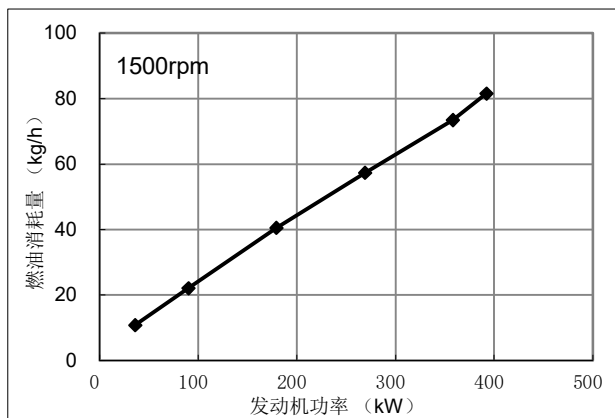
	发动机性能数据 重庆康明斯 重庆,中国 http://www.cummins.com	G-Drive QSNT-G3 FR11390	版本 20210706
			特征编号 D093677GX03
压缩比 燃油系统 排放证书	16.7:1 CELECT STG IIIA, 非道路国三	排量 进气方式	14L (855 in ³) 增压, 空空中冷

发动机转速	备用功率		常用功率		持续功率	
rpm	kW	HP	kW	HP	kW	HP
1500	392	525	358	480	321	430
1800	392	525	358	480	321	430

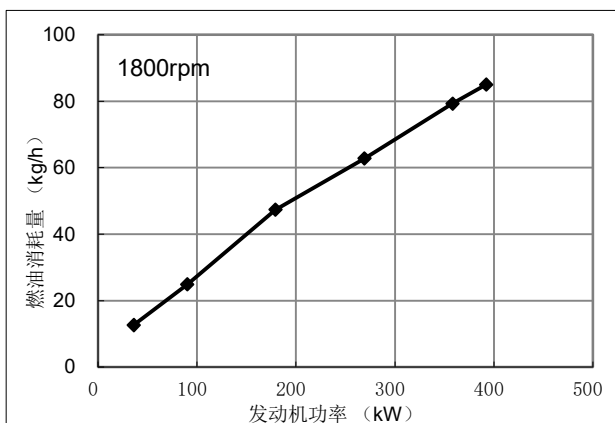
发动机性能数据@1500 rpm

输出功率			燃油消耗			
%	HP	kW	lb/hp·h	kg/kW·h	lb/h	kg/h
备用功率						
100	525	392	0.342	0.208	179.7	81.5
常用功率						
100	480	358	0.337	0.205	161.8	73.4
75	360	269	0.351	0.213	126.3	57.3
50	240	179	0.372	0.226	89.3	40.5
25	120	90	0.404	0.244	48.5	22.0
10	48	36	0.496	0.300	23.8	10.8
持续功率						
100	430	321	0.342	0.208	147.3	66.8



发动机性能数据@1800 rpm

输出功率			燃油消耗			
%	HP	kW	lb/hp·h	kg/kW·h	lb/h	kg/h
备用功率						
100	525	392	0.357	0.217	187.4	85.0
常用功率						
100	480	358	0.364	0.222	174.8	79.3
75	360	269	0.385	0.234	138.5	62.8
50	240	179	0.435	0.265	104.4	47.4
25	120	90	0.457	0.276	54.9	24.9
10	48	36	0.582	0.352	27.9	12.7
持续功率						
100	430	321	0.382	0.232	164.2	74.5



所有数据如有更改, 恕不另行通知。

所有数据基于:

- ISO 3046标准规定的条件: 大气压力100kPa(29.5in.Hg)、[海拔110m (361ft)]、进气温度 25°C (77°F)、相对湿度30%。
- 发动机运转使用符合GB 252标准的0号柴油或符合 ASTM D2标准的柴油。
- 进气阻力3.7kPa(15in H₂O); 排气阻力10kPa (3.0 in Hg)。
- 发动机带燃油系统、水泵、机油泵; 但不包括交流发电机、空压机、风扇、选用设备和被驱动的部件。

曲线和数据状态: 产品

总工程师:

朱荣

公差: ±5%以内

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G驱动发动机功率标定指导说明

此指导说明是为了确保发电驱动用发动机在装配发电机组时的正确应用。发电驱动用发动机不能用于变速直流发电机组。

备用功率标定 可用于在失去主电源的情况下提供紧急备用电源。在此功率上没有超载能力。在任何情况下发动机都不允许以备用功率与市电并网。

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%运行的整体时间不超过25小时。

限时运行常用功率

按常用功率标定的发动机，可以有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1500 m (4921 ft)，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1500 m (4921 ft)，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1500 m (4921ft)时，每升高300 m (984 ft)，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%)。

整机数据

型式		六缸、直列、四冲程	
进气方式		增压, 空空中冷	
缸径×行程	— mm×mm (in.×in.)	140x152	(5.5x6.0)
排量	— L (in.3)	14	(855)
压缩比		16.7:1	
发火顺序		1-5-3-6-2-4	
发动机干重			
--包括飞轮和发电机, 但不包括其它电气零件	— kg (lb.)	1460	(3219)
发动机湿重			
--仅发动机	— kg (lb.)	1510	(3330)
旋转部件转动惯量(配备FW1010飞轮)	— kg·m ² (lb.-ft. ²)	4.99	(118.5)
重心			
--距缸体前端面距离	— mm (in.)	575.7	(22.67)
--从发动机中心线到左侧距离(从发动机后端看)	— mm (in.)	12.9	(0.51)
--曲轴中心线之上	— mm (in.)	164.6	(6.48)

发动机安装

允许的最大缸体后端面处弯矩	— N·m (lb.·ft.)	1356	(1000)
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排气系统

允许的最大排气背压	— kPa (in.Hg)	10	(3.0)
推荐排气管内径	— mm (in.)	127	(5.0)

进气系统

允许的最大进气阻力			
--滤清器脏时	— kPa (in.H ₂ O)	6.2	(25)
--重型干净滤芯时	— kPa (in.H ₂ O)	3.7	(15)
允许的最大进气温升ΔT	— °C (°F)	17	(30)

冷却系统

冷却液容量 - 单机	— L (U.S. gal)	21.0	(5.5)
发动机外部最大允许冷却液阻力	— kPa (PSI)	34.5	(5)
最大冷却水静压(高于曲轴中心线以上)	— m (ft.)	14	(46)
标准节温器温度调节范围	— °C (°F)	82-94	(180-202)
允许的最小压力盖压力	— kPa (PSI)	69	(10)
散热器上水室允许的最高温度-备用/常用	— °C (°F)	104/100	(220/212)
散热器上水室允许的最低温度	— °C (°F)	71	(160)
冷却水最小膨胀空间(占系统容积%)		6	
增压器压气机出口相对于进气歧管的最大压降	— in.Hg (kPa)	4	(13.5)
环境温度为25°C(77°F)时进气歧管最大温度	— °C (°F)	60	(140)
当环境温度大于25°C(77°F)时, 空空中冷出口的最大温升	— °C (°F)	35	(63)
进气歧管空气的报警温度	— °C (°F)	85	(185)

润滑系统

机油压力 @ 怠速	— kPa (PSI)	103	(15)
@ 额定转速	— kPa (PSI)	241-345	(35-50)
允许的最高机油温度	— °C (°F)	121	(250)
机油盘容量 低位/高位	— L (U.S. gal.)	28.4/36.0	(7.5/9.5)
系统总容量	— L (U.S. gal.)	38.6	(10.2)
机油盘允许倾角 前倾/后倾/侧倾		38°	

燃油系统

燃油系统型式		CELECT	
燃油泵入口最大允许阻力			
-- 干净燃油滤清器	— kPa (in.Hg)	20	(6)
-- 脏燃油滤清器	— kPa (in.Hg)	34	(10)
回油管路最大阻力			
-- 带单向阀	— kPa (in.Hg)	22	(6.5)
-- 不带单向阀	— kPa (in.Hg)	8.5	(2.5)
最大的供油流量 @1500/1800rpm	— kg/hr(lb/hr)	255/275	(562/606)
最大的回油流量 @1500/1800rpm	— kg/hr(lb/hr)	175/195	(386/430)
最大允许进油温度	— °C (°F)	71	(160)

电气系统

系统电压	— volt	24	
最小推荐蓄电池起动力 (仅发动机)			
-- 冷起动电流 @环境气温10 °C (50°F)及以上	— CCA	600	
-- 冷起动电流 @环境气温0°C-10 °C (32°F-50°F)	— CCA	640	
-- 冷起动电流 @环境气温-18°C-0 °C (0°F-32°F)	— CCA	900	
-- 储备容量(RC) @ 环境温度-18°C(0°F) 及以上	— min	320	
起动电路允许的最大电阻	— Ohm	0.002	

冷起动能力

无辅助冷起动			
--最小起动转速	— r/min	130	
--无辅助冷起动的最低环境温度	— °C (°F)	-12	(10.4)

性能数据

		备用功率		常用功率	
		60Hz	50Hz	60Hz	50Hz
发动机转速	rpm	1800	1500	1800	1500
发动机怠速	r/min	700-800	700-800	700-800	700-800
总输出功率	kW(HP)	392 (525)	392 (525)	358 (480)	358 (480)
平均有效压力	kPa(PSI)	1867 (271)	2240 (325)	1705 (247)	2046 (297)
摩擦功率	kW(HP)	43.8 (59)	31.4 (42)	43.8 (59)	31.4 (42)
进气流量	L/s (ft ³ /min)	552 (1169)	511 (1083)	550 (1164)	474 (1004)
增压后空气流量	kg/h(lb/min)	2317 (85)	2140 (78)	2305 (85)	1988 (73)
增压后压力	kPa(PSI)	235 (34)	242 (35)	221 (32)	216 (31)
增压后温度	°C (°F)	190 (374)	195 (383)	160 (320)	178 (352)
排气温度	°C (°F)	493 (919)	500 (932)	459 (859)	489 (912)
排气流量	L/s (ft ³ /min)	1410 (2988)	1284 (2721)	1328 (2814)	1227 (2600)
排气散热量	kW(BTU/min)	350 (19904)	324 (18425)	328 (18653)	293 (16662)
散失到环境中的热量	kW(BTU/min)	20 (1137)	19 (1080)	18 (1024)	18 (1024)
散失到燃油中的热量	kW(BTU/min)	8.8 (500)	8.0 (455)	5.8 (330)	5.5 (313)
冷却水散热量	kW(BTU/min)	144 (8189)	141 (8018)	134 (7620)	127 (7222)
空空中冷散热量	kW(BTU/min)	89 (5061)	87 (4948)	85 (4834)	72 (4094)

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Engine Performance Data
 Chongqing Cummins
 Chongqing, China
<http://www.cummins.com>

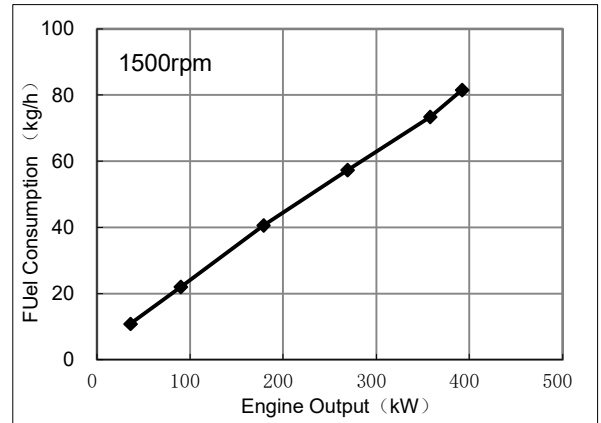
Revision
20210706

Configuration D093677GX03	CPL 4691
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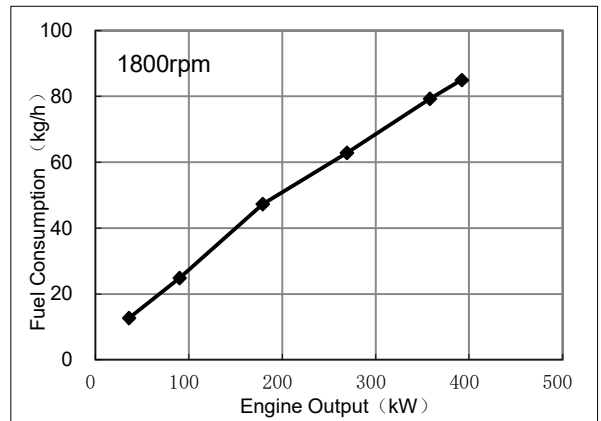
Compression Ratio	16.7:1	Displacement	14L (855 in3)
Fuel System	CELECT	Aspiration	Turbocharged and Charge Air Cooled
Emission Certification	STG IIIA, NRMM 3		

1500	392	525	358	480	321	430
1800	392	525	358	480	321	430

100	525	392	0.342	0.208	179.7	81.5
100	480	358	0.337	0.205	161.8	73.4
75	360	269	0.351	0.213	126.3	57.3
50	240	179	0.372	0.226	89.3	40.5
25	120	90	0.404	0.244	48.5	22.0
10	48	36	0.496	0.300	23.8	10.8
100	430	321	0.342	0.208	147.3	66.8



100	525	392	0.357	0.217	38.6	85.0
100	480	358	0.364	0.222	174.8	79.3
75	360	269	0.385	0.234	138.5	62.8
50	240	179	0.435	0.265	104.4	47.4
25	120	90	0.457	0.276	54.9	24.9
10	48	36	0.582	0.352	27.9	12.7
100	430	321	0.382	0.232	164.2	74.5



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

All data are based on 15 in H₂O(3.7kPa) air intake restriction and 3.0 in Hg (10kPa) exhaust restriction.

The fuel consumption data is based on with No. 2 diesel fuel or a fuel corresponding to ASTM D2. 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.

朱崇



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. Negotiated power outages contracted with a utility company are not considered an emergency.

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.

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 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 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

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 Prime Power rating should use the Continuous Power rating.

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 4,921 ft.(1500 m) and 104°F (40°C) without power deration.

1500RPM up to 4,921 ft.(1500 m) and 104°F (40°C) without power deration.

For sustained operation above these conditions, derate by 4% per 984 ft. (300 m), and 1% per 10°F (2% per 11°C).

General Engine Data

Type		6-Cylinder;In-line;4-Cycle	
Aspiration		Turbocharged and Charge Air Cooled	
Bore x Stroke	— in.×in. (mm×mm)	5.5x6.0	140x152
Displacement	— in. ³ (L)	855	14
Compression Ratio		16.7:1	
Firing Order		1-5-3-6-2-4	
Dry Weight			
--Including Flywheel and Generator			
Excluding other Electrical Component	— lb. (kg)	3219	(1460)
Wet Weight			
--Engine Only	— lb. (kg)	3330	(1510)
Moment of Inertia of Rotating Components			
- With FW1010 Flywheel	— lb.·ft. ² (kg·m ²)	118.5	(4.99)
Center of Gravity			
--From Front Face of Block	— in.(mm)	22.67	(575.7)
--From Engine Centerline to Left Side of Engine (as view from rear of engine)	— in.(mm)	0.51	(12.9)
--above crankshaft centerline	— in.(mm)	6.48	(164.6)

ENGINE MOUNTING

Max Bending Moment at Rear Face of Block	— lb-ft (N.m)	1000	(1356)
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EXHAUST SYSTEM

Maximum Allowable Back Pressure	— in.Hg (kPa)	3.0	(10)
Recommended Exhaust Pipe Diameter	— in.(mm)	5.0	(127)

AIR INDUCTION SYSTEM

Maximum Allowable Intake Air Restriction			
--with Dirty Filter Element	— in.H ₂ O(kPa)	25	(6.2)
--with Heavy Duty Air Cleaner and Clean Filter Element	— in.H ₂ O(kPa)	15	(3.7)
Maximum Allowable Intake Air Temperature ΔT	— °F (°C)	30	(17)

COOLING SYSTEM

Coolant Capacity - Engine Only	— U.S. gal (L)	5.5	(21.0)
Maximum Coolant Friction Head External to Engine	— PSI (kPa)	5	(34.5)
Maximum Static Head of Coolant Above Engine Crank Centerline	— ft. (m)	46	(14)
Standard Thermostat (Modulating) Range	— °F (°C)	180-202	(82-94)
Minimum Allowable Pressure Cap	— PSI (kPa)	10	(69)
Maximum Top Tank Temperature for Standby/PrimePower	— °F (°C)	220/212	(104/100)
Minimum Top Tank Temperature	— °F (°C)	160	(71)
Minimum Coolant Expansion Space - % of System Capacity		6	
Max Air Pressure Drop from Turbo Air Outlet to Intake Manifold	— kPa (in.Hg)	13.5	(4)
Max Intake Manifold Temperature @ 77°F(25°C) Ambient	— °F (°C)	140	(60)
Max CAC Outlet delta Temperature at an ambient of ≥77°F(25°C)	— °F (°C)	63	(35)

Max Intake Manifold Air Temperature Derate/Alarm	— °F (°C)	185	(85)
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LUBRICATION SYSTEM

Oil Pressure @ Idle Speed	— PSI (kPa)	15	(103)
@ Governed Speed	— PSI (kPa)	35-50	(241-345)
Maximum Allowable Oil Temperature	— °F (°C)	250	(121)
Oil Pan Capacity - Low / High	— U.S. gal. (L)	7.5/9.5	(28.4/36.0)
Total System Capacity	— U.S. gal. (L)	10.2	(38.6)
Angularity of Oil Pan - Front Down/Front Up/Side to Side		38°	

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FUEL SYSTEM

Type Injection System		SELECT	
Maximum Fuel Supply Restriction at Fuel Pump Inlet			
-- With Clean Fuel Filter	— in Hg (kPa)	6	(20)
-- With Dirty Fuel Filter	— in Hg (kPa)	10	(34)
Maximum Fuel Drain Restriction (total head)			
-- With Check Valve	— in Hg (kPa)	6.5	(22)
-- Without Check Valve	— in Hg (kPa)	2.5	(8.5)
Max Supply Fuel Flow @1500/1800rpm	— lb/hr(kg/hr)	562/606	(255/275)
Max Return Fuel Flow @1500/1800rpm	— lb/hr(kg/hr)	386/430	(175/195)
Maximum Fuel Inlet Temperature	— °F (°C)	160	(71)

ELECTRICAL SYSTEM

System Voltage	— volt	24	
Minimum Recommended Battery Capacity for Engine only			
-- cold cranking amperes @ cold soak at 50°F(10°C) and above	— CCA	600	
-- cold cranking amperes @ cold soak at 32°F-50°F(0°C-10°C)	— CCA	640	
-- cold cranking amperes @ cold soak at 0°F-32°F(-18°C-0°C)	— CCA	900	
-- reserve capacity (RC) @ cold soak at 0°F(-18°C) or above	— min	320	
Max Starting Circuit Resistance	— Ohm	0.002	

Cold Start Capability

Cold Start Capability			
--Minimum Cranking Speed	— r/min	130	
--Minimum Ambient Temp for Unaided Cold Start	— °F (°C)	10.4	(-12)

Performance Data

		Standby Power		Prime Power	
		60Hz	50Hz	60Hz	50Hz
Governed Engine Speed	rpm	1800	1500	1800	1500
Engine Idle Speed	rpm	700-800	700-800	700-800	700-800
Gross Engine Power Output	HP(kW)	525 (392)	525 (392)	480 (358)	480 (358)
Brake Mean Effective Pressure	PSI(kPa)	272 (1867)	325 (2240)	247 (1705)	297 (2046)
Friction Power	HP(kW)	59 (43.8)	42 (31.4)	59 (43.8)	42 (31.4)
Intake Air Flow	ft ³ /min (L/s)	1169 (552)	1083 (511)	1164 (550)	1004 (474)
Charge Air Flow	lb/min (kg/h)	85 (2317)	78 (2140)	85 (2305)	73 (1988)
Turbo Comp Outlet Pressure	PSI(kPa)	34 (235)	35 (242)	32 (220.88)	31 (216)
Turbo Comp Outlet Temp	°F (°C)	374 (190)	383 (195)	320 (160.01)	352 (178)
Exhaust Gas Temperature	°F (°C)	919 (493)	932 (500)	859 (459.36)	912 (489)
Exhaust Gas Flow	ft ³ /min(L/s)	2988 (1410)	2721 (1284)	2814 (1328)	2600 (1227)
Heat Rejection to Exhaust	BTU/min (kW)	19904 (350)	18425 (324)	18653 (328)	16662 (293)
Heat Rejection to Ambient	BTU/min (kW)	1137 (20)	1080 (19)	1024 (18)	1024 (18)
Heat Rejection to Fuel	BTU/min (kW)	500 (8.8)	455 (8)	330 (5.8)	313 (5.5)
Heat Rejection to Exhaust	BTU/min (kW)	8189 (144)	8018 (141)	7620 (134)	7222 (127)
Heat Rejected to Aftercooler	BTU/min (kW)	5061 (89)	4948 (87)	4834 (85)	4094 (72)

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