

Technical Sales Documentation		- ENGINE DATA -			MTU Project No.				
Printout: (y-m-d) 2007-07-25									
No.		Index	Unit	12V2000G65					
	Application Group MTU data code Intake air temperature Charge-air coolant temperature Barometric pressure Site altitude above sea level Raw-water inlet temperature		°C °C mbar m °C	3B 13 25 - 1000 100 -					
0. DATA-RELEVANT ENGINE DESIGN CONFIGURATION									
1	Fuel-consumption optimized			x					
2	Exhaust-emissions optimized (limit values see Exhaust Emissions, Chapter 21)			-					
16	Complies with: "TA-Luft" (Edition 1986) (German clean-air standard)			-					
17	Complies with: Regulations for stationary power plants in France (arrêté du 25 Juillet 1997)			-					
18	Complies with: US EPA, regulation for nonroad engines (40 CFR 89 - Tier 1 -)			-					
25	Complies with: US EPA, regulation for nonroad engines (40 CFR 89 - Tier 2 -)			-					
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 (power ratings are net brake power to ISO 3046)									
1	Engine rated speed	A	rpm	1500					
3	Mean piston speed		m/s	7.5					
4	Continuous power ISO 3046 (10% overload capability) (design power DIN 6280, ISO 8528)	A	kW	695					
5	Fuel stop power ISO 3046	A	kW	765					
8	Mean effective pressure (MEP) (Continuous power ISO 3046)		bar	23.3					
9	Mean effective pressure (MEP) (Fuel stop power ISO 3046)		bar	25.6					
2. GENERAL CONDITIONS (for maximum power)									
1	Intake air depression (new filter)	A	mbar	15					
2	Intake air depression, max.	L	mbar	50					
3	Exhaust back pressure	A	mbar	30					
4	Exhaust back pressure, max.	L	mbar	85					
5	Fuel temperature at fuel feed connection	R	°C	25					
6	Fuel temperature at fuel feed connection, max.	L	°C	60					
3. CONSUMPTION									
17	Specific fuel consumption (be) - 100 % CP (+ 5 %; EN 590; 42.8 MJ/kg)	G	g/kWh	202					
18	Specific fuel consumption (be) - 75 % CP (+ 5 %; EN 590; 42.8 MJ/kg)	R	g/kWh	203					
19	Specific fuel consumption (be) - 50 % CP (+ 5 %; EN 590; 42.8 MJ/kg)	R	g/kWh	210					
20	Specific fuel consumption (be) - 25 % CP (+ 5 %; EN 590; 42.8 MJ/kg)	R	g/kWh	230					

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21	Specific fuel consumption (be) - FSP (+ 5 %; EN 590; 42.8 MJ/kg)	R	g/kWh	204					
73	No-load fuel consumption	R	kg/h	12					
61	Lube oil consumption after 100 h of operation (B = fuel consumption per hour)	R	% of B	0.5					
62	Lube oil consumption after 100 h of operation, max. (B = fuel consumption per hour)	L	% of B	1.0					
4. MODEL-RELATED DATA (basic design)									
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			12					
7	Cylinder configuration: V angle		degrees	90					
10	Bore		mm	130					
11	Stroke		mm	150					
12	Displacement, cylinder		liter	1.99					
13	Displacement, total		liter	23.88					
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)		SAE	0					
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									
39	Pressure differential in external air-to-air intercooler, max.	L	mbar	130					
8	Charge-air pressure before cylinder - CP	R	bar abs	3.2					
27	Charge-air pressure before cylinder - FSP	R	bar abs	3.5					
9	Combustion air volume flow - CP	R	m³/s	0.85					
10	Combustion air volume flow - FSP	R	m³/s	0.9					
11	Exhaust volume flow (at exhaust temperature) - CP	R	m³/s	2.3					
12	Exhaust volume flow (at exhaust temperature) - FSP	R	m³/s	2.5					
15	Exhaust temperature after turbocharger - CP	R	°C	555					
16	Exhaust temperature after turbocharger - FSP	R	°C	565					
6. HEAT DISSIPATION									

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15	Heat dissipated by engine coolant - CP with oil heat, without charge-air heat	R	kW	310					
16	Heat dissipated by engine coolant - FSP with oil heat, without charge-air heat	R	kW	N					
26	Charge-air heat dissipation - CP	R	kW	135					
27	Charge-air heat dissipation - FSP	R	kW	N					
33	Radiation and convection heat, engine - CP	R	kW	40					
34	Radiation and convection heat, engine - FSP	R	kW	N					
7. COOLANT SYSTEM (high-temperature circuit)									
17	Coolant temperature (at engine outlet to cooling equipment)	A	°C	95					
20	Coolant temperature after engine, alarm	R	°C	97					
21	Coolant temperature after engine, shutdown	L	°C	102					
25	Coolant antifreeze content, max.	L	%	50					
30	Cooling equipment: coolant flow rate	A	m³/h	40					
35	Coolant pump: inlet pressure, min.	L	bar	0.4					
36	Coolant pump: inlet pressure, max.	L	bar	1.52					
41	Pressure loss in off-engine cooling system, max.	L	bar	0.7					
47	Breather valve (expansion tank) opening pressure (excess pressure)	R	bar	N					
48	Breather valve (expansion tank) opening pressure (depression)	R	bar	N					
49	Pressure in cooling system, max.	L	bar	N					
54	Cooling equipment: height above engine, max.	L	m	15.2					
53	Cooling equipment: operating pressure	A	bar	2.2					
73	Coolant level in expansion tank, below min. alarm	L		-					
74	Coolant level in expansion tank, below min. shutdown	L		x					
8. COOLANT SYSTEM (low-temperature circuit)									
76	Temperature differential between intake air and charge-air coolant before intercooler	A	K	-					
75	Temperature differential between intake air and charge-air coolant before intercooler, max.	L	K	-					
10. LUBE OIL SYSTEM									
1	Lube oil operating temp. before engine, from	R	°C	88					
2	Lube oil operating temp. before engine, to	R	°C	98					
5	Lube oil temperature before engine, alarm	R	°C	100					
6	Lube oil temperature before engine, shutdown	L	°C	105					
8	Lube oil operating press. bef. engine, from	R	bar	6.2					
9	Lube oil operating press. bef. engine, to	R	bar	7.5					
10	Lube oil pressure before engine, alarm	R	bar	4.4					
11	Lube oil pressure before engine, shutdown	L	bar	3.9					
19	Lube oil fine filter (main circuit): number of units			1					
20	Lube oil fine filter (main circuit): number of elements per unit			2					

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21	Lube oil fine filter (main circuit): particle retention	R	mm	0.009					
32	Lube oil fine filter (main circuit): pressure differential, max.	L	bar	0.8					
11. FUEL SYSTEM									
1	Fuel pressure at fuel feed connection, min. (when engine is starting)	L	bar	-0.3					
2	Fuel pressure at fuel feed connection, max. (when engine is starting)	L	bar	+0.5					
37	Fuel supply flow, max.	R	liter/min	8.0					
8	Fuel return flow, max.	R	liter/min	3.5					
10	Fuel pressure at return connection on engine, max.	L	bar	0.5					
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	mm	0.005					
21	Fuel fine filter (main circuit): pressure differential, max.	L	bar	1.0					
12. GENERAL OPERATING DATA									
1	Cold start capability: air temperature (w/o starting aid, w/o preheating) - (case A)	R	°C	0**					
2	Additional condition (to case A): engine coolant temperature	R	°C	N					
3	Additional condition (to case A): lube oil temperature	R	°C	+10**					
4	Additional condition (to case A): lube oil viscosity	R	SAE	30**					
9	Cold start capability: air temperature (w/o starting aid, w/ preheating) - (case C)	R	°C	-10**					
10	Additional condition (to case C): engine coolant temperature	R	°C	+40**					
11	Additional condition (to case C): lube oil temperature	R	°C	-5**					
12	Additional condition (to case C): lube oil viscosity	R	SAE	10W30					
21	Coolant preheating, heater performance (standard)	R	kW	3					
22	Coolant preheating, preheating temperature (min.)	R	°C	32					
28	Breakaway torque (without driven machinery) coolant temperature +5°C	R	Nm	580					
30	Breakaway torque (without driven machinery) coolant temperature +40°C	R	Nm	330*					
29	Cranking torque at firing speed (without driven machinery) coolant temperature +5°C	R	Nm	380*					
31	Cranking torque at firing speed (without driven machinery) coolant temperature +40°C	R	Nm	305*					
96	Starting is blocked if the engine coolant temperature is below		°C	N					
37	High idling speed, max. (static)	L	rpm	1660					
38	Limit speed for overspeed alarm / emergency shutdown	L	rpm	1800					
42	Firing speed, from	R	rpm	100					
43	Firing speed, to	R	rpm	120					

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44	Engine coolant temperature before starting full-load operation, recommended min. (for emergency/standby sets with coolant preheating: at least the preheating temperature)	L	°C	40					
48	Minimum continuous load	R	%	20					
49	Extended low or no-load operation possible (consultation required)			x					
50	Engine mass moment of inertia (without flywheel)	R	kgm²	1.12					
51	Engine mass moment of inertia (with standard flywheel)	R	kgm²	3.92					
52	Standard flywheel mass moment of inertia	R	kgm²	2.80					
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			160					
13. STARTING (electric)									
12	Starter, rated power (make DELCO) (standard design)	R	kW	9.0					
2	Starter, rated voltage (standard design)	R	V=	24					
14	Starter, power requirement max. (make DELCO)	R	A	1750					
15	Starter, power requirement at firing speed (make DELCO)	R	A	800					
16	Start attempt duration (engine preheated)	R	s	-					
17	Start attempt duration (engine not preheated)	R	s	-					
18	Start attempt duration, max.	L	s	6					
15. STARTING (pneumatic/oil pressure starter)									
5	Starting air pressure before starter motor, min.	R	bar	17					
6	Starting air pressure before starter motor, max.	R	bar	N					
7	Starting air pressure before starter motor, min.	L	bar	N					
8	Starting air pressure before starter motor, max.	L	bar	N					
18	Start attempt duration (engine preheated)	R	s	N					
19	Start attempt duration (engine not preheated)	R	s	N					
20	Start attempt duration, max.	L	s	N					
21	Air consumption / start attempt (engine preheated)	R	m³3n	0.49					
23	Starting air tank for 3 start attempts (max. 40 bar) (engine preheated)	R	liter	N					
24	Starting air tank for 3 start attempts (max. 30 bar) (engine preheated)	R	liter	N					
25	Starting air tank for 6 start attempts (max. 40 bar) (engine preheated)	R	liter	N					
26	Starting air tank for 6 start attempts (max. 30 bar) (engine preheated)	R	liter	N					
27	Starting air tank for 10 start attempts (max. 40 bar) (engine preheated)	R	liter	N					
28	Starting air tank for 10 start attempts (max. 30 bar) (engine preheated)	R	liter	N					
16. INCLINATIONS - STANDARD OIL SYSTEM (ref.: waterline)									
15	Longitudinal inclination, continuous max. driving end down (Option: max. operating inclinations)	L	degrees	5					

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17	Longitudinal inclination, continuous max. driving end up (Option: max. operating inclinations)	L	degrees	5					
19	Transverse inclination, continuous max. (Option: max. operating inclinations)	L	degrees	10					
18. CAPACITIES									
1	Engine coolant capacity (without cooling equipment)	R	liter	90					
11	On-engine fuel capacity	R	liter	5					
14	Engine oil capacity, initial filling (standard oil system) (Option: max. operating inclinations)	R	liter	77					
20	Oil change quantity, max. (standard oil system) (Option: max. operating inclinations)	R	liter	74					
28	Oil pan capacity, dipstick mark min. (standard oil system) (Option: max. operating inclinations)	L	liter	50					
29	Oil pan capacity, dipstick mark max. (standard oil system) (Option: max. operating inclinations)	L	liter	67					
19. WEIGHTS / DIMENSIONS									
9	Engine weight, dry (basic engine configuration acc. to scope of supply specification)	R	kg	2490					
10	Engine weight, wet (basic engine configuration acc. to scope of supply specification)	R	kg	2660					
20. FAN / FAN COOLER									
3	Fan, pusher-type			x					
18	Fan arrangement: vertical above crankshaft			x					
9	Fan drive: mechanical via V-belt			x					
13	Fan: speed	R	rpm	N					
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	°C	N					
54	(Case A) - fan cooler, designed for: - site altitude, max.	A	m	N					
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	kW	N					
56	(Case A) - fan: power consumption at 2 mbar / 200 Pa duct allowance (pressure and suction sides, total)	R	kW	N					
57	(Case A) - fan: power consumption at 3 mbar / 300 Pa duct allowance (pressure and suction sides, total)	R	kW	N					
27	(Case A) - cooling-air flow rate at 1 mbar / 100 Pa duct allowance (pressure and suction sides, total)	R	m³/s	N					

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

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50	(Case C) - cooling-air flow rate at 2 mbar / 200 Pa duct allowance (pressure and suction sides, total)	R	m³/s	N					
51	(Case C) - cooling-air flow rate at 3 mbar / 300 Pa duct allowance (pressure and suction sides, total)	R	m³/s	N					
70	(Case C) - fan: weight	R	kg	N					
71	(Case C) - fan cooler: weight, dry (incl. pipework)	R	kg	N					
53	(Case C) - fan cooler: coolant capacity	R	liter	N					
21. EXHAUST EMISSIONS									
307	Regulation: "TA-Luft" (Edition 1986) - CP Nitric oxide (NOx) (5% O2)	G	mg/m³n	-					
308	Regulation: "TA-Luft" (Edition 1986) - CP Carbon monoxide (CO) (5% O2)	G	mg/m³n	-					
309	Regulation: "TA-Luft" (Edition 1986) - CP Unburned hydrocarbons (HC)	G	mg/m³n	-					
310	Regulation: "TA-Luft" (Edition 1986) - CP Dust (5% O2)	G	mg/m³n	-					
366	Regulation: "TA-Luft" (Edition 1986) - CP Formaldehyde (5% O2)	G	mg/m³n	-					
311	Regulation: stationary power plants in France - CP Nitric oxide (NOx) (5% O2)	G	mg/m³n	-					
312	Regulation: stationary power plants in France - CP Carbon monoxide (CO) (5% O2)	G	mg/m³n	-					
313	Regulation: stationary power plants in France - CP Unburned hydrocarbons (NMHC)	G	mg/m³n	-					
314	Regulation: stationary power plants in France - CP Dust / particulates (5% O2)	G	mg/m³n	-					
316	Regulation: US EPA "Nonroad" (40 CFR 89 - Tier 1 -) Nitric oxide (NOx)	G	g/kWh	-					
317	Regulation: US EPA "Nonroad" (40 CFR 89 - Tier 1 -) Carbon monoxide (CO)	G	g/kWh	-					
318	Regulation: US EPA "Nonroad" (40 CFR 89 - Tier 1 -) Unburned hydrocarbons (HC)	G	g/kWh	-					
319	Regulation: US EPA "Nonroad" (40 CFR 89 - Tier 1 -) Particulates	G	g/kWh	-					
320	Regulation: US EPA "Nonroad" (40 CFR 89 - Tier 2 -) Nitric oxide (NOx) + unburned hydrocarbons (HC)	G	g/kWh	-					
321	Regulation: US EPA "Nonroad" (40 CFR 89 - Tier 2 -) Carbon monoxide (CO)	G	g/kWh	-					
323	Regulation: US EPA "Nonroad" (40 CFR 89 - Tier 2 -) Particulates	G	g/kWh	-					
141	Exhaust volume flow, dry - CP (standard conditions)	R	m³/h	N					
143	Exhaust mass flow - CP (reference conditions)	R	kg/h	N					

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144	Residual oxygen content (O2) in dry exhaust - CP (standard conditions)	R	% (vol.)	N					
145	Total combustion calorific value - CP	R	kW	N					
37	Smoke index, BOSCH - FSP	R		0.3					
22. ACOUSTICS									
101	Exhaust noise, unsilenced - CP (free-field sound-pressure level Lp, 1m distance, ISO 6798)	R	dB(A)						
201	Exhaust noise, unsilenced - CP (sound power level LW, ISO 6798)	R	dB(A)						
103	Exhaust noise, unsilenced - FSP (free-field sound-pressure level Lp, 1m distance, ISO 6798) Spectrum No.								
203	Exhaust noise,unsilenced - CP (sound power level LW, ISO 6798) Spectrum No.			N					
109	Engine surface noise with attenuated intake noise (filter) - CP (free-field sound-pressure level Lp, 1m distance, ISO 6798)	R	dB(A)						
209	Engine surface noise with attenuated intake noise (filter) - CP (sound power level LW, ISO 6798)	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.								
211	Engine surface noise with attenuated intake noise (filter) - CP (sound power level LW, ISO 6798) Spectrum No.			N					
125	Structure borne noise at engine mounting brackets in vertical direction above resilient engine mounts - CP Spectrum No.								
129	Test stand impedance spectrum, Diagram No.			N					
130	Test stand impedance spectrum, Diagram No. (cont.)			N					
23. TBO AND LOAD PROFILE (case A)									
15	Maintenance schedule No.			N					
16	Maintenance schedule No. (cont.)			N					

Explanation:

CP = Ref.value: Continuous power    FSP = Ref.value: Fuel stop power  
 A = Design value    G = Guaranteed value    L = Limit value, up to which the engine can be operated, without change (e.g. of power setting)    R = Guideline value  
 X = Applicable    - = Not applicable    N = Not yet defined value    Z = See notes provided after "ENGINE DATA"