Mercedes-Benz Powertrain



Portfolio Bus Classic: EURO III, EURO V and EEV.



Welcome to the Mercedes-Benz Powertrain.
Leading in technology and efficiency.







Content

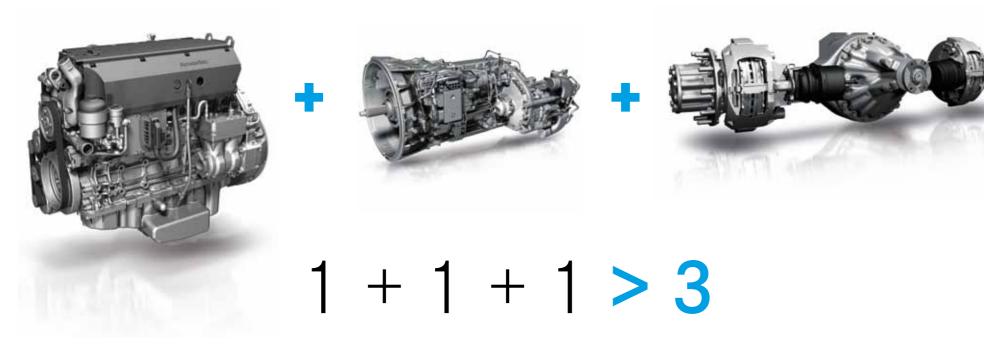
Mercedes-Benz Powertrain	04	Mercedes-Benz axles	34
		Right application for your chassis:	
Mercedes-Benz engine systems	06	low floor, low entry, raised floor	3
Nomenclature engines	10	Nomenclature axles	38
Engine portfolio	11	Axles portfolio	39
Medium-duty engine systems	12	Front axles	4:
Heavy-duty engine systems	16	Rear axles	48
Exhaust after-treatment system	20		
		Global Mercedes-Benz service network	52
Mercedes-Benz transmissions	22		
Nomenclature transmissions	24	Spare parts supply	54
Transmission portfolio	25		
Bus transmissions	28	More than products	5
Retarder	32		
		Index	50

Going the extra mile. Mercedes-Benz Powertrain.

Mercedes-Benz Powertrain offers outperforming and individual engineered powertrain components: engine systems, transmissions and axles – each will provide our customers with the **highest durability and quality at the same time**.

Together, they compose an even more sophisticated, technologically advanced and with regards to efficiency, unbeatable powertrain.

Let's develop together the best individual solution for your success.



Benefits for you.

Integrated powertrain:

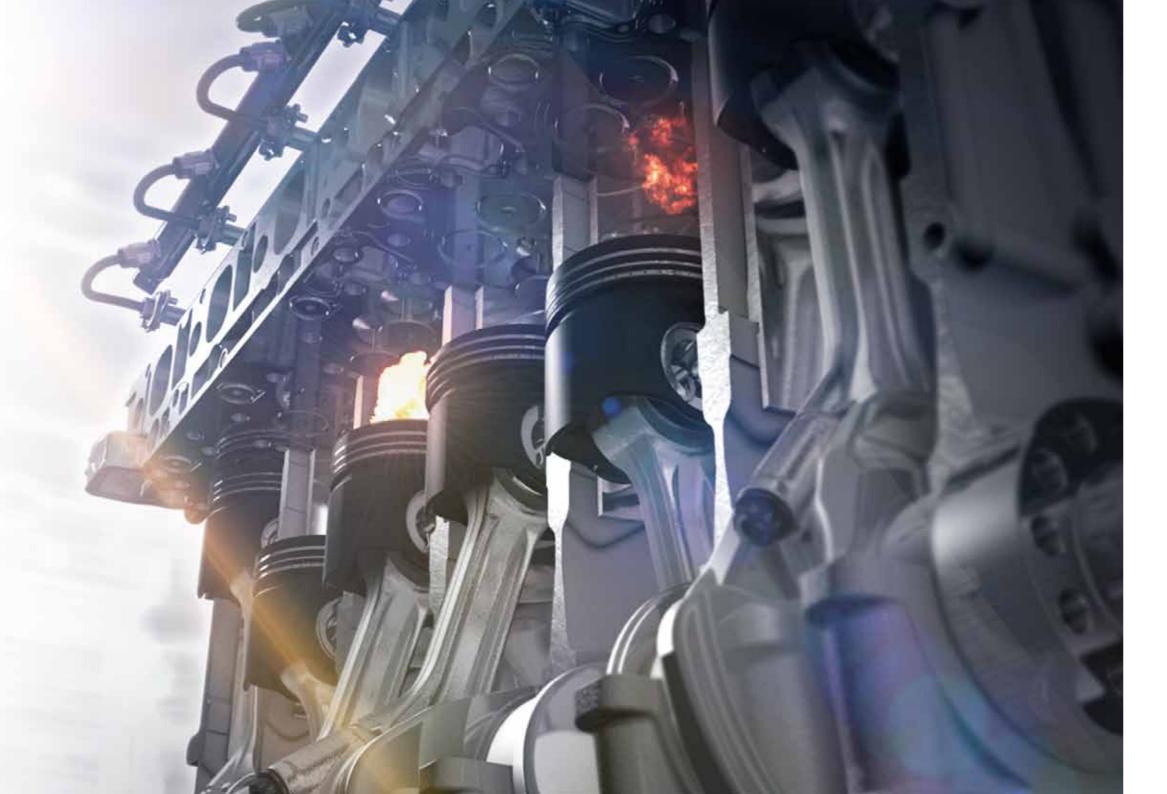
- ✓ Reduces integration efforts
- ✓ One Key Account Manager as main contact partner
- One system supplier for your individual powertrain solution
- ✓ One contractual partner

All powertrain components:

- ✓ Premium Mercedes-Benz quality standards due to the production on our high volume production lines
- ✓ Overall robust and reliable powertrain solutions provide a long lifetime for your powertrain components
- ✓ Leads to an optimized system setup due to common electric and electronic architecture (EE architecture) for efficient interaction of all powertrain components
- ✓ One electronic tool for end of line commissioning and diagnosis requires less training for your engineering group and after-sales team
- ✓ High invest in Mercedes-Benz R&D assures state-of-the-art quality

Benefits for your customers.

- Provides optimized fuel efficiency by specially composed powertrain solutions
- Ensures robust and reliable performance in every scenario of operation
- ✓ Minimizes downtimes as our worldwide After-Sales network covers warranty and policy from one source
- Synchronized maintenance intervals and repair worldwide via our one-stop shop logic for the complete powertrain
- ✓ Increases the resale value of the vehicles due to the highest quality standards offered by Mercedes-Benz
- ✓ Higher Driver comfort due to the high integration of all assistent systems and features



Our engine product portfolio: TCO reduction at its best.

Our EURO III, V and EEV engines are **synonymous with strength, economy and durability.** Based on these characteristics, our engine systems in all series are ideal for city buses and touring coaches. They can be modified to create customer-specific variants for use in different bus applications. From the 4/6 cylinder in-line models the EURO III, V and EEV engines represent superior function and efficiency.

The EURO III, EURO V and EEV engines operate at the highest levels of efficiency and ensure superior power output.

Thanks to BlueTec®, Mercedes-Benz's SCR diesel technology, they operate in a particularly eco-friendly way. BlueTec® ensures low CO² emissions and extremely low concentrations of nitrogen oxide (NOx) and particulates, to meet emission standards at the tailpipe. **Besides low consumption, the BlueTec® engines also have impressive maintenance intervals and a long engine life systems.** At Mercedes-Benz, we have spent decades bringing our diesel engine systems to perfection. Our dedication to excellence has earned Mercedes-Benz loyal customers around the world, in the most demanding industries.

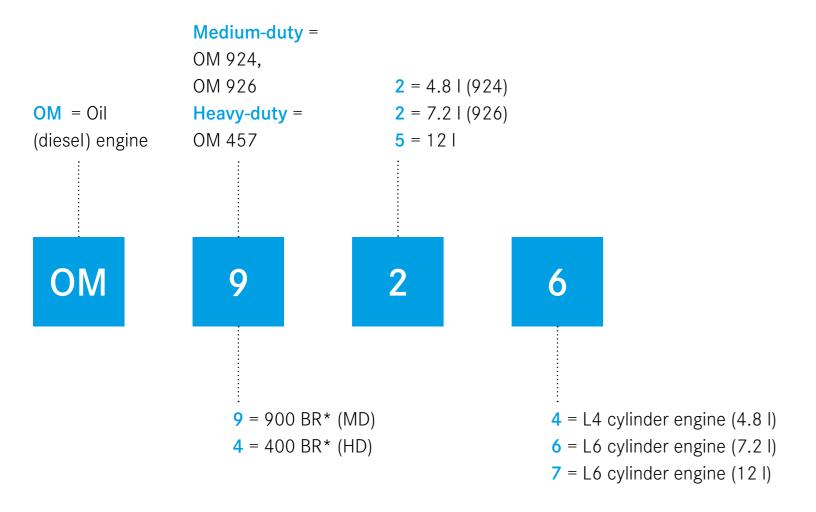




OM 92X and 457 model series.

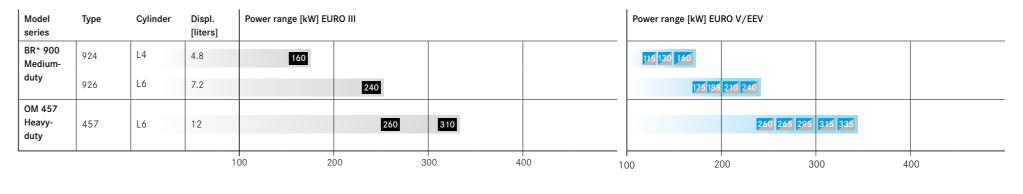
Approved engine systems for a variety of applications.

Derivation "Nomenclature" - engine systems.



Engine systems for EURO III, EURO V and EEV.

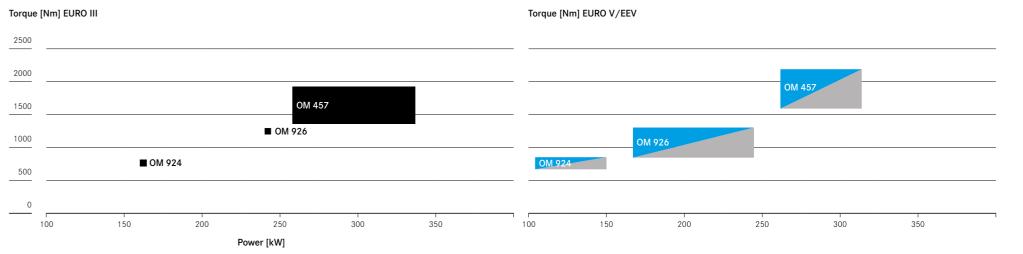
Portfolio of EURO III, EURO V and EEV engine systems for buses



* BR = Baureihe = model series

EURO III EURO V EEV

Power range



^{*} BR = Baureihe = model series

Performance. Even on challenging terrain.

Your product benefits for medium-duty engine systems:

- 4- and 6-cylinder diesel engines
 in an in-line arrangement
- **Displacement** of 4.8 and 7.2 liters
- Output of 115 up to 240 kW
- Low fuel consumption due to innovative SCR technology
- · Compact installation space

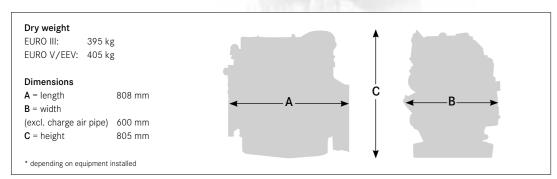
- Cylinder head with 3-valve technology
- Powerful and dynamic engine brakes due to decompression technology
- · Additional **power take-off** options
- "One box" SCR exhaust aftertreatment
- Wide range of potential adaptations due to extensive

OM 924

Arrangement: In-line 4 Displacement: 4.8 I



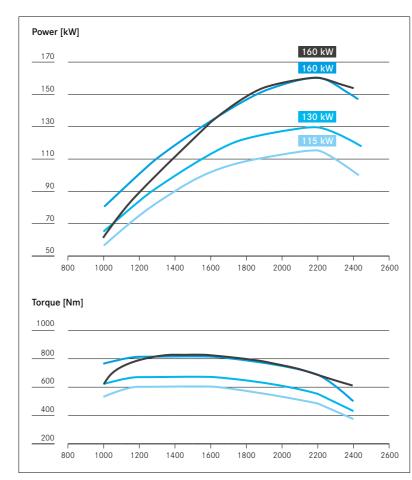
Weight and dimensions*



Rated power and nominal torque

		EURO III	EURO V/EEV	EURO V/EEV	EURO V/EEV
Rated power	[kW/hp]	160/218	115/156	130/177	160/218
at engine speed	[rpm]	2200	2200	2200	2200
Nominal torque	[Nm]	810	610	675	810
at engine speed	[rpm]	1400-1600	1200-1600	1200-1600	1200-1600

Performance

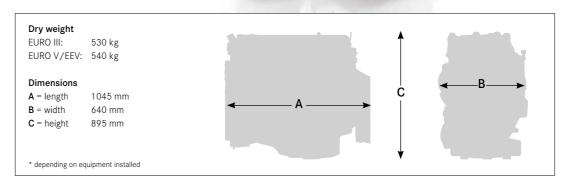


OM 926

Arrangement: In-line 6 Displacement: 7.2 l



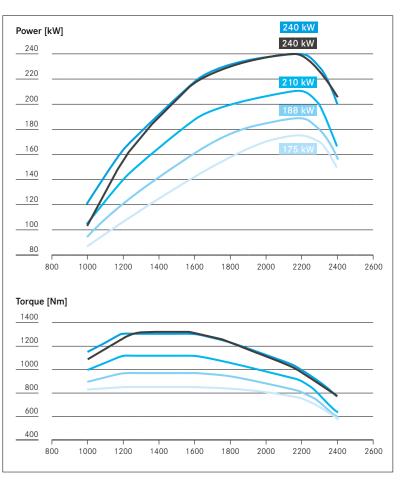
Weight and dimensions*



Rated power and nominal torque

		EURO III	EURO V/EEV	EURO V/EEV	EURO V/EEV	EURO V/E
Rated power	[kW/hp]	240/326	175/238	188/255	210/286	240/326
at engine speed	[rpm]	2200	2200	2200	2200	2200
Nominal torque	[Nm]	1300	850	970	1120	1300
at engine speed	[rpm]	1200-1600	1200-1600	1200-1600	1200-1600	1200-1600

Performance



		EURO III	EURO V/EEV	EURO V/EEV	EURO V/EEV	EURO V/E
Rated power	[kW/hp]	240/326	175/238	188/255	210/286	240/326
at engine speed	[rpm]	2200	2200	2200	2200	2200
Nominal torque	[Nm]	1300	850	970	1120	1300
at engine speed	[rpm]	1200-1600	1200-1600	1200-1600	1200-1600	1200-1600



A drive that stands out.

Your product benefits for heavy-duty engine systems:

- · **6-cylinder** diesel engines in-line
- **Displacement** of 12 liters
- **Output** of 260 335 kW
- Low fuel consumption due to proven SCR technology
- · Compact installation space

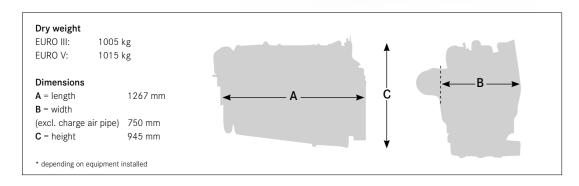
- Cylinder head with 4-valve technology
- Powerful and dynamic engine brakes due to decompression technology
- · Additional **power take-off options**
- · "One box" SCR exhaust after-treatment
- Wide range of potential adaptations due to extensive modular system

OM 457

Arrangement: In-line 6 Displacement: 12 I



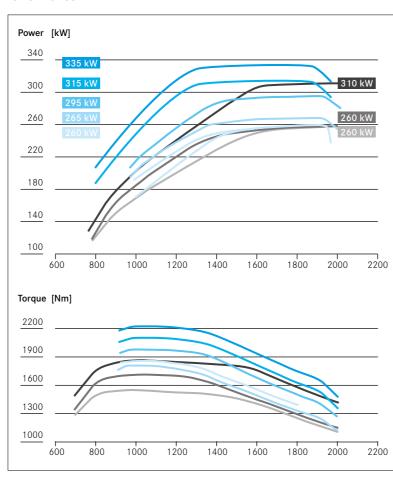
Weight and dimensions*



Rated power and nominal torque

		EURO III	EURO III	EURO III	EURO V/EEV				
Rated power	[kW/hp]	260/348	260/348	310/422	260/354	265/360	295/401	315/428	335/456
at engine speed	[rpm]	2000	2000	2000	2000	1900	1900	1900/2000	2000
Nominal torque	[Nm]	1600	1750	1900	1600/1850	1850	2000	2100	2200
at engine speed	[rpm]	1100	1100	1100	1100	1100	1100	1100	1100

Performance





Clean from start to finish.

Your product benefits for the after-treatment system:

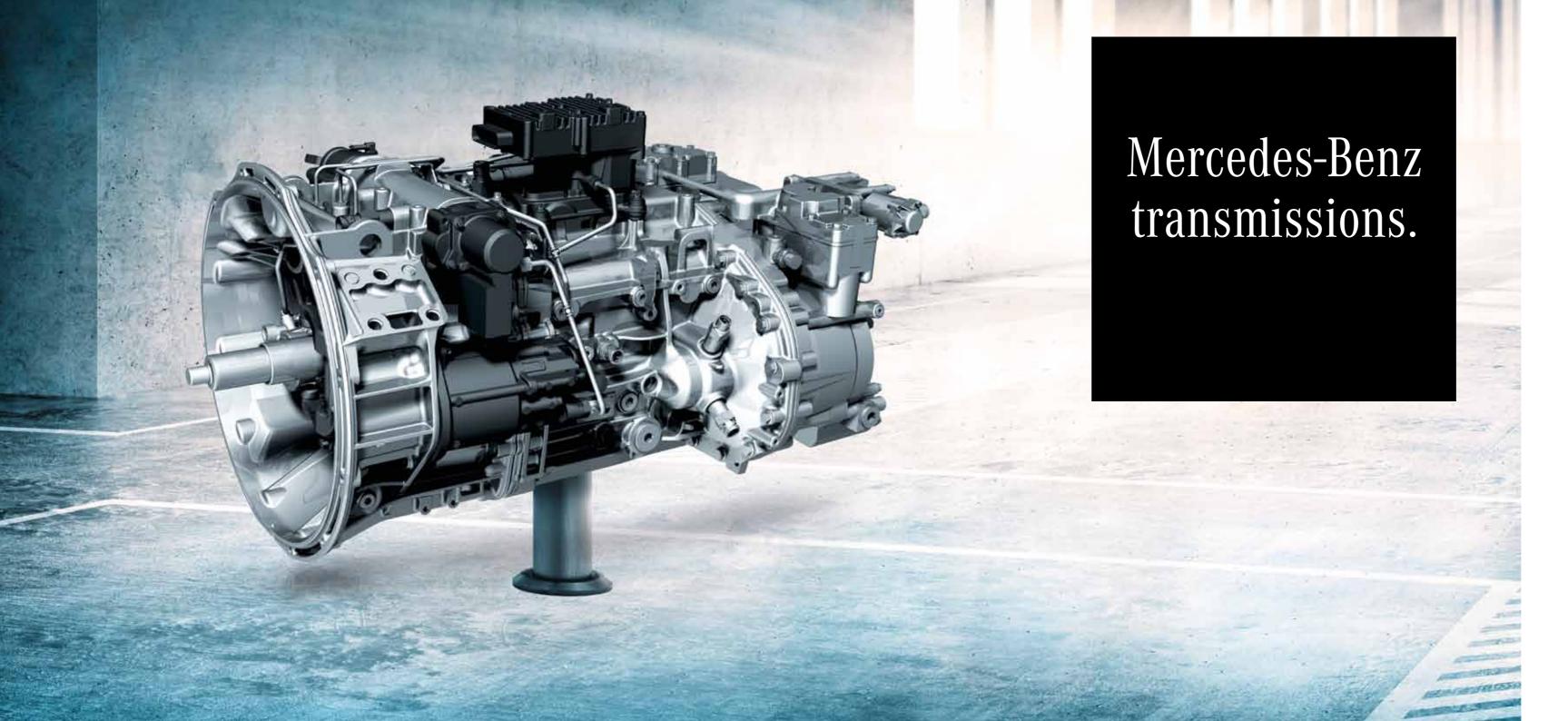
- Low impact on exhaust back pressure
- Significant NOx reduction at a broad range of exhaust gas volume flows and exhaust gas temperatures
- Small installation space and low weight
- Long lifetime, adapted to the engine's lifetime

- Consistent common parts strategy
- Many different variants for exhaust gas inlet and outlet
- Different shapes: cubic or oval geometry

With BlueTec®, Mercedes-Benz's SCR diesel technology, the level of nitrogen oxide is reduced by a catalytic converter and AdBlue® / Diesel Exhaust Fluid (DEF).

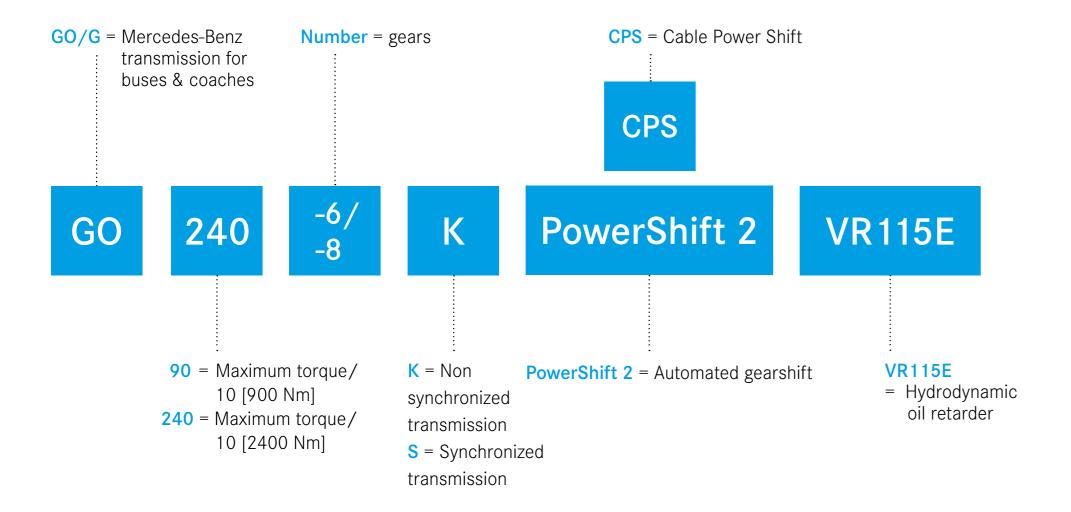
The main advantages of **BlueTec**[®] are **cost-efficient compliance with EURO V and EEV**, low fuel consumption, low particulate matter emissions and low CO₂ emissions.





Reliable transmissions for a wide range of applications.

Derivation "Nomenclature" - transmissions.



Transmissions for EURO III, EURO V and EEV.

Model series	Туре	Ratio	Forward gears	Max. input torque	[Nm]		
Buses	G 90-6S	6.70-0.73/9.20	6	10	000		
	GO 230-6 CPS	6.53 - 0.72/9.03	6				2300
	GO 240-8 PowerShift 2	6.57-0.62/10.38	8				2400
	,			00 10	000 1	500 20	000 250



Meaning of symbols:

Manual shifted transmission



Transmission for buses and coaches

Fully automated manual transmission

Mercedes-Benz transmissions | Portfolio



Our transmission product portfolio: Smooth operation in every situation.

Our range of service extends from 6-speed manual shifted to 8-speed automated shifted and manual transmissions for buses and coaches. All transmissions are manufactured on a large scale by Mercedes-Benz buses and coaches and are engineered to meet the highest standards of technology and quality.

Meeting the demands of our customers is the focus of our work. We feel committed to advancing the design of our systems in a consistent and innovative way in-line with market and customer requirements.

Our know-how is based on decades of experience in the manufacturing and development of bus and coach transmissions. This manufacturing expertise distinguishes our transmissions today particularly by three features:

- Very smooth running characteristics
- Low weight
- Extreme durability

In future, we will continue to stand for innovative products focused on customer-oriented applications.



Redefining efficiency.

Your product benefits for bus transmissions made by Mercedes-Benz:

- Manual 6-speed transmissions and automated 8-speed transmission
- Resilient from 900 Nm to 2400 Nm max. input torque
- **Gear ratio** spread from 9.03 to 10.38

- Permissible max. gross combination weight (GCW) from 20 t to 28.5 t
- · Integrated **hydrodynamic retarder** available
- Quiet running characteristics and long service life through optimized gear set geometry and high-precision processing technologies

G 90-6S



- 6-speed synchronized transmission with a wide gear ratio spread
- SAE 2 or SAE 3 clutch housing available
- Overdrive configuration
- Hydrodynamic retarder can be adapted



GO 230-6 CPS

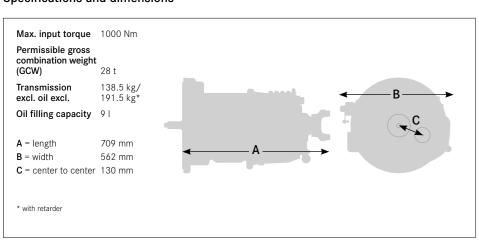




- 6 progressively stepped gears
- Overdrive version
- · Mechanical 2-cable shifting system, pneumatic supported (PSH)
- Hydrodynamic retarder can be adapted

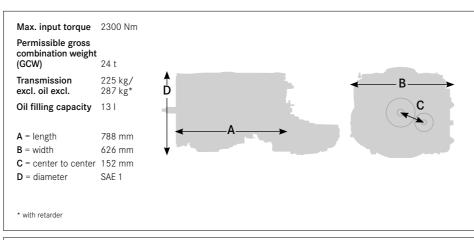


Specifications and dimensions



Gear	1	2	3	4	5	6	R	Gear ratio spread
Ratio	6.696	3.806	2.289	1.480	1.000	0.728	6.294	9.20

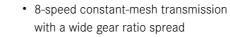
Specifications and dimensions



Gear	1	2	3	4	5	6	R	Gear ratio spread
Ratio (E-Version)	6.528	3.711	2.238	1.443	1.000	0.723	6.136	9.03

GO 240-8 PowerShift 2

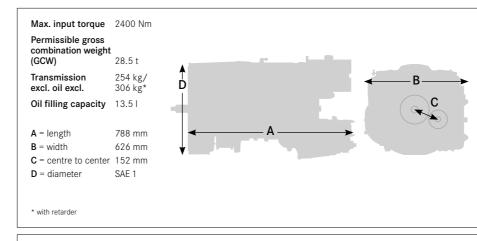




- Double overdrive
- · Hydrodynamic retarder is adapted



Specifications and dimensions



Gear	1	2	3	4	5	6	7	8	R 1	R 2	Gear ratio spread
Ratio	6.571	4.158	2.748	1.739	1.259	1.000	0.797	0.633	6.176	3.909	10.38



The **integrated hydrodynamic oil retarder** offers a high braking torque in combination with a compact, weight-saving design. The braking power of the retarder is also independent of selected gear or current engine speed.

A gear change does not result in any interruption in the retarder braking action and the retarder braking power depends only on the current driving speed. The braking power can be controlled precisely in five stages using the right-hand control stalk on the steering column. In addition to the engine brake, the retarder provides a **maximum braking torque up to 3500 Nm (VR 115 E).**

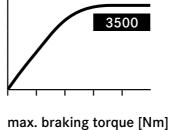


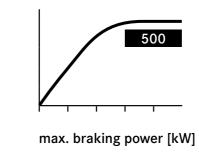
VR 115 E Hydrodynamic retarder

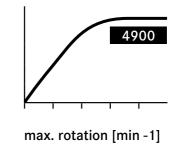
Your product benefits:

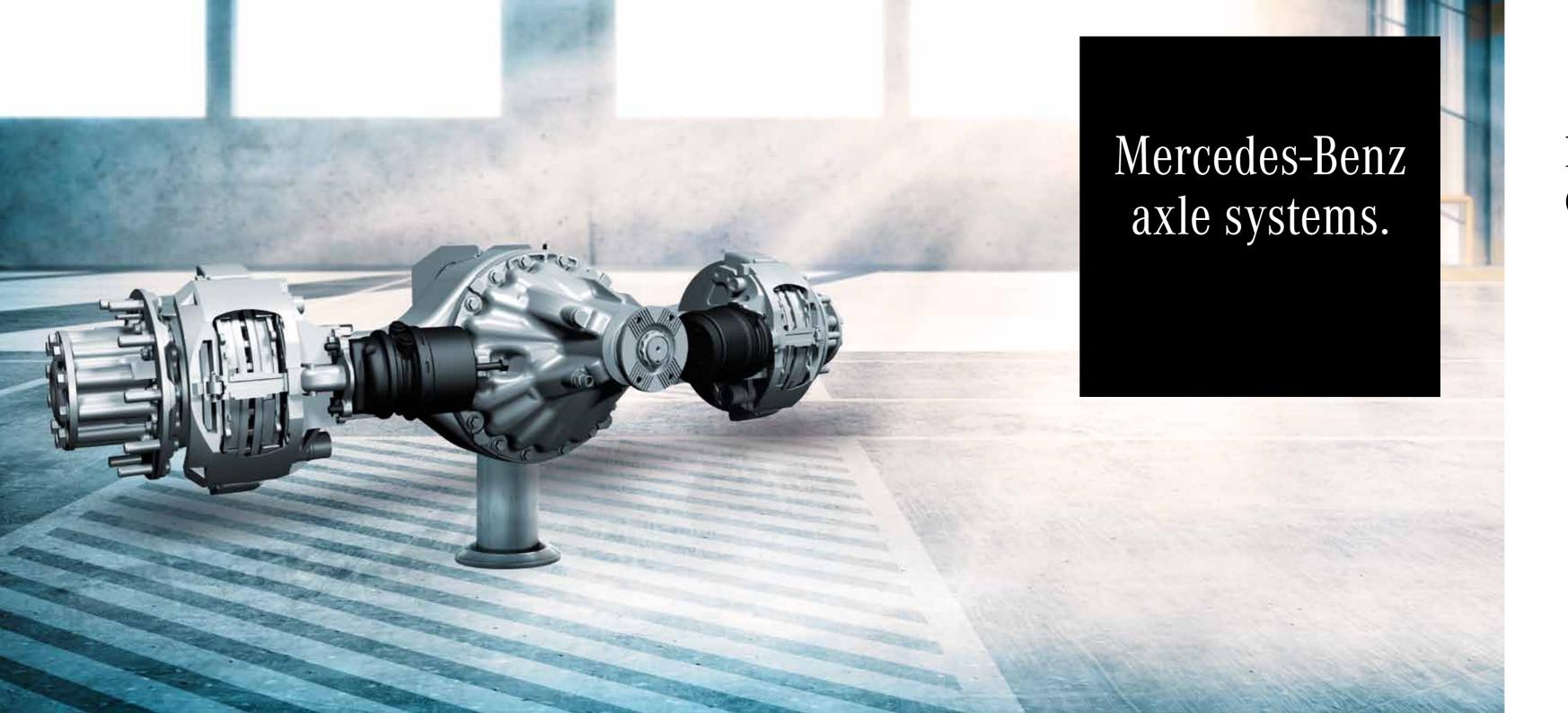
- Stainless steel heat exchanger
- Reduction of friction by axial rotor displacement
- · Optimized hydrodynamics
- · Integration into the vehicle management
- Same prop shaft length with and without retarder











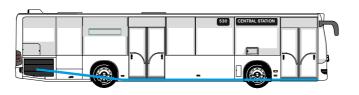
Reliable axles for every application.

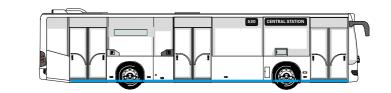
Vehicle classification for buses.

Low floor Chassis







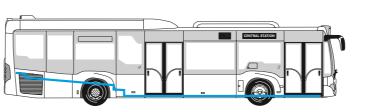


City buses (and intercity buses)

Low entry Chassis



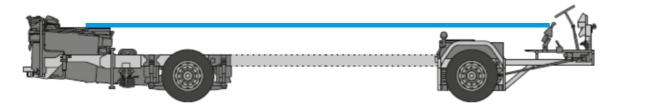


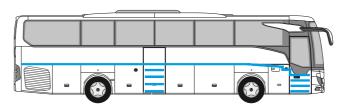


City and intercity buses

High floor Chassis



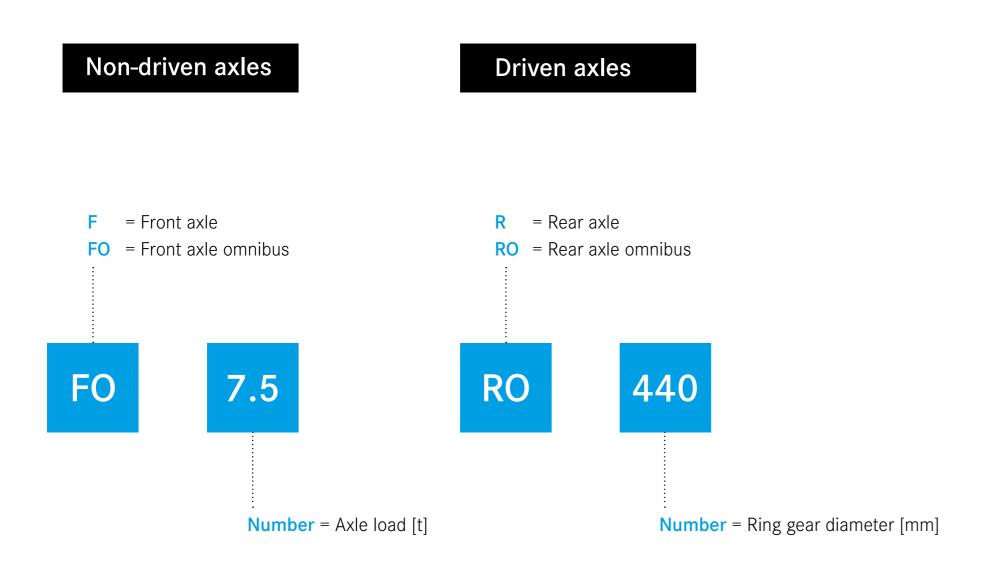




Coaches, intercity and transfer buses

36

Derivation "Nomenclature" - axles.



The right axle for every application.

Axle portfolio: front axles* and rear axles.

	Vehicle category	Front axles*	Wheel-end size [inches]	Axle load [t]				Rear axles	Wheel-end size [inches]	Axle load [t]		
-	Minibus (7 m)	F 4.1 – F 4.4	17.5	to 4.	4			R/RO 325	17.5		6-8.3	
1	Midibus (8 – 10 m)	F 5.3 - F 6.1	19.5/20/22.5		5.3-6.1			R 390*	19.5/20/22,5		9.2-	11
	City bus/coach (12 m)	FO 7.5	22.5			7.5						
		F 7.5 - F 8	20/22.5			7.5-8		R 440	22.5			11.5-13
		F9-F9.5	20/22.5/24				9-9.5	RO 440	22.5			11.5-13
				4	1 6	5 8	3				5	0

^{*} only applicable with front engine configuration

For further applications see truck axle portfolio

Meaning of symbols:

Front axles



Rear axles

Axles for minibuses



Low floor Chassis

Axles for midibuses



Low entry Chassis



High floor Chassis

Axles for city buses & coaches





Our axle product portfolio: Efficiency on demand.

Our product range consists of various axle systems which are highly suitable for nearly all bus categories from minibuses through to coaches, in urban areas or overland.

We use our customers' experience, their requirements and demands as an essential precondition for the development of new axle technologies.

Our innovative state-of-the-art engineering and our quality-driven plants in Germany give our axles outstanding performance in:

- Durability
- · Fuel efficiency
- Quiet operation

Top vehicle manufacturers around the world trust on the outstanding quality and performance of our axles and the reliability of our services. We are one of the world's biggest producers of commercial axles and we want to share our experience and technology with you.

Convince yourself and discover the advantages of Mercedes-Benz axles.



Reliability at high level.

Your product benefits for front axles:

- · Wheel-end sizes from 17.5 to 22.5 inches
- Axle loads from 4.1 to 9 t (per axle)
- Gross vehicle weight rating (GVWR) from 6.5 to 26 t
- Longer lifetime and easy maintenace

- Additional payload due to weight-optimized design
- · Left or right handed applications possible
- · Maintenance-free wheel hub

F 4.1-F 4.4

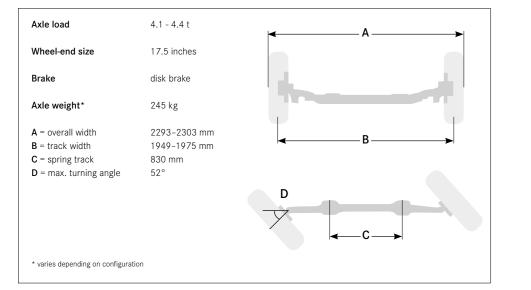






- Steered rigid axle with forged front axle beam
- Recommended for minibuses

Data and dimensions



F 5.3-F 6.1



- Steered rigid axle with forged front axle beam
- Recommended for midibuses

Data and dimensions

Wheel-end size 19.5 inches Brake disk brake Axle weight* 357 kg A = overall width 2346-2389 mm	
Axle weight* 357 kg	
A = overall width 2346–2389 mm	
B = track width 1955-1991 mm	—В——
C = spring track 830 mm	
D = max. turning angle 52°	
D	

FO 7.5











- Steered rigid axle with forged front axle beam
- Low-floor option owing to a large drop
- Recommended for city buses and coaches

Data and dimensions

Axle load	7.5 t	◄ — A — — →
Wheel-end size	22.5 inches	
Brake	disk brake	
Axle weight*	430 kg	
A = overall width	2495 mm	
B = track width	2101 mm	 ← B →
C = spring track	1094 mm	
D = max. turning angle	55°	
		D
* varies depending on configurat	ion	



F 7.5-F 8



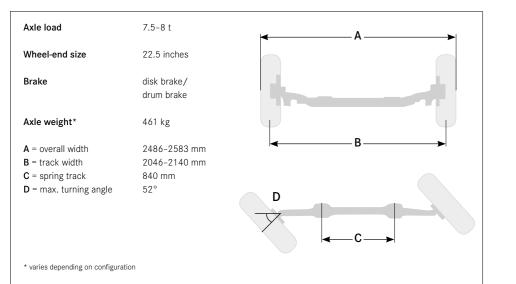






- Steered rigid axle with forged front axle beam
- Recommended for city buses and coaches

Data and dimensions



F 9-F 9.5

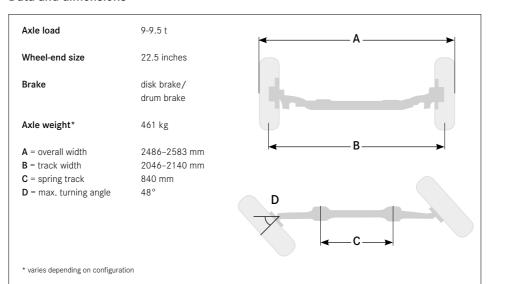






- Steered rigid axle with forged front axle beam
- Recommended for city buses and coaches

Data and dimensions







Comfort and safety in every situation.

Your product benefits for rear axles:

- · Wheel-end sizes from 17.5 to 22.5 inches
- · **Hypoid** driven
- Ring gear diameter from 325 to 440 mm
- · Axle loads from 6.2 to 13 t (per axle)
- Gross vehicle weight rating (GVWR) from 6.5 to 26 t
- Long lifetime and quite operations due to our optimized gear set design

- · High fuel efficiency
- Easy maintenance and long oil change intervals
- · Additional payload due to weight optimized design
- Adaption to the transport task through numerous ratio variants
- · Maintenance-free wheel hub
- · Applicable for **front and rear engine** configuration

R/RO 325



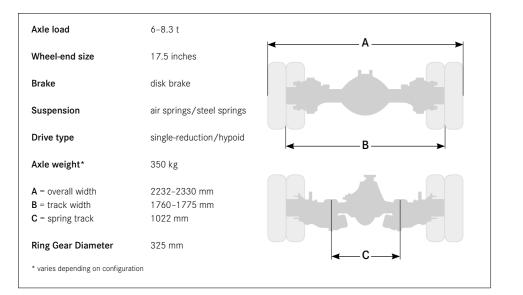






- Fabricated axle housing
- Recommended for minibuses

Data and dimensions



R 390*



- Fabricated axle housing
- Recommended for for medium-duty application

Data and dimensions

Axle load	11 t	•
Wheel-end size	19.5 inches	A
Drake	disk brake	20, 60, 400
Suspension	air springs/steel springs	
Drive type	single-reduction/hypoid	В
Axle weight**	350 kg	
A = overall width B = track width	2232–2330 mm 1760–1775 mm	
C = spring track	1022 mm	
Ring Gear Diameter	325 mm	← C→
* only applicable with front engir ** varies depending on configura		

R/RO 440











- Fabricated axle housing
- Recommended for category city buses and coaches

Data and dimensions

Axle load	11.5-13 t	Δ
Wheel-end size	22.5 inches	
Drake	disk brake	
Suspension	air springs	
Drive type	single-reduction/hypoid	→ B →
Axle weight*	683 kg	
A = overall width	2419-2482 mm	
B = track width	1802-1804 mm	
C = spring track	930/940 mm	
Ring Gear Diameter	440 mm	





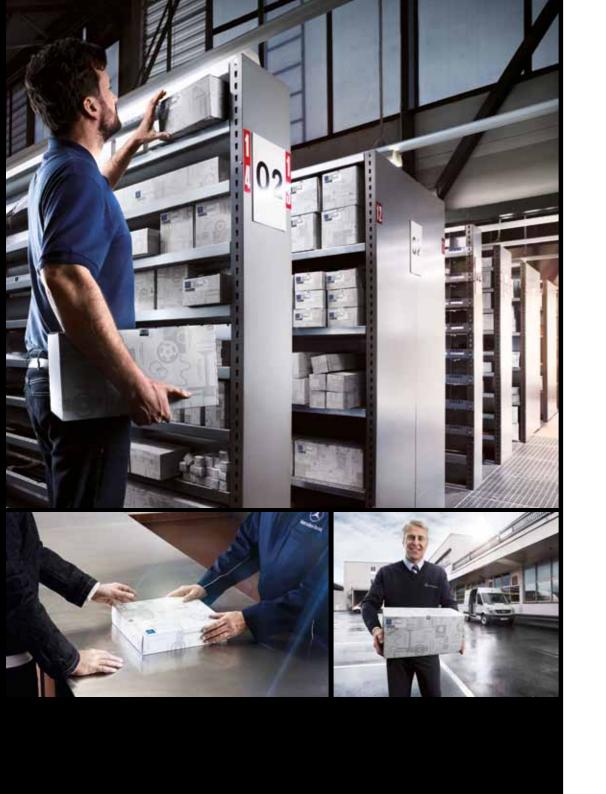


Our Global Mercedes-Benz Service Network.

Optimizing customer support while minimizing downtimes of your truck and bus is highly relevant for us. Enjoy the advantages of our network with more than 2400 authorized Mercedes-Benz Truck Service Centers worldwide.



Your next Service Center:
Dealer Locator Online



Spare parts supply.

We will ensure spare parts availability for many years after your initial investment. Your vehicle only can deliver top performance if it's kept in shape at all times. It is only the use of high-quality GenuineParts that ensures that the explicit and implied warranty is maintained.

For our price sensitive customers we also offer a large portfolio of Genuine Remanufactured Parts - for saving costs but on the same quality level.

More than products.

Our perfectly matched powertrain delivers you the best possible performance and fuel savings, while maintaining low overall operating costs. The perfect combination of engine systems, transmissions and axles yields in the greatest possible efficiency and the best quality made by Mercedes-Benz Powertrain.

We tailor Mercedes-Benz Powertrain component configurations to the needs of our customers for sales in the on-highway segment.

If you have technical questions, would like additional information or wish to request installation drawings, please do not hesitate to contact our sales team:

Sales External Customers
Daimler Truck AG
001-E206
70546 Stuttgart/Germany

aggregate-info@daimler.com www.mercedes-benz.com/powertrain



Index.

ENGINES					TRUCK	BUSES
Туре	Cylinder	Displacement [litres]	Power [kW]	Torque [Nm]		
OM 924	L4	4.8	115. 130. 160	610. 675. 810	x	x
OM 926	L6	7.2	175. 188. 210. 240	850. 970. 1120. 1300	X	X
OM 457	L6	12.0	260. 265. 295. 310². 315. 335²	1600². 1750². 1850. 1900². 2000. 2100. 2200²	х	Х
OM 460	L6	12.8	335. 375	2300. 2400	X	

			~	
-2ΔΓ	$u \le w$	IISSI	α	

Туре	Ratio	Forward gears	Max. input torque [Nm]		
G 90 - 6S	6.70 - 0.73/9.20	6	1000		X
G 141-9S	9.75 - 1.00/14.57	8	1400	X	
G 260 - 16S	11.72 - 0.69/17.11	16	2600	X	
G 211-12 PowerShift 2	14.93 - 1.00/14.93	12	2100	X	
G 281-12 PowerShift 2	14.93-1.00/14.93	12	2800	X	
G 330 -12 PowerShift 2	11.64 - 0.78/14.93	12	3300	X	
GO 230 - 6 CPS	6.53 - 0.72/9.03	6	2300		X
GO 240 - 8 PowerShift 2	6.57 - 0.63/10.38	8	2400		Х

TRUCK BUSES

RETARDER	TRUCK	BUSES
Hydrodynamic retarder	X	<u>x</u>

AXLES			TRUCK	BUSES
Type [front axles]	Wheel-end size [inches]	Axle load [t]		
F 4.1- F 4.4	17.5	4.1 - 4.4	x	X
F 5.3 - F 6.1	19.5	5.3 – 6.1	x	X
FD 346 - FD 360	19.5	4.7 - 6	x	
FO 7.5	22.5	7.5		X
F 7.5 – F 8	22.5	7.5 – 8	X	X
F9-F9.5	22.5	9-9.5	X	X
FD 233 P	22.5	7.5 – 9	X	
FD 233 P + FT 233 P	22.5	18	X	
			TRUCK	BUSES
Type [rear axles]	Wheel-end size [inches]	Axle load [t]		

			TRUCK	BUSES
Type [rear axles]	Wheel-end size [inches]	Axle load [t]		
R 325	17.5	6.2 - 8.3	X	X
R 390	19.5	11	X	Χ
R 440	22.5	13	X	X
R 485	22.5	13	X	
R 233 P – R 300 P	22.5	26.8 - 32	X	
RT 233 P + R 233 P - RT 300 P + R 300 P	22.5	26 – 32	X	
RT 390 + RT 390 T	22.5	20.5	X	
RT 440 + R 440	22.5	26	X	

¹ Output level only available for trucks. ² Output level only available for buses.

