



IFN Rating F/IFN/ICFN Rating

Sales area Exhaust certificate	[rpm]	1B20	1B30E	1B30	1B30VE	1B40	1B50E	1B50
US EPA T4f/CARB constant		–	3000, 3600	–	3100	–	1800, 3000, 3600	–
US EPA T4f variable		–	3000, 3600	–	3100	–	3000, 3600	–
Europe EU V constant		3000, 3600	3000, 3600	2950–3000, 3600	3100	3000, 3600	1800, 3000, 3600	–
Europe EU V variable		2700–3350	3000, 3600	2000–3600	3100	2250–3600	3000, 3600	2500–3600
Less regulated		1500–3600	3000, 3600	1500–3600	3100	1500–3600	3000, 3600	1500–3600

# Technical Data, Performance Table

Technical data		1B20	1B30E <sup>1</sup>	1B30	1B30VE <sup>1</sup>	1B40	1B50E <sup>1</sup>	1B50
Type	Air cooled 4-stroke diesel engine							
Cylinder	1							
Direct injection	mechanical	electronical	mechanical	electronical	mechanical	electronical	mechanical	
Position of crank shaft	horizontal	horizontal		vertical	horizontal		horizontal	
Bore x stroke [mm / in]	69 x 65 / 2.72 x 2.56	80 x 69 / 3.15 x 2.72	80 x 69 / 3.15 x 2.72	88 x 76 / 3.46 x 2.99	93 x 76 / 3.66 x 2.99			
Displacement [l / cu in]	0.243 / 14.83	0.347 / 21.18	0.347 / 21.18	0.462 / 28.19	0.517 / 31.55			
Mean piston speed @ 3000 rpm [m/s / ft/min]	6.5 / 1279.53	6.9 / 1358.27	6.9 / 1358.27	7.6 / 1496.06	7.6 / 1496.06			
Compression ratio	22:1	21.5:1	21.5:1	20.5:1	20.5:1			
Lubrication oil consumption, related to full load	max. 1 % of fuel consumption							
Lubrication oil capacity	max. [l / US qts]	0.9 / 0.951	1.2 / 1.27	1.1 / 1.162	1.2 / 1.27	1.5 / 1.528	1.6 / 1.69	1.5 / 1.528
	min. [l / US qts]	0.4 / 0.423	0.7 / 0.74	0.6 / 0.634	0.7 / 0.74	0.7 / 0.739	0.8 / 0.85	0.7 / 0.739
Speed control	Lowest idle speed [rpm]	approx. 1000			approx. 800			
	Static speed droop @ 3000 rpm	approx. 5 %	configurable	approx. 5 %	configurable	approx. 5 %	configurable	approx. 5 %
	Control method	mechanical	CAN J1939, multi stage switch, analog	mechanical	CAN J1939, multi stage switch, analog	mechanical	CAN J1939, multi stage switch, analog	mechanical
Installation Data	Combustion air required @ 3000 rpm approx. [kg/h / cfm] <sup>2</sup>	25.2 / 12.3	37.8 / 18.5		49.8 / 24.3		56.4 / 27.6	
	Cooling air required @ 3000 rpm approx. [kg/h / cfm] <sup>2</sup>	306 / 150	432 / 210		528 / 258		552 / 270	
	Starter [V]	12 [1.0 kW / 1.3 hp]   24 [1.6 kW / 2.1 hp]						
	Alternator charging current @ 3000 / 1500 rpm [A]	14 / 7 [14 V]   7 / 4 [28 V]						
Battery capacity min. / max. [Ah]	36 / 55 [12 V]   24 / 44 [24 V]							
Dimensions	Engine with recoil start [kg / lb]	28.0 / 61.7	—	35.0 / 77.2	—	48.0 / 105.8	—	51.2 / 112.9
	Engine with electric start [kg / lb]	32.8 / 72.3	40.8 / 90.0	39.8 / 87.7	42.8 / 94.4	53.3 / 117.5	57.5 / 126.8	56.5 / 124.6
	L x W x H [mm / in]	292 x 367 x 401 / 11.5 x 14.4 x 15.8	322 x 411 x 431 / 12.7 x 16.2 x 17.0	322 x 404 x 431 / 12.7 x 15.9 x 17.0	398 x 432 x 385 / 15.7 x 17.0 x 15.2	334 x 412 x 480 / 13.1 x 16.2 x 18.9	334 x 438 x 480 / 13.1 x 17.2 x 18.9	334 x 412 x 480 / 13.1 x 16.2 x 18.9

<sup>1</sup> Performance data ICFN <sup>2</sup> For other rpm there is a linear reduction in the air requirement. <sup>3</sup> EU Stage V only <sup>4</sup> Power ratings include generator power

# Technical Data, Performance Table

Engine output max. [kW / hp]	[rpm]	<b>1B20</b>	<b>1B30E<sup>1,4</sup></b>	<b>1B30</b>	<b>1B30VE<sup>1,4</sup></b>	<b>1B40</b>	<b>1B50E<sup>1,4</sup></b>		<b>1B50</b>
<b>Blocked ISO brake horsepower (IFN) for intermittent loading according to ISO 3046-1. For variable speed.</b>	3600	—	4.5 / 6.0	5.0 / 6.7	—	7.3 / 9.8	7.9 / 10.6	8.1 / 10.9 <sup>3</sup>	7.9 / 10.6
	3000	3.1 / 4.2	4.1 / 5.6	4.6 / 6.2	4.1 / 5.6	6.8 / 9.1	7.6 / 10.2		7.6 / 10.2
	2800	2.9 / 3.9	4.0 / 5.3	4.5 / 6.0	4.0 / 5.3	6.6 / 8.9	7.3 / 9.8		7.3 / 9.8
	2600	—	3.8 / 5.1	4.2 / 5.6	3.8 / 5.1	6.3 / 8.4	6.9 / 9.3		6.9 / 9.3
	2300	—	3.5 / 4.7	3.9 / 5.2	3.5 / 4.7	5.7 / 7.6	6.2 / 8.3		—
	2000	—	3.1 / 4.1	3.4 / 4.6	3.1 / 4.1	—	5.3 / 7.1		—
<b>Blocked ISO brake horsepower (IFN) for intermittent loading according to ISO 3046-1. For constant speed.</b>	3600	3.4 / 4.6	4.5 / 6.0	5.0 / 6.7	—	7.3 / 9.8	7.9 / 10.6	8.1 / 10.9 <sup>3</sup>	7.9 / 10.6
	3100	—	—	—	4.2 / 5.6	—	—		—
	3000	3.1 / 4.2	4.1 / 5.5	4.6 / 6.2	4.1 / 5.5	6.8 / 9.1	7.6 / 10.2		7.6 / 10.2
	1800	—	—	—	—	—	4.7 / 6.3		—
	1500	—	—	—	—	—	—		—
<b>Blocked ISO brake horsepower (IFN) for intermittent loading according to ISO 3046-1. For variable speed.</b>	3600	3.4 / 4.6	4.5 / 6.0	5.0 / 6.7	—	7.3 / 9.8	7.9 / 10.6	8.1 / 10.9 <sup>3</sup>	7.9 / 10.6
	3000	3.1 / 4.2	4.1 / 5.6	4.6 / 6.2	4.1 / 5.6	6.8 / 9.1	7.6 / 10.2		7.6 / 10.2
Less regulated markets	2800	2.9 / 3.9	4.0 / 5.3	4.5 / 6.0	4.0 / 5.3	6.6 / 8.9	7.3 / 9.8		7.3 / 9.8
	2600	2.8 / 3.8	3.8 / 5.1	4.2 / 5.6	3.8 / 5.1	6.3 / 8.4	6.9 / 9.3		6.9 / 9.3
	2300	2.5 / 3.4	3.5 / 4.7	3.9 / 5.2	3.5 / 4.7	5.7 / 7.6	6.2 / 8.3		6.2 / 8.3
	2000	2.1 / 2.8	3.1 / 4.1	3.4 / 4.6	3.1 / 4.1	4.9 / 6.6	5.3 / 7.1		5.3 / 7.1
	1800	1.9 / 2.5	2.7 / 3.6	3.0 / 4.0	2.7 / 3.6	4.4 / 5.9	4.7 / 6.3		4.7 / 6.3
	1500	1.5 / 2.0	2.1 / 2.8	2.3 / 3.1	2.1 / 2.8	3.5 / 4.7	3.9 / 5.2		3.9 / 5.2

<sup>1</sup> Performance data ICFN <sup>2</sup> For other rpm there is a linear reduction in the air requirement. <sup>3</sup> EU Stage V only <sup>4</sup> Power ratings include generator power