



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

G-Drive
QSNT-G4
FR11714

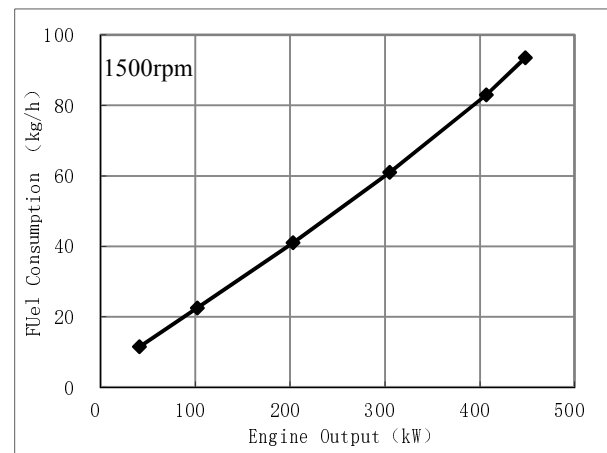
Revision
13-Dec-17
Configuration
D093677GX03
CPL
5304

Compression Ratio 14:1
Fuel System CELECT
Emission Certification
Displacement 14L (855 in³)
Aspiration Turbocharged and Charge Air Cooled

Engine Speed	Standby Power		Prime Power		Continuous Power	
rpm	kW	HP	kW	HP	kW	HP
1500	448	600	407	545	-	-
1800	-	-	-	-	-	-

Engine Performance Data @ 1500 rpm

Output Power			Fuel Consumption			
%	HP	kW	lb/hp·h	kg/kW·h	lb/h	kg/h
Standby Power						
100	600	448	0.071	0.209	42.4	93.5
Prime Power						
100	545	407	0.069	0.204	37.6	83.0
75	409	305	0.068	0.200	27.7	61.0
50	273	203	0.068	0.202	18.6	41.0
25	136	102	0.075	0.221	10.2	22.5
10	55	41	0.096	0.280	5.2	11.5
Continuous Power						
NA						



Engine Performance Data @ 1800 rpm

Not Available at 1800 RPM

Not Available at 1800 RPM

Data Subject to Change Without Notice

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.

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 No. 2 diesel fuel. 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: Preliminary
Tolerance: ±5%

Chief Engineer:
Guan Rong

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 is 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 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

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.

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:

1800 RPM is not applicable.

1500 RPM up to 3280 ft. (1000 m) and 104 °F (40 °C) without power deration.

For sustained operation above these conditions, derated by 4% per 1,000 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		14:1	
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 ≥25°C(77°F)	— °F (°C)	63	(35)
Max Intake Manifold Air Temperature Derate/Alarm	— °F (°C)	185	(85)

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°	

FUEL SYSTEM

Type Injection System

CELECT

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 (255)

Max Return Fuel Flow @1500/1800rpm

— lb/hr(kg/hr) 386 (175)

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		1500		1500
Engine Idle Speed	rpm		700-800		700-800
Gross Engine Power Output	HP(kW)		600 (448)		545 (407)
Brake Mean Effective Pressure	PSI(kPa)		371 (2560)		337 (2326)
Friction Power	HP(kW)		42 (31.4)		42 (31.4)
Intake Air Flow	ft ³ /min (L/s)		1110 (524)		1030 (486)
Charge Air Flow	lb/min (kg/h)		82 (2236)		76 (2075)
Turbo Comp Outlet Pressure	PSI(kPa)	Not Available @1800 RPM	36 (251)	Not Available @1800 RPM	32 (224)
Turbo Comp Outlet Temp	°F (°C)		376 (191)		345 (174)
Exhaust Gas Temperature	°F (°C)		963 (517)		943 (506)
Exhaust Gas Flow	kg/h		2319		2152
Heat Rejection to Exhaust	BTU/min (kW)		19108 (336)		17288 (304)
Heat Rejection to Ambient	BTU/min (kW)		1365 (24)		1308 (23)
Heat Rejection to Fuel	BTU/min (kW)		313 (5.5)		216 (3.8)
Heat Rejection to Exhaust	BTU/min (kW)		12795 (225)		11544 (203)
Heat Rejected to Aftercooler	BTU/min (kW)		4948 (87)		4094 (72)