

1013. The engine for construction.

63-200 kW at 1500-2300 rpm



Engines for exhaust emission step 2

These are the characteristics of the 1013:

Modern water-cooled 4- and 6-cylinder in-line engines.

Three separate mounting options for gear-driven hydraulic pumps.

Easily accessible service points on one engine side.

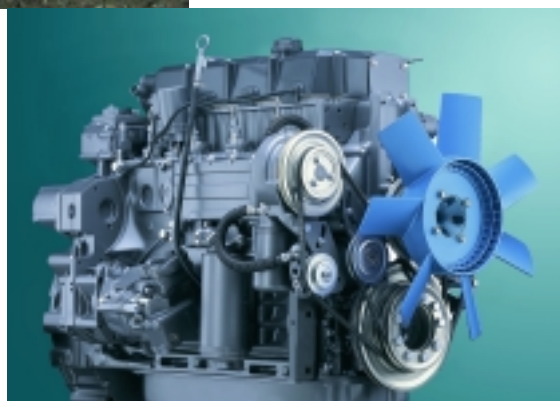
Exchangeable cylinder liners in cooling water flow.

Displacement 1.2 liters per cylinder. Compact design, high power-to-volume-ratio.

Turbocharging with charge air cooling, integrated engine cooling package optional.

Integrated high-pressure fuel injection system with single injection pumps.

Electronic engine governor with diagnostic facilities with CAN-Bus optional.

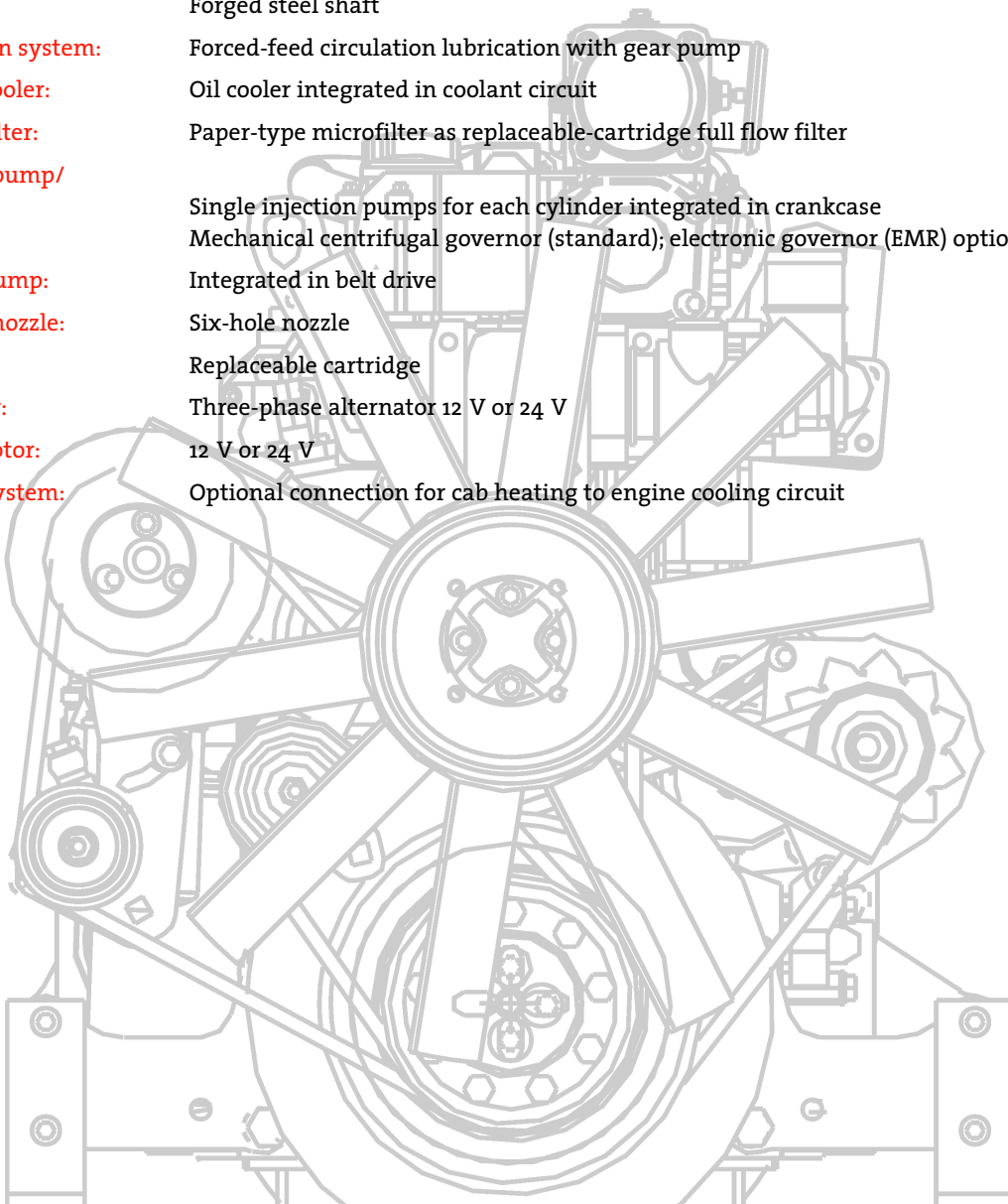


Your benefits:

- ▶ Modular series platform for wide range of applications.
- ▶ Low cost for noise insulation measures. High comfort in driver's cabin.
- ▶ Low fuel consumption and maintenance costs, long service life.
- ▶ Meets exhaust regulation EU-RL 97/68 (step 2) and US-EPA Nonroad (Tier 2).
- ▶ High reliability even under extreme working conditions.
- ▶ Compact installation of engines with integrated cooling system without customizing of engine cooling package.

► Engine description

Type of cooling:	Liquid cooling, thermostatically controlled, charge-air-cooled engines with air-to-air charge air cooler
Crankcase:	High grey cast iron crankcase, for monobloc construction
Crankcase breather:	Closed-circuit crankcase breather
Cylinder head:	Grey cast iron block-type cylinder head
Valve arrangement/ timing:	One inlet and one exhaust valve per cylinder, actuated via tappets, push rods and rocker arms, camshaft driven by geartrain
Piston:	Three-ring piston, two compression rings and one oil scraper ring
Piston cooling:	Oil cooled with spray nozzles (channel-cooled piston)
Connecting rod:	Forged steel rod
Crankshaft bearings:	Tri-metal plain bearings
Crankshaft:	With integral counterweights
Camshaft:	Forged steel shaft
Lubrication system:	Forced-feed circulation lubrication with gear pump
Lube oil cooler:	Oil cooler integrated in coolant circuit
Lube oil filter:	Paper-type microfilter as replaceable-cartridge full flow filter
Injection pump/ governor:	Single injection pumps for each cylinder integrated in crankcase Mechanical centrifugal governor (standard); electronic governor (EMR) optional
Fuel lift pump:	Integrated in belt drive
Injection nozzle:	Six-hole nozzle
Fuel filter:	Replaceable cartridge
Alternator:	Three-phase alternator 12 V or 24 V
Starter motor:	12 V or 24 V
Heating system:	Optional connection for cab heating to engine cooling circuit



► Technical data

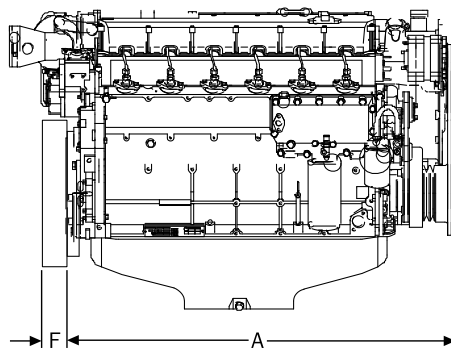
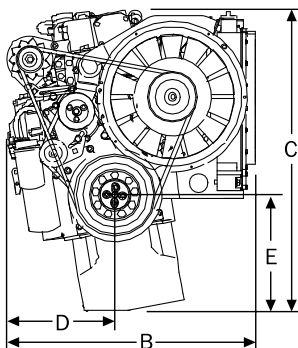
Engine type		BF4M1013C	BF4M1013EC	BF4M1013FC
Number of cylinders		4	4	4
Bore/stroke	mm inch	108/130 4.2/5.1	108/130 4.2/5.1	108/130 4.2/5.1
Displacement	l cu inch	4.76 290	4.76 290	4.76 290
Compression ratio		17.5	17.5	17.5
Max. rated speed	min ⁻¹ rpm	2300	2300	2300
Mean piston speed	m/s ft/sec	9.97 32.71	9.97 32.71	9.97 32.71

Power ratings for construction equipment engines³⁾

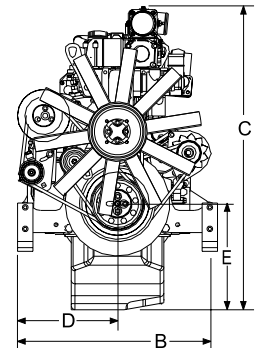
Power ratings for industrial engines, group I ²⁾	kW hp	115 154	118 158	129 173
at speed	min ⁻¹ rpm	2300	2300	2300
Mean effective pressure	bar psi	12.59 182.59	12.93 187.52	13.70 198.68
Industrial engines, group 4 ³⁾	kW hp	104 140	102 137	112 150
at speed	min ⁻¹ rpm	2300	2300	2300
Mean effective pressure	bar psi	11.39 165.18	11.72 169.99	12.28 178.10
Max. torque group 1	Nm lb-ft	572 422	577 426	700 516.25
at speed	min ⁻¹ rpm	1400	1400	1400
Mean effective pressure	bar psi	14.97 217.15	15.23 220.92	16.63 241.23
Minimum idle speed	min ⁻¹ rpm	800	800	650
Weight to DIN 70020, Part 7A (incl. cooling system) ⁴⁾	kg lb	(550) 432 (1212) 952	430 948	432 952

► Dimensions

Integrated cooling system

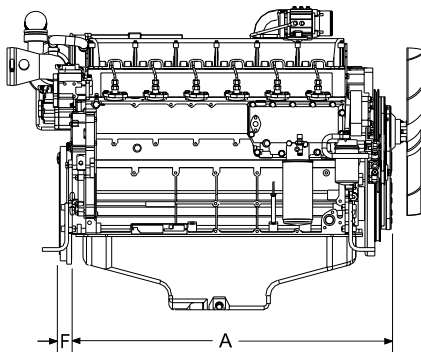


External cooling system



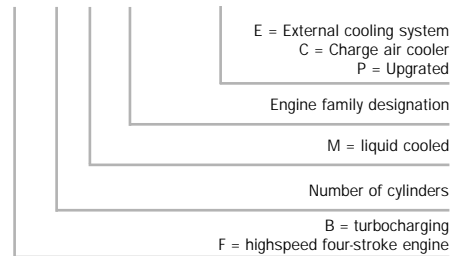
Engine		A	B	C	D	E	F
BF4M1013C	mm inch	898 35.7	760 29.9	790 31.1	338 13.3	295 11.6	122 4.8
BF4M1013EC	mm inch	740 29.1	616 24.3	935 36.8	292 11.5	302 11.9	122 4.8
BF4M1013FC	mm inch	740 29.1	616 24.3	935 36.8	292 11.5	302 11.9	122 4.8
BF6M1013C	mm inch	1158 45.6	760 29.9	845 33.3	338 13.3	345 13.6	122 4.8
BF6M1013EC	mm inch	1024 40.3	622 24.5	943 37.1	292 11.5	310 12.2	122 4.8
BF6M1013CP	mm inch	1158 45.6	760 29.9	845 33.3	338 13.3	345 13.6	122 4.8
BF6M1013ECP	mm inch	1024 40.3	622 24.5	943 37.1	292 11.5	310 12.2	122 4.8
BF6M1013FC	mm inch	1024 40.3	622 24.5	943 37.1	292 11.5	310 12.2	122 4.8

BF6M1013C	BF6M1013EC	BF6M1013CP	BF6M1013ECP	BF6M1013FC
6	6	6	6	6
108/130 4.2/5.1	108/130 4.2/5.1	108/130 4.2/5.1	108/130 4.2/5.1	108/130 4.2/5.1
7.14 435	7.15 435	7.14 435	7.15 435	7.15 435
17.5	17.5	17.5	17.5	17.5
2300	2300	2300	2300	2300
9.97 32.71	9.97 32.71	9.97 32.71	9.97 32.71	9.97 32.71
170 228	174 234	190 255	195 262	233 313
2300	2300	2300	2300	2300
12.41 179.98	12.71 184.32	13.87 201.15	14.59 211.59	16.88 244.80
153 205	148 199	171 229	166 223	191 256
2300	2300	2300	2300	2300
11.17 161.99	11.46 166.20	12.48 180.99	13.13 190.42	13.18 191.14
847 624.66	854 629.83	946 697.68	954 703.56	1050
1400	1400	1400	1400	1700
14.78 214.39	15.01 217.73	16.51 239.49	18.45 267.63	18.45 267.62
600	800	800	800	650
(702) 572 (1547) 1261	572 1260	(702) 572 (1547) 1261	572 1261	572 1261



► Model designation

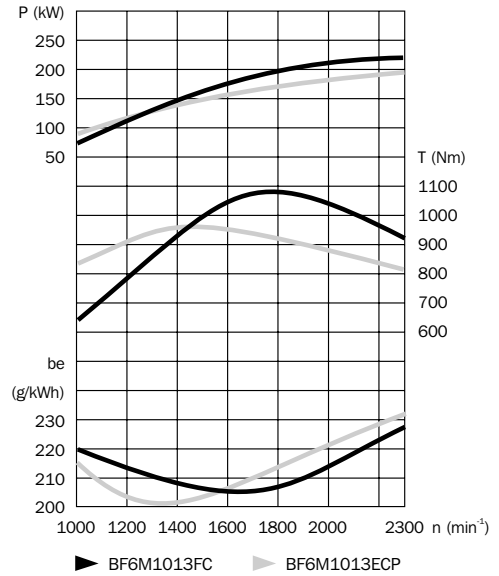
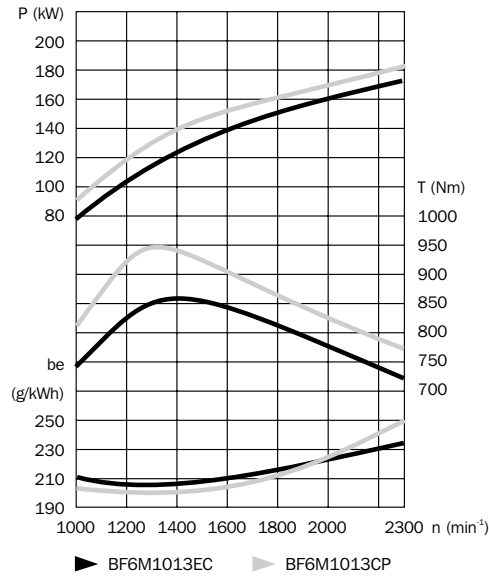
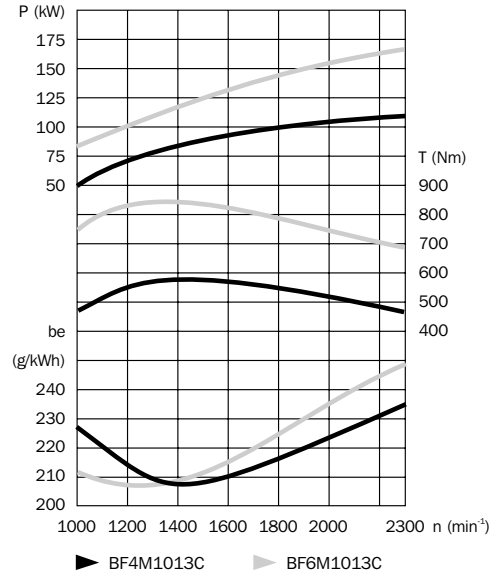
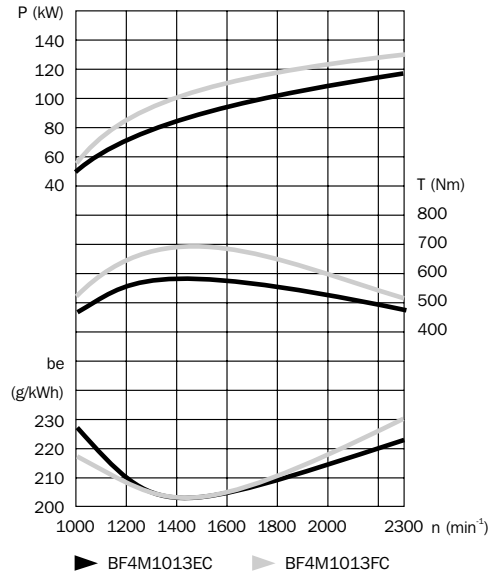
BF 6 M 1013 ECP



- 1) Power ratings at flywheel without deduction fan power requirement.
- 2) To ISO 1585, EG-RL80/1269/EWG and EG-RL88/195/EWG.
- 3) To ISO 3046/1 (IFN), DIN 6271 fuel stop power.
- 4) Specific fuel consumption based on diesel fuel with a specific gravity of 0.835 kg/dm³ at 15°C.

The values given in this data sheet are for information purposes only and not binding.
The information given in the offer is decisive.

► Standard engines





The engine company.

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