

Cummins

European Technical Operations

Darlington, England



Engine Model : B180 20
Curve and Datasheet : FR90174

CURRENT AT DATE OF ISSUE



CUMMINS ENGINE COMPANY LIMITED

Automotive Engine Data Sheet FR90174

EURO II

Engine Model: B180 20

Advertised Power: 132kW @ 2500rpm
178BHP @ 2500rpm

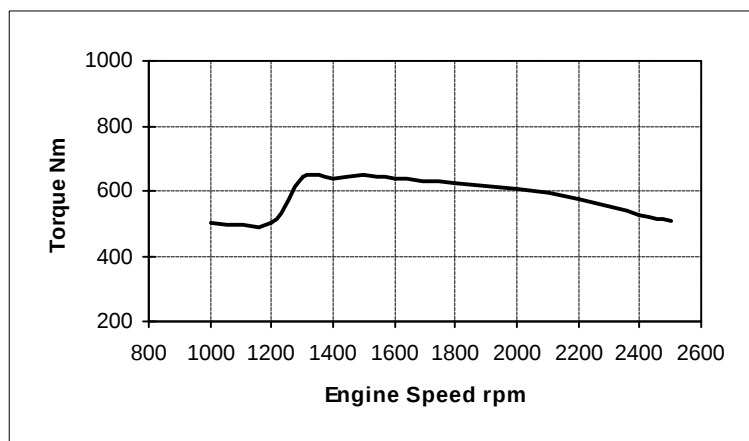
CPL: 2122

Peak Torque: 650Nm @ 1500rpm
479lbft @ 1500rpm

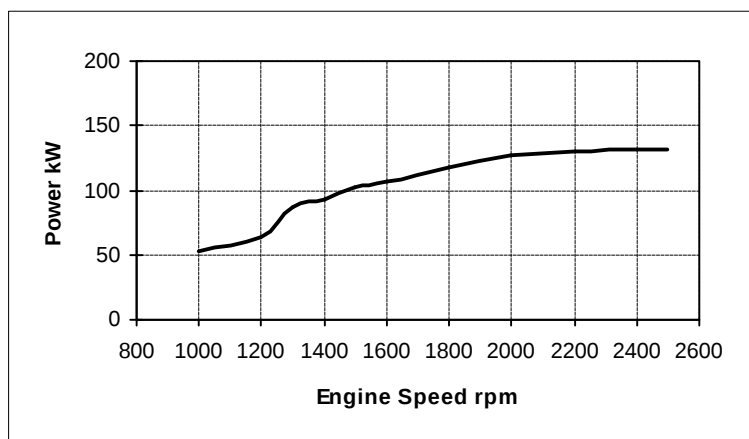
Displacement: 5.9 Litre
Configuration: 6 cylinders in line

Bore: 102mm
Stroke: 120mm

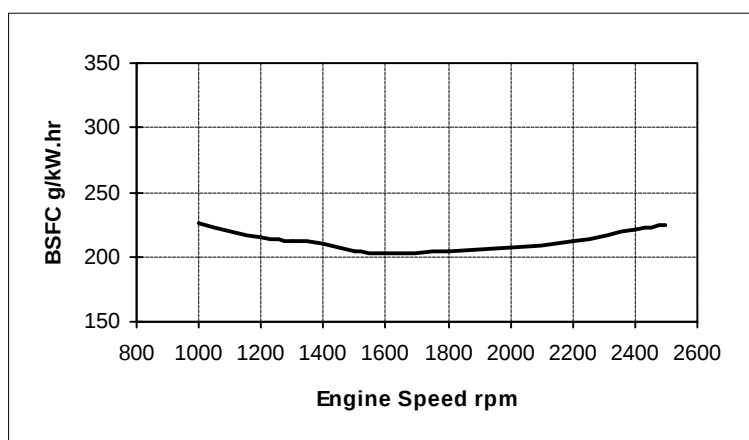
Aspiration: Turbocharged & Aftercooled
Fuel System: BOSCH



rpm	Torque	
	Nm	lb-ft
1000	500	369
1200	500	369
1300	642	474
1400	634	468
1500	650	479
1600	640	472
1800	625	461
2000	605	446
2200	573	423
2400	526	388
2500	506	373



rpm	Power	
	kW	bhp
1000	52	70
1200	63	84
1300	87	117
1400	93	125
1500	102	137
1600	107	143
1800	118	158
2000	127	170
2200	131	176
2400	132	177
2500	132	178



rpm	BSFC	
	g/kW.hr	lb/hp.hr
1000	226	0.372
1200	215	0.353
1300	212	0.349
1400	210	0.345
1500	205	0.337
1600	203	0.334
1800	205	0.337
2000	207	0.340
2200	212	0.349
2400	221	0.363
2500	225	0.370

CURRENT AT DATE OF ISSUE

Performance data shown is nominal, and is to 80/1269/EEC (as amended) conditions of 990mbar barometric pressure and 25 °C air intake temperature. Not included are Compressor, Fan and Alternator.



CUMMINS ENGINE COMPANY LIMITED

Automotive Engine Data Sheet FR90174

General

Reference:	Turbocharged and Air to Air Aftercooled
Certification:	ECE Reg24.03, ECE Reg 49.02, EEC88/77(91/542)
Data on this sheet refers to Installation Diagram:	3673463
Weight Dry: kg (with flywheel and alternator, but less starter and air compressor)	413
Weight Wet: kg	437
Compression Ratio:	17.6:1
C.G.Distance from F.F.O.B: mm	328
C.G.Distance above crank centre line: mm	155
Maximum bending moment at R.F.O.B: Nm	1356
Thrust bearing load limit;	
Maximum intermittent: N	3781
Maximum continuous: N	1780

Performance Data

Idle Speed: rpm	775
Maximum no load governed speed: rpm	2900
Maximum overspeed capability: rpm (15secs max.)	4200
Maximum altitude for continuous operation: m	3000
Clutch engagement torque at 800rpm: Nm	500
When using exhaust brakes;	
Exhaust pressure, at 2750rpm, at turbocharger outlet, must not exceed: kPa	414
Brake blade must have orifice to control exhaust pressure.	
Approximate engine retardation: kW	112

RPM	Oil Pressure kPa	Air to Turbo m³/min	Air From Turbo		Exhaust Flow m³/min	Exhaust Temp °C	Fuel Flow l/hr	Coolant Flow l/m	Heat Rejection		Friction Power kW
			Flow kg/min	Pressure kPa					Coolant kW	Air kW	
2500	400	12.5	14.6	140	28.9	479	36.2	185	66.0	26.1	32.6
1500	350	6.5	7.6	78	17.6	531	24.7	110	45.9	10.9	12.7

All values within $\pm 5\%$

* Updated Data Since Previous Issue

CURRENT AT DATE OF ISSUE



CUMMINS ENGINE COMPANY LIMITED

Automotive Engine Data Sheet FR90174

Engine Model: B180 20

CPL: 2122

Certification: See Below

Advertised Power: 132kW @ 2500rpm

Peak Torque: 650Nm @ 1500rpm

178BHP @ 2500rpm

479lbft @ 1500rpm

Lubrication System

Oil pan capacity	
High: litre	14.3
Low: litre	12.3
Total capacity: litre	16.4
Angularity low oil level: Front up 35°, Rear up 35°, F/P side up 35°, Exh side up 35°	

Air Intake System

Max. temp. rise between ambient air and turbo air inlet: °C	15
Max. intake restriction with dry type air cleaner, with clean filter;	
Medium Duty: kPa (mmH ₂ O)	2.9 (300)
Heavy Duty: kPa (mmH ₂ O)	3.7 (380)
Max. intake restriction with dirty filter: kPa (mmH ₂ O)	6.2 (635)

Charge Air Cooling

Design parameters for ambients;	Level 2	Level 3
Max. inlet manifold temperature: °C	55	50
Air on to charge cooler temperature: °C	25	20
Max. ΔP between turbo out/manifold in: kPa (mmHg)		16.7 (125)
Intake pipe size normally acceptable: mm dia		65
For further information see European AEB PCD613.		

Exhaust System

Max. back pressure imposed by piping and silencer: kPa (mmHg)	10.0 (75)
Exhaust pipe size normally acceptable: mm dia	75

Fuel System

Max. restriction at fuel pump with clean filter: mmHg	150
Max. return line restriction: mmHg	520

Cooling System

Engine coolant capacity: litre		9.0
Standard modulating thermostat (range): °C		83 - 95
Max. coolant pressure (no pressure cap and thermostat closed): kPa		276
Max. coolant temperature (engine out): °C		100
Max. deaeration time: mins		25
Max. coolant flow to accessories: litre/min		37
Min. coolant temperature: °C		70
Min. fill rate: litre/min		19
Min. coolant expansion space % of system capacity:		6
Min. drawdown capacity excluding expansion space : litre		5
Min. allowable pressure cap: kPa		50
Coolant alarm activation temperature: °C		100
Air on fan, typical operating temperature range: °C		93
Shutter opening temperature: °C		DO NOT USE
Min. cooling capability at normal fuel rate;	Level 2	Level 3
Limiting ambient temperature (LAT) at rated rpm: °C	45	42
Limiting ambient temperature (LAT) at peak torque rpm: °C	40	37

Electrical System 24Volt

Max. resistance of starting circuit: ohms	0.002
Min. recommended battery capacity as per DIN72311 and BS3911	
Engine only with de-clutched load cold cranking amperes:	12Volt 500CCA 24Volt 250CCA

Starting System

Min. unaided cold start temperature -10 °C @ 120 average rpm.
Min. aided (ether) cold start temperature -25 °C @ 110 average rpm.

**CURRENT AT
DATE OF ISSUE**