



- Product Data -

Name	16V2000G86F	Speed [rpm]	1500
Application Group	3D	Nominal power [kW]	1100
Dataset	Ref. 25°C/-; Air charge air cooling	Nominal power [bhp]	1475
		Nominal power [kVA]	-
		Nominal power [kWeI]	-
		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

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

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Engine power that can be run continuously under standard conditions

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Exhaust Regulations Fuel-consumption optimized;

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)		-	-

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Exhaust Regulations Fuel-consumption optimized;

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	-	kW
5	Fuel stop power ISO 3046	A	1100	kW
8	Mean effective pressure (MEP) (Continuous power ISO 3046)		-	bar
9	Mean effective pressure (MEP) (Fuel stop power ISO 3046)		24.6	bar

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Exhaust Regulations Fuel-consumption optimized;

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

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3. Consumption

No.	Description	Index	Value	Unit
17	Specific fuel consumption (be) - 100 % CP (+ 5 %; EN 590; 42.8 MJ/kg)	R	-	g/kWh
18	Specific fuel consumption (be) - 75 % CP (+ 5 %; EN 590; 42.8 MJ/kg)	R	-	g/kWh
19	Specific fuel consumption (be) - 50 % CP (+ 5 %; EN 590; 42.8 MJ/kg)	R	-	g/kWh
20	Specific fuel consumption (be) - 25 % CP (+ 5 %; EN 590; 42.8 MJ/kg)	R	-	g/kWh
21	Specific fuel consumption (be) - FSP (+ 5 %; EN 590; 42.8 MJ/kg)	R	-	g/kWh
56	Specific fuel consumption (be) - 100 % FSP (+ 5 %; EN 590; 42.8 MJ/kg)	R	193	g/kWh
57	Specific fuel consumption (be) - 75 % FSP (+ 5 %; EN 590; 42.8 MJ/kg)	R	191	g/kWh
58	Specific fuel consumption (be) - 50 % FSP (+ 5 %; EN 590; 42.8 MJ/kg)	R	197	g/kWh
59	Specific fuel consumption (be) - 25 % FSP (+ 5 %; EN 590; 42.8 MJ/kg)	R	216	g/kWh
73	No-load fuel consumption	R	14	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

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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		16	-
7	Cylinder configuration: V angle		90	degrees (°)
10	Bore		135	mm
11	Stroke		156	mm
12	Displacement, cylinder		2.233	liter
13	Displacement, total		35.7	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		-	-

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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	-

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Exhaust Regulations Fuel-consumption optimized;

5. Combustion air / exhaust gas

No.	Description	Index	Value	Unit
33	Charge-air flow through external air-to-air intercooler	A	N	m ³ /s
34	Charge-air temperature before external air-to-air intercooler	A	225	°C
35	Charge-air temperature after external air-to-air intercooler	A	60	°C
36	Charge-air temperature after external air-to-air intercooler, max.	L	75	°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	-	bar abs
27	Charge-air pressure before cylinder - FSP	R	3.5	bar abs
9	Combustion air volume flow - CP	R	-	m ³ /s
10	Combustion air volume flow - FSP	R	1.28	m ³ /s
11	Exhaust volume flow (at exhaust temperature) - CP	R	-	m ³ /s
12	Exhaust volume flow (at exhaust temperature) - FSP	R	3.45	m ³ /s
17	Exhaust temperature after engine - CP	R	-	°C
18	Exhaust temperature after engine - FSP	R	545	°C
58	Exhaust temperature after engine (turbocharger), max.	L	700	°C

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		Nominal power [kWel]	-
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Exhaust Regulations Fuel-consumption optimized;

6. Heat dissipation

No.	Description	Index	Value	Unit
60	Heat dissipated by engine coolant - CP (high-temperature circuit)	R	-	kW
61	Heat dissipated by engine coolant - CP (low-temperature circuit)	R	-	kW
62	Heat dissipated by engine coolant - FSP (high-temperature circuit)	R	425	kW
63	Heat dissipated by engine coolant - FSP (low-temperature circuit)	R	-	kW
26	Charge-air heat dissipation - CP	R	-	kW
27	Charge-air heat dissipation - FSP	R	235	kW
31	Heat dissipated by return fuel flow - CP	R	-	kW
32	Heat dissipated by return fuel flow - FSP	R	3.629	kW
33	Radiation and convection heat, engine - CP	R	-	kW
34	Radiation and convection heat, engine - FSP	R	40	kW

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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	41.6	m ³ /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

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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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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	6.2	bar
9	Lube oil operating press. bef. engine, to	R	8.8	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		3	-
32	Lube oil fine filter (main circuit): pressure differential, max.	L	1.0	bar

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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
4213	Max. fuel return volume Normal mode	A	25	liter/min
4214	Max. fuel return volume Failure mode	A	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. (for emergency/standby sets with coolant preheating the minimum preheating temperature referred to extended property No.22 is sufficient)	R	40	°C
48	Minimum continuous load	R	20	%
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)

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Engine power that can be run continuously under standard conditions

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Name	16V2000G86F	Speed [rpm]	1500
Application Group	3D	Nominal power [kW]	1100
Dataset	Ref. 25°C/-; Air charge air cooling	Nominal power [bhp]	1475
		Nominal power [kVA]	-
		Nominal power [kWeI]	-
		Frequency [Hz]	50

Exhaust Regulations Fuel-consumption optimized;

50	Engine mass moment of inertia (without flywheel)	R	3.4	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	%

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		Nominal power [kVA]	-
		Nominal power [kWeI]	-
		Frequency [Hz]	50

Exhaust Regulations Fuel-consumption optimized;

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
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

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Application Group	3D	Nominal power [kW]	1100
Dataset	Ref. 25°C/-; Air charge air cooling	Nominal power [bhp]	1475
		Nominal power [kVA]	-
		Nominal power [kWeI]	-
		Frequency [Hz]	50

Exhaust Regulations Fuel-consumption optimized;

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 full)	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	-

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Dataset	Ref. 25°C/-; Air charge air cooling	Nominal power [bhp]	1475
		Nominal power [kVA]	-
		Nominal power [kWeI]	-
		Frequency [Hz]	50

Exhaust Regulations Fuel-consumption optimized;

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	m ³ n
115	Air consumption/start attempt (engine not preheated) Engine without generator Control with engine controller	R	1.2	m ³ n
116	Air consumption with external control for air-starter (per second)	R	0.6	m ³ n
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

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Application Group	3D	Nominal power [kW]	1100
Dataset	Ref. 25°C/-; Air charge air cooling	Nominal power [bhp]	1475
		Nominal power [kVA]	-
		Nominal power [kWel]	-
		Frequency [Hz]	50

Exhaust Regulations Fuel-consumption optimized;

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

[BL] Reference value: fuel stop power

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Dataset	Ref. 25°C/-; Air charge air cooling	Nominal power [bhp]	1475
		Nominal power [kVA]	-
		Nominal power [kWeI]	-
		Frequency [Hz]	50

Exhaust Regulations Fuel-consumption optimized;

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 (°)

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Dataset	Ref. 25°C/-; Air charge air cooling	Nominal power [bhp]	1475
		Nominal power [kVA]	-
		Nominal power [kWeI]	-
		Frequency [Hz]	50

Exhaust Regulations Fuel-consumption optimized;

18. Capacities

No.	Description	Index	Value	Unit
1	Engine coolant capacity (without cooling equipment)	R	70	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	114	liter
20	Oil change quantity, max. (standard oil system) (Option: max. operating inclinations)	R	102	liter
2024	Oil pan capacity, dipstick mark min. (standard oil system)	R	88	liter
2025	Oil pan capacity, dipstick mark max. (standard oil system)	R	94	liter

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

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Application Group	3D	Nominal power [kW]	1100
Dataset	Ref. 25°C/-; Air charge air cooling	Nominal power [bhp]	1475
		Nominal power [kVA]	-
		Nominal power [kWeI]	-
		Frequency [Hz]	50

Exhaust Regulations Fuel-consumption optimized;

19. Masses / dimensions

No.	Description	Index	Value	Unit
9	Engine mass, dry (basic engine configuration acc. to scope of supply specification)	R	3100	kg
10	Engine mass, wet (basic engine configuration acc. to scope of supply specification)	R	3275	kg

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Dataset	Ref. 25°C/-; Air charge air cooling	Nominal power [bhp]	1475
		Nominal power [kVA]	-
		Nominal power [kWeI]	-
		Frequency [Hz]	50

Exhaust Regulations Fuel-consumption optimized;

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

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Application Group	3D	Nominal power [kW]	1100
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		Nominal power [kVA]	-
		Nominal power [kWeI]	-
		Frequency [Hz]	50

Exhaust Regulations Fuel-consumption optimized;

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		-	-

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		Nominal power [kVA]	-
		Nominal power [kWeI]	-
		Frequency [Hz]	50

Exhaust Regulations Fuel-consumption optimized;

22. Acoustics

No.	Description	Index	Value	Unit
23	Structure born noise, vertically above resilient mounting Spectrum No.	R	736740e	-
101	Exhaust noise, unsilenced - CP (free-field sound-pressure level Lp, 1m distance, ISO 6798, +3dB(A) tolerance)	R	115	dB(A)
201	Exhaust noise, unsilenced - CP (sound power level LW, ISO 6798, +3dB(A) tolerance)	R	127	dB(A)
103	Exhaust noise, unsilenced - CP (free-field sound-pressure level Lp, 1m distance, ISO 6798) Spectrum No.	R	736750e	-
109	Engine surface noise with attenuated intake noise (filter) - CP (free-field sound-pressure level Lp, 1m distance, ISO 6798, +2dB(A) tolerance)	R	102	dB(A)
209	Engine surface noise with attenuated intake noise (filter) - CP (sound power level LW, ISO 6798, +2dB(A) tolerance)	R	119	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	736730e	-

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		Nominal power [kWeI]	-
		Frequency [Hz]	50

Exhaust Regulations Fuel-consumption optimized;

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	9000	h
22	P1 (percent load related to CP)	R	100	%
3	t1 (percentage of operating time)	R	5	%
24	P2 (percent load related to CP)	R	85	%
5	t2 (percentage of operating time)	R	95	%
26	P3 (percent load related to CP)	R	-	%
7	t3 (percentage of operating time)	R	-	%
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	<85	%
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	-

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