Technical Data: OM 457 LA

260 kW, 1600 Nm, D457.951, On Highway EURO 4, Bus , Stadtbus

Mercedes-Benz

Date: 21.12.2009

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Engine Description

Model	In-line Diesel engine with electronic engine management
Turbocharging System	Turbocharging with charge air cooling (air/air)
Turbocharger	1 - TC, with fixed geometry
Exhaust Gas Aftertreatment	SCR system, exhaust muffler with catalyst, AdBlue injection with supplying and metering unit
Combustion Process	Four stroke Diesel direct injection
Injection System	High-pressure fuel-injection system with centrally positioned injection nozzles
Injection Pump	Single injection pumps, integrated in crankcase
Cooling System	Coolant recirculation cooling
Fan	xxx
Crankcase	Grey cast iron, noise-optimized
Cylinder	Wet type cylinder liners
Cylinder Head	Single cylinder heads, grey cast iron
Valves	2 inlet valves and 2 exhaust valves per cylinder
Charge Air Housing / Charge Air Manifold	Noise-optimized, acoustically decoupled
Crankshaft	Forged, with counterweights
Connecting Rod	Forged
Piston	Aluminium piston with steel ring carrier and oil cooling
Oil Cooler	Integrated in crankcase
Gear Drive	Located at fleywheel end
Belt Drive System	V-ribbed single belt with automatic belt tensioner
Oil- / Fuel Filter	Hanging positon at engine front
Engine Representation (Drawing)	---
Engine Illustration (Drawing)	000 05 401

General Data

Engine Code		OM 457 LA.IV/12
No. of Cylinders		6
Displacement	liter	11,97
Bore	mm	128
Stroke	mm	155
Compression		18,5
Direction of Rotation (View From Flywheel)		Counterclockwise direction
Firing Order		1 - 5 - 3 - 6 - 2 - 4
Coldstart		
Coldstart Limit at Battery Capacity of 75%	°C	-20
Starting Speed at -20°C, min	rpm	100
Engine Compartment Temperature		
Engine Compartment, max. Permissible	°C	100
Generator, max. Permissible	°C	80
Noise Emission		
Sound Power Level at Rated Power	dB(A)	---
Sound Power and Third Octave Band (Drawing)		---
Moment of Inertia of the Rotating Mass		
Flywheel	kgm²	1,09
Engine (with Flywheel)	kgm²	2,16
Bending Moment at Rear Edge of Flywheel Housing (stat.), max.	Nm	2000

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Power, Torque

Rated Power	kW	260
at Engine Speed	rpm	2000
Torque, max.	Nm	1600
from Engine Speed	rpm	1100
Power, Torque		
Overview		
Single Curve		100 04 555
Mean Effective Pressure		
at Maximum Torque	bar	16,80
at Rated Power	bar	13,03
Engine Speed		
Low Idle Speed, Standard	rpm	560
Low Idle Speed, min.	rpm	510
Maximum no Load Speed, max.	rpm	2360
Lowest Speed for Continuous Operating	rpm	1000
Operation Altitude w/o Power Reduction, max	m.a.sea l.	2000
Power Reduction at Higher Altitudes		
Overview (Drawing)		100 70 010

Dimension, Weight

Dimension		
Length	mm	1316
Width	mm	746
Height	mm	1019
Weight		
Dry	kg	1045
Wet	kg	1065
P/W Ratio kg/kW		
Dry	kg/kW	4,02
Wet	kg/kW	4,10
Location of Center of Gravity (Drawing)		---
Main Moments of Inertia (Drawing)		---

Coolant System

Cooling Water Circuit (Drawing)		---
Heat Rejection, at Rated Power	kW	116
Coolant Pump		
Delivery at Rated Speed Engine	l/s	7,7
Transmission Ratio		0,55
Pump Characteristic (Drawing)		300 10 200
Thermostat		
Begin of Opening	°C	83
Fully Open at	°C	95
Temperature Difference between Engine Inlet and Outlet, max.	°C	8
Coolant Temperature, max.	°C	100
Pressure Protection of Cooling System		
min.	bar	1,0
Coolant Volume in the Engine	liter	15

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Fan		xxx

Charge Air System

Charge Air Cooler, Design Data (Drawing)		650 60 398
Charge Air Pressure (Overpr., stat.) after Turbocharger		
At Rated Power	mbar	1350
max.	mbar	1400
Pressure Drop Charge Air System at Rated Power, max.	mbar	100
Charge Air Temperature after Turbocharger		
At Rated Power	°C	145
max.	°C	145
Charge Air Temperature before Engine at Rated Power, max.	°C	40
Heat Rejection at Rated Power, min.	kW	47

Lubrication System

Lubrication - Circuit (Drawing)		---
Quantity Oil Pan with Filter		
max.	liter	30
min.	liter	20
Quantity in Oil Pan		
max.	liter	27
min.	liter	16
Oil Temperature at Main Oil Gallery, max.	°C	120
Oil Pressure at Engine Operation Temperature and Low Idle, min.	bar	0,5
Oil Consumption, max., Related to Fuel Consumption	%	0,5
Engine Inclinations		
Installation Inclination (Position Flywheel Downwards)	degree	---
Operation Inclinations (Drawing)		---

Fuel System

Fuel Circuit (Drawing)		---
Diesel Fuel		
Requirements / Standard		DIN EN 590
FAME (Biodiesel / Fatty Acid Methyl Ester)		
Requirements / Standard		DIN EN 14214
Negative Fuel Depression at Engine Inlet, max.		
Without, resp. with New Pre-Filter	mbar	350
With Pre-Filter at Service Limit	mbar	600
Injection Nozzles		
Max. Injection Pressure	bar	1800
Number of Injection Holes		7
Fuel Consumption (Diesel Fuel)		
At Rated Power	g/kWh	202
At Full Load, min.	g/kWh	184
At Characteristic Map Best Point	g/kWh	---

Intake Air System

Intake Air Volume		

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At Rated Power	m³/min	24,0
max.	m³/min	24,9
Intake Air Volume (Drawing)		650 00 716
Combustion Intake Vacuum (stat.), at Rated Power		
Air Cleaner, at New Condition	mbar	25
Air Cleaner, Service Point, max.	mbar	55
Permissible Air Temperature, max.		
At Engine Inlet	°C	55
Rise between Ambiente and Engine Inlet	°C	8

Exhaust System

Exhaust Gas Mass, at Rated Power	g/s	460
Exhaust Gas Volume, at Rated Power	m³/min	44
Exhaust Gas Temperature		
at Rated Power	°C	380
max.	°C	580
Exhaust Back Pressure (stat.), at Rated Power	mbar	165
Exhaust Silencer		
Volume, +/-40%	dm³	
Volume	dm³	149
AdBlue Consumption, Related to Fuel Consumption, approx.	%	3-5

Auxillaries

Alternator		2 x
Voltage	V	28
Current	A	100
Starter Motor		
Voltage	V	24
Rating	kW	7,0
Air Compressor		
Delivery, at Rated Power	dm³/min	890
Operating Pressure	bar	12
Transmission Ratio		0,74
Delivery (Drawing)		550 10 402
Power Steering Pump		xxx

Power Take-Off

Power - Take - Off, Rear		xxx
Output, Front		xxx
Power - Take - Off (Air Compressor)		xxx

Engine Brake

Drag Power		
at max. Permissible Brake Speed, Short-Time	kW	55
Drag Power (Drawing)		700 00 603
Brake Speed		
max. Permissible, Continuous	rpm	2300
max. Permissible, Short-Time	rpm	2500

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Exhaust Aftertreatment

NOx-Reduction		
Trade name		AdBlue
Standard		DIN 70070 / ISO 22241
Dosing Unit		
AdBlue Dosing Unit (drawing)		000 96 003
Voltage	V	24
required air pressure, approx.	bar	5,5
AdBlue Pressure	bar	4,6-5,0
AdBlue Pump Unit		
Voltage	V	24
AdBlue pressure, max.	bar	0,6
AdBlue Volume flow	l/h	18
Pressure Regulator		
Voltage	V	24
Consumption of compressed air for AdBlue	l/min	22,4