Product description TG-A - cover sheet

Status: 16.03.2000

Product features, customer benefit - TG-A

This presentation is designed as a reference work for information on the most important product features of and the customer benefit derived from the TG-A.

Please note the following points:

- **Important product advantages are printed in bold**
- ***Important benefits for the entrepreneur are printed in bold and in italics***
- ***Important benefits for the driver are printed in bold, in italics and in blue***

- Drawn up and updated by Dept. VGTT, Kerschl -

Product description TG-A, contents

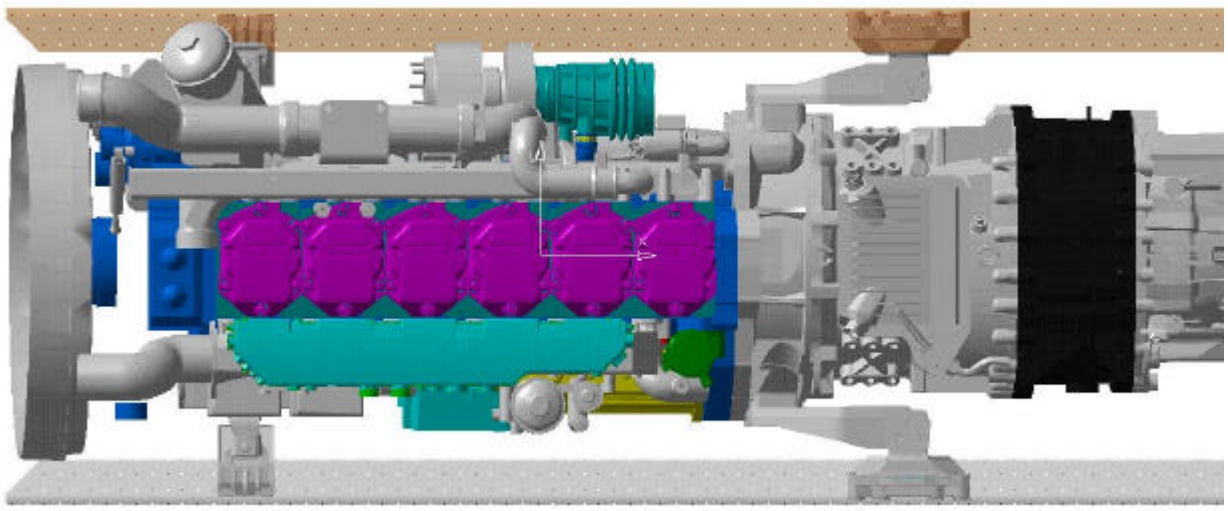
Status: 16.03.2000

Product description TG-A, contents

Status: 24.01.00

🕮 Equipment:

4-point engine mounts



🕮 Technology:

The engine is attached to the frame by means of 4-point mounts with large support faces.
Thanks to this new support concept a 5th driveline mount on the gearbox is cancelled.

🕮 Product advantages/customer benefit:

•Low input required for removing gearbox
•Optimum acoustic separation of driveline from chassis
•High comfort (shaking during starting is reduced)
•Mounts with long service life, even in heavy-duty operation (HD operation)

🕮 Notes (availability, recommended application, combination):

All in-line engines for TG-As are installed in this manner.
The engine mounts are also suitable for attaching the retarder, the engine-dependent PTO etc.

🕮 Competitive situation:

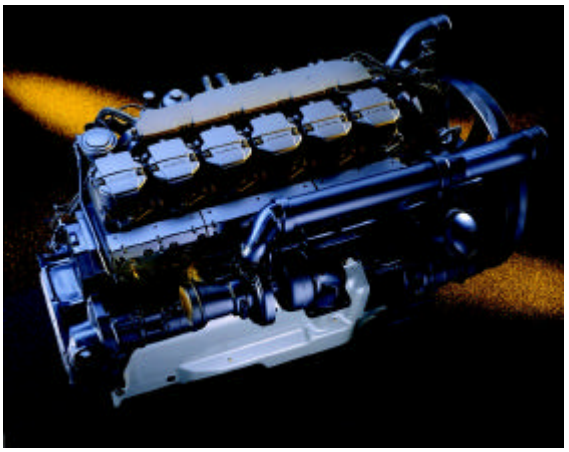
Other competitors also offer comparable concepts.

TG-A Engine, cooling, clutch

EURO 3

🕮 Equipment:

D28 engines with 310, 360, 410 and 460 hp in EURO 3 version



🕮 Technology:

The following essential measures ensure compliance with the EURO 3 limit values:

Turbocharing and intercooling (also for EURO 2)
Injection quantity and injection start electronically controlled (also for EURO 2)
Increased injection pressure (+8%, approx. 1400 bar)
7-hole injection nozzles with reduced bore diameter
4-valve cylinder heads with vertical and central injection nozzle arrangement
Compression ratio increased from 17 to 19, except for 460 hp units
Optimised piston bottom, swirl adaptation
External, controlled exhaust-gas recirculation (EGR) with recooling

Owing to the compliance of the D28 engine concept with the EURO 3 exhaust-gas limit values and to the use of conventional injection technology, tried-and-tested engine components (eg injection system, crankcase...) continue to be employed. Controlled exhaust-gas recirculation with recooling is the only deliberate measure for complying with the NOx limit value of 5g/kWh **without resulting in considerable extra consumption.** These EURO 3 measures do not cause any additional oil contamination.

🕮 Product advantages/customer benefit:

- **Recooled EGR ensures an only insignificant extra consumption of approx. 2%.**
- **The oil change interval of 80,000 km is maintained.**
- High reliability thanks to the continued use of the tried-and-tested D28 engine concept
- Range of spare parts only slightly extended
- Only 5 eco points necessary for transit traffic through Austria
- Early introduction of a future-oriented technology (EGR is a basic precondition for compliance with the EURO 4 limit values at reasonable consumption values)

🕮 Notes (availability, recommended application, combination):

Currently, D28 engines are alternatively available in EURO 2 or EURO 3 versions.
The start-up date for EURO 3 is 1st October 2001 for first registration.

🕮 Competitive situation:

No other competitor is currently using external, controlled EGR with recooling.

TG-A Intake system/exhaust system

201AS Intake system

🕮 Equipment:

Upswept air intake, with dry-air filter

🕮 Technology:

There is a standard position for the intake system on the TG-A. Air is taken in exclusively on the left-hand side in the upper area of the cab rear wall (cf. upswept air intake). The air filter is installed in the centre of the vehicle, above the frame upper edge under the cab. A pre-silencer (Helmholtz resonator) for the intake air is located in the intake duct.

🕮 Product advantages/customer benefit:

•The air intake system does not project towards the rear beyond the cab rear wall, which means that there is no loss in length for fitting bodies.
•Favourable point for taking in clean air, which extends maintenance intervals
•Easy access for maintenance work
•The angle of approach is not impaired, as there is no air filter before the front axle
•Optimum utilisation of the space available and no restriction of attachment and body conditions
•Reduced intake noise

🕮 Notes (availability, recommended application, combination):

Precleaning systems for the intake air can be integrated into the intake duct.

🕮 Competitive situation:

Volvo uses a similar arrangement.

TG-A Intake system/exhaust system

206HC Oxidising catalytic converter

🕮 Equipment:

Oxidising catalytic converter

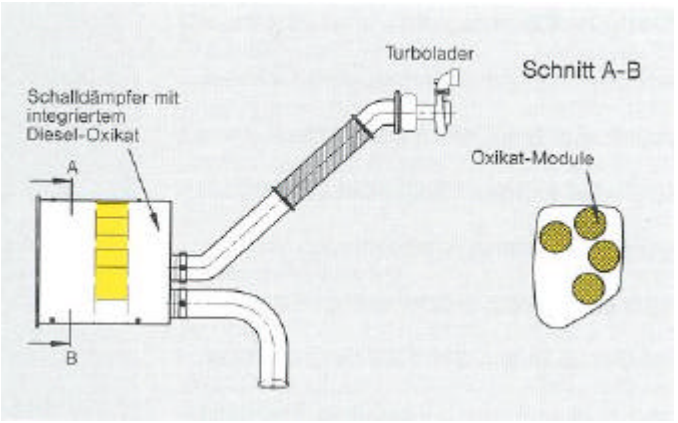


Diagram of system

🕮 Technology:

The oxidising catalytic converter of the TG-A is integrated into the exhaust silencer and consists of honeycomb-structured modules with a special coating. When exhaust gases flow through these modules this coating effects the oxidation of unburnt hydrocarbons (HC) and carbon monoxide (CO) to carbon dioxide (CO_2) and water.
The oxidising catalytic converter works as a passive exhaust-gas aftertreatment system without additional control features. It is maintenance-free and can be 100% recycled.
Long years of testing and experience have made the oxidising catalytic converter a durable and reliable system employed by MAN.

🕮 Product advantages/customer benefit:

•Reduction of hydrocarbons (HC) and carbon monoxide (CO) by 70 - 90%
•High eco-friendliness
•An effective measure against the smell of exhaust gas typical of diesel engines
•Owing to its integration into the silencer no additional space is required
•High reliability and durability
•A contribution to a better acceptance of the truck by the general public

🕮 Notes (availability, recommended application, combination):

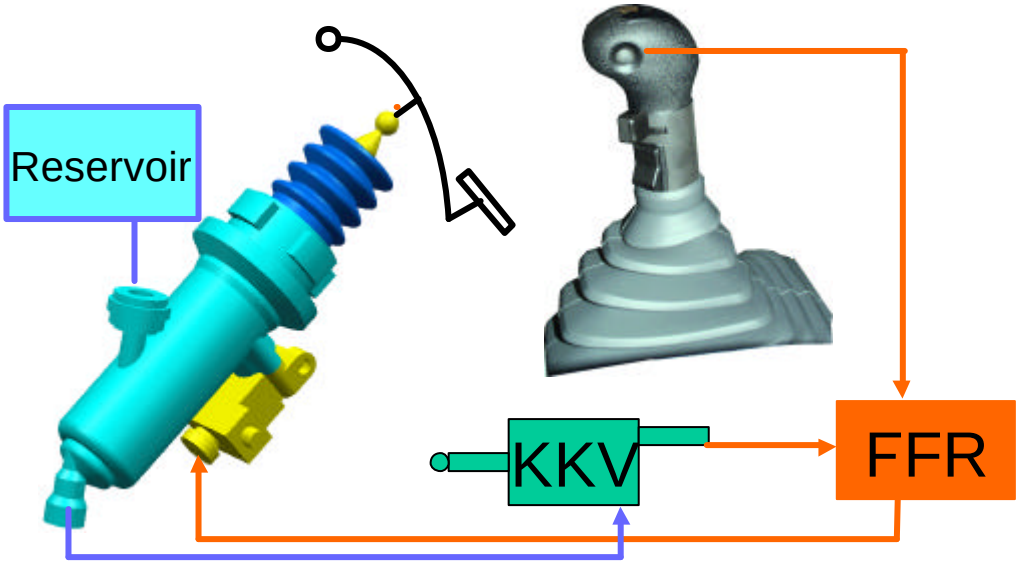
The oxidising catalytic converter is documented for the entire model programme.

🕮 Competitive situation:

Only MAN offers a documentation for standard vehicles.

🕮 Equipment:

Shifting / splitting without clutch pedal through MAN ComfortShift



🕮 Technology:

Gear changes in the large range-change group (speeds 8-16) can be performed without actuating the clutch pedal and without changing the accelerator pedal position.
Activated by a button on the left-hand side of the gearshift knob, the clutch is electro-pneumatically controlled and hydro-pneumatically actuated during the gearshifting action. The engine speed is automatically adapted to the gear change by the vehicle management computer (FFR).
Both splitting actions and gear changes in the large range-change group can be supported.

🕮 Product advantages/customer benefit:

•Enhanced comfort:
⇨No actuation of the clutch pedal during gear changes
⇨The accelerator pedal does not have to be let out during gear changes
⇨Automatic speed adaptation to the gear-change action
•Driveline protected against load peaks through optimum adaptation of the engine speed during gear changes
•Extended clutch service life

🕮 Notes (availability, recommended application, combination):

In conjunction with the single-H gearshift pattern and hydrostatic gearshifting (HGS) this results in a completely new way of changing gears (MAN ComfortShift). All manual gearboxes are equipped with this function.

🕮 Competitive situation:

Currently, no other competitor offers a comparable system.

TG-A Gearbox

022SR/ST MAN TipMatic

🕮 Equipment:

ZF AS TRONIC 12 AS 2301 OD - MAN TipMatic gearbox

🕮 Technology:

The basis is a robust mechanical 12-speed manual gearbox with two layshafts and one planetary gear. The basic gearbox is not synchronised, the splitter unit and the range-change group are synchronised. Gears are changed electro-pneumatically, and the standard dry clutch too is controlled and actuated electro-pneumatically. There is no clutch pedal.
The gearbox can be operated both automatically and semi-automatically (manual gear selection via toggle switch) and is controlled by the vehicle management computer (FFR).
All assemblies (incl. control elements) are integrated and thus protected against external influences. Diagnostic options are provided.

🕮 Product advantages/customer benefit:

•The vehicle offers higher economic efficiency:
⇨60 kg less weight compared to Ecosplit, which translates into more payload
⇨Protection of driveline, which means less wear
⇨Long service life for the clutch
⇨The gearshifting programme enables economical driving in the automatic operating mode and thus ensures lower fleet consumption
⇨High degree of safety against failure thanks to an integrated design
•Optimum relief for the driver:
⇨Quick and smooth gearshifting
⇨No clutch pedal, no manual clutch and gearshifting operations necessary
⇨Easy operation, no operating errors possible
⇨Information continuously supplied via display
⇨Sensitive clutch control and, consequently, uncomplicated moving-off actions
⇨Separate driving programme for sensitively moving off during shunting operations
•High safety in conjunction with a ZF intarder
•Variety of possible auxiliary units, which means optimised operation

🕮 Notes (availability, recommended application, combination):

All known auxiliary units (PTOs, intarder and emergency steering pump) for ZF gearboxes are possible.

🕮 Competitive situation:

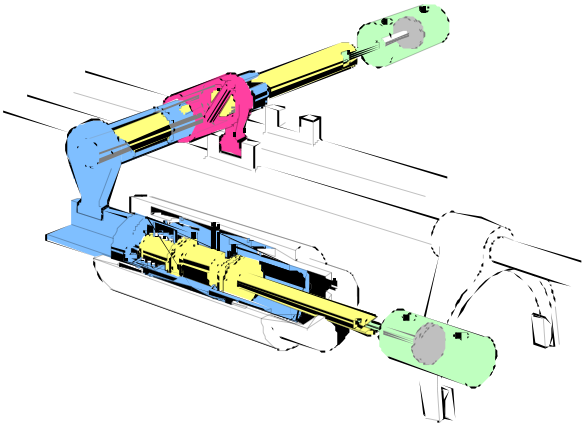
Simpler, shorter, lighter and more universal than anything offered by other competitors.

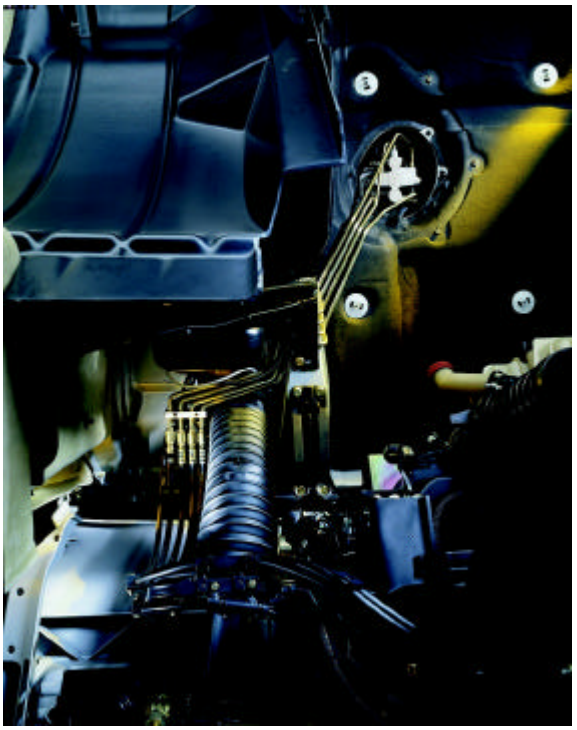
TG-A Gearbox

Hydrostatic gearshifting (HGS)

🕮 Equipment:

Hydrostatic gearshifting (HGS) and Servo-Shift with MAN ComfortShift





🕮 Technology:

Power is transferred from the gear lever to the gearbox via hydraulic lines, with a master cylinder on the gear lever and a slave cylinder on the gearbox. The shift linkage is cancelled. To avoid stiff action at low temperatures, the system is electrically heated.
Gearshifting is boosted via the Servo Shift system consisting of a mechanical-pneumatic and a double-acting compressed-air cylinder.

🕮 Product advantages/customer benefit:

•Enhanced comfort and improved ergonomics:
⇨Low shifing forces
⇨Short shifting travel
•Shocks and vibrations from the engine, gearbox and driveline are not transferred to the gear lever in the cab

🕮 Notes (availability, recommended application, combination):

In conjunction with the single-H shift pattern and with gearshifting without clutch this makes changing gears a completely new experience (MAN ComfortShift).

🕮 Competitive situation:

DC-Actros and Atego are also available with a hydraulic transfer of shifting forces.

TG-A Gearbox

Gearshifting with single-H shift pattern

🕮 Equipment:

MAN ComfortShift: Changing gears with a single-H shift pattern

🕮 Technology:

The 16 speeds are engaged via a splitter group and a range-change group. Only two shift gates are left. The shift patterns of the high and low ranges overlap. The display shows the gear engaged.
A safety feature preventing shifting errors is provided.

🕮 Product advantages/customer benefit:

•Improved ergonomics:
⇨Shorter shifting travel
⇨Easier shifting through cancellation of two shift gutters
⇨Lower gear-selection forces in range-changing operations
•Less space taken up inside cab
•Prevention of damage owing to shifting errors
•High degree of information through indication on the display of the gear engaged

🕮 Notes (availability, recommended application, combination):

In conjunction with the single-H shift pattern and with gearshifting without clutch this makes changing gears a completely new experience (MAN ComfortShift).

🕮 Competitive situation:

Volvo, Scania and DAF also use overlapping range groups.
DC-Actros and Iveco use the double-H shift pattern.

TG-A Gearbox

Retarder and engine brake actuation

🕮 Equipment:

Retarder and engine brake actuation

🕮 Technology:

The individual retarder stages and the engine brake are selected by briefly pressing or holding the control lever (button) at the steering wheel. The following switching logic applies:

1. Tap lever backwards once to switch to the next highest retarder stage.
2. Tap lever forwards once to switch to the next lowest stage.
3. Hold the control lever in one of the end positions to skip several stages.
4. Push the button on the end of the control lever to immediately release the sustained-action brake.

In vehicles without retarder the control lever is used only for actuating the engine brake (by pressing the push button).
The retarder stage selected is indicated on the display.

🕮 Product advantages/customer benefit:

- Retarder switching operations are quiet ("grating noises" are eliminated)
- Short actuating travel of only 3°, which means enhanced ergonomics and comfort
- Swift and easy release possible at the push of a button
- Variety of functions with readily comprehensible operating logic
- As tip switch the control lever works wear-free.
- High degree of alertness through information provided on the display

🕮 Notes (availability, recommended application, combination):

The actuation of the engine brake via a push button on the cab floor is superseded by this concept.

🕮 Competitive situation:

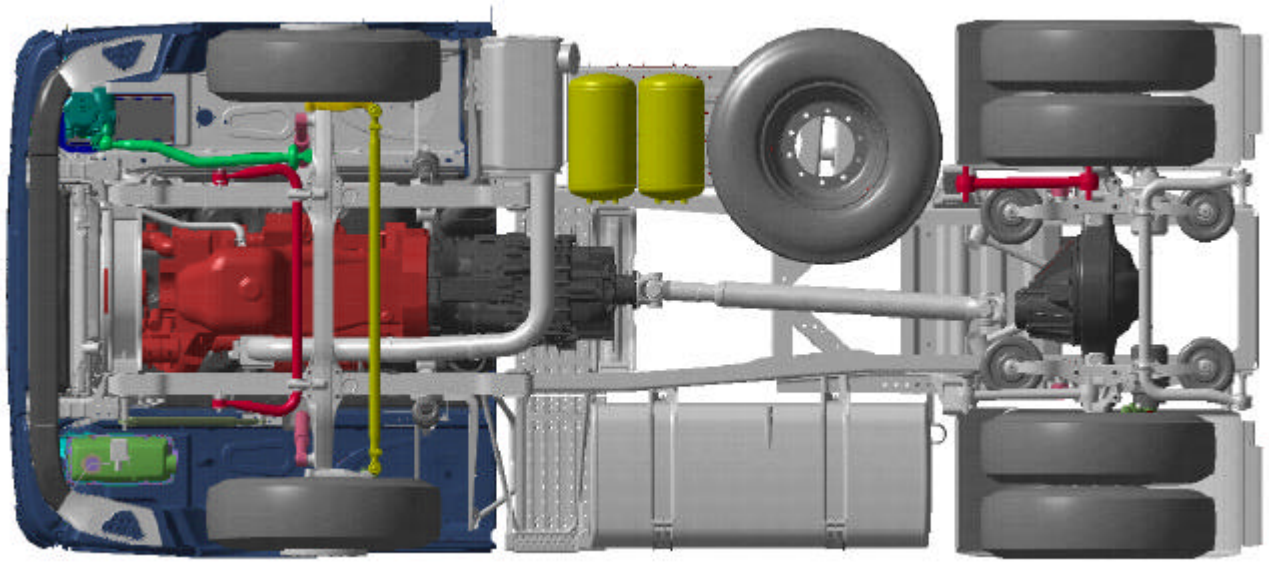
Currently, no other competitor offers a comparable system.

TG-A Gearbox

Maintenance-free propshafts

🕮 Equipment:

Maintenance-free propshafts



🕮 Technology:

The propshaft bearings are provided with service-life lubrication.
Greasing nipples are cancelled.

🕮 Product advantages/customer benefit:

•No maintenance input, as regreasing is cancelled.

🕮 Notes (availability, recommended application, combination):

Greasing nipples are no longer necessary on the entire chassis. Only superstructures and fifth-wheel/trailer couplings must still be greased.

🕮 Competitive situation:

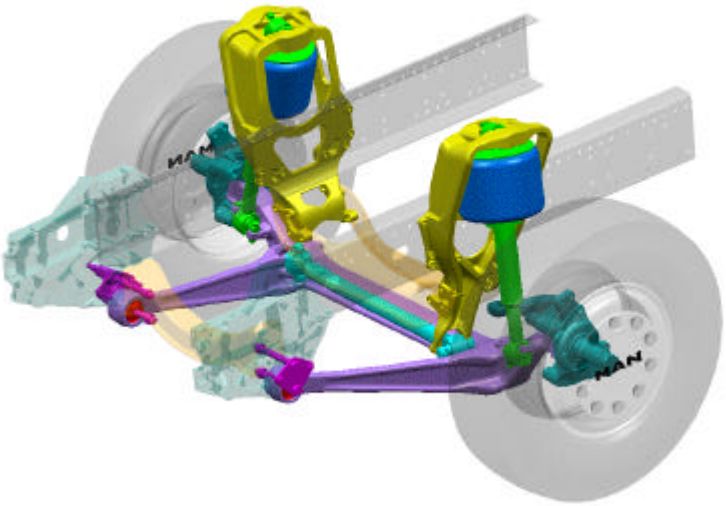
No other competitor can generally do without greasing nipples.

TG-A Front axle/front springs

Air-sprung front axle

🕮 Equipment:

Air-sprung front axle



🕮 Technology:

The air-sprung front axle is of impressive simple design.
The axle body reacts like a torsion bar and therefore fulfills the function of the stabiliser too.
The air spring and the shock absorber are combined into one unit (air spring/damper system, LDS) which results in the widest spring track in this class.
The air suspension makes it possible to lower the vehicle 90 mm from the ride height and raise it 190 mm (280 mm spring travel, fifth-wheel coupling height limited to 235 mm, ie -90/+145).
The air-sprung front axle is designed for an axle load of 8.2 tonnes.

🕮 Product advantages/customer benefit:

•Excellent stabilising properties, even for high centres of gravity, which means a high degree of road safety
•High suspension and ride comfort and, consequently, a high degree of alertness
•Long raising and lowering paths
⇨Adaptation to various loading heights possible
⇨Greater adaptability for taking up swap bodies
⇨Adaptation to articulation angles possible through large spring travel
•Reduced number of single parts
•Longer service life for the air bellows thanks to LDS (centric loads only)

🕮 Notes (availability, recommended application, combination):

A height-modified variant with a front-axle load of max. 7.1 tonnes is available for low semitrailer tractors and high-cube transporters.
A special shock-absorber adjustment for high centres of gravity is possible.

🕮 Competitive situation:

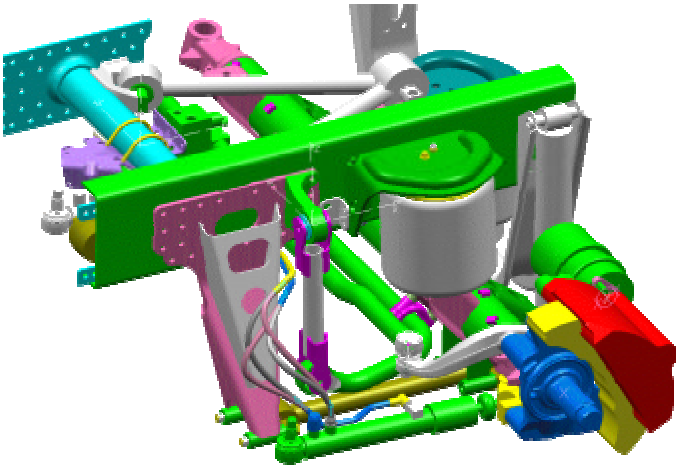
No other competitor offers a comparable system.

TG-A Front axle/front springs

Non-driven axles

🕮 Equipment:

Non-driven front/rear axles



🕮 Technology:

The front, second-steering and trailing axles are maintenance-free. All axles are equipped with maintenance-fee wheel bearings (HUB units). The kingpin bearings no longer need to be greased. All axles feature disc brakes as standard. Information on the state of wear of the brake pads is continuously ascertained by means of a potentiometer and passed on to the MAN Tronic unit.

🕮 Product advantages/customer benefit:

•***Low maintenance input***
⇨No regreasing of the kingpin bearings at the top and bottom
•High reliability owing to the use of HUB units
•Uniform brake pads on all axles facilitate the procurement of spare parts
•See: Disc brakes all round

🕮 Notes (availability, recommended application, combination):

As regards permissible axle loads and axle design (offset), several variants are available. Details can be learned from the axle model tables.

🕮 Competitive situation:

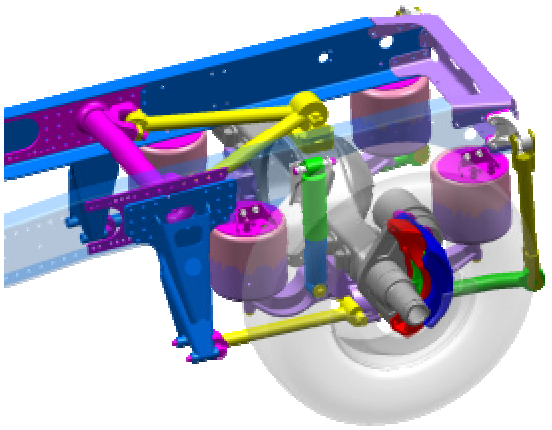
Currently, no other competitor offers maintenance-free front, second-steering and trailing axles.

TG-A Rear axle/rear springs

HY 1350 rear axle

🕮 Equipment:

Hypoid HY - 1350 rear axle



🕮 Technology:

Owing to the new development of all axle components, a weight reduction of 90 kg has been achieved.
Owing to the use of an oil filter, a synthetic gearbox oil filling ex works and a new ventilation system, oil change intervals are extended to 500,000 km in future (from IAA 2000 onwards).
Maintenance-free HUB units are used as wheel bearings. The sealing of the axle has been improved through the use of seals in cassette design.
The axle is more compact, since the crown wheel diameter has been reduced from 485 to 465 mm.
The axles feature a robust differential lock as standard.
Maximum axle load: 13 tonnes, maximum gross combination weight: 50 tonnes.

🕮 Product advantages/customer benefit:

•Higher payload thanks to an axle weight reduced by 90 kg
•Higher brake power thanks to the use of disc brakes all round
with continuous indication of the state of wear (EBS)
•No extra charge for differential lock
•Lower maintenance input thanks to:
⇨maintenance intervals extended to 500,000 km for oil changes (from IAA 2000 onwards)
⇨the use of HUB units
•Higher reliability thanks to:
⇨improved seals
⇨the use of HUB units
•Better ground clearance and easier installation of bodies owing to compact design
•Uniform brake pads on all axles facilitate the procurement of spare parts

🕮 Notes (availability, recommended application, combination):

This rear axle is installed in all long-haul vehicles from the heavy model range.

🕮 Competitive situation:

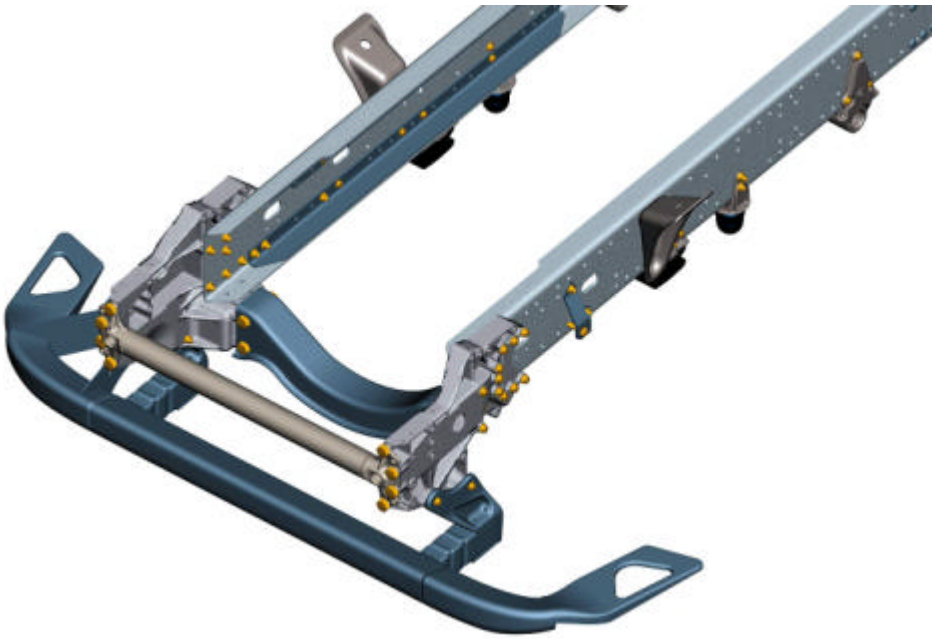
Oil change intervals of 500,000 km and the use of HUB units are unique to MAN.

TG-A Frame

Front underride guard

🕮 Equipment:

Front underride guard



🕮 Technology:

The front underride guard is fastened to the front end of the frame, crash elements being integrated into the fastening. With the aid of these deformation elements impact energy is purposefully absorbed.
The lower edge of the underride guard is approx. 340 mm above the ground (if 315/80 R 22.5 tyres are fitted).
A crash test has revealed that even at a high relative speed of 64 km/h the occupant injury criteria stipulated in ECE-R-94 (according to ECE-R94 for an impact speed of 56 km/h) are complied with.
The front underride guard effectively protects the components (such as the radiator, pipes etc) lying behind it. The lower entrance steps are fitted to the front underride guard.

🕮 Product advantages/customer benefit:

•High passive safety (protection for other road users)
•Effective moving-off protection
•Future legislation has already been anticipated in the design of the vehicle
•Robust attachment of the lower entrance step for safe entering and exiting

🕮 Notes (availability, recommended application, combination):

Currently, each and every TG-A is equipped with the front underride guard.

🕮 Competitive situation:

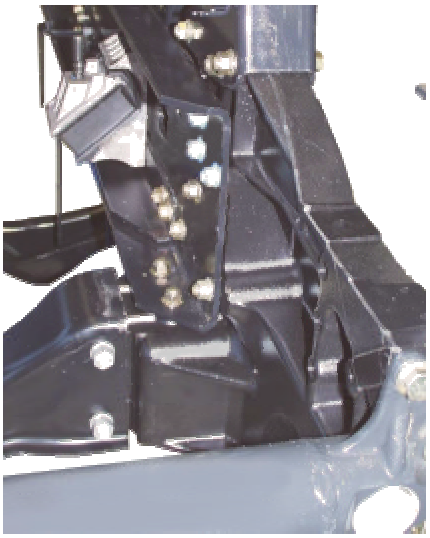
No other competitor offers the front underride guard as standard equipment. This integrated solution is unique to the TG-A.

TG-A Frame

Front end

🕮 Equipment:

Front end of the chassis frame



🕮 Technology:

At the front the chassis frame terminates in the front end, a multi-function element, to which the following components are attached:

front cab mounts
steering gear
front springs
cooling system
front underide guard
bumper
front cross member

The U-section of the frame longitudinal members remains unchanged over its entire length. The frame track is widened by the laterally attached cast elements.
This concept enables the installation of wide radiators and, consequently, a large cooling area. The modular design makes it possible that parts damaged are easy to repair.

🕮 Product advantages/customer benefit:

•Simplified, elegant solution
•Reduced variety of parts, which means fewer spare parts
•Large cooling area feasible, which means shorter fan running times and less fuel consumption
•Easy repair of parts damaged

🕮 Notes (availability, recommended application, combination):

Each and every vehicle from the heavy model ranges is equipped with this front end and the front underride guard.

🕮 Competitive situation:

Scania and DC-Actros also feature a frame front end. However, their design is different.

TG-A Frame

Rear underride guard

🕮 Equipment:

Rear underride guard for class-2 chassis

🕮 Technology:

The rear underride guard is designed as a tube and can be adjusted in height. Rear lamps, the number plate and sockets are fitted to the frame by means of a separate bracket.

🕮 Product advantages/customer benefit:

- It can be adjusted in height to different bodies, operating conditions (angle of departure), statutory regulations or tyres.
- The round underride guard is easy to clean.
- In tipping operations (in tipper vehicles) the load does not catch on the underride guard.

🕮 Notes (availability, recommended application, combination):

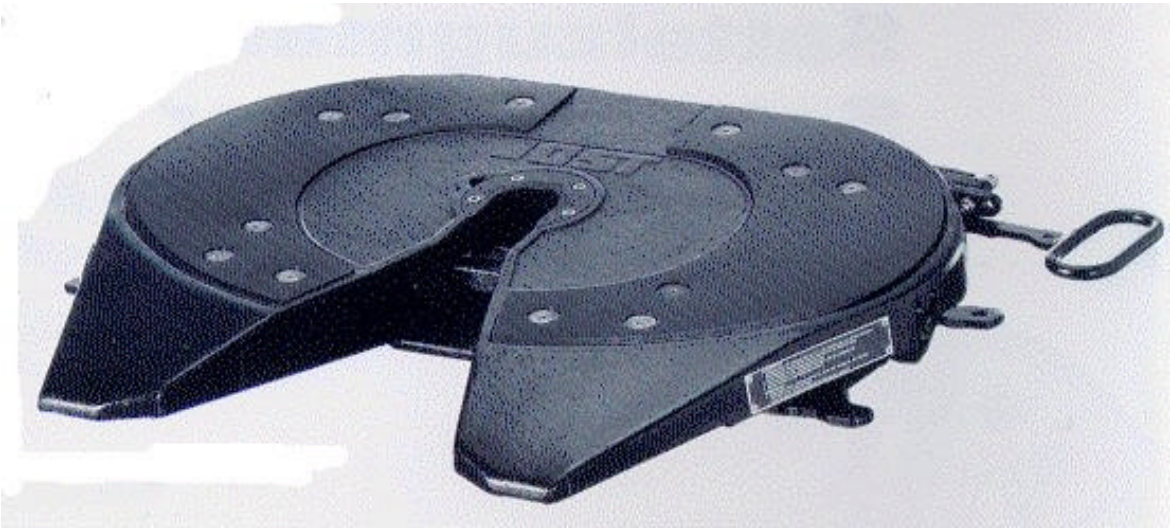
For construction-side vehicles a folding underride guard is available too, which enlarges the angle of departure and enables on-road operation.

TG-A Frame

Fifth-wheel coupling, low-maintenance

🕮 Equipment:

Fifth-wheel coupling, low-maintenance



🕮 Technology:

Fifth-wheel couplings from Jost and Fischer are also available in a low-maintenance version. Specially developed sliding elements made of abrasion-resistant synthetic material ensure an ideal and constant sliding behaviour between the semitrailer and the fifth-wheel coupling plate.
Apart from the locking hook all wearing and bearing parts are maintenance-free. All wearing parts can be readily exchanged, even if the fifth-wheel coupling is in the installed condition.
Maintenance work is reduced to regularly cleaning and maintaining the locking hook. The fifth-wheel coupling plate and the kingpin require basic greasing.
In long-haul transport the wearing pads last for approx. 500,000 km.
The synthetic elements are fully recyclable.

🕮 Product advantages/customer benefit:

•High economic efficiency, as no regular lubrication is necessary (except for the locking hook)
•Constant optimum coefficient of friction in all external conditions
•Fifth-wheel coupling plate exposed to less wear
•High eco-friendliness thanks to
⇨recyclable wearing elements
⇨cancellation of need to dispose of old greases

🕮 Notes (availability, recommended application, combination):

Fifth-wheel couplings with 150, 185 and 250 mm coupling heights are available in low-maintenance versions.

🕮 Competitive situation:

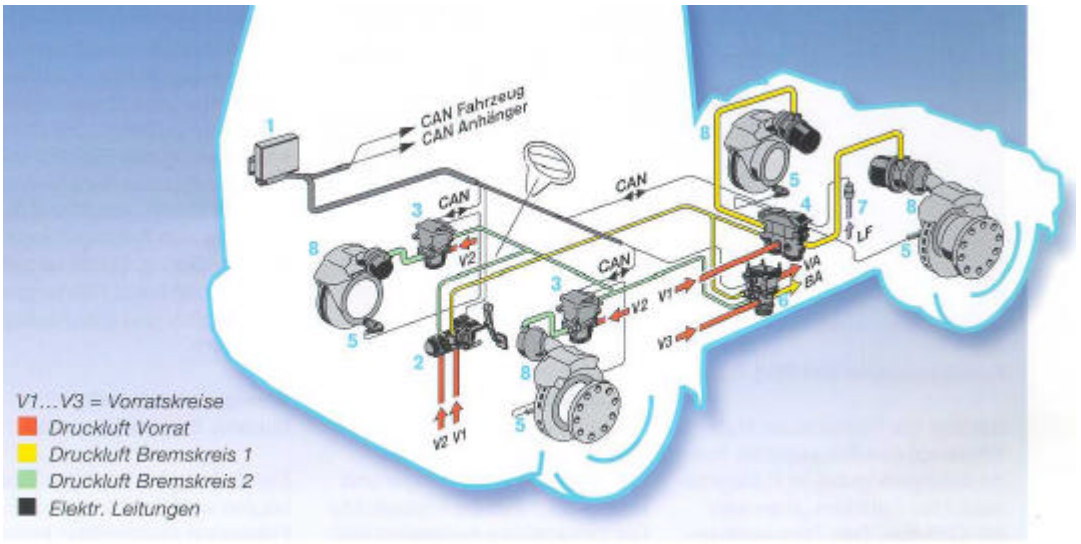
Low-maintenance fifth-wheel couplings are offered by other competitors too.

TG-A Brake system

632AB Electronic brake system (EBS)

🕮 Equipment:

Electronic brake system (EBS) - MAN-BrakeMatic



🕮 Technology:

Electronic pressure control modules control the brake-cylinder pressure of the individual wheels and are permanently connected via the CAN data bus with the central control unit, which evaluates a multitude of relevant influence variables and calculates the brake pressures optimal for the respective requirements. Systems such as trailer control, brake pad wear control and ABS/ASR are integrated. Diagnostic options are available.

🕮 Product advantages/customer benefit:

•Braking distance reduced by up to 3 metres (in conjunction with disc brakes all round)
•Precise control
•Wear control for even brake pad wear on all axles; as a result, brake pads show the same degree of wear when being exchanged - a contribution to economic efficiency
•Short response and release times
•Car-like brake pedal actuation
•Wear forecast and wear limit display
•ABS/ASR are integrated into the system
•Comfort advantages and longer brake-pad service lives thanks to the integration of the sustained-action brakes
•Better coupling power control
•In-depth self-diagnosis option, which means shorter downtimes for repair work

🕮 Notes (availability, recommended application, combination):

Retarders can be integrated into the electronic brake management system. EBS is an integral part of MAN BrakeMatic.

🕮 Competitive situation:

DC: Telligent brake system
Volvo and Scania: electronic brake system

TG-A Brake system

370ER MAN ECAM (Electronically Controlled Air Management)

🕮 Equipment:

MAN ECAM - Electronically controlled compressed-air management

🕮 Technology:

The conventional air preparation devices (air dryer, regeneration tank (4-litre air tank), pressure governor, 4-circuit protection valve, pressure limiter, pressure sensors, check valve and overflow valve) are combined into one unit. MAN ECAM also includes the filler connection for external filling. The air dryer is regenerated (drying of the granulate) directly with reservoir air and not with air from a regeneration tank, as was previously the case. The regeneration process is controlled electronically and not, as hitherto, upon reaching the cut-off pressure. The air compressor runs under load, preferably when the vehicle is being engaged in overrun condition.
All pressures are controlled electronically and indicated via MAN Tronic.
Diagnostic options and safety devices against failure (mechanical backup system) are fitted.

🕮 Product advantages/customer benefit:

•Fewer pneumatic lines and screwed connections are necessary, which enhances safety for the tightness of the compressed-air brake system
•A regeneration tank is no longer necessary
•The air dryer is regenerated as required, which ensures high functional safety at low air consumption
•Self-diagnosis for driver information and reduced downtimes for repairs

🕮 Notes (availability, recommended application, combination):

MAN ECAM is employed in all TG-A vehicles.

🕮 Competitive situation:

Currently, no other competitor offers a comparable system.

TG-A Brake system

Sustained-action brake management

🕮 Equipment:

MAN BrakeMatic - intelligent sustained-action brake management

🕮 Technology:

Comprehensive utilisation of MAN Tronic for data exchange enables the following functions for sustained-action brakes:

1) Pre-engagement via brake pedal

Up to 25 % of the brake pedal travel (free travel) is used for pre-engaging retarder stages (up to 50 % of the maximum output).

2) Bremsomat (brake control) if cruise control is engaged

If the cruise-control function is active the Bremsomat is automatically set for the speed selected + 2km/h. As a result, the maximum speed set by the driver will then not be exceeded by more than 2km/h, even in pushing operation, owing to the engagement of the sustained-action brakes.

3) Bremsomat after minor braking operation

Upon deceleration of the vehicle by means of a brake pedal actuation, the speed reached on releasing the brake is stored and maintained by the Bremsomat.

4) Bremsomat after acceleration

Upon release of the accelerator pedal the actual road speed is stored, and the vehicle is automatically decelerated when exceeding this speed by more than 2 km/h.

The functions are activated via a rocker switch in the instrument panel.

🕮 Product advantages/customer benefit:

- **Comfortable, automated engagement of the sustained-action brakes**
- High road safety, as the driver is not distracted by the actuation of the sustained-action brakes.
- The sustained-action brakes is more frequently used owing to its automated engagement.
- Owing especially to the pre-engagement of the sustained-action brakes, this brake is more often used if the vehicle is being driven uneconomically.

🕮 Notes (availability, recommended application, combination):

The EVB engine brake too is integrated into the sustained-action brake management. The sustained-action brake management is currently available only in conjunction with a retarder and is an integral part of MAN BrakeMatic.

🕮 Competitive situation:

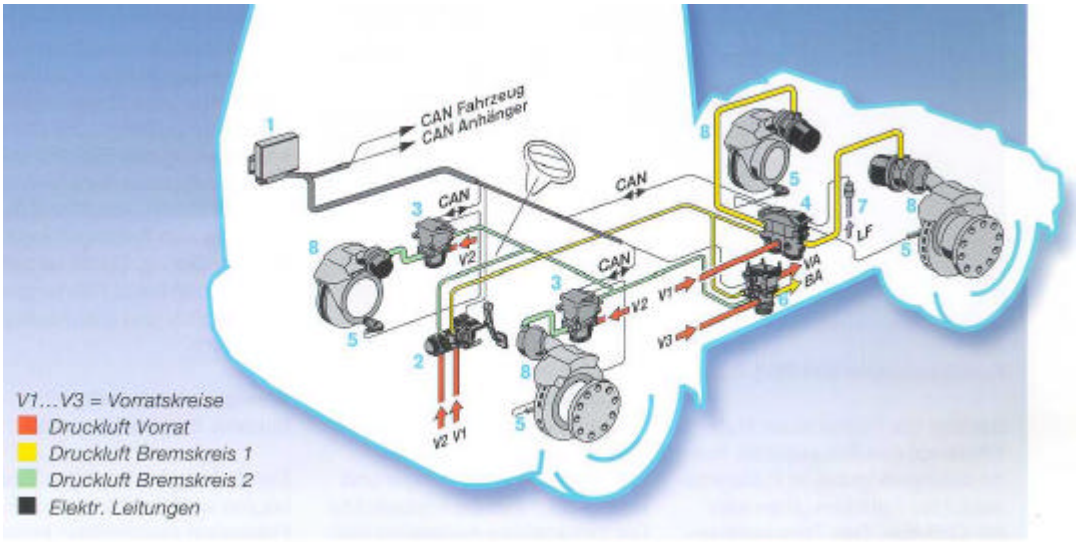
Telligent brake system from DC.

TG-A Brake system

Coupling power control

🕮 Equipment:

MAN BrakeMatic - Coupling power control



🕮 Technology:

The objective of train adjustment is to achieve that during the deceleration of a train the trailer and the tractor decelerate their own respective masses. Owing to the different quality of trailer brakes, it has hitherto not been possible to achieve optimum train adjustment in varying tractor/trailer combinations. The vehicle electronics is capable of recognising the quality of the trailer brake system. For this purpose the first few braking actions of the train are used as reference values. MAN Tronic then evaluates information such as brake pressures, values from the wheel sensors and the recognised tractor and trailer masses.
The pressure applied by the trailer or semitrailer brake system (the pressure necessary for applying the brake linings to the drums or the brake pads to the brake discs) is controlled.

🕮 Product advantages/customer benefit:

•Better train adjustment
•Shorter braking distances
•Harmonisation of brake pad/lining wear between tractor and trailer

🕮 Notes (availability, recommended application, combination):

EBS-braked trailers also benefit from the advantages of EBS. However, for the coupling power control described, EBS is not necessary on the trailer.

🕮 Competitive situation:

DC also offers coupling power control, which however in comparison with ours is less reliable in recognising the trailer braking quality.

TG-A Brake system

Disc brakes all round

🕮 Equipment:

Disc brakes on all axles with HUB wheel bearing units

🕮 Technology:

The floating caliper disc brakes are equipped with internally ventilated brake discs.
All axles feature the same brake pads. The brake cylinders are directly flanged on to the brake calipers, which makes for a very compact design. The thickness of the brake pads is recognised by the MAN BrakeMatic system.
The wheel bearings are maintenance-free HUB units.
The maximum braking moment has been increased by approx. 15 %.

🕮 Product advantages/customer benefit:

•Braking distances reduced by up to 3 metres (in conjunction with EBS)
•Lower temperature-induced performance fluctuations
•Lower brake power fluctuation (linear characteristic)
•High braking moment (+15%)
•Better application of braking effect in metered doses
•Quick response behaviour
•Brake-pad-wear harmonisation and service-life forecast through MAN BrakeMatic
•Easy exchange of brake pads, which means lower maintenance inputs
•HUB units facilitate exchanging brake discs and reduce the maintenance input
•Good cooling through internal ventilation
•Uniform brake pads on all axles, which facilitates the procurement of spare parts

🕮 Notes (availability, recommended application, combination):

Disc brakes are offered for hypoid and non-driven axles.

🕮 Competitive situation:

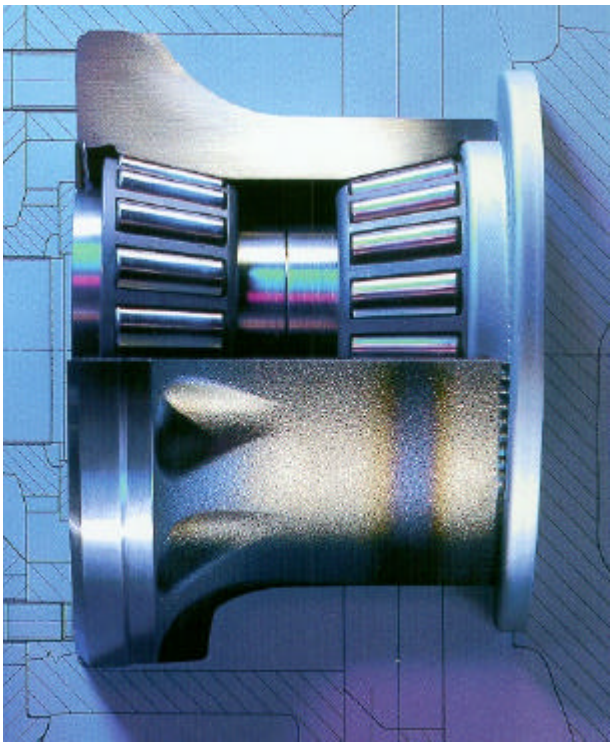
DC, Volvo, RVI and Scania offer disc brakes all round.

TG-A Brake system

HUB unit

🕮 Equipment:

Wheel bearing unit (HUB unit)



🕮 Technology:

The wheel bearings are designed as bearing units (HUB units) which combine the two wheel bearings into one sealed unit with service-life lubrication.
The brake disc is attached to the HUB unit and is therefore easy to remove.

🕮 Product advantages/customer benefit:

•Permanently lubricated and sealed, which makes gease changes no longer necessary
•The wheel bearing no longer needs to be disassembled for changing brake discs
•Exact, manufacturer-set axial play in the bearing, which ensures high running accuracy for the wheels
•No risk of bearing contamination or damage to seals during installation and maintenance work
•Easy assembly

🕮 Notes (availability, recommended application, combination):

HUB wheel bearing units are installed on all axles with disc brakes.

🕮 Competitive situation:

HUB wheel bearing units are used by RVI too.

TG-A Cab exterior

Cab tilt mechanism

🕮 Equipment:

Cab tilt mechanism for the TG-A cab variants.

🕮 Technology:

In left-hand drive vehicles the cab tilt mechanism is located on the right-hand side of the cab behind the bumper and is accessible through an aperture in the entry box. The tilt mechanism boasts a simple and functional design. The location of the control arms enables a tilting angle which in comparison with that of the F2000 has been enlarged by 10° to more than 65°.

🕮 Product advantages/customer benefit:

•Good accessibility to engine and units during maintenance and repair work
•Accessibility to actuation device independent of the body fitted
•The actuation device does not reduce the space available for bodies.
•Fewer components, which means high functional safety

🕮 Notes (availability, recommended application, combination):

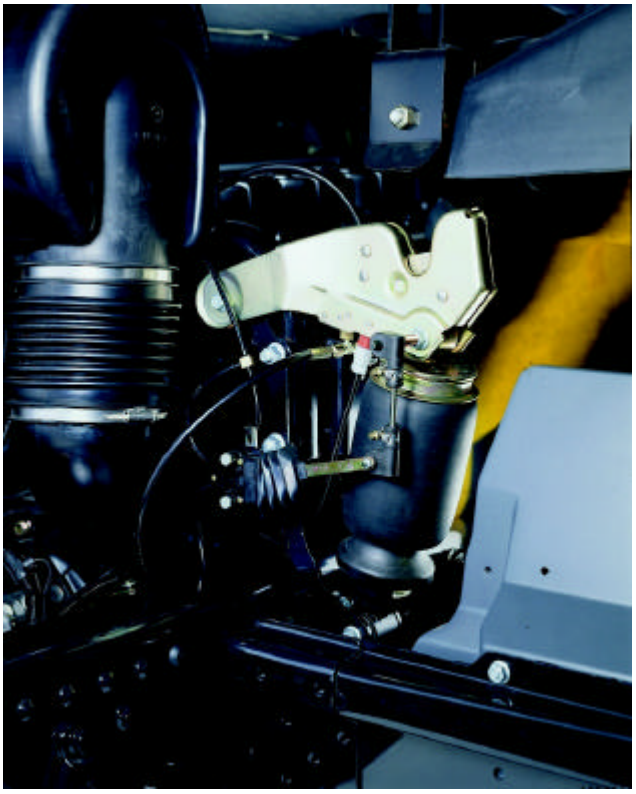
An electro-hydraulic cab tilt mechanism will also be available, which makes for comfortable tilting without need to exert excessive force.

TG-A Cab exterior

283FA High-comfort cab mounts

🕮 Equipment:

Air-sprung cab mounts



🕮 Technology:

The newly designed air-sprung 4-point cab mounts enable a maximum spring travel of +/-45mm and are designed so that in a frontal collision (rear-end crash) they permit a defined movement of the cab towards the rear and simulatneously absorb energy.

🕮 Product advantages/customer benefit:

•High suspension comfort and, consequently, high ride comfort

•High passive safety owing to the design of the mounts

🕮 Notes (availability, recommended application, combination):

The L/LX/XL/XXL long-haul cabs feature high-comfort cab mounts as standard.

🕮 Competitive situation:

This suspension comfort is unsurpassed by any other competitor.

TG-A Cab exterior

388AR Glare protection on the outside

🕮 Equipment:

Sunshade before windscreen, green shade band

🕮 Technology:

The cab exterior features the following antiglare protection:
•Exterior sunshade
•Green shade band for high windscreens in XXL cabs
The exterior sunshades are fastened by means of 4 brackets made of high-strength synthetic material. Additional support in the form of carriers for position lamps is provided on the sides.
The sunshade brackets are fitted with assembly devices for attaching additional equipment.

🕮 Product advantages/customer benefit:

•Antiglare protection effectively prevents any sight obstruction caused when the sun is low
•Design and dimensions optimally adjusted to individual cab models
•Cab visually enhanced
•Brackets for attaching additional equipment (eg roof-mounted headlights)

🕮 Notes (availability, recommended application, combination):

Exterior sunshades are available for all cab variants.

🕮 Competitive situation:

Exterior sunshades with preparation for attaching additional equipment are not offered by any other competitor.

TG-A Cab exterior

050NH XXL long-haul cab

🕮 Equipment:

XXL long-haul space cab, 2440 mm wide

🕮 Technology:

The XXL cab has the following dimensions:

Length: 2280 mm Width: 2440 mm

It features two bunks with the following dimensions:

Upper bunk: 2125/705 mm Lower bunk: 2200/790 mm

The “top-of-the-range“ cab offers a tall, tinted windscreen with green shade band and an electric sunshade for glare protection as standard.

The air-sprung 4-point cab mounts ensure superb suspension comfort.

The interior offers ample storage space, a large variety of deposit trays and an electric tilt/slide roof.

As the engine tunnel is only 100 mm high, the standing height is 2100 mm.

🕮 Product advantages/customer benefit:

- **Maximum interior space**
- **Demands for superb comfort are satisfied**
- **Maximum storage space**
- **Two enlarged bunks (a total of +35% more lying surface)**

🕮 Notes (availability, recommended application, combination):

The XXL cab is ideally suited for international long-haul trucking, as it offers superb comfort.

Aeropackage and roof spoiler are available.

🕮 Competitive situation:

See comparison of competing cabs. The standing height of 2100 mm, the ample interior space and the free cross-cab access to the co-driver‘s side are clear competitive advantages.

TG-A Cab exterior

050NG XL long-haul cab

🕮 Equipment:

XL long-haul cab, 2440 mm wide

🕮 Technology:

The XL cab has the following dimensions:

Length: 2280 mm Width: 2440 mm

It features a bunk with the following dimensions: 2200/790 mm.
The XL cab offers a mechanical roller sun blind for glare protection as standard equipment.
The air-sprung 4-point cab ensures superb suspension comfort.
The interior offers a large variety of deposit trays and storage compartments.
The head clearance above the 100 mm high engine tunnel is 1560 mm.
Compared with the XXL cab the overall vehicle height is 520 mm lower.

🕮 Product advantages/customer benefit:

•Low overall vehicle height for special body and customer requirements
•Comfortable cab width
•Weight and price-optimised variant of the wide cab version

🕮 Notes (availability, recommended application, combination):

The XL cab is particularly suitable for operation in long-haul transport with only one driver.

🕮 Competitive situation:

See comparison of competing cabs.

TG-A Cab exterior

LX long-haul cab

🕮 Equipment:

LX long-haul space cab

🕮 Technology:

The LX cab has the following dimensions:

Length: 2280 mm Width: 2240 mm

It features two bunks with the following dimensions:

Upper bunks: 1940/705 mm Lower bunk: 2005/760 mm

The LX cab offers a high cab roof and a mechanical roller sun blind for glare protection.
The air-sprung 4-point cab ensures superb suspension comfort.
The interior offers ample storage space with a large variety of deposit trays and storage compartments and an electric tilt/slide roof. The standing height above the engine tunnel is 1720 mm.

🕮 Product advantages/customer benefit:

- **Cab with a width of 2240 mm for superb comfort**
- **Weight and price-optimised variant of the space cab version**
- **Cab with comfortable equipment for two drivers**
- **Cab perfectly suitable for international long-haul trucking**
- Full standing height for co-driver

🕮 Notes (availability, recommended application, combination):

The LX cab is suitable for all requirements in international long-haul transport which do not require maximum cab width.

🕮 Competitive situation:

See comparison of competing cabs.

TG-A Cab exterior

L long-haul cab

🕮 Equipment:

L long-haul cab

🕮 Technology:

The L cab has the following dimensions:

Length 2280 mm Width: 2240 mm

It features a bunk with the following dimensions: 2005/760 mm
The L cab features a mechanical roller sun blind for glare protection.
The air-sprung 4-point cab ensures superb suspension comfort.
The interior offers a large variety of deposit trays and storage compartments.
The head clearance above the 260 mm high engine tunnel is 1320 mm.
Compared with the LX cab the overall vehicle height is approximately 300 mm lower.

🕮 Product advantages/customer benefit:

•Weight and price-optimised variant
•Low overall vehicle height for special body and customer requirements
•Small-width cab with high comfort
•Cab perfectly suitable for light long-haul transport

🕮 Notes (availability, recommended application, combination):

The L cab is particularly suitable for light long-haul trucking, for transporting timber, refrigerated goods, construction materials and for tanker and silo vehicles.

🕮 Competitive situation:

See comparison of competing cabs.

TG-A Cab exterior

232HA Bumper

🕮 Equipment:
Synthetic bumper with integrated air dam

🕮 Technology:
The bumpers have a self-supporting structure of glassfibre-reinforced synthetic material without metallic inlays.
The main headlights, the light strip and the headlight cleaning system are harmoniously integrated. The collision-prone areas feature easy-to-exchange crash corner parts.
Optimum air deflection prevent heavy contamination in the door and side-wall areas.
The air slots double as steps for access to the windscreen.
The headlights fold out for easy exchange of lamps.

🕮 Product advantages/customer benefit:
•***Crash corner parts are easy to exchange and cost little***
•Aerodynamic design
•Little contamination of vehicle sides thanks to optimum air deflection
•Easy exchange of lamps
•Safe access to windscreen
•Segregated recycling possible

🕮 Notes (availability, recommended application, combination):
The standard bumper is in MAN grey (7585) and is also available in other tints.

TG-A Cab exterior

Air deflectors

🕮 Equipment:

Spoiler and aeropackage

🕮 Technology:

Spoilers and aeropackages are optimally adjusted to the individual cab variants. Design elements of the cab find their continuation in the aeropackage.
The lateral air deflectors of the aeropackage can be slewed out and do not impede access to the fifth-wheel coupling and the connection elements.
All air deflector parts are made of glassfibre-reinforced synthetic material with a high surface quality, which makes them corrosion-proof and paintable.
The brackets and adjusting devices are made of steel with high-quality corrosion protection.
The spoiler height can be adjusted by one person without outside help.

🕮 Product advantages/customer benefit:

- ***Fuel savings through enhanced aerodynamics***
- Space for attaching company logos
- Visual enhancement thanks to a design matched to the cab
- All spoilers are easy to adjust in height without tools
- Unimpeded access to fifth-wheel coupling and connection elements

🕮 Notes (availability, recommended application, combination):

Roof spoilers and aeropackages are special equipment.
Retrofitting is possible.
Notes on possible paintwork variants can be learned from the relevant MAN Info.

🕮 Competitive situation:

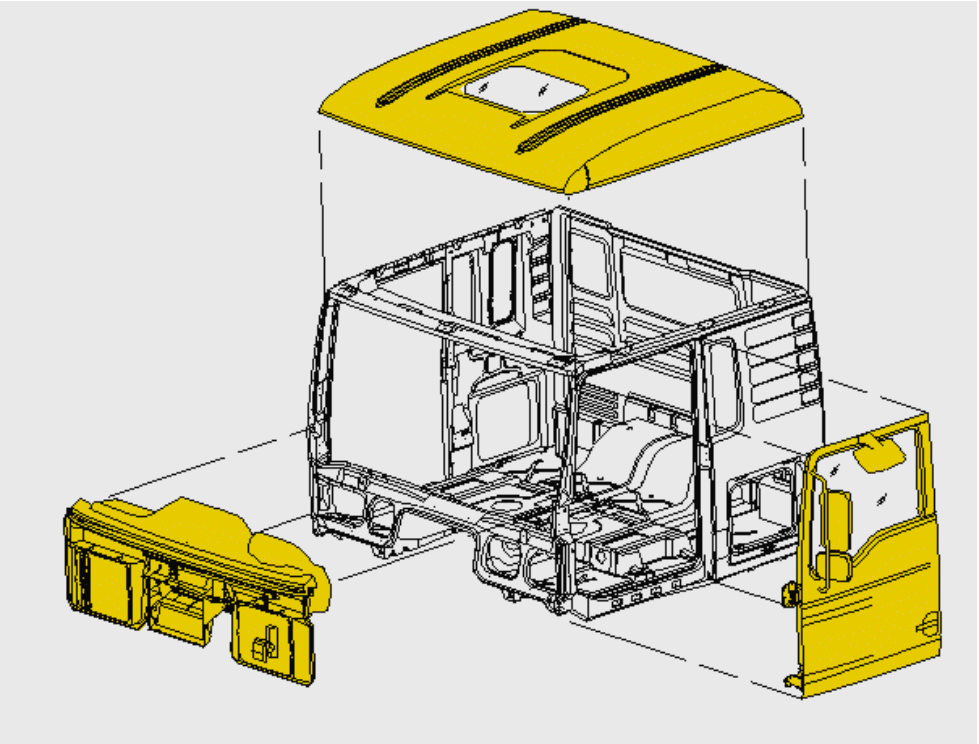
Some competitors offer synthetic parts made from a hand laminate with poor surface quality.
Height adjustment is often a time-consuming job and is possible with special tools only.

TG-A Cab exterior

Cab shell

🕮 Equipment:

Cab shell



🕮 Technology:

All sheet-metal parts of the cab are fully galvanised. The areas exposed to stoning are additionally protected by synthetic covers.
To enhance the cab's visual quality, gaps have been reduced to 8 mm.
The cab is designed on a modular basis. The components *door, roof* and *system carrier* are pre-assembled in the manufacturing process, ie they are put together outside the cab and are tested.
Three continuous bands lend the cab high structural strength. As a result, the cabs comply with the safety requirements to ECE R26 (simulation of head-on collision).

🕮 Product advantages/customer benefit:

•Longevity and retention of value through optimum corrosion protection
•High visual quality
•Reliability through process safety in the manufacturing process
•Passive safety through high strength

🕮 Notes (availability, recommended application, combination):

The low cabs are fitted with a sheet-metal roof. Space cabs are made from synthetic materials.

TG-A Cab exterior

Entrance

🕮 Equipment:

Entrance to XXL and XL cabs

🕮 Technology:

Three wide, deep steps make it easy to board XL and XXL cabs. The distance between the entrance steps is 365 mm.
The lowermost step is attached to the front underride guard, whereas the two upper steps are fitted to the cab.
When the door is open the entrance is lit by a lamp fitted to the door inner cladding.
When the door is shut, a door extension covers the two upper steps.
Two long ergonomically designed handles ensure safe boarding and exiting.

🕮 Product advantages/customer benefit:

•Ergonomic and safe boarding and exiting in all weather conditions and in darkness
•No contamination of or ice formation on the upper steps
•Aerodynamic design through door extension

🕮 Notes (availability, recommended application, combination):

The door extension, entrance and front mudguards constitute a single paintwork area for cab finishing.

TG-A Cab interior

052AC Storage compartment

🕮 Equipment:

Storage compartment

🕮 Technology:

Below the bunk two large-volume storage compartments are located, each with a **capacitcy of 180 litres**, interior lighting and a large flap for access from the outside. The flaps can be unlocked by means of a lever on the cab floor. The storage compartment behind der driver‘s seat is accessible also from within the cab.
The opening action of the storage-compartment flaps is supported by gas-filled telecopic struts. The flaps shut smell-tight.
The on-board tools are stored in the compartment on the co-driver‘s side in a space-saving manner. The compartments for the warning triangle, the fire extinguisher and the first-aid kit are integrated into the top portion of the storage compartment on the co-driver‘s side. Thus, these items can be quickly and safely retrieved from the cab interior.

🕮 Product advantages/customer benefit:

•Large storage compartment accessible from the outside
•Comfortable access to left-hand storage compartment from within the cab
•Emergency lamp, fire extinguisher and first-aid kit within easy reach in the cab interior

🕮 Notes (availability, recommended application, combination):

The two storage compartments are standard equipment.

🕮 Competitive situation:

No other competitor offers the same storage volume and flap size.

TG-A Cab interior

Door module

🕮 Equipment:

Door module

🕮 Technology:

The following functions are integrated into the door module:

1) Mirror adjustment
2) Mirror heating
3) Automatic window lifter
4) Central locking system

The individual functions are actuated in readily comprehensible logic.
The module is fitted to the driver's door in the area of the armrest.
The mirror is adjusted via a serial data line. The number of lines to the mirrors has been markedly reduced.

🕮 Product advantages/customer benefit:

- **Comfortable, ergonomic actuation of the window lifters, mirror adjustment / heating and central locking system**
- Clean integrated solution
- Readily comprehensible operation
- High functional safety

🕮 Notes (availability, recommended application, combination):

A special mirror adjustment for semitrailer trains when in angled positions is available as special equipment.

🕮 Competitive situation:

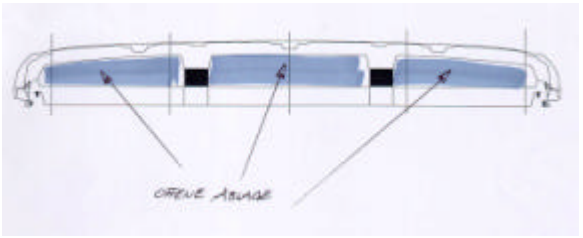
No other competitor offers either a unit in which all of the aforementioned functions are equally elegantly combined or the mirror adjustment for semitrailer trains.

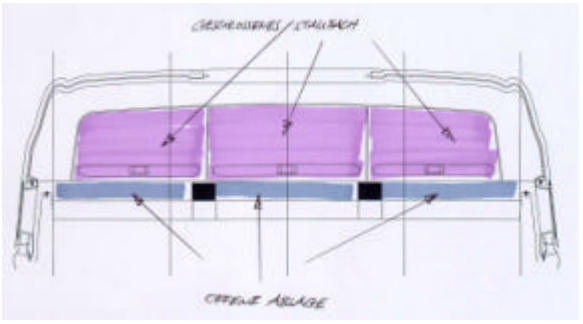
TG-A Cab interior

Storage compartment system above windscreen

🕮 Equipment:

Storage compartment system above windscreen





🕮 Technology:

In all cab models the storage system above the windscreen features modular design and is divided into three compartments by two interior/spotlight elements.
The compartment above the driver is equipped with two radio DIN drawers.
Cabs (M,L, XL) with low roof feature three open trays directly under the roof cladding, each with a maximum load capacity of 85 kg.
XXL cabs are additionally equipped with three large-volume (XL cabs with two) closed storage compartments, each with a load capacity of max. 20 kg.
LX cabs have no storage unit on the co-driver's side to provide space for standing upright in the area next to the engine tunnel. A storage net is provided here instead.
The interior of the closed storage compartments is lit.

🕮 Product advantages/customer benefit:

- **Optimum space utilisation in all cab variants**
- Storage compartments with high permissible load capacity
- Owing to the modular design it is easy to exchange storage units and, consequently, retrofit future modules
- A free DIN compartment is provided for installing, for example, radio equipment
- LX cabs provide sufficient space for standing upright in the area next to the engine tunnel

🕮 Notes (availability, recommended application, combination):

Lockable flaps for the storage compartments are available as special equipment.

🕮 Competitive situation:

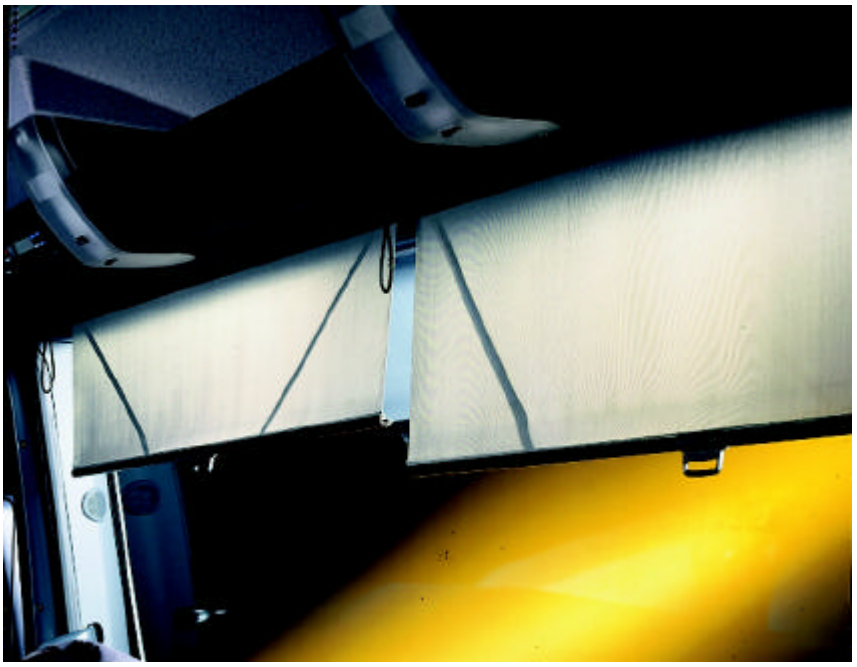
Modular storage compartment systems are not provided by other competitors.

TG-A Cab interior

Glare protection on the inside

🕮 Equipment:

Roller sun blinds and glare protection inside cab



🕮 Technology:

The following glare protection measures are available for the cab interior:

⇨2 roller sun blinds at the windscreen (500 mm long), electrically operated, for tall windscreen

⇨2 roller sun blinds at the windscreen (300 mm long), manually operated for low windscreen

⇨Fan-type fold-out antiglare device made of synthetic material for the side windows, fitted to top of door frame

When rolled up, the roller sun blinds are covered by a trim panel. The fabric is of high quality and opaque.

🕮 Product advantages/customer benefit:

- **The glare protection effectively prevents sight obstruction caused when the sun is low**
- Optimum adjustment through infinite adjustability
- An electric drive in XXL cabs enables easy operation of the roller sun blind on the driver's and co-driver's sides
- Concealed roller sun blind installation to reduce the risk of injury in accidents
- Concealed roller sun blind installation for enhanced visual quality
- The antiglare device on the door does not impede boarding and exiting, even when folded out.

🕮 Notes (availability, recommended application, combination):

Glare protection for the cab sides is available for all cab sizes and is also easy to retrofit.

🕮 Competitive situation:

In terms of look, functionality and ergonomics, this is the best concept on the market.

TG-A Cab interior

386CC Tilt/slide roof

🕮 Equipment:

Electric tilt/slide roof

🕮 Technology:

The tilt/slide roof is standard for all space cabs (XXL, LX). The following opening positions are possible:
Position 1: Raising about the front edge (“rain position”)
Position 2: Moving the raised flap towards the rear (“open position”)
A maximum opening of 650x250 mm is possible.
The tilt/slide roof can be stopped over the entire travel range.
The tilt/slide roof is actuated via a button in the instrument panel or control console. This enables comfortable actuation from the driver‘s seat and from the bunk.
The tilt/slide roof is installed in and fits flush with the roof contour.

🕮 Product advantages/customer benefit:

•Various adjusting positions
•Comfortable operation via button
•Button within easy reach from the important areas (seat, bunks)
•Only little space required above the roof contour

🕮 Notes (availability, recommended application, combination):

The tilt/slide roof and roof hatch have the same installation dimensions. Subsequent exchange is therefore possible without great effort.
The inside cover frame can be equipped with additional interior lamps or with combined interior red-light lamps.

🕮 Competitive situation:

In terms of look, functionality and ergonomics, this is the best concept on the market.

TG-A Cab interior

386AS Tilt roof

🕮 Equipment:

Tilt roof, mechanical

🕮 Technology:

The roof hatch is in all cabs with normal roof height (M, L, XL). The following opening positions are possible:

Position 1: Raising the hatch 45 mm about the front edge (“rain position”)

Position 2: Raising the hatch 235 mm about the front edge (“open position”)

The roof hatch is actuated via a large, transverse hand lever.

A trim panel lined with cotton non-woven material matches the design of the cab interior cladding and ensures insulation against noise and heat.

The roof hatch is installed in and fits flush with the roof contour.

🕮 Product advantages/customer benefit:

- The hand lever is within easy reach from the driver‘s and co-driver‘s seats.
- The hatch can be locked in rain position, which allows driving in light rain with the hatch open.
- Only little space required above the roof contour.

🕮 Notes (availability, recommended application, combination):

The tilt/slide roof and roof hatch have the same installation dimensions. Subsequent exchange is therefore possible without great effort.

The inside cover frame can be equipped with additional interior lamps or combined interior red-light lamps.

🕮 Competitive situation:

In terms of look, functionality and ergonomics, this is the best concept on the market.

TG-A Cab interior

Rocking seats

🕮 Equipment:

High-comfort rocking seat for the driver

🕮 Technology:

This is a new generation of seats which set new standards in terms of design, seating comfort and operation.
All rocking seat models feature the following equipment:
Air suspension, integrated belt system, longitudinal adjustment with resting position, backrest adjustment, pneumatic height adjustment, seat-cushion inclination adjustment, quick-lowering feature and verical damper adjustment
<u>High-comfort driver's seat, air-sprung, with lumbar support and seat heating:</u>
Pneumatic lumbar support, seat-cushion depth adjustment, pneumatic side contour adjustment, hydraulically damped horizontal suspension with locking device, seat heating, bolster adjustable in height
<u>High-comfort driver's seat, air-sprung, with lumbar support, seat heating and memory:</u>
Electric adjustment of longitudinal, height and backrest positions and of seat cushion inclination; three seat positions can be saved in a memory feature;
All seats have a new operating concept. The headrest is integrated into the backrest.
The "multi-function backrest " combines a variety of functions.

🕮 Product advantages/customer benefit:

•High seating comfort

Multi-function backrest
Improved vibration behaviour (natural frequency reduced from 1.7 to 1.3 Hz)
Optimised response behaviour of seat heating
Equipment variants for optimum adjustment

•High control comfort owing to a straightforward arrangement of confusion-proof and self-explaining operating elements (ergonomic arrangement)
•Resting position for relaxing during breaks in the journey
•High safety through implementation of very stringent crash requirements
•High-luxury electric rocking seat: the optimum seating position can be saved and comfortably activated

🕮 Notes (availability, recommended application, combination):

A belt tightener is offered in conjunction with the air bag.

🕮 Competitive situation:

More sophisticated and more comfortable than competing seats.

TG-A Cab interior

Multi-function backrest

🕮 Equipment:

Seat with multi-function backrest

🕮 Technology:

The backrest of the new seat generation boasts a multi-function design with a functional cover, whose upper area features a hook while the centre portion is provided with a flexible deposit pocket and the lower portion with ventilation slots.
Both the headrest and the three-point belt are integrated into the backrest in all rocking seats.
The design of the backrest ensures optimum support for the shoulders. The elbow room necessary for reversing and steering is not restricted.

🕮 Product advantages/customer benefit:

•High seat comfort owing to :

integrated headrest
integrated safety belt
perfect design
elbow room

•Excellent seat climate through vent slots
•Hook on backrest for hanging up, and thus optimally stowing away, clothes
•Storage space in storage pocket for maps etc

🕮 Notes (availability, recommended application, combination):

A belt tightener is offered in conjunction with an air bag.

🕮 Competitive situation:

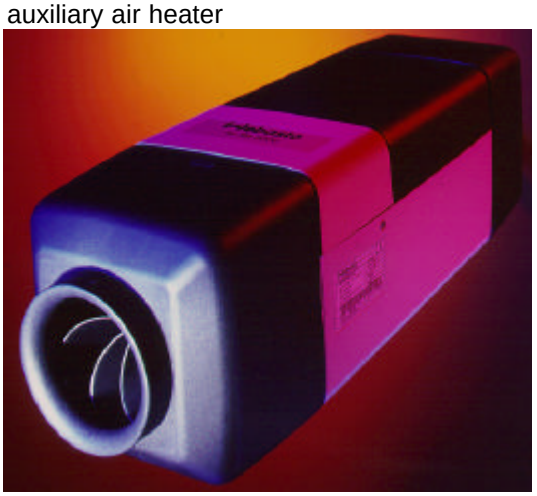
More sophisticated and more comfortable than any other competing seat.

TG-A Cab interior

153ET AIR TOP 3500 auxiliary heater

🕮 Equipment:

WEBASTO AIR TOP 3500 auxiliary air heater



🕮 Technology:

WEBASTO AIR TOP 3500 is a diesel-powered air heater with a maximum calorific output of 3.5 kW. The temperatur can be set in the range from 10°C to 35°C via the combined clock with thermostat function. The calorific output is automatically and continuously controlled from 1.5 to 3.5 kW.
The heater is located under the co-driver's footwell. Under each seat is an outlet nozzle for hot air.
A clock enables programming 3 switch-on times up to 7 days in advance. The clock doubles as an alarm clock.
The system is RME-compatible and is also approved for transport of hazarous materials as per ADR (without pre-selection function).
The consumption of fuel lies between 0.17 and 0.42 l/h and that of current between 15 and 36 W in heating operation. Diagnostic capability is provided via MANCATS.

🕮 Product advantages/customer benefit:

•High calorific output (3.5 KW permanently)
•Constant temperature, as the calorific output is automatically provided as required
•Pleasant noise behaviour thanks to quiet operation and smooth noise transitions during output changes
•High comfort thanks to optimum air distribution
•No separate fuel tank necessary
•Automatic start of heating, even after prolonged downtimes
•With the same operating logic it is approved for transport of hazardous materials
•Eco-friendly operation with bio-diesel (RME) possible
•MAN diagnostic options

🕮 Notes (availability, recommended application, combination):

Comfort-conscious solution for large cabs and for operation in cold countries.
For lower calorific-output requirements Webasto offers the AIR TOP 2000 unit.
Can be combined with cooling-water preheaters with the same operating logic.

🕮 Competitive situation:

DC is the only other competitor to offer this auxiliary heater (in Actros vehicles) .

TG-A Cab interior

153EM Thermo 50 cooling-water preheater

🕮 Equipment:

WEBASTO THERMO 50 cooling-water preheater

🕮 Technology:

The Thermo 50 cooling-water preheater is integrated into the coolant circuit fitted and performs the following functions:

Pre-heating the engine
Providing additional heat during the journey
Providing heat while vehicle is stationary and engine is hot

Two output stages can be selected (partial load: 2.2kW and full load: 5.0 kW).
A clock enables programming 3 switch-on times up to 7 days in advance. The clock doubles as an alarm clock.
The system is RME-compatible and is also approved for transport of hazarous materials as per ADR (without pre-selection function).
The heater is located at the front right below the cab and is water-tight.
The consumption of fuel is 0.28/0.63 l/h and that of current is 34 - 50 W in heating operating.
Diagnostic capability is provided via MANCATS.

🕮 Product advantages/customer benefit:

- Additional provision of heat during the journey and for breaks
- Reduced engine wear through engine preheating
- Reduced pollutant emission, as there is no warming-up phase
- Automatic start of heating, even after prolonged downtimes
- Integrated alarm-clock function
- Low operating noise
- No separate fuel tank necessary
- With the same operating logic it is approved for transport of hazardous materials
- Cleaning with steam-jet cleaner is permissible
- Eco-friendly operation with bio-diesel (RME) possible
- MAN diagnostic options

🕮 Notes (availability, recommended application, combination):

Can be combined with cooling-water preheaters with the same operating logic.

🕮 Competitive situation:

Currently, no other original-equipment manufactuer offers this heating concept.

TG-A Cab interior

153EL Eberspächer auxiliary air heater

🕮 Equipment:

Eberspächer auxiliary air heater D3LCC

🕮 Technology:

The Eberspächer D3LCC is a diesel-powered air heater with a maximum calorific output of 3.5 kW. The calorific output is automatically controlled via a temperature pre-selection from 1 to 3.5 kW. The heater is located under the co-driver's footwell and ensures an even distribution of air for the driver and co-driver.
The consumption of fuel lies between 0.12 and 0.42 l/h and that of current between 8 and 36 W in heating operation.
A clock enables programming 3 switch-on times up to 7 days in advance. The clock doubles as an alarm clock. The system is RME-compatible and is also approved for transport of hazarous materials as per ADR (without pre-selection function).
Diagnostic capability is provided via MANCATS.

🕮 Product advantages/customer benefit:

•High calorific output (3.5 KW)
•Automatic, infinite control with temperature pre-selection
•Warming-up period shortened owing to a powerful heating stage
•Pleasant climate through optimum air distribution
•Automatic start of heating, even after prolonged downtimes
•Pleasant noise behaviour thanks to quiet operation and smooth noise transitions during output changes
•Eco-friendly operation with bio-diesel fuel (RME) is possible
•With the same operating logic it is approved for transport of hazardous materials
•MAN diagnostic options

🕮 Notes (availability, recommended application, combination):

Comfort-oriented solution for all cabs and and for operation in cold countries.
Can be combined with cooling-water pre-heaters with the same operating logic.

TG-A Cab interior

Resting area for driver

🕮 Equipment:

Driver‘s resting area in XL, XXL cabs

🕮 Technology:

XL and XXL cabs feature a lower bunk with the dimensions 2200 x 790 mm. The XXL cab is additionally equipped with a second, upper bunk (2125 x 705 mm), which is located at a distance of 790 mm to the lower bunk. A folding safety bar provides effective protection against falling from the bunk.The bunks can be comfortably folded up with the aid of a gas spring and be secured in this position.

Ventilation slots in the rear cab wall ensure an excellent interior climate.

The window lifter, the tilt/slide roof, the heating and the interior lighting can be comfortably operated via a switch console within easy reach from the lower bunk.

🕮 Product advantages/customer benefit:

•Superb comfort and relaxed freedom of movement

•The bunk surface in the XXL cab is 35% larger than in the F2000 G cab with space cab attachment

•High safety owing to a new retention system

•Excellent interior climate thanks to suberb ventilation

•Operating elements within easy reach

🕮 Notes (availability, recommended application, combination):

A pillow is supplied as standard equipment. The radio set can be operated from the bunk via a remote control unit. Further comfort functions can be set via an operating module from the upper bunk.

🕮 Competitive situation:

The width of our bunk is only slightly surpassed by the DAF Spacecab (810mm).

TG-A Cab interior

030EE Steering-wheel adjustment/steering column

🕮 Equipment:

Steering wheel adjustable in height and inclination

🕮 Technology:

The position of the steering wheel can be changed via a foot-operated button (located laterally, near the driver‘s seat). The lock of the steering wheel adjustment system is disengaged pneumatically. The steering wheel can be adjusted in inclination by up to 21° and in height by ±40 mm. As soon as the button is released the lock engages immediately.
Owing to its position, the button is secured against accidental actuation.
The steering column and the steering propshaft are protected against contamination and corrosion by a rubber sleeve under the pedal plate.

🕮 Product advantages/customer benefit:

•Large steering-wheel adjustment range
•Extremely easy-action adjustment
•Comfortable handling of the steering-wheel adjustment system
•Cross-cab access is facilitated, as the steering wheel can be folded forward
•Entering and exiting is facilitated, as the steering wheel can be folded forward
•High safety owing to a pneumatic lock
•No corrosion on steeing column and propshaft if vehicle is washed with a steam jet cleaner.

🕮 Notes (availability, recommended application, combination):

Standard in all cab variants.

🕮 Competitive situation:

DAF and Renault Premium have a comparable system.

🕮 Equipment:

Pull-out insulating box

🕮 Technology:

The insulating box is fastened to the floor between the seats and can be stowed away under the bunk by means of a shifting mechanism comparable to that for the seats.
The box has a capacity of approx. 40 l and is divided into two compartments: The front compartment is for bottles and can accommodate up to three 2-litre bottles; the rear compartment provides space for other items. The box cover doubles as the step for access to the upper bunk and is therefore designed particularly robust.

🕮 Product advantages/customer benefit:

•The insulating box can be used as a daily cold box if cooling elements are put in.
•Comfortable access to upper bunk
•Space-saving accommodation below bunk

🕮 Notes (availability, recommended application, combination):

Instead of the insulating box a refrigerator is availble as special equipment.

🕮 Competitive situation:

No other competitor offers an insulating box of this size and quality.

TG-A Cab interior

Tray concept for small items

🕮 Equipment:

Trays for storing small items

🕮 Technology:

The following storage and deposit devices are within easy reach from the driver‘s seat:

several trays, compartments of various size
can holders
bottle holders

From the driver‘s station all sorts of small items can thus be safely stored away and retrieved.
The oblong trays have the standard dimensions of a DIN drawer.

🕮 Product advantages/customer benefit:

•A large variety of comfortable and safe storage and deposit devices for small parts
•Instrument panel prepared for retrofitting electric devices with standard dimensions

🕮 Notes (availability, recommended application, combination):

The number of deposit trays installed in the instrument panel depends on the vehicle equipment fitted (space required for switches).

TG-A Displays

02AA Instruments

🕮 Equipment:

"Base-line" instruments

🕮 Technology:

The “base-line" instruments constitute the basic equipment in the TG-A.
The instruments comprise as hitherto:

the speedometer and the kilometrage indicator
the rev counter with a clock
the legally required checklamps

Additional displays:

direct fault indicator in the central fault display with clear driving instructions or fault numbers
cruise control function
indicator for the gear and retarder stage engaged at the respective point in time
differential locks, off-road gear and axles additionally engaged
journey data, outside temperature

Important fault displays are equipped with a central fault lamp and a buzzer.
At the concept stage great importance was attached to ensuring that only relevant information is displayed.
The display for the economical speed range is dynamic and adjusts to the respective driving situation. For better recognisability the display can be switched over to inverse operation.
In the check lamp block all displays are fitted with LEDs instead of conventional bulbs.

🕮 Product advantages/customer benefit:

- **High degree of information without distracting the driver with information irrelvant to the the driving situation**
- Readily accessible information through logical arrangement
- The information displayed is difficult to overlook owing to the use of readily recognisable and comprehensible symbols
- Economical driving supported by dynamic set-point speeds
- Low proneness to failure owing to the use of LEDs in the check lamp block

🕮 Notes (availability, recommended application, combination):

"Mid-line" and "High-line" instruments with additional display features will be offered at a later date.

🕮 Competitive situation:

This depth of information is unparalleled.

TG-A Lighting system

Rear light

🕮 Equipment:

7-chamber rear light

🕮 Technology:

The luminous efficiency of the reversing light has been improved by the factor 3 through fitting an additional reflector (light value raised from hitherto approx. 90 to 285 Lux).
In semitrailer tractors the rear light is integrated into the rear-axle mudguard.

🕮 Product advantages/customer benefit:

•Enhanced visibility for reversing manoeuvres
•Higher safety owing to better visibility
•No extra input in the form of an attachment of additional rear lights
•Arrangement protected against contamination and damage (for semitrailer tractors)

🕮 Notes (availability, recommended application, combination):

Rear lights with an integrated buzzer as a warning device will be available as special equipment.
The 5-chamber rear light, which is necessary for some superstructures, is available as special equipment.

🕮 Competitive situation:

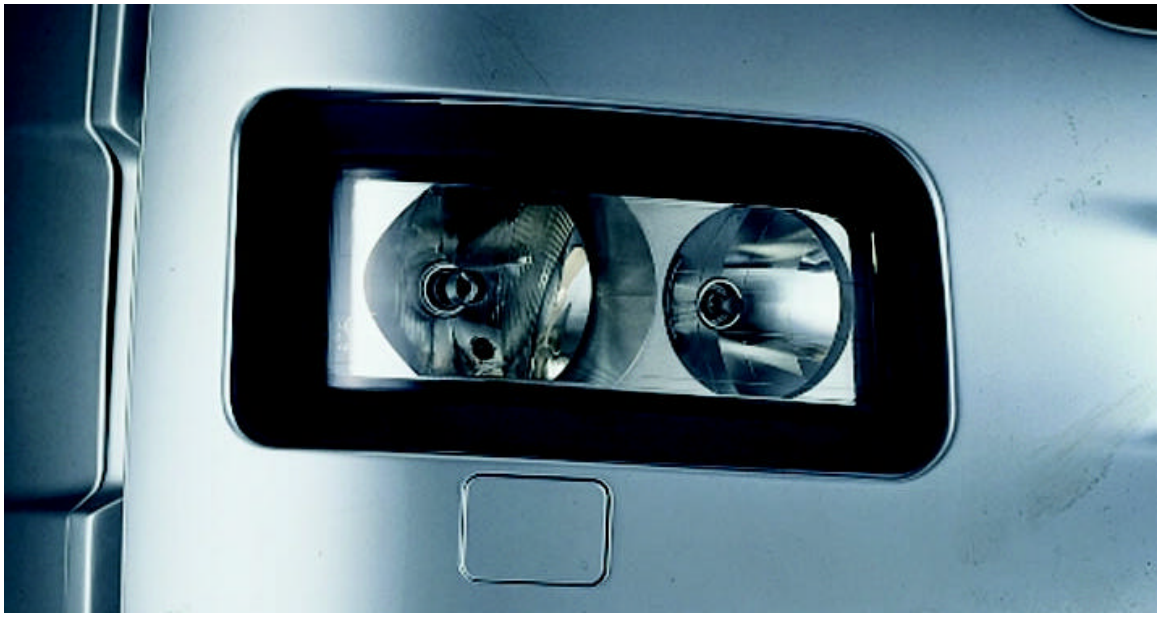
The luminous efficiency of our reversing lamps is unparalleled.

TG-A Lighting system

Headlights

🕮 Equipment:

Headlights with free-form reflectors



🕮 Technology:

Further-developed reflector in free-form design. Free-form design means that the light/dark line can be achieved without shading the spiral-type filament. As a result, the entire light available is optimally used.
H7 bulbs are employed.
Gas-discharge headlights (Xenon light) are offered as special equipment.

🕮 Product advantages/customer benefit:

- Illumination of an even wider area
- More homogeneously illuminated area
- Improved active/passive safety
- ***Better concentration during night-time journeys and in bad weather through improved visibility***
- ***Enhanced alertness***
- **First truck manufacturer with Xenon light**
- Xenon light as additional equipment:
  - longer service life (approx. 4000 h)
  - even better luminous efficiency

🕮 Notes (availability, recommended application, combination):

The new headlight technology is also employed if steel bumpers are fitted.
In conjunction with Xenon lights an automatic headlight range adjustment for leaf and leaf/air-sprung vehciles is offered.

🕮 Competitive situation:

The most sophisticated and most powerful headlight on the market for commercial vehicles.

TG-A Lighting system

310CL Auxiliary headlights

🕮 Equipment:
High-beam headlamps and foglamps

🕮 Technology:
The foglamps and high-beam headlamps are installed in one headlight housing. For both lamps a free-form reflector is used.
A conventional H4 lamp fulfills both functions. The high-beam filament is used for the auxiliary headlight and the low-beam filament for the foglamp.
The headlight housing can be slewed out for easy lamp change.

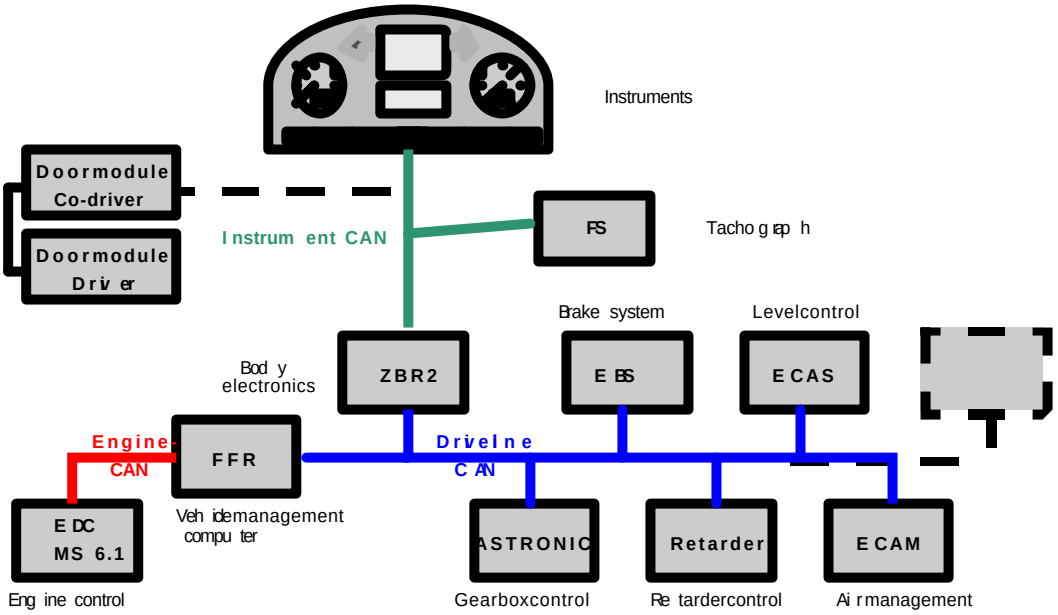
🕮 Product advantages/customer benefit:
- **Reduced number of components, which means less exposure to damage**
- Visually enhanced, integrated solution
- Easy bulb change

🕮 Notes (availability, recommended application, combination):
The auxiliary headlights are available for all cab variants.

🕮 Competitive situation:
Foglamps and high-beam headlamps with this technolgoy are future-oriented and are offered only by us.

🕮 Equipment:

MANTronic



🕮 Technology:

MAN Tronic, an interlinked electronics set-up, connects all computer systems with one another. Once measured, values can therefore be used equally by all control units.
A distinction is to be made between a driveline CAN, an engine CAN and an instrument CAN. The most important computers are the vehicle management computer (FFR) and the central on-board computer (ZBR).
MAN Tronic enables a variety of additional functions, such as:

- clutch protection
- sustained-action brake management
- comprehensive diagnostic options
- mass recognition
- uphill gradient recognition etc.

🕮 Product advantages/customer benefit:

•A large variety of additional functions are possible
•Low susceptibility to faults thanks to
⇨a reduced number of sensors
⇨reduced cable lengths (approx.10 % shorter than in the F2000)
⇨a reduced number of plug connections (approx. 170 pieces fewer than in the F2000)

🕮 Notes (availability, recommended application, combination):

Add-on attachments or superstructures which are relevant to the electronics system must be integrated into the interlinked electronics set-up by means of EOL programming.

🕮 Competitive situation:

A CAN data bus is used in the DC Actros too.

TG-A Electronic system

Switches for control elements

🕮 Equipment:

Rotary and rocker switches

🕮 Technology:

The following functions are actuated by means of a **rotary switch**:

lights
differential locks, off-road gear
automatic gearbox, MAN TipMatic

The functions engaged are indicated in the dashboard.

The **rocker swiches** have been provided with larger symbols for better recognition.
To aid finding the right switch, the switches have been arranged according to their function and combined into meaningful groups. The switches are provided with a search light and a function light (LEDs).

🕮 Product advantages/customer benefit:

•Rotary switches

⇨Rotary switches are always actuated in the right logic (eg correct shifting sequence for differential locks), which means high operational safety
⇨Rotary switches are better protected against unintentional operation.
⇨Rotary switches need little space, as several functions can be fulfilled by one switch

•Rocker switches

⇨Better identification and, consequently, high operational safety
⇨Easier to find and, consequently, high operational safety

🕮 Notes (availability, recommended application, combination):

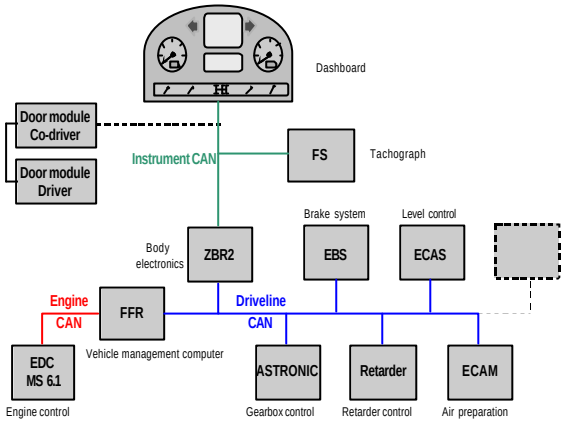
Engagement of the differential locks is indicated in the dashboard.

🕮 Competitive situation:

Competitors offer the most varied solutions. In the DC Actros the differential locks are also actuated via a rotary switch.

🕮 Equipment:

Vehicle electrics and cabling



🕮 Technology:

All cable lengths and the number of plug connections have been significantly cut. The proportion of unsecured cables in particular has been reduced, as has the overall length of cable.
All plug connections are provided with a second contact safety device (secondary lock). The plug connections in the external area are designed as single-wire seals, which provides protection as per IP 67, IP 6 K9 (=steam-jet tightness).
Component plug connections to DIN 72585 are used.
At the end of the frame a T-adapter is fitted as a connection feature for the vehicle electrics (distributor box is cancelled).
On request, the sockets for the trailer electrics are located outside the frame, on the bracket for the rear lights.

🕮 Product advantages/customer benefit:

•***High functional safety* and reliability**
⇨Reduction of cable lengths and plug connections (cable lengths approx. 10 % shorter, 170 plug connections fewer than previously)
⇨High-quality contact systems
•The standard version of the on-board network is suitable for transport of hazardous materials as per ADR.
•Reduced variety of contact systems
•Better access to trailer sockets (if arranged outside the frame)
•Reduced risk of damaging the trailer sockets (if arranged outside the frame) during hitching-up manoeuvres

🕮 Notes (availability, recommended application, combination):

If the trailer sockets are arranged externally, the cable lengths for the trailers are to be checked.

🕮 Competitive situation:

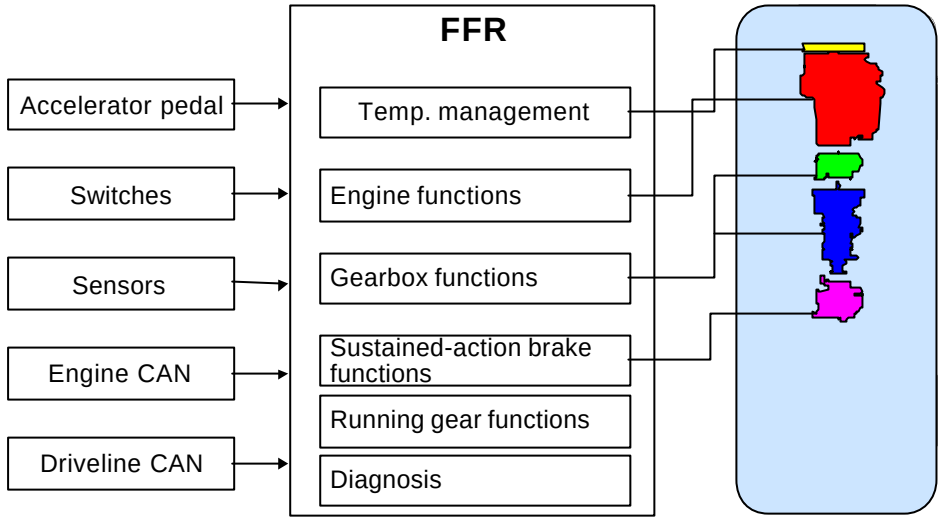
The described optimisation of the on-board network is not to be found to the same extent in the products of other competitors.

TG-A Electronic system

Vehicle management computer (FFR)

🕮 Equipment:

Vehicle management computer (FFR)



🕮 Technology

The vehicle management computer (FFR), which is part of the MAN Tronic system, is in charge of all vehicle-specific functions from the driveline control units and intervenes in the controlling and regulating functions of the engine, gearbox, sustained-action-brake and running-gear electronics. The FFR is connected via CAN interfaces with the control units on the driveline (brakes, gearbox, air suspension, retarder, central on-board computer) and on the engine (EDC).
An interface is provided for diagnostic functions with MAN-Cats. In addition, switches, sensors and actuators for the required functions are connected to the FFR.
Special features of the FFR are the optimisation of the condition of the cooling system, engine heating and auxiliary energies and the recording of trend, service and load data.

🕮 Product advantages/customer benefit:

•The vehicle management computer enables a variety of additional functions, eg:
⇨Clutch protection function
⇨Temperature management
⇨Gearbox control functions
⇨MAN ComfortShift
⇨Sustained-action brake management
•These additional functions mean a gain in economic efficiency, reliability, comfort and safety.

🕮 Notes (availability, recommended application, combination):

The vehicle management computer is an integral part of the MAN Tronic system.

🕮 Competitive situation:

The vehicle-specific functions of the DC Actros are controlled in a similar manner.

TG-A Electronic system

Alternator

🕮 Equipment:

KC/NC alternator

🕮 Technology:

The KC/NC alternator is equipped with a multi-function controller. The charging voltage is controlled as a function of the temperature, the charge of the battery and the power consumption at the respective point in time. As a function of this operating condition the central on-board computer determines control actions on the basis of a fixed or variable characteristic.
The alternator runs at four times the engine speed (F2000 1:3.65)
Two fans ensure optimum cooling.
The alternator is connected to the on-board network via a central connector.

🕮 Product advantages/customer benefit:

•Longer service life for the battery (up to 30%)
•High functional safety for the power supply
•Positive charging balance while engine is idling
•Low-noise operation

🕮 Notes (availability, recommended application, combination):

Alternators with 55 A (KC) and 90 A (NC) are available.

🕮 Competitive situation:

DC Actros has a speed ratio of 1: 3.85 between engine and alternator.

TG-A Electronic system

Position lamps/lateral marker lamps

🕮 Equipment:

Position lamps and lateral marker lamps

🕮 Technology:

The position lamps retain the outward appearance of those on the F2000. However, new 5W bulbs with a glass base are used. Their service life is three times that of their predecessors.
The lateral marker lamps also retain their F2000 design, but feature LEDs instead of conventional bulbs.

🕮 Product advantages/customer benefit:

•Lamps with a long service life and, consequently, with high economic efficiency
•High functional safety
•The standard version of the lateral marker lamps is also approved for transport of hazardous materials to ADR

🕮 Notes (availability, recommended application, combination):

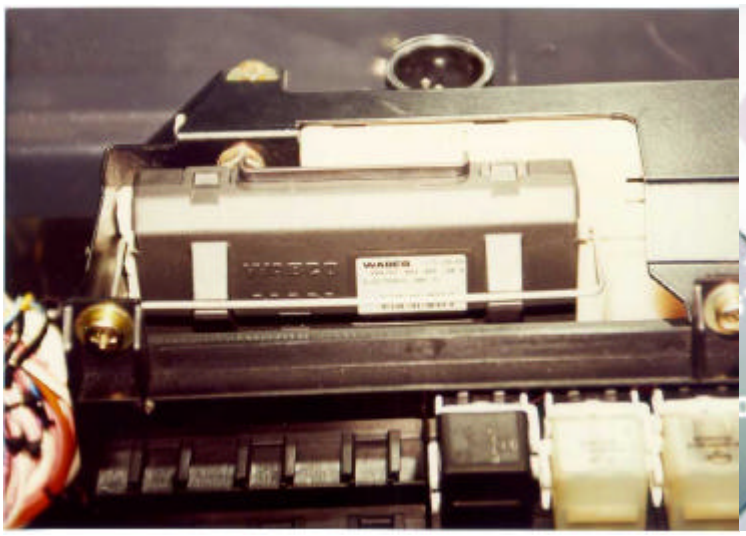
The aforementioned lamps are available for all cabs and chassis variants.

TG-A Electronic system

Central on-board computer (ZBR)

🕮 Equipment:

Central on-board computer (ZBR) - MAN Tronic



🕮 Technology:

The central on-board computer is part of the electronic system (MAN Tronic) and located between the driveline data bus and the instrument CAN. It is also connected to the vehicle management computer.
Its task consists in sensing, monitoring (eg lamps, fluid levels, temperatures, engine oil pressure, CAN users, on-board voltage,...) and controlling body systems (eg lighting, wipe/wash system, central lubrication, charging voltage, flame starter,...).
The ZBR independently monitors its inputs and outputs for line interruptions or short circuits and indicates faults in the form of a fault code (on-board diagnosis) on the display in the dashboard.
The central on-board computer saves in the fault memory the faults occurred. These entries can be read with the aid of MAN-Cats (off-board diagnosis).

🕮 Product advantages/customer benefit:

•High reliability and functionality thanks to comprehensive monitoring functions
•Comprehensive control of body systems and comfort functions
•On-board diagnosis for informing the driver at an early stage
•Better planning of downtimes at workshops thanks to diagnostic options
•Off-board diagnosis for finding faults quickly

🕮 Notes (availability, recommended application, combination):

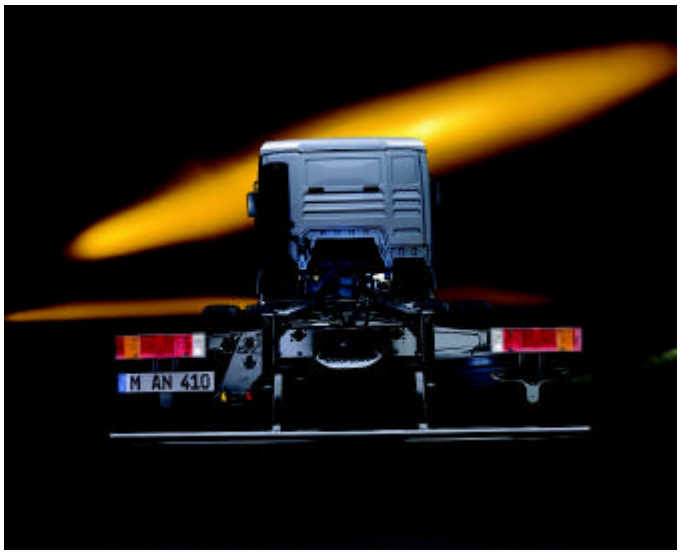
The central on-board computer is an integral part of the electronic system.

TG-A Other items

Chassis paintwork

🕮 Equipment:

Chassis paintwork with water-thinnable 2-component top coating



🕮 Technology:

The chassis are painted according to a new painting concept (similar to that for the F2000, paintshop located at Munich since July 99). For almost all colours a water-thinnable 2-component top coat with 100 % degree of gloss is used. The 2-component top coat is processed in a manner which involves a low content of solvents and instantly hardens fully owing to the new processing concept.
Paint is applied in the manufacturing process before the piping and cabling are fitted to the vehicle and before the various add-on components are attached. The subsequently installed cables and bolted connections are not painted, which imparts a very professional look.
Add-on components fitted after completion of the paintwork always remain black (RAL 9011).
In the event of repair work or if a body is fitted, conventional 2-component top coats can be used for overpainting.

🕮 Product advantages/customer benefit:

•High-quality chassis paintwork
⇨Degree of gloss: 100%
⇨No shadow effect in the paintwork
⇨Short hardening periods
⇨Cables, pipes and a large portion of the bolted connections are not painted
⇨Higher process safety in the manufacturing process
⇨Better access to faces thanks to the subsequent attachment of add-on components
•Easy access for repairs and body attachment
•Extremely eco-friendly paint and painting process

🕮 Notes (availability, recommended application, combination):

Currently, this painting concept is not in use at all manufacturing plants.

🕮 Competitive situation:

Volvo and Scania also employ water-soluble 2-component top coats.