

# ENGINE DATASHEET



# KOHLER®

Engine ref. : KD45V20-5EFP

## 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)		1547	1789
PRP Power (kW)		1406,40	1626,40
Pistons speed (m/s)		7,85	9,42
BMEP @ PRP 50 Hz (bar) / BMEP @ PRP 60 Hz (bar)		25	24,10
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 <sup>2</sup> )	8,5330

## Fuel system

	RPM	1500	1800
Maximum fuel pump flow (L/h)		455	540
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)		216	228,60
Specific consumption 50% PRP load (g/kW.h)		199,10	204
Specific consumption 75% PRP load (g/kW.h)		194,30	199,30
Specific consumption 100% PRP load (g/kW.h)		196	205
Specific consumption 25% ESP load (g/kW.h)		211	225
Specific consumption 50% ESP load (g/kW.h)		198	201
Specific consumption 75% ESP load (g/kW.h)		194	199
Specific consumption 100% ESP load (g/kW.h)		195	205

## Lubrication system

	RPM	1500	1800
Oil consumption 100% ESP (L/h)		0,18	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)		1454,99	1913,50
Max. intake restriction (mm H2O)		510	500

## Exhaust system

	RPM	1500	1800
Heat rejection to exhaust (kW)		989	1293
Max. exhaust back pressure (mm H2O)		867	850
Exhaust gas temperature @ PRP 50Hz (°C)			495
Exhaust gas temperature @ PRP 60Hz (°C)			496
Exhaust gas flow @ PRP 50Hz (L/s)			3963
Exhaust gas flow @ PRP 60Hz (L/s)			5203

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## Cooling system

	RPM	1500	1800
Radiated heat to ambient (kW)		99	
Heat rejection to coolant HT (kW)		558	623
Flow on the HT circuit at 0.7Bars pressure drop off engine (L/min)		1948	2247
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)		292	436
CAC Temperature into Engine at 25°C Limit, (°C min / max)		45	56
CAC Temperature into Engine Limit (max at any ambient temperature) (°C)		60	
Compressor Discharge Temp at 25°C (°C)		204	233
Compressor Discharge Temp Max (°C)		245	
Maximum Pressure Drop through CAC (kPa)		100	15,80
Turbocharger Boost Pressure (kPa)		309	346