YAVUZ MOTORS GENERATOR DRIVE ENGINE

4304G

Yavuz Motors engine model 4204G is 4 in-line cylinder diesel 4-cycle, water-cooled, turbo charged and charge air after-cooled aspirated designed for electric generator drive

Engine is design to provide excellent performance for a long service life and to comply with major international standards

Engine is completely equipped from fan to flywheel and ready to directly couple with wide range of industrial electric generator by SAE housing and flywheel disk coupling

PERFORMANCE DATA

	Engine model		4304G
1	Net Stand-by power (ESP) at 1500rpm	kW	96
2	Net Prime power (PRP) at 1500rpm	kW	88
3	Net Continuous power (COP) at 1500rpm	kW	79
4	Power lost for fan at 1500rpm	kW	≤ 2.2
5	Net Stand-by power (STB) at 1800rpm	kW	103
6	Net Prime power (PRP) at 1800rpm	kW	95
7	Net Continuous power (COP) at 1800rpm	kW	86
8	Power lost for fan at 1800rpm	kW	≤ 3.2
9	Speed variation at stable load	%	± 0.5
10	Speed static drop from no load to full load (%)	%	5
11	Step load for 10% speed transient drop (%)	%	60
12	Fuel consumption at LTP	Lt/ hr	25.0 ±5%
13	Fuel consumption at PRP	Lt/ hr	11.0 ±5%
14	Fuel consumption at 75% PRP	Lt/ hr	15.2 ±5%
15	Fuel consumption at 50% PRP	Lt/ hr	11.0 ±5%

Rating accuracy
Represent the engine performance capabilities guaranteed within plus or minus 3%

Rating conditions
25°C air inlet temperature, barometric pressure 100 kPa, relative humidity 30% in accordance with ISO 8528.

Ratings definitions
The power ratings of Emergency Standby and Prime are in accordance with ISO 8528.

EMERGENCY 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 a 70% average load factor and 200 hours of operation per year. This includes less than 50 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 load factor 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 within a 12 hour period of operation. The total operating time at the 10% overload power shall not exceed 50 hours per year.

CONTINUOUS POWER RATING
is available for an unlimited number of hours per year at constant load application. Constant load should not exceed a 100% of the Continuous power rating

Electric power must be considered, alternator efficiency, altitude derating and ambient temperature.

BASIC ENGINE SPECIFICATION

Engine cylinder block is made by cast iron and integrated with non-sleeve cylinders. Crankshaft is suspended by plain main bearing and connected to con-rod by plain con-rod bearing. Camshaft is supported by plain sleeve bearing and driven from crankshaft by gears.

Cylinder head is made by cast iron in mono-block type with two valves per cylinder and aluminum rocker cover.

1	Number of cylinder		4
2	Bore x stroke	mm	104 x 115
3	Displacement	cm^3	3905
4	Mean piston speed at 1500rpm	m/s	5.75
5	Compression ratio		17:1
6	Flywheel housing		SAE No. 3
7	Flywheel coupling size		SAE 11.5”
8	Dry weight	kg	465
9	Dimension L x W x H	cm	116 x 65 x 105

AIR INTAKE AND EXHAUST SYSTEM

Engine air intake is boost-charged through dry air filter, Garrett turbo charger, Honeywell Turbo Technologies, Switzerland - Europe and air-to-air aluminum charge air cooler and aluminum intake manifold. Air filter has a restriction mechanical indicator

Exhaust gas is made through a cast iron exhaust manifold to boot charge turbine before released to atmosphere

1	Max restriction in air intake (vacuum)	bar	0.035
2	Max back pressure of exhaust	bar	0.12
3	Max exhaust temperature @1500 rpm	˚C	600
4	Max combustion air flow	m^3/hrs	340
5	Turbo charger make/ model		Garrett
6	Max turbo charger pressure @1500 rpm	bar	2.5
7	Charge air cooler make/ model or size		Yavuz Motors
8	Max charge air cooler inlet temperature	˚C	130
9	Max charge air cooler outlet temperature	˚C	80

COOLING SYSTEM

Engine is cooled by a radiator liquid cooling system. Water pump and push fan are driven by V-belt from crankshaft pulley. Temperature is controlled by a thermostat valve

Radiator is pressurized type and made by copper tubes and fins

1	Cooling air flow (fan) for both radiator and charge air cooler	m^3/hr	9,000
2	Max pressure drop of cooling air after radiator	bar	0.005
3	Max water pump flow	Lt/ min	150
4	Radiator core size	mm	700 x 590
5	Max radiator pressure	bar	1.1
6	Cooling water volume (including radiator)	Lt	18
7	Max allowable ambient temperature (Power derating must be applied)	˚C	55

LUBRICATION SYSTEM

Engine is lubricated by a pressurized oil lubrication circuit. Oil pump is gear type and driven from crankshaft by gear. Lubrication oil is filled in a wet oil sump and cleaned by full flow spin-on filter

1	Max lube oil pump flow	Lt/ min	42
2	Max lube oil pressure	bar	10
3	Min lube oil pressure	bar	3
4	Max oil volume	Lt	13
5	Oil viscosity		SAE 15W-40
6	Oil quality class API recommendation		CH-4

FUEL SYSTEM

Fuel is fed from tank by diaphragm type transfer pump through water separator and fine fuel spin-on filter to injection pump. The injection pump is Bosch type in-line pump driven by gear from crankshaft for reliable operation with various kind and quality of fuel oil. Standard governor is mechanical type with 5% static speed droop.

Electronic governor is available as option

Fuel injection pump and injector is produced by Motorpal in Czech – Europe, an international manufacturer in Bosch supply chain

ELECTRIC SYSTEM

Electric system is 12VDC with motor starter and charging alternator produced by international Mako Manegtti Marelli in Turkey - Europe

Minimum battery capacity is 120Ah

1	Starter Voltage and power	12V – 2.7 kW
2	Alternator Voltage and Amperage	12V-45A
3	Battery Voltage and Ah capacity	12V-120AH
4	Solenoid stroke x force (mm x N)	33 x 90/210

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