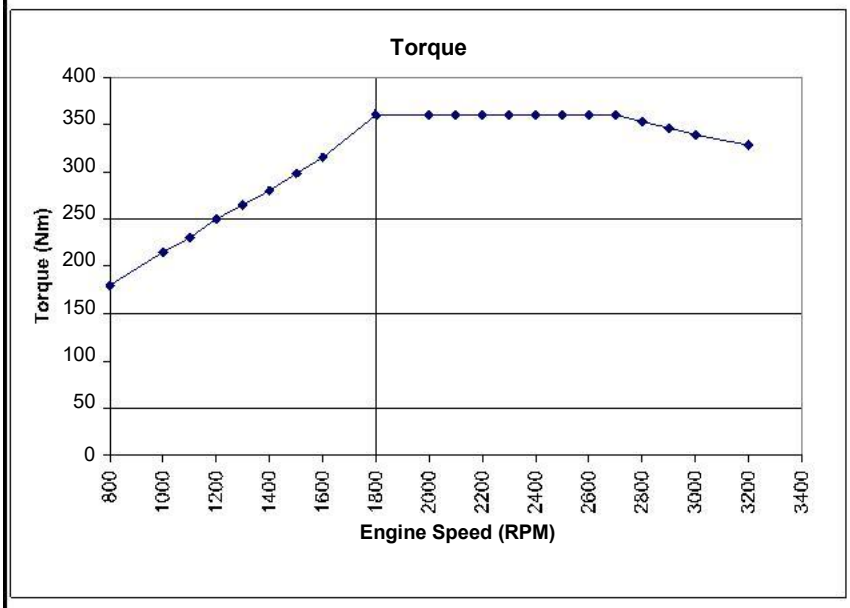
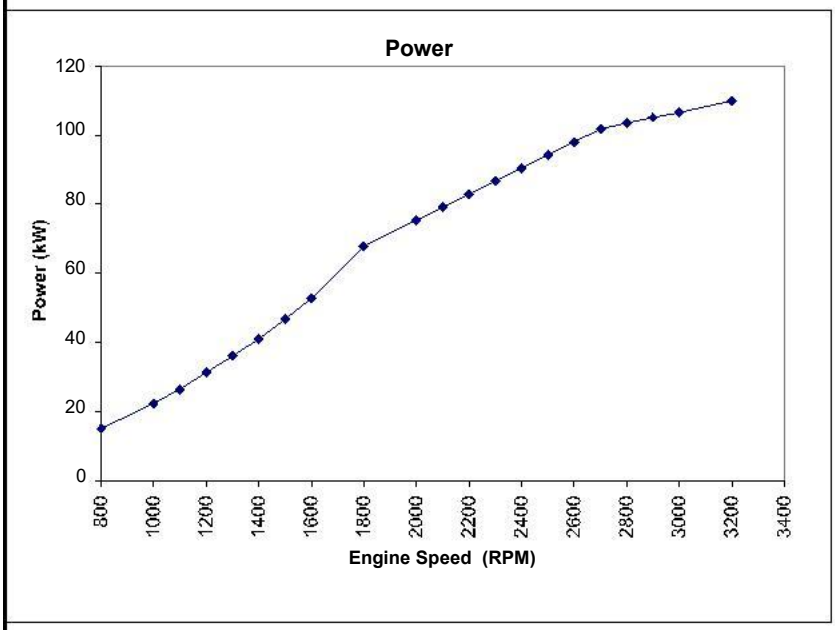
Engine Performance Curve Cummins Ltd Yarm Road, Darlington http://www.cummins.com	**ISF2.8s3148T**	**110KW@3200** **360Nm @1800rpm**	Automotive
		Curve Number **FR93191** CPL code **3441** Date **07-Jul-09**	Page **1**

Compression Ratio	**16.0:1**	Engine Configuration	**DOE3002BX03**
Fuel System	**Bosch Electronic**	Emission Certification	**Euro 3**
Cylinders	**4**	Aspiration	**Turbocharged and Charge Air Cooled**
Bore	**94 mm**	Displacement	**2.8L**
Stroke	**100 mm**	Status	**Preliminary**



Torque Output	
RPM	Nm
800	**180**
1000	**215**
1100	**230**
1200	**250**
1300	**265**
1400	**280**
1500	**298**
1600	**315**
1800	**360**
2000	**360**
2100	**360**
2200	**360**
2300	**360**
2400	**360**
2500	**360**
2600	**360**
2700	**360**
2800	**353**
2900	**346**
3000	**339**
3200	**328**



Power Output	
RPM	kW
800	**15**
1000	**23**
1100	**26**
1200	**31**
1300	**36**
1400	**41**
1500	**47**
1600	**53**
1800	**68**
2000	**75**
2100	**79**
2200	**83**
2300	**87**
2400	**90**
2500	**94**
2600	**98**
2700	**102**
2800	**104**
2900	**105**
3000	**106**
3200	**110**

Performance data shown is nominal and is to 80/1269/EEC (as amended) conditions of 990 mbar barometric pressure and 25 deg C air intake temperature. All data is based on the engine operating with fuel system, water pump, lubricating oil pump with inlet and exhaust restriction at or below Datasheet limits. Not included are air compressor, fan and alternator.

Customer Engineering — Certified within 5%

Chris Nash — Cummins Confidential

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Stroke	**100 mm**	Status	**Preliminary**

General Performance Data

Maximum low idle speed	**800**	RPM
Minimum low idle speed	**700**	RPM
Nominal no load governed speed	**3,600**	RPM
Maximum overspeed capability	**4,800**	RPM
Clutch engagement torque at 800rpm	**180**	N-m
Maximum altitude for continuous operation without derate	**2300**	m

Air Induction System

Maximum temperature rise between ambient air and engine air inlet	**11**	delta deg C

Exhaust System

Maximum back pressure imposed by complete exhaust system	**20**	kPa

Cooling System

Maximum coolant temperature (engine out) with 103kPa pressure cap	**110**	deg C
Maximum coolant pressure (exclusive of pressure cap; closed thermostat at maximum no load speed)	**215**	kPa
Maximum temperature rise between ambient air and intake manifold	**30**	deg C
Maximum allowable pressure drop across charge air cooler and OEM CAC piping (CACDP)	**13.5**	kPa
Maximum coolant temperature for engine protection controls	**114**	deg C
Maximum coolant flow to accessories	**23**	L/minute

Refer to AEB 21.52 for territory related cooling standard

Maximum Rating Performance Data

Parameter	Maximum Power	Peak Torque
Engine speed	**3200** RPM	**1800** RPM
Output power	**110** KW	**68** KW
Torque	**328** Nm	**360** Nm
Inlet air flow	**533** m3/hr	**266** m3/hr
Charge air flow	**624** kg/hr	**312** kg/hr
Exhaust Gas Flow	**648** Kg/hr	**326** Kg/hr
Exhaust gas temperature	**496** Deg C	**484** Deg C
Heat Rejection to coolant	**50** KW	**38** KW
Radiator coolant flow*	**203** L/min	**96** L/min
Heat Rejection to charge air cooler**	**25** KW	**7** KW
Turbo Comp. Outlet Pressure	**160** Kpa	**112** Kpa
Turbo Comp. Outlet Temperature	**165** Deg C	**130** Deg C
Fuel Consumption	**24.6** Kg/hr	**14** Kg/hr
Brake Mean Effective Pressure	**14.6** Bar	**16.2** Bar

*Radiator coolant flow is approximately 5% less with a continuously dearating system.
Coolant: 50/50 Ethylene Glycol/Water by volume.
Values are within +/-10%
**Heat rejection to charge air cooler is at standard engine test conditions of 25degC turbo air inlet temperature

This rating is dynamometer certified for vehicles above 3500kg GVW