

Right up your street



The modern low-floor bus family from MAN



Progress on programme.

Welcome to the MAN family of new low-floor city buses. You will be delighted with our programme for more and less heavily frequented routes. Yet more comfort for passengers. Better ergonomic design and safety for the driver. More reliability and economic efficiency for the operator. But it's best that you see for yourself the many groundbreaking innovations that MAN now offers you. You are about to start out on a tour of one of the finest bus lines – presented on the pages of this brochure. It will take you from the solo bus to the articulated bus and on to the midibus and open out a world of new perspectives. With the developments such as natural gas buses and the diesel-electrical central motor, for example. When you have found a source of inspiration why not take the next step and talk to your MAN partner? He'll be happy to give you further information.





The future is at hand.

A bus that on first sight inspires you and on closer examination fascinates you. The mark of this unmistakable design is the spherical front window that is bonded to fit flush with the front and is also available in a three-part design – and the new headlights. The striking feature of the side surfaces are the continuous, low-reaching expanses of glass without cover strips. And the rear

impresses with the imposing rear lights and the high extended window. The low-floor city bus of the 3rd generation displays external merits and internal qualities that set the standard for MAN's entire low-floor bus family. But above all for state-of-the-art technology and the ultimate in comfort for passengers and driver. So take a ride down the MAN line – towards the future.

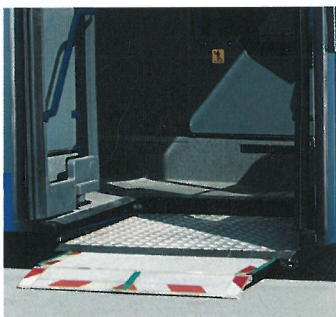


Low-floor bus NL 223/263/313



A dream of space for all passengers.

It has never been so easy and convenient to get on and take a seat. You enter practically at kerb level; there is no step. The floor is level without any platforms right through to the rear seat. The seats are both comfortable and easy-to-care for. And for those who have to stand there are attractively designed handrails and grab handles to help keep passengers on their feet. The deep-drawn windows create a light and friendly atmosphere throughout. You are sure to enjoy riding in this bus.



Just one small step ...

- Entry level at the front 320 mm, at the rear 340 mm (with standard tyres)
- Lateral kneeling as a special extra, lowering of 70 mm
- Well lit entries without steps at all doors
- Wide central aisle without platforms between door 1 and 2
- Two-wing, inward swinging doors flush with body
- Installation of electrical ramp and wheelchair lift possible

... take your seats!

- Comfortable and ergonomically designed bucket seats, optionally attached to the side wall only
- Plenty of legroom
- Curved handrails and grips
- Padded level spaces for prams or wheelchairs, with folding seats as an optional extra
- A large selection of fabrics and colours for seats and floor coverings
- Pleasant interior lighting with fluorescent tubes or, if required halogen lamps
- Rounded seat group possible at the rear
- 1 extra seat since tank is installed in behind the rear axle

Fresh air throughout.

- Roof duct ventilation/heating, manually or electronically controlled
- 3 blower heater units with recirculating air mode
- Electrical roof ventilators
- Several underseat heaters and a front heater for efficient air exchange
- Convector heating and further roof ventilators if required
- Fully automatic, roof-mounted air-conditioner as an optional extra





Bitte nach hinten
durchgehen
←

Ausgang
in der Mitte
←

Notausstieg
Bei Gefahr
Schnelle
entriegeln

Notausstieg
Bei Gefahr
Schnelle
entriegeln



Front-line equipment for the driver.



At first glance an old hand sees that everything has been thought of to make his work easier. The cockpit has been perfected down to the last detail and offers a complete range of innovations for more healthy sitting, more easy operation and better information. It would be best for you to try it out. Just take a seat and look around.

Sitting pretty.

- An ergonomically designed driver's seat with a headrest and a three-point seat belt
- A revolving "super seat" as an extra, with hydraulic damping, automatic weight adjustment, electrical up/down and forwards/backwards adjustment, inclining backrest

An accommodating dashboard.

- The height and inclination of the dashboard can be adjusted along with the steering wheel
- Anti-glare, clearly arranged displays and check lamps
- All instruments and buttons easily accessible

Focus on the "info centre".

- LCD display in the instrument panel
- Information in clear symbols or as text,
- Five screen displays for all information when starting, driving and about passenger movements at stops
- Display only of information required at the moment

Pleasant working atmosphere.

- Optimised ventilation/heating in the driver's area
- Air outlets in the dashboard for positioning as required
- Heat exchanger for fresh air and recirculating air mode under the driver's seat
- Air conditioning of the driver's station as required
- Special evaporator for integration in the air conditioner to cool the driver's area

Interfaces to the electrical system.

- Central board computer in the partition behind the driver
- Newly designed main switchboard in the partition behind the driver, auxiliary switchboard in the ceiling moulding on the rear right-hand side

See the light.

- New fold-out headlights with a higher light yield and long beam
- Rounded corner rear lights
- Four chamber light units incorporating tail lights/rear foglamp
- Heated and electrically adjustable external mirrors, with no blind spot, also permissible for school buses
- Large interior mirrors

The greatest happiness for the greatest number.

Make way, the MAN is coming, is a call that is heard increasingly often at bus stops. After all the design, equipment and technology of the NG 263/313 is right down MAN's line. Everything as in the NL but with more generous dimensions. In other words: just the right choice for the rush hour or for city buses which need an especially large passenger carrying capacity. Up to 150 passengers

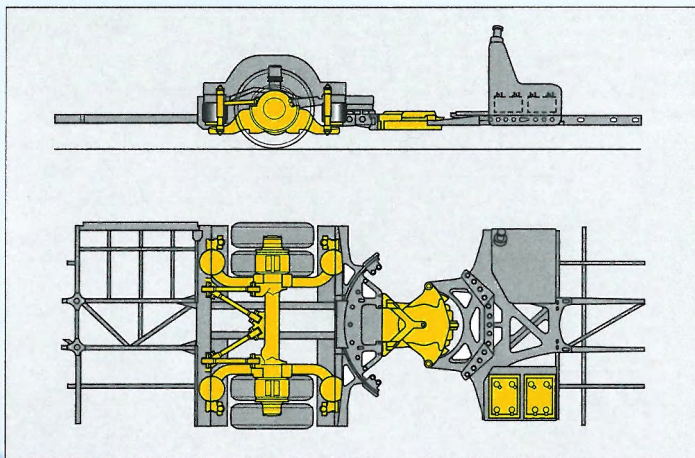
can easily be accommodated in this surprisingly manoeuvrable articulated bus (clearance circle 24 m) with its special innovations. The new features include the particularly low articulated joint and the non-driven central axle that is now also designed as a portal axle and equipped with disk brakes. And last but not least the entries at all the doors of the NG do not have any steps.



The low-floor articulated bus NG 263/313

Designed to a turn by MAN.

The modified MAN-Hemscheidt articulated joint with an integrated anti-jackknife device permits the lowering of the central aisle from 540 mm to 425 mm. This greatly enhances the low-floor properties and passenger friendliness. What is more – it makes it possible for leads to be laid over the centre of the articulated joint on each side between the external and internal concertinas. This provides for greater safety and functionality. The concertina design is also new. If damaged the very flat floor covering made of elastic material can be easily replaced. Inside the vehicle an additional concertina replaces the side guard rails, improving the visual effect and creating a feeling of space.





**The entrance –
a class by itself.**

Even older people can get on the NG with ease. The entries are extremely low and now without steps and at kerb level at all three double-swing doors. This means that passengers can get on and off quickly and without difficulty. There is no crowding or pushing or shoving, but a smooth and safe movement of passengers.

**The passenger compartment –
a whole new dimension.**

In its large-size vehicles MAN attaches particular importance to comfort and functionality coupled with safety and style. In the NG this is brought to a perfected synthesis. The ambience is light and friendly, the materials and colours radiate an attractive atmosphere. Ergonomic bucket seats and generous legroom ensure that passengers are well-seated. And if they have to stand they can keep firmly on their feet. The curved handrails and grips provide passengers with a secure hold even in bends. Prams and wheelchairs, of course, have plenty of room – with special level and padded spaces, with folding seats for companions as an optional extra.





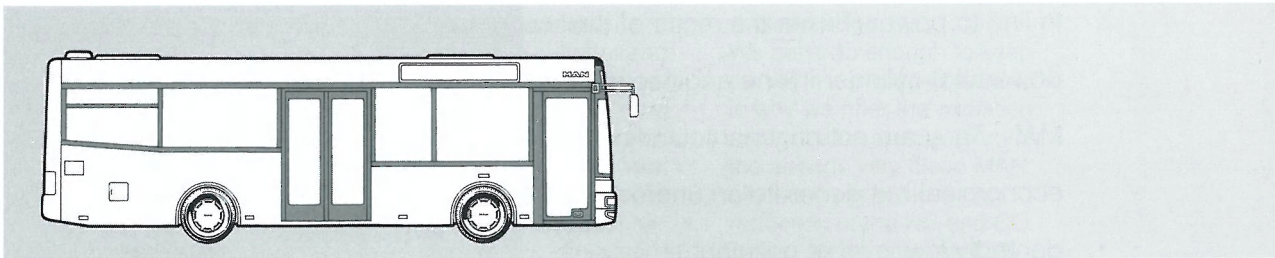
Fit the bill in the compact class. The low-floor midibus NM 223.

The low-floor midibus with a Göppel body is a one-off. With its compact dimensions and a clearance circle of just 16.8 m (wheelbase 4,200 mm) it is predestined for narrow, winding streets. The comfortably appointed passenger compartment offers enough room for

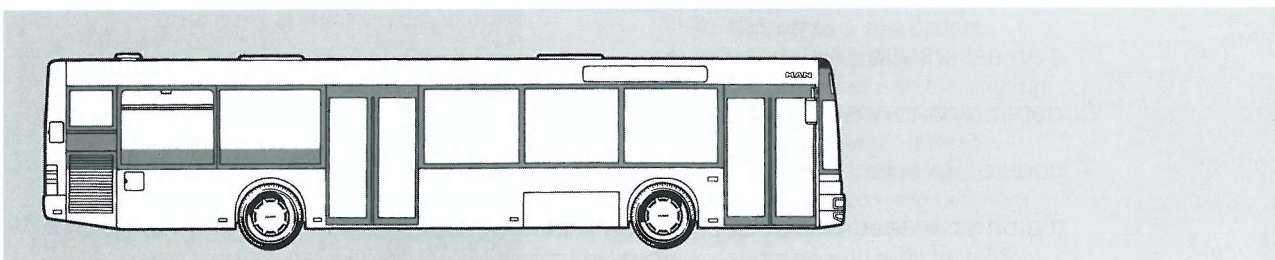
town services with less traffic. And with 162 kW (220 hp) its engine is like big brother's with power and dynamics that set a standard of their own in this class. Rounded off with the advantages of MAN's low-floor technology – so get in gear and off you go!



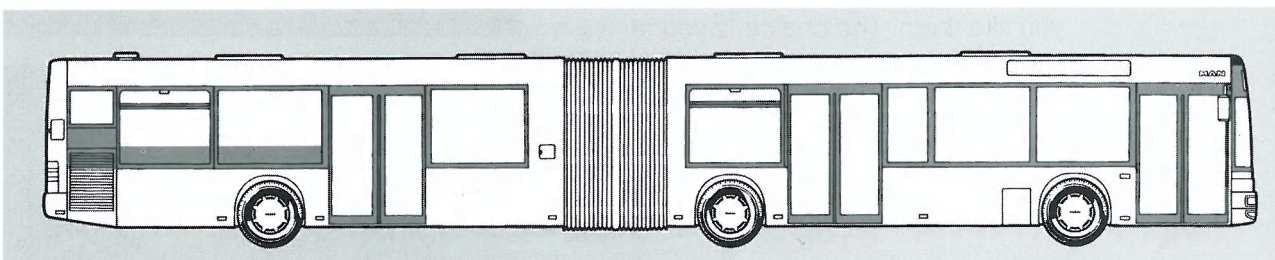
Make your choice to match your needs.



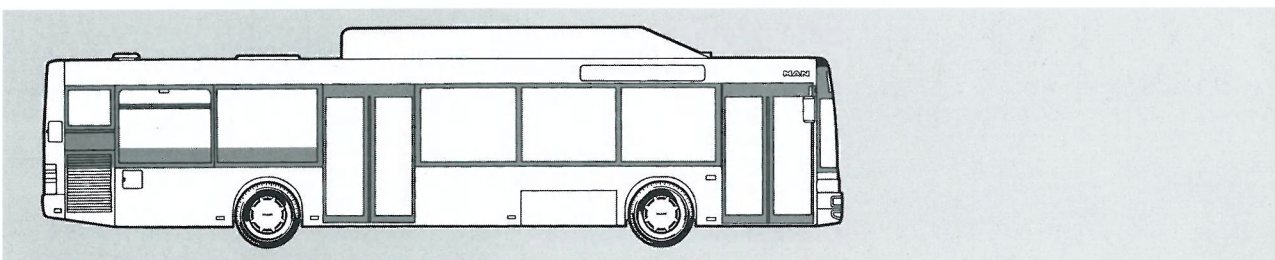
NM 223 Low-floor midibus with Göppel body



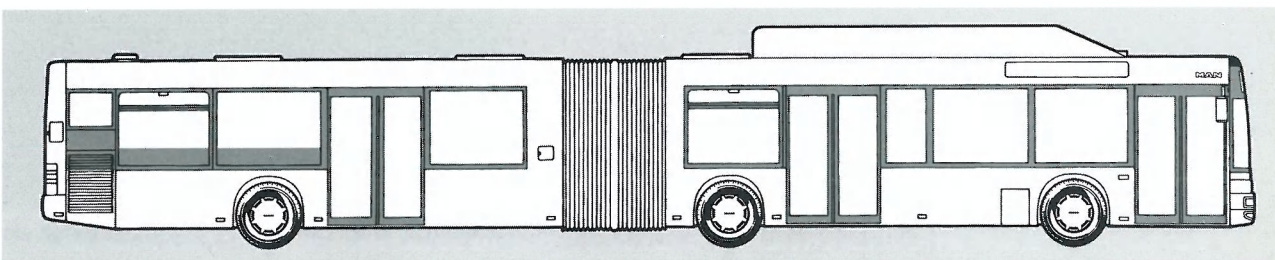
NL 223/263/313 Low-floor city bus, 2-door version



NG 263/313 Low-floor articulated bus, 3-door version



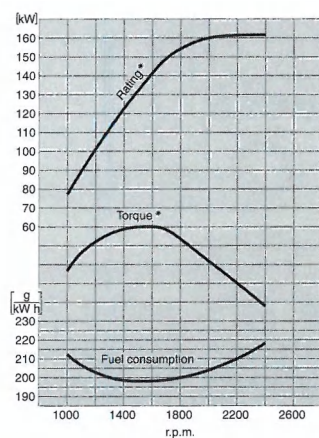
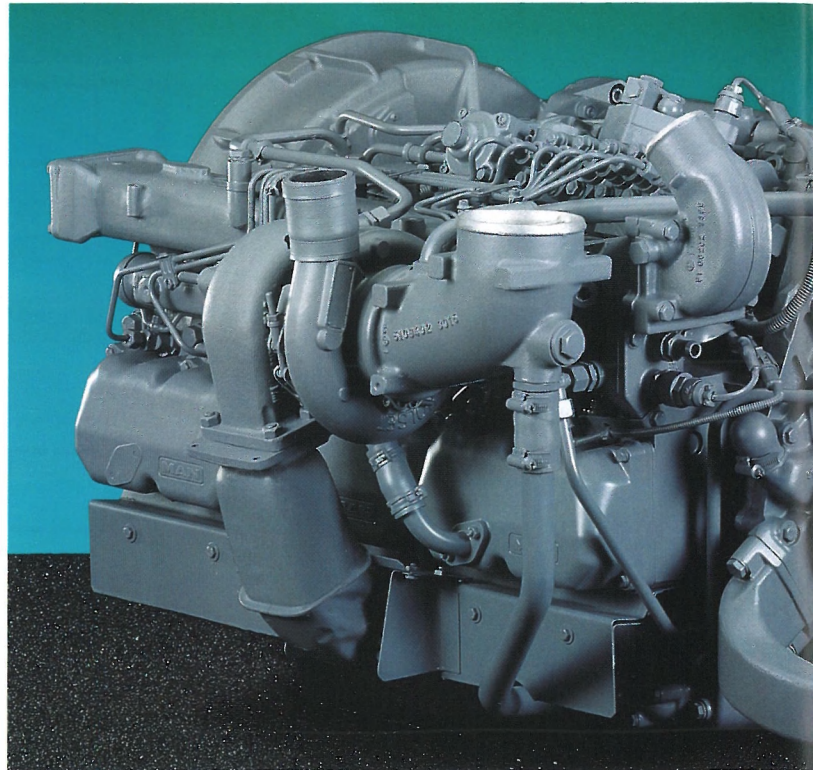
NL 233/313 CNG Low-floor city bus with natural-gas drive



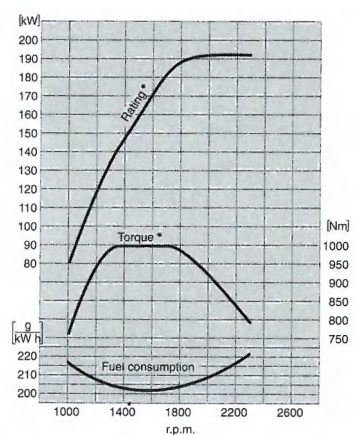
NG 313 CNG Low-floor articulated bus with natural-gas drive

Modern power politics.

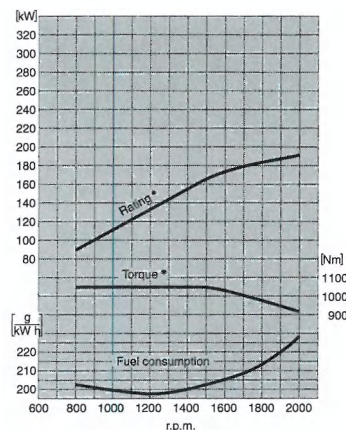
In line to power. This is the motto of the powerful 6-cylinder in-line engines from MAN. They are not only particularly economical but generate an unprecedentedly low level of pollutant emissions combined with quiet running. And a high degree of reliability into the bargain – an essential quality that you can depend on to ensure that you stay the course. So select the right engine to match your needs. MAN offers you a unique range of four engines and perfectly co-ordinated gearboxes just as you like them. The choice is yours!



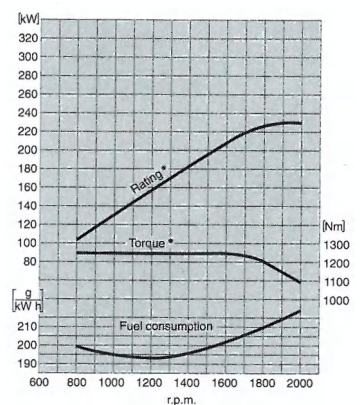
D 0826 LUH 12, 162 kW (220 hp)



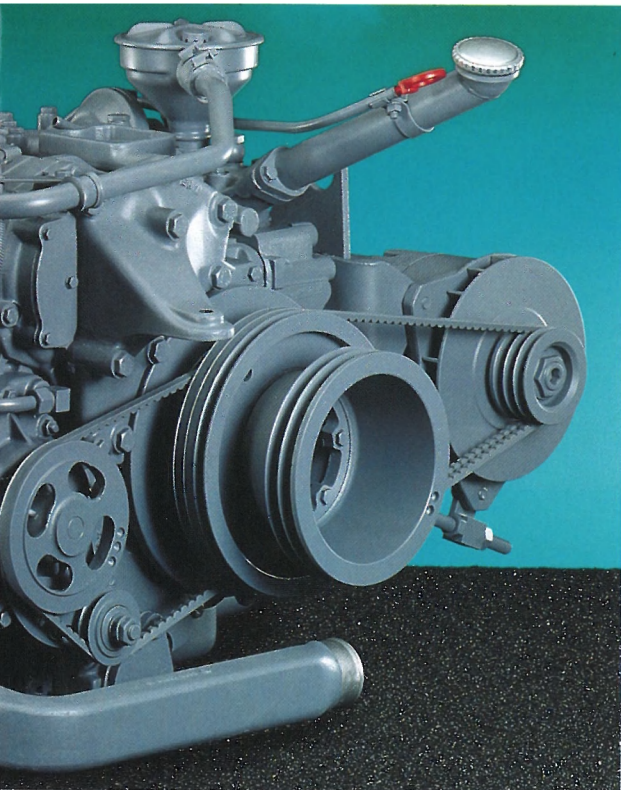
D 0826 LUH 13, 191 kW (260 hp)



D 2866 LUH 22, 191 kW (260 hp)



D 2866 LUH 26, 228 kW (310 hp)



Unbridled dynamics.

The compact 6-cylinder engines that are the first choice for the low-floor NL buses show just what you can get out of 6,9 litres displacement. With 162 kW (220 hp) and 191 kW (260 hp). They are ideal for top performance in the city. Although the 220 hp version with its maximum torque of an ample 820 Nm also makes the most of the low-floor NM midibus.

The power packs with 12 litre displacement and ratings of 191 kW (260 hp) and 228 kW (310 hp) with mighty torques of 1050 or 1250 Nm are ideal for the low-floor NG articulated bus. Both can also be used as a powerful alternative for the NL solobus.

Nothing but the best.

The Euro 2 engines are equipped with the latest MAN technology: high-pressure direct injection, turbocharging and intercooling as well as Electronic Diesel Control (EDC) are all a matter of course. The advantages of EDC: smooth running straight after a cold start, consistent control of fuel supply to injectors, optimum engine behaviour during all points of operation together with excellent running characteristics, low consumption and favourable emission values.

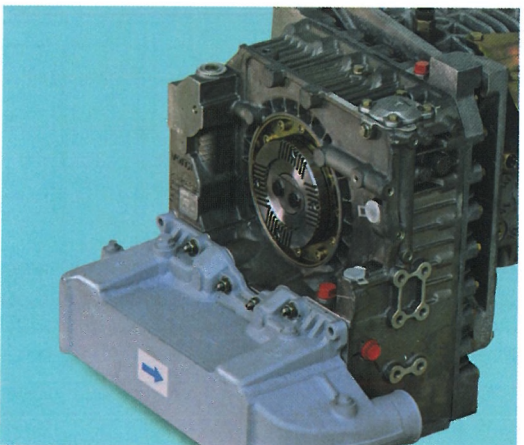
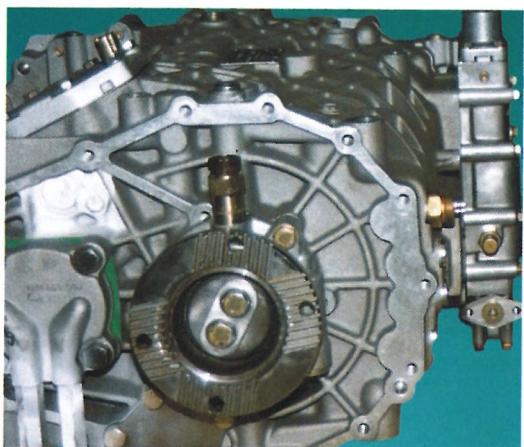
A clean edge.

We can't do enough to keep the air in our towns clean. This is why we offer the oxidation catalyst as a special extra for the already very clean MAN city buses. It achieves a reduction of the HC and CO emissions by a further 80% beneath the Euro 2 limits. A CRT particulate filter can also be fitted as an option.

Get off to a head start.

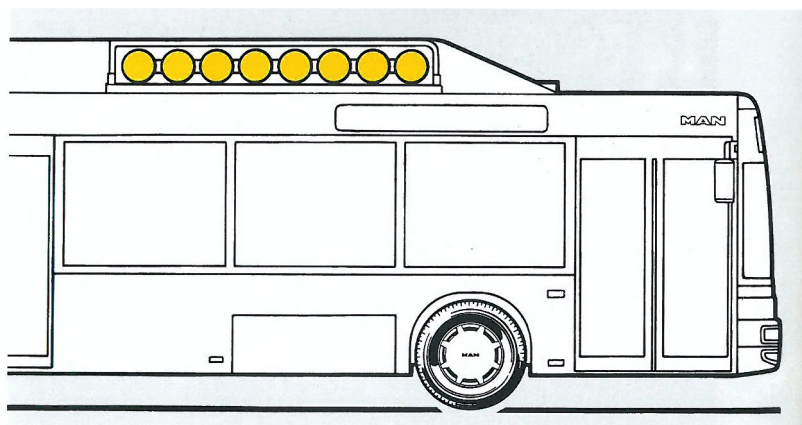
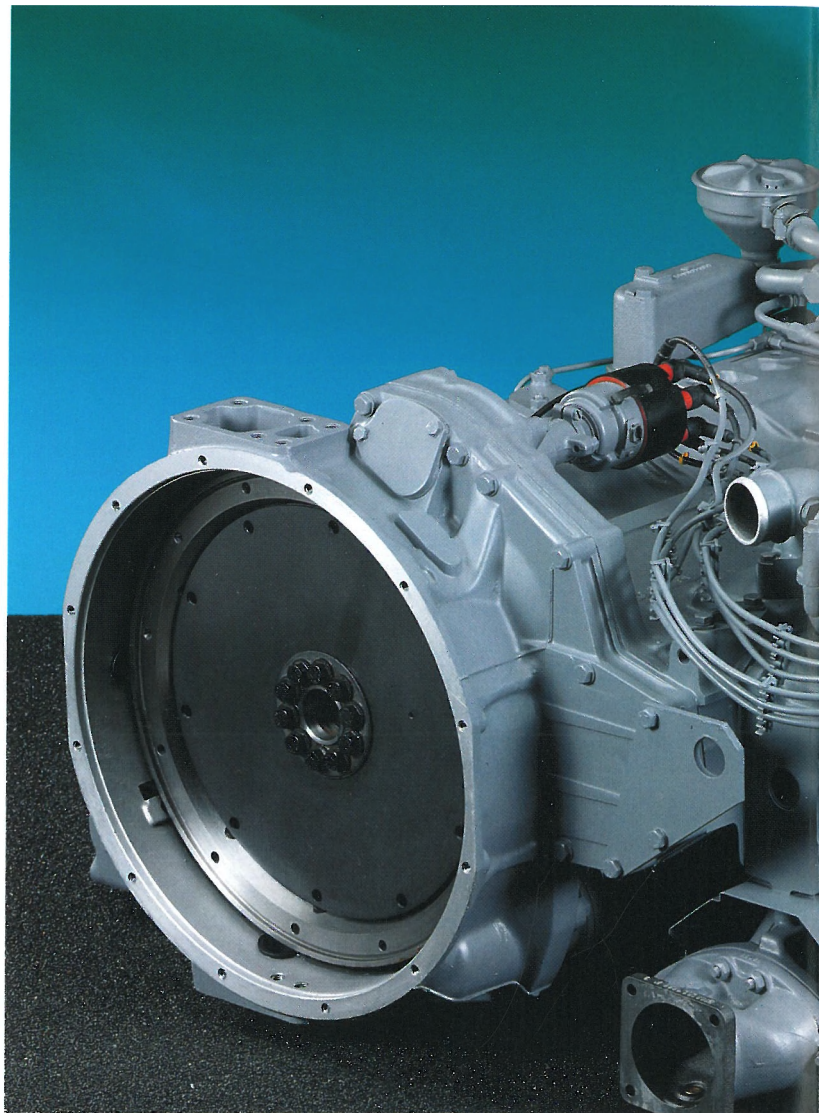
In gear with MAN.

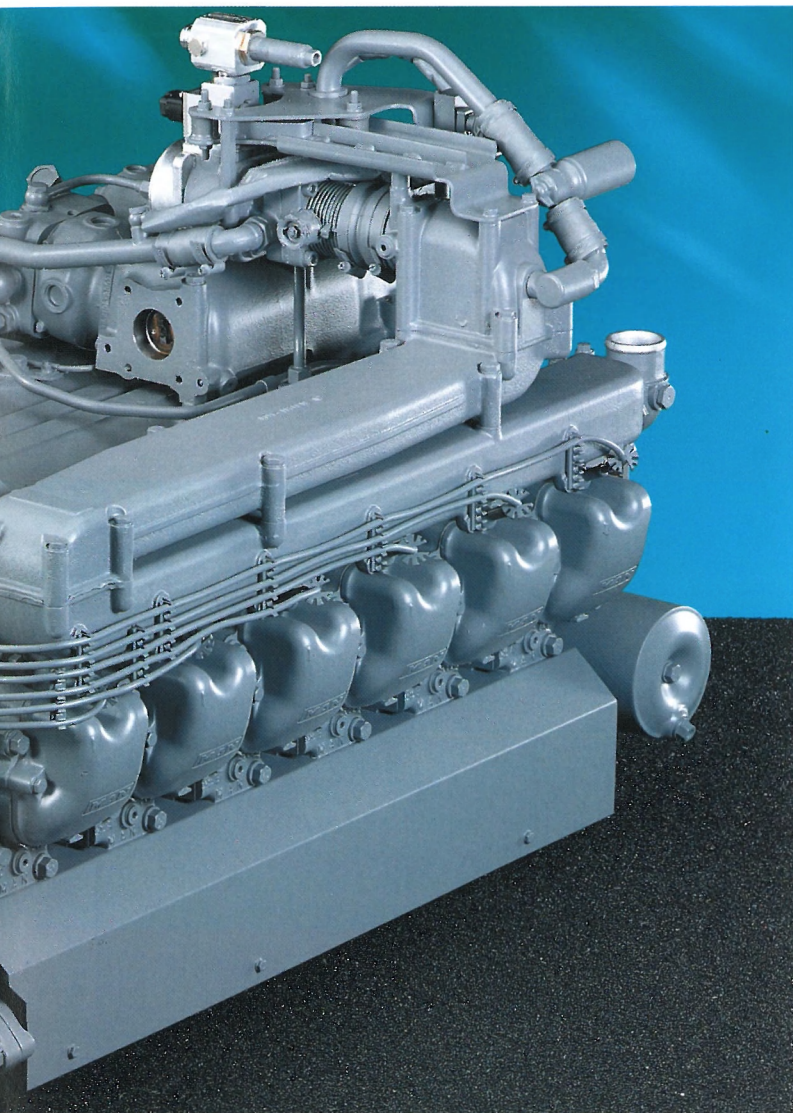
Co-ordinated with the engines you can choose between 3 and 4-speed automatic gearboxes from Voith and a 5-speed automatic unit from ZF. The NL can also be supplied with a ZF 56 – 85 manual gearbox – if desired with a Voith retarder – and air-assisted, cable-controlled gear shifting.



The gasMAN cometh.

Gas is the coming thing. This applies in particular to environmentally friendly natural gas (CNG), that is becoming an increasingly important source of alternative fuel for city buses. MAN has played a central role in this development and was one of the first manufacturers of commercial vehicles to start serial production. The road is clear for a front-line, environmentally friendly engine concept that even today remains well under the pollutant limits envisaged for Euro 3.



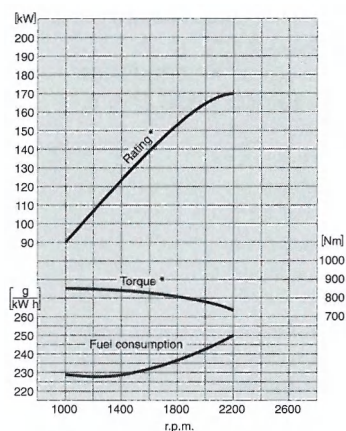


The engines of progress.

The 170 kW (231 hp) powerful CNG engine is used in the NL low-floor bus. The further development of this the lean-burn engine with 228 kW (310 hp), is available for the NG low-floor articulated bus and the NL low-floor city bus. These are 6-cylinder in-line engines designed in the manner of an Otto engine. They have spark plugs and high voltage ignition distributors, and their smooth combustion process makes them especially quiet. To achieve the favourable pollutant values the CNG engines are equipped with a closed-loop, three-way catalyst.

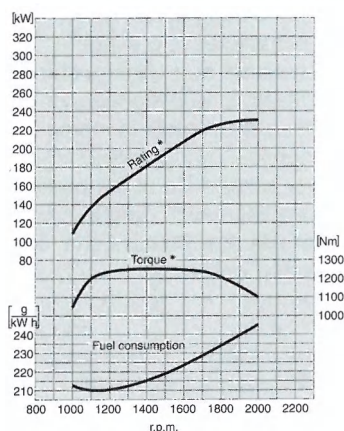
The gas system on board.

The distinctive characteristic of CNG buses is the natural gas tank system on their roofs. On the NL there are eight and on the NG ten high-pressure bottles with a capacity of 1120 or 1720 litre respectively – enough for a range of 400 to 500 km or a full day's service. The tanks can be filled with a special filler neck in roughly 3 to 8 minutes depending on the layout of the filling station and the gas system on board.



* Data in accordance with ISO 1585 88/195 EEC

E 2866 DUH 02, 170 kW (231 hp)

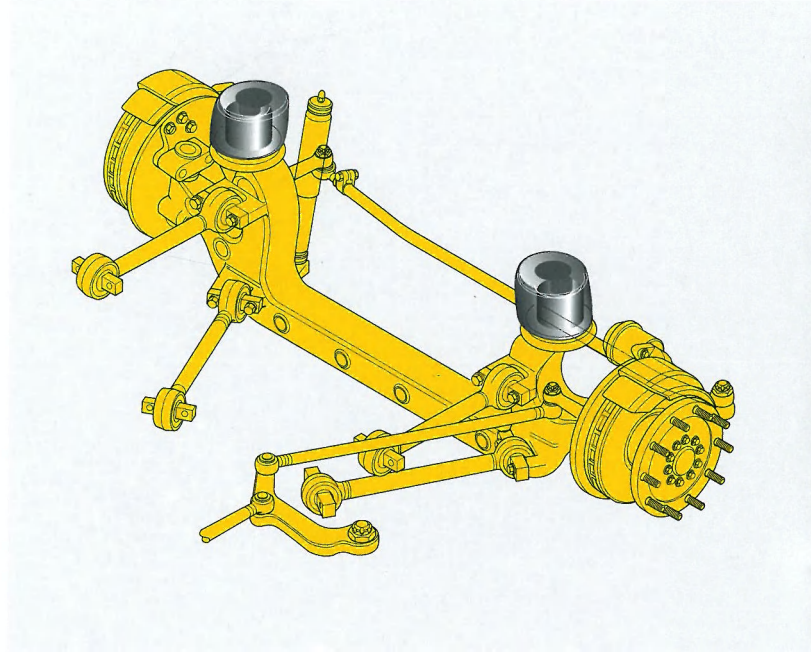


* Data in accordance with ISO 1585 88/195 EEC

E 2866 LUH 01, 228 kW (310 hp)

New design, new construction.

An important characteristic of the current generation of city buses is their excellent performance which can be experienced to great effect all the way between bus stops. They keep right to their track on the straight and narrow, hold well on curves and brake diving has also been reduced. All of these qualities contribute to a high degree of driving comfort. Besides the innovations in the gear technology this also stems from special developments in the floor frame such as the cast-iron cross members in front of the axles. They absorb all the forces from the axle control arms, air suspension and shock absorbers and improve the driving comfort even more. With the completely new developed running gear MAN has achieved a notable synthesis of first-class safety combined with higher driving performance and even less maintenance. Good reasons to ride high with MAN.

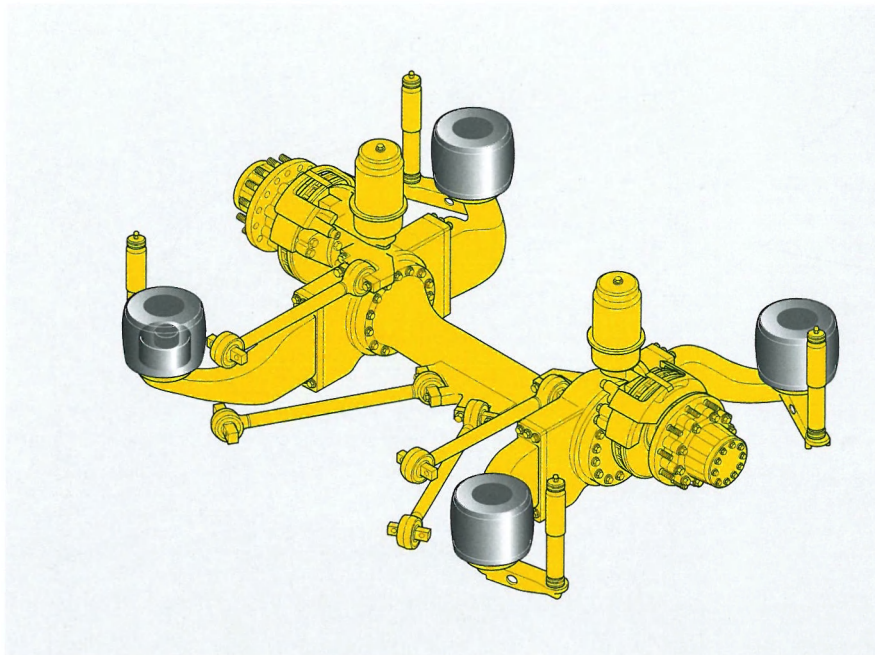


Markedly better: the electronic brake system EBS

The new electronic brake system (EBS), a combination of an electronically/pneumatically controlled service brake system with ABS and ASR function, ensures a considerably higher degree of safety. It permits the brake to respond more quickly on the individual wheels. The advantages: no spinning of the tyres when starting and accelerating, no locking up when braking and during evading manoeuvres and very much shorter braking distances. In addition the system is more economical owing to the longer service life of the brake pads. EBS, which can be supplied from 1999, is certainly worth thinking about.

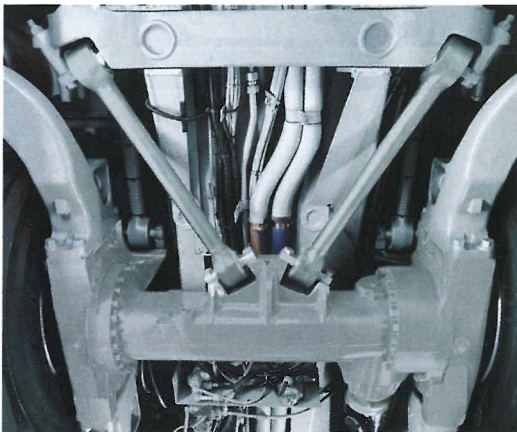
Front axle

- Low-torsion rigid axle mounted on four control arms without roll-steer effect
- Suitable for track guiding
- Precisely adjusted, maintenance-free wheel and control arm bearings for smoother running and lower costs
- Displacement-dependent shock absorbers for increased ride comfort
- Stabiliser for reduced rolling
- ZF steering gear with variable, speed-dependent ratio
- Under certain conditions suitable for snow chains



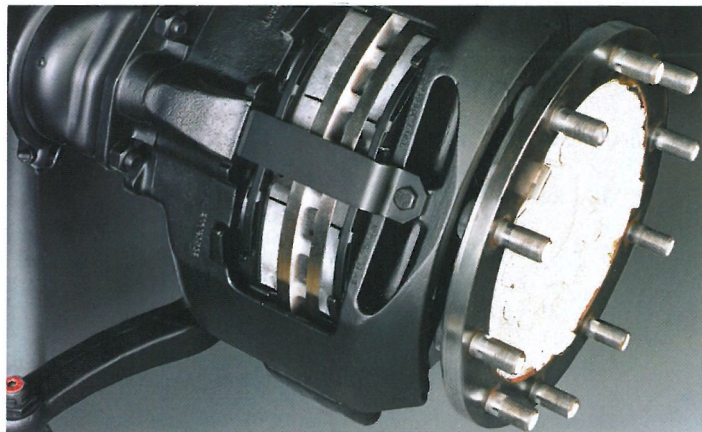
Drive axle

- Portal axle from MAN and ZF mounted on 4 control arms
- Permits a further lowering of the central aisle by approximately 100 mm
- Maintenance-free with the exception of oil changes
- Suspension and damping by means of 4 bellows mounted well towards the ends of the axles and displacement-dependent shock absorbers
- Tyre track adjusted to front axle track to prevent damage to tyres
- 6 different axle transmission ratios depending on type of route, engine and gearbox
- Under certain circumstances suitable for snow chains



Air suspension

- For outstanding driving and suspension comfort and high rolling stability
- Constant ride height under all loads
- 2 air bellows at the front, 4 on the rear axle
- Maintenance-free MAN-ECAS air suspension control available as an option
- 2 different ride heights can be set
- Additional kneeling as an extra – bus lowering on the right-hand side by 70 mm



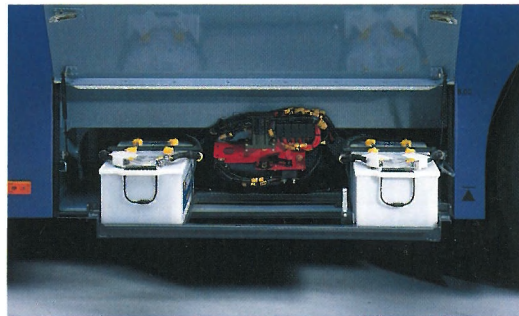
Brakes

- New Lucas-D-Elsa disc brakes on the front and drive axle
- For greater braking comfort, better metering, more favourable driving performance
- Shorter braking distances for more safety
- Air-assisted, no lubrication points
- With brake pad wear display
- Easy, cost-effective maintenance
- ABS standard, ASR as an option

- Hydraulic retarder as special equipment for vehicles with manual gearboxes
- Electronic braking system EBS

Just open the flap.

MAN has taken a lot of trouble to ensure that you don't need to get in a flap about servicing and maintenance. The driver can carry out the daily and regular checks and maintenance work quickly and easily. All the maintenance flaps are fitted with gas springs and can be opened wide. In no time at all everything is in front of you. Even washing the vehicle is clean and easy since the buses have a smooth outer skin with no grooves or edges. And even if repair work should be necessary that's not a problem either: the modular design of the MAN low-floor buses makes repairs especially simple.





From front ...

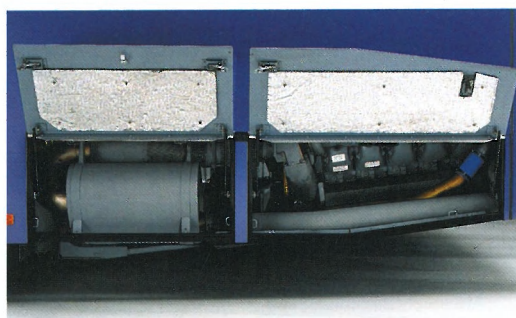
- Front panel with access to steering gear, pedal mechanism, windscreen wash system and various test connections
- 10 l reservoir for the windscreen wash system behind the central panel
- Headlights that swing out to the side
- Electrical info unit at driver's seat, quicker trouble-shooting

... to rear.

- Rear panel to the engine, heater unit and steering oil
- Coolant expansion tank behind an extra panel
- Engine air intake and air filter in the roof for better air and longer filter service life
- Accident-prone components at rear easily replaceable, bumper separate from rear panel

In top condition.

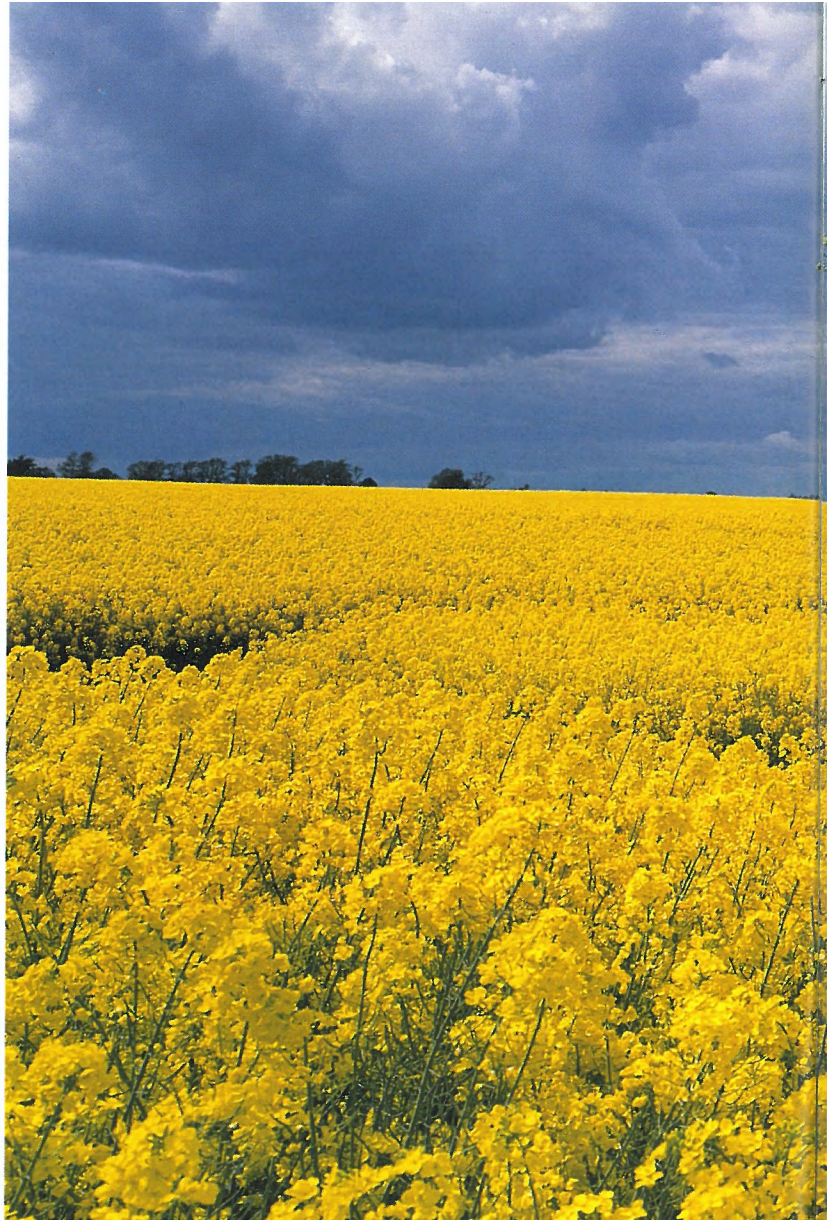
- Maintenance-free control arm and wheel bearings on the front axle. Drive axle maintenance-free with the exception of regular lubricating
- Portal axle and air suspension maintenance-free
- Quick and easy replacement of disc brake pads
- Low maintenance intercooler swings out for cleaning from inside and outside
- Uncluttered, tidy cabling with watertight plugs
- Multiple plug system for easy installation and removal



On course for environmental protection.

Modern buses and coaches are not only among the safest means of transport, but also amongst the most environmentally acceptable. Against a background of increasing demands for recreation, comfort and mobility, they have become more attractive for people who consciously opt for this modern mode of travel.

As a leading European manufacturer of commercial vehicles, MAN is aware of its responsibility to utilise every technical development which could increase the environmental acceptability of its vehicles. MAN develops and implements comprehensive solutions which not only comply with legal requirements, but indeed frequently surpass them. MAN buses operate at exemplary exhaust-emission and noise levels. Production methods and materials correspond with the latest ecological research. MAN is active in its efforts to protect the environment.



**In top form.**

All MAN diesel engines with turbocharger and charge-air intercooling fulfil the Euro II emission limits. They are not only clean in operation, but also particularly good at conserving fuel. With the aid of smart EDC management, MAN engines perform miracles in terms of output and fuel consumption.

Alternative movement.

MAN has assumed a pioneering role in the development of future-oriented innovative drive systems. The world's first regular-service bus running on hydrogen fuel – almost pollutant free – is currently being tested. A further pre-series development is the diesel-electric mid-engine drive, which will eventually be equipped with an absolutely emission-free fuel cell.

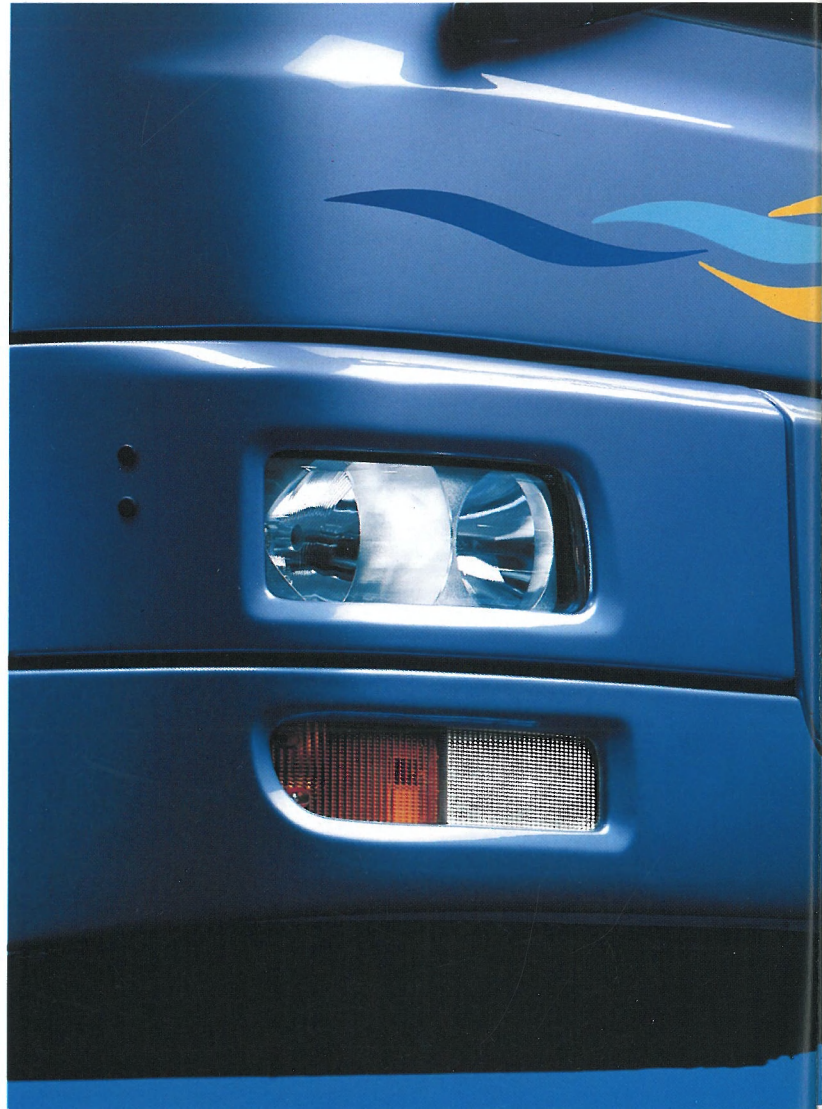
Round-trip recycling.

The materials used by MAN are environmentally compatible and do not constitute a health hazard. Components capable of being recycled are given top priority. Parts are marked with a material designation so that they can be properly sorted and recycled. CFC emissions along with asbestos have long since been banished from the MAN production process and its vehicles.

MAN – a great product.

MAN vehicles are made in modern production facilities with computer-controlled systems and semi-automatic lines to ensure that they meet bus operators' extremely high quality standards in full. In the final assembly area, highly qualified teams ensure that "their" buses are indeed up to these demanding quality standards. Exceptional care, specific know-how and a high degree of motivation go hand in hand here.

In order to achieve perfection and to maintain it in the long term, MAN has set up a sophisticated quality management process covering everything from development and material tests to production and comprehensive after-sales service: Not without reason has this MAN system been certified in accordance with the international quality standard DIN EN ISO 9001 – a sign that MAN has fulfilled customer expectations to the highest degree.





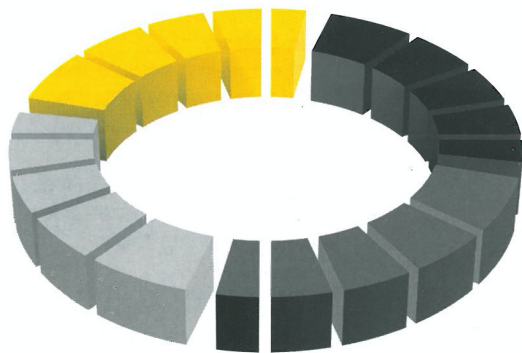
Even better.

MAN is the first vehicle manufacturer to comply with the exacting VDA 6.1 standard. This stringent German standard for suppliers to the automotive industry has been incorporated into the

catalogue of quality features in ISO 9001, which covers product safety, corporate strategy and the planning and development of processes. This is further evidence of the pioneering role played by MAN in the quality area.

The MAN promise: we're there for you.

Bus and coach journeys have developed into an important factor in commercial public transport – with a huge demand being placed on fringe performance areas too. People want comprehensive and competent advice, logistical know-how and support when they are planning long-term investments. Full leasing or rental offers are tailored individually to meet customers' requirements. And, last but not least, MAN has been holding driver training courses for several years, including recommendations on how to drive more safely and economically.





MAN vehicle service, with its highly competent team of employees spread across Europe at over 1100 locations, is an outstanding example of efficiency. If the worse should come to the worst, the 24-hour MAN Euro-Service will provide you with qualified help immediately. In Germany alone, there are 300 service locations, of which 35 are specifically equipped to cope with buses and coaches, to ensure that off-road times are kept to a minimum during maintenance or repair work, inspections or tests. Urgently required spare parts are delivered by MAN's express spare part service as quickly as possible.

MAN TransCom*

One-source solutions, flexible and individual.

- Transport logistics: for example fleet information and control systems, route-guidance software and tour planning
- Financial services: financing, leasing and rental, maintenance and repair contracts
- Fleet administration and fleet management: individual service package solutions, e.g. insurance cover including damage claims
- Communication: cellular phones, trunk radio communication/Modacom, satellite communications

*** The services described here are as available in Germany.**

For corresponding offers in other European countries, please contact your MAN dealer.



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