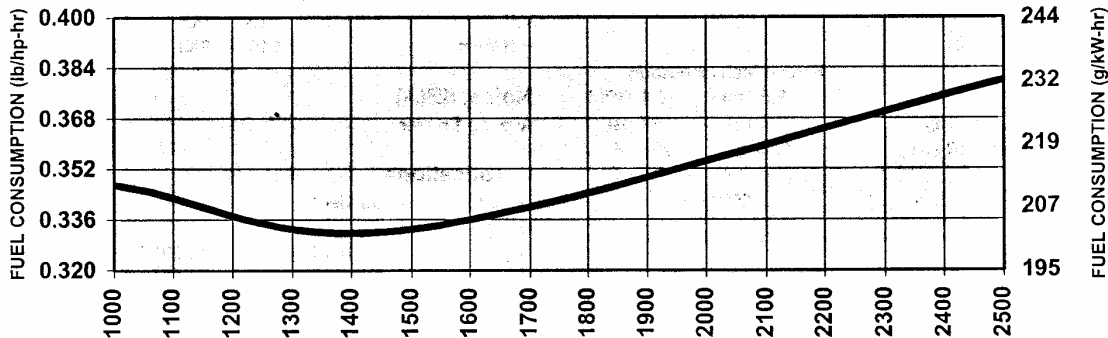
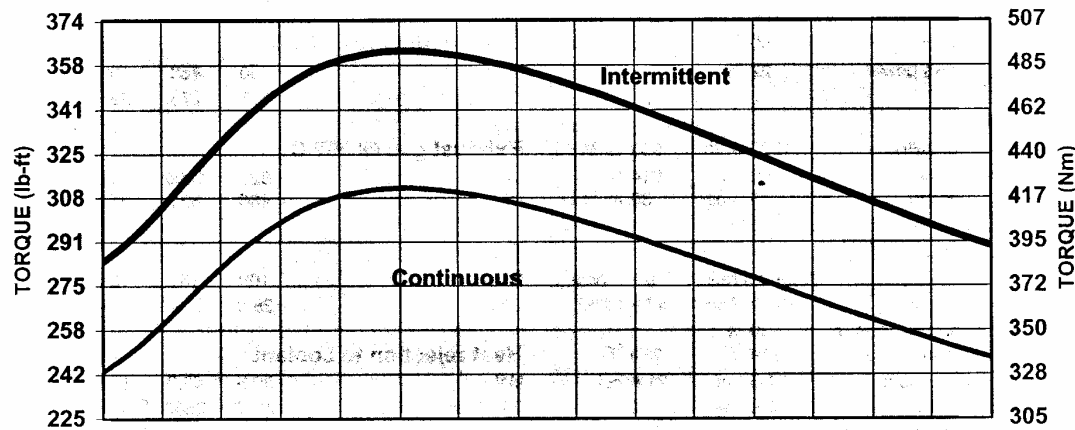
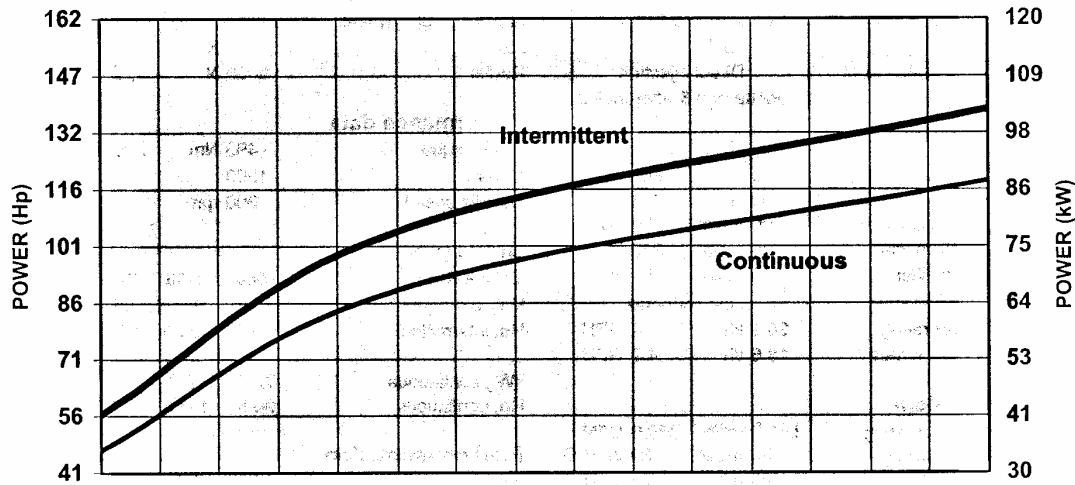


ENGINE PERFORMANCE CURVES

ENGINE MODEL	BF4M2012C
RATING STANDARD	ISO 3046
RATED INTERMITTENT POWER	138 Hp at 2500 rpm
MAX. TORQUE	363.3 lb-ft at 1500 rpm
EMISSION CERTIFICATION	EPA Tier 2/COM 2



Tolerance: +/- 5% per ISO 3046
 Reference conditions: 25 °C (77 °F) 99 kPa (29.31 in. Hg)
 Fuel: 40 °C (104 °F) 0.850 kg/l (7.07 lb/gal)

Document: 999-7121
 Date: 3 May 2002
 Name: Koschella

Curves are based on current data and are subject to change without notice.

BF4M2012C

Specification data

General

Cylinders	4	
Cylinder arrangement	In line	
Bore	101 mm	4.0 in.
Stroke	126 mm	5.0 in.
Cylinder Displacement	1.01 liter	61.6 in. ³
Total displacement	4.04 liter	246.5 in. ³
Compression ratio	18.4:1	
Combustion system	Direct injection	
Aspiration	Turbocharged & aftercooled	

Fuel system

Lift pump suction head, max	1.5 m	59.1 in.
Lift pump flow @max rpm	600 l/h	2.6 GPM
Max restriction in fuel supply line	200 mbar	80 in. H ₂ O
Max restriction in fuel return line	500 mbar	200 in. H ₂ O
Max restriction in fuel pre-filter	200 mbar	80 in. H ₂ O
Fuel filter type	Replaceable cartridge	
Fuel consumption @ max rating	28.1 l/h	7.4 GPH
Fuel consumption @ peak torque	18.6 l/h	4.9 GPH

Combustion air system

Combustion air flow @ max rating	576.0 m ³ /h	339.0 CFM
Max allowable clean restriction	50 mbar	20 in. H ₂ O
Max allowable dirty restriction	65 mbar	26 in. H ₂ O
Charge air press. @ max rating	1.5 bar	21.8 psi
Turbo outlet temp. @ max rating	168 °C	334.4 °F
Temp. after charge air cooler	50 °C	122.0 °F
Charge air heat % of gross power	22 %	

Exhaust system

Exhaust gas flow @ max rating	1630 m ³ /h	959 CFM
Exhaust temp @ max rating	490 °C	914 °F
Max allowable back pressure	75 mbar	30 in. H ₂ O

Cooling system

Type	External radiator& aftercooler	
Coolant flow rate @ max rpm	180.0 l/min	47.6 GPM
Coolant heat reject.% of gross power	50 %	
Max coolant temp @ engine outlet	110 °C	230 °F
Max coolant operating pressure	1.5 bar	21.8 psi
Coolant volume in engine	5.6 liter	5.9 qt.
Coolant volume, cooler & pipes, min	0.06 l/kW, 0.05 qt/hp	
Expansion tank capacity, min	30% of circ. Coolant volume	

Lubrication system

Lubrication type	Forced feed lubrication	
Oil flow at max rpm	49.5 l/min	13.1 GPM
Oil pump relief valve setting	6 bar	87 psi
Max oil temperature in oil sump	130 °C	266 °F
Filter volume	1.0 liter	1.1 qt.
Oil change interval	500 hours	

Electrical

Starter motor	12V, 3.1kW	24V, 4.0kW
Max battery CCA	1300A	750A
Voltage drop, battery (+), max	1.0V	

Physical data

Length	775 mm	30.5 in.
Width	540 mm	21.3 in.
Height	742 mm	29.2 in.
Weight, dry	332 kg	730.4 lb.
Max bending @ housing:	800 Nm	589.6 lb-ft
Max force @ flywheel:		
Axial:	N	0 lb.
Radial:	5000 N	1126.1 lb.

Performance data

Peak torque	493 Nm	363.3 lb-ft
@ rpm	1500	
low idle speed	800 rpm	

Gross power

Engine RPM	1500	2100	2200	2300	2500
kW, intermittent	77.4	92.0	95.0	98.0	103.0
Hp, intermittent	103.7	123.3	127.3	131.3	138.0
kW, continuous	72.0	78.0	81.0	83.0	88.0
Hp, continuous	96.5	104.5	108.5	111.2	117.9

Fuel consumption

g/kWhr	204	217	221	225	232
lb/hphr	0.335	0.356	0.362	0.369	0.380

Combustion air @ 25 C

m ³ /h	300	468	499	523	576
CFM	177	275	294	308	339

Exhaust gas @ 500 C

m ³ /h	825	1395	1450	1508	1620
CFM	486	821	853	887	953

Coolant

l/min	109	151	158	166	180
GPM	28.8	39.9	41.7	43.9	47.6

Heat rejection to coolant

kW	39.5	45.0	47.1	49.2	52.8
BTU/min	2245	2560	2679	2798	3003

Heat rejection to charge air

kW	10.8	15.1	16.8	18.8	22.2
BTU/min	616	859	956	1069	1263

Noise, dB(A)

Avg. @ 1 meter

Certifications

U. S. EPA Non-road Tier 1
European COM 1
U. S. EPA Non-road Tier 2, effective Jan 2003
European COM 2, effective Jan 2003

All data refer to standard conditions of 25 °C, 1000 mbar
Data are based on max intermittent output, unless noted



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