

Generator set data sheet



Model: DQLH
Frequency: 60 Hz
Fuel type: Ultra-low sulphur diesel (15 ppm sulphur)
kW rating: 2750 Standby
 2500 Prime
 2100 Continuous
Emissions level: EPA Stationary non-Emergency Tier 4

Exhaust emission data sheet Tier 4F:	EDS-1151
Exhaust emission compliance sheet Tier 4F:	EPA-1221
Sound performance data sheet:	MSP-1151
Cooling performance data sheet:	MCP-238
Prototype test summary data sheet:	PTS-307
Remote radiator cooling outline:	A034X495
High ambient air temperature radiator cooling outline (ship loose)	A044U639
Enhanced high ambient radiator cooling outline (ship loose):	A044U256
After-treatment outline drawing Tier4F:	A041V809

Fuel consumption	Standby				Prime				Continuous
	kW (kVA)				kW (kVA)				kW (kVA)
Ratings	2750 (3438)				2500 (3125)				2100 (2625)
Load	1/4	1/2	3/4	Full	1/4	1/2	3/4	Full	Full
US gph	63.3	103.4	143.4	183.4	59.7	96.1	132.5	169	145.5
L/hr	239	391	542	694	226	364	501	639	551

DEF consumption	Standby				Prime				Continuous			
	kW (kVA)				kW (kVA)				kW (kVA)			
Ratings	2750 (3438)				2500 (3125)				2100 (2625)			
Load	1/4	1/2	3/4	Full	1/4	1/2	3/4	Full	1/4	1/2	3/4	Full
US gph	1.74	3.29	6.40	12.62	1.67	3.01	5.56	10.37	1.58	2.67	4.54	7.64
L/hr	6.44	12.17	23.68	46.69	6.18	11.14	20.57	38.37	5.85	9.88	16.80	28.27

Engine	Standby rating	Prime rating	Continuous rating
Engine manufacturer	Cummins Inc.		
Engine model	QSK78-G14		
Configuration	Cast iron, V 18 cylinder		
Aspiration	Turbocharged and low temperature after-cooled		
Gross engine power output, kWm (bhp)	3028 (4060)	2737 (3670)	2271 (3045)
BMEP at set rated load, kPa (psi)	2599 (377)	2351 (341)	1951 (283)
Bore, mm (in.)	170.0 (6.69)		
Stroke, mm (in.)	190.0 (7.48)		

Engine (continued)	Standby rating	Prime rating	Continuous rating
Rated speed, rpm	1800		
Piston speed, m/s (ft/min)	11.4 (2243)		
Compression ratio	15.5:1		
Lube oil capacity, L (qt)	413 (436)		
Overspeed limit, rpm	2100		
Regenerative power, kW	266		

Fuel flow

Maximum fuel flow, L/hr (US gph)	2234 (590)		
Maximum fuel inlet restriction, kPa (in Hg)	17 (5)		
Maximum fuel inlet temperature, °C (°F)	71 (160)		

Air

Combustion air, m ³ /min (scfm)	239 (8451)	227 (8003)	207 (7302)
Maximum air cleaner restriction, kPa (in H ₂ O)	3.7 (15)		
Alternator cooling air, m ³ /min (cfm)	270 (9535)		

Exhaust

Exhaust flow at set rated load, m ³ /min (cfm)	570 (20134)	532 (18784)	480 (16965)
Exhaust temperature, °C (°F)	471 (879)	454 (850)	442 (827)
Maximum back pressure, kPa (in H ₂ O)	7 (28)		

High ambient cooling system (ship loose)

Ambient design, °C (°F)	43 (109)	40 (104)	44 (111)
Fan load, kW _m (HP)	90 (121)		
Coolant capacity (with radiator), L (US gal)	738 (195)		
Cooling system air flow, m ³ /min (scfm)	3060 (108000)		
Total heat rejection, MJ/min (Btu/min)	103.6 (98257)	94.6 (89618)	82.0 (77746)
Maximum cooling air flow static restriction, kPa (in H ₂ O)	0.12 (0.5)		
Heat radiated to room from after-treatment (Btu/min)	270840		

Enhanced high ambient cooling system (ship loose)

Ambient design, °C (°F)	51 (124)	49 (120)	50 (122)
Fan load, kW _m (HP)	107 (144)		
Coolant capacity (with radiator), L (US gal)	1061 (280)		
Cooling system air flow, m ³ /min (scfm)	4560 (161000)		
Total heat rejection, MJ/min (Btu/min)	103.6 (98257)	94.6 (89618)	82.0 (77746)
Maximum cooling air flow static restriction, kPa (in H ₂ O)	0.12 (0.5)		
Heat radiated to room from after-treatment (Btu/min)	270840		

Remote radiator cooling at 25C, 110 M¹

Set coolant capacity, L (US gal)	223 (59)		
Max flow rate at max friction head, jacket water circuit, L/min (US gal/min)	2222 (587)		
Max flow rate at max friction head, aftercooler circuit, L/min (US gal/min)	988 (261)		
Heat rejected, jacket water circuit, MJ/min (Btu/min)	55.1 (52234)	51.1 (48459)	45.5 (43158)
Heat rejected, aftercooler circuit, MJ/min (Btu/min)	45.9 (43523)	40.8 (38659)	33.9 (32088)
Heat rejected, fuel circuit, MJ/min (Btu/min)	2.6 (2500)		
Total heat radiated to room, MJ/min (Btu/min)	23.4 (22179)	21.4 (20341)	18.3 (17400)

Remote radiator cooling at 25C, 110M¹ (continued)

Maximum friction head, jacket water circuit, kPa (psi)	69 (10)		
Maximum friction head, aftercooler circuit, kPa (psi)	48 (7)		
Maximum static head, jacket water circuit, m (ft)	18.3 (60)		
Maximum static head, aftercooler circuit, m (ft)	18.3 (60)		
Maximum jacket water outlet temp, °C (°F)	104 (220)	100 (212)	100 (212)
Maximum aftercooler inlet temp at 25 °C (77 °F) ambient, °C (°F)	49 (120)		
Maximum aftercooler inlet temp, °C (°F)	71 (160)	66 (150)	
Maximum fuel flow, L/hr (US gph)	2234 (590)		
Maximum fuel return line restriction, kPa (in Hg)	34 (10)		
Heat radiated to room from aftertreatment (Btu/min)	270840		

¹ For non-standard remote installations contact your local Cummins representative.

After-treatment system

T4F

Pressure drop across after-treatment, kPa (in H ₂ O)	6.4 (26)
Available back pressure for exhaust system piping, kPa (in H ₂ O)	0.6 (2)
Exhaust heater rating (kW)	660
Exhaust heater input requirements (Amps at 480 V)	794
Minimum unaided ambient operating temperature °C (°F)	2 (35)
Maximum ambient operating temperature (warning) °C (°F)	52 (125)
DEF tank capacity (usable) L (gal)	765 (202)
Heat radiated to room from after-treatment (Btu/min)	270840

DEF flow

Maximum supply flow, L/hr (US gph)	238 (63)
Maximum return flow, L/hr (US gph)	189 (50)
Maximum static head (from pump to injector), m (ft)	6.4 (21)

Weights¹

Unit dry weight kgs (lbs)	22865 (50408)
Unit wet weight kgs (lbs)	23642 (52122)
After-treatment weight kgs (lbs)	5776 (12734)

Derating factors²

Standby	<p>Standard cooling system: Full rated power available up to 1077 m (3536 ft) elevation at ambient temperatures up to 40 °C (104 °F). At 40 °C (104 °F) derate by 4.6% per 305 m (1000 ft) from 1077 m (3536 ft) to 2000 m (6560 ft). Above these conditions derate by 7.5% per 305 m (1000 ft) and by an additional 17.8% per 10 °C (18 °F).</p> <p>Enhanced cooling system: Full rated power available up to 1240 m (4067 ft) elevation at ambient temperatures up to 40°C (104°F). At 40°C (104°F) derate by 4.6% per 305 m (1000 ft) from 1240 m (4067 ft) to 2399 m (7872 ft), and above 2399 m (7872 ft) derate by 7.5% per 305m (1000 ft). Full rated power available up to 387 m (1269 ft) elevation at ambient temperatures up to 50°C (122°F). At 50°C (122°F) derate by 4.6% per 305 m (1000 ft) from 387 m (1269 ft) to 1600 m (5248 ft), and above 1600 m (5248 ft) derate by 7.5% per 305m (1000 ft). At higher ambient temperatures, derate by an additional 21.3% per 10 °C (18°F).</p> <p>Remote radiator cooling option: Full rated power available up to 728 m (2387 ft) at ambient temperature up to 40 °C (104 °F). Above these elevations, at 40 °C (104 °F), derate by an additional 7.75% per 305 m (1000 ft). Derate by 2.25% at sea level at ambient temperatures up to 50 °C (122 °F). Above these elevations, at 50 °C (122 °F), derate by an additional 7.4% per 305 m (1000 ft). At higher ambient temperatures, derate by an additional 19% per 10 °C (18 °F),</p>
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Derating factors² (continued)

Prime	Full rated power available up to 394 m (1294 ft) at ambient temperature up to 40 °C (104 °F). Above these elevations, at 40 °C (104 °F), derate by an additional 8.5% per 305 m (1000 ft). Derate by 11.5% at sea level at ambient temperatures up to 50 °C (122 °F). Above these elevations, at 50 °C (122 °F), derate by an additional 8.25% per 305 m (1000 ft). At higher ambient temperatures, derate by an additional 22% per 10 °C (18 °F).
Continuous	Full rated power available at sea level at ambient temperature up to 40 °C (104 °F). Above these elevations, at 40 °C (104 °F), derate by an additional 9.75% per 305 m (1000 ft). Derate by 29% at sea level at ambient temperatures up to 50 °C (122 °F). Above these elevations, at 50 °C (122 °F), derate by an additional 8.5% per 305 m (1000 ft). At higher ambient temperatures, derate by an additional 28% per 10 °C (18 °F).

Notes:

¹ Weights represent a set with standard features. See outline drawing for weights of other configurations.

² Derating factors do not include after-treatment system.

Ratings definitions

Emergency Standby Power (ESP):	Limited-Time Running Power (LTP):	Prime Power (PRP):	Base Load (Continuous) Power (COP):
Applicable for supplying power to varying electrical load for the duration of power interruption of a reliable utility source. Emergency Standby Power (ESP) is in accordance with ISO 8528. Fuel Stop power in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.	Applicable for supplying power to a constant electrical load for limited hours. Limited-Time Running Power (LTP) is in accordance with ISO 8528.	Applicable for supplying power to varying electrical load for unlimited hours. Prime Power (PRP) is in accordance with ISO 8528. Ten percent overload capability is available in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.	Applicable for supplying power continuously to a constant electrical load for unlimited hours. Continuous Power (COP) is in accordance with ISO 8528, ISO 3046, AS 2789, DIN 6271 and BS 5514.

Alternator data

Voltage	Connection	Temp rise degrees C	Duty¹	Single phase factor	Max surge kVA²	Winding No.	Alternator data sheet	Feature code
220/380	Wye	125	S		N/A	13	ADS-531	B407-2
380	Wye	150	S		7944	13	ADS-516	B814-2
440	Wye	150	S/P/C		9719	12	ADS-517	B813-2
380	Wye	125	P		7944	13	ADS-516	B815-2
380	Wye	80	C		N/A	13	ADS-531	B800-2
220/380	Wye	105	C		7944	13	ADS-516	B597-2
380	Wye	105	P		10049	13	ADS-517	B840-2
440	Wye	125	S/P/C		13024	12	ADS-531	B663-2
440	Wye	105	S/P		13024	12	ADS-531	B664-2
480	Wye	150	S		8412	12	ADS-516	B816-2
277/480	Wye	125	P		8412	12	ADS-516	B718-2
480	Wye	125	S/P/C		9719	12	ADS-517	B801-2
480	Wye	105	S		13024	12	ADS-531	B280-2
480	Wye	80	S		14781	12	ADS-532	B601-2
480	Wye	80	P		13024	12	ADS-531	B694-2
480	Wye	105	C		7267	12	ADS-515	B583-2
600	Wye	150	S		8189	7	ADS-516	B817-2
347/600	Wye	125	P		8189	7	ADS-516	B720-2
347/600	Wye	80	S		N/A	7	ADS-532	B604-2
600	Wye	80	P		12426	7	ADS-531	B695-2

Alternator data (continued)

347/600	Wye	105	C		7233	7	ADS-515	B582-2
347/600	Wye	105	S		12426	7	ADS-531	B839-2
2400/4160	Wye	105	P/C		7295	51	ADS-519	B571-2
13200-13800	Wye	125	P		6800	91	ADS-522	B804-2
13200	Wye	105	C		6800	91	ADS-522	B805-2
13200	Wye	125	S/P		11213	91	ADS-533	B819-2
13200	Wye	105	S		11213	91	ADS-533	B501-2
13200	Wye	80	P		13438	91	ADS-534	B566-2
13200	Wye	80	S		13438	91	ADS-534	B807-2
13200	Wye	80	C		11213	91	ADS-533	B808-2
13800	Wye	125	S		7993	91	ADS-523	B820-2
13800	Wye	105	P		7993	91	ADS-523	B821-2
13800	Wye	105	C		6800	91	ADS-522	B460-2
13800	Wye	80	S		13438	91	ADS-534	B610-2
13800	Wye	80	P		11213	91	ADS-533	B809-2
13800	Wye	80	C		7993	91	ADS-523	B565-2
12470	Wye	125	S		11213	91	ADS-533	B822-2
12470	Wye	105	P		11213	91	ADS-533	B823-2
12470	Wye	105	S		13438	91	ADS-534	B568-2
12470	Wye	80	P		13438	91	ADS-534	B812-2
12470	Wye	105	C		6800	91	ADS-522	B569-2
12470	Wye	80	C		11213	91	ADS-533	B570-2
13800	Wye	105	S		11213	91	ADS-533	B895-2
2400/4160	Wye	105	S		8752	51	ADS-520	B933-2
2400/4160	Wye	80	S		11185	51	ADS-545	B935-2
2400/4160	Wye	150	S/P/C		7295	51	ADS-519	B938-2
2400/4160	Wye	125	S		7295	51	ADS-519	B940-2
600	Wye	80	C		12426	7	ADS-531	B589-2
2400/4160	Wye	80	P		8752	51	ADS-520	B939-2

Notes:

¹ Single phase power can be taken from three phase generator sets at up to the value listed in the single phase factor column for the generator set nameplate kW rating at unity power factor.

² Standby (S), Prime (P) and Continuous ratings (C).

³ Factor for the *Single Phase Output from Three Phase Alternator* formula listed below.

⁴ Maximum rated starting kVA that results in a minimum of 90% of rated sustained voltage during starting.

Formulas for calculating full load currents:

Three phase output

$$\frac{\text{kW} \times 1000}{\text{Voltage} \times 1.73 \times 0.8}$$

Single phase output

$$\frac{\text{kW} \times \text{SinglePhaseFactor} \times 1000}{\text{Voltage}}$$

Warning: Back feed to a utility system can cause electrocution and/or property damage. Do not connect to any building's electrical system except through an approved device or after building main switch is open.

For more information contact your local Cummins distributor
or visit power.cummins.com

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