



Name	20V4000G14F	Speed [rpm]	1500
Application Group	3B	Nominal power [kW]	2200
Dataset	Ref. 25°C/55°C	Nominal power [bhp]	2950
		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		55	°C
8	Barometric pressure		1000	mbar
9	Site altitude above sea level		100	m
10	Raw-water inlet temperature		-	°C

0. Data-relevant engine design configuration

No.	Description	Index	Value	Unit
13	Engine without sequential turbocharging (turbochargers without cut-in/cut-out control)		X	-

1. Power-related data

No.	Description	Index	Value	Unit
1	Engine rated speed	A	1500	rpm
2	Reduction gear - Output speed	A	-	rpm
3	Mean piston speed		10.5	m/s
4	Continuous power ISO 3046 (10% overload capability) (design power DIN 6280, ISO 8528)	A	2200	kW
5	Fuel stop power ISO 3046	A	2420	kW
8	Mean effective pressure (MEP) (Continuous power ISO 3046)		18.5	bar
9	Mean effective pressure (MEP) (Fuel stop power ISO 3046)		20.3	bar
18	Performance map No.		-	-
38	Performance map No. (cont.)		-	-
20	Performance map, amendment index		-	-

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	50	mbar
51	Exhaust overpressure (total pressure against atmosphere)	A	30	mbar
52	Exhaust overpressure, max. (total pressure against atmosphere)	L	85	mbar
5	Fuel temperature at fuel feed connection	R	25	°C
9	Fuel temperature at fuel feed connection, max. (w/o power reduction)	L	55	°C
10	Fuel temperature at fuel feed connection, max.	L	55	°C
18	Fuel temperature at fuel feed connection, min.	L	-	°C

3. Consumption

No.	Description	Index	Value	Unit
-----	-------------	-------	-------	------

[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 20V4000G14F
Application Group 3B
Dataset Ref. 25°C/55°C

Speed [rpm] 1500
Nominal power [kW] 2200
Nominal power [bhp] 2950
Frequency [Hz] 50

Exhaust Regulations Fuel-consumption optimized;

17	Specific fuel consumption (be) - 100 % CP (+ 5 %; EN 590; 42.8 MJ/kg)	R	192	g/kWh
18	Specific fuel consumption (be) - 75 % CP (+ 5 %; EN 590; 42.8 MJ/kg)	R	195	g/kWh
19	Specific fuel consumption (be) - 50 % CP (+ 5 %; EN 590; 42.8 MJ/kg)	R	211	g/kWh
20	Specific fuel consumption (be) - 25 % CP (+ 5 %; EN 590; 42.8 MJ/kg)	R	240	g/kWh
21	Specific fuel consumption (be) - FSP (+ 5 %; EN 590; 42.8 MJ/kg)	R	193	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	35	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	0.3	% of B
62	Lube oil consumption after 100 h of operation, max. (B = fuel consumption per hour)	L	1.0	% of B

4. Model-related data (basic design)

No.	Description	Index	Value	Unit
1	Naturally aspirated engine		-	-
2	Engine with exhaust turbocharger (ETC)		-	-
3	Engine with exhaust turbocharger (ETC) and intercooler		X	-
4	Exhaust piping, non-cooled		X	-
5	Exhaust piping, liquid-cooled		-	-
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		20	-
7	Cylinder configuration: V angle		90	degrees (°)
8	Cylinder configuration: in-line vertical		-	-
10	Bore		170	mm
11	Stroke		210	mm
12	Displacement, cylinder		4.77	liter
13	Displacement, total		95.4	liter
14	Compression ratio		16.4	-
40	Cylinder heads: single-cylinder		X	-
41	Cylinder liners: wet, replaceable		X	-
42	Piston design: composite piston		-	-
49	Piston design: solid-skirt piston		X	-
21	Number of piston compression rings		2	-
22	Number of piston oil control rings		1	-
24	Number of inlet valves, per cylinder		2	-

[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	20V4000G14F	Speed [rpm]	1500
Application Group	3B	Nominal power [kW]	2200
Dataset	Ref. 25°C/55°C	Nominal power [bhp]	2950
		Frequency [Hz]	50

Exhaust Regulations Fuel-consumption optimized;

25	Number of exhaust valves, per cylinder		2	-
15	Number of turbochargers		6	-
16	Number of L.P. turbochargers		6	-
17	Number of H.P. turbochargers		-	-
18	Number of intercoolers		1	-
19	Number of L.P. intercoolers		1	-
20	Number of H.P. intercoolers		-	-
28	Standard flywheel housing flange (engine main PTO)		00	SAE
50	Static bending moment at standard flywheel housing flange, max.	L	15	kNm
51	Dynamic bending moment at standard flywheel housing flange, max.	L	75	kNm
29	Standard flywheel housing flange (reduction gearbox main PTO)		-	SAE
43	Flywheel interface (DISC)		21	-

5. Combustion air / exhaust gas

No.	Description	Index	Value	Unit
8	Charge-air pressure before cylinder - CP	R	2.3	bar abs
27	Charge-air pressure before cylinder - FSP	R	2.5	bar abs
9	Combustion air volume flow - CP	R	2.4	m³/s
10	Combustion air volume flow - FSP	R	2.6	m³/s
11	Exhaust volume flow (at exhaust temperature) - CP	R	6.5	m³/s
12	Exhaust volume flow (at exhaust temperature) - FSP	R	7.1	m³/s
13	Exhaust temperature before turbocharger - CP	R	695	°C
14	Exhaust temperature before turbocharger - FSP	R	720	°C
15	Exhaust temperature after turbocharger - CP	R	580	°C
16	Exhaust temperature after turbocharger - FSP	R	600	°C
17	Exhaust temperature after engine - CP	R	525	°C
18	Exhaust temperature after engine - FSP	R	540	°C

6. Heat dissipation

No.	Description	Index	Value	Unit
10	Heat dissipated by engine coolant - FSP with oil heat	R	-	kW
12	Heat dissipation by engine coolant - FSP with oil heat, with charge-air heat	R	-	kW
62	Heat dissipated by engine coolant - FSP (high-temperature circuit)	R	-	kW
63	Heat dissipated by engine coolant - FSP (low-temperature circuit)	R	-	kW
14	Heat dissipated by engine coolant - FSP without oil heat, with charge-air heat	R	-	kW
15	Heat dissipated by engine coolant - CP with oil heat, without charge-air heat	R	860	kW
16	Heat dissipated by engine coolant - FSP with oil heat, without charge-air heat	R	910	kW
18	Heat dissipated by engine coolant - FSP without oil heat, without charge-air heat	R	-	kW
23	Heat dissipated by oil - FSP	R	-	kW
25	Charge-air and oil heat dissipation - FSP	R	-	kW
26	Charge-air heat dissipation - CP	R	300	kW

[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	20V4000G14F	Speed [rpm]	1500
Application Group	3B	Nominal power [kW]	2200
Dataset	Ref. 25°C/55°C	Nominal power [bhp]	2950
		Frequency [Hz]	50

Exhaust Regulations Fuel-consumption optimized;

No.	Description	Index	Value	Unit
27	Charge-air heat dissipation - FSP	R	350	kW
39	Heat dissipated by exhaust gas - FSP	R	-	kW
31	Heat dissipated by return fuel flow - CP	R	7.5	kW
32	Heat dissipated by return fuel flow - FSP	R	-	kW
33	Radiation and convection heat, engine - CP	R	105	kW
34	Radiation and convection heat, engine - FSP	R	-	kW
36	Radiation and convection heat, genset - FSP (engine + generator + 10m insulated exhaust pipework)	R	-	kW

7. Coolant system (high-temperature circuit)

No.	Description	Index	Value	Unit
9	Coolant temperature (at engine outlet to cooling equipment; with max. 40% antifreeze)	A	-	°C
17	Coolant temperature (at engine outlet to cooling equipment)	A	100	°C
57	Coolant temperature differential after/before engine, from	R	8	K
58	Coolant temperature differential after/before engine, to	R	10	K
23	Coolant temperature differential after/before engine	L	12	K
20	Coolant temperature after engine, limit 1	L	102	°C
21	Coolant temperature after engine, limit 2	L	104	°C
25	Coolant antifreeze content, max.	L	50	%
30	Cooling equipment: coolant flow rate	A	80	m³/h
31	Coolant pump: pressure differential	R	2.25	bar
35	Coolant pump: inlet pressure, min.	L	0.5	bar
36	Coolant pump: inlet pressure, max.	L	2.5	bar
39	Engine: coolant pressure differential with thermostat	R	1.7	bar
41	Pressure loss in off-engine cooling system, max.	L	0.7	bar
72	Pressure loss in off-engine cooling system, min.	L	0.55	bar
43	Pressure loss in off-engine cooling system, max. without thermostat	L	0.7	bar
70	Pressure loss in off-engine cooling system, min. without thermostat	L	0.55	bar
47	Breather valve (expansion tank) opening pressure (excess pressure)	R	1.0	bar
54	Cooling equipment: height above engine, max.	L	15	m
53	Cooling equipment: operating pressure	A	2.5	bar
73	Coolant level in expansion tank, below min. alarm	L	-	-
74	Coolant level in expansion tank, below min. shutdown	L	X	-
50	Thermostat, starts to open	R	79	°C
51	Thermostat, bypass closed	R	92	°C
52	Thermostat, fully open	R	92	°C
48	Breather valve (expansion tank) opening pressure (depression)	R	-0.1	bar
49	Pressure in cooling system, max.	L	5.0	bar

8. Coolant system (low-temperature circuit)

No.	Description	Index	Value	Unit
-----	-------------	-------	-------	------

[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	20V4000G14F	Speed [rpm]	1500
Application Group	3B	Nominal power [kW]	2200
Dataset	Ref. 25°C/55°C	Nominal power [bhp]	2950
		Frequency [Hz]	50

Exhaust Regulations Fuel-consumption optimized;

53	Coolant temperature (at engine outlet to cooling equipment)	R	62	°C
9	Coolant temperature before intercooler (at engine inlet from cooling equipment)	A	55	°C
14	Coolant temperature before intercooler, limit 1	L	75	°C
61	Coolant temperature before intercooler, shutdown	L	-	°C
15	Coolant temperature before intercooler, limit 2	L	-	°C
54	Coolant temperature differential after/before intercooler, min.	L	7	K
55	Coolant temperature differential after/before intercooler, max.	L	11	K
13	Coolant antifreeze content, max.	L	50	%
17	Charge-air temperature after intercooler, max.	L	80	°C
76	Temperature differential between intake air and charge-air coolant before intercooler	A	30	K
75	Temperature differential between intake air and charge-air coolant before intercooler, max.	L	32	K
45	Charge-air temperature after intercooler, max. for compliance with "TA-Luft" at CP	L	-	°C
56	Coolant pump: flow rate	A	32.5	m³/h
18	Coolant pump: flow rate (± 5 %)	R	32.5	m³/h
20	Cooling equipment: coolant flow rate	A	32.5	m³/h
21	Intercooler: coolant flow rate	R	32.5	m³/h
22	Coolant pump: pressure differential	R	1.7	bar
24	Coolant pump: inlet pressure, min.	L	0.5	bar
25	Coolant pump: inlet pressure, max.	L	2.5	bar
29	Pressure loss in off-engine cooling system, max.	L	0.7	bar
62	Pressure loss in off-engine cooling system, min.	L	0.55	bar
31	Pressure loss in off-engine cooling system, max. without thermostat	L	0.7	bar
63	Pressure loss in off-engine cooling system, min. without thermostat	L	0.55	bar
43	Cooling equipment: height above engine, max.	L	15	m
36	Breather valve (expansion tank) opening pressure (excess pressure)	R	1.0	bar
37	Breather valve (expansion tank) opening pressure (depression)	R	-0.1	bar
42	Cooling equipment: operating pressure	A	2.5	bar
67	Coolant level in expansion tank, below min. alarm	L	-	-
68	Coolant level in expansion tank, below min. shutdown	L	X	-
39	Thermostat, starts to open	R	38	°C
40	Thermostat, bypass closed	R	51	°C
41	Thermostat, fully open	R	51	°C

10. Lube oil system

No.	Description	Index	Value	Unit
1	Lube oil operating temp. before engine, from	R	88	°C
2	Lube oil operating temp. before engine, to	R	98	°C
3	Lube oil operating temp. after engine, from	R	98	°C
4	Lube oil operating temp. after engine, to	R	108	°C
5	Lube oil temperature before engine, limit 1	L	99	°C

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

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

Applicable
The module is valid for this product type

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

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%)

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

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



Name	20V4000G14F	Speed [rpm]	1500
Application Group	3B	Nominal power [kW]	2200
Dataset	Ref. 25°C/55°C	Nominal power [bhp]	2950
		Frequency [Hz]	50

Exhaust Regulations Fuel-consumption optimized;

No.	Description	Index	Value	Unit
6	Lube oil temperature before engine, limit 2	L	101	°C
7	Lube oil operating pressure before engine (measuring block)	R	5.4	bar
8	Lube oil operating press. bef. engine, from	R	4.6	bar
9	Lube oil operating press. bef. engine, to	R	7.4	bar
10	Lube oil pressure before engine, alarm	L	-	bar
33	Lube oil pressure before engine, limit 1(speed-related value, consult MTU)	L	3.5	bar
11	Lube oil pressure before engine, shutdown	L	-	bar
34	Lube oil pressure before engine, limit 2 (speed-related value, consult MTU)	L	3.2	bar
17	Lube oil pump(s): oil flow, total	R	835	liter/min
19	Lube oil fine filter (main circuit): number of units		5	-
20	Lube oil fine filter (main circuit): number of elements per unit		1	-
21	Lube oil fine filter (main circuit): particle retention	R	0.014	mm
32	Lube oil fine filter (main circuit): pressure differential, max.	L	1.5	bar
35	Lube oil fine filter (main circuit): make (standard): MANN & HUMMEL		X	-

11. Fuel system

No.	Description	Index	Value	Unit
1	Fuel pressure at fuel feed connection, min. (when engine is starting)	L	-0.1	bar
57	Fuel pressure at fuel feed connection, min. (when engine is running)	L	-0.3	bar
2	Fuel pressure at fuel feed connection, max. (when engine is starting)	L	1.5	bar
65	Fuel pressure at fuel feed connection, max. (permanent)	L	0.5	bar
37	Fuel supply flow, max.	A	27	liter/min
4	Fuel pressure before injection pump, from (high-pressure pump)	R	6.0	bar
5	Fuel pressure before injection pump, to (high-pressure pump)	R	11	bar
6	Fuel pressure before injection pump, min. (high-pressure pump)	L	5.0	bar
7	Fuel pressure before injection pump with engine not running, max. (high-pressure pump)	L	1.5	bar
8	Fuel return flow, max.	A	7	liter/min
10	Fuel pressure at return connection on engine, max.	L	0.5	bar
12	Fuel temperature differential before/after engine	R	30	K
38	Fuel temperature after high-pressure pump, alarm	L	100	°C
15	Fuel prefilter: number of units	A	-	-
16	Fuel prefilter: number of elements per unit	A	-	-
17	Fuel prefilter: particle retention	A	-	mm
29	Fuel prefilter: make (standard): MANN & HUMMEL		-	-
18	Fuel fine filter (main circuit): number of units	A	1	-
19	Fuel fine filter (main circuit): number of elements per unit	A	1	-
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

[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

[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

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



Name	20V4000G14F	Speed [rpm]	1500
Application Group	3B	Nominal power [kW]	2200
Dataset	Ref. 25°C/55°C	Nominal power [bhp]	2950
		Frequency [Hz]	50

Exhaust Regulations Fuel-consumption optimized;

32	Fuel fine filter (main circuit): make (standard): MANN & HUMMEL	X	-
----	--------------------------------------------------------------------	---	---

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	10	°C
2	Additional condition (to case A): engine coolant temperature	R	10	°C
3	Additional condition (to case A): lube oil temperature	R	10	°C
4	Additional condition (to case A): lube oil viscosity	R	15W40	SAE
9	Cold start capability: air temperature (w/o starting aid, w/ preheating) - (case C)	R	0	°C
10	Additional condition (to case C): engine coolant temperature	R	40	°C
11	Additional condition (to case C): lube oil temperature	R	-10	°C
12	Additional condition (to case C): lube oil viscosity	R	15W40	SAE
21	Coolant preheating, heater performance (standard)	R	9	kW
22	Coolant preheating, preheating temperature, min.	L	32	°C
3506	Coolant preheating, preheating temperature, max.	L	55	°C
23	Lube oil priming pump: flow rate	R	N	liter/min
24	Lube oil priming pump: pressure	R	N	bar
25	Lube oil priming pump: rated power	R	N	kW
26	Lube oil priming pump: cut-in interval pump cut-in every ... minutes	R	N	min
27	Lube oil priming pump: cut-in duration	R	N	min
28	Breakaway torque (without driven machinery) coolant temperature +5°C	R	2600	Nm
30	Breakaway torque (without driven machinery) coolant temperature +40°C	R	2200	Nm
29	Cranking torque at firing speed (without driven machinery) coolant temperature +5°C	R	1400	Nm
31	Cranking torque at firing speed (without driven machinery) coolant temperature +40°C	R	1100	Nm
96	Starting is blocked if the engine coolant temperature is below		0	°C
92	Run-up period to rated speed (without driven machinery)	R	N	s
93	Run-up period to rated speed (with driven machinery) (* at general conditions)	R	N	s
37	High idling speed, max. (static)	L	1700	rpm
38	Limit speed for overspeed alarm / emergency shutdown	L	1950	rpm
39	Limit speed for overspeed alarm	L	1950	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 min.	R	60	°C
3515	Minimum continuous load (operation > 10h)	R	30	kW/cyl
49	Extended low or no-load operation possible (consultation required)		X	-

[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	20V4000G14F	Speed [rpm]	1500
Application Group	3B	Nominal power [kW]	2200
Dataset	Ref. 25°C/55°C	Nominal power [bhp]	2950
		Frequency [Hz]	50

Exhaust Regulations Fuel-consumption optimized;

50	Engine mass moment of inertia (without flywheel)	R	24.6	kgm ²
52	Standard flywheel mass moment of inertia	R	10.2	kgm ²
51	Engine mass moment of inertia (with standard flywheel)	R	34.8	kgm ²
69	Speed droop (with electronic governor) adjustable, from	R	0	%
70	Speed droop (with electronic governor) adjustable, to	R	7	%
95	Number of starter ring-gear teeth on engine flywheel		182	-

13. Starting (electric)

No.	Description	Index	Value	Unit
2309	Manufacturer		Delco	-
2310	Number of starter		2	-
2312	Starter electrically redundant		-	-
2313	Rated power per starter	R	9	kW
2314	Starter, rated voltage	R	24	VDC
2315	Rated short-circuit current per starter	L	1900	A
2316	Power consumption per starter (at an engine speed of 100 rpm)	R	580	A
2317	Internal resistance of power supply + line resistance per starter	A	0.008	Ω
2318	Manufacturer		Bosch	-
2319	Number of starter		2	-
2320	Starter electrically redundant		-	-
2321	Rated power per starter	R	11.3	kW
2322	Starter, rated voltage	R	24	VDC
2323	Rated short-circuit current per starter	L	2190	A
2324	Power consumption per starter (at an engine speed of 100 rpm)	R	750	A
2325	Internal resistance of power supply + line resistance per starter	A	0.0047	Ω
2326	Manufacturer		Prestolite	-
2327	Number of starter		1	-
2328	Starter electrically redundant		-	-
2329	Rated power per starter	R	15	kW
2330	Starter, rated voltage	R	24	VDC
2331	Rated short-circuit current per starter	L	3000	A
2332	Power consumption per starter (at an engine speed of 100 rpm)	R	1400	A
2333	Internal resistance of power supply + line resistance per starter	A	0.0045	Ω
2334	Manufacturer		Prestolite	-
2335	Number of starter		2	-
2336	Starter electrically redundant		X	-
2337	Rated power per starter	R	15	kW
2338	Starter, rated voltage	R	24	VDC
2339	Rated short-circuit current per starter	L	3000	A
2340	Power consumption per starter (at an engine speed of 100 rpm)	R	1400	A
2341	Internal resistance of power supply + line resistance per starter	A	0.0045	Ω
2347	Generally valid data for starter		X	-
2342	Rated starting-attempt Duration (at +20°C ambient temperature with battery)	R	5	s
2343	Interval between starts (at rated starting-attempt duration), min.	L	20	s
2345	Maximum acceptable starting-attempt duration	L	15	s

[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 20V4000G14F
Application Group 3B
Dataset Ref. 25°C/55°C

Speed [rpm] 1500
Nominal power [kW] 2200
Nominal power [bhp] 2950
Frequency [Hz] 50

Exhaust Regulations Fuel-consumption optimized;

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	-
3565	Disengagement of starter pinion at engine Speed Note: Exceeding the guideline value of the disengagement speed will reduce	R	400	rpm
3566	Disengagement of starter pinion at engine speed, max.	L	500	rpm

14. Starting (air in cylinder)

No.	Description	Index	Value	Unit
1	Starting air pressure before engine, min.	R	-	bar
2	Starting air pressure before engine, max.	R	-	bar
3	Starting air pressure before engine, min.	L	-	bar
4	Starting air pressure before engine, max.	L	-	bar
20	Start attempt duration (engine preheated)	R	-	s
21	Start attempt duration (engine not preheated)	R	-	s
22	Start attempt duration	L	-	s
23	Air consumption / start attempt (engine preheated)	R	-	m³n
24	Air consumption / start attempt (engine not preheated)	R	-	m³n
25	Starting air tank for 3 start attempts (max. 40 bar) (engine preheated)	R	-	liter
26	Starting air tank for 3 start attempts (max. 30 bar) (engine preheated)	R	-	liter
27	Starting air tank for 6 start attempts (max. 40 bar) (engine preheated)	R	-	liter
28	Starting air tank for 6 start attempts (max. 30 bar) (engine preheated)	R	-	liter
29	Starting air tank for 10 start attempts (max. 40 bar) (engine preheated)	R	-	liter
30	Starting air tank for 10 start attempts (max. 30 bar) (engine preheated)	R	-	liter
31	Starting air tank for 3 start attempts (max. 40 bar) (engine not preheated)	R	-	liter
32	Starting air tank for 3 start attempts (max. 30 bar) (engine not preheated)	R	-	liter
33	Starting air tank for 6 start attempts (max. 40 bar) (engine not preheated)	R	-	liter
34	Starting air tank for 6 start attempts (max. 30 bar) (engine not preheated)	R	-	liter
35	Starting air tank for 10 start attempts (max. 40 bar) (engine not preheated)	R	-	liter
36	Starting air tank for 10 start attempts (max. 30 bar) (engine not preheated)	R	-	liter

15. Starting (pneumatic/oil pressure starter)

No.	Description	Index	Value	Unit
35	Pneumatic starter: make Gali		-	-
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

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	20V4000G14F	Speed [rpm]	1500
Application Group	3B	Nominal power [kW]	2200
Dataset	Ref. 25°C/55°C	Nominal power [bhp]	2950
		Frequency [Hz]	50

Exhaust Regulations Fuel-consumption optimized;

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	1.4	m³n
115	Air consumption/start attempt (engine not preheated) Engine without generator Control with engine controller	R	1.6	m³n
116	Air consumption with external control for air-starter (per second)	R	0.7	m³n
23	Starting air tank for 3 start attempts (max. 40 bar) (engine preheated)	R	-	liter
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 (°)
16	Longitudinal inclination, temporary max. driving end down (Option: max. operating inclinations)	L	-	degrees (°)
17	Longitudinal inclination, continuous max. driving end up (Option: max. operating inclinations)	L	5	degrees (°)

[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	20V4000G14F	Speed [rpm]	1500
Application Group	3B	Nominal power [kW]	2200
Dataset	Ref. 25°C/55°C	Nominal power [bhp]	2950
		Frequency [Hz]	50

Exhaust Regulations Fuel-consumption optimized;

18	Longitudinal inclination, temporary max. driving end up (Option: max. operating inclinations)	L	-	degrees (°)
19	Transverse inclination, continuous max. (Option: max. operating inclinations)	L	10	degrees (°)
20	Transverse inclination, temporary max. (Option: max. operating inclinations)	L	-	degrees (°)

17. Inclinations - special oil system (ref.: waterline)

No.	Description	Index	Value	Unit
1	Longitudinal inclination, continuous max.	L	-	degrees (°)
7	Transverse inclination, continuous max.	L	-	degrees (°)

18. Capacities

No.	Description	Index	Value	Unit
1	Engine coolant capacity (without cooling equipment)	R	205 *	liter
10	Intercooler coolant capacity	R	50	liter
11	On-engine fuel capacity	R	9	liter
14	Engine oil capacity, initial filling (standard oil system) (Option: max. operating inclinations)	R	390 *	liter
20	Oil change quantity, max. (standard oil system) (Option: max. operating inclinations)	R	340 *	liter
28	Oil pan capacity, dipstick mark min. (standard oil system) (Option: max. operating inclinations)	L	268	liter
29	Oil pan capacity, dipstick mark max. (standard oil system) (Option: max. operating inclinations)	L	315	liter

19. Masses / dimensions

No.	Description	Index	Value	Unit
9	Engine mass, dry (basic engine configuration acc. to scope of supply specification)	R	9290	kg

21. Exhaust emissions

No.	Description	Index	Value	Unit
1972	Emissions data sheet: Fuel-consumption optimized		EDS 4000 1235	-

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	112	dB(A)

[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	20V4000G14F	Speed [rpm]	1500
Application Group	3B	Nominal power [kW]	2200
Dataset	Ref. 25°C/55°C	Nominal power [bhp]	2950
		Frequency [Hz]	50

Exhaust Regulations Fuel-consumption optimized;

201	Exhaust noise, unsilenced - CP (sound power level LW, ISO 6798, +3dB(A) tolerance)	R	124	dB(A)
102	Exhaust noise, unsilenced - FSP (free-field sound-pressure level Lp, 1m distance, ISO 6798, +3dB(A) tolerance)	R	-	dB(A)
202	Exhaust noise, unsilenced - FSP (sound power level LW, ISO 6798, +3dB(A) tolerance)	R	-	dB(A)
103	Exhaust noise, unsilenced - CP (free-field sound-pressure level Lp, 1m distance, ISO 6798) Spectrum No.	R	735827e	-
203	Exhaust noise,unsilenced - CP (sound power level LW, ISO 6798) Spectrum No.	R	N	-
104	Exhaust noise, unsilenced - FSP (free-field sound-pressure level Lp, 1m distance, ISO 6798) Spectrum No.	R	-	-
204	Exhaust noise,unsilenced - FSP (sound power level LW, ISO 6798) Spectrum No.	R	-	-
109	Engine surface noise with attenuated intake noise (filter) - CP (free-field sound-pressure level Lp, 1m distance, ISO 6798, +2dB(A) tolerance)	R	104	dB(A)
209	Engine surface noise with attenuated intake noise (filter) - CP (sound power level LW, ISO 6798, +2dB(A) tolerance)	R	123	dB(A)
110	Engine surface noise with attenuated intake noise (filter) - FSP (free-field sound-pressure level Lp, 1m distance, ISO 6798, +2dB(A) tolerance)	R	-	dB(A)
210	Engine surface noise with attenuated intake noise (filter) - FSP (sound power level LW, ISO 6798, +2dB(A) tolerance)	R	-	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	735805e	-
211	Engine surface noise with attenuated intake noise (filter) - CP (sound power level LW, ISO 6798) Spectrum No.	R	N	-
112	Engine surface noise with attenuated intake noise (filter) - FSP (free-field sound-pressure level Lp, 1m distance, ISO 6798) Spectrum No.	R	-	-
212	Engine surface noise with attenuated intake noise (filter) - FSP (sound power level LW, ISO 6798) Spectrum No.	R	-	-

[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 20V4000G14F
Application Group 3B
Dataset Ref. 25°C/55°C

Speed [rpm] 1500
Nominal power [kW] 2200
Nominal power [bhp] 2950
Frequency [Hz] 50

Exhaust Regulations Fuel-consumption optimized;

132	Engine surface noise, without intake noise - FSP (free-field sound-pressure level Lp, 1m distance, ISO 6798, +2dB(A) tolerance)	R	-	dB(A)
232	Engine surface noise, without intake noise - FSP (sound power level LW, ISO 6798, +2dB(A) tolerance)	R	-	dB(A)
134	Engine surface noise, without intake noise - FSP (free-field sound-pressure level Lp, 1m distance, ISO 6798) Spectrum No.	R	-	-
234	Engine surface noise, without intake noise - FSP (sound power level LW, ISO 6798) Spectrum No.	R	-	-
118	Intake noise, unsilenced - FSP (free-field sound-pressure level Lp, 1m distance, ISO 6798)	R	-	dB(A)
218	Intake noise, unsilenced - FSP (sound power level LW, ISO 6798)	R	-	dB(A)
120	Intake noise, unsilenced - FSP (free-field sound-pressure level Lp, 1m distance, ISO 6798) Spectrum No.	R	-	-
220	Intake noise, unsilenced - FSP (sound power level LW, ISO 6798) Spectrum No.	R	-	-
125	Structure borne noise at engine mounting brackets in vertical direction above resilient engine mounts - CP Spectrum No.	R	735849e	-
126	Structure borne noise at engine mounting brackets in vertical direction above resilient engine mounts - FSP Spectrum No.	R	-	-
128	Structure born noise, vertically below the resilient engine mounts - FSP Spectrum No.	R	-	-

[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