DOOSAN INFRACORE GENERATOR ENGINE

P086TI

Ratings (kWm/PS)	Gross Engine Output		Net Engine Output		
	Standby	Prime	Standby	Prime	
1500rpm(50Hz)	199/270	177/240	194/263	172/233	
1800rpm(60Hz)	223/303	205/279	215/292	197/268	



Ratings Definitions

The power ratings of Emergency Standby and Prime are in accordance with ISO 8528. Fuel Stop power in accordance with ISO 3046.

<u>STANDBY POWER RATING</u> 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.

<u>PRIME POWER RATING</u> 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 250 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 hous per year

© GENERAL ENGINE DATA

Cylinder Diesel, water cooled, Turbo charged & intercooled
Cylinder Diesel, water cooled, Turbo charged & intercooled
ise viewed from Flywheel
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,095 mm
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© COOLING SYSTEM

<u> </u>	
Water circulation by centrifugal pump on engine.	
○ Cooling method	Fresh water forced circulation
○ Coolant capacity	Engine Only: Approx. 14 lit., With Radiator: Approx 44 lit.(standard)
○ Coolant flow rate	166 liters / min
○ Pressure Cap	Max. 49 kPa
○ Water Temperature	
- Maximum for standby and Prime	103℃
- Before start of full load	40.0℃
○ Water pump	Centrifugal type driven by belt
○ Thermostat Type and Range	Wax – pellet type, Opening temp. 71°C , Full open temp. 85°C
○ Cooling fan	Blower type, Plastic , 660 mm diameter, 7 blade
Max. external coolant system restriction	Not Available
© LUBRICATION SYSTEM	
Force-feed lubrication by gear pump, lubricating oil	cooling in cooling water circuit of engine.
○ Lub. Method	Fully forced pressure feed type
○ Oil pump ○ Oil filter	Gear type driven by crank-shaft gear Full flow, cartridge type
Oil pan capacity	Max. 15.5 liters , Min. 12 liters
○ Lub oil pressure	Idle Speed : Min 100 kPa
	Governed Speed : Min 250 kPa
Maximum oil temperature	120℃ ————————————————————————————————————
Angularity limit	Front down 15 deg , Front up 15 deg , Side to side 15 deg
Lubrication oil	Refer to Operation Manual
© FUEL SYSTEM	
Bosch type in-line pump with integrated, electromag	
Olnjection pump	Doowon in-line "P" type (Licensed by ZEXEL)
○ Governor	Electric type (all speed control)
○ Speed drop	G3 Class (ISO 8528)
○ Feed pump	Mechanical type in injpump.
○ Injection nozzle	Multi hole type
○ Opening pressure	22.0 MPa
○ Fuel filter	
○ Maximum fuel inlet restriction	10 kPa
Maximum fuel return restriction	
○ Fuel feed pump Capacity	230 liters / hr
○ Used fuel	Diesel fuel oil
© ELECTRICAL SYSTEM	
Battery Charging Alternator	28.5V x 45A alternator
○ Voltage regulator	Built-in type IC regulator
○ Starting motor	24V x 6.0 kW
↑ Potton / Voltogo	24\/
Battery VoltageBattery Capacity	24V 100 Ah (recommended)



O VALVE SYSTEM

○ Type	Overhead valve type		
 Number of valve 	Intake 1, exhaust 1 per cylinder		
 Valve lashes at cold 	Intake 0.3mm,Exhaust 0.3mm		
 Valve timing 			
	Opening Close		
Intake valve	16 deg. BTDC 36 deg. ABDC		
Exhaust valve	46 deg. BBDC 14 deg. ATDC		

O PERFORMANCE DATA		Prime Power		Standby Power	
○ Governed Engine speed	rpm	1500	1800	1500	1800
○ Engine Idle Speed	rpm	800	800	800	800
Over speed limit	rpm	1650	1980	1650	1980
○ Gross Engine Power Output	kW	177	205	199	223
	ps	240	279	270	303
O Break Mean effective pressur	rє Мра	1.75	1.70	1.97	1.84
○ Mean Piston Speed	m/s	6.95	8.34	6.95	8.34
○ Friction Horsepower	kW	18	24	18	24
	ps	24.47	32.63	24.47	32.63
 Specific fuel consumption 					
25% load	liters/hr	11.3	13.8	12.7	15.2
50% load	liters/hr	21.1	25.1	23.7	27.7
75% load	liters/hr	31.7	37.7	35.5	41.6
100% load	liters/hr	43.1	50.6	48.4	56.8
○ Maximum Lube oil consumpti	ic g/h	168	195.3	189	212.1
○ Fan Power	kW	5	8	5	8
 Exhaust Noise at 1m Horizon 	tally from Center	line of Exhaust Pipe d	ista		•••••
(without Fan)	dB(A)	98.3	100.7	98.3	100.7

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, 60% relative humidity, 110m(361ft) altitude.

Operation At Elevated Temperature And Altitude: The engine may be operated at :

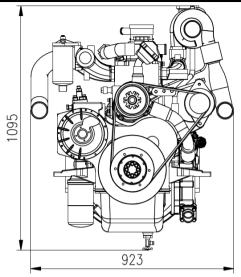
1800 rpm & 1500rpm up to 750~ 1000m and 30°C without power deration

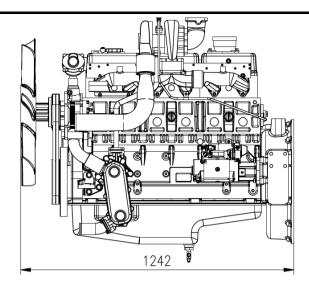
For sustained operation above these conditions, derate by 3% per 304m, and 2% per 11 °C

Engine Data with Dry Type Ex	khaust Manifold				
Intake Air Flow	m3/min	15.71	22.33	16.95	23.35
○ Exhaust gas temp. after turbo	o. °C	-	509	580	524
○ Exhaust Gas Flow	m3/min	-	40.9	33.9	44.6
○ Heat Rejection to Exhaust	kW	151.9	178.3	170.6	200.2
○ Heat Rejection to Coolant	kW	66.0	77.5	74.2	87.0
○ Heat Rejetion to Intercooler	kW	35.2	41.3	39.5	46.4
 Radiated Heat to Ambient 	kW	15.4	18.1	17.3	20.3
 Cooling water circulation 	liters/min	130	150	130	150
○ Cooling fan air flow	m3/min	190	224	190	224



ENGINE DIMENSION





♦ CONVERSION TABLE

in. = $mm \times 0.0394$

 $PS = kW \times 1.3596$

 $psi = kg/cm2 \times 14.2233$

in3 = lit. x 61.02

 $hp = PS \times 0.98635$

 $lb = kg \times 2.20462$

 $kW = Kcal/sec \times 0.239$

lb/ft = N.m x 0.737 U.S. gal = lit. x 0.264 kW = 0.2388 kcal/s

 $lb/PS.h = g/kW.h \times 0.00162$

 $cfm = m^3/min \times 35.336$

Mpa = Pa x 1000 = bar x 10

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