

## Generator set data sheet

### 995 kW continuous



<b>Model:</b>	<b>C995 N5C</b>
<b>Frequency:</b>	<b>50 Hz</b>
<b>Fuel type:</b>	<b>Natural gas MI 60 +</b>
<b>Emissions NOx:</b>	<b>500 mg/Nm<sup>3</sup></b>
<b>LT water inlet temp:</b>	<b>40 °C (104 °F)</b>
<b>HT water outlet temp:</b>	<b>90 °C (194 °F)</b>

<b>Measured sound performance data sheet:</b>	MSP-1067
<b>Prototype test summary data:</b>	PTS-287
<b>Generator set outline drawing:</b>	A029E093 heavy duty air cleaner A029U550 standard air cleaner

<b>Fuel consumption (ISO3046/1)</b>	<b>100% load</b>	<b>90% load</b>	<b>75% load</b>	<b>50% load</b>
Fuel consumption (LHV) ISO3046/1, kW (MMBTU/hr) <sup>1,2,3,4,5,7</sup>	2450 (8.37)	2241 (7.65)	1933 (6.6)	N/A
Mechanical efficiency ISO3046/1, percent <sup>1,2,4,5,7</sup>	41.9%	41.3%	40.1%	N/A
Electrical efficiency ISO3046/1, percent <sup>1,2,3,4,5,7</sup>	40.6%	40.0%	38.6%	N/A

### Engine

Engine manufacturer	Cummins
Engine model	QSK60G
Configuration	V16
Displacement, L (cu.in.)	60 (3671)
Aspiration	Turbocharged (1)
Gross engine power output, kWm (hp)	1027 (1377)
BMEP, bar (psi)	19.4 (281)
Bore, mm (in.)	159 (6.26)
Stroke, mm (in.)	190 (7.48)
Rated speed, rpm	1500
Piston speed, m/s (ft/min)	9.5 (1870)
Compression ratio	13.7:1
Lube oil capacity, L (qt)	380 (400)
Overspeed limit, rpm	1875
Regenerative power, kW	N/A
Full load lubricating oil consumption, g/kWe-hr (g/hp-hr)	0.15 (0.12)

### Fuel system

Gas supply pressure to engine inlet, bar (psi) <sup>8</sup>	0.2 (2.9)
Minimum methane index	60

## Engine electrical system(s)

Electric starter voltage, volts	24
Ignition timing, deg before top dead center	18
Minimum battery capacity @ 40 °C (104 °F), AH	720

## Genset dimensions

Genset length, m (ft) <sup>6</sup>	5.12 (16.8)
Genset width, m (ft) <sup>6</sup>	2.23 (7.30)
Genset height, m (ft) <sup>6</sup>	2.77 (9.08)
Genset weight (wet), kg (lbs) <sup>6</sup>	14440 (31770)

### Notes:

1. At ISO3046 reference conditions, altitude 1013 mbar (30 in. Hg), air inlet temperature 25 °C (77 °F).
2. Power output and efficiency include the effect of Cummins supplied engine driven coolant pumps.
3. At electrical output of 1.0 power factor.
4. Based on pipeline natural gas with LHV of 33.44 MJ/Nm<sup>3</sup> (905 BTU/ft<sup>3</sup>).
5. Subtract 3 °C ambient temperature capability for each 100 mm (4 in.) H<sub>2</sub>O back pressure above the information shown on page 2.
6. Weights and dimensions represent a generator set with its standard features only. See outline drawing for other configurations.
7. According to ISO3046/1 with fuel consumption tolerance of +5% -0%.
8. Minimum gas supply pressure dependant on LHV of fuel.

	100% load	90% load	75% load	50% load
<b>Energy data</b>				
Continuous generator electrical output kW <sub>e</sub> <sup>1,5,6,7</sup>	995	896	746	N/A
Continuous shaft power, kW <sub>m</sub> (bhp) <sup>1,5,6,7</sup>	1027 (1377)	925 (1240)	774 (1038)	N/A
Total heat rejected in LT circuit, kW (MMBTU/h) <sup>2</sup>	79 (0.27)	73 (0.25)	64 (0.22)	N/A
Total heat rejected in HT circuit, kW (MMBTU/h) <sup>2</sup>	483 (1.65)	436 (1.49)	366 (1.25)	N/A
Unburnt, kW (MMBTU/h) <sup>2</sup>	62 (0.21)	56 (0.19)	47 (0.16)	N/A
Heat radiated to ambient, kW (MMBTU/h) <sup>2</sup>	159 (0.54)	146 (0.5)	128 (0.44)	N/A
Available exhaust heat to 105 °C, kW (MMBTU/h) <sup>2</sup>	606 (2.07)	561 (1.91)	496 (1.69)	N/A
<b>Intake air flow</b>				
Intake air flow mass, kg/s (lb/hr) <sup>2</sup>	1.44 (11400)	1.3 (10300)	1.1 (8710)	N/A
Intake air flow volume, m <sup>3</sup> /s @ 0 °C (scfm) <sup>2</sup>	1.12 (2500)	1.01 (2260)	0.85 (1900)	N/A
Max inlet restriction (after filter, limit for changing filters), below 35 °C ambient temp, mm HG, (in H <sub>2</sub> O)	14.7 (7.9)	11.9 (6.4)	8.3 (4.4)	N/A
Max inlet restriction (after filter, limit for changing filters), above 35 °C ambient temp, mm HG, (in H <sub>2</sub> O)	9.5 (5.1)	7.7 (4.1)	5.4 (2.9)	N/A
<b>Exhaust air flow</b>				
Exhaust gas flow mass, kg/s (lb/hr) <sup>2</sup>	1.49 (11800)	1.35 (10690)	1.14 (9030)	N/A
Exhaust gas flow volume, m <sup>3</sup> /s (cfm) <sup>2</sup>	3.14 (6650)	2.89 (6120)	2.49 (5270)	N/A
Exhaust temp after turbine, °C (°F) <sup>1</sup>	472 (882)	482 (900)	497 (927)	N/A
Max exhaust system back pressure, mm HG (in H <sub>2</sub> O) <sup>8</sup>	20 (11)	16 (9)	11 (6)	N/A
<b>HT cooling circuit</b>				
HT circuit engine coolant volume, l (gal)	181 (48)	181 (48)	181 (48)	N/A
HT coolant flow @ max ext restriction, m <sup>3</sup> /h (gal/min)	70 (308)	70 (308)	70 (308)	N/A
Max HT engine coolant inlet temp, °C (°F) reference <sup>3</sup>	81 (178)	82 (180)	83 (181)	N/A
HT coolant outlet temp, °C (°F) <sup>3</sup>	90 (194)	90 (194)	90 (194)	N/A
Max pressure drop in external HT circuit, bar (psig)	1 (15)	1 (15)	1 (15)	N/A
HT circuit max pressure, bar (psig)	5 (73)	5 (73)	5 (73)	N/A
Static head pump inlet, bar (psig)	0.5-1.5 (7-20)	0.5-1.5 (7-20)	0.5-1.5 (7-20)	N/A
<b>LT cooling circuit</b>				
LT circuit engine coolant volume, l (gal)	34 (9)	34 (9)	34 (9)	N/A
LT coolant flow @ max ext restriction, m <sup>3</sup> /h (gal/min)	23 (101)	23 (101)	23 (101)	N/A
Max LT engine coolant inlet temp, thermostat controlled °C (°F) <sup>4</sup>	40 (104)	40 (104)	40 (104)	N/A
Max pressure drop in external LT circuit, bar (psig)	1 (15)	1 (15)	1 (15)	N/A
LT circuit max pressure, bar (psig)	5 (73)	5 (73)	5 (73)	N/A
Static head pump inlet, bar (psig)	0.5-1.5 (7-20)	0.5-1.5 (7-20)	0.5-1.5 (7-20)	N/A

#### Notes:

1. At ISO3046 reference conditions, altitude 1013 mbar (30 in. Hg), air inlet temperature 25 °C (77 °F).
2. Production variation/tolerance ±5%.
3. Outlet temperature controlled by thermostat. Inlet temperature for reference only.
4. Inlet temperature controlled by thermostat to 40 °C but is allowed to go to 50 °C and ignition timing is retarded resulting in efficiency loss of 0.4 - 0.6%.
5. Power output and efficiency include the effect of Cummins supplied engine driven LT coolant pump.
6. At electrical output of 1.0 power factor.
7. Based on pipeline natural gas with LHV of 33.44 mJ/Nm<sup>3</sup> (905 BTU/ft<sup>3</sup>).
8. Subtract 3 °C ambient temperature capability for each 100 mm (4 in.) H<sub>2</sub>O back pressure above the information shown on page 2.

**Altitude and temperature derate multiplication factor <sup>1.2.3</sup>**

Barometer		Altitude		Table A								
In Hg	mbar	Feet	Meters	Derate multiplier for all operation modes								
20.7	701	9843	3000	1.00	1.00	1.00	1.00	0.99	0.95	0.86	0.75	-
21.4	723	9022	2750	1.00	1.00	1.00	1.00	1.00	0.98	0.88	0.76	-
22.1	747	8202	2500	1.00	1.00	1.00	1.00	1.00	1.00	0.89	0.76	-
22.8	771	7382	2250	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.77	-
23.5	795	6562	2000	1.00	1.00	1.00	1.00	1.00	1.00	0.93	0.78	-
24.3	820	5741	1750	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.79	-
25.0	846	4921	1500	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.79	-
25.8	872	4101	1250	1.00	1.00	1.00	1.00	1.00	1.00	0.99	0.80	-
26.6	899	3281	1000	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.81	-
27.4	926	2461	750	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.82	-
28.3	954	1640	500	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.83	-
29.1	983	820	250	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.83	-
29.5	995	492	150	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.83	-
30.0	1012	0	0	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.83	-
Air filter inlet temperature			°C	0	15	20	25	30	35	40	45	50
			°F	32	59	68	77	86	95	104	113	122

**Methane number vs LT temp - table C <sup>4</sup>**

Methane number	LT return temperature		
	40 °C	45 °C	50 °C
70	Green	Green	Green
65	Green	Green	Yellow
60	Green	Yellow	Yellow
55	Yellow	Yellow	Red
50	Yellow	Red	Red

**Methane number capability table B**

	Load (percent of rated)			
	100%	90%	75%	50%
60	60	60	60	N/A

## Table D altitude and ambient heat rejection factor adjustment for HT and LT circuits

### LT & HT circuit heat rejection calculation procedure

1. Determine derate multiplier vs. temp derate from table A.
2. Using the multiplier from #1 above as the percent load factor, determine the heat rejection.
3. From table D find the HT and LT circuit multiplier.
4. Multiply the result of step 2 by the result of step 3 to obtain the heat rejection at your altitude and temperature.

Barometer		Altitude		Multiplier for HT & LT heat rejection vs alt & temp.									
In Hg	mbar	Feet	Meters										
20.7	701	9843	3000	1.06	1.10	1.11	1.13	1.14	1.15	1.17	1.18	1.19	
21.4	723	9022	2750	1.05	1.09	1.10	1.12	1.13	1.14	1.15	1.17	1.18	
22.1	747	8202	2500	1.04	1.08	1.09	1.10	1.12	1.13	1.14	1.16	1.17	
22.8	771	7382	2250	1.03	1.07	1.08	1.09	1.11	1.12	1.13	1.14	1.16	
23.5	795	6562	2000	1.02	1.06	1.07	1.08	1.09	1.11	1.12	1.13	1.15	
24.3	820	5741	1750	1.01	1.04	1.06	1.07	1.08	1.10	1.11	1.12	1.14	
25.0	846	4921	1500	0.99	1.03	1.05	1.06	1.07	1.09	1.10	1.11	1.12	
25.8	872	4101	1250	0.98	1.02	1.04	1.05	1.06	1.07	1.09	1.10	1.11	
26.6	899	3281	1000	0.97	1.01	1.02	1.04	1.05	1.06	1.08	1.09	1.10	
27.4	926	2461	750	0.96	1.00	1.01	1.03	1.04	1.05	1.07	1.08	1.09	
28.3	954	1640	500	0.95	0.99	1.00	1.02	1.03	1.04	1.05	1.07	1.08	
29.1	983	820	250	0.94	0.98	0.99	1.00	1.02	1.03	1.04	1.06	1.07	
29.5	995	492	150	0.94	0.97	0.99	1.00	1.01	1.03	1.04	1.05	1.06	
30.0	1012	0	0	0.93	0.97	0.98	0.99	1.01	1.02	1.03	1.05	1.06	
Air filter inlet temperature				°C	0	15	20	25	30	35	40	45	50
				°F	32	59	68	77	86	95	104	113	122

### Notes:

1. Ambient temperature is the same as air filter inlet temperature and LT inlet temperature is 10 °C above ambient or 40 °C whichever is higher.
2. Table refers to the capability to run at continuous power level. For short periods of time the genset can run at 5 °C higher temperature with reduced efficiency.
3. Subtract 3 °C ambient temperature capability for each 100 mm (4 in.) H<sub>2</sub>O back pressure above the information shown on page 3.
4. This generator set is capable of operating for short periods of time under with the LT temperature and/or the fuel methane number outside of the recommended limits with decreased performance. Operation in the green area will result in normal performance. Operation in the yellow area is recommended only for short periods of time and will result in reduced efficiency and shorter spark plug life. Operation in the red area is NOT recommended.

### Alternator data

Voltage range	Connection configuration	Temp rise degrees C	Duty cycle <sup>4</sup>	Single phase factor	Maximum surge kVA	Alternator data sheet	Feature code
380-440	Wye, 3 Phase	80	C	N/A	3688	331	B703-2
400-415	Wye, 3 Phase	105	C	N/A	3375	330	B792-2
3300	Wye, 3 Phase	80	C	N/A	4922	323	B592-2
6300-6600	Wye, 3 Phase	80	C	N/A	5250	521	B593-2
10500-11000	Wye, 3 Phase	80	C	N/A	5196	521	B835-2
10000	Wye, 3 Phase	80	C	N/A	5145	521	B794-2

## Continuous rating definition

Applicable for supplying power continuously to a constant load up to the full output rating for unlimited hours. No sustained overload capability is available for this rating. Consult authorized distributor for rating (equivalent to continuous power in accordance with ISO8528, ISO3046, AS2789, DIN6271, and BS5514). This rating is not applicable to all generator set models.

<b>Emissions</b>	<b>100% load</b>	<b>90% load</b>	<b>75% load</b>	<b>50% load</b>
NO <sub>x</sub> emissions dry, ppm <sup>1</sup>	181	181	181	N/A
NO <sub>x</sub> emissions, mg/Nm <sup>3</sup> @ 5% O <sub>2</sub> (g/hp-h) <sup>1</sup>	500 (1)	500 (1)	500 (1)	N/A
THC emissions wet, ppm <sup>2</sup>	1418	1410	1399	N/A
THC emissions, mg/Nm <sup>3</sup> @ 5% O <sub>2</sub> (g/hp-h) <sup>2</sup>	1490 (3.1)	1460 (3.1)	1420 (3.1)	N/A
NMHC emissions wet, ppm <sup>2,3</sup>	213	212	210	N/A
NMHC exhaust emissions, mg/Nm <sup>3</sup> @ 5% O <sub>2</sub> (g/hp-h) <sup>2,3</sup>	220 (0.5)	220 (0.5)	210 (0.5)	N/A
CO emissions (dry), ppm <sup>2</sup>	497	500	504	N/A
CO emissions rate, mg/Nm <sup>3,2</sup> @ 5% O <sub>2</sub> (g/hp-h)	800 (1.6)	800 (1.7)	790 (1.7)	N/A
CO <sub>2</sub> emissions (dry), percent <sup>1</sup>	6.9	7.0	7.2	N/A
O <sub>2</sub> emissions (dry), percent <sup>2</sup>	8.6	8.4	8.2	N/A
Particulates PM10, g/hp-h <sup>2</sup>	<0.03	<0.03	<0.03	N/A

### Notes:

1. Production variation/tolerance ±5%.
2. Tolerance +/- 15%.
3. NMHC emission are an estimate. Actual NMHC emissions are a function of the non-methane hydrocarbons in the fuel.
4. Standby (S), Prime (P), Continuous (C) ratings.
5. Maximum rated starting kVA that results in minimum of 90% of rated sustained voltage during starting.

For more information contact your local Cummins distributor  
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