



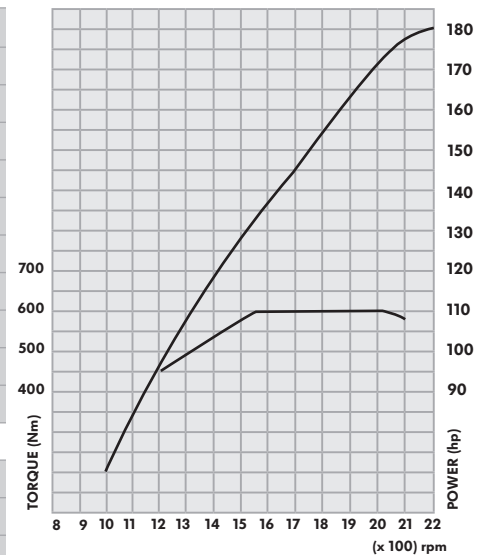
**Trucks  
Buses**



**Constellation 13.180**

Engine	
Model	MWM 4.12 TCE Turbo Intercooled
Emission Standard	Euro III
Configuration/Displacement	4 cylinder in line / 4.748cm <sup>3</sup>
Cylinder Bore x Stroke	105 x 137mm
Compression Ratio	16.9 : 1
Maximum Power - kW (Hp) @ rpm	132 (180) @ 2200
Maximum Torque - Nm @ rpm	600 @ 1550 ~ 2000
Green Band	1400 ~ 2300
Injection Sequence	1 - 3 - 4 - 2
Injection System	Common Rail ECU Controlled
Air Compressor Brand & Capacity	Knorr LK 38/(225L/m)

Engine Performance Curve



Transmission	
Brand/Type	EATON FS 4205 A Manual Transmission
Speeds	5 Forward (synchronized) + 1 Reverse
Ratios: 1st	8.05 : 1
2nd	4.35 : 1
3rd	2.45 : 1
4th	1.48 : 1
5th	1.00 : 1
Reverse	8.05 : 1
Drive Configuration	4 x 2

Clutch	
Type	Dry, Single Disc, Organic Lining
Brand	Sachs
Clutch Diameter	362mm

Front Axle	
Type	I-Beam, Forged Steel
Brand & Model	Meritor MFS-09 or Sifco 9K

Rear Axle	
Type	Stamped Steel, Dual Ratio Differential
Brand & Model	Meritor RS 19-230
Final Drive Ratios	4.88 / 6.80 : 1

Front Suspension	
Springs	Semi-Elliptical
Shock Absorbers	Hydraulic, Double Action
Stabilizer Bar	Standard

Rear Suspension	
Main Springs	Semi-Elliptical, Progressive Action
Auxiliary Springs	Parabolic
Shock Absorbers	Hydraulic, Double Action
Stabilizer Bar	Standard

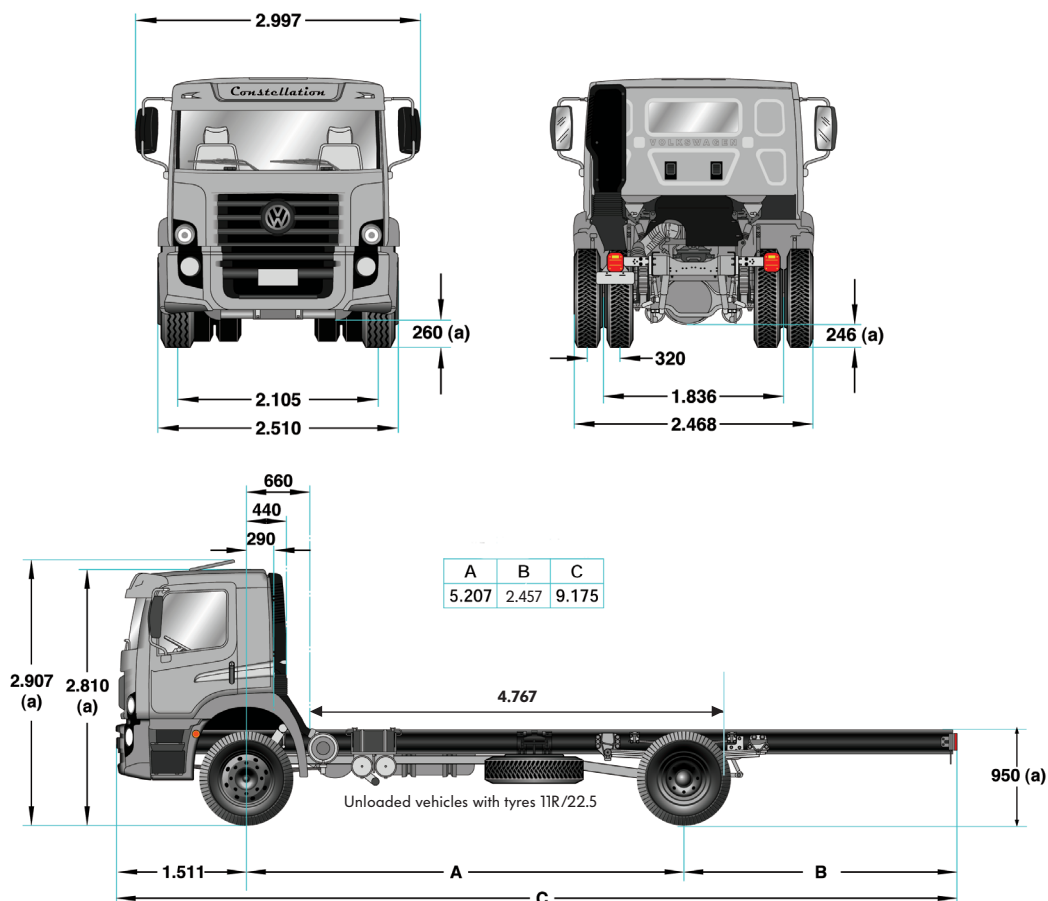
Steering	
Type	Fully Hydraulic, Recirculating Ball Type
Brand & Model	ZF 8095
Lock to Lock	4.4

Frame	
Type	Ladder Type, Single Profile, Flat Surface, Bolted and Riveted
Material	LNE 38 Steel

<b>Wheels and Tyres</b>	
Wheel Rims (Steel)	7.50" x 22.5" (8 hole)
Tyres	11R/22.5
<b>Brakes</b>	
Brand	Master
Service Brake Actuation	Full Air, S-Cam, Front and Rear Drums
Circuit	Double Independent, Double Air Reservoir, Air Dryer/CONSEP with Oil & Water Separator
Effective Braking Area	3446cm <sup>2</sup>
Drum Diameter	381mm
Engine Brake Type	Exhaust Pipe, Butterfly Type Valve
Actuation	Electropneumatic, Switch on instrument panel with combined control at throttle/clutch pedal
<b>Electrical System</b>	
Voltage	24V
Battery	2 x 12V & 100Ah
Alternator	80A & 28V
<b>Cab Mounting</b>	
Celasto Bushing	Standard
<b>Capacities (litres)</b>	
Fuel tank Plastic	275
Engine (with filter)	15.5
Gearbox	9.2
Rear Axle	20.0
Steering	2.1
Cooling System	21.6
<b>Weights (kg)</b>	
Curb Weight: Front Axle (Tare)	3037
Rear Axle (Tare)	1708
Vehicle Mass (Tare)	4745
Axle Capacity: Front Axle (GA)	4500
Rear Axle (GAU)	9000
Gross Vehicle Mass (GVM)	13500
Permissible Front Axle (A-Front)	4500
Permissible Rear Axle (AU-Rear)	9000
Permissible Max Vehicle (V)	13500
Gross Combined Mass (GCM)	23000
Permissible Maximum Drawing Vehicle Mass (D/T)	23000
Payload (Net load + Body)	8755
<b>Performance (Theoretical Calculation)</b>	
Maximum Speed (km/h)	89
Gradeability @ GVM (%) (Top Gear)	3.2%
Startability @ GVM (%) (1st Gear)	43.1%
GVM / Engine Power Ratio (kg/hp)	75
Data projected by performance simulations	

Dimensions (mm)	
Wheelbase	5207
Front Overhang	1511
Rear Overhang	2457
Total Length	9175
Total Width (without mirrors): Front	2510
Rear	2468
Front Wheel Track	2105
Rear Wheel Track	1836
Front Ground Clearance	260
Rear Ground Clearance	246
Turning Diameter - Wall to Wall (metres)	19.6

NOTE: Reference technical data; values and other information may change without prior notice.



### Volkswagen Trucks and Buses

General Enquiries	011 928 6800
Roadside Assistance (South Africa)	0800 110809
Roadside Assistance (Swaziland, Lesotho, Namibia, Botswana)	0800 110809
MAN Financial Services	011 387 1940

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The enclosed information was effective as at January 2011 and is subject to change without notice.