高机油温度—℃(°F).....	121	(250)
机油旁通滤清器容量		
旋装式—L(U.S.Gal).....	2.6	(0.7)
可换滤芯式—L(U.S.Gal).....	11.0	(2.9)
机油盘容量(选用件 OP4019)		
高位—L(U.S.Gal).....	37.9	(10.0)
低位—L(U.S.Gal).....	32.2	(8.5)
系统总容量(包含旁通滤清器)—L(U.S.Gal).....	50.0	(13.2)
标准机油盘的倾斜角(选用件 OP4019)		
前俯角.....	30°	
前仰角.....	30°	

燃油系统

燃油喷射系统形式..... 康明斯 PT 直喷系统

最大标定功率和转速时的最大燃油消耗量—kg/h(lb/h).....

燃油泵进油口的最大供油阻力

滤清器在清洁状态最大供油流量时—kPa(in.Hg).....	13.55	(4)
滤清器在脏的状态最大供油流量时—kPa(in.Hg).....	27.09	(8)

额定功率和转速时的最大供油量—kg/h(lb/h).....

允许的喷油器最大燃油回油阻

带单向阀—kPa(in.Hg).....	22.0	(6.5)
不带单向阀—kPa(in.Hg).....	8.5	(2.5)

允许的最小燃油箱通气能力—L/h (ft³/h)

[在背压为 8.4kPa (2.5in.Hg) 或更低的背压时]

电气及启动系统

启动马达(重型, 正极)—Volt.....	24	
电瓶充电系统, 负极接地—A.....	35	
起动电路允许的最大电阻—Ω.....	0.002	
推荐的电瓶最小容量		



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·在 10℃ (50°F) 或以上时—0°F CCA	600
·在 0℃ 至 10℃ (32°F 至 50°F) 或以上时—0°F CCA.....	640
·在 -18℃ 至 0℃ (0°F 至 32°F) 或以上时—0°F CCA	900

性能数据

在任意恒定负荷下的转速稳定性—%..... ±0.25

所有的数据均是基于发动机带燃油泵、水泵、机油泵、空滤器和消声器运转时获得的，但不包括交流发电机、空压机、风扇、选用设备和驱动件。所有的数据都是基于 SAE J1349 标准规定的条件——海拔 90m (300ft.)，大气压力 100kPa (29.61in.Hg)，进气温度 25℃ (77°F)，水蒸汽压力 1.0kPa (0.30in.Hg)，使用标准 2#柴油或符合 ASTM D2 的柴油。数据随时可能更改，恕不另行通知。

	备用功率		常用功率	
	60 Hz	50 Hz	60 Hz	50 Hz
转速 r/min.....	1800	1500	1800	1500
怠速 r/min	675-775	675-775	675-775	675-775
输出总功率 kW(BHP).....	563(754)	504(675)	507(679)	448(600)
平均有效压力 kPa(PSI).....	1978(287)	2125(308)	1781(258)	1889(274)
活塞平均速度 m/s(ft/min).....	9.5(1870)	7.9(1555)	9.5(1870)	7.9(1555)
摩擦功率 kW(BHP).....	62(83)	40(54)	62(83)	40(54)
排气流量				
干式排气管 L/s(CFM).....	1862(3945)	1604(3398)	1734(3673)	1434(3039)
排气温度				
干式排气管 °C(°F).....	504(939)	557(1034)	481(898)	538(1000)
对环境的散热量				
干式排气管 kW(BTU/min).....	80(4522)	72(4108)	71(4050)	64(3654)
对冷却液的散热量				
干式排气管 kW(BTU/min).....	288(16350)	270(15340)	252(14350)	240(13660)
发动机冷却液流量 L/s(U.S.GPM)阻力为 3psi 时.....				



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ENGINE : KTA19-G3A

STAND_BY: 754 BHP	REFERENCE INFORMATION:
563 kW @1800r/min	CONFIGURATION..... D193091DX02
PRIME: 679 BHP	CPL NUMBER 4153
507 kW @1800r/min	PERFORMANCE CURVE NUMBER..... C-4212B

GENERAENGINE DATA

Type.....	4 Cycle , In-line , 6 Cylinder
Aspiration	Turbocharged , Aftercooled
Bore—in.(mm)×stroke—in.(mm).....	6.25×6.25 (159×159)
Displacement—in ³ (L)	1150 (19)
Compression Ratio	13.9:1
Dry Weight	
Fan Hub to Flywheel Engine —lb(kg).....	3725 (1690)
Radiator Cooled Engine —lb(kg).....	5900 (2676)
Wet Weight	
Fan Hub to Flywheel Engine —lb(kg).....	3880 (1760)
Radiator Cooled Engine —lb(kg).....	6300 (2858)
Moment of Inertia of Rotating Components (Excluding Flywheel) —lbm.ft ² (kg•m ²)... 43	(1.82)
·With FW 4001 Flywhe —kg•m ² (lbm.ft ²)	7.16 (170.0)
·With Flywheel—kg•m ² (lbm.ft ²).....	
C.G. Distance From Front Face of Block—in(mm)	23.6 (598)
C.G. Distance Above Crank Centerline—in(mm)	9 (229)
Maximum Allowable Bending Moment at Rear Face of Block —N•m(lb.ft).....	2000 (907)
Firing Order	1-5-3-6-2-4

ENGINE MOUNTIN

Moment of Inertia About Roll Axis —lb.ft ² (kg•m ²)	1876 (79)
Maximum Allowable Back Pressure (1500/1800 rpm) —in.Hg(kPa)	2.3/3 (7.8/10.2)
Maximum Allowable Back Pressure —in.Hg(kPa).....	3 (10)
Exhaust Pipe Size Normally Acceptable —in(mm).....	5 (127)

AIR INDUCTION SYSTEM

Maximum Allowable Intake Air Restriction With Heavy Duty Air Cleaner

Clean Element —in.H ₂ O(kPa)	15 (3.73)
Clean Normal Element —in.H ₂ O(kPa).....	10 (2.49)
Intake Air Alarm Temperature (1500/1800 rpm)—℃(°F)	82 (180)



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FUEL SYSTEM

Fuel Injection System.....	Cummins PT
Maximum Fuel Consumption at Maximum Rated Output and Speed —lb/h(kg/h).....	
Maximum allowable Restriction to PT Fuel Pump	
With Clean Fuel Filter —in.Hg(kPa).....	4 (13.55)
With Dirty Fuel Filter —in.Hg(kPa).....	9 (30.48)
Maximum Fuel Supply at Rated Power and Speed —lb/h(kg/h).....	
Maximum Allowable Injector Return Line Restriction	
With Check Valves —in.Hg(kPa).....	7 (22)
Less Check Valves —in.Hg(kPa).....	3 (8)
Minimum Allowable Fuel Tank Vent Capability —ft ³ /h (L/h)	15 (425)
(With 2.5 in. Hg (63 mm Hg) or Less Back Pressure)	
Starter (Heavy, Anode)—Volt.....	24
Battery Recharge System,Negative ground—A	35
Maximum Allowable Resistance of Starting Circuit—Ω.....	0.002
Minimum Recommended Battery Capacity	
·Cold Soak at 50°F(10°C) or Above—0°F CCA.....	600
·Cold Soak at 32~50°F(0~10°C) or Above—0°F CCA.....	640
·Cold Soak at 0~32°F(-18~0°C) or Above—0°F CCA.....	900

PERFORMANCE DATA



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All data is based on the engine operating with fuel system, water pump, lubricating oil pump, air cleaner, and muffler, not included are alternator, compressor, fan, optional equipment and driven components. Data represents gross engine performance capabilities obtained and corrected in accordance with SAE J1349 conditions for 29.61 in Hg(100 kPa) barometric pressure[300ft. (90 m) altitude], 77°F (25 °C) inlet air temperature, and 0.30 in. Hg (1kPa) water vapor pressure with No. 2 diesel fuel or a fuel corresponding to ASTM D2. All data is subject to change without

	STAND_BY		PRIME	
	60 Hz	50 Hz	60 Hz	50 Hz
Engine Speed r/min.....	1800	1500	1800	1500
Nominal Rail Pressure PSI(kPa).....				
Intake Manifold Pressure in.Hg(kPa).....				
Brake Mean Effective Pressure PSI(kPa).....				
Friction Horsepower BHP(kW).....	83(62)	54(40)	83(62)	54(40)
Intake Air FlowCFM(L/s).....	1517(716)	1226(579)	1455(687)	1126(531)
Dry ManifoldCFM(L/s).....	3945(1862)			
Wet ManifoldCFM(L/s).....		1034(557)	898(481)	1000(538)
Dry Manifold °F(°C).....	939(504)	1034(557)	898(481)	1000(538)
Wet Manifold°F(°C).....				
Dry Manifold BTU/min(kW).....	4522(80)	4108(72)	4050(0)	3654(64)
Wet Manifold BTU/min(kW).....				
Dry Manifold BTU/min(kW).....	16350(288)	15340(270)	14350(252)	3660(240)
with 100°F(38°C) RadiatorCFM(L/s).....				