

ENGINE DATASHEET



KOHLER®

Engine ref. : KD45V20-5DFP

General technical data

Cylinders configuration	V
Number of cylinders	20
Engine optimisation	Fuel optimisation
Dual Frequency	Yes
Speed (RPM)	1500
Speed (RPM)	1800
Displacement (L)	44,95
Bore (mm)	135
Stroke (mm)	157
Compression ratio	15 : 1
Engine Firing Order	1-15-4-20-8-17-2-13-6-19-10-16-7-11-3-14-9-18-5-12
Air inlet system	Turbo
Fuel	Diesel Fuel

Performance

	RPM	1500	1800
Maximum stand-by power at rated RPM (kW)		1463	1755
PRP Power (kW)		1330	1595,50
Pistons speed (m/s)		7,85	9,42
BMEP @ PRP 50 Hz (bar) / BMEP @ PRP 60 Hz (bar)		23,70	23,70
Friction Power Loss (kW)		111,50	
Max Combustion Pressure (Mpa)		240	

Electrical system

Governor type	Electronic
ECU type	KODEC
Frequency regulation, no-load to full-load	Isochrone
Frequency regulation, steady state (%)	+/- 0.25%
No. of teeth on ring gear	174
Idle speed (RPM)	1000
Battery voltages (V)	24
Charging alternator (V/A)	24 / 28 / 140
Starter characteristics (V/kW)	24 / 8.4

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Dimensions and weight

Length (mm)	3087
Width (mm)	1414
Height (mm)	1547
Dry weight (kg)	4085
Wet weight (kg)	4383
Center of Gravity from Rear Face of Block (mm)	920

Construction / Material

Main Bearing Type	Half shell bearing
Cylinder Head Material	Cast Iron
Crankshaft Material	Steel
Intake and Exhaust Valve Material	Steel
Piston type & material	Steel
Exhaust manifold type	Dry

Installation

Maximum Bending Moment at Rear Face of Block (RFOB) (Nm)	8000
Maximum Rear Bearing Load (N)	850
Maximal engine inclination, longitudinal front up/down (degree)	10
Maximal engine inclination, lateral (degree)	15
SAE Flywheel housing	0
SAE Flywheel	18
Inertia (kg.m ²)	8,5330

Fuel system

	RPM	1500	1800
Maximum fuel pump flow (L/h)		435	520
Maximum fuel return flow (L/h)			
Maximum heat rejected to return fuel (kW)			
Max. restriction at fuel pump (m)		3,50	
Max head on fuel return line (m)		3,10	
Maximum allowed inlet fuel temperature (°C)		60	
Primary fuel filter rating (micron)		5	
Fuel Prefilter / Water Separator Micron Size		10	
Fuel Inlet Minimum recommended size (mm)		19,05	
Fuel Outlet Minimum recommended size (mm)		9,53	

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Fuel consumption (Specific fuel consumption +5% ; ISO3046-1 ; 42.7 MJ/kg)

	RPM	1500	1800
Specific consumption 25% PRP load (g/kW.h)		218,90	229,60
Specific consumption 50% PRP load (g/kW.h)		200,90	203,80
Specific consumption 75% PRP load (g/kW.h)		197	198,10
Specific consumption 100% PRP load (g/kW.h)		197	200
Specific consumption 25% ESP load (g/kW.h)		216,10	224,50
Specific consumption 50% ESP load (g/kW.h)		199,10	213,30
Specific consumption 75% ESP load (g/kW.h)		195,30	192,10
Specific consumption 100% ESP load (g/kW.h)		195	204

Lubrication system

	RPM	1500	1800
Oil consumption 100% ESP (L/h)		0,17	0,21
Oil system capacity including filters (L)		180	
Oil sump capacity (L)		180	
Oil capacity between dipstick marks Max-Min (L)		30	
Min. oil pressure (bar)		3,50	
Oil Pressure at rated speed (bar)		3,90	
Max. oil pressure (bar)		6,50	
Oil temperature maximum (°C at 25°C ambient)		118	
Oil filter micron size		14	
Oil Filter Quantity and type		Spin On / 4	
Oil cooler		Plate Exchanger	

Air intake system

	RPM	1500	1800
Intake air flow (L/s)		1370,84	1842,24
Max. intake restriction (mm H2O)		510	500

Exhaust system

	RPM	1500	1800
Heat rejection to exhaust (kW)		949	1207
Max. exhaust back pressure (mm H2O)		867	850
Exhaust gas temperature @ PRP 50Hz (°C)		503	
Exhaust gas temperature @ PRP 60Hz (°C)		484	
Exhaust gas flow @ PRP 50Hz (L/s)		3772	
Exhaust gas flow @ PRP 60Hz (L/s)		4929	

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Cooling system

	RPM	1500	1800
Radiated heat to ambient (kW)		94	
Heat rejection to coolant HT (kW)		543	604
Flow on the HT circuit at 0.7Bars pressure drop off engine (L/min)		1952	2281
Outlet coolant temperature (°C)		100	
Maximum Coolant temp without derating (°C)		105	
Max coolant temperature, Shutdown (°C)		105	
Coolant capacity HT, engine only (L)		143	
Restriction pressure drop off engine – HT circuit (mbar)		700	
Minimal pressure before HT pump (mbar)		400	
Max. pressure at inlet of HT water pump (mbar)		1000	
Thermostat begin of opening HT (°C)		82	
Thermostat end of opening HT (°C)		92	
HT Standard pressure cap setting (kPa)		100	
Water Pump Type		Vane Wheel pump	
Fan drive ratio		0.82	
Radiator & Engine capacity (L)		264	

Charge air cooling system

	RPM	1500	1800
CAC Heat Rejection (kW)		261	393
CAC Temperature into Engine at 25°C Limit, (°C min / max)		45	58
CAC Temperature into Engine Limit (max at any ambient temperature) (°C)		60	
Compressor Discharge Temp at 25°C (°C)		197	225
Compressor Discharge Temp Max (°C)		245	
Maximum Pressure Drop through CAC (kPa)		100	15,50
Turbocharger Boost Pressure (kPa)		292	341