



Mercedes-Benz

## Unimog – Medium-duty series

Unimog U 1400 – U 1650



# Logical design, trend-setting engineering







Capabilities that go beyond the strenuous requirements of everyday operation and maximum day-to-day reliability – these have always been key ingredients of the Unimog concept. A concept which undergoes constant rigorous development and offers the ideal solution for all fields of application.

**1. Up to four implement mounting areas** at the front, rear and in the centre, with mounting points. Simple mounting and removal of implements.

**2. Implement drive facilities.** Three independently acting drive systems: power take-offs, special drives and a hydraulic system.

**3. All-wheel drive and differential locks with 100% locking effect on both axles.**

Four equal-size, equal-width wheels.

**4. Mercedes-Benz diesel engines.** Fuel-saving, pollutant-reduced, low-noise, designed to comply with future environmental requirements (EURO 2).

**5. Equal strength portal axles front and rear.** For high axle loads, extremely high ground clearance and a low centre of gravity.

**6. Finely graduated synchromesh gearbox.** For speeds from 100 metres to 80 kilometres per hour. All gears can be driven in reverse.

**7. Compact design.** For implement operation, turning and manoeuvring in cramped conditions. Small turning circle.

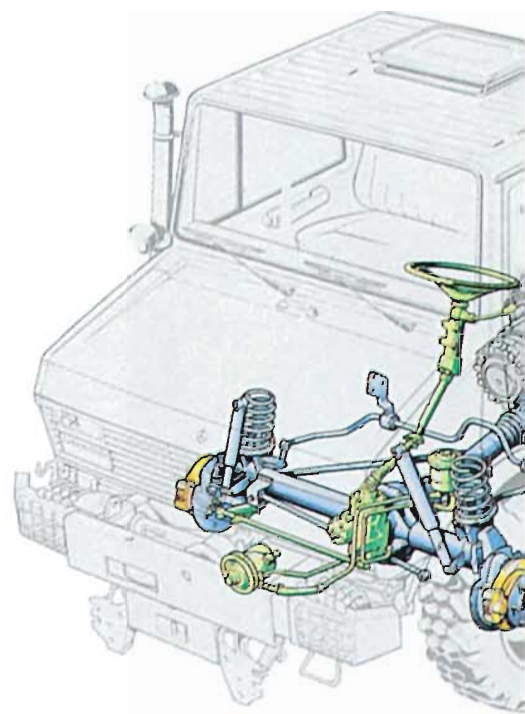
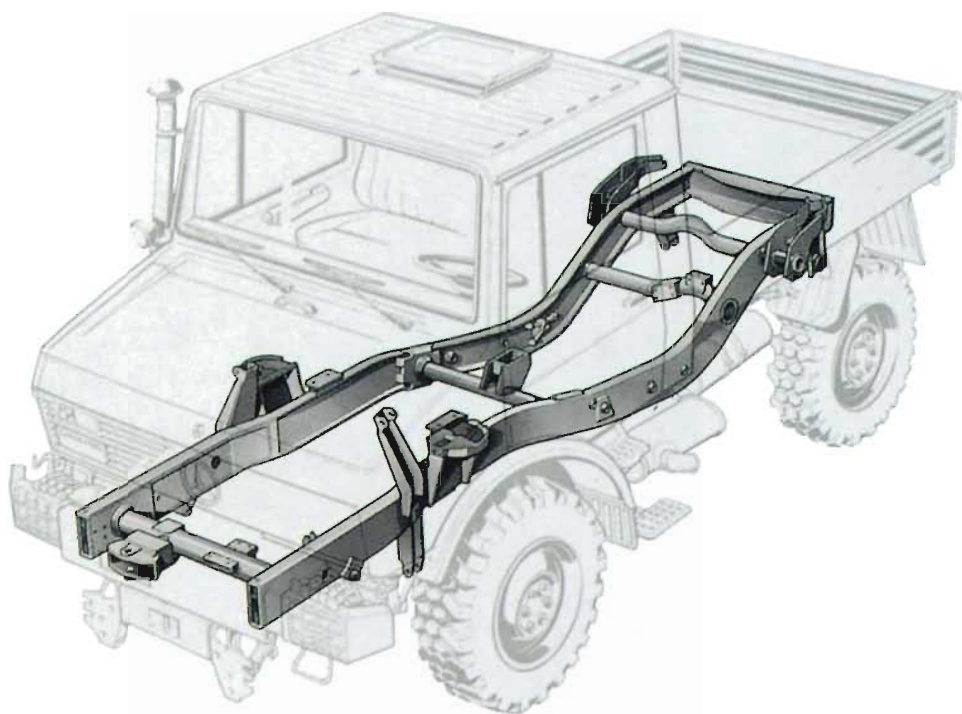
**8. Extreme cross-country mobility** with or without bodies thanks to all-wheel drive with differential locks, portal axles and co-ordinated chassis and body design.

**9. High operating safety and traffic safety** for driver and co-driver with dual-circuit brake system, disc brakes on all four wheels and trailer brake. Optional anti-lock braking system.

**10. 3-point-mounted safety cab** with outstanding comfort on and off the road. The driver remains fit and alert due to the comfortable hydraulically cushioned seat, conveniently located controls and clearly arranged instruments. Optional bench seat for co-driver.

**11. High overall economy** as a versatile, self-propelled working machine designed for optimal capacity utilisation and offering exemplary service and a high resale value.

# A strong chassis for demanding requirements



## A robust frame – the backbone of the Unimog.

Thanks to ingenious design, the frame can cope with the heaviest loads. Tubular cross-members welded into two U-section side members ensure the necessary stiffness on the road and outstanding torsional flexibility off the road. The Unimog takes even extreme diagonal torsional stresses in its stride.

## Fixed mounting points on frame.

Whether heavy implements are mounted at the front, at the rear or in the centre, the location of the mounting points ensures that torsional flexibility is not impaired. The pushing or pulling forces are directed into the frame. For heavy loads, frame and axle reinforcements precisely integrated into the design are available. Implements

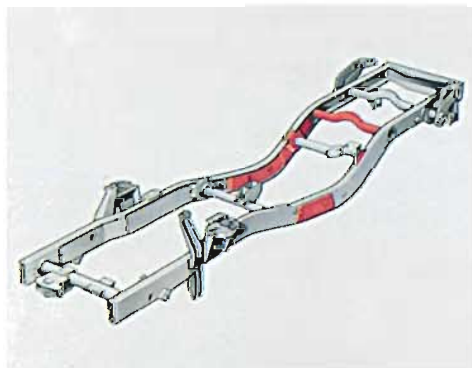
can be mounted safely and simply. In static condition, 60% of the vehicle weight is borne by the front axle and 40% by the rear axle.

## 3-point mounting caters for extreme stresses.

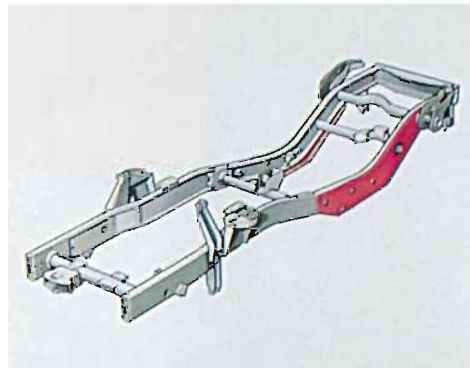
Assemblies, the cab and the platform are all mounted at three points, which means that minimal forces are transmitted even under extreme torsional stress. This is an excellent basis not only for cross-country mobility but also for long vehicle life.

## Axles of equal strength, for high loads.

The axles front and rear are of portal design, that is to say the axles are situated over the centre of the wheels. This gives a very high ground clearance with a low centre of gravity. Obstacles as high as 500 mm can be driven over without risk. Torque tubes connect the axles to the transfer case, protecting the drive shafts from damage off the road, from fouling and from corrosion. Pushing and pulling forces are transmitted directly into the frame. The Unimog's portal axles are of equal strength, which gives a high carrying capacity and allows heavy implements to be mounted both front and rear. The maximum front axle load of the U 1400 for example is 4900 kg, the rear axle load 5500 kg, while for the U 1650 the figures are 6000 kg and 6500 kg respectively.



Extended and reinforced frame for 3250 mm wheelbase

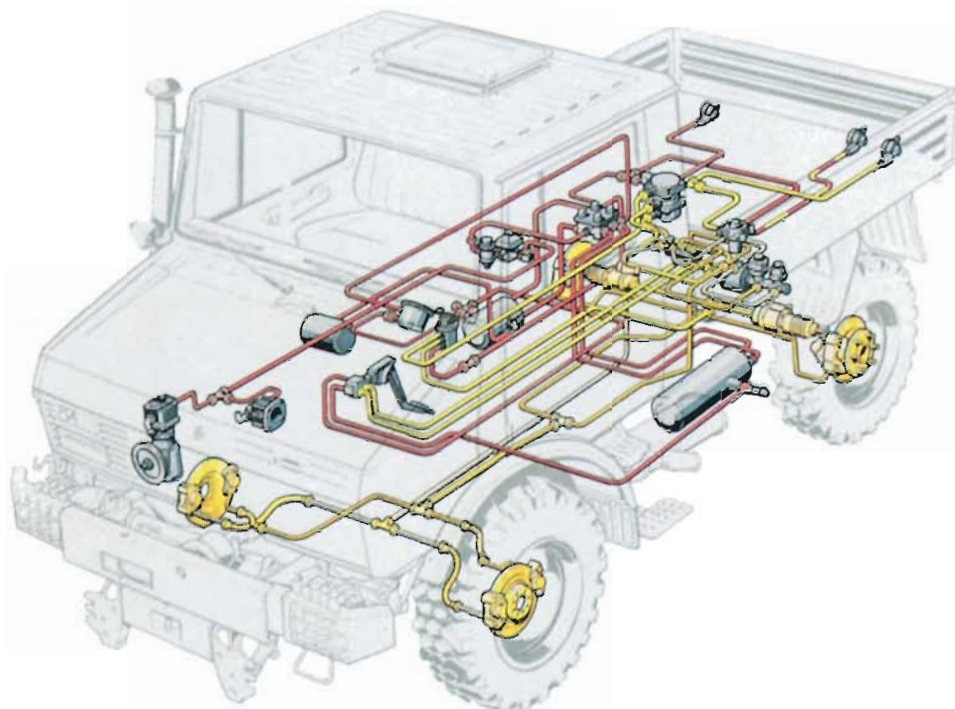
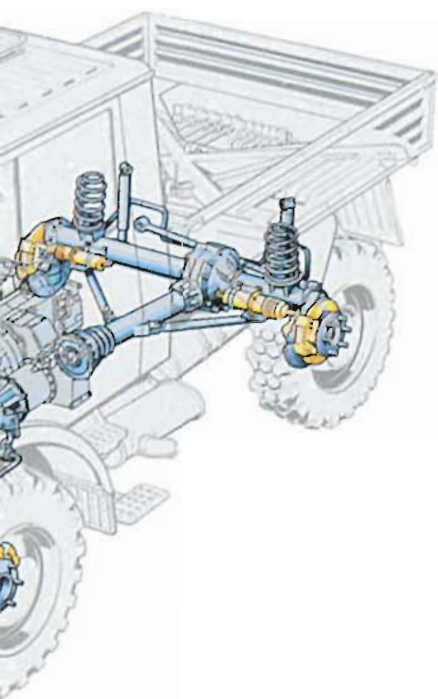


Reinforced frame with a wheelbase of 2650 mm for Unimog U 1600



Implement mounting plate for easily attaching and removing front-mounted equipment

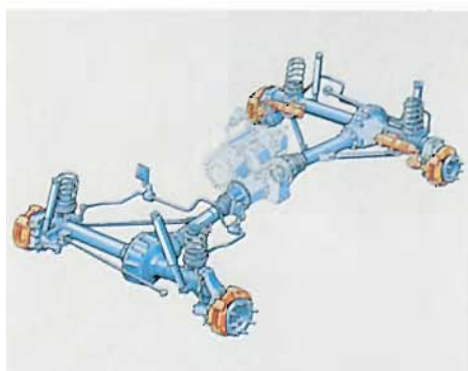




**Coil springs with telescopic shock-absorbers** front and rear, all-wheel drive, the differential locks with 100% locking effect and the torsionally flexible frame all contribute to extreme cross-country mobility. They also offer outstanding comfort at maximum speeds of around 80 km/h.

**Reinforced axles for even heavier loads.**

The Unimogs U 1600 and 1650 have the highest load ratings. This is possible due to reinforced axle housings and axle tubes plus stronger springs, shock absorbers and stabilisers, 8-hole wheels, larger brake calipers and a reinforced steering assembly.



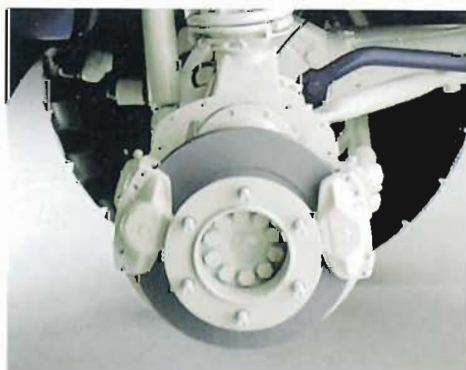
Reinforced axles for Unimogs U 1600 and U 1650

**Easy steering under difficult conditions.**

Thanks to light and accurate power steering, steering the Unimog is child's play, even with very heavy front-mounted implements. The turning circle is very small and manoeuvring to the nearest centimetre presents no problems. The separate hydraulic fluid circuit with its own reservoir prevents fouling of the steering oil by other oils. The Unimog is optionally available with right-hand drive.

**The right tyres for all applications.**

A wide range of tyres ensures optimal traction for on or off-road operation or for different loads.



Large brake discs on all four wheels

**When moving heavy loads quickly you must be able to stop quickly too.**

This poses no problem for the Unimog. With standard air/hydraulic dual-circuit disc brakes a large amount of braking power is applied evenly however much the brakes are used. The large brake discs are cooled by fresh air and so are not liable to overheat, which ensures safety even when the brakes are in use continuously for long periods at a time. The calipers have asbestos-free linings. The pneumatic spring-loaded parking brake, which acts on the rear wheels, is operated with minimal effort by a lever. Additional safety is provided by the optional anti-lock braking system (ABS). ABS prevents the wheels from locking during braking and ensures stable handling and steerability. For cross-country operation, the ABS can be switched off. A further safety feature is the standard automatic load-sensitive braking system for the rear axle, which varies the braking power to suit the load. On long and extreme downhill gradients, the exhaust brake provides additional braking effect and relieves the service brake. For trailers, both a twin-circuit braking system and a combined single and twin-circuit system are available.

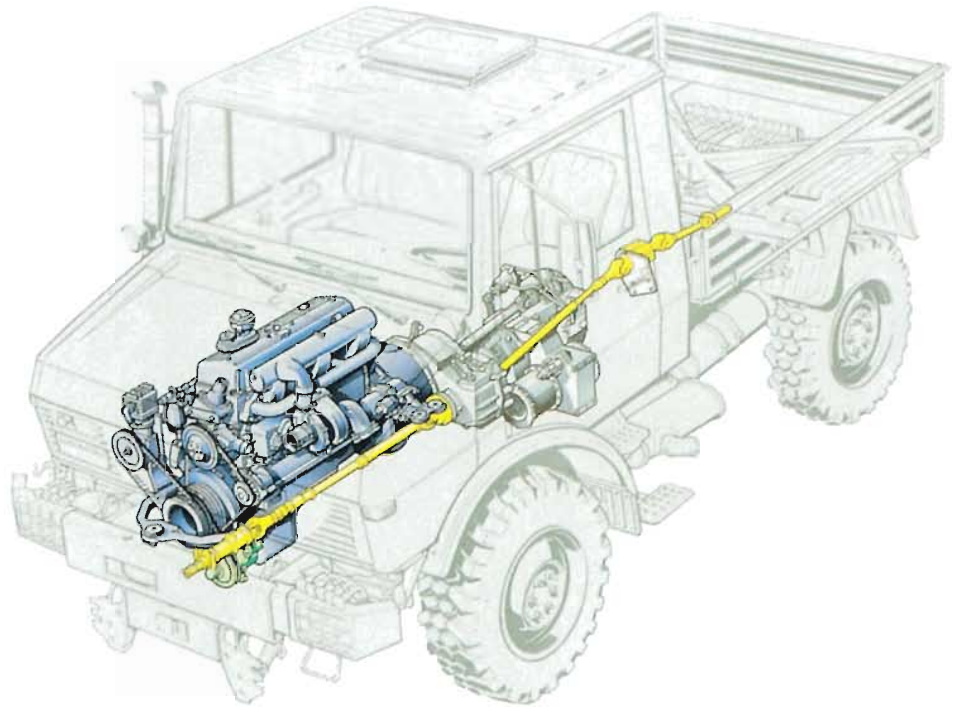
# Major assemblies to cope with all applications

## At the heart of every Unimog is a water-cooled Mercedes-Benz direct injection diesel engine.

The Unimogs in the U 1400 to U 1650 series are fitted with the new OM 366 A and 366 LA engines, with a power spectrum from 100 to 157 kW (136 – 214 hp) and a torque curve suitable for all types of application. Engines which are as remarkable for their long life and economy as for their clean operation.



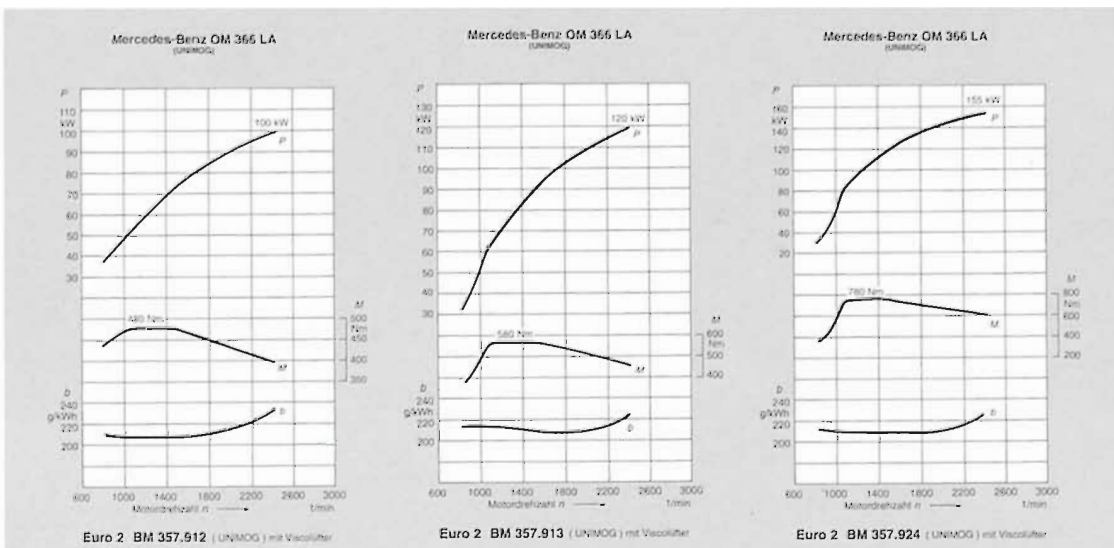
Lots of power from the turbocharged OM 366 A.



Thanks to the optimal power and torque characteristics, fuel consumption has been cut by 10%, with a simultaneous improvement in emissions. This is where experience tells, the experience of a manufacturer who has built diesel engines in their millions and plays a leading role in development. Technical improvements to the cooling system and intake and exhaust system result in a substantial drop in noise emission. All in all, these are engines which fulfil the environmental requirements not only of today but of tomorrow as well.

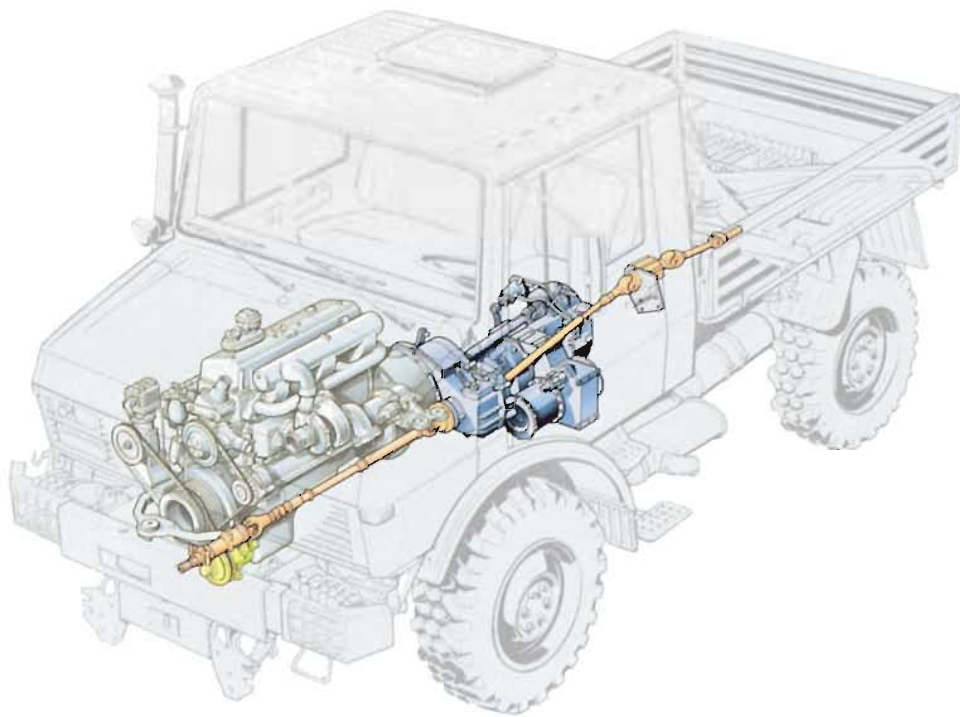
## The right speed for all types of work.

The finely graduated Unimog transmission provides for speeds between 100 m and 80 km per hour. Even at low forward speeds the full engine power can be utilised. On the Unimogs U 1400 to U 1650, the main transmission has 8 speeds. With the additional working group, 16 fully synchronised gears are available, with the crawler group up to 24. All gears can be used in reverse. The double-H shift is precise and, thanks partly to the gear-shift path indicator, easy to operate.



Optimal power and torque characteristics: the OM 366 A and 366 LA engines



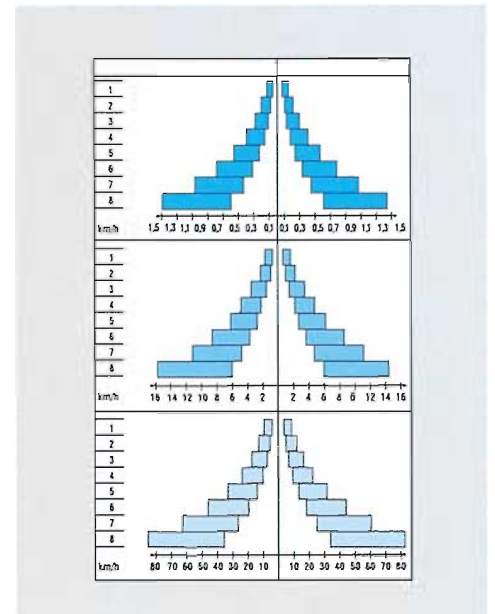


### Mechanical ptos utilise full engine power.

The ptos at the front, rear and centre can be connected to either the engine or the transmission. The front and rear ptos can be engaged individually or both together. A speed of revolution of either 540 or 1000/min can be selected. Fast ptos and special drives for implements with high speeds of revolution are also provided. Thus two mechanical power circuits are available, allowing two implements to be used simultaneously, for example a cable winch from the front pto and a crane from the fast pto.

### Non-wearing torque converter and clutch for heavy trailer loads.

The optional torque converter ensures extra smooth starting under high traction. This advantage makes itself felt particularly in operation as a road-railer vehicle, pulling waggons that may weigh anything up to 600 tonnes.

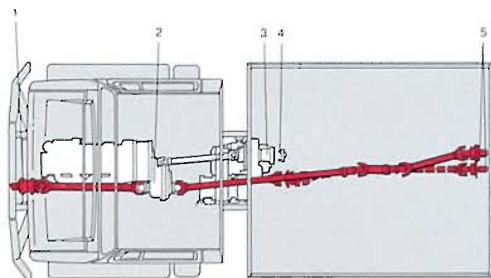


Finely graduated speed range caters for all types of operation

### Hydrostatic driving mode for precisely controlled rate of advance.

The special design of the transmission allows it to be combined with hydrostatic drive, which gives a continuous, finely controlled rate of advance – in the working and crawler gears as well – up to 4th gear. The rate of advance – forward or reverse – can be increased or reduced as required while the engine speed remains constant. Strain on the driver is reduced and clutch wear avoided.

A constant speed increases the quality of work when using implements, for example digging ditches or mowing embankments.



- 1 Front pto
- 2 Special drive for live pto (540/1000 min<sup>-1</sup>)  
Special drive for transmission pto (540/1000 min<sup>-1</sup>)  
Special drive for high-speed live pto (i = 0.745)  
Special drive for high-speed transmission pto (i = 0.745)
- 3 Fast pto (i = 1)
- 4 Very fast pto (i = 0.71 or 0.61)
- 5 Rear pto, can be shifted to the right

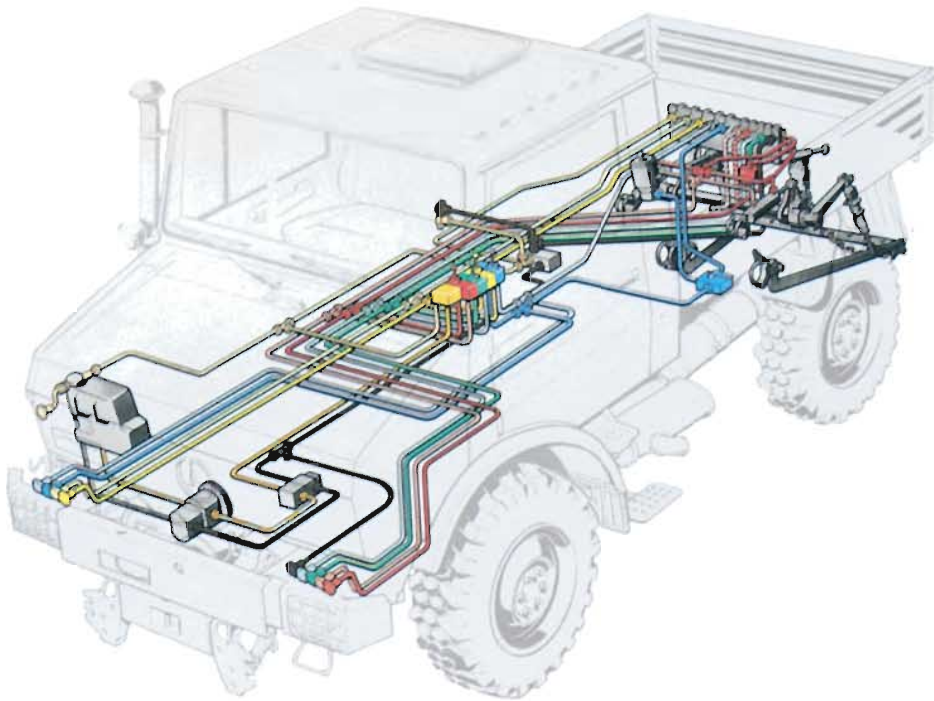


Pto stub shaft, 1 $\frac{3}{8}$ " or 1 $\frac{3}{4}$ ", splined/involute profile



Fast pto for implements with high speed of revolution

# Coping safely with strain



**Integrated single or dual-circuit hydraulic system** for implement operation front and rear. The high-performance working hydraulics meet all practical requirements. The separate oil circuit with its large reservoir has a capacity of 26 litres. With up to four double-acting control valves, 2, 4, 6 or 8 connections are possible front and rear, each with additional separate return line. The following control actions are possible for implements: raising, lowering or floating.

With the dual-circuit working hydraulics, simultaneous hydraulic operation of two implements is possible, the power supply to each being controlled independently: for example an adjustable snow-plough can be used in combination with a hydraulic spreader. The raising, lowering and swivelling of the snow-plough is controlled by the 1st hydraulic circuit while the 2nd circuit drives the worm conveyor and spreader plate.



The platform is tilting on three sides



Up to 8 hydraulic connections each are possible front and rear



3-point rear power lift for heavy implements



# Comfort Hydraulics

## Ergonomic

Use the new Comfort Hydraulics: You can rest your arm comfortably on the adjustable swivel arm in front of the control console.

Use your finger to select the required hydraulic valves and use your hand to operate the joystick, two/four valves and thus control all implement functions with one "lever".

## Simple and safe

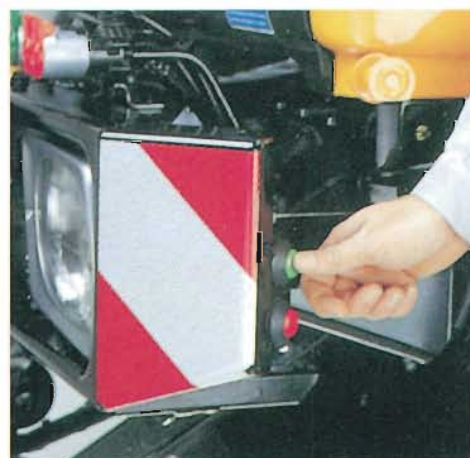
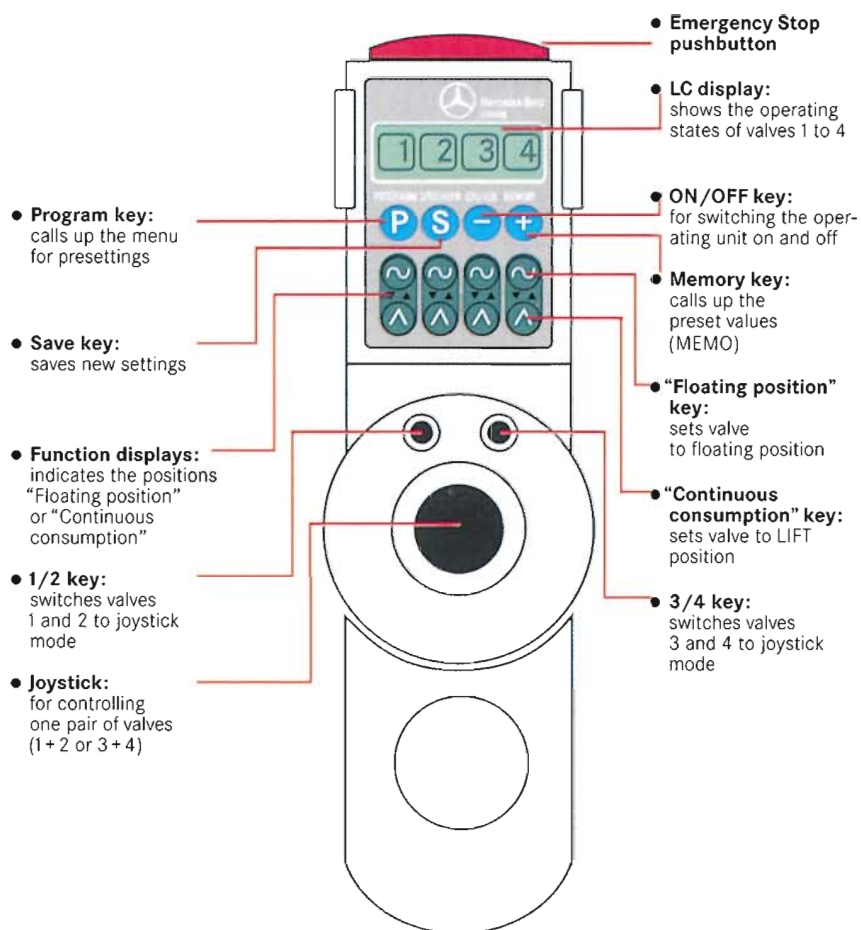
Simultaneous driving and working is made easier: you can steer and at the same time accurately cut the grass on the verge. You can keep an eye on the traffic, for example while clearing snow, and still have a sensitive hand for the snowplough. Of course, the co-driver can also set up the control console for himself and operate it from his seat.

## Two servo functions, adjustable with one hand

It's under your control: one adjustment function by moving the joystick forwards and backwards, the other by moving it to the left and to the right. The simultaneous parallel operation of two implement functions is also possible.

## Programming and storing

Simply by pressing the keys, you can preselect and individually store a wide range of parameters – such as setting the valves for continuous consumers or to the floating position; setting the flow rate or delay in pressure build-up, and defining the reaction of the implement to joystick movements. The system is ideal for universal implement utilisation and for professional use; it permits optimum efficiency and, of course, makes life easier for the operator. Moreover, everything is clearly laid out – a display shows you all of the settings: which two valves are currently active, whether the third valve is currently switched to continuous consumption for the wood chipper, or what settings you saved last winter for the snow clearing combination.



## Inside or out

Even if you have to perform tasks outside the driver's cabin, for example hitching up other units: you can operate a preselected valve externally using the new Comfort Hydraulics – both at the front and at the back, on the driver's side.

# Safety, comfort and healthy working conditions

## **For hard-working drivers, comfortable, ergonomically designed seating is essential.**

That's why the Unimog has three-point cab mounting and a multiply-adjustable, hydraulically cushioned (optionally air-cushioned) seat. The roomy cab provides plenty of space for two co-drivers. Three-point seatbelts can be fitted. As a result of the new steering wheel position, the Unimog offers more legroom, convenient entry and easy through-cab access. The optimised position of the steering column tube and the new steering column lining provide greatly improved protection for the knees in the event of an accident. The efficient heating and ventilation system, equipped with a circulating pump, ensures a pleasant and stable interior climate at all times. Additional air can be supplied by means of a roof vent, the crank-operated side windows and the optionally available sliding windows in the rear of the cab. Air-conditioning and an improved, environment-friendly auxiliary heater are also available.

## **Pneumatic switching for working and crawler gears**

The working or crawler gear groups can be selected effortlessly by simply turning the pneumatic switch located to the right of the driver's seat, directly behind the gearshift.

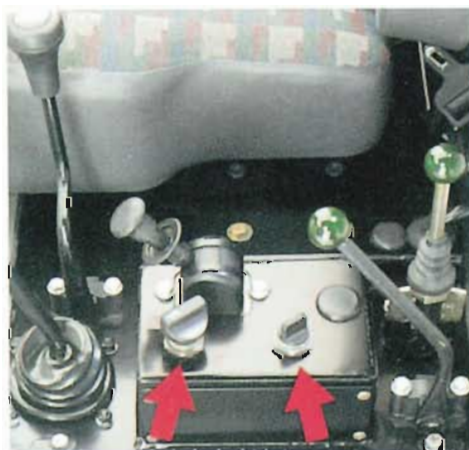
Ideal for working conditions, this proven technology from the Mercedes-Benz Commercial Vehicle Division helps you even in unfavourable situations, when the power-train is under tension. Things couldn't be simpler.

## **Every detail practically conceived.**

The controls are so conveniently located that the driver can use them without transferring his attention from the road or the job in hand. He also has a clear overview of the standardised symbols, illuminated switch clusters and speedometer. The monitoring instruments are situated within close range. Working is further facilitated by the excellent view of the implements.



The friendly cab interior with its easily maintained appointments provides more room for the driver

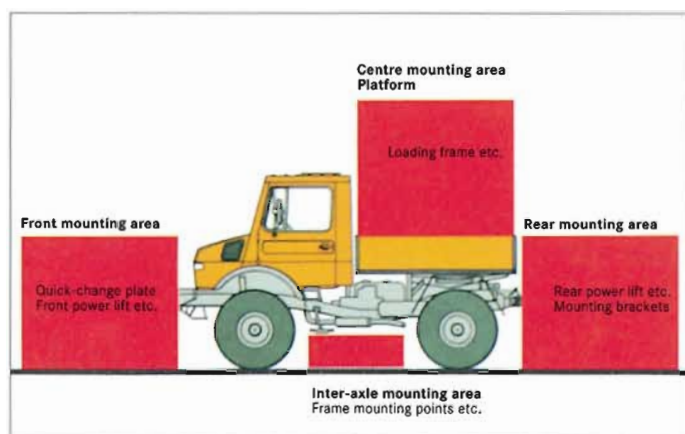


The steering column with redesigned plastic lining for greater safety

The combination switch including 2-stage wiper with intermittent setting, washer system, lights, headlamp flasher and horn



# Economical and versatile in operation



## Up to four implement mounting areas.

A great variety of implement combinations is possible due to four implement mounting areas. For economical all-year-round municipal operation or as a special-purpose machine for the wide range of tasks encountered in industry and the building trade. A unique feature is the inter-axle mounting facility, which is particularly

useful for sweepers. With a quick-change plate, all Category 3 front-mounted implements can be used.

Three systems of implement operation are available: mechanical operation via pto, mechanical operation via fast ptos and hydraulic operation.

## Quick implement change.

Most working implements for the Unimog are available with quick-change systems and can thus be fitted or removed without difficulty. In most cases one person requires only a few minutes to change an implement.



**The Mercedes-Benz range of brochures on Unimogs consists of a number of different modules.**

**Should you need further information before making your decision, please consult your Unimog sales representative.**

Concept brochures

	Technical concept Light Unimog series
	Technical concept Medium-duty Unimog series
	Technical concept Heavy-duty Unimog series
	Concept/application brochure Unimog chassis
	Concept/application brochure Unimog traction heads

Application brochures

	Public services
	Industrial use
	Energy industry
	Construction industry
	Fire fighting

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