

Name 12V2000G16F
Application Group 3B
Dataset Ref. 25°C/-; Air charge air cooling

Speed [rpm] 1500
Nominal power [kW] 665
Nominal power [bhp] 891
Frequency [Hz] 50

Exhaust Regulations Fuel-consumption optimized;

Reference conditions

No.	Description	Index	Value	Unit
6	Intake air temperature		25	°C
7	Charge-air coolant temperature		-	°C
8	Barometric pressure		1000	mbar
9	Site altitude above sea level		100	m

0. Data-relevant engine design configuration

No.	Description	Index	Value	Unit
43	Amendment history drawing No.		N	-
44	Amendment history drawing No. (cont.)		N	-
8	Engine rated speed switchable (1500/1800 rpm)		-	-
13	Engine without sequential turbocharging (turbochargers without cut-in/cut-out control)		X	-
31	Engine with air-cooled charge air		X	-
61	Engine with water/charge air cooling (LT, on-engine)		-	-

1. Power-related data

No.	Description	Index	Value	Unit
1	Engine rated speed	A	1500	rpm
4	Continuous power ISO 3046 (10% overload capability) (design power DIN 6280, ISO 8528)	A	665	kW
5	Fuel stop power ISO 3046	A	732	kW
8	Mean effective pressure (MEP) (Continuous power ISO 3046)		19.9	bar
9	Mean effective pressure (MEP) (Fuel stop power ISO 3046)		21.8	bar

2. General Conditions (for maximum power)

No.	Description	Index	Value	Unit
46	Individual power calculation (ESCM) required for maximum power		X	-
1	Intake air depression (new filter)	A	15	mbar
2	Intake air depression, max.	L	40	mbar
3	Exhaust back pressure	A	30	mbar
4	Exhaust back pressure, max.	L	50	mbar
5	Fuel temperature at fuel feed connection	R	25	°C
9	Fuel temperature at fuel feed connection, max. (w/o power reduction)	L	-	°C
10	Fuel temperature at fuel feed connection, max.	L	65	°C

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49	Max. ambient temperature in direct vicinity of vibration damper	L	-	°C
18	Fuel temperature at fuel feed connection, min.	L	N	°C

3. Consumption

No.	Description	Index	Value	Unit
17	Specific fuel consumption (be) - 100 % CP (+ 5 %; EN 590; 42.8 MJ/kg)	R	190	g/kWh
18	Specific fuel consumption (be) - 75 % CP (+ 5 %; EN 590; 42.8 MJ/kg)	R	194	g/kWh
19	Specific fuel consumption (be) - 50 % CP (+ 5 %; EN 590; 42.8 MJ/kg)	R	205	g/kWh
20	Specific fuel consumption (be) - 25 % CP (+ 5 %; EN 590; 42.8 MJ/kg)	R	225	g/kWh
21	Specific fuel consumption (be) - FSP (+ 5 %; EN 590; 42.8 MJ/kg)	R	191	g/kWh
56	Specific fuel consumption (be) - 100 % FSP (+ 5 %; EN 590; 42.8 MJ/kg)	R	-	g/kWh
57	Specific fuel consumption (be) - 75 % FSP (+ 5 %; EN 590; 42.8 MJ/kg)	R	-	g/kWh
58	Specific fuel consumption (be) - 50 % FSP (+ 5 %; EN 590; 42.8 MJ/kg)	R	-	g/kWh
59	Specific fuel consumption (be) - 25 % FSP (+ 5 %; EN 590; 42.8 MJ/kg)	R	-	g/kWh
73	No-load fuel consumption	R	11	kg/h
92	Lube oil consumption after 100 h of operation (B = fuel consumption per hour) Guideline value does not apply for the design of EGAT systems. Please consult the Applications Center with regard to the layout of EGA systems.	R	0.35	% of B
62	Lube oil consumption after 100 h of operation, max. (B = fuel consumption per hour)	L	0.8	% of B

4. Model-related data (basic design)

No.	Description	Index	Value	Unit
3	Engine with exhaust turbocharger (ETC) and intercooler		X	-
4	Exhaust piping, non-cooled		X	-
33	Working method: four-cycle, diesel, single-acting		X	-
34	Combustion method: direct injection		X	-
36	Cooling system: conditioned water		X	-
37	Direction of rotation: c.c.w. (facing driving end)		X	-
6	Number of cylinders		12	-
7	Cylinder configuration: V angle		90	degrees (°)
10	Bore		135	mm
11	Stroke		156	mm
12	Displacement, cylinder		2.333	liter

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Exhaust Regulations Fuel-consumption optimized;

13	Displacement, total		26.8	liter
14	Compression ratio		17.5	-
40	Cylinder heads: single-cylinder		X	-
41	Cylinder liners: wet, replaceable		X	-
24	Number of inlet valves, per cylinder		2	-
25	Number of exhaust valves, per cylinder		2	-
15	Number of turbochargers		2	-
16	Number of L.P. turbochargers		-	-
17	Number of H.P. turbochargers		-	-
18	Number of intercoolers		1	-
19	Number of L.P. intercoolers		-	-
20	Number of H.P. intercoolers		-	-
28	Standard flywheel housing flange (engine main PTO)		0	SAE
50	Static bending moment at standard flywheel housing flange, max.	L	N	kNm
51	Dynamic bending moment at standard flywheel housing flange, max.	L	N	kNm
43	Flywheel interface (DISC)		18"	-
46	Engine mass diagram, drawing No.		N	-
47	Engine mass diagram, drawing No. (cont.)		N	-

5. Combustion air / exhaust gas

No.	Description	Index	Value	Unit
33	Charge-air flow through external air-to-air intercooler	A	N	m³/s
34	Charge-air temperature before external air-to-air intercooler	A	175	°C
35	Charge-air temperature after external air-to-air intercooler	A	50	°C
36	Charge-air temperature after external air-to-air intercooler, max.	L	65	°C
37	Charge-air temperature after external air-to-air intercooler, min.	L	10	°C
39	Pressure differential in external air-to-air intercooler, max.	L	130	mbar
8	Charge-air pressure before cylinder - CP	R	2.7	bar abs
27	Charge-air pressure before cylinder - FSP	R	2.9	bar abs
9	Combustion air volume flow - CP	R	0.74	m³/s
10	Combustion air volume flow - FSP	R	0.81	m³/s
11	Exhaust volume flow (at exhaust temperature) - CP	R	2.05	m³/s
12	Exhaust volume flow (at exhaust temperature) - FSP	R	2.25	m³/s
17	Exhaust temperature after engine - CP	R	550	°C
18	Exhaust temperature after engine - FSP	R	555	°C
58	Exhaust temperature after engine (turbocharger), max.	L	670	°C

6. Heat dissipation

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60	Heat dissipated by engine coolant - CP (high-temperature circuit)	R	280	kW
61	Heat dissipated by engine coolant - CP (low-temperature circuit)	R	-	kW
62	Heat dissipated by engine coolant - FSP (high-temperature circuit)	R	300	kW
63	Heat dissipated by engine coolant - FSP (low-temperature circuit)	R	-	kW
26	Charge-air heat dissipation - CP	R	105	kW
27	Charge-air heat dissipation - FSP	R	125	kW
31	Heat dissipated by return fuel flow - CP	R	3.5	kW
32	Heat dissipated by return fuel flow - FSP	R	3.5	kW
33	Radiation and convection heat, engine - CP	R	35	kW
34	Radiation and convection heat, engine - FSP	R	35	kW

7. Coolant system (high-temperature circuit)

No.	Description	Index	Value	Unit
17	Coolant temperature (at engine outlet to cooling equipment)	A	100	°C
20	Coolant temperature after engine, limit 1	L	102	°C
21	Coolant temperature after engine, limit 2	L	105	°C
25	Coolant antifreeze content, max.	L	50	%
30	Cooling equipment: coolant flow rate	A	31.6	m³/h
35	Coolant pump: inlet pressure, min.	L	0.4	bar
36	Coolant pump: inlet pressure, max.	L	1.5	bar
41	Pressure loss in off-engine cooling system, max.	L	1.0	bar
72	Pressure loss in off-engine cooling system, min.	L	0.3	bar
47	Breather valve (expansion tank) opening pressure (excess pressure)	R	1.0	bar
54	Cooling equipment: height above engine, max.	L	20	m
50	Thermostat, starts to open	R	79	°C

8. Coolant system (low-temperature circuit)

No.	Description	Index	Value	Unit
9	Coolant temperature before intercooler (at engine inlet from cooling equipment)	A	-	°C
13	Coolant antifreeze content, max.	L	-	%
17	Charge-air temperature after intercooler, max.	L	-	°C
76	Temperature differential between intake air and charge-air coolant before intercooler	A	-	K
20	Cooling equipment: coolant flow rate	A	-	m³/h
24	Coolant pump: inlet pressure, min.	L	-	bar
25	Coolant pump: inlet pressure, max.	L	-	bar
29	Pressure loss in off-engine cooling system, max.	L	-	bar
62	Pressure loss in off-engine cooling system, min.	L	-	bar
43	Cooling equipment: height above engine, max.	L	-	m

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36	Breather valve (expansion tank) opening pressure (excess pressure)	R	-	bar
39	Thermostat, starts to open	R	-	°C

10. Lube oil system

No.	Description	Index	Value	Unit
1	Lube oil operating temp. before engine, from	R	75	°C
2	Lube oil operating temp. before engine, to	R	100	°C
5	Lube oil temperature before engine, limit 1	L	103	°C
6	Lube oil temperature before engine, limit 2	L	105	°C
8	Lube oil operating press. bef. engine, from	R	5.8	bar
9	Lube oil operating press. bef. engine, to	R	8.5	bar
10	Lube oil pressure before engine, alarm	L	4.5	bar
11	Lube oil pressure before engine, shutdown	L	4.0	bar
19	Lube oil fine filter (main circuit): number of units		1	-
20	Lube oil fine filter (main circuit): number of elements per unit		2	-
32	Lube oil fine filter (main circuit): pressure differential, max.	L	1.0	bar

11. Fuel system

No.	Description	Index	Value	Unit
3307	Fuel pressure at fuel feed connection, min. (when engine is starting), absolute pressure	L	0.5	bar abs
3309	Fuel pressure at fuel feed connection, max. (when engine is starting), absolute pressure	L	1.5	bar abs
3308	Fuel pressure at fuel feed connection, min. (when engine is running), absolute pressure	L	0.5	bar abs
3310	Fuel pressure at fuel feed connection, max. (permanent), absolute pressure	L	1.0	bar abs
3311	Fuel pressure at fuel feed connection, specification		XZ54407000001	-
4211	Max. fuel supply volume Normal mode	A	25	liter/min
4212	Max. fuel supply volume Failure mode	A	25	liter/min
77	Max. fuel return volume Normal mode	R	25	liter/min
4184	Max. fuel return volume Failure mode	R	25	liter/min
10	Fuel pressure at return connection on engine, max.	L	0.5	bar
13	Fuel temperature differential before/after engine, max.	L	15	K
18	Fuel fine filter (main circuit): number of units	A	1	-
19	Fuel fine filter (main circuit): number of elements per unit	A	4	-
20	Fuel fine filter (main circuit): particle retention	A	0.005	mm
21	Fuel fine filter (main circuit): pressure differential, max.	L	1.0	bar

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12. General operating data

No.	Description	Index	Value	Unit
1	Cold start capability: air temperature (w/o starting aid, w/o preheating) - (case A)	R	0	°C
22	Coolant preheating, preheating temperature, min.	L	32	°C
3506	Coolant preheating, preheating temperature, max.	L	55	°C
28	Breakaway torque (without driven machinery) coolant temperature +5°C	R	-	Nm
30	Breakaway torque (without driven machinery) coolant temperature +40°C	R	-	Nm
29	Cranking torque at firing speed (without driven machinery) coolant temperature +5°C	R	-	Nm
31	Cranking torque at firing speed (without driven machinery) coolant temperature +40°C	R	-	Nm
96	Starting is blocked if the engine coolant temperature is below		-20	°C
37	High idling speed, max. (static)	L	1660	rpm
38	Limit speed for overspeed alarm / emergency shutdown	L	1800	rpm
42	Firing speed, from	R	100	rpm
43	Firing speed, to	R	120	rpm
44	Engine coolant temperature before starting full-load operation, recommended min.	R	40	°C
48	Minimum continuous load	R	20	%
49	Extended low or no-load operation possible (consultation required)		X	-
50	Engine mass moment of inertia (without flywheel)	R	2.67	kgm ²
52	Standard flywheel mass moment of inertia	R	2.99	kgm ²
1981	Block bending moment - SAE 0	R	N	kNm
69	Speed droop (with electronic governor) adjustable, from	R	0	%
70	Speed droop (with electronic governor) adjustable, to	R	5	%

13. Starting (electric)

No.	Description	Index	Value	Unit
2309	Manufacturer		PRESTOLITE	-
2310	Number of starter		1	-
2312	Starter electrically redundant		-	-
2313	Rated power per starter	R	7.5	kW
2314	Starter, rated voltage	R	24	VDC
2315	Rated short-circuit current per starter	L	1730	A
2316	Power consumption per starter (at an engine speed of 100 rpm)	R	720	A
3000	Power consumption per starter (at an engine speed of 100 rpm, SAE0)	R	-	A
3002	Power consumption per starter (at an engine speed of 100 rpm, SAE1)	R	-	A

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2317	Internal resistance of power supply + line resistance per starter	A	0.008	Ω
2318	Manufacturer		PRESTOLITE	-
2319	Number of starter		2	-
2320	Starter electrically redundant		X	-
2321	Rated power per starter	R	7.5	kW
2322	Starter, rated voltage	R	24	VDC
2323	Rated short-circuit current per starter	L	1730	A
2324	Power consumption per starter (at an engine speed of 100 rpm)	R	720	A
3001	Power consumption per starter (at an engine speed of 100 rpm, SAE0)	R	-	A
3003	Power consumption per starter (at an engine speed of 100 rpm, SAE1)	R	-	A
2325	Internal resistance of power supply + line resistance per starter	A	0.008	Ω
2347	Generally valid data for starter		X	-
2342	Rated starting-attempt Duration (at +20°C ambient temperature with battery)	R	3	s
2343	Interval between starts (at rated starting-attempt duration), min.	L	5	s
2345	Maximum acceptable starting-attempt duration	L	15	s
2344	Interval between starts (when starting-attempt duration > rated starting-attempt duration)	R	60	s
2346	Starting attempts within 30 minutes (at +20°C ambient temperature with battery full), max.	L	6	-

15. Starting (pneumatic/oil pressure starter)

No.	Description	Index	Value	Unit
36	Pneumatic starter: make TDI		X	-
5	Starting air pressure before starter motor, min.	R	8	bar
6	Starting air pressure before starter motor, max.	R	9	bar
7	Starting air pressure before starter motor, min.	L	8	bar
8	Starting air pressure before starter motor, max.	L	9	bar
18	Start attempt duration (engine preheated)	R	3	s
19	Start attempt duration (engine not preheated)	R	5	s
20	Start attempt duration, max.	L	-	s
114	Air consumption/start attempt (engine preheated) Engine without generator Control with engine controller	R	1.1	m³n
115	Air consumption/start attempt (engine not preheated) Engine without generator Control with engine controller	R	1.2	m³n
116	Air consumption with external control for air-starter (per second)	R	0.6	m³n
23	Starting air tank for 3 start attempts (max. 40 bar) (engine preheated)	R	-	liter

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24	Starting air tank for 3 start attempts (max. 30 bar) (engine preheated)	R	-	liter
25	Starting air tank for 6 start attempts (max. 40 bar) (engine preheated)	R	-	liter
26	Starting air tank for 6 start attempts (max. 30 bar) (engine preheated)	R	-	liter
27	Starting air tank for 10 start attempts (max. 40 bar) (engine preheated)	R	-	liter
28	Starting air tank for 10 start attempts (max. 30 bar) (engine preheated)	R	-	liter
29	Starting air tank for 3 start attempts (max. 40 bar) (engine not preheated)	R	N	liter
30	Starting air tank for 3 start attempts (max. 30 bar) (engine not preheated)	R	N	liter
31	Starting air tank for 6 start attempts (max. 40 bar) (engine not preheated)	R	N	liter
32	Starting air tank for 6 start attempts (max. 30 bar) (engine not preheated)	R	N	liter
33	Starting air tank for 10 start attempts (max. 40 bar) (engine not preheated)	R	N	liter
34	Starting air tank for 10 start attempts (max. 30 bar) (engine not preheated)	R	N	liter

16. Inclinations - standard oil system (ref.: waterline)

No.	Description	Index	Value	Unit
15	Longitudinal inclination, continuous max. driving end down (Option: max. operating inclinations)	L	5	degrees (°)
17	Longitudinal inclination, continuous max. driving end up (Option: max. operating inclinations)	L	5	degrees (°)
19	Transverse inclination, continuous max. (Option: max. operating inclinations)	L	10	degrees (°)

18. Capacities

No.	Description	Index	Value	Unit
1	Engine coolant capacity (without cooling equipment)	R	63	liter
10	Intercooler coolant capacity	R	-	liter
11	On-engine fuel capacity	R	6	liter
14	Engine oil capacity, initial filling (standard oil system) (Option: max. operating inclinations)	R	92	liter
20	Oil change quantity, max. (standard oil system) (Option: max. operating inclinations)	R	80	liter

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2024	Oil pan capacity, dipstick mark min. (standard oil system)	R	65	liter
2025	Oil pan capacity, dipstick mark max. (standard oil system)	R	70	liter

19. Masses / dimensions

No.	Description	Index	Value	Unit
9	Engine mass, dry (basic engine configuration acc. to scope of supply specification)	R	2640	kg
10	Engine mass, wet (basic engine configuration acc. to scope of supply specification)	R	2805	kg

20. Fan / fan cooler

No.	Description	Index	Value	Unit
1	Standard design		-	-
3	Fan, pusher-type		X	-
9	Fan drive: mechanical via V-belt		X	-
13	Fan: speed	R	N	rpm

21. Exhaust emissions

No.	Description	Index	Value	Unit
2005	Emissions data sheet: NEA Singapore for ORDE		-	-
1959	Emissions data sheet: US EPA Tier 4i		-	-
2052	Emissions data sheet: MoEF India / CPCB Stage II		-	-
1972	Emissions data sheet: Fuel-consumption optimized		EDS2000-0412	-

22. Acoustics

No.	Description	Index	Value	Unit
101	Exhaust noise, unsilenced - CP (free-field sound-pressure level Lp, 1m distance, ISO 6798, +3dB(A) tolerance)	R	111	dB(A)
201	Exhaust noise, unsilenced - CP (sound power level LW, ISO 6798, +3dB(A) tolerance)	R	124	dB(A)
103	Exhaust noise, unsilenced - CP (free-field sound-pressure level Lp, 1m distance, ISO 6798) Spectrum No.	R	736687e	-

[BL] Reference value: fuel stop power
Maximum engine power that cannot be run continuously on
some applications (stabilization reserve)

[DL] Reference value: continuous power
Engine power that can be run continuously under standard
conditions

[>] Actual value must be greater than specified value
[<] Actual value must be less than specified value

[X] Applicable
The module is valid for this product type

[] Non-applicable
The module is not valid for this product type

[N] Value not named
The value has not yet been named or will not be named

[] Adequate verification not yet available (tolerance +/- 10%)
[]** Adequate verification not yet available (tolerance +/- 5%)

[A] Design value
Value required for the design of an external system
(plant)

[R] Guideline value
Typical average value as information – only suitable
for design purposes to a limited extent

[L] Limit value
A value representing the lower limit/minimum value or
upper limit/maximum value that may not be
exceeded. Not suitable for design purposes

Name 12V2000G16F
Application Group 3B
Dataset Ref. 25°C/-; Air charge air cooling

Speed [rpm] 1500
Nominal power [kW] 665
Nominal power [bhp] 891
Frequency [Hz] 50

Exhaust Regulations Fuel-consumption optimized;

109	Engine surface noise with attenuated intake noise (filter) - CP (free-field sound-pressure level Lp, 1m distance, ISO 6798, +2dB(A) tolerance)	R	100	dB(A)
209	Engine surface noise with attenuated intake noise (filter) - CP (sound power level LW, ISO 6798, +2dB(A) tolerance)	R	118	dB(A)
111	Engine surface noise with attenuated intake noise (filter) - CP (free-field sound-pressure level Lp, 1m distance, ISO 6798) Spectrum No.	R	736701e	-

23. TBO and load profile (case A)

No.	Description	Index	Value	Unit
1	TBO (Time between Overhaul) (related to standard load profile (Pn,tn))	L	18000	h
22	P1 (percent load related to CP)	R	110	%
3	t1 (percentage of operating time)	R	1	%
24	P2 (percent load related to CP)	R	100	%
5	t2 (percentage of operating time)	R	9	%
26	P3 (percent load related to CP)	R	70	%
7	t3 (percentage of operating time)	R	90	%
28	P4 (percent load related to CP)	R	-	%
9	t4 (percentage of operating time)	R	-	%
30	P5 (percent load related to CP)	R	-	%
18	t5 (percentage of operating time)	R	-	%
11	Mean utilization rate (percentage of rated power)	R	<75	%
12	Number of load changes/hour, type I (< 10% to >90% load)	R	2	-
13	Number of load changes/hour, type II (< 10% to between 70% and 90% load)	R	2	-
15	Maintenance schedule No.		N	-
16	Maintenance schedule No. (cont.)		N	-

[BL] Reference value: fuel stop power
Maximum engine power that cannot be run continuously on some applications (stabilization reserve)

[DL] Reference value: continuous power
Engine power that can be run continuously under standard conditions

[>] Actual value must be greater than specified value
[<] Actual value must be less than specified value

[X] Applicable
The module is valid for this product type

[] Non-applicable
The module is not valid for this product type

[N] Value not named
The value has not yet been named or will not be named

[] Adequate verification not yet available (tolerance +/- 10%)
[]** Adequate verification not yet available (tolerance +/- 5%)

[A] Design value
Value required for the design of an external system (plant)

[R] Guideline value
Typical average value as information – only suitable for design purposes to a limited extent

[L] Limit value
A value representing the lower limit/minimum value or upper limit/maximum value that may not be exceeded. Not suitable for design purposes