DOOSAN INFRACORE GENERATOR ENGINE

SP103N

Type	emission	Rated RPM	Ratings (kW/PS)			
			Gross Engine Output		Net Engine Output	
			Standby	Prime	Standby	Prime
-I	T4	3600 (60Hz)	16.4/22.3	14.8/20.1	15.7/21.3	14.1/19.2
-G	n/a	3600 (60Hz)	16.4/22.3	14.8/20.1	15.7/21.3	14.1/19.2
-A	n/a	3000 (50Hz)	16.4/22.3	14.8/20.1	15.7/21.3	14.1/19.2
-H	T4	1800 (60Hz)	10.0/13.6	9.0/12.2	9.3/12.6	8.4/11.4
-D	n/a	1500 (50Hz)	8.0/10.9	7.2/9.8	7.3/9.9	6.6/8.9

Ratings Definitions

The power ratings of Emergency Standby and Prime are in accordance with ISO 8528.
Fuel Stop power in accordance with ISO 3046.
Electric power (kWe) must be considered cooling fan loss, alternator efficiency, altitude derating and ambient temperature.
STANDBY POWER RATING is applicable for supplying emergency power for the duration of the utility power outage. No overload capability is available for this rating. A standby rated engine should be sized for a maximum of an 80% average load factor and 200 hours of operation per year. This includes less than 25 hours per year at the Standby Power rating.
PRIME POWER RATING is available for an unlimited number of hours per year in variable load application. Variable load should not exceed a 70% average of the Prime Power rating during any operating period of 24 hours. The Total operating time at 100% Prime Power shall not exceed 500 hours per year. A 10% overload capability is available for a period of 1 hour withing a 12 hour period of operation. Total operating time at the 10% overload power shall not exceed 25 hours per year.

◎ GENERAL ENGINE DATA

► Engine Model	SP103NA/ND/NG/NH/NI
► Engine Type	3-Cycle, In-line, Diesel, Water cooled, N/A
► Bore x stroke	Ø75 x 76 mm
► Displacement	1.007 liters
► Compression ratio	21:1
► Rotation	Counter clockwise viewed from Flywheel
► Firing order	1-2-3
► Injection timing	E & U & D : 20˚ BTDC , E1 & U1 : 14˚ BTDC
► Dry weight	101kg (with Fan)
► Dimension (L x W x H)	513 x 482 x 553 mm
► Flywheel housing	SAE No.5
► Flywheel	Clutch No.7-1/2
► Number of teeth on flywheel	98

◎ ENGINE MOUNTING

► Max. Bending Moment at Rear Face t -

This is normally attained after a running period of about 100 hours and Image shown may not be actual engine.

Printed in July 11, 2016_Doosan Infracore Co., Ltd.

◎ EXHAUST SYSTEM

► Max. Back Pressure	9.8kPa

◎ COOLING SYSTEM

Water circulation by centrifugal pump on engine.	
► Cooling method	Fresh water forced circulation
► Coolant capacity (Engine Only)	1.6 liters
► Coolant flow rate	liters / min
► Pressure Cap	90kPa
► Water Temperature	
-. Maximum for standby and Prime	110℃
-. Before start of full load	40℃
► Water pump	Centrifugal type driven by belt
► Thermostat Type and Range	Wax – pellet type Opening temp. 82°C , Full open temp. 95°C
► Cooling fan	Blower type, Plyproplene , Dia : Ø315mm , 6 blade
► Max. external coolant system restricti	Not Available

◎ LUBRICATION SYSTEM

Force-feed lubrication by gear pump	
► Lub. Method	Fully forced pressure feed type
► Oil pump	Gear type driven by crank-shaft gear
► Oil filter	Full flow, cartridge type
► Oil capacity	Max. 3.8 liters
► Lub oil pressure	Governed Speed : Min 220kPa
► Maximum oil temperature	121℃
► Angularity limit	Front down 30 deg , Front up 30 deg Side to side 30 deg
► Lubrication oil	SAE 10W-30 or SAE 15W-40(Above -10℃)

◎ FUEL SYSTEM

Bosch type in-line pump	
► Injection pump	K-type mini pump
► Governor	Mechnical centrifugal + Woodward Apecs 4500
► Speed drop	G2 Class(ISO 8528)
► Feed pump	Diaphragm type pump
► Injection nozzle	Throttle type
► Opening pressure	14.7 ~ 15.7Mpa
► Fuel filter	Full flow, cartridge type
► Maximum fuel inlet restriction	-

This is normally attained after a running period of about 100 hours and Image shown may not be actual engine.

► Maximum fuel return restriction	-
► Fuel feed pump capacity	24 liters / hr
► Used fuel	Diesel fuel oil

This is normally attained after a running period of about 100 hours and Image shown may not be actual engine.

◎ ELECTRICAL SYSTEM

► Battery Charging Alternator	12V x 75A alternator
► Voltage regulator	Built-in type IC regulator
► Starting motor	12V x 1.7 kW
► Battery Voltage	12V
► Battery Capacity	64AH(recommended)
► Starting aid (Option)	Glow plug

◎ VALVE SYSTEM

► Type	Overhead valve type	
► Number of valve	Intake 1, exhaust 1 per cylinder	
► Valve lashes at cold	Intake 0.15mm , Exhaust 0.15mm	
► Valve timing	Open	Close
-. Intake valve	8 deg. BTDC	38 deg. ABDC
-. Exhaust valve	44 deg. BBDC	8 deg. ATDC

◎ PERFORMANCE DATA		SP103NI, NG	SP103ND	SP103NH	SP103NA
► Governed Engine	rpm	3600	3000	1800	1500
► Engine Idle Spee	rpm				
► Over speed limit	rpm	3780	3150	1890	1575
► Gross Eng. Power	kW	16.4	16.4	10.0	8.0
efficiency	kVe	14.8	14.8	9.0	7.2
	kVA	18.5	18.5	11.3	9.0
	PS	22.3	22.3	13.6	10.9
► BMEP	Mpa	5.54	6.64	6.75	6.49
► Mean Piston Spe	m/s	9.12	7.60	4.56	3.80
► Friction Power	kW	-	-	-	-
	PS	-	-	-	-
► Specific fuel cons	L/hr	6.2	5.5	3.0	2.5
► Fan Power	kW				
► Sound Pressure at 1m from the each side of Cylin					
(Without Fan)	dB(A)				

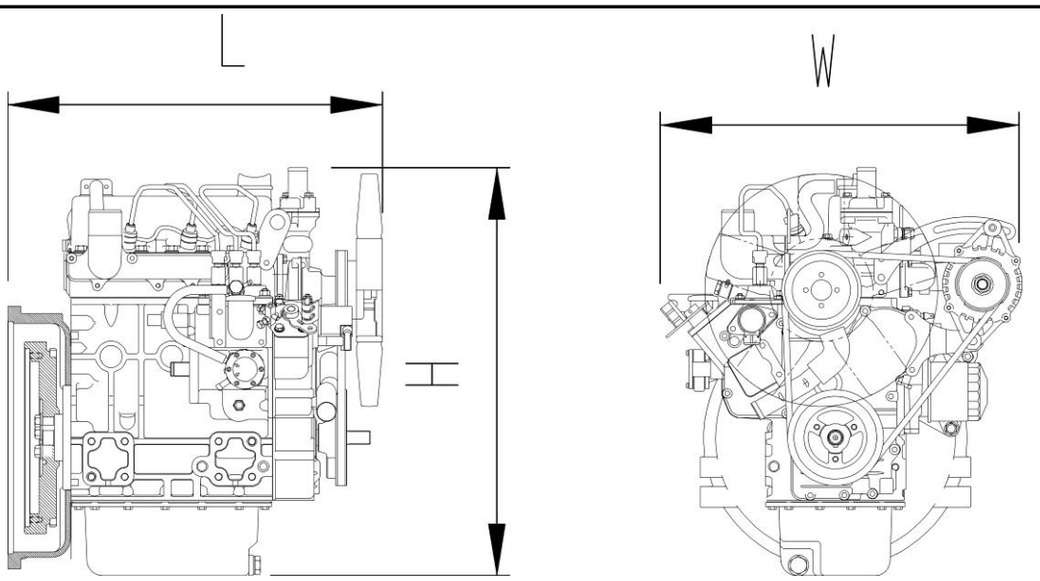
The all data and the specific fuel consumption are based on ISO 3046/1, Standard reference conditions are in accordance with 298 K(25˚ Celsius) air temperature, 100kPa(1000mbar) air pressure, 30% relative humidity, 100m(328ft) altitude.
Engine output is affected by atmospheric pressure, temperature and humidity. Therefore, an engine should be selected with sufficient power to meet the load demands under all operating conditions. Provided output be corrected for various atmospheric conditions by above standards, For detail information, refer to deration coefficient table.

This is normally attained after a running period of about 100 hours and Image shown may not be actual engine.

◎ Engine Data with Dry Type Exhaust Manifold

► Intake Air Flow ㎥/min		1.62	1.47	0.74	0.60
This is normally attained after a running period of about 100 hours and Image shown may not be actual engine.					
► Exh. gas temp. af °C		545	500	400	370
► Exhaust Gas Flow ㎥/min		1.69	1.53	0.77	0.63
► Heat Rejection tc kW	-	-	-	-	-
► Heat Rejection tc kW	-	-	-	-	-
► Heat Rejetion to kW	-	-	-	-	-
► Radiated Heat to kW	-	-	-	-	-
► Cooling water cir L/min	-	-	-	-	-
► Cooling fan air fl ㎥/min	-	-	-	-	-

◎ ENGINE DIMENSION



Designation	Length(L)	Width(W)	Height(H)	Dry weight
Value	513mm	482mm	553mm	101kg

◎ CONVERSION TABLE

in. = mm x 0.0394
PS = kW x 1.3596
psi = kg/cm2 x 14.2233
in3 = lit. x 61.02
hp = PS x 0.98635
lb = kg x 2.20462
kW = Kcal/sec x 0.239
lb/ft = N.m x 0.737
U.S. gal = lit. x 0.264
kW = 0.2388 kcal/s
lb/PS.h = g/kW.h x 0.00162
cfm = m3 /min x 35.336
Mpa = Pa x 1000 = bar x 10

This is normally attained after a running period of about 100 hours and Image shown may not be actual engine.