



Engine Performance Data

<http://www.cummins.com>

Industrial
QSF2.8
FR 94868

71 BHP (53kW) @ 2200 RPM
199 lb-ft (270 N-m) @ 1500 - 1800 RPM

Configuration
 DOE2004CX03

CPL Code
 4221

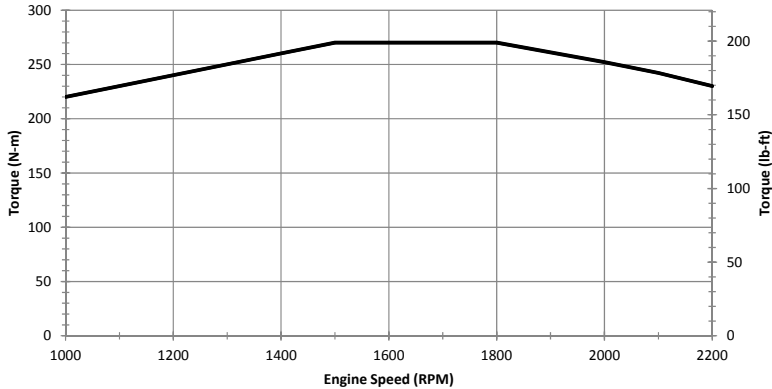
Revision
 10-Mar-2015

Compression Ratio 16.7
 Fuel System HPCR
 Emission Certification EU Stage IIIA

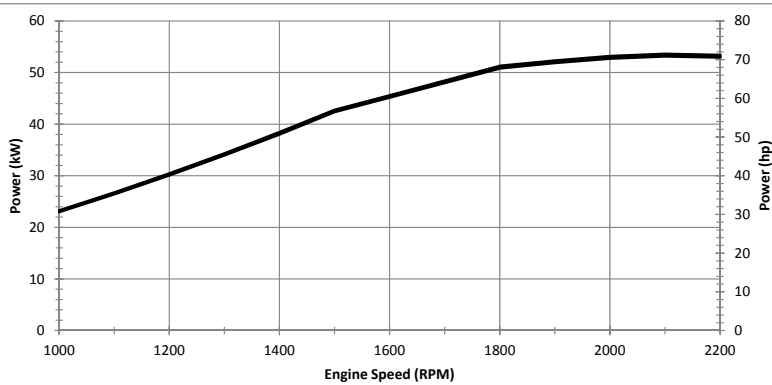
Displacement 2.8L (170 in³)
 Aspiration Turbocharged without CAC

All data is based on the engine operating with fuel system, water pump, and 12.1 in H₂O (3 kPa) inlet air restriction with 4.1 in (104 mm) inner diameter, and with 3 in Hg (10 kPa) exhaust restriction with 1.57 in (40 mm) inner diameter; not included are alternator, fan, optional equipment and driven components. Coolant flows and heat rejection data based on coolants as 50% ethylene glycol/50% water. All data is subject to change without notice.

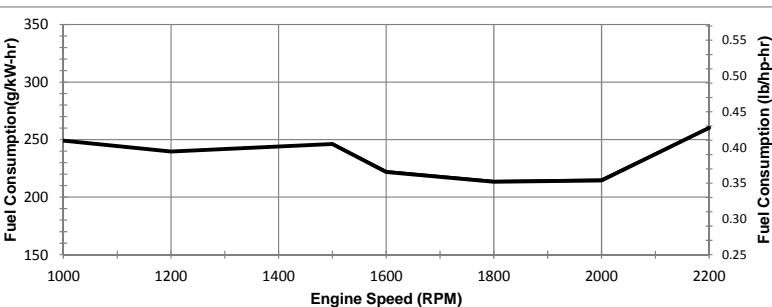
Rating Type: Intermittent



Torque Output		
RPM	N-m	lb-ft
1,000	220	162
1,100	230	170
1,200	240	177
1,300	250	184
1,400	260	192
1,500	270	199
1,600	270	199
1,700	270	199
1,800	270	199
1,900	261	193
2,000	252	186
2,100	242	178
2,200	230	170



Power Output		
RPM	kW	hp
1,000	23	31
1,100	26	36
1,200	30	40
1,300	34	46
1,400	38	51
1,500	42	57
1,600	45	61
1,700	48	64
1,800	51	68
1,900	52	70
2,000	53	71
2,100	53	71
2,200	53	71



Fuel Consumption		
RPM	lb/hp-hr	g/kW-hr
1000	0.41	249
1200	0.39	240
1500	0.40	246
1600	0.37	223
1800	0.35	214
2000	0.35	215
2200	0.43	260

Curves shown above represent gross engine performance capabilities obtained and corrected in accordance with SAE J1995 conditions of 29.61 in Hg (100 kPa) barometric pressure [300ft (91m) altitude] 77 deg F (25 deg C) inlet air temperature, and 0.30 in Hg (1kPa) water vapor pressure with No. 2 diesel fuel. The engine may be operated up to 5,577 ft (1,700 m) altitude before electronic derate is applied.

Tolerance: N/A for Alpha/Beta/Preliminary Engines.

Air Induction System

Maximum allowable air temperature rise over ambient at Intake Manifold (Naturally Aspirated Engines) or Turbo Compressor inlet (Turbo-charged Engines): (This parameter impacts emissions, LAT and/or altitude capability)

18 delta deg F

10 delta deg C

Exhaust System

Maximum exhaust back pressure:

5.91 in-Hg

20 kPa

Recommended exhaust piping size (inner diameter):

3 in

76 mm

Cooling System

Maximum coolant temperature for engine protection controls

225 deg F

107 deg C

Maximum coolant operating temperature at engine outlet (max. top tank temp):

217 deg F

103 deg C

Lubrication System

Nominal operating oil pressure

@ minimum low idle

@ maximum rated speed

48-55

20 psi

psi

330-380

141 kPa

kPa

Minimum engine oil pressure for engine protection devices

@ minimum low idle

10 psi

69 kPa

Fuel System

Fuel cooling requirements (with diesel fuel)

Maximum heat rejection to return fuel at max. coolant and inlet fuel temperature:

31.88 BTU/min

0.56 kW

@ fuel return flow rate of:

183 lb/hr

83 kg/hr

@ fuel return temperature prior to cooler:

257 deg F

125 deg C

Maximum supply fuel flow:

207 lb/hr

94 kg/hr

Maximum return fuel flow:

183 lb/hr

83 kg/hr

Engine fuel compatibility (consult Service Bulletin #3379001 for appropriate use of other fuels)

ULSD, B5, B20

Maximum fuel inlet pressure:

2 psi

13.5 kPa

Performance Data

Maximum low idle speed:

1200 RPM

Minimum low idle speed:

600 RPM

Maximum Rating Performance Data

Parameter	Rated Power		Peak Torque	
	2200 RPM		1500 RPM	
Engine speed	2200 RPM		1500 RPM	
Output power	71 hp	53.0 kW	56.3 hp	42.0 kW
Torque	169.6 lb-ft	230.0 Nm	199.1 lb-ft	270.0 Nm
Friction Horsepower	15.4 hp	11.5 kW	8.6 hp	6.4 kW
Turbo Comp. Outlet Pressure	32.5 in-Hg	110.0 kPa	20.1 in-Hg	68.0 kPa
Inlet air flow	155.7 ft ³ /min	73.5 L/s	84.7 ft ³ /min	40.0 L/s
Exhaust Gas Flow	396.1 ft ³ /min	186.9 L/s	237.9 ft ³ /min	112.3 L/s
Exhaust gas temperature	1017.1 Deg F	547.3 Deg C	1070.1 Deg F	576.7 Deg C
Maximum Fuel Flow to Pump	173.3 lb/hr	78.6 kg/hr	127.0 lb/hr	57.6 kg/hr
Heat Rejection to coolant	2328.0 BTU/min	40.9 kW	1656.4 BTU/min	29.1 kW
Heat Rejection to Fuel	38.7 BTU/min	0.7 kW	34.3 BTU/min	0.6 kW
Heat Rejection to Ambient	1250.6 BTU/min	22.0 kW	1110.0 BTU/min	19.5 kW
Heat Rejection to Exhaust	2449.3 BTU/min	43.0 kW	1609.7 BTU/min	28.3 kW

**When operating Naturally Aspirated engines above SAE J1995 conditions, it should be noted that smoke levels will increase due to combustion inefficiencies associated with a reduction in the air to fuel mixture.

Cranking System (Cold Starting Capability)

Unaided Cold Start:			
Minimum cranking speed	120 RPM		
Minimum ambient temperature for unaided cold start	deg F		-10 deg C
Aided Cold Start:			
Minimum ambient temperature with Grid Heater only	deg F		-25 deg C
Cold starting aids available	Intake Manifold Heater		

End of Report