

**SPECIFICATIONS**

Technical code	F4HFE413M*A001	
Thermodynamic cycle	Diesel 4 stroke	
Air intake	TAA	
Arrangement	4L	
Bore x Stroke	mm	104 x 132
Total displacement	L	4.5
N° valves per cylinder	4	
Cooling	liquid	
Direction of rotation (seen from flywheel side)	CCW	
Compression ratio	17 : 1	
Rotation mass moment of inertia (without flywheel)	kgm <sup>2</sup>	0.31
Standard flywheel inertia	kgm <sup>2</sup>	0.708

**FUEL SYSTEM**

Injection system	Electronic Common Rail	
Upstream injectors fuel pressure	kPa(bar)	<160,000 (1,600)
Gas oil max intake temperature	°C	70 (at 25°C amb.)

**AIR INTAKE**

Max suggested intake restriction with clean air filter	kPa(bar)	3.5 (0.035)
Max suggested intake restriction with dirty air filter	kPa(bar)	4.5 (0.045)
Air flow at 100% load / rated speed	kg/h	610
Turbocharging pressure at full load/rated speed	kPa(bar)	132 (1.32)
Maximum supercharging air temperature (compressor outlet)	°C	200
Maximum air temperature increase between ambient and intercooler	°C	25
Heat rejected to intercooler at maximum power	kJ/s(kcal/h)	16 (13,700)
Intercooler system max pressure drop	kPa(bar)	12 (0.12)
Air consumption at:		
2200 rpm	kg/h	620
2000 rpm	kg/h	590
1400 rpm	kg/h	355

**EXHAUST SYSTEM**

Max allowable backpressure	kPa(bar)	18 (0.18)
Max exhaust temperature at full load/rated speed	°C	540
Exhaust flow at max output	kg/h	625

# N45 ENT

75 kW (102 HP) @ 2200 rpm - 472 Nm @ 1400 rpm

Stage IIIB / Tier 4i

## LUBRICATION SYSTEM

Minimum oil pressure at idle	kPa(bar)	70 (0.7)
Max oil pressure at idle	kPa(bar)	350 (3.5)
Max oil temperature at full load/rated speed	°C	120
Engine angularity limits continuous operation:		
max front up and front down	0/360°	35°
max left hand and right hand	0/360°	35°
Total system capacity including pipes, filters, etc.	L	14.4

## COOLING SYSTEM

Coolant capacity (engine only)	L	6.1
Water pump flow at:		
2200 rpm	l/h	11,160
2000 rpm	l/h	9,180
1400 rpm	l/h	7,560
Heat to reject by heat exchanger at max power	kJ/s(kcal/h)	38 (32,600)
Thermostatic valve (adjustment range)	°C	83 ÷ 99
Cooling liquid max temperature	°C	106
Min/max inner pressure in the cooling circuit	kPa(bar)	30/275 (0.3/2.75)
External cooling system max pressure drop	kPa(bar)	35 (0.35)

## ELECTRICAL SYSTEM

Voltage	V	24
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## HEAT BALANCE

		1400 rpm	2000 rpm	2200 rpm
Total thermal power	kW (±3%)	163.8	200.7	197.1
Useful power	kW (±3%)	73	80	75
Water cooling power	kW (±5%)	35.8	42.2	43.2
Oil cooling power + Exhaust power	kW (±5%)	41	59	57
Intercooler power	kW (±10%)	8	14	16
Issued power (% of total thermal power)	%	3.5	3	3

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## PERFORMANCE

Rated power[*]	kW (HP) @ rpm	75 (102) @ 2200
Peak power	kW (HP) @ rpm	80 (109) @ 2000
Peak torque	Nm (kgm) @ rpm	472 (49) @ 1400
Maximum no load governed speed at max rating	rpm	2375
Minimum idling speed	rpm	800
Mean piston speed at rated speed	m/s	10.5
BMEP at max torque	bar	8.23
Available certifications	CE 97/68 Stage IIIB - EPA Tier 4i	
Specific fuel consumption at:		
2200 rpm	g/kWh (kg/h)	221 (16.6)
2000 rpm	g/kWh (kg/h)	211 (16.9)
1400 rpm	g/kWh (kg/h)	200 (13.8)
Oil consumption at max rating	% fuel cons.	0.0055%
DEF [**]/AdBlue consumption at peak torque and rated power	% fuel weight cons.	4 - 5
Noise at max rating (ISO 3744)	dBA	<91
Minimum starting temperature without auxiliaries	°C	-15
Oil and oil filter maintenance interval for replacement [***]	h	600
Dry weight (standard configuration without: oil, cooling, starter, clutch, Compressor A/C, alternator)	kg	425

FOR INFORMATION ON THE AVAILABLE RATINGS NOT LISTED IN THIS DOCUMENT PLEASE CONTACT THE FPT SALES NETWORK.

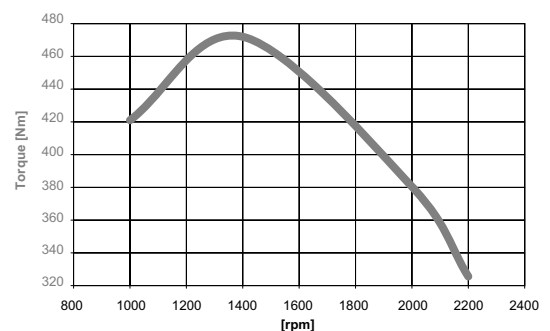
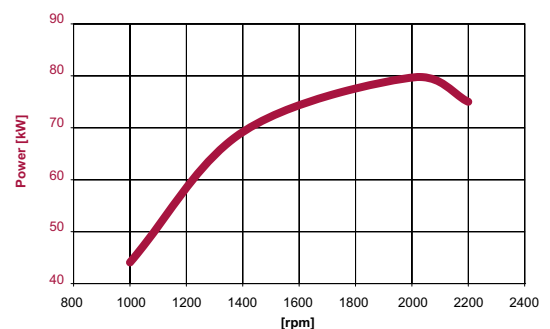
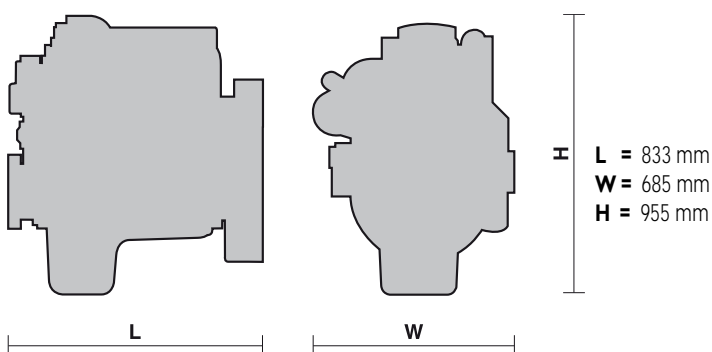
[\*] **Power** at flywheel according to 97/68 EC (without fan), after 50 hours running, 3% tolerance, Fuel Diesel EN 560.

[\*\*] **DEF**: Diesel Exhaust Fluid

[\*\*\*] **Oil type**: Approved engine oil specification: 15W-40 ACEA E7 / API CI-4 or 10W-30 ACEA E7 / API CI-4 (ambient temperature below -15°C). 10W-40 ACEA E9/API CJ-4 as alternative.

**Test conditions**: ISO 3046/1, 25 °C air temperature, 100 kPa atmospheric pressure, 30 % relative humidity - Applicable also to DIN 6271, BS 5514, SAE J1349 Standards.

## Dimensions



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## STANDARD CONFIGURATION

Flywheel housing	type	SAE 3 - cast iron
Flywheel size	inch	11" 1/2
Intake manifold location		high / left side / vertical from top
Exhaust manifold location		high / right side / front
Turbocharger		Fixed Geometry with Waste Gate valve
Turbocharger location		high / back / right side
Fan transmission ratio		1.4 : 1
Distance between fan - crankshaft centers	mm	x = 0 ; y = 296
Fuel filter	n°	single cartridge - left side
Oil filter	n°	single cartridge - right side
Oil sump		suspended sheet steel / front sump, 35° angularity limits continuous in all directions
Oil vapours blow-by circuit		fly wheel housing, Mann & Hummel valve
Oil heat exchanger		integrated into the block
Oil filler		on valve cover
Starter		24V - 4kW
Alternator		24V - 70A with W contact
Engine stop device		incorporated in the pump
Wiring harness		-
Painting	color	grey

## NOT INCLUDED IN THE STANDARD CONFIGURATION

Power take off - transmission ratio		1.03 : 1
PTO maximum available torque	SAE A	100Nm (9 teeth) - 150Nm (11 teeth)
	SAE B	240Nm (13 teeth)
Battery - minimum capacity recommended		130Ah (24V)
Battery - minimum cold cranking capacity recommended		500A (24V)

FPT OFFERS THE WIDEST AVAILABILITY OF ENGINE BUILD OPTIONS TO CUSTOMER SPECIFIC REQUIREMENTS WITHIN THE ENGINE SUPPLY.  
TO FIND OUT MORE ABOUT THE CONFIGURATIONS AND ACCESSORIES WHICH ARE AVAILABLE, CONTACT THE FPT SALES NETWORK.

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Specifications subject to change without notice.  
Illustrations may include optional equipment.