Engine Performance Data	G-Drive	Date
Cummins Inc. Columbus, Indiana 47202-3005 http://www.cummins.com	**QSK19-G14** **FR4791**	2-Aug-19

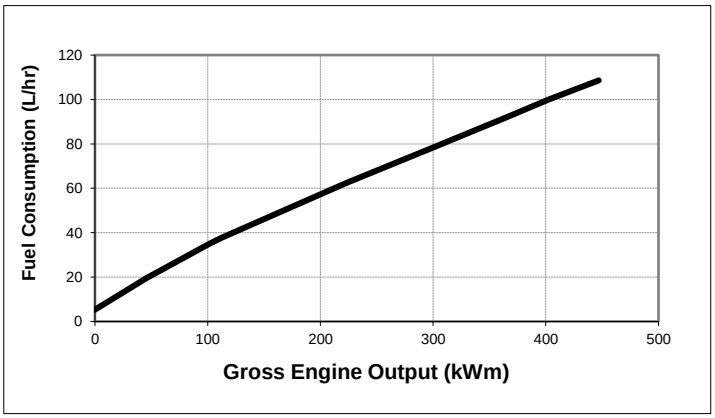
Configuration	CPL	Revision
D193103GX03	4382	0

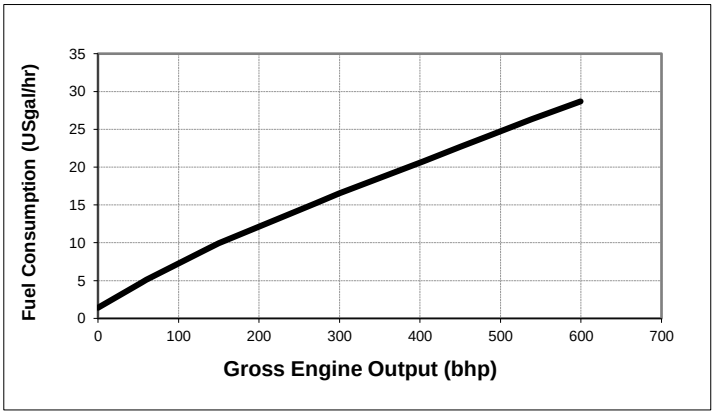
Compression Ratio	15.8:1	**Displacement**	18.9 L (1150 in³)
Fuel System	Cummins MCRS	**Aspiration**	Turbocharged and Charge Air Cooled
Aftertreatment	0	**Emission Compliance**	Noncertified EPA Tier 3

Engine Speed	Standby Power		Prime Power		Continuous Power	
rpm	kWm	bhp	kWm	bhp	kWm	bhp
1500	447	599	402	539	362	486

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	447	599	0.207	0.340	108.6	28.7
75	335	450	0.217	0.357	85.7	22.7
50	224	300	0.238	0.391	62.6	16.5
25	112	150	0.286	0.470	37.6	9.9
10	45	60	0.366	0.602	19.3	5.1
Prime Power						
100	402	539	0.211	0.347	99.7	26.3
75	302	404	0.222	0.364	78.6	20.8
50	201	270	0.243	0.399	57.5	15.2
25	101	135	0.293	0.481	34.6	9.1
Continuous Power						
100	362	486	0.214	0.352	91.3	24.1





Note: The values on this datasheet have not been verified and are pending design review. There is a high possibility some values are inaccurate.

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 500 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 CEB00150 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.

The fuel consumption data is based on No. 2 diesel fuel weight at 0.850 kg/L. 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 : Jianguo Wu

1500 rpm Power Derate Tables

Standby

Standby Power Altitude Capability (kWm)											
Ambient Operating Temp. (°F)		77.0	86.0	95.0	104.0	108.5	113.0	117.5	122.0	126.5	131.0
Ambient Operating Temp. (°C)		25.0	30.0	35.0	40.0	42.5	45.0	47.5	50.0	52.5	55.0
Altitude (ft)	Altitude (m)										
0	0	447	447	447	447	447	447	447	447	447	447
328	100	447	447	447	447	447	447	447	447	447	447
656	200	447	447	447	447	447	447	447	447	447	447
984	300	447	447	447	447	447	447	447	447	447	447
1312	400	447	447	447	447	447	447	447	447	447	447
1640	500	447	447	447	447	447	447	447	447	447	447
1969	600	447	447	447	447	447	447	447	447	447	447
2625	800	447	447	447	447	447	447	447	447	447	447
3281	1000	447	447	447	447	447	447	447	447	447	447
3937	1200	447	447	447	447	447	447	447	447	447	447
4593	1400	447	447	447	447	447	447	447	447	447	447
5249	1600	447	447	447	447	447	447	447	447	447	447
5906	1800	447	447	447	447	447	447	447	447	447	447
6562	2000	447	447	447	447	447	447	447	447	447	447
Maximum Altitude Capability(ft)		12612	11829	11046	10264	9872	9481	9089	8698	8306	7915
Maximum Altitude Capability(m)		3844	3606	3367	3128	3009	2890	2770	2651	2532	2412

Prime

Prime Power Altitude Capability (kWm)											
Ambient Operating Temp. (°F)		77.0	86.0	95.0	104.0	108.5	113.0	117.5	122.0	126.5	131.0
Ambient Operating Temp. (°C)		25.0	30.0	35.0	40.0	42.5	45.0	47.5	50.0	52.5	55.0
Altitude (ft)	Altitude (m)										
0	0	402	402	402	402	402	402	402	402	402	402
328	100	402	402	402	402	402	402	402	402	402	402
656	200	402	402	402	402	402	402	402	402	402	402
984	300	402	402	402	402	402	402	402	402	402	402
1312	400	402	402	402	402	402	402	402	402	402	402
1640	500	402	402	402	402	402	402	402	402	402	402
1969	600	402	402	402	402	402	402	402	402	402	402
2625	800	402	402	402	402	402	402	402	402	402	402
3281	1000	402	402	402	402	402	402	402	402	402	402
3937	1200	402	402	402	402	402	402	402	402	402	402
4593	1400	402	402	402	402	402	402	402	402	402	402
5249	1600	402	402	402	402	402	402	402	402	402	393
5906	1800	402	402	402	402	402	402	402	398	384	370
6562	2000	402	402	402	402	402	402	388	374	360	346
Maximum Altitude Capability(ft)		9701	8918	8135	7352	6960	6569	6178	5786	5395	5003
Maximum Altitude Capability(m)		2957	2718	2480	2241	2122	2002	1883	1764	1644	1525

Continuous

Continuous Power Altitude Capability (kWm)											
Ambient Operating Temp. (°F)		77.0	86.0	95.0	104.0	108.5	113.0	117.5	122.0	126.5	131.0
Ambient Operating Temp. (°C)		25.0	30.0	35.0	40.0	42.5	45.0	47.5	50.0	52.5	55.0
Altitude (ft)	Altitude (m)										
0	0	362	362	362	362	362	362	362	362	362	362
328	100	362	362	362	362	362	362	362	362	362	362
656	200	362	362	362	362	362	362	362	362	362	362
984	300	362	362	362	362	362	362	362	362	362	362
1312	400	362	362	362	362	362	362	362	362	362	362
1640	500	362	362	362	362	362	362	362	362	362	362
1969	600	362	362	362	362	362	362	362	362	362	362
2625	800	362	362	362	362	362	362	362	362	362	355
3281	1000	362	362	362	362	362	362	362	359	347	334
3937	1200	362	362	362	362	362	362	351	338	326	314
4593	1400	362	362	362	362	354	342	330	318	306	294
5249	1600	362	362	362	346	334	322	310	298	286	273
5906	1800	362	362	350	326	314	302	289	277	265	253
6562	2000	362	354	330	306	293	281	269	257	245	233
Maximum Altitude Capability(ft)		7087	6304	5521	4738	4347	3955	3564	3172	2781	2390
Maximum Altitude Capability(m)		2160	1922	1683	1444	1325	1206	1086	967	848	728

Altitude derate data is based on a 0°C air temperature rise over ambient at the compressor inlet and 50 °C LAT cooling system capability. Please contact Application Engineering if the air temperature rise over ambient exceeds this value.

Please contact Application Engineering for operation above table temperature or altitude values.

SAE AS210 Table A15 was referenced for standard day temperature and barometric pressure versus altitude.

General Engine Data

Installation Drawing Number		0	
Type		Four Cycle ; Inline ; 6 Cylinder	
Aspiration		Turbocharged and Charge Air Cooled	
Bore x Stroke	in x in (mm x mm)	6.25 x 6.25	(159 x 159)
Displacement	in^3 (L)	1150	(18.9)
Compression Ratio		15.8:1	
Dry Weight (Approximate)	lbm (kg)	4348	(1972)
Wet Weight (Approximate)	lbm (kg)	4568	(2072)
Aftertreatment Weight (Approximate)	lbm (kg)	N/A	(N/A)
Moment of Inertia of Rotating Components			
with FW 4568 Flywheel, SAE 0	lbm • ft² (kg • m²)	195.0	(8.2)
Center of Gravity from Rear Face of Block	in (mm)	24.0	(609.6)
Center of Gravity Above Crankshaft Centerline	in (mm)	11.0	(279.4)

Engine Mounting

Max Bending Moment at Rear Face of Block	lb • ft (N • m)	1000	(1356)

Exhaust System

Max Allowable Static Bending Moment @ Exhaust Outlet Flange	lb • ft (N • m)	0	(N/A)
Max Back Pressure at Standby Power (Exhaust Outlet)	in Hg (kPa)	0.0	(0)

Air Induction System

Max Air Temperature Rise Over Ambient At Compressor Inlet	°F (°C)	0	(-18)
Max Intake Air Restriction			
With Normal Duty Air Cleaner and Clean Filter Element	in H_2O (kPa)	10.0	(2.5)
With Heavy Duty Air Cleaner and Clean Filter Element	in H_2O (kPa)	0.0	(0)
With Dirty Filter Element	in H_2O (kPa)	25.0	(6.2)

Cooling System

Jacket Water/ High Temperature Circuit Requirements			
Max Coolant Friction Head External to Engine (1500 rpm)	psi (kPa)	5.0	(34.5)
Engine Water Flow at Stated Friction Head External to Engine:			
1 psi Friction Head (1500 rpm)	US gpm (L/m)	128	(485)
Maximum Friction Head (1500 rpm)	US gpm (L/m)	118	(447)
Coolant Capacity - Engine High Temperature Circuit	US gal (L)	11.0	(41.6)
Minimum Pressure Cap Rating at Sea Level	psi (kPa)	7.0	(48.3)
Max Static Head of Coolant Above Crankshaft Centerline	ft (m)	60.0	(18.3)
Max Coolant (Top Tank) Temperature for Standby/Prime Power	°F (°C)	219 / 212	(104 / 100)
Thermostat (Modulating) Range	°F (°C)	0 - 0	(-18 - -18)
Low Temperature Circuit (LTC) Requirements			
Max Coolant Friction Head External to Engine (1500 rpm)	psi (kPa)	0.0	(N/A)
Aftercooler Water Flow at Stated Friction Head External to Engine:			
psi Friction Head (1500 rpm)	US gpm (L/m)	0	(N/A)
Maximum Friction Head (1500 rpm)	US gpm (L/m)	0	(N/A)
Max Coolant Temp into LTC @ 77°F (25°C) Ambient	°F (°C)	0	(-18)
Max Coolant Temperature into LTC @			
Limiting Ambient Conditions for Standby/Prime Power	°F (°C)	0 / 0	(-18 / -18)
Thermostat (Modulating) Range	°F (°C)	0 - 0	(-18 - -18)
Coolant Capacity - Engine Low Temperature Circuit	US gal (L)	0.0	(N/A)
Charge Air Cooler Requirements			
Max Allowable Pressure Drop Across Charge Air Cooler and OEM CAC piping (1800 rpm)	in Hg (kPa)	3.0	(10.1)
Max Charge Air Cooler Outlet to Ambient at 77°F (25°C)(CAC dT)	Δ°F (Δ°C)	38	(21)
Max CAC Outlet Temperature at <=25 °C (77 °F) Ambient	°F (°C)	115	(64)

Lubrication System

Oil Pressure at Minimum Idle Speed	psi (kPa)	20	(138)
Oil Pressure at Governed Speed	psi (kPa)	N/A - 70	(N/A - 483)
Max Oil Temperature	°F (°C)	250	(121)
Oil Capacity : Low - High	US gal (L)	16 - 19	(61 - 72)
Total System Capacity (with Spin-On Filters)	US gal (L)	22	(83)

Fuel System

Max Allowable Fuel Supply Restriction at Stage 1 Filter Inlet	in Hg (kPa)	0.0	(N/A)
Max Allowable Head on Injector Return Line			
(Consisting of Friction Head and Static Head)	in Hg (kPa)	10.0	(33.8)
Max Fuel Inlet Temperature	°F (°C)	160	(71)
Max Supply Fuel Flow	US gph (L/hr)	0	(N/A)
Max Return Fuel Flow	US gph (L/hr)	65	(246)

Electrical System

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

Cold Start Capability

Unaided Cold Start			
Minimum Cranking Speed	rpm	150	
Minimum Ambient Temp for Unaided Cold Start	°F (°C)	10	(-12)

Performance Data

Minimum Low Idle Speed	rpm	700	
Maximum Low Idle Speed	rpm	0	

		STANDBY	PRIME	CONTINUOUS
		50 Hz	50 Hz	50 Hz
Governed Engine Speed	rpm	1500	1500	1500
Gross Engine Power Output	bhp (kWm)	599 (447)	539 (402)	486 (362)
Brake Mean Effective Pressure	psi (kPa)	274 (1890)	247 (1704)	222 (1531)
Friction Power	hp (kWm)	N/A (N/A)	N/A (N/A)	N/A (N/A)
Intake Air Flow	ft^3/min (L/sec)	1363 (644)	1279 (604)	1214 (573)
Exhaust Gas Temp	°F (°C)	890 (477)	900 (483)	890 (477)
Exhaust Gas Flow	ft^3/min (L/sec)	3426 (1617)	3215 (1518)	3044 (1437)
Air:Fuel Ratio		29.3:1	29.7:1	30.9:1
Radiated Heat to Ambient	BTU/min (kWm)	2483 (44)	2280 (41)	2088 (37)
Heat to JW Radiator	BTU/min (kWm)	9112 (161)	6575 (116)	5851 (103)
Heat to Exhaust	BTU/min (kWm)	22398 (394)	21003 (370)	19670 (346)
* Heat to Fuel	BTU/min (kWm)	N/A (N/A)	0 (0)	0 (0)
Heat to Aftercooler Radiator	BTU/min (kWm)	5972 (106)	5129 (91)	4547 (80)
Charge Air Flow	lb/min (kg/min)	100 (46)	93 (43)	88 (40)
Turbo Comp Outlet Pressure	psi (kPa)	31.9 (220)	29 (200)	26 (180)
Turbo Comp Outlet Temp	°F (°C)	363 (184)	346 (175)	328 (165)

* This is the maximum heat rejection to fuel.

Noise Emissions

Frequency (Hz) Sound Power dB(A)[123]		31.5	63	125	250	500	1000	2000	4000	8000	16000	Overall
1500 rpm 50 Hz	Engine[4]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Exhaust[5]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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)

4. Engine with "typical Radiator and fan", Sound Power (dB).
5. Engine Exhaust at 1 Meter from open stack, Sound Pressure (dB).

Emissions Data

ATTENTION: This data was taken from a single engine test according to the Test Methods and Conditions specified. This data is subject to instrumentation, measurement, and engine-to-engine variability. Field emissions test data is not guaranteed to these levels. For air permit programs, please contact Application Engineering for expected site variation.

Nominal Exhaust Emissions Data @ 1500 rpm

		STANDBY			PRIME			CONTINUOUS		
Component		g/bhp-hr	mg/Nm^3	PPM	g/bhp-hr	mg/Nm^3	PPM	g/bhp-hr	mg/Nm^3	PPM
HC	(Total Unburned Hydrocarbons)	0.04	32	16	0.05	35	17	0.06	41	19
NOx	(Oxides of Nitrogen as NO_2)	3.42	655	323	3.11	576	280	2.84	517	243
CO	(Carbon Monoxide)	0.49	180	89	0.70	250	122	0.96	327	154
PM	(Particulate Matter)	0.02	0	N/A	0.04	0	N/A	0.09	0	N/A
SO_2	(Sulfur Dioxide)	0.004	0.9	0.4	0.005	0.9	0.4	0.005	0.8	0.3
CO_2	(Carbon Dioxide)	484	110230	56139	495	108558	55288	509	104728	53337

Note: mg/Nm^3 and PPM numbers are measured dry and corrected to 5% O_2 content.

mg/Nm^3 values are normalized to standard temperature and pressure (0°C, 101.325 kPA).

Test Methods and Conditions:

Steady-State emissions recorded per ISO8178-1 during operation at rated engine speed (+/- 2%) and stated constant load (+/-2%) with engine temperatures, pressures, and emission rates stabilized.

Fuel Specification:

52-54 Cetane Number (EU), 42-48 Cetane Number (EPA), 0.0015 Max. Wt. % Sulfur as referenced by directive 97/68/EC.

Reference:

25 °C (77°F) Air inlet Temperature, 40 °C (104°F) Fuel inlet Temperature, 100 kPa (29.53 in Hg) Barometric Pressure; 10.7 g/kg (75 grains H2O/lb) of dry air Humidity (required for NOx correction): Intake Restriction set to Max allowable limit for clean filter; Exhaust Back Pressure set to Max allowable limit.