Data Handbook

SISU Gas Engines
Produced by Sandfirden Technics

Section 2.

Engine data

Gas Engines for power generation

7-series

Contents

Engine program

7-series gas engines for power generation

		1500 r/min (50 Hz)			1800 r/min (60 Hz)		
		COP	**PRP**	**ESP**	**COP**	**PRP**	**ESP**
SGI-7 STM	kWm	110	110	120	120	120	120
SGI-7 CGM	kWm	110	110	120	120	120	120

These outputs have been determined under certain given test conditions according to the international performance standard ISO 3046.
NOx emissions <500mg/m_3,

Ratings PRP: Prime power
ESP: Maximum stand-by power
Descriptions of ratings and other power information, see “General”

Standard equipment

Impco gas mixer
Speed governing with an electronically controlled integral actuator
Electronic ignition system, pulse pick-up on the crankshaft
Separate ignition coils for each spark plug
Spark plug leads with extensions
Cable harness
Turbocharger
90 º exhaust bend, adjustable direction.
Dry exhaust manifold
Charge-air cooler (air to water)
Fan with fan guard and fan-ring (STM engine)
2nd cooling water-pump for the charge-air cooler circuit (STM engine)
Main cooling water-pump for the engine block and heads cooling (STM engine)
Starting motor, 1 pole, 24V
Charging alternator 65A, 24V
SAE 2 flywheel housing
SAE 11,5” industrial flywheel
Engine mounted air filter
Engine front suspension
Poly-V belt transmission with guarding (STM engine)

For optional equipment, see “Equipment list” page 9

Basic data

General

Configuration		6 cylinders in line
Working principle		working 4-stroke Otto principle, lean burn
Bore x stroke	mm	108 x 134
Displacement	dm^3	7,4
Compression ratio		12:1
Firing order		1 - 5 - 3 - 6 - 2 - 4
Rotation, seen from flywheel end		Counter clockwise
Number of teeth on flywheel ring gear		
Weight approx., excl. oil and coolant		
with fan		650 kg

Lubrication system

Oil capacity	dm^3, min	
	max	
Oil consumption	g/kWh	< 0.3
Oil change intervals	h	500
Oil grade		Viscosity SAE 15W-40 (-15°C - >30°C)
		Ash content maximum 1.0 wt%
		Sulphur content maximum 0.4 wt%
Oil Pressure		
Normal	bar	3 – 6
Minimum permitted	bar	1,6
Oil temperature		
Maximum permitted	°C	120
Oil cleaner		Paper and centrifugal
Filtration	Micron	5-7
Oil filter for turbo charger		Paper
Oil cooler		Water cooled/Full flow

Ignition system

Spark plugs via individual coils.

Inductive discharge with electronic timing control unit.

Cooling system

Type		HT and LT
Coolant volume engine	dm^3	24
Coolant volume, incl. radiator, charge Cooler, expansion tank, and pipes	dm^3	80
Permissible pressure on static line / pump inlet	bar	2

Intake system

Permissible pressure drop in intake system with cleaned or new filter	mmWc	300
Permissible pressure drop in intake system with blocked (dirty) filter	mmWc	500

Exhaust system

Recommended maximum backpressure	mmWc	500
maximum exhaust temp @ < 1m from turbo outlet	°C	544

Electrical system

Starter		1-pole, 24 VDC - 4,0 kW
Start aid relay capacity minimum	Amp	64
Starter battery capacity	Amph	2x 200
Alternator		1-pole, 28 VDC - 65 A

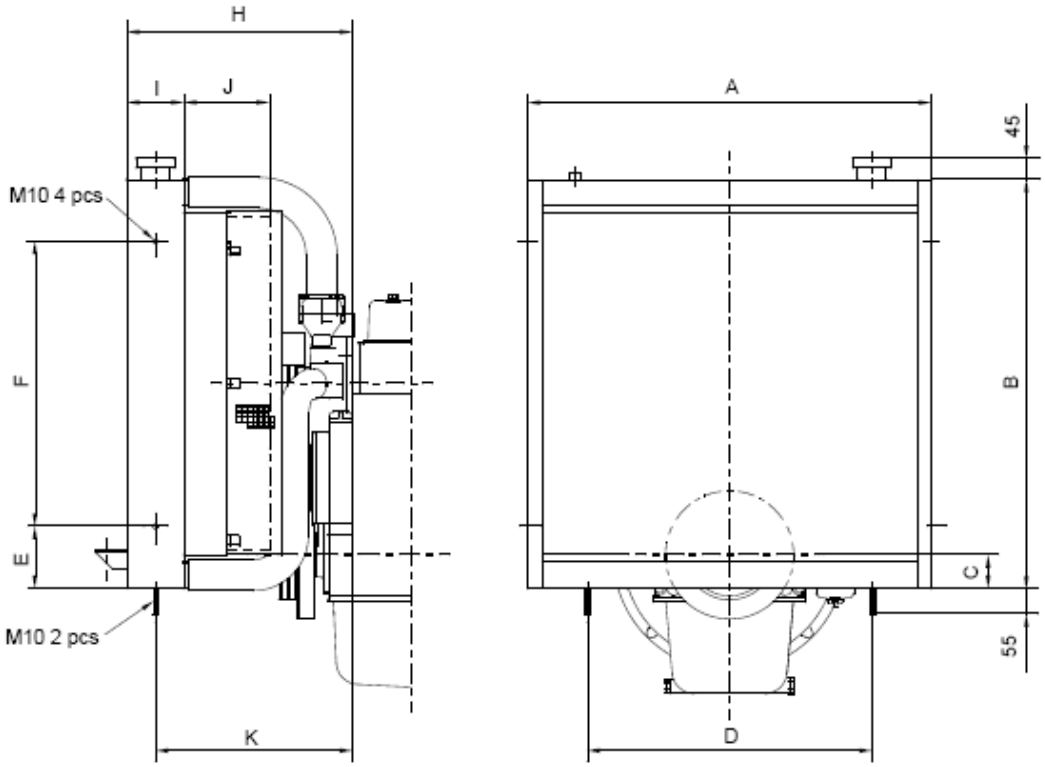
Technical data and cooling equipment recommendation

SGI-7 STM, order ref:

		1500 r/min (50 Hz)			1800 r/min (60 Hz)		
		COP	**PRP**	**ESP**	**COP**	**PRP**	**ESP**
Gross power	kW	110	110	120	120	120	120
	kVA *	137,5	137,5	150	137,5	137,5	150
Specific fuel consumption(15°C, 1013hPa)	m^3/h*						
full load		32	32		33	33	
3/4 load		26	26		27	27	
1/2 load		20	20		20	20	
Heat rejection	kW						
to cooling water		77	77		79	79	
to exhaust gas		81	81		82	82	
to surrounding air		13	13		13	13	
Mechanical efficiency	%	39,3	39,3		37,9	37,9	
Air consumption	kg/min	10	10		10	10	
Air temp. after charge air cooler	°C						
Pressure fall, charge air cooler	Bar						
Exhaust flow	kg/min	11	11		11	11	
Exhaust temperature	°C	545	545		551	551	

		1500 r/min (50 Hz)						1800 r/min (60 Hz)					
		COP		**PRP**		**ESP**		**COP**		**PRP**		**ESP**	
		Air-on temp.						**Air-on temp.**					
		35	50	35	50	35	50	35	50	35	50	35	50
Radiator													
front area	m²	1,2		1,2		1,2		1,2		1,2		1,2	
Coolant pump flow													
HT jacket water pump	dm³	175		175		175		200		200		200	
LT intercooler pump	dm³												
Fan													
type		Pusher		Pusher		Pusher		Pusher		Pusher		Pusher	
diameter	mm	685		685		685		635		635		635	
power losses	kW	4		4		4		4		4		4	
number of drive belts (poly-V)		1		1		1		1		1		1	
speed ration		1:1		1:1		1:1		1:1		1:1		1:1	
Air flow													
free air flow	m³ /s	6.5		6.5		6.5		5,8		5,8		5,8	
pressure reserve	mm Wc	40	32	40	32	30	26	32	28	32	28	27	23

Radiator SGI-7



Radiators

Fan diameter	Fan type	Radiator no.	Dimensions mm									
			A	B	C	D	E	F	I	J	H	K
685	puller	8368 64440	850	860	70	600	60	600	120	180	486	426
685	pusher	8368 64440	850	860	70	600	60	600	120	180	475	415

Protection for fan part no. 8368 66042

Upper and lower hoses

Fan diameter	Fan type	Upper hose	Lower hose
685	puller	8368 66041	8368 66044
685	pusher	8368 66041	8368 66044

Technical data and cooling equipment recommendation

SGI-7 CGM, order ref:

		1500 r/min (50 Hz)			1800 r/min (60 Hz)		
		COP	**PRP**	**ESP**	**COP**	**PRP**	**ESP**
Gross power	kW	110	110	120	120	120	120
	kVA *	137,5	137,5	150	137,5	137,5	150
Specific fuel consumption(15°C, 1013hPa)	m^3/h *						
full load		32	32		33	33	
3/4 load		26	26		27	27	
1/2 load		20	20		20	20	
Heat rejection	kW						
to cooling water HT circuit		59	59		60	60	
to cooling water LT circuit		12	12		12	12	
to exhaust gas (back to 120 °C)		67	67		67	67	
to surrounding air		13	13		13	13	
Mechanical efficiency	%	39,3	39,3		37,9	37,9	
Air consumption	kg/min	10	10		10	10	
Exhaust flow	kg/min	11	11		11	11	
Exhaust temperature after turbo	°C	545	545		551	551	

Max. coolant temp. engine out HT	°C	85	85		85	85	
Max. coolant temp. water engine in HT	°C	75	75		75	75	
Openings temperature thermostat HT	°C	75	75		75	75	
Max. coolant temp. Heat Exch. in LT	°C	48	48		48	48	
Max. coolant temp. Heat Exch. out LT	°C	55	55		55	55	
Openings temperature thermostat LT	°C	20	20		20	20	
Cooling water flow HT at least:	l/min	150	150		150	150	
Cooling water flow LT maximum	l/min	50	50		50	50	
Pressure drop Engine internal HT	bar	0,5	0,5		0,5	0,5	
Pressure drop Air cooler internal LT	bar	0,6	0,6		0,6	0,6	

Note:

The design of the cooling system is based on water/glycol mixture of 60/40 specific heat of the mixture 3.8 kJ/kg.

* Lower calorific value 31MJ/m^3 ,rating/fuel consumption acc ISO 3046

Basic dimensions

SGI-7 CGM

Equipment list

S=Standard equip., O= Optional equip. Technical descriptions of references, see “Equipment data”

10	ENGINE WITH STANDARD EQUIPMENT		COP	PRP	ESP	
Ref	Description	r/min	kW	kW	kW	Drw No.

Ideas and opinions about this book?

The ambition with this book is to give you all the information you may need working with Scania Gas Engines produced by Sandfirden Technics. However, there can be parts of this book that could be described in another way or some information you wish to be added.

When you have suggestions for improvements, or you find faulty information, please copy this page, write down your opinions and send by fax or mail to the address below.

Your remarks may help us to further improve the following editions.

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