

Name 12V1600G20F Speed [rpm] 1500 **Application Group** 3B Nominal power [kW] 576 Dataset Ref. 25°C/-Nominal power [bhp] 772 Frequency [Hz] 50

Exhaust Regulations NOx emission optimized;

Reference conditions

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

0. Data-relevant engine design configuration

to a sum to the sum of				
No.	Description	Index	Value	Unit
8	Engine rated speed switchable			
	(1500/1800 rpm)		-	-
113	Engine without sequential turbocharging	_	v	
	(turbochargers without cut-in/cut-out control)		^	-
31	Engine with air-cooled charge air		х	-

1. Power-related data

No.	Description	Index	Value	Unit
1	Engine rated speed	Α	1500	rpm
3	Mean piston speed		7.5	m/s
4	Continuous power ISO 3046 (10% overload capability)	۸	576	kW
4	(design power DIN 6280, ISO 8528)	А	370	KVV
5	Fuel stop power ISO 3046	Α	634	kW
0	Mean effective pressure (MEP)		21.96	hau
8	(Continuous power ISO 3046)		21.90	bar
9	Mean effective pressure (MEP)		24.15	la a u
	(Fuel stop power ISO 3046)		24.15	bar

2. General Conditions (for maximum power)

	neral Conditions (for maximum power)		1 .	
No.	Description	Index	Value	Unit
1	Intake air depression (new filter)	А	25	mbar
2	Intake air depression, max.	L	50	mbar
3	Exhaust back pressure	А	85	mbar
4	Exhaust back pressure, max.	L	85	mbar
5	Fuel temperature at fuel feed connection	R	38	°C
0	Fuel temperature at fuel feed connection, max.		60	°C
9	(w/o power reduction)	L		C
10	Fuel temperature at fuel feed connection, max.	L	70	°C
49	Max. ambient temperature in direct vicinity		FF	°C
	of vibration damper	L	55	C

3. Consumption

No.	Description	Index	Value	Unit
17	Specific fuel consumption (be) - 100 % CP	В	208	~ /k\A/b
1'	(+ 5 %; EN 590; 42.8 MJ/kg)	K	208	g/kWh

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 <a> Actual value must be less than specified value

IX Applicable
The module is valid for this product type
In Non-applicable
The module is not valid for this product type
IX 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%)



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	Constitution (by) 75 (CD			
18	Specific fuel consumption (be) - 75 % CP	R	205	g/kWh
	(+ 5 %; EN 590; 42.8 MJ/kg)		203	6/ ((()))
19	Specific fuel consumption (be) - 50 % CP	R	211	g/kWh
19	(+ 5 %; EN 590; 42.8 MJ/kg)	11	211	g/KVVII
20	Specific fuel consumption (be) - 25 % CP	R	227	a /lawh
20	(+ 5 %; EN 590; 42.8 MJ/kg)	N	227	g/kWh
56	Specific fuel consumption (be) - 100 % FSP	R	193	g/kWh
30	(+ 5 %; EN 590; 42.8 MJ/kg)	K		
57	Specific fuel consumption (be) - 75 % FSP	R	203	g/kWh
37	(+ 5 %; EN 590; 42.8 MJ/kg)	ĸ	203	g/KVVII
58	Specific fuel consumption (be) - 50 % FSP	R	210	g/kWh
30	(+ 5 %; EN 590; 42.8 MJ/kg)	K		
59	Specific fuel consumption (be) - 25 % FSP	R	221	- /I->A/I-
39	(+ 5 %; EN 590; 42.8 MJ/kg)	K	221	g/kWh
73	No-load fuel consumption	R	2.1	kg/h
61	Lube oil consumption after 100 h of operation	R	<0.2	% of B
01	(B = fuel consumption per hour)	K	0.2	% OI B
62	Lube oil consumption after 100 h of operation, max.		<0.5	% of B
02	(B = fuel consumption per hour)	L	<0.5	

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		Х	-
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		122	mm
11	Stroke		150	mm
12	Displacement, cylinder		1.75	liter
13	Displacement, total		21.0	liter
14	Compression ratio		17.5	-
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	-
28	Standard flywheel housing flange (engine main PTO)		01	SAE
43	Flywheel interface (DISC)		14"	-

5. Combustion air / exhaust gas

No.	Description	Index	Value	Unit
19	Charge-air temperature before cylinder	Α	50	°C
33	Charge-air flow through external air-to-air intercooler	Α	0.37	m³/s

Applicable
 The module is valid for this product type
 Non-applicable
 The module is not valid for this product type
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		1	T	1
34	Charge-air temperature before external	Α	219	°C
٠.	air-to-air intercooler	,		Č
35	Charge-air temperature after external	Α	50	°C
33	air-to-air intercooler	^	30	C
36	Charge-air temperature after external		65	°C
30	air-to-air intercooler, max.	L	03	C
37	Charge-air temperature after external		-15	°C
37	air-to-air intercooler, min.	L .	-13	C
39	Pressure differential in external		130	mbar
39	air-to-air intercooler, max.	_	130	IIIDai
8	Charge-air pressure before cylinder - CP	R	3.4	bar abs
27	Charge-air pressure before cylinder - FSP	R	N	bar abs
9	Combustion air volume flow - CP	R	0.63	m³/s
10	Combustion air volume flow - FSP	R	0.74	m³/s
11	Exhaust volume flow (at exhaust temperature) - CP	R	1.7	m³/s
12	Exhaust volume flow (at exhaust temperature) - FSP	R	1.9	m³/s
15	Exhaust temperature after turbocharger - CP	R	470	°C
16	Exhaust temperature after turbocharger - FSP	R	480	°C

6. Heat dissipation

No.	Description	Index	Value	Unit
1.0	Heat dissipated by engine coolant - FSP	R	254	kW
16	with oil heat, without charge-air heat			
26	Charge-air heat dissipation - CP	R	121	kW
27	Charge-air heat dissipation - FSP	R	150	kW
31	Heat dissipated by return fuel flow - CP	R	3.6	kW
32	Heat dissipated by return fuel flow - FSP	R	3.4	kW
33	Radiation and convection heat, engine - CP	R	24	kW

7. Coolant system (high-temperature circuit)

7. Coolant system (nign-temperature circuit)					
No.	Description	Index	Value	Unit	
17	Coolant temperature	^	95	°C	
17	(at engine outlet to cooling equipment)	Α	93	C	
20	Coolant temperature after engine, limit 1	L	105	°C	
21	Coolant temperature after engine, limit 2	L	109	°C	
25	Coolant antifreeze content, max.	L	50	%	
30	Cooling equipment: coolant flow rate	А	26	m³/h	
35	Coolant pump: inlet pressure, min.	L	1.4	bar	
36	Coolant pump: inlet pressure, max.	L	3.5	bar	
41	Pressure loss in off-engine cooling system, max.	L	1	bar	
47	Breather valve (expansion tank)		1	har	
47	opening pressure (excess pressure)	R		bar	
54	Cooling equipment: height above engine, max.	L	15	m	
48	Breather valve (expansion tank)		-0.2	la a s	
40	opening pressure (depression)	R	-0.2	bar	
49	Pressure in cooling system, max.	L	5.0	bar	



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Exhaust Regulations NOx emission optimized;

10. Lube oil system

IV. LUD	e on system			
No.	Description	Index	Value	Unit
1	Lube oil operating temp. before engine, from	R	105	°C
2	Lube oil operating temp. before engine, to	R	115	°C
8	Lube oil operating press. bef. engine, from	R	4.5	bar
9	Lube oil operating press. bef. engine, to	R	5.5	bar
10	Lube oil pressure before engine, alarm	L	2.6	bar
11	Lube oil pressure before engine, shutdown	L	2.4	bar
19	Lube oil fine filter (main circuit):		1	
19	number of units			-
20	Lube oil fine filter (main circuit):		4	
20	number of elements per unit		4	-
56	Lube-oil fine filter (main flow), particle size 1		10	μm
57	Lube-oil fine filter (main flow), filtering efficiency re 1		26	%
58	Lube-oil fine filter (main flow), particle size 2		15	μm
59	Lube-oil fine filter (main flow), filtering efficiency re 2		50	%
60	Lube-oil fine filter (main flow), particle size 3		20	μm
61	Lube-oil fine filter (main flow), filtering efficiency re 3		75	%
32	Lube oil fine filter (main circuit):		2	h
32	pressure differential, max.	L		bar

11. Fuel system

II. FUE	er system			
No.	Description	Index	Value	Unit
1	Fuel pressure at engine fuel feed connection, min.		-0.5	har
1	(when engine is starting)	-	-0.5	bar
2	Fuel pressure at engine fuel feed connection, max.		0.5	bar
2	(when engine is starting)	L	0.5	Dai
74	Max. fuel supply volume	R	4.8	liter/min
	Normal mode	N.	4.0	iitei/iiiii
4183	Max. fuel supply volume	R	5.3	liter/min
	Failure mode	K	3.3	iiter/min
77	Max. fuel return volume	R	2.1	liter/min
	Normal mode	N.	2.1	iitei/iiiii
4184	Max. fuel return volume	R	4.1	liter/min
	Failure mode	N.	4.1	iitei/iiiii
10	Fuel pressure at return connection on engine, max.	L	<0.4	bar
18	Fuel fine filter (main circuit): number of units	Α	1	-
19	Fuel fine filter (main circuit): number of elements per unit	Α	1	-
68	Fuel fine filter, particle size 1		4	μm
69	Fuel fine filter, filtering efficiency re 1		99.5	%
70	Fuel fine filter, particle size 2		6	μm
71	Fuel fine filter, filtering efficiency re 2		99.8	%
72	Fuel fine filter, particle size 3		14	μm
73	Fuel fine filter, filtering efficiency re 3		99.8	%
21	Fuel fine filter (main circuit): pressure differential, max.	L	2	bar

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Exhaust Regulations NOx emission optimized;

12. General operating data

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No.	Description	Index	Value	Unit
1	Cold start capability: air temperature	R	-20	°C
1	(w/o starting aid, w/o preheating) - (case A)	I.	-20	C
2	Additional condition (to case A):	R	-20	°C
2	engine coolant temperature	K	-20	C
3	Additional condition (to case A): lube oil temperature	R	-20	°C
4	Additional condition (to case A): lube oil viscosity	R	10W40	SAE
9	Cold start capability: air temperature	R	-40	°C
,	(w/o starting aid, w/ preheating) - (case C)	I.	-40	C
10	Additional condition (to case C):	R	32	°C
10	engine coolant temperature	K	32	C
11	Additional condition (to case C): lube oil temperature	R	32	°C
12	Additional condition (to case C): lube oil viscosity	R	10W40	SAE
21	Coolant preheating, heater performance (standard)	R	3	kW
22	Coolant preheating, preheating temperature, min.	L	32	°C
3506	Coolant preheating, preheating temperature, max.	L	55	°C
28	Breakaway torque (without driven machinery)	R	750	Nine
20	coolant temperature +5°C	K	/30	Nm
20	Breakaway torque (without driven machinery)		450	Nico
30	coolant temperature +40°C	R	450	Nm
20	Cranking torque at firing speed (without driven machinery)		400	
29	coolant temperature +5°C	R	400	Nm
21	Cranking torque at firing speed (without driven machinery)		270	Nima
31	coolant temperature +40°C	R	270	Nm
00	Starting is blocked if the engine coolant temperature is		-20	
96	below		-20	°C
37	High idling speed, max. (static)	L	1560	rpm
38	Limit speed for overspeed alarm / emergency shutdown	L	1800	rpm
42	Firing speed, from	R	80	rpm
43	Firing speed, to	R	120	rpm
44	Engine coolant temperature before starting full-load operation, recommended	R	60	°C
44	min.	K	60	°C
48	Minimum continuous load	R	20	%
F0	Engine mass moment of inertia		4.540	. 2
50	(without flywheel)	R	1.548	kgm²
52	Standard flywheel mass moment of inertia	R	1.44	kgm²
1981	Block bending moment - SAE 0	R	3	kNm
1982	Block bending moment - SAE 1	R	3	kNm
Г1	Engine mass moment of inertia	D	2.088	Leres 2
51	(with standard flywheel)	R	2.988	kgm²
109	Speed droop (with electronic governor) adjustable P1	R	4	%
110	Speed droop (with electronic governor) adjustable P2	R	0.4	%
95	Number of starter ring-gear teeth on engine flywheel		157	-



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Application Group 3B

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Exhaust Regulations NOx emission optimized;

13. Starting (electric)

	ung (electric)			
	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	Α
3000	Power consumption per starter	R	400	Δ.
3000	(at an engine speed of 100 rpm, SAEO)	ĸ	400	Α
3002	Power consumption per starter		F 40	
3002	(at an engine speed of 100 rpm, SAE1)	R	540	Α
2317	Internal resistance of power supply + line resistance per starter	Α	0.008	Ω
2318	Manufacturer		Prestolite	-
2319	Number of starter		1	-
2320	Starter electrically redundant		х	-
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	Α
2004	Power consumption per starter	_	400	
3001	(at an engine speed of 100 rpm, SAE0)	R	400	А
2002	Power consumption per starter	_	540	_
3003	(at an engine speed of 100 rpm, SAE1)	R	540	Α
2325	Internal resistance of power supply + line resistance per starter	Α	0.008	Ω
2326	Manufacturer		Prestolite	-
2327	Number of starter		2	-
2328	Starter electrically redundant		-	-
2329	Rated power per starter	R	7.5	kW
2330	Starter, rated voltage	R	24	VDC
2331	Rated short-circuit current per starter	L	1730	Α
3251	Power consumption per starter	_	400	
3251	(at an engine speed of 100 rpm, SAE0)	R	400	А
2252	Power consumption per starter	_	F40	
3252	(at an engine speed of 100 rpm, SAE1)	R	540	А
2333	Internal resistance of power supply + line resistance per starter	Α	0.008	Ω
2347	Generally valid data for starter		х	-
2342	Rated starting-attempt Duration (at +20°C ambient temperature with battery	R	3	s
2242	Interval between starts		-	
2343	(at rated starting-attempt duration), min.	L	5	S
2345	Maximum acceptable starting-attempt duration	L	15	s
	Interval between starts	_	60	
2344	(when starting-attempt duration > rated starting-attempt duration)	R	60	S
22.46	Starting attempts within 30 minutes	1.		
2346	(at +20°C ambient temperature with battery full), max.	L	6	-
	The second composition access from the second control of the secon	1	l .	1

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

No.	Description	Index	Value	Unit	
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Frequency [Hz]

1500

576

772

50

Speed [rpm] Name 12V1600G20F **Application Group** 3B Nominal power [kW] Dataset Ref. 25°C/-Nominal power [bhp]

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15	Longitudinal inclination, continuous max. driving end down (Option: max. operating inclinations)	L	15	degrees (°)
	Longitudinal inclination, continuous max. driving end up (Option: max. operating inclinations)	L	15	degrees (°)
19	Transverse inclination, continuous max. (Option: max. operating inclinations)	L	15	degrees (°)

18. Capacities

10. 00	10. Capacities				
No.	Description	Index	Value	Unit	
1	Engine coolant capacity (without cooling equipment)	R	65	liter	
11	On-engine fuel capacity	R	3 *	liter	
	Engine oil capacity, initial filling				
14	(standard oil system)	R	72.5	liter	
	(Option: max. operating inclinations)				
	Oil change quantity, max.				
20	(standard oil system)	R	64	liter	
	(Option: max. operating inclinations)				
	Oil pan capacity, dipstick mark min.				
28	(standard oil system)	L	56	liter	
	(Option: max. operating inclinations)				
	Oil pan capacity, dipstick mark max.				
29	(standard oil system)	L	64	liter	
	(Option: max. operating inclinations)				

19. Masses / dimensions

No.	Description	Index	Value	Unit
7	Engine dry mass (with engine-mounted	В	1855 *	lea.
/	standard accessories, without coupling)	К	1835	kg
12	Engine mass, wet	В	1918	lea.
12	(with engine-mounted standard accessories, without coupling)	ĸ	1910	kg

20. Fan / fan cooler

No.	Description	Index	Value	Unit
3	Fan, pusher-type		X	-
18	Fan arrangement: vertical above crankshaft		X	-
9	Fan drive: mechanical via V-belt		X	-
13	Fan: speed	R	1500	rpm

21. Exhaust emissions

No. Description	Index	Value	Unit
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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 <a> Actual value must be less than specified value

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

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

Adequate verification not yet available (tolerance +/-10%)

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1	947	Emissions data sheet:	EDS16000103	
1	347	"TA-Luft" - CP	ED310000103	-

22. Acoustics

	ustics		1	1
No.	Description	Index	Value	Unit
	Exhaust noise, unsilenced - CP			
101	(free-field sound-pressure level Lp, 1m distance,	R	109	dB(A)
	ISO 6798, +3dB(A) tolerance)			
201	Exhaust noise, unsilenced - CP	R	122	dB(A)
201	(sound power level LW, ISO 6798, +3dB(A) tolerance)	IX.	122	ub(A)
	Exhaust noise, unsilenced - FSP			
102	(free-field sound-pressure level Lp, 1m distance,	R	110	dB(A)
	ISO 6798, +3dB(A) tolerance)			
202	Exhaust noise, unsilenced - FSP	R	123	dB(A)
	(sound power level LW, ISO 6798, +3dB(A) tolerance)	IV.	123	ub(A)
	Exhaust noise, unsilenced - CP			
103	(free-field sound-pressure level Lp, 1m distance,	R	735162e	
103	ISO 6798)		7331020	
	Spectrum No.			
	Exhaust noise,unsilenced - CP			
203	(sound power level LW, ISO 6798)	R	-	-
	Spectrum No.			
	Engine surface noise with attenuated			
109	intake noise (filter) - CP	R	104	dB(A)
103	(free-field sound-pressure level Lp, 1m distance,	I'N		
	ISO 6798, +2dB(A) tolerance)			
	Engine surface noise with attenuated			
209	intake noise (filter) - CP	R	122	dB(A)
	(sound power level LW, ISO 6798, +2dB(A) tolerance)			
	Engine surface noise with attenuated			
111	intake noise (filter) - CP	R	735155e	-
111	(free-field sound-pressure level Lp, 1m distance,	K		
	ISO 6798) Spectrum No.			
	Engine surface noise with attenuated			
211	intake noise (filter) - CP	l _D		
211	(sound power level LW, ISO 6798)	R		-
	Spectrum No.			
	Engine surface noise with attenuated			
113	intake noise (intake silencer) - CP	_	101	۹۵/۷)
113	(free-field sound-pressure level Lp, 1m distance,	R	101	dB(A)
	ISO 6798, +2dB(A) tolerance)			
	Engine surface noise with attenuated			
114	intake noise (intake silencer) - FSP		101	-ID(A)
114	(free-field sound-pressure level Lp, 1m distance,	R		dB(A)
	ISO 6798, +2dB(A) tolerance)			



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125	Structure borne noise at engine mounting brackets in vertical direction above resilient engine mounts - CP	R	735248e	_
	Spectrum No.			
	Structure borne noise at engine mounting brackets			
126	in vertical direction above resilient engine mounts - FSP	R	735247e	-
	Spectrum No.			

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