Extended Data Sheet

S8000 G-DRIVE ENGINE | **Industrial Market** | Rev. 4.0_Dec 2017

Number of cylinders:	3	Bore:	104mm
Displacement:	2.9l	Stroke:	115mm
Aspiration:	natural		

General		@1500rpm	@1800rpm
Engine model		S8000 AM1 ; 80313AM1P; 8031AM1P	
Basic engine type		8031.05.372	
Number of cylinders		3	
Firing order (1st from fan)		1-3-2	
Cylinder arrangement		in line	
Valves per cylinder		2	
Cycle		diesel 4 stroke	
Injection system		direct, mech injection pump	
Induction system		natural aspirated	
Bore	mm	104	
Stroke	mm	115	
Displacement	l	2.9	
Mean piston speed	m/s	5.75	6.9
Compression ratio		17:1	
Flywheel rotation		anti clockwise viewed from flywheel	
Flywheel housing		SAE3	
Flywheel	in	11 1/2	
Moment of inertia			
Without flywheel	kgm^2	0.102	
With flywheel	kgm^2	0.84	
BMEP gross			
Prime power	bar (kPa)	7.92	7.31
Stand-by power	bar (kPa)	8.72	8.05
Energy to coolant	kcal/kWh	556	510
Energy to air	kcal/kWh	143	143
Bare engine			
Dry weight	kg	320	
Dimensions LxWxh	mm	945 x 625 x 872	
Centre of gravity from FOB (X,Y,Z)	mm	n/a	
Assembled engine (G_Drive)			
Dry weight	kg	370	
Dimensions LxWxh	mm	962 x 621 x 979	
Centre of gravity		n/a	

Performances		@1500rpm	@1800rpm
Continuous power (gross)	kWm	23	25
Prime power (gross)	kWm	28.7	32
Stand-by power (gross)	kWm	31.6	35
Fan consumption	kWm	0.6	1
Continuous power (net)	kWm	22	24
Prime power (net)	kWm	28.1	31
Stand-by power (net)	kWm	31	34
** Typical generator output	r^{end}	0.95	0.95
Prime power	kVA (kWe)	30	34
Stand by	kVA (kWe)	33	37.4
Performance conditions			
Temperature	°C	-10°C / +45°C	
Altitude a.s.l.	m	1000	
Derating			
Temperature > 40°C		2% / 5°C > 30°C	
Altitude > 1000 < 3000m		5 % / 400 m. s.l.m.	
Altitude > 3000m		7% / 500 m	

** Generator powers are typical and are based on an average alternator efficiency and a power factor (cos. Θ) of 0.8.
kWe=kWm x gen. eff.
kVA=kWe / 0.8

Cooling system		@1500rpm	@1800rpm
Type		liquid	
Recommended coolant		see dedicated table	
Coolant capacity			
Engine only	l	5	
Radiator & hoses	l	9	
Coolant engine flow	l/min	62.3	75.4
Cap pressure	kPa (bar)	100 (1)	
Warning setting first threshold	°C	103	
Maximum additional restriction	kPa	10	15
Air to boil (stand-by)	°C	65	65
Fan		Pusher (Wingfan)	
Diameter	mm	450	
Number of blades		8	
Drive ratio		1.04:1	
Speed	rpm	1560	1872
Air flow	m^3/s	0.55 at 2.7	0.85 at 3.3
Power consumption	kWm	0.6	0.95

Lubrication system		@1500rpm	@1800rpm
Oil sump capacity			
Max.	l	7.7	
Min.	l	5.5	
Oil system capacity including filter	l	8.8	
Oil pressure at rated speed	kPa	220 (105°C)	260 (11 0 °C)
Max. oil temperature	°C	125	
Engine angularity			
Longitudinal	deg	10	
Transversal	deg	10	
Servicing intervals	h	depending on lube oil	
Oil specifications		see dedicated table	
Oil consumption	% fuel	0.2 max	

Intake system		@1500rpm	@1800rpm
Air consumption at 100% load	m^3/h (kg/h)	125 (146)	150(176)
Air intake restriction, clean filter	kPa (mbar)	2.5 (25)	
Air intake restriction, dirty filter	kPa (mbar)	5 (50)	
Air filter type		dry	

Exhaust system		@1500rpm	@1800rpm
Gas flow at stand-by power	kg/h	153	184
Max. temperature at PRP	°C	525	520
Max. allowable back pressure	kPa (mbar)	7 (70)	
Energy to exhaust	kcal/kWh	641	684

Fuel system		@1500rpm	@1800rpm
Fuel consumption			
Stand-by	g/kWh (kg/h)	218 (6.9)	218 (7.6)
Full load	g/kWh (kg/h)	209 (6.0)	214 (6.85)
80%	g/kWh (kg/h)	209 (84.8)	213.5 (5.45)
50%	g/kWh (kg/h)	224 (3.2)	225 (3.6)
Fuel specifications		see dedicated table	
Feed pump max. suction head	m	1	
Injection pump			
Type		Bosch	
Model		VE rotary	

Electric system		@1500rpm	@1800rpm
Voltage (negative to ground)	V	12	
Starter motor			
Maker		Bosch	
Power	kW	2.7	
Pull current	A	60	
Hold current	A	12	
Break away current (+20°C)	A	n/a	
Cranking current (+20°C)	A	n/a	
Number of teeth of the starter motor		n/a	
Number of teeth of the flywheel		n/a	
Starting battery			
Recommended capacity	Ah	n/a	
Discharge current	A	n/a	
Stop solenoid		ETR	
Alternator		Bosch	
Voltage	V	12	
Charge	A	35	

Cold starting		@1500rpm	@1800rpm
Without air preheating	°C	-5	
With air preheating	°C	-12	

Emission gases and particles			@1500rpm	@1800rpm
NOx	oxides of nitrogen	g/kWh	-	-
HC	hydrocarbons	g/kWh	-	-
NOx	+HC	g/kWh	-	-
CO	carbon monoxide	g/kWh	-	-
PT	particles	g/kWh	-	-

Sound level		@1500rpm	@1800rpm
Overall sound pressure (engine only)	dBA	88	90
Overall sound pressure (with accessories only)	dBA	n/a	

Step load	@1500rpm	@1800rpm
G2	100	100
G3	70	80

* Power at flywheel according dir. 97/68 EC (w/o fan). After 50 hours of run-in, tolerance ±3%. Fuel EN 590. Test according ISO 3046/1. Turbo air inlet temperature 25°C. Atmospheric pressure 100kPa. Humidity 30%. According also to DIN 6271, BS 5514, SAE J1349. All data is based on the engine operating with fuel system, water pump, lubricating oil pump with inlet and exhaust restriction at or below datasheet limits. Accessory loads assumed at 20Nm across from idle to rated rpm. Fan duty cycle must be lower than 20%.

Rating Guidelines

Prime power is the maximum power available with varying loads for an unlimited of hours. The average power output during a 24 hours period of operation must not exceed 80% of the declared prime power between the prescribed maintenance intervals at standard environmental conditions. A 10% overload is available for 1h every 12 hours of operation.

Stand-by power is the maximum power available for a period of 500h/y with a mean load of 90% of the declared stand-by power. No overload is permissible for this use.

ACRONYMS LIST

Acronyms	Description
-	Not Needed
2stTC	Two Stage Turbo (sequential)
Ag	Agricultural
ASC	Ammonia Slip Catalyst (same as CUC)
ATS	After Treatment System
BSFC	Brake Specific Fuel Consumption
CAC	Charge Air Cooler
CCDPF	Close Coupled DPF
CCV	Crankcase Ventilation
CE	Construction Equipment
CI	Cast Iron
CRS	Common Rail System
CRSN	Common Rail System NKW (Commercial vehicles)
CUC	Clean Up Catalyst for ammonia (same as ASC)
DAVNT	Dual Axis Variable Nozzle Turbine
DCS	Drawing Coordinate System
DI	Direct Injection
DOC	Diesel Oxidation Catalyst
DOHC	Double Over Head Camshaft
DPF	Diesel Particulate Filter
ECEGR	External Cooled EGR
ECU	Engine Control Unit
EEGR	External EGR
EGR	Exhaust Gas Recirculation
epWG	Electro pneumatic WG
eVGT	Electrical VGT
eWG	Electrical WG
FFOB	Front Face of Block
FGT	Fixed Geometry Turbocharger (no WG)
FIE	Fuel Injection System
HD	Heavy Duty
HLA	Hydraulic Lash Adjusters

Acronyms	Description
IDI	Indirect Injection
iEGR	Internal EGR
ISC	Interstage Cooling
LD	Light Duty
LDCV	Light Duty Commercial Vehicles
LH	Left Hand Side
LWR	Laser Welded Rail
MD	Medium Duty
n/a	Not Available
NA	Natural Aspirated
NS	Non Structural
OHV	Over Head Valves
OPT	Option
PCP	Peak Cylinder Pressure
PTO	Power Take Off
RFOB	Rear Face of Block
RH	Right Hand Side
S	Structural
SAPS	Sulphated Ash, Phosphorus, Sulphur
SCR	Selective Catalytic Reduction catalyst
SOHC	Single Over Head Camshaft
STD	Standard
TC	Turbocharged
TCA	Turbocharged, Charge Air Cooled
THM	Thermal Management
UFDPF	Under Floor DPF
UQS	Urea Quality Sensor
VE	Bosch Distributor Mechanical Pump
VFT	Variable Flow Turbine
VGT	Variable Geometry Turbocharger
WG	Waste Gate Turbocharger
XPI	Extra high Pressure Injection (Scania, Cummins)

Unit of misure according to international system of unit.
Engine accessories and Options available on Option List.
All data is subject to change without notice.

UPDATING

Revision	Description	Date
4.0	Updated document	Dec 2017