



## - Product Data -

<b>Name</b>	16V4000G34F	<b>Speed [rpm]</b>	1500
<b>Application Group</b>	3E	<b>Nominal power [kW]</b>	2170
<b>Dataset</b>	Ref. 25°C/45°C	<b>Nominal power [bhp]</b>	2910
		<b>Nominal power [kVA]</b>	-
		<b>Nominal power [kWeI]</b>	-
		<b>Frequency [Hz]</b>	50

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## Reference conditions

No.	Description	Index	Value	Unit
6	Intake air temperature		25	°C
7	Charge-air coolant temperature		45	°C
8	Barometric pressure		1000	mbar
9	Site altitude above sea level		100	m
10	Raw-water inlet temperature		-	°C

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## 0. Data-relevant engine design configuration

No.	Description	Index	Value	Unit
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	-

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## 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	2170	kW
5	Fuel stop power ISO 3046	A	2387	kW
8	Mean effective pressure (MEP) (Continuous power ISO 3046)		22.8	bar
9	Mean effective pressure (MEP) (Fuel stop power ISO 3046)		26.4	bar

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## 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	30	mbar
51	Exhaust overpressure (total pressure against atmosphere)	A	30	mbar
52	Exhaust overpressure, max. (total pressure against atmosphere)	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	55	°C
18	Fuel temperature at fuel feed connection, min.	L	-	°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	195	g/kWh
18	Specific fuel consumption (be) - 75 % CP (+ 5 %; EN 590; 42.8 MJ/kg)	R	199	g/kWh
19	Specific fuel consumption (be) - 50 % CP (+ 5 %; EN 590; 42.8 MJ/kg)	R	206	g/kWh
20	Specific fuel consumption (be) - 25 % CP (+ 5 %; EN 590; 42.8 MJ/kg)	R	225	g/kWh
73	No-load fuel consumption	R	30	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	0.2	% of B
62	Lube oil consumption after 100 h of operation, max. (B = fuel consumption per hour)	L	0.5	% of B

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#### 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		16	-
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		76.3	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	-

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24	Number of inlet valves, per cylinder		2	-
25	Number of exhaust valves, per cylinder		2	-
15	Number of turbochargers		4	-
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		-	-
28	Standard flywheel housing flange (engine main PTO)		0	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
43	Flywheel interface (DISC)		21	-

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## 5. Combustion air / exhaust gas

No.	Description	Index	Value	Unit
8	Charge-air pressure before cylinder - CP	R	3.4	bar abs
9	Combustion air volume flow - CP	R	2.7	m <sup>3</sup> /s
11	Exhaust volume flow (at exhaust temperature) - CP	R	6.8	m <sup>3</sup> /s
13	Exhaust temperature before turbocharger - CP	R	660	°C
4084	Exhaust temperature after engine - CP (Position of interface according to installation drawing)	R	440	°C
4086	Exhaust temperature after engine, max. - CP (Position of interface according to installation drawing)	L	550	°C

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## 6. Heat dissipation

No.	Description	Index	Value	Unit
15	Heat dissipated by engine coolant - CP with oil heat, without charge-air heat	R	785	kW
16	Heat dissipated by engine coolant - FSP with oil heat, without charge-air heat	R	880	kW
26	Charge-air heat dissipation - CP	R	505	kW
27	Charge-air heat dissipation - FSP	R	590	kW
33	Radiation and convection heat, engine - CP	R	90	kW
34	Radiation and convection heat, engine - FSP	R	90	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	100.0	°C
23	Coolant temperature differential after/before engine	L	14	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	53	m³/h
127	Cooling equipment: coolant flow rate at max. pressure loss in off-engine cooling System (see chapter 7, item No. 41)	A	53	m³/h
128	Cooling equipment: coolant flow rate at min. pressure loss in off-engine cooling System (see chapter 7, item No. 72)	A	63	m³/h
31	Coolant pump: pressure differential	R	2.4	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	2.4	bar
41	Pressure loss in off-engine cooling system, max.	L	0.7	bar
72	Pressure loss in off-engine cooling system, min.	L	0.3	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	0.3	bar
45	Flow resistance (X) coefficient engine w/ thermostat, w/o cooling equipment	R	0.78	mbar/(m³/h)²
47	Breather valve (expansion tank) opening pressure (excess pressure)	R	1	bar

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54	Cooling equipment: height above engine, max.	L	15	m
53	Cooling equipment: operating pressure	A	2.5	bar
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

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## 8. Coolant system (low-temperature circuit)

No.	Description	Index	Value	Unit
53	Coolant temperature (at engine outlet to cooling equipment)	R	64.5	°C
9	Coolant temperature before intercooler (at engine inlet from cooling equipment)	A	45	°C
14	Coolant temperature before intercooler, limit 1	L	75	°C
15	Coolant temperature before intercooler, limit 2	L	78	°C
54	Coolant temperature differential after/before intercooler, min.	L	18	K
55	Coolant temperature differential after/before intercooler, max.	L	30	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	20	K
75	Temperature differential between intake air and charge-air coolant before intercooler, max.	L	22	K
45	Charge-air temperature after intercooler, max. for compliance with "TA-Luft" at CP	L	-	°C
56	Coolant pump: flow rate	A	25	m <sup>3</sup> /h
20	Cooling equipment: coolant flow rate	A	25	m <sup>3</sup> /h
80	Cooling equipment: coolant flow rate at max. pressure loss in off-engine cooling system	A	25	m <sup>3</sup> /h
81	Cooling equipment: coolant flow rate at min. pressure loss in off-engine cooling system	A	33	m <sup>3</sup> /h
21	Intercooler: coolant flow rate	R	25	m <sup>3</sup> /h
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	1.0	bar

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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  
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<b>Name</b>	16V4000G34F	<b>Speed [rpm]</b>	1500
<b>Application Group</b>	3E	<b>Nominal power [kW]</b>	2170
<b>Dataset</b>	Ref. 25°C/45°C	<b>Nominal power [bhp]</b>	2910
		<b>Nominal power [kVA]</b>	-
		<b>Nominal power [kWeI]</b>	-
		<b>Frequency [Hz]</b>	50

**Exhaust Regulations** NEA Singapore for ORDE;

62	Pressure loss in off-engine cooling system, min.	L	0.3	bar
31	Pressure loss in off-engine cooling system, max. without thermostat	L	1.0	bar
63	Pressure loss in off-engine cooling system, min. without thermostat	L	0.3	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  
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**N** Value not named  
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<b>Application Group</b>	3E	<b>Nominal power [kW]</b>	2170
<b>Dataset</b>	Ref. 25°C/45°C	<b>Nominal power [bhp]</b>	2910
		<b>Nominal power [kVA]</b>	-
		<b>Nominal power [kWeI]</b>	-
		<b>Frequency [Hz]</b>	50

**Exhaust Regulations** NEA Singapore for ORDE;

## 10. Lube oil system

No.	Description	Index	Value	Unit
1	Lube oil operating temp. before engine, from	R	84	°C
2	Lube oil operating temp. before engine, to	R	98	°C
3	Lube oil operating temp. after engine, from	R	93	°C
4	Lube oil operating temp. after engine, to	R	108	°C
5	Lube oil temperature before engine, limit 1	L	99	°C
6	Lube oil temperature before engine, limit 2	L	101	°C
7	Lube oil operating pressure before engine (measuring block)	R	5.8	bar
8	Lube oil operating press. bef. engine, from	R	5	bar
9	Lube oil operating press. bef. engine, to	R	7	bar
10	Lube oil pressure before engine, alarm	L	-	bar
33	Lube oil pressure before engine, limit 1 (speed-related value, consult Rolls-Royce Solutions GmbH)	L	3.5	bar
34	Lube oil pressure before engine, limit 2 (speed-related value, consult Rolls-Royce Solutions GmbH)	L	3.2	bar
17	Lube oil pump(s): oil flow, total	R	693	liter/min
19	Lube oil fine filter (main circuit): number of units		1	-
20	Lube oil fine filter (main circuit): number of elements per unit		5	-
21	Lube oil fine filter (main circuit): particle retention	R	0.012	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	-

**[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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**[X]** Applicable  
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**[ ]** Non-applicable  
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<b>Application Group</b>	3E	<b>Nominal power [kW]</b>	2170
<b>Dataset</b>	Ref. 25°C/45°C	<b>Nominal power [bhp]</b>	2910
		<b>Nominal power [kVA]</b>	-
		<b>Nominal power [kWeI]</b>	-
		<b>Frequency [Hz]</b>	50

**Exhaust Regulations** NEA Singapore for ORDE;

## 11. Fuel system

No.	Description	Index	Value	Unit
1	Fuel pressure at engine fuel feed connection, min. (when engine is starting)	L	-0.1	bar
2	Fuel pressure at engine fuel feed connection, max. (when engine is starting)	L	1.5	bar
57	Fuel pressure at engine fuel feed connection, min. (when engine is running)	L	-0.3	bar
65	Fuel pressure at engine fuel feed connection, max. (when engine is running)	L	0.5	bar
37	Fuel supply flow, max.	A	27	liter/min
4	Fuel pressure before injection pump, from (high-pressure pump)	R	7.0	bar
5	Fuel pressure before injection pump, to (high-pressure pump)	R	9.0	bar
6	Fuel pressure before injection pump, min. (high-pressure pump)	L	5.0	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	25	K
38	Fuel temperature after high-pressure pump, alarm	L	65	°C
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	2	-
20	Fuel fine filter (main circuit): particle retention	A	0.005	mm
21	Fuel fine filter (main circuit): pressure differential, max.	L	2.0	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

**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

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

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<b>Application Group</b>	3E	<b>Nominal power [kW]</b>	2170
<b>Dataset</b>	Ref. 25°C/45°C	<b>Nominal power [bhp]</b>	2910
		<b>Nominal power [kVA]</b>	-
		<b>Nominal power [kWeI]</b>	-
		<b>Frequency [Hz]</b>	50

**Exhaust Regulations** NEA Singapore for ORDE;

## 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	9.0	kW
22	Coolant preheating, preheating temperature, min.	L	32	°C
3506	Coolant preheating, preheating temperature, max.	L	55	°C
28	Breakaway torque (without driven machinery) coolant temperature +5°C	R	1950	Nm
30	Breakaway torque (without driven machinery) coolant temperature +40°C	R	1600	Nm
29	Cranking torque at firing speed (without driven machinery) coolant temperature +5°C	R	1150	Nm
31	Cranking torque at firing speed (without driven machinery) coolant temperature +40°C	R	880	Nm
92	Run-up period to rated speed (without driven machinery)	R	N	s

**[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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<b>Application Group</b>	3E	<b>Nominal power [kW]</b>	2170
<b>Dataset</b>	Ref. 25°C/45°C	<b>Nominal power [bhp]</b>	2910
		<b>Nominal power [kVA]</b>	-
		<b>Nominal power [kWeI]</b>	-
		<b>Frequency [Hz]</b>	50

**Exhaust Regulations** NEA Singapore for ORDE;

93	Run-up period to rated speed (with driven machinery) (* at general conditions)	R	N	s
37	High idling speed, max. (static)	L	1650	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. (for emergency/standby sets with coolant preheating the minimum preheating temperature referred to extended property No.22 is sufficient)	R	60	°C
3515	Minimum continuous load (operation > 10h)	R	30	kW/cyl
49	Extended low or no-load operation possible (consultation required)		X	-
50	Engine mass moment of inertia (without flywheel)	R	12.7	kgm <sup>2</sup>
52	Standard flywheel mass moment of inertia	R	10.18	kgm <sup>2</sup>
51	Engine mass moment of inertia (with standard flywheel)	R	22.88	kgm <sup>2</sup>
69	Speed droop (with electronic governor) adjustable, from	R	0	%
70	Speed droop (with electronic governor) adjustable, to	R	4	%
95	Number of starter ring-gear teeth on engine flywheel		182	-

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

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		<b>Nominal power [kVA]</b>	-
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		<b>Frequency [Hz]</b>	50

**Exhaust Regulations** NEA Singapore for ORDE;

### 13. Starting (electric)

No.	Description	Index	Value	Unit
2309	Manufacturer		Delco	-
4101	Type		50MT	-
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	-
4118	Type		HEP	-
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	-
4119	Type		S-152	-
2327	Number of starter		1	-
2328	Starter electrically redundant		-	-

**BL Reference value: fuel stop power**  
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Engine power that can be run continuously under standard conditions

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<b>Application Group</b>	3E	<b>Nominal power [kW]</b>	2170
<b>Dataset</b>	Ref. 25°C/45°C	<b>Nominal power [bhp]</b>	2910
		<b>Nominal power [kVA]</b>	-
		<b>Nominal power [kWeI]</b>	-
		<b>Frequency [Hz]</b>	50

**Exhaust Regulations** NEA Singapore for ORDE;

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	0.0049	Ω
2334	Manufacturer		Prestolite	-
4120	Type		S-152	-
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	0.0049	Ω
3374	Manufacturer		Prestolite	-
4121	Type		MS7	-
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	530	A
3383	Internal resistance of power supply + line resistance per starter	A	0.005	Ω
4104	Manufacturer		Prestolite	-

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<b>Application Group</b>	3E	<b>Nominal power [kW]</b>	2170
<b>Dataset</b>	Ref. 25°C/45°C	<b>Nominal power [bhp]</b>	2910
		<b>Nominal power [kVA]</b>	-
		<b>Nominal power [kWeI]</b>	-
		<b>Frequency [Hz]</b>	50

**Exhaust Regulations** NEA Singapore for ORDE;

4105	Type		M128R	-
4106	Number of starter		2	-
4107	Starter electrically redundant		-	-
4108	Rated power per starter	R	9.4	kW
4109	Starter, rated voltage	R	24	VDC
4110	Rated short-circuit current per starter	L	2000	A
4111	Power consumption per starter (at an engine speed of 100 rpm)	R	600	A
4112	Power consumption per starter (at an engine speed of 100 rpm, SAE0)	R	-	A
4113	Power consumption per starter (at an engine speed of 100 rpm, SAE1)	R	-	A
4114	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	5	s
2343	Interval between starts (at rated starting-attempt duration), min.	L	20	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	-
3565	Disengagement of starter pinion at engine Speed Note: Exceeding the guideline value of the disengagement speed will reduce the life cycle of the starter depending on how often and how much the speed has been exceeded	R	400	rpm
3566	Disengagement of starter pinion at engine speed, max.	L	500	rpm

**[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  
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<b>Application Group</b>	3E	<b>Nominal power [kW]</b>	2170
<b>Dataset</b>	Ref. 25°C/45°C	<b>Nominal power [bhp]</b>	2910
		<b>Nominal power [kVA]</b>	-
		<b>Nominal power [kWeI]</b>	-
		<b>Frequency [Hz]</b>	50

**Exhaust Regulations** NEA Singapore for ORDE;

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

**[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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<b>Application Group</b>	3E	<b>Nominal power [kW]</b>	2170
<b>Dataset</b>	Ref. 25°C/45°C	<b>Nominal power [bhp]</b>	2910
		<b>Nominal power [kVA]</b>	-
		<b>Nominal power [kWeI]</b>	-
		<b>Frequency [Hz]</b>	50

**Exhaust Regulations** NEA Singapore for ORDE;

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
101	Hydraulic starter: make Huegli		X	-
102	Starting oil pressure before starter motor, min.	R	107	bar
103	Starting oil pressure before starter motor, max.	R	207	bar
104	Starting oil pressure before starter motor, min.	L	107	bar
105	Starting oil pressure before starter motor, max.	L	207	bar
106	Start attempt duration (engine preheated)	R	N	s
107	Start attempt duration (engine not preheated)	R	N	s
108	Start attempt duration, max.	L	N	s
109	Hydraulic oil consumption / start attempt (engine preheated)	R	N	liter
110	Hydraulic oil consumption / start attempt (engine not preheated)	R	N	liter
111	Minimum specification of hydraulic oil viscosity	R	MilSpec 5606	-

**[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



<b>Name</b>	16V4000G34F	<b>Speed [rpm]</b>	1500
<b>Application Group</b>	3E	<b>Nominal power [kW]</b>	2170
<b>Dataset</b>	Ref. 25°C/45°C	<b>Nominal power [bhp]</b>	2910
		<b>Nominal power [kVA]</b>	-
		<b>Nominal power [kWeI]</b>	-
		<b>Frequency [Hz]</b>	50

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### 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 (°)
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 (°)

**[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



<b>Name</b>	16V4000G34F	<b>Speed [rpm]</b>	1500
<b>Application Group</b>	3E	<b>Nominal power [kW]</b>	2170
<b>Dataset</b>	Ref. 25°C/45°C	<b>Nominal power [bhp]</b>	2910
		<b>Nominal power [kVA]</b>	-
		<b>Nominal power [kWeI]</b>	-
		<b>Frequency [Hz]</b>	50

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## 18. Capacities

No.	Description	Index	Value	Unit
1	Engine coolant capacity (without cooling equipment)	R	175	liter
10	Intercooler coolant capacity	R	50	liter
11	On-engine fuel capacity	R	8	liter
14	Engine oil capacity, initial filling (standard oil system) (Option: max. operating inclinations)	R	300	liter
20	Oil change quantity, max. (standard oil system) (Option: max. operating inclinations)	R	240	liter
28	Oil pan capacity, dipstick mark min. (standard oil system) (Option: max. operating inclinations)	L	210	liter
29	Oil pan capacity, dipstick mark max. (standard oil system) (Option: max. operating inclinations)	L	240	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

**≥** 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





<b>Name</b>	16V4000G34F	<b>Speed [rpm]</b>	1500
<b>Application Group</b>	3E	<b>Nominal power [kW]</b>	2170
<b>Dataset</b>	Ref. 25°C/45°C	<b>Nominal power [bhp]</b>	2910
		<b>Nominal power [kVA]</b>	-
		<b>Nominal power [kWeI]</b>	-
		<b>Frequency [Hz]</b>	50

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## 19. Masses / dimensions

No.	Description	Index	Value	Unit
9	Engine mass, dry (basic engine configuration acc. to scope of supply specification)	R	8052	kg

**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  
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upper limit/maximum value that may not be  
exceeded. Not suitable for design purposes



<b>Name</b>	16V4000G34F	<b>Speed [rpm]</b>	1500
<b>Application Group</b>	3E	<b>Nominal power [kW]</b>	2170
<b>Dataset</b>	Ref. 25°C/45°C	<b>Nominal power [bhp]</b>	2910
		<b>Nominal power [kVA]</b>	-
		<b>Nominal power [kWeI]</b>	-
		<b>Frequency [Hz]</b>	50

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## 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	110	dB(A)
201	Exhaust noise, unsilenced - CP (sound power level LW, ISO 6798, +3dB(A) tolerance)	R	123	dB(A)
103	Exhaust noise, unsilenced - CP (free-field sound-pressure level Lp, 1m distance, ISO 6798) Spectrum No.	R	737927e	-
109	Engine surface noise with attenuated intake noise (filter) - CP (free-field sound-pressure level Lp, 1m distance, ISO 6798, +2dB(A) tolerance)	R	108	dB(A)
209	Engine surface noise with attenuated intake noise (filter) - CP (sound power level LW, ISO 6798, +2dB(A) tolerance)	R	126	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	737925e	-
125	Structure borne noise at engine mounting brackets in vertical direction above resilient engine mounts - CP Spectrum No.	R	737929e	-

**[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