



## **Efficiency meets Performance: introducing the MAN flagship TGX D38**

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- **Efficient engines with 520, 560 and 640 hp**
- **GPS cruise control EfficientCruise saves up to six percent**
- **Market launch at the IAA 2014**

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MAN presents its newest flagship: the TGX D38. MAN engineers have created the high-performance truck for challenging transport tasks and developed a customised driveline with numerous new efficiency functions. At its centre is the newly developed D3876 six-cylinder engine with 15.2 l displacement.

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This engine stands for superior power and adds 520, 560 and 640 hp to the TGX model range. The D3876 is a fusion of a whole range of ideas from MAN developers, making it an outstandingly reliable and highly fuel-efficient power unit. It represents MAN's sheer engine skills – from Rudolf Diesel's design, incredible evolutionary steps have turned diesel technology into an essential power source for commercial vehicles.

The MAN TGX D38 will be launched onto the market at IAA Nutzfahrzeuge 2014 in Hanover, Germany. The first customer vehicles will be rolled out at the same time.

### **Driveline: a fusion of extraordinary power and efficiency**

MAN's new flagship resumes MAN's focus on total cost of ownership (TCO): the MAN TGX D38 does not set new records in terms of horsepower, but combines extraordinary performance with unprecedented efficiency.

The two-stage-turbocharging makes full torque available at 930 rpm. The powerful torque of the D3876 engine is ideal for all axle ratios, from short axles for traction vehicles to the highest-g geared axle for long-haul trucks. The TGX D38 is therefore predestined for extraordinarily efficient long-haul driving at low speeds. The maximum torques of 2,500 Nm (520 hp),

The MAN Group is one of Europe's leading industrial players in transport-related engineering, with revenue of approximately €15.7 billion in 2013. As a supplier of trucks, buses, diesel engines, turbomachinery, and special gear units, MAN employs approximately 53,500 people worldwide. Its business areas hold leading positions in their respective markets.



2,700 Nm (560 hp) and 3,000 Nm (640 hp heavy-duty) are fully available in all gears.

### **New fuel-saving gearbox functions**

The MAN TGX D38 is combined with the MAN TipMatic 2 in all model versions. MAN offers three new gearbox functions, all of which add to the superior efficiency of the TGX D38:

- **Speed Shifting:** the MAN TipMatic 2 shifts between the three highest gears – 10, 11 and 12 – at a faster rate. This means, for example, that the gearbox can shift down quicker when going uphill. This means that greater momentum is maintained, saving fuel.
  
- **EfficientRoll:** the new EfficientRoll gearbox function is designed for motorway and country road stretches that run gently downhill. The new MAN TipMatic 2 shifts into neutral automatically and allows the vehicle to roll, without the engine brake causing the vehicle to lose speed. This enables the vehicle to carry the momentum from gentle downhill sections into a following flat stretch or slight incline. Even on almost flat stretches, fuel can be saved as the vehicle reacts independently to slight downhill sections. If the truck accelerates over the specified or permitted speed when coasting, the gearbox automatically shifts into gear again. It also automatically shifts as soon as the driver brakes or accelerates or if cruise control accelerates the vehicle in order to maintain speed.
  
- **Idle Speed Driving:** the Idle Speed Driving function uses the high torque of the 15.2 l engine at low speeds, providing greater comfort when driving slowly and allowing for greater fuel-savings. This is particularly practical in stop/start traffic or when approaching roundabouts. In driving situations like these, the truck continues to move at idling speed with the clutch engaged, unless the driver brakes.

### **GPS cruise control and new assistance systems**

MAN has also incorporated a new generation of safety and assistance systems into the TGX D38: EfficientCruise – the GPS-controlled cruise control system – analyses forthcoming inclines and downhill sections of the current route and adjusts the vehicle's speed to save as much fuel as possible. EfficientCruise uses integrated 3D maps to detect inclines and downhill



sections in the current route. The truck can then drive automatically with an eye to what's coming ahead, building up momentum before an incline and rolling over the summit with reduced speed at the end of the incline. Using EfficientCruise in long-haul or distribution transport can lower fuel consumption by up to six percent without losing time on the route. This assistant provides valuable support for the driver on long routes, taking the challenging task of driving efficiently with a view to the gradients coming ahead, even for hours at a time.

On inclines, EfficientCruise prevents the MAN TipMatic 2 from shifting down if it is clear that the vehicle can reach the top in the current gear. With a desired speed and one of four possible speed tolerances both selected by the driver, EfficientCruise calculates the appropriate speed for the most fuel-efficient uphill and downhill driving and adapts the current speed accordingly. The driver can adjust the tolerance level for deviations from the set speed at any time to suit the driving scenario. Four tried-and-tested levels make it easier for the driver to choose the right setting: level 3 is always selected when you set off, corresponding to +/- 7 km/h. Level 4 provides greater flexibility, both up and down, for when there is less traffic around and levels 2 and 1 are options best suited to heavier traffic.

EBA (Emergency Brake Assist) comes as standard with the MAN TGX D38. The aim of the assistant is to prevent or lessen the impact of serious rear-end collisions on motorways and highways – around 32 percent of all truck accidents fall into this category. EBA recognises moving vehicles and stationary objects in the lane in which the vehicle is travelling by means of a centrally mounted radar sensor on the front of the vehicle. If the driver fails to react to warnings, EBA independently initiates emergency braking. The trucks come with ESP (Electronic Stability Program) as standard, which also controls the trailer brakes.

MAN has made the LGS (Lane Guard System) even more driver-focused. With a higher resolution, the camera now monitors lane compliance with even greater precision, and a higher optical range. This enables the assistant to warn the driver more precisely, making long distance driving with the assistant even more convenient.

Adaptive Cruise Control (ACC) automatically adapts the speed of travel on motorways and dual carriageways and maintains a defined safety gap. It increases driving safety supporting the driver on long distance journeys. Should the vehicle undershoot the safety gap to the vehicle in front, the



system automatically reduces engine torque, and in the next step activates the brakes with a maximum of one third of the available braking power.

### **New engine: reliable design for low operating costs**

MAN has developed the 15.2 litre series six-cylinder D3876 to be an extremely reliable and highly efficient truck diesel engine for the most demanding transport tasks. The new engine brings together numerous design features all of which focus on lowering total cost of ownership throughout the life of the vehicle, above all being structural reliability and durability, fuel consumption and engine maintenance.

As a six-cylinder in-line engine, the new D38 is made up of the same basic structure and high-tensile materials as the D20/D26 engines and is therefore built around a design that has been proven over millions of miles. At the same time, the MAN engineers drew on every level of cutting-edge engine expertise when designing the D3876: in order to achieve the best possible results in terms of performance, reliability, fuel efficiency, weight and ease of maintenance, new technologies were used in many function groups. A third-generation common rail injection system with 2,500 bar peak pressure enables further refinement of fuel induction and jet optimisation for fuel injection, thus ensuring low-particle combustion that is optimised for fuel efficiency. The new generation fuel pump requires less power, which also contributes to fuel savings.

The high-tensile basic materials form the basis for a light engine – MAN has achieved overall weight savings of 160 kg in comparison to the strongest Euro-5 engine D28 V8. This is backed up by the aluminium flywheel housing with cast engine brackets. The oil sump and valve cover are made from highly durable impact-resistant plastic. This material makes it possible to shape the MAN-patented acoustic structure of the oil sump, which reduces emitted engine noise.

MAN's ideas for maximum reliability also come into play in the D3876 cylinder head: using domed valves for the first time in a truck diesel engine. This structural feature reinforces the valve heads of the inlet and outlet valves so that even minimal flexing cannot occur when the valves open and close. This means that the valves and their valve seats always meet at the ideal angle. This is one of the factors that allow the interval between setting valve play to be doubled – the valve clearance of the D3876 engine only needs to be adjusted at every second oil change. The oil change intervals remain the



same as for the MAN D26, as does the maintenance interval for the particle filter.

The new top-down cooling system leads the coolant in the cylinder head from the top directly to the areas under thermal stress, thus reducing wear. MAN uses fire rings in the D3876 at the top edge of the cylinder liner to prevent the build-up of oil carbon – and therefore wear – on the contact surface. The engines thus use less oil and the cylinders are lubricated reliably for an extended lifetime.

MAN has another structural feature up its sleeve in terms of durability: eight cylinder head screws per cylinder ensure that the cylinder head and liner are pressed very evenly against the engine block. Along with low oil consumption and the resultant extended cleaning intervals for the particle filter, this also extends the durability of the cylinder head seal: it is designed to last for the entire life of the engine.

The tried-and-tested two-stage-turbocharging ensures an ideal supply of combustion air to the engine throughout a wide range of speeds. From 930 rpm, the MAN D38 engine delivers its full torque of 2,500, 2,700 or 3,000 Nm. This shifts the main operating range of the engine towards lower speeds, which means both lower fuel consumption and less wear.

### **Greater power in air pressure management**

As with the EfficientLine range, MAN's top of the range model also features a demand-controlled air compressor. Air pressure management (APM) reduces operating time by around 90 percent in comparison to a permanently running air compressor for long-haul driving, which saves fuel by reducing power take-off. In the TGX D38, MAN has optimised APM for the higher air requirements of vehicle applications in this performance class. Instead of the 1-cylinder APM used in smaller models, the D38 has a 2-cylinder APM with 476 cc. For even greater air requirements, such as for heavy duty trucks with many trailer axles, MAN offers a permanent air compressor option with 720 cc.

### **Continuous braking system with up to 600 kW brake power**

Strong engine brakes in the form of non-wearing continuous braking systems provide a high level of safety. As the primary continuous brake, which operates at high engine speeds, their high braking power is also available



at low vehicle speeds, depending on the gear selection. The Exhaust Valve Brake (EVB) offers up to 340 kW braking power.

An even more powerful engine brake version is used in the MAN TGX D38 heavy-duty trucks: the Turbo EVB. Being specifically charged in engine braking mode, it increases brake power to 600 kW. The Turbo EVB will first be available for heavy-duty TGX D38 vehicles, in the next step also for other D38 trucks.

Controlled by the BrakeMatic, the engine brake, intarder and service brake work together in the MAN TGX D38. The new-generation intarders have 3,500 Nm brake torque and 500 kW brake power. Alongside the safety aspect, brake management is also designed for the maximum possible useful life for wearing parts such as brake pads and discs, as well as wearing evenly. For the customer, this means less downtime if all worn parts can be replaced with only one visit to the workshop.

### **The TGX D38 model range**

The range of extremely powerful TGX models is a reflection of its versatility: it is available in right- or left-hand drive and can be used in conjunction with XL, XLX and XXL cabs. MAN offers its customers a wide range of axle configurations for semitrailer tractors and chassis for bodies. Long-haul and traction customers can choose semitrailer tractors and chassis with 4x2 leaf/air suspension and 4x2 full air suspension. The three-axles offer more permissible overall weight as 6x2 with leading and trailing axles. As 6x4 with tandem-axle drive, the MAN TGX D38 offers optimum traction for semitrailer tractors and traction chassis. The four-axle heavy-duty vehicles are equipped as 8x4/4 with two driven rear axles for a gross weight of up to 41 tons and 250 tons gross train weight.

As a result, the TGX D38 not only provides the prestige of a top of the range model, but also the most efficient transport solution for long-haul driving over difficult terrain with a full capacity load of 40 to 44 tons. With the particularly fuel-efficient direct-drive gearboxes, gross train weights of up to 65 tons can be transported.

In power-intensive traction traffic, the MAN TGX D38 can generally pull up to 65 tons with overdrive gearboxes (OD). The heavy-duty versions with converter-clutch units can handle gross train weights of up to 250 tons with ease.

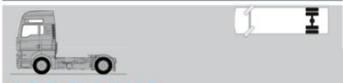


**Ideal for use in long-haul traffic with constantly high gross trailer weights**

The MAN TGX D38 is more than just a powerhouse on the road – above all, it is very economic. In Europe, the maximum gross trailer weight permitted is 40 tons, combined with a rail load of up to 44 tons. For customers who frequently reach these trailer weight limits, the TGX D38 offers an attractive combination of extraordinary transport power and cost effectiveness. For routes with demanding terrain, the TGX D38 has plenty of power reserves at its disposal and impressive driving force for inclines. With the high-performance continuous braking systems, you can traverse even the steepest of inclines at high average speeds. This makes it possible to achieve high transport speeds even on difficult routes.

MAN has designed the TGX D38 as the ideal vehicle for such difficult long-haul conditions and offers a suitable range of chassis versions and wheelbases.

The compact exhaust system for the TGX D38 means there is a lot more space to play with inside the frame and a high tank capacity – the dimensions for the rear silencer are no different from those vehicles with D26 engines. The customer can choose fuel tanks with a capacity of up to 1,400 litres, allowing a long range.

	Tractor	Chassis Height	Chassis	Chassis Height
4x2	 4x2 BLS, 4x2 LLS	n	 4x2 BL, 4x2 LL	n
6x2-2	 6x2-2 BLS, 6x2-2 LLS	n	 6x2-2 BL, 6x2-2 LL	n
6x2/2	 6x2/2 BLS	n		
6x4	 6x4 BBS, 6x4 BLS	n		

(written in blue: also available as RHD)



**Full torque at low engine speeds: the TGX D38 traction trucks**

In terms of traction, the MAN TGX D38 is an ideal vehicle platform for construction site deployment, the timber industry, waste disposal and cranes. With high engine power, you can drive heavy loads at high average speeds for heavy-duty traction. For traction purposes, the TGX D38 is available with normal and medium chassis height and with steel bumpers.

In construction site traffic, e.g. when pulling low loader trailers with heavy construction machinery, the D38 really comes into its own and can move gross weights of up to 65 tons. Typical areas of use include tilting articulated trains or 6x4 tippers frequently used with trailers, as well as heavy-duty roll-off skip loaders.

With its characteristic two-stage turbochargers, the MAN TGX D38 reaches its maximum torque at 930 rpm. With its power band - full torque is available from 930 to 1,350 rpm - the TGX D38 draws upon its extraordinary tractive power at low speeds, shifts up a gear early on and keeps the engine torque high in high gears.

	Tractor	Chassis Height	Chassis	Chassis Height
4x2	 4x2 BLS, 4x2 LLS	m, n		
6x2-2	 6x2-2 BLS, 6x2-2 LLS	n		
6x2/2	 6x2/2 BLS	n		
6x4	 6x4 BBS, 6x4 BLS	m, n	 6x4 BB, 6x4 BL	m, n
8x4	 8x4/4 BBS, 8x4/4 BLS	n	 8x4-4 BL	n

(written in blue: also available as RHD)



### **Heavy-duty transport with up to 640 hp**

Heavy-duty transporters are another core application for the TGX D38. MAN offers the highest power level of the TGX D38 for this segment: 560 and 640 hp.

The MAN D38 heavy-duty trucks use a converter-clutch unit for power transmission, connected to the MAN TipMatic 2 gearbox. This combination lets the D38 take to the roads smoothly with unstoppable force at the maximum 3,000 Nm torque. The Idle Speed Driving function of the new MAN TipMatic 2 ensures optimum driving for heavy-duty vehicles when shunting and operating at crawl speed. In driving situations like these, the truck continues to move at idling speed with the clutch engaged, unless the driver brakes.

The newly developed high-performance Turbo EVB (exhaust valve brake) is ideal for use in the heavy-duty sector and will therefore be put into operation in this field first. It offers extremely high continuous braking power of 600 kW, with continuous use facilitated by its marginal demands on the cooling system.

At IAA 2014 MAN will be presenting a 41.640 8x4/4 D38 heavy-duty tractor with a gross train weight of up to 250 tons.