

LOW RIDERS

Low height tractor units may be a niche market, but they most definitely have their place for those operators who need to extract the maximum possible volume out of vehicles going to mainland Europe, where they are restricted by the 4m maximum height limit for international transport.

Lucy Radley examines the options

Low height tractors have been around for quite a while. Volvo and DAF were the earliest adopters. The Swedes were building low height F12s for the likes of international operator Bowkers as far back as the late '80s. The Dutch were big drivers of development in this area too, their country being somewhat notorious for rigorous enforcement of the 4m limit.

In the UK, sales are mostly destined for a few specific sectors, with events and entertainment probably the biggest market. This is followed by automotive applications, with both high-value covered car transport and high-volume just-in-time components operators taking advantage of the configuration. Even the likes of parcel company DPD and furniture specialist DFS are taking some units for use on international journeys.

DAF is probably the leading supplier of low-height tractors in the UK these days, boasting customers such as

Fly By Nite, Stardes, Stagetruck, Transam and outside broadcast support firm Facilities by ADF within the events sector alone. Ontime Logistics, EM Rogers, AC Binns, Alcaline and Acumen Automotive, among others, all have DAF Low Deck on their fleets too. All in all, the Dutch manufacturer sells around 100-150 of these trucks per annum in the UK, a good number for such a specialist product.

"Having a low deck tractor with a low height trailer gives you the maximum volume within the overall limit," DAF marketing manager Phil Moon explains. Going back a few years, the way to do this was by using a stepframe trailer with a standard tractor, but that meant there was a ramp inside the load space - not ideal for those rolling cases or stillages through the back doors. A flat floor was, therefore, the ultimate goal.

"This configuration is looking for a three-metre space within the trailer. That means you've got to have a coupling height below one metre - so around



960mm," Moon explains. "The challenge is making sure you've still got a good approach angle and ground clearance for getting on and off ferries and, for events operators particularly, accessing steep ramps for loading at some of the older venues."

SUSPENSION

The height reduction seen with DAF's XF Low Deck is achieved via the suspension. If the steel front suspension option is taken, operators get a single-leaf spring, which is lower than on the regular XF tractor. However, customers are said to be increasingly opting for full air suspension on these models, as it enables the overall ride height of the vehicle to be changed in particular circumstances.

There is, for example, a dashboard switch in the cab (pictured below) that engages a manoeuvring mode while the vehicle stays below 30kph. This automatically raises the chassis by up to 85mm at the rear, and up to





50mm where front air suspension is chosen, so the driver can avoid fouling the underside on speed bumps and while boarding ferries. If even greater clearance is temporarily needed, fully raising the suspension using the ECAS controller is also an option; in that case, the front end offers a full 130mm of available travel.

At the rear of the vehicle, the adaptation needed to lower the chassis is greater. Moon explains: "Simply lowering the suspension ride height would take the reaction rods from being parallel to the ground to running upwards towards the rear; and as a result induce rear axle steer as the chassis rolls during cornering". Instead, specially designed reaction rod brackets and reaction rods ensure the rear axle stays at 90° to the chassis throughout. The air bellows are also set to maintain a higher pressure when the vehicle is loaded, to compensate for tyre deflection. This keeps the distance between chassis and road as large as possible within the limitations of the required overall height.

Another thing to consider is the articulation between tractor and trailer, which is also reduced because the fifth wheel is lower – typically just 140mm in DAF's case, 100mm below those found on a standard UK tractor. This means there is a danger that the front of the trailer may contact the chassis, so there is the option to specify an additional protection beam (pictured top right) to prevent damage.

Other changes include the fitting of shallower fuel tanks. Tyre sizes are 375/50 on the front axle, with 295/60 to the rear, though 45-series tyres are an option. Wheelbase is 3,600mm. Dual-height fifth wheels are also available for those wishing to pull regular-height UK trailers on occasion, and are the only component that potentially requires slightly greater maintenance than usual – otherwise, all workshop routines are the same as for a standard tractor.

Volvo's answer to DAF's Low Deck is X-Low, which is available with both FH and FM cabs. Frame height is normally around 810mm, depending on whether 295/60 or 315/60 tyres are chosen, with a fifth wheel height of approximately 1,000mm. All X-Low tractors come with

full air suspension, as does the next step up, the Low, which has an 850mm frame height. Wider 355/50 tyres are also an option for the front axle.

X-Low is only available as a 4x2, but Volvo also offers a 6x2 at the 850mm frame height. It uses their lightweight axle, which runs on 17.5-inch wheels. This is, perhaps, most relevant currently to the FM – a demonstrator has been produced which uses 355/50 front tyres and 315/60 at the rear, a configuration developed to enable a 3-star rating to be achieved for London's Direct Vision Standard.

Returning to X-Low, the main adaptations to the standard tractor design are a shorter suspension rods to the rear, smaller airbags, and 560mm tall fuel tanks, as opposed to 710mm on the standard FH. "There are no particular inspection or maintenance implications surrounding X Low or Low height tractors," head of product management John Comer assures. "Although obviously if you're running X Low, you need to check that the suspension settings are where you want them to be, to ensure you meet the relevant overall height limit of four metres."

Fellow Swedish manufacturer Scania also offers both low and extra low height tractors. "The extra low is only relevant to 4x2 tractor units rather than tri-axes, because for extra low we actually shape the frame, instead of it being C-section channel all the way down," explains Phil Rootham, head of pre-sales technical. "It's always on full air suspension, so it

SPRINGS COME EARLY

Roadlink International is now an official distributor of Weweler road springs through the CV aftermarket. These leaf springs are designed to suit specific vehicle models and specific operational areas. The manufacturer has collaborated with Belgian metalworking research centre WTCM and steel manufacturers to employ new steel alloys, a 'free bending hardening' method combined with high stress shot peening to improve coil spring endurance. The company is also a distributor of the AL-KO shock absorber range, which is said to be fitted as original equipment to 50% of Europe's air suspended trailer axles.

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Phil Rootham



has a low airbag on the front end, and then the shaped rear frame, with a low quarter-elliptic spring to gain enough chassis movement from a suspension point of view.”

If you assume the use of 315/60 tyres, the most common option from a European perspective, the extra low 4x2 Scania tractor has an unladen frame height of 824mm. Usually a low-height fifth wheel would be 207mm over the frame in order to allow for fore and aft articulation. “The biggest challenge, given these vehicles are usually required to do four-metre height work across Europe, is getting on a ferry,” Rootham says. They also usually have a 3,750mm wheelbase to maximise room for fuel storage, which just compounds the issue. “Normally the solution is setting a memory function in the air suspension that is +50mm from ride, to give that extra bit of clearance needed when passing over the ramps.”

The extra low chassis is available with a range of cab options, including the taller S cab. Until recently, Scania only offered steel fuel tanks with extra low chassis, as they have the shallower profile. It is, however, now possible to specify the wide fuel tank under certain circumstances, though the extra-wide is still restricted.

Looking across to Germany, MAN states that it does now offer a low ride version of the New Truck Generation TGX tractor, two examples of which are currently out on demonstration in this country. It comes as a 4x2 with



a 3,600mm wheelbase, and can be ordered with the GN, GM and top-of-the-range GX cabs. Both the 9-litre D15 (325, 355 and 395bhp) and the 12.4-litre D26 (424, 464 and 503bhp) engines are available with this version of TGX.

OTHER BRANDS

Mercedes-Benz, meanwhile, offers two low-height, 4x2 versions of its flagship tractor (pictured below). The LsnR has a frame height of approximately 880mm unladen, while the LsnRL is a particularly low 795mm. For reference, the standard height variant has a frame height of 983mm unladen. Of the two models combined, the company sells around 200 per year in the UK.

“The Mercedes-Benz Actros with low frame height is a specific model designed as such,” says Kevin Storey, product manager (tractor units). “The low frame height Actros all have air suspension on all axles with low height air bellows, different suspension mounting systems [to those used on standard Actros] and low profile tyres.”

No additional maintenance is required.

Mercedes has also recently introduced a 6x2 tractor variant to the market. “It’s early days,” Storey admits, “but it’s certainly creating interest among operators who need the benefits of low frame height, but also the extra weight capacity of 6x2.”

Most of Renault’s low height tractors are based around its Range D distribution models, but it does offer a factory chassis configuration for the Range T called X Low (pictured above). As well as the usual suspension changes, Renault uses a shallower chassis rail to help achieve the lower height. “These vehicles typically work as much in mainland Europe as in the UK, particularly in the Netherlands,” observes Andrew Scott, head of product management, homologation.

Last but by no means least comes IVECO, which has recently leased a low-height version of its new S-WAY tractor, which it says has a minimum coupling height of less than 950mm based on 295/55 R22.4 tyres (diesel models). To achieve this, it is using specific low-ride air suspension bellows with a lowered ride height setting on front and rear. The vehicle also features a protection bar to prevent possible damage to the catwalk from low-height trailers as standard. Low-deck S-WAY comes with maximum diesel capacity tanks at 1,210 litres, or maximum gas fuel capacity tanks at 880 litres for Natural Power models, giving up to 1,300km range. [IE](#)

