Generator set data sheet

Cummins

Model:	**DQPAB**
Frequency:	**60 Hz**
Fuel type:	**Diesel**
kW rating:	**650 Standby**
Emissions level:	**EPA NSPS Stationary Emergency Tier 2**

Exhaust emission data sheet:	EDS-1155
Exhaust emission compliance sheet:	EPA-1225
Sound performance data sheet:	MSP-1153
Cooling performance data sheet:	MCP-241
Prototype test summary data sheet:	PTS-316
Standard set-mounted radiator cooling outline:	A041U110
Optional set-mounted radiator cooling outline:	
Optional heat exchanger cooling outline:	
Optional remote radiator cooling outline	

Fuel consumption

	Standby				Prime				Continuous			
	kW (kVA)				kW (kVA)				kW (kVA)			
Ratings	650 (813)				545 (681)							
Load	1/4	1/2	3/4	Full	1/4	1/2	3/4	Full	1/4	1/2	3/4	Full
US gph	13.9	24.5	35.3	49.5	12.2	21.2	29.8	41.0				
L/hr	52.8	93.2	133.9	188.0	46.2	80.3	112.8	155.2				

Engine

	Standby rating	Prime rating	Continuous rating
Engine manufacturer	Cummins Inc.		
Engine model	QSK19-G8		
Configuration	Cast Iron, in line 6 cylinder		
Aspiration	Turbocharged and charged after-cooled (air- to-air)		
Gross engine power output, kWm (bhp)	721 (967)	608 (815)	
BMEP at set rated load, kPa (psi)	2552 (370)	2151 (312)	
Bore, mm (in)	158.8 (6.25)		
Stroke, mm (in)	158.8 (6.25)		
Rated speed, rpm	1800		
Piston speed, m/s (ft/min)	9.5 (1875)		
Compression ratio	15:1		
Lube oil capacity, L (qt)	68.1 (72)		
Overspeed limit, rpm	2070		
Regenerative power, kW	59		

Fuel flow

Maximum fuel flow, L/hr (US gph)	492 (130)	
Maximum fuel inlet restriction, kPa (in Hg)	30.5 (9)	
Maximum fuel inlet temperature, °C (°F)	71 (160)	
Maximum fuel return line restriction kPa (in Hg)	33.8 (10)	

Air

Air	Standby rating	Prime rating	Continuous rating
Combustion air, m³/min (scfm)	63 (2225)	56.3 (1689)	
Maximum air cleaner restriction, kPa (in H_2O)	6.2 (25)		
Alternator cooling air, m³/min (cfm)	117 (4156)		

Exhaust

Exhaust	Standby rating	Prime rating	Continuous rating
Exhaust flow at set rated load, m³/min (cfm)	164 (5815)	138 (4901)	
Exhaust temperature, °C (°F)	532 (989)	486 (906)	
Maximum back pressure, kPa (in H_2O)	3.4 (13.6)		

Standard set-mounted radiator cooling

Standard set-mounted radiator cooling	Standby rating	Prime rating	Continuous rating
Ambient design, °C (°F)	45 (110)	50 (122)	
Fan load, kW$_m$ (HP)	26.1 (35)		
Coolant capacity (with radiator), L (US gal)	95 (25.3)		
Cooling system air flow, m³/min (scfm)	1013 (35815)		
Total heat rejection, MJ/min (Btu/min)	34.24 (32474)	24.4 (23118)	
Maximum cooling air flow static restriction, kPa (in H_2O)	0.12 (0.5)		

Optional set-mounted radiator cooling

Optional set-mounted radiator cooling			
Ambient design, °C (°F)			
Fan load, kW$_m$ (HP)			
Coolant capacity (with radiator), L (US gal)			
Cooling system air flow, m³/min (scfm)			
Total heat rejection, MJ/min (Btu/min)			
Maximum cooling air flow static restriction, kPa (in H_2O)			
Maximum fuel return line restriction, kPa (in Hg)			

Optional heat exchanger cooling

Optional heat exchanger cooling	Standby rating	Prime rating	Continuous rating
Set coolant capacity, L (US gal)			
Heat rejected, jacket water circuit, MJ/min (Btu/min)			
Heat rejected, aftercooler circuit, MJ/min (Btu/min)			
Heat rejected, fuel circuit, MJ/min (Btu/min)			
Total heat radiated to room, MJ/min (Btu/min)			
Maximum raw water pressure, jacket water circuit, kPa (psi)			
Maximum raw water pressure, aftercooler circuit, kPa (psi)			
Maximum raw water pressure, fuel circuit, kPa (psi)			
Maximum raw water flow, jacket water circuit, L/min (US gal/min)			
Maximum raw water flow, aftercooler circuit, L/min (US gal/min)			
Maximum raw water flow, fuel circuit, L/min (US gal/min)			
Minimum raw water flow at 27 °C (80 °F) inlet temp, jacket water circuit, L/min (US gal/min)			
Minimum raw water flow at 27 °C (80 °F) inlet temp, aftercooler circuit, L/min (US gal/min)			
Minimum raw water flow at 27 °C (80 °F) inlet temp, fuel circuit, L/min (US gal/min)			
Raw water delta P at min flow, jacket water circuit, kPa (psi)			
Raw water delta P at min flow, aftercooler circuit, kPa (psi)			
Raw water delta P at min flow, fuel circuit, kPa (psi)			
Maximum jacket water outlet temp, °C (°F)			
Maximum aftercooler inlet temp, °C (°F)			
Maximum aftercooler inlet temp at 25 °C (77 °F) ambient, °C (°F)			
Maximum fuel return line restriction, kPa (in Hg)			

Optional remote radiator cooling[1]

Optional remote radiator cooling[1]	Standby rating	Prime rating	Continuous rating
Set coolant capacity, L (US gal)			
Max flow rate at max friction head, jacket water circuit, L/min (US gal/min)			
Max flow rate at max friction head, aftercooler circuit, L/min (US gal/min)			
Heat rejected, jacket water circuit, MJ/min (Btu/min)			
Heat rejected, aftercooler circuit, MJ/min (Btu/min)			
Heat rejected, fuel circuit, MJ/min (Btu/min)			
Total heat radiated to room, MJ/min (Btu/min)			
Maximum friction head, jacket water circuit, kPa (psi)			
Maximum friction head, aftercooler circuit, kPa (psi)			
Maximum static head, jacket water circuit, m (ft)			
Maximum static head, aftercooler circuit, m (ft)			
Maximum jacket water outlet temp, °C (°F)			
Maximum aftercooler inlet temp at 25 °C (77 °F) ambient, °C (°F)			
Maximum aftercooler inlet temp, °C (°F)			
Maximum fuel flow, L/hr (US gph)			
Maximum fuel return line restriction, kPa (in Hg)			

Weights[2]

Unit dry weight kgs (lbs)	5449 (12013)
Unit wet weight kgs (lbs)	5590 (12324)

Notes:
[1] For non-standard remote installations contact your local Cummins representative.

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

Derating factors

Standby	Engine power available up to 510 m (1673 ft) at ambient temperatures up to 40 °C (104 °F). Above these elevations, derate at 1.7% per 300 m (1000 ft). Above 40 °C (104 °F) derate 6.7% per 10 °C (18 °F).
Prime	Engine power available up to 2174 m (7133 ft) at ambient temperatures up to 40 °C (104 °F). Above these elevations, derate at 2.8% per 300 m (1000 ft). Above 40 °C (104 °F) derate 9.2% per 10 °C (18 °F).
Continuous	

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[1]	Temp rise ºC	Duty[2]	Single phase factor[3]	Max surge kVA[4]	Winding No.	Alternator	Feature code
600	Wye	80	S/P		3310	7	ADS-310	B305-2
600	Wye	105	S/P		2944	7	ADS-309	B304-2
240/480	Wye	80	S/P		3310	11	ADS-310	B969-2
240/480	Wye	105	P		2429	11	ADS-308	B971-2
190/380-208/416	Wye	105	P		2429	14	ADS-308	B868-2
208/416-240/480	Wye	105	S		3310	11	ADS-310	B974-2
380-416	Wye	105	S		3310	13	ADS-310	B976-2
380-416	Wye	80	P		3310	13	ADS-310	B976-2
208/416-240/480	Wye	80	P		3310	11	ADS-310	B974-2

Notes:

[1] Limited single phase capability is available from some three phase rated configurations. To obtain single phase rating, multiply the three phase kW rating by the Single Phase Factor[3]. All single phase ratings are 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

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

Single phase output

$$\frac{kW \times Single\ Phase\ Factor \times 1000}{Voltage}$$

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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