



Name	16V2000G45	Speed [rpm]	1800
Application Group	3D	Nominal power [kW]	1010
Dataset	Ref. 25°C/- ; Air charge air cooling	Nominal power [bhp]	1354
		Frequency [Hz]	60
Exhaust Regulations	EPA Stationary EMERG T2 (40CFR60) ; EPA Nonroad T2 Comp		

Reference conditions

No.	Description	Index	Value	Unit
3	MTU data code		34	-
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
10	Raw-water inlet temperature		-	°C

0. Data-relevant engine design configuration

No.	Description	Index	Value	Unit
2	Exhaust-emissions optimized (limit values see Exhaust Emissions, Chapter 21)		X	-
25	Complies with: US EPA, regulation for nonroad engines (40 CFR 89 - Tier 2 -)		X	-
8	Engine rated speed switchable (1500/1800 rpm)		-	-
12	Engine with sequential turbocharging (turbochargers with cut-in/cut-out control)		-	-
13	Engine without sequential turbocharging (turbochargers without cut-in/cut-out control)		X	-
31	Engine with air-cooled charge air		X	-
32	Engine with water-cooled charge air (external)		-	-

1. Power-related data

No.	Description	Index	Value	Unit
1	Engine rated speed	A	1800	rpm
3	Mean piston speed		9.0	m/s
5	Fuel stop power ISO 3046	A	1010	kW
9	Mean effective pressure (MEP) (Fuel stop power ISO 3046)		21.2	bar

2. General Conditions (for maximum power)

No.	Description	Index	Value	Unit
1	Intake air depression (new filter)	A	15	mbar
2	Intake air depression, max.	L	50	mbar
3	Exhaust back pressure	A	30	mbar
4	Exhaust back pressure, max.	L	85	mbar
5	Fuel temperature at fuel feed connection	R	25	°C
6	Fuel temperature at fuel feed connection, max.	L	60	°C

3. Consumption

No.	Description	Index	Value	Unit
56	Specific fuel consumption (be) - 100 % FSP (+ 5 %; EN 590; 42.8 MJ/kg)	R	205	g/kWh
57	Specific fuel consumption (be) - 75 % FSP (+ 5 %; EN 590; 42.8 MJ/kg)	R	209	g/kWh

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58	Specific fuel consumption (be) - 50 % FSP (+ 5 %; EN 590; 42.8 MJ/kg)	R	213	g/kWh
59	Specific fuel consumption (be) - 25 % FSP (+ 5 %; EN 590; 42.8 MJ/kg)	R	237	g/kWh
73	No-load fuel consumption	R	22	kg/h
61	Lube oil consumption after 100 h of operation (B = fuel consumption per hour)	R	0.5	% 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
3	Engine with exhaust turbocharger (ETC) and intercooler		X	-
4	Exhaust piping, non-cooled		X	-
5	Exhaust piping, liquid-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		130	mm
11	Stroke		150	mm
12	Displacement, cylinder		1.99	liter
13	Displacement, total		31.84	liter
14	Compression ratio		16	-
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	-
18	Number of intercoolers		1	-
28	Standard flywheel housing flange (engine main PTO)		0	SAE
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
39	Pressure differential in external air-to-air intercooler, max.	L	130	mbar
27	Charge-air pressure before cylinder - FSP	R	3.4	bar abs
10	Combustion air volume flow - FSP	R	1.40	m³/s
12	Exhaust volume flow (at exhaust temperature) - FSP	R	3.5	m³/s
16	Exhaust temperature after turbocharger - FSP	R	530	°C

6. Heat dissipation

No.	Description	Index	Value	Unit
16	Heat dissipated by engine coolant - FSP with oil heat, without charge-air heat	R	385	kW
27	Charge-air heat dissipation - FSP	R	260	kW

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34	Radiation and convection heat, engine - FSP	R	45	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	95	°C
20	Coolant temperature after engine, limit 1	L	97	°C
21	Coolant temperature after engine, limit 2	L	102	°C
25	Coolant antifreeze content, max.	L	50	%
30	Cooling equipment: coolant flow rate	A	50	m³/h
35	Coolant pump: inlet pressure, min.	L	0.4	bar
36	Coolant pump: inlet pressure, max.	L	1.52	bar
41	Pressure loss in off-engine cooling system, max.	L	0.7	bar
47	Breather valve (expansion tank) opening pressure (excess pressure)	R	N	bar
54	Cooling equipment: height above engine, max.	L	15.2	m
53	Cooling equipment: operating pressure	A	2.2	bar
74	Coolant level in expansion tank, below min. shutdown	L	X	-
48	Breather valve (expansion tank) opening pressure (depression)	R	N	bar
49	Pressure in cooling system, max.	L	N	bar

8. Coolant system (low-temperature circuit)

No.	Description	Index	Value	Unit
75	Temperature differential between intake air and charge-air coolant before intercooler, max.	L	-	K

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
5	Lube oil temperature before engine, limit 1	L	103	°C
6	Lube oil temperature before engine, limit 2	L	-	°C
8	Lube oil operating press. bef. engine, from	R	6.0	bar
9	Lube oil operating press. bef. engine, to	R	7.0	bar
10	Lube oil pressure before engine, alarm	L	5.5	bar
11	Lube oil pressure before engine, shutdown	L	5.0	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	-
21	Lube oil fine filter (main circuit): particle retention	R	0.009	mm
32	Lube oil fine filter (main circuit): pressure differential, max.	L	0.8	bar

11. Fuel system

No.	Description	Index	Value	Unit
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No.	Description	Index	Value	Unit
1	Fuel pressure at fuel feed connection, min. (when engine is starting)	L	-0.3	bar
2	Fuel pressure at fuel feed connection, max. (when engine is starting)	L	0.5	bar
37	Fuel supply flow, max.	A	8.0	liter/min
8	Fuel return flow, max.	A	3.5	liter/min
10	Fuel pressure at return connection on engine, max.	L	0.5	bar
12	Fuel temperature differential before/after engine	R	50	K
15	Fuel prefilter: number of units	A	-	-
16	Fuel prefilter: number of elements per unit	A	-	-
17	Fuel prefilter: particle retention	A	-	mm
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

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
2	Additional condition (to case A): engine coolant temperature	R	N	°C
3	Additional condition (to case A): lube oil temperature	R	10 **	°C
4	Additional condition (to case A): lube oil viscosity	R	30 **	SAE
9	Cold start capability: air temperature (w/o starting aid, w/ preheating) - (case C)	R	-10 **	°C
10	Additional condition (to case C): engine coolant temperature	R	40 **	°C
11	Additional condition (to case C): lube oil temperature	R	-5 **	°C
12	Additional condition (to case C): lube oil viscosity	R	10W30	SAE
21	Coolant preheating, heater performance (standard)	R	3.5	kW
22	Coolant preheating, preheating temperature, min.	L	32	°C
28	Breakaway torque (without driven machinery) coolant temperature +5°C	R	770	Nm
30	Breakaway torque (without driven machinery) coolant temperature +40°C	R	440 *	Nm
29	Cranking torque at firing speed (without driven machinery) coolant temperature +5°C	R	510 *	Nm
31	Cranking torque at firing speed (without driven machinery) coolant temperature +40°C	R	405 *	Nm
96	Starting is blocked if the engine coolant temperature is below		0	°C
93	Run-up period to rated speed (with driven machinery) (* at general conditions)	R	N	s
37	High idling speed, max. (static)	L	1920	rpm
38	Limit speed for overspeed alarm / emergency shutdown	L	2100	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	%

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49	Extended low or no-load operation possible (consultation required)		X	-
50	Engine mass moment of inertia (without flywheel)	R	3.269	kgm ²
52	Standard flywheel mass moment of inertia	R	2.820	kgm ²
51	Engine mass moment of inertia (with standard flywheel)	R	6.089	kgm ²
69	Speed droop (with electronic governor) adjustable, from	R	0	%
70	Speed droop (with electronic governor) adjustable, to	R	5	%
95	Number of starter ring-gear teeth on engine flywheel		118	-

13. Starting (electric)

No.	Description	Index	Value	Unit
1	Starter, rated power (make BOSCH) (standard design)	R	-	kW
12	Starter, rated power (make DELCO) (standard design)	R	9.5	kW
22	Starter, rated power (make PRESTOLITE) (standard design)	R	9.2	kW
2	Starter, rated voltage (standard design)	R	24	VDC
3	Starter, rated short-circuit current (make BOSCH)	R	-	A
13	Starter, rated short-circuit current (make DELCO)	R	64	A
23	Starter, rated short-circuit current (make PRESTOLITE)	R	64	A
4	Starter, power requirement max. (make BOSCH)	R	-	A
14	Starter, power requirement max. (make DELCO)	R	1600	A
24	Starter, power requirement max. (make PRESTOLITE)	R	1800	A
5	Starter, power requirement at firing speed (make BOSCH)	R	-	A
15	Starter, power requirement at firing speed (make DELCO)	R	800	A
25	Starter, power requirement at firing speed (make PRESTOLITE)	R	800	A
6	Recommended battery capacity (automotive starter battery, DIN 72311)	A	N	Ah/20h
10	Recommended battery capacity, from (automotive starter battery, DIN 72311)	A	N	Ah/20h
11	Recommended battery capacity, to (automotive starter battery, DIN 72311)	A	N	Ah/20h
7	Recommended battery capacity (NiCd battery)	A	N	Ah/ 5h
8	Recommended battery capacity (NiCd battery, VDE 0108)	A	N	Ah/ 5h
16	Start attempt duration (engine preheated)	R	2	s
17	Start attempt duration (engine not preheated)	R	6	s
18	Start attempt duration, max.	L	15	s
2309	Manufacturer		DELCO	-
2310	Number of starter		1	-
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	930	A
3000	Power consumption per starter (at an engine speed of 100 rpm, SAE0)	R	-	A

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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		DELCO	-
2319	Number of starter		2	-
2320	Starter electrically redundant		X	-
2321	Rated power per starter	R	9	kW
2322	Starter, rated voltage	R	24	VDC
2323	Rated short-circuit current per starter	L	1900	A
2324	Power consumption per starter (at an engine speed of 100 rpm)	R	930	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
2326	Manufacturer		PRESTOLITE	-
2327	Number of starter		1	-
2328	Starter electrically redundant		-	-
2329	Rated power per starter	R	9	kW
2330	Starter, rated voltage	R	24	VDC
2331	Rated short-circuit current per starter	L	1900	A
2332	Power consumption per starter (at an engine speed of 100 rpm)	R	830	A
3251	Power consumption per starter (at an engine speed of 100 rpm, SAE0)	R	-	A
3252	Power consumption per starter (at an engine speed of 100 rpm, SAE1)	R	-	A
2333	Internal resistance of power supply + line resistance per starter	A	0.005	Ω
2334	Manufacturer		PRESTOLITE	-
2335	Number of starter		2	-
2336	Starter electrically redundant		X	-
2337	Rated power per starter	R	9	kW
2338	Starter, rated voltage	R	24	VDC
2339	Rated short-circuit current per starter	L	1900	A
2340	Power consumption per starter (at an engine speed of 100 rpm)	R	830	A
3372	Power consumption per starter (at an engine speed of 100 rpm, SAE0)	R	-	A
3373	Power consumption per starter (at an engine speed of 100 rpm, SAE1)	R	-	A
2341	Internal resistance of power supply + line resistance per starter	A	0.005	Ω
3374	Manufacturer		PRESTOLITE	-
3375	Number of starter		2	-
3376	Starter electrically redundant		-	-
3377	Rated power per starter	R	9	kW
3378	Starter, rated voltage	R	24	VDC
3379	Rated short-circuit current per starter	L	1900	A
3380	Power consumption per starter (at an engine speed of 100 rpm)	R	830	A
3381	Power consumption per starter (at an engine speed of 100 rpm, SAE0)	R	-	A
3382	Power consumption per starter (at an engine speed of 100 rpm, SAE1)	R	-	A

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3383	Internal resistance of power supply + line resistance per starter	A	0.005	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
5	Starting air pressure before starter motor, min.	R	17	bar
6	Starting air pressure before starter motor, max.	R	N	bar
7	Starting air pressure before starter motor, min.	L	N	bar
8	Starting air pressure before starter motor, max.	L	N	bar
18	Start attempt duration (engine preheated)	R	N	s
19	Start attempt duration (engine not preheated)	R	N	s
20	Start attempt duration, max.	L	N	s
21	Air consumption/start attempt (engine preheated)	R	0.83	m³n
23	Starting air tank for 3 start attempts (max. 40 bar) (engine preheated)	R	N	liter
24	Starting air tank for 3 start attempts (max. 30 bar) (engine preheated)	R	N	liter
25	Starting air tank for 6 start attempts (max. 40 bar) (engine preheated)	R	N	liter
26	Starting air tank for 6 start attempts (max. 30 bar) (engine preheated)	R	N	liter
27	Starting air tank for 10 start attempts (max. 40 bar) (engine preheated)	R	N	liter
28	Starting air tank for 10 start attempts (max. 30 bar) (engine 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	110	liter
11	On-engine fuel capacity	R	5	liter

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14	Engine oil capacity, initial filling (standard oil system) (Option: max. operating inclinations)	R	102	liter
20	Oil change quantity, max. (standard oil system) (Option: max. operating inclinations)	R	99	liter
28	Oil pan capacity, dipstick mark min. (standard oil system) (Option: max. operating inclinations)	L	69	liter
29	Oil pan capacity, dipstick mark max. (standard oil system) (Option: max. operating inclinations)	L	88	liter

19. Masses / dimensions

No.	Description	Index	Value	Unit
9	Engine mass, dry (basic engine configuration acc. to scope of supply specification)	R	3150	kg
10	Engine mass, wet (basic engine configuration acc. to scope of supply specification)	R	3360	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	N	rpm
19	Standard fan cooler, supplied by MTU, design and specific data acc. to case A / B / C		N	-
21	(Case A) - fan cooler, designed for: - ambient temperature	A	N	°C
54	(Case A) - fan cooler, designed for: - site altitude, max.	A	N	m
22	(Case A) - fan cooler, designed for: - coolant antifreeze content, max.	A	N	%
55	(Case A) - fan: power consumption at 1 mbar / 100 Pa duct allowance (pressure and suction sides, total)	R	N	kW
56	(Case A) - fan: power consumption at 2 mbar / 200 Pa duct allowance (pressure and suction sides, total)	R	N	kW
57	(Case A) - fan: power consumption at 3 mbar / 300 Pa duct allowance (pressure and suction sides, total)	R	N	kW
27	(Case A) - cooling-air flow rate at 1 mbar / 100 Pa duct allowance (pressure and suction sides, total)	R	N	m³/s
28	(Case A) - cooling-air flow rate at 2 mbar / 200 Pa duct allowance (pressure and suction sides, total)	R	N	m³/s

[BL] Reference value: fuel stop power
Maximum engine power that cannot be run continuously on
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Engine power that can be run continuously under standard
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Name	16V2000G45	Speed [rpm]	1800
Application Group	3D	Nominal power [kW]	1010
Dataset	Ref. 25°C/- ; Air charge air cooling	Nominal power [bhp]	1354
		Frequency [Hz]	60

Exhaust Regulations EPA Stationary EMERG T2 (40CFR60) ; EPA Nonroad T2 Comp

29	(Case A) - cooling-air flow rate at 3 mbar / 300 Pa duct allowance (pressure and suction sides, total)	R	N	m³/s
58	(Case A) - fan: weight	R	N	kg
59	(Case A) - fan cooler: weight, dry (incl. pipework)	R	N	kg
31	(Case A) - fan cooler: coolant capacity	R	N	liter
32	(Case B) - fan cooler, designed for: - ambient temperature	A	N	°C
60	(Case B) - fan cooler, designed for: - site altitude, max.	A	N	m
33	(Case B) - fan cooler, designed for: - coolant antifreeze content, max.	A	N	%
61	(Case B) - fan: power consumption at 1 mbar / 100 Pa duct allowance (pressure and suction sides, total)	R	N	kW
62	(Case B) - fan: power consumption at 2 mbar / 200 Pa duct allowance (pressure and suction sides, total)	R	N	kW
63	(Case B) - fan: power consumption at 3 mbar / 300 Pa duct allowance (pressure and suction sides, total)	R	N	kW
38	(Case B) - cooling-air flow rate at 1 mbar / 100 Pa duct allowance (pressure and suction sides, total)	R	N	m³/s
39	(Case B) - cooling-air flow rate at 2 mbar / 200 Pa duct allowance (pressure and suction sides, total)	R	N	m³/s
40	(Case B) - cooling-air flow rate at 3 mbar / 300 Pa duct allowance (pressure and suction sides, total)	R	N	m³/s
64	(Case B) - fan: weight	R	N	kg
65	(Case B) - fan cooler: weight, dry (incl. pipework)	R	N	kg
42	(Case B) - fan cooler: coolant capacity	R	N	liter
43	(Case C) - fan cooler, designed for: - ambient temperature	A	N	°C
66	(Case C) - fan cooler, designed for: - site altitude, max.	A	N	m
44	(Case C) - fan cooler, designed for: - coolant antifreeze content, max.	A	N	%
67	(Case C) - fan: power consumption at 1 mbar / 100 Pa duct allowance (pressure and suction sides, total)	R	N	kW
68	(Case C) - fan: power consumption at 2 mbar / 200 Pa duct allowance (pressure and suction sides, total)	R	N	kW
69	(Case C) - fan: power consumption at 3 mbar / 300 Pa duct allowance (pressure and suction sides, total)	R	N	kW
49	(Case C) - cooling-air flow rate at 1 mbar / 100 Pa duct allowance (pressure and suction sides, total)	R	N	m³/s

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		Frequency [Hz]	60

Exhaust Regulations EPA Stationary EMERG T2 (40CFR60) ; EPA Nonroad T2 Comp

50	(Case C) - cooling-air flow rate at 2 mbar / 200 Pa duct allowance (pressure and suction sides, total)	R	N	m³/s
51	(Case C) - cooling-air flow rate at 3 mbar / 300 Pa duct allowance (pressure and suction sides, total)	R	N	m³/s
70	(Case C) - fan: weight	R	N	kg
71	(Case C) - fan cooler: weight, dry (incl. pipework)	R	N	kg
53	(Case C) - fan cooler: coolant capacity	R	N	liter

21. Exhaust emissions

No.	Description	Index	Value	Unit
1956	Emissions data sheet: US EPA Tier 2		EDS20000105	-

22. Acoustics

No.	Description	Index	Value	Unit
102	Exhaust noise, unsilenced - FSP (free-field sound-pressure level Lp, 1m distance, ISO 6798, +3dB(A) tolerance)	R	115	dB(A)
202	Exhaust noise, unsilenced - FSP (sound power level LW, ISO 6798, +3dB(A) tolerance)	R	128	dB(A)
104	Exhaust noise, unsilenced - FSP (free-field sound-pressure level Lp, 1m distance, ISO 6798) Spectrum No.	R	734 387e	-
204	Exhaust noise,unsilenced - FSP (sound power level LW, ISO 6798) Spectrum No.	R	N	-
110	Engine surface noise with attenuated intake noise (filter) - FSP (free-field sound-pressure level Lp, 1m distance, ISO 6798, +2dB(A) tolerance)	R	104	dB(A)
210	Engine surface noise with attenuated intake noise (filter) - FSP (sound power level LW, ISO 6798, +2dB(A) tolerance)	R	122	dB(A)
112	Engine surface noise with attenuated intake noise (filter) - FSP (free-field sound-pressure level Lp, 1m distance, ISO 6798) Spectrum No.	R	734 388e	-
212	Engine surface noise with attenuated intake noise (filter) - FSP (sound power level LW, ISO 6798) Spectrum No.	R	N	-
129	Test stand impedance spectrum, Diagram No.		N	-
130	Test stand impedance spectrum, Diagram No. (cont.)		N	-

23. TBO and load profile (case A)

No.	Description	Index	Value	Unit
15	Maintenance schedule No.		N	-
16	Maintenance schedule No. (cont.)		N	-

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Application Group	3D	Nominal power [kW]	1010
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