KAPLAN POWER

PRODUCT BROCHURE

#POWER YOUR FUTURE

MANUFACTURING HIGH QUALITY PRODUCTS

Kaplan Power

DIESEL ENGINE

Engine KSP490D

Compact footprint, low profile design.
Exhaust system inside canopy
Large doors on each side
Body made from steel components treated with polyester powder coating
Lifting points on the base frame
Kaplan makes its generating sets' noise level tests in accordance with directive 2000/14/EC validation of the noise level

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DIESEL ENGINE

ENGINE KSP490D

BASIC TECHNICAL DATA

ITEMS	DETAILS
Number of cylinders	4
Cylinder arrangement	Inline
Cycle	4 Stroke
Induction system	Natural Aspiration
Compression ratio	19:01
Bore	87mm
Stroke	103mm
Cubic capacity (Liter)	2.45
Direction of rotation when viewed from flywheel	Anti- clockwise (from the flywheel view)
Firing order	1-3-4-2

WEIGHT & OVERALL DIMENSIONS:

Dry	240kg
Height	822
Length (from rear of air cleaner to front face of radiator)	998
Width (including mounting brackets)	557
Engine rotational component (kgm²)	0.901
Flywheel (kgm²)	0.74

CENTRE OF GRAVITY (ENGINE ONLY)

Forward from rear of block (mm)	203
Above centre line of block (mm)	114
Offset to RHS of centre line (mm)	14

PERFORMANCE

At 110% standby power	20.3kw
Air temperature (°C)	25
Barometric pressure (kPa)	100
Relative humidity (%)	30
Air inlet restriction at maximum power (nominal).(kPa)	<=2
Exhaust back pressure at maximum power (nominal) (kPa)	<=5
Fuel temperature (inlet pump)(°C)	40
All ratings certified to within (%)	5

SOUND LEVEL

Average sound pressure level for bare engine (without inlet and exhaust) at 1 metre (Db(A))	90

DIESEL ENGINE

ENGINE KSP490D

POWER/ EFFICIENCY

50 HZ			
DESIGNATION	UNITS	PRIME	STANDBY
Gross engine power	kWb	18.5	20.3
Mean piston speed	m/s	5.15	5.15
Engine coolant flow (coolant pump ratio 1.33:1)	l/min	5.5	5.5
Combustion air flow	m^3/min	1.65	1.67
Exhaust gas flow (maximum)	m^3/min	4.01	4.22
Exhaust gas temperature outlet (maximum)	°C	475	500
Overall thermal efficiency (nett)	%	36.3	36.6
Typical genset electrical output (0.8 pf 25°C)	kWe	15	16.5
	kVA	18.7	20.6
Assumed alternator efficiency	%	89	88.5

ENERGY BALANCE

50 HZ			
DESIGNATION	UNITS	PRIME	STANDBY
Energy in fuel (heat of combustion)	kWt	54	60
Energy in power output (gross)	kWb	18.5	20.3
Energy to cooling fan	kWt	1.1	1.1
Energy in power output (nett)	kWm	16.8	18.5
Energy to coolant and lubricating oil	kWt	0.6	0.6
Energy to exhaust	kWt	13.6	14.9
Energy to radiation	kWt	13.4	14.7

FUEL CONSUMPTION

DIRECT	
Type of injection	direct injection
Fuel injection pump type	stanadyne rotory pump
Fuel atomiser type	glow plug
Nozzle opening pressure (Mpa)	25~26
Maximum particle size (microns)	10
FUEL LIFT PUMP	
Type	electrical
Flow/hour (Ltr/hr)	75.00
Pressure (kPa)	0.35
Maximum suction head (m)	0.50
Maximum static pressure head (m)	0.50
Governor type	mechnical

		1500 RPM
POWER RATING	G/KWH	LITRES/HOUR
110%	232	5.98
100%	230	5.11
75%	245	4.07
50%	267	2.96

DIESEL ENGINE

COOLING SYSTEM

RADIATOR

ITEM	DETAILS
Radiator face area (m^2)	12.8
Number of rows and materials	2 rows /84 fins
Matrix density and material (fins/inches)	14 fins/inches,
Width of matrix (mm)	502
Height of matrix (mm)	775
Pressure cap setting (kPa)	90
Estimated cooling air flow reserve (kPa)	0.125

FAN

ITEM	DETAILS
Diameter (mm)	380
Drive ratio	1.4:1
Number of blades	10
Material	GF30+PA6
Type	blower

INDUCTION SYSTEM

ITEM	DETAILS
Clean filter (kPa)	1.5
Dirty filter (kPa)	2
Air filter type	Dry paper
COLD START RECOMMENDATIONS	
Minimum cranking speed (rev/min)	-

COOLANT (TOTAL SYSTEM CAPACITY)

ITEM	DETAILS
With radiator (Liter)	8.1
Without radiator (Liter)	2.6
Maximum top tank temperature (°C)	105
Temperature rise across engine (°C)	8
Maximum permissible external system resistance (kPa)	120
Thermostat operation range (°C)	71~81
MAXIMUM STATIC BENDING MOMENT	
At rear face of block (Nm)	5

ELECTRICAL SYSTEM

ITEM	DETAILS
Alternator (Ampere/ Volts)	14v/40A
Starter motor (KW/ Volts)	12v/2.3kw

EXHAUST SYSTEM

ITEM	DETAILS
Maximum back pressure for total system (kPa)	5
Inside diameter of outlet flange (mm)	57

ENERGY BALANCE

		BATTERY SPECIFICATIONS		
MINIMUM STARTING EMPERATURE (°C)	BS3911 COLD START AMPS	SAEJ537 COLD CRANKING AMPS	NO. OF BATTERIES REQUIRED	COMMERCIAL REFERENCE NO.
-15	225			
-20	275			
-25	323			