



CUMMINS ENGINE CO.LTD

Model: **STARPAC 6 CYLINDER B SERIES** 1500 rpm
 Data sheet:003 Jan 98

Rev03

GENERAL ENGINE DATA

Type: 4 cycle,in-line,5.9 litres		CPL 1519/24	CPL 1518/23
Engine Model		6BT5.9G1	6BT5.9G2
Aspiration		Turbo	Turbo
Bore/Stroke	mm	All Models : 102/120	
Compression Ratio		16.5:1	16.5:1
Firing Order		1-5-3-6-2-4	1-5-3-6-2-4
Rotation (viewed from front)		All Models : Clockwise Rotation	
Weight Dry	kg	500	500
Weight Wet	kg	540	544
C of G from FFOB	mm	324	324
Installation Diagram		3276872	3276872

ENGINE MOUNTING

Maximum Bending Moment @ Rear		
Face of Block	Nm(lb.ft)	All Models:1356 (1000)

AIR INDUCTION SYSTEM

Maximum Air Intake Restriction;			
With Dirty Filter Element	mmH ₂ O	635	635
With Normal Duty Air Cleaner and Clean Element	mmH ₂ O	254	254
Minimum Dirt Holding Capacity	g/CFM	All Models:3	

Exhaust System

Maximum Back Pressure	mmHg	All Models:76
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COOLING SYSTEM

Maximum Top Tank Temp	Standby	104	104
°C		100	100
	Prime		
Minimum Pressure Cap Setting	Kpa(psi)	69(10)	69(10)
Standard Thermostat Setting (modulating)	°C	82-95	82-95

STANDARD COOLING WITH 20" FAN

Maximum Air Restriction On Discharge			
Side of Radiator	mmH ₂ O	10	10
Limiting Ambient Temperature	°C	52	46
Total Coolant Capacity	Litres	25.1	25.1
Cooling Fan Air Flow with Maximum Duct Restriction		1.6	1.5
M ³ /sec			

HEAVY DUTY COOLING WITH 22" FAN AND UPGRADED RADIATOR

Maximum Air Restriction On Discharge			
Side of Radiator	mmH ₂ O		10
Limiting Ambient Temperature	°C		52
Total Coolant Capacity	Litres		26.1
Cooling Fan Air Flow with Maximum Duct Restriction			2.2
M ³ /sec			

LUBRICATION SYSTEM

Oil Pressure @ Rated Speed	Kpa(psi)	345(50)	345(50)
Oil Pan Capacity (OP 9006)	Litres		
	High(Low)	14(11)	14(11)

ALL DATA SUBJECT TO CHANGE WITHOUT NOTICE

ENGINE MODEL **6BT5.9G1** **6BT5.9G2**

FUEL SYSTEM

Type of Injection System	Standyne DB4 Direct Injection
Maximum Restriction to Lift Pump mmHg	All Models:102
Maximum Return Line Restriction mmHg	All Models:508
Total Return Line Flow litres/hr	All Loads : 30 (Constant for all loads)

ELECTRICAL SYSTEM

Battery Charging System (Neg. Ground)		
Amps(12V)	63	63
Amps(24V)	40	40
Cranking Motor	All Models:Heavy Duty, Positive Engagement	
Maximum Resistance of Cranking Circuit		
Ohms(12V)	0.00075	0.00075
Ohms(24V)	0.002	0.002
Minimum Recommended Battery Capacity @ -18°C and above CCA(12V)	950	950
CCA(24V)	475	475

Note: CCA according to STD SAE J537H

PERFORMANCE DATA

Steady State Stability @ Any Constant Load	+/- %	0.5	0.5
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Engine Model	Rating	RPM	Gross Engine Output BHP	BMEP Bar	Piston Speed m/sec	Engine Water Flow l/sec	Intake Air Flow l/sec	Exhaust Gas Flow l/sec	Exhaust Gas Temp °C	Heat Rejection Exhaust Kwm	Heat Rejection Ambient Kwm
6BT5.9G1	Standby	1500	115	11.65	6.0	1.5	90	255	532	65	13.0
	Prime	1500	104	10.55	6.0	1.5	85	234	510	60	12.0
6BT5.9G2	Standby	1500	143	14.48	6.0	1.5	99	307	610	80	16.0
	Prime	1500	130	13.17	6.0	1.5	94	283	577	69	14.0

NOTE

- 1, All data represents gross engine performance capabilities obtained and corrected in accordance with ISO 3046 conditions of 29.53 inHg (100 Kpa) barometric pressure, 361 ft (100 m) altitude, 77°F (25°C) air inlet temperature and 30% relative humidity with #2-D diesel fuel or a fuel corresponding to ASTM D975.
- 2, Data is based on the engine operating with fuel system, water pump, and lubricating oil pump. Not included are battery charging alternator, fan and optional equipment, and driven components.
- 3, Engine water flow at maximum 4 psi friction head.
- 4, Data certified within +/- 5%.

NETT ENGINE OUTPUTS AND TYPICAL GENERATOR SET OUTPUTS, 50 Hz ONLY

Engine Model		6BT5.9G1	6BT5.9G2
Nett Engine Output Kwm	Standby	83	104
	Prime	75	94
Typical Gen Set Output	Kwe(KVa)		
	Standby	75(94)	95(117)
	Prime	68(85)	86(107)

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Engine Model		6BT5.9G1	6BT5.9G2
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FUEL CONSUMPTION DATA

Maximum Power Brake Specific Fuel Consumption	g/Kwm-Hr	215	214
Fuel Consumption	litres/hour		
	100% Standby	21.73	26.87
	100% Prime	19.83	24.07
	75% Prime	15.44	17.79
	50% Prime	10.98	12.11
	25% Prime	6.59	7.12
	0% Prime	3.26	3.26
Performance Curve		FR-9607	FR-9608

OPERATION AT ELEVATED TEMPERATURE AND ALTITUDE

Normal Operation

Maximum Altitude Before Derate	m	1370	150
Maximum Temperature Before Derate	°C	40	40

For Sustained Operation Above These Conditions

Derate Factor per 1000ft(300m)	%	4	4
Derate factor per 10°F(5°C)	%	1	1
Derate Factor per 10% Relative Humidity Above 30%	%	N/A	N/A

NOTE

- 5, Fuel consumption data taken from the relevant performance curve, and is based on a specific gravity of #2-D diesel of 0.85 Kg/litre.
- 6, Tabulation quotes typical fuel consumption within 5%
- 7, Reference data obtained and corrected in accordance with ISO 3046 conditions of 100Kpa barometric pressure, 110m altitude, 25°C air inlet temperature and relative humidity of 30%.
- 8, Net engine outputs quoted are based on maximum engine ratings less deductions for the standard STARPAC fan arrangement etc at standard operating conditions.
- 9, Typical Generator set outputs are based on an alternator efficiency range of 87-89% and 0.8 p.f.
- 10, All engines use dry type exhaust manifolds.

CAUTION

Engines supplied without regard for the attached ratings guidelines may not be covered by warranty.

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