Caught in the middle

The choice of lifting axles on tractor units keeps on increasing. Peter Shakespeare considers the operational experience of using tags, lightweights and mid-lifts

The 6x2 tractor unit is the workhorse of the UK's road freight transport industry. Typically fitted with a fixed mid-lift axle, plated at 7.1 tonnes, this configuration of tractor unit dominates the market.

In most situations that general haulage applications present, this type of 6x2 does the job perfectly well. But drivers of this specification will know that with a fully freighted truck, the load sensors won't allow the mid-axle to lift. In a tight spot, spinning around in a small yard or executing a jack-knife reverse, they soon realise the centre axle isn't doing them any favours at all. With its tyres being scrubbed sideways trying to stop the vehicle, more power is needed, putting unnecessary strain on the chassis and clutch, or in poor adhesion, spinning the driving wheels. But what are the alternatives?

In their defence, Volvo's UK product manager John Comer says the key benefit of the standard 6x2 pusher is that it is the easiest combination to couple at 16.5m. As it has a longer wheelbase between drive and primary steer axles than a 6x2 tag, the suspension is more dynamically stable, particularly when the mid-lift axle is raised. While Comer's employer favours the pusher solution, he says that hydraulic twin-steer is an option to help reduce scrub in tight situations. But the downside to twin-steers is additional weight, reduced chassis space and cost.

Comer adds that he is seeing the market moving towards alternatives to the mid-lift. "The biggest change we see on pushers is the growth in the lightweight pusher axle," he says (see also pp24-25). "In terms of loading, in the EU and UK, the tag and pusher standard design weights are 19t, split 7.5 and 11.5 for a spread greater than 1.3m. The lightweight is only 16 tonnes (4.5 and 11.5), so axle loading needs to be considered at point of sale. But in general, it is not an issue. Lightweights are road-going axles, but there is

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scope to balance durability against weight. They serve the construction logistics operators well, but they are not designed to go deep into a quarry, for example. The interesting thing is that market acceptance is growing, and due to increased volumes, there is now a healthy used truck market for them."

Confirming Comer's cautionary words about specifying the lightweight axle is Dan McNulty, director at operator Danjak. The Nottingham-based firm offers a range of general haulage services, but the bulk of its work currently is in the construction logistics sector. It runs three types of 6x2 tractor units. Its experiences of each type are mixed, McNulty explains. "We have conventional mid-lifts, a lightweight mid-lift and a rear-steer tag axle," he says. "Generally, the lightweight pusher is fine, but what you have to watch is overloading this axle. It is plated to 4.5 tonnes, so you have to be very aware of the kingpin load. We deliver a lot of cast concrete products, and these are loaded by the customer on to our 45-foot trailers. With a bulk tipper or a tanker, you have a short-neck, 40-foot trailer. With a longer-necked trailer, put too much weight against the headboard and you put more weight over the kingpin, which can easily overload a lightweight pusher axle."

TOP TAG TIPS

If manoeuvrability and adhesion is key to your operation, the tag axle can offer numerous benefits. It comes in three types: pusher, rear-steer and, for STGO operations, twin-tyre lifting bogie. The tag axle has the ability to give a 6x2 the manoeuvrability of a 4x2, but McNulty points out that there are drawbacks. "The rear-steer tag allows you to get into some very tight spots. But you have to be very careful when the axle is raised, because you get a lot of overhang. With the axle lowered, it allows the tractor to pivot around the drive axle, without

scrubbing the tyres. I recently delivered a full load into a small building site. I had to do a three-point turn in the site, to get the truck to where it was needed. With a normal tag or mid-lift, that would have been very difficult, and would have put a lot of strain on the vehicle, in terms of tyre wear and wear on the wheel bearings.

"The driver has to think about a few more things with a tag. The rear overhang can easily catch them out, with expensive results. It can also sit down on the tag axle, leaving you with very little ground clearance. It happened to me once, and I caught a rear air tank on some uneven ground and pulled it off. By the time I had called out assistance and paid for the repair and a new tank, the bill was over £1,000. As a result, we have moved the rear air tanks higher up on the chassis.

"You also need to think about picking up strange trailers, because the rear tractor lights can get so close to the trailer landing legs. We've moved the winding handle stowage positions on ours so they don't catch the rear of the tractor unit. You can put most any driver in a 6x2 mid-lift and they won't encounter these sort of considerations they need to be aware of, if driving a tag. We bought the tag for additional traction, but another negative is if you are running with the tag raised, the tractor unit is nowhere near as stable as a mid-lift, because of the shorter wheelbase. You really notice it in cross winds. So there are good reasons why there are a lot more mid-lifts on the road than tags."

To assist with coupling tractor units with tag axles, Volvo recommends a 2.9 or 3.0m pusher, with batteries on the rear to allow space on the chassis. Comer also advises checking with the manufacturer to make sure that when the tag axle is lifted, the lift is also compensated on the drive axle, as this will affect the running height.

He adds: "Other key developments in tractor unit axle design apply to 6x4 or 8x4s. The tandem with a lifting drive axle is now available. This saves fuel on the way home, and increases manoeuvrability when unladen; but they are not suitable on a tractor with a heavy crane, even when unladen, because the bogie won't lift. Tandem axle lift is very popular on 6x4 tractors, and because of this feature, we have seen a move away from leaf suspension to rear air in this sector of the market.

"Looking at mid-lift axles, the key model in terms of dimensions for load and handling is a 3,900mm wheelbase. For increased fuel economy, a 4,100mm wheelbase is the answer. The mid-lift 6x2 behaves like a 4x2 at light loads, because the mid axle has traction-biased load apportioning, and only comes in when pin load starts to get above 8 or 9 tonnes. The axle lift is controlled not only by the rear axle loading, but also there is a front axle load limiter, with a 30% overload applied to all axles."

Like most aspects of truck specification, lift axles need careful consideration. Sanity should prevail over cost and vanity. TE