



2011. The engine for agricultural equipment.

23 - 65 kW at 1500 - 2800 rpm



These are the characteristics of the 2011:

2-, 3- and 4-cylinder naturally aspirated in-line engines.

3- and 4-cylinder engines also turbocharged.

Conventional or external cooling system.

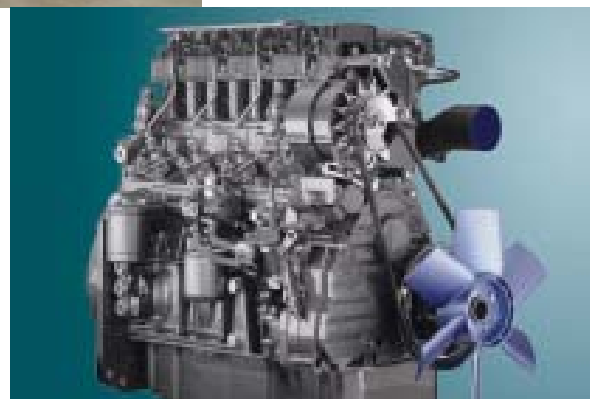
Up to 14 % more power in comparison to the successor 1011F.

100 % extended belt change interval.

PTO for hydraulic pump drive ist increased by 55 % up to 28 kW/2800 rpm.

All service points on one engine side.

Compact engine design.

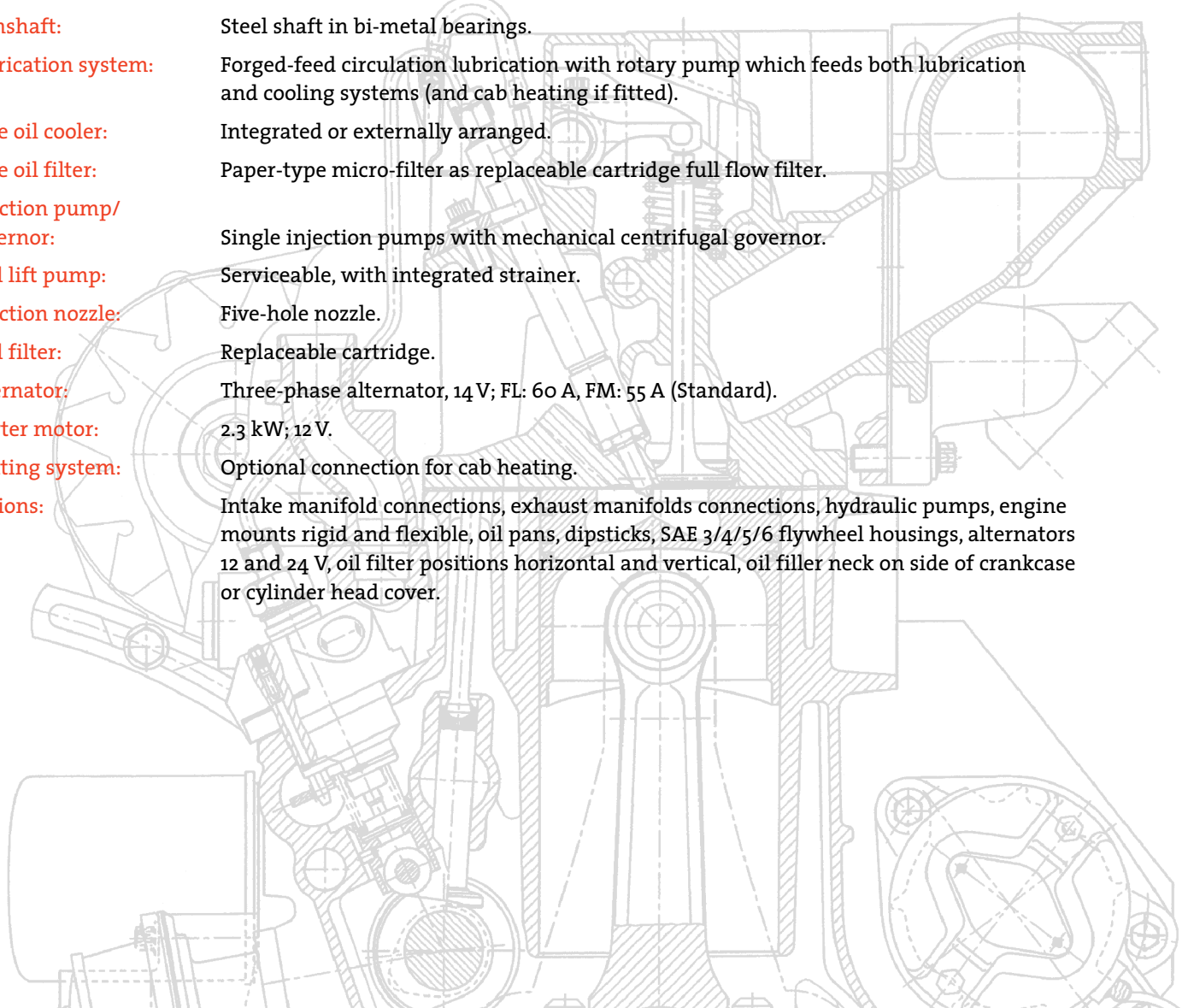


Your benefits:

- ▶ Designed specifically for construction equipment the dimensions of the engines are extremely compact. Thus reducing installation cost.
- ▶ The 2011 engines convince with an excellent power-to-weight ratio.
- ▶ Low exhaust emission for a clean environment. Meet exhaust emission legislations 97/68 EU Step II and EPA Tier II for mobile equipment.
- ▶ Cooling and lubrication with oil avoid corrosion and cavitation. High reliability combined with long maintenance intervals and less wear parts.
- ▶ Low noise emission, no expensive insulation measures for noise reduction.

► Engine description

Type of cooling:	Conventional or external cooling system.
Crankcase:	Grey cast iron.
Crankcase breather:	Closed-circuit breather.
Cylinder head:	Block-type cast iron cylinder head.
Valve arrangement/ timing:	Overhead valves in cylinder head, one inlet and one exhaust valve per cylinder, actuated via tappets, push rods and rocker arms, driven by toothed belt and camshaft, automatic tensioner.
Piston:	Three-ring piston, two compressions rings and one oil scraper ring.
Piston cooling:	Oil-cooled with spray nozzles.
Connecting rod:	Drop-forged steel rod.
Crankshaft and big-end bearings:	Ready-to-install plain bearings.
Crankshaft:	Modular cast iron.
Camshaft:	Steel shaft in bi-metal bearings.
Lubrication system:	Forged-feed circulation lubrication with rotary pump which feeds both lubrication and cooling systems (and cab heating if fitted).
Lube oil cooler:	Integrated or externally arranged.
Lube oil filter:	Paper-type micro-filter as replaceable cartridge full flow filter.
Injection pump/ governor:	Single injection pumps with mechanical centrifugal governor.
Fuel lift pump:	Serviceable, with integrated strainer.
Injection nozzle:	Five-hole nozzle.
Fuel filter:	Replaceable cartridge.
Alternator:	Three-phase alternator, 14 V; FL: 60 A, FM: 55 A (Standard).
Starter motor:	2.3 kW; 12 V.
Heating system:	Optional connection for cab heating.
Options:	Intake manifold connections, exhaust manifolds connections, hydraulic pumps, engine mounts rigid and flexible, oil pans, dipsticks, SAE 3/4/5/6 flywheel housings, alternators 12 and 24 V, oil filter positions horizontal and vertical, oil filler neck on side of crankcase or cylinder head cover.



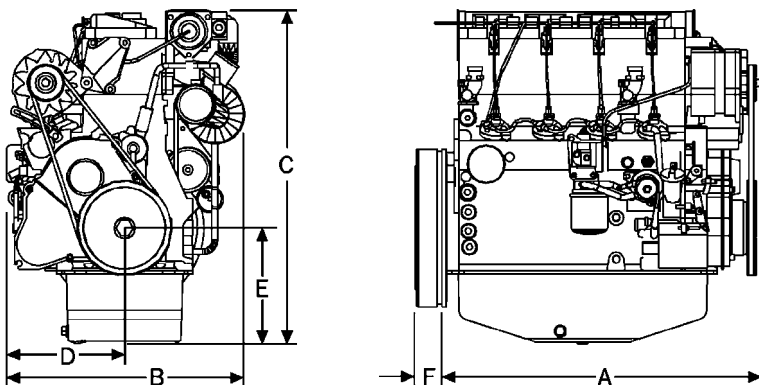
► Technical data

Engine type		F 2 M 2011	F 3 M 2011	BF 3 M 2011	F 4 M 2011	BF 4 M 2011
Number of cylinders		2	3	3	4	4
Bore/stroke	mm	94/112	94/112	94/112	94/112	94/112
Displacement	l	1.55	2.33	2.33	3.11	3.11
Compression ratio		19	19	17.5	19	17.5
Max. rated speed	rpm	2800	2800	2800	2800	2800
Mean piston speed	m/s	25.0	25.0	23.6	25.0	23.6

► Power ratings for agricultural application¹⁾

Power ratings to ISO 3046/1	kW	24.2	36.5	48.5	48.5	65.0
at speed	rpm	2800	2800	2800	2800	2800
Mean effective pressure	bar	7.5	7.5	10.2	7.9	10.9
Max. torque	Nm	93	140	190	195	270
at speed	rpm	1700	1700	1600	1700	1600
Minimum idle speed	rpm	900	900	900	900	900
Specific fuel consumption ²⁾	g/kWh	250	245	235	245	245
Weight to DIN 70020, partie 7A ³⁾	kg	169	210	215	248	250

► Dimensions

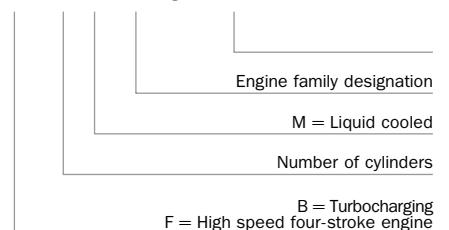


Engine		A	B	C*	D	E*	F
F 2 M 2011	mm	439	455	683	245	225	69
F 3 M 2011	mm	550	485	678	245	220	69
BF 3 M 2011	mm	550	576	695	246	221	69
F 4 M 2011	mm	663	503	702	266	245	68
BF 4 M 2011	mm	663	524	707	265.5	245	68

* with standard oil pan

► Modell designation

BF 4 M 2011



- 1) Power ratings at flywheel net, incl. integrated cooling system.
- 2) At optimal operating point. Specific fuel consumption based on diesel fuel with a specific gravity of 0.835 kg/dm³ at 15°C.
- 3) With integrated cooling system, dry weight.

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

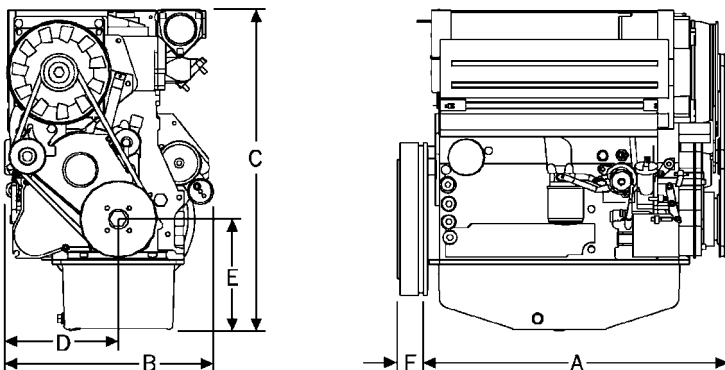
► Technical data

Engine type		F 2 L 2011	F 3 L 2011	BF 3 L 2011	F 4 L 2011	BF 4 L 2011
Number of cylinders		2	3	3	4	4
Bore/stroke	mm	94/112	94/112	94/112	94/112	94/112
Displacement	l	1.55	2.33	2.33	3.11	3.11
Compression ratio		19	19	17.5	19	17.5
Max. rated speed	rpm	2800	2800	2800	2800	2800
Mean piston speed	m/s	25.0	25.0	23.6	25.0	23.6

Power ratings for agricultural application¹⁾

Power ratings to ISO 3046/1	kW	23.0	35.8	44.9	47.8	58.1
at speed	rpm	2800	2800	2800	2800	2800
Mean effective pressure	bar	7.3	7.4	9.8	7.7	9.7
Max. torque	Nm	90	137	1810	190	241
at speed	rpm	1700	1700	1600	1700	1600
Minimum idle speed	rpm	900	900	900	900	900
Specific fuel consumption ²⁾	g/kWh	250	245	235	245	245
Weight to DIN 70020, partie 7A ³⁾	kg	175	217	222	256	257

► Dimensions

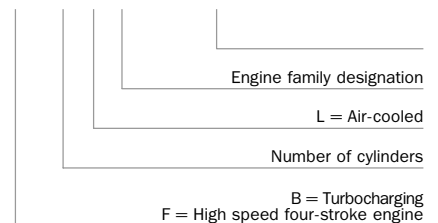


Engine		A	B	C*	D	E*	F
F 2 L 2011	mm	432	491	783	245	225	69
F 3 L 2011	mm	544	491	477	246	220	69
BF 3 L 2011	mm	544	587	695	257	221	69
F 4 L 2011	mm	656	491	707	266	245	68
BF 4 L 2011	mm	656	525	707	266	245	68

* with standard oil pan

► Modell designation

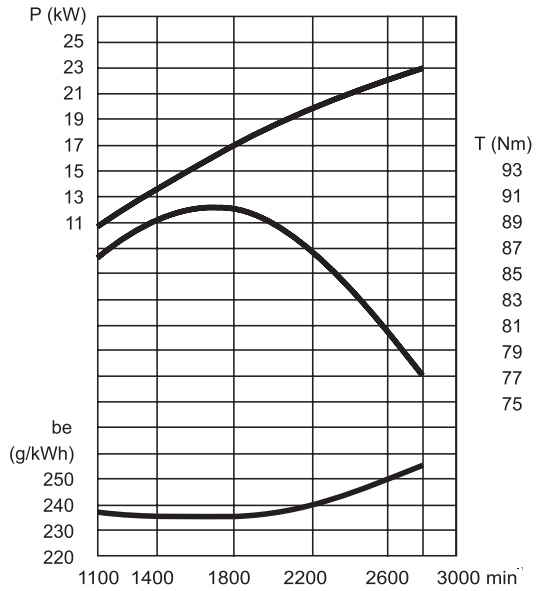
BF 4 L 2011



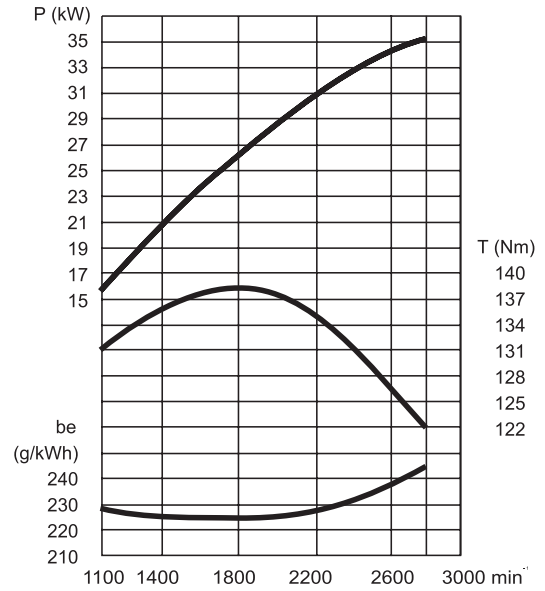
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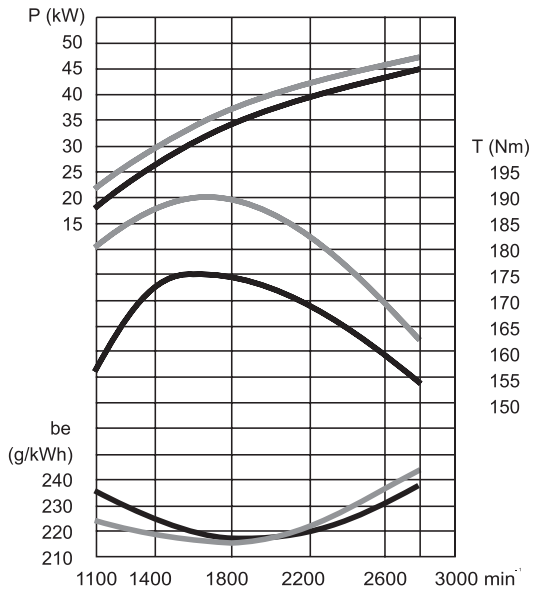
► Standard engines



► F 2 L 2011

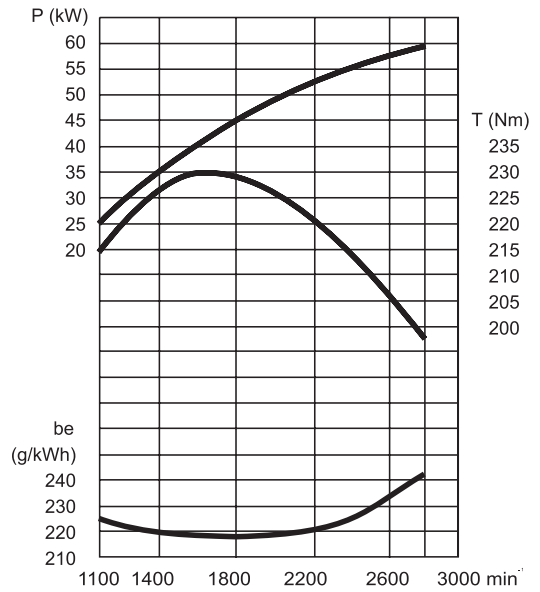


► F 3 L 2011



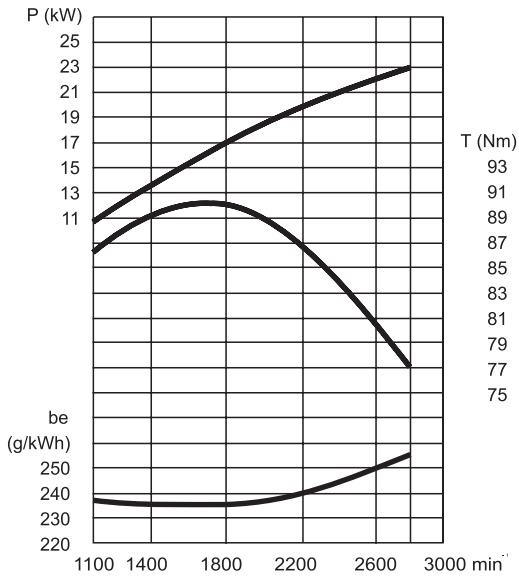
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► F 4 L 2011

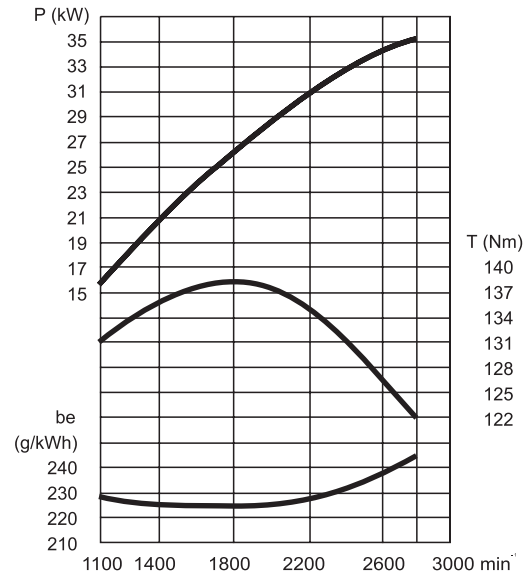


► BF 4 L 2011

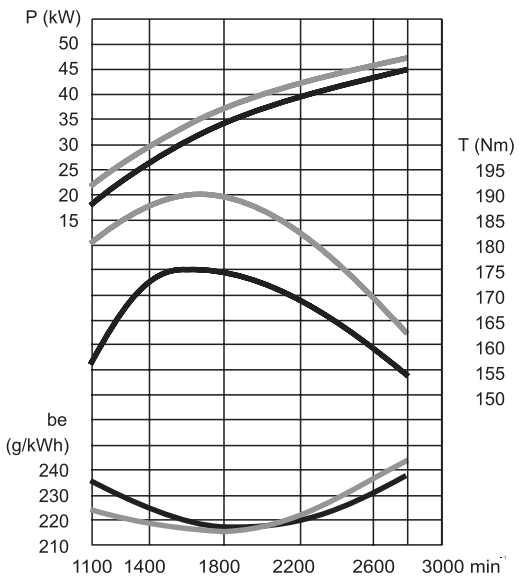
► Standard engines



► F 2 M 2011

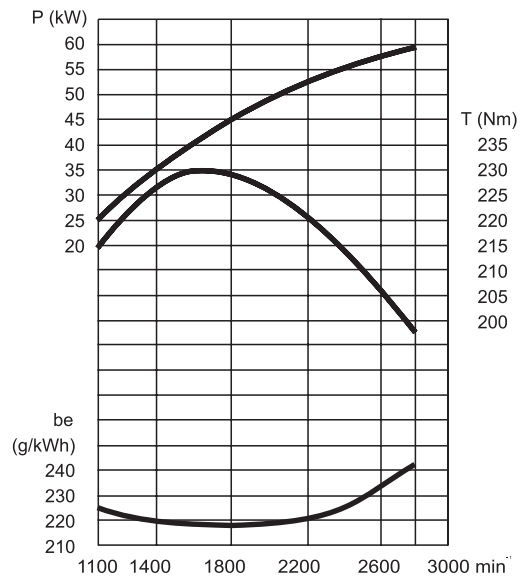


► F 3 M 2011



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