

Dowdeswell

Over-Sized Tyres

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Low ground pressure tyres are being specified increasingly on new and existing tractors to help minimise soil compaction and improve the conversion of engine power into traction. They can also overcome the logistical and legal problems posed by dual wheels when driven on public roads. While appreciating the proven benefits of LGP tyres, a number of end-users are experiencing difficulties when setting up and using a plough behind a tractor shod with the latest generation of super wide wheels and tyres.

The most common question, concerns fitting a tyre of up to 850mm (35.5 in) wide within a furrow bottom which is unlikely to measure more than 610mm (24in) in width. Where, they ask, should the tractor's tyres be driven to ensure that the plough turns a consistently even set of furrows? Are any special wheel track settings required and how should an existing plough be set to work with wide tyres? Yet, it is a relatively straightforward task to match a modern plough to a tractor equipped with over-sized tyres. The following guide covers ploughs used behind tractors driven in-the-furrow and on-the-land.



Ploughing an even and consistent furrow with oversized wheels on the tractor. The furrow widener which will come into work on the return pass can be seen fitted to the rear most body of the plough.

The first action required when working in-the-furrow is to fit a furrow widener to the rearmost body of the plough. By breaking away the furrow wall, the furrow widener produces a wider, semi-cultivated furrow bottom which can better accommodate over-sized tyres on the subsequent pass across the field. Dowdeswell can supply furrow wideners in width from 15mm to 30mm (6in – 12in) to suit the majority of wide tyres on the market.

However, there is more to successful ploughing with low ground pressure tyres than simply fitting a furrow widener. A change is also required in ploughing technique. Because the furrow widener cuts away the previously clearly- defined rear furrow wall, the straightest and clearest line now remaining within the ploughed area is the outer edge of the final furrow turned on the previous pass. So, instead of the normal ploughing practice of following the furrow wall with the inside of the tractor's front wheel, the tractor should now be steered so that the outside of the front wheel follows the edge of the previously-turned final furrow.



To plough successfully in the furrow with wide tyres, the tractor's wheels need to run in an enlarged furrow bottom produced by a furrow widener fitted to the plough's rearmost body.

This driving action has two advantages. First, it keeps the wheels off the ploughed land, avoiding soil damage and compaction. And second, it enables both new and existing in-the-furrow ploughs to be used successfully behind a tractor fitted with oversized tyres.

By driving so that the tractor and plough are as close as possible to the previously-turned furrows—without actually running over them—the plough will need the minimum lateral adjustment to match its front furrow width to the furrow width settings along the plough. Although most modern Dowdeswell ploughs incorporate ample hydraulic sideways movement as standard older models and other makes may not have sufficient lateral movement, so the driving action recommended

covers all eventualities, while providing the tractor driver with a clear line along which to steer. For optimum results it is recommended that the tractor's wheels are set as close to the mudguards as is practicable to minimise the distance that the plough needs to be adjusted sideways to match its front furrow width to the furrow width settings along the length of the plough.



With no furrow wall to guide the wheels, a tractor running in a widened furrow bottom must be steered so that the outside of the front and rear wheels follow the edge of the final furrow turned on the previous pass.

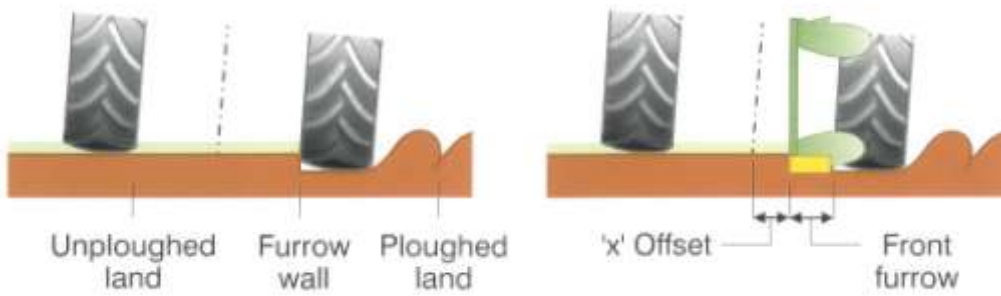
Because the tractor is now being driven using the outside of the front wheel as a guide, it is important that the distance between the outer edge of the tractor's two front wheels is as close as possible to the distance between the outside of the two rear wheels. This will ensure that the rear wheels follow the same line as the front wheels to avoid running over ploughed land while also assisting with accurate front furrow width setting on the plough.

Because the majority of tractor front wheel rims are of solid welded construction offering only two possible track widths, it is likely that the tyre supplier will have to provide custom built rims with suitable dish dimensions so that the outside front and rear wheel track measurements match each other. The major advantage of working in—the furrow with over-sized tyres is the ability to use an existing plough—provided, of course, that sufficient lateral adjustment is available on the implements to produce the required front furrow width without having to drive on top of the previously formed furrows.

There are a number of disadvantages of working in the furrow with wide LGP tyres. These include the difficulty of accurately guiding the tractor's front wheels along the edge of the previously-turned final furrow; the fact

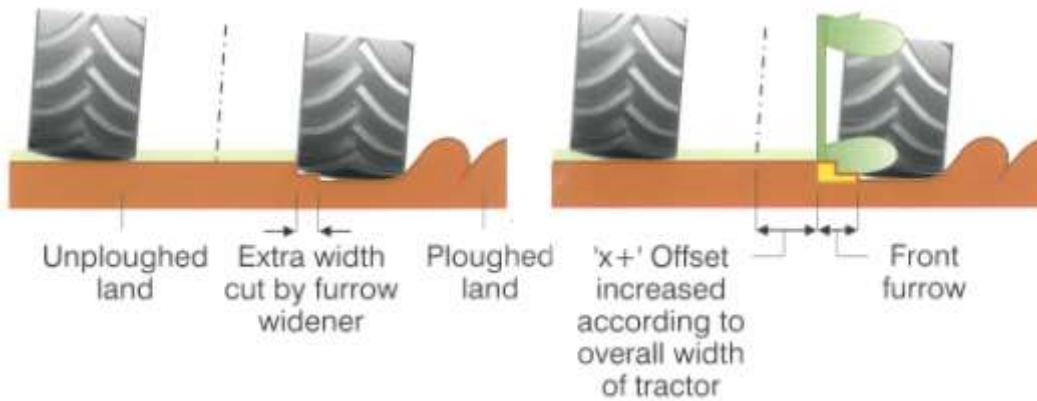
Standard tyres in the furrow

Ploughing in the furrow with standard tyres



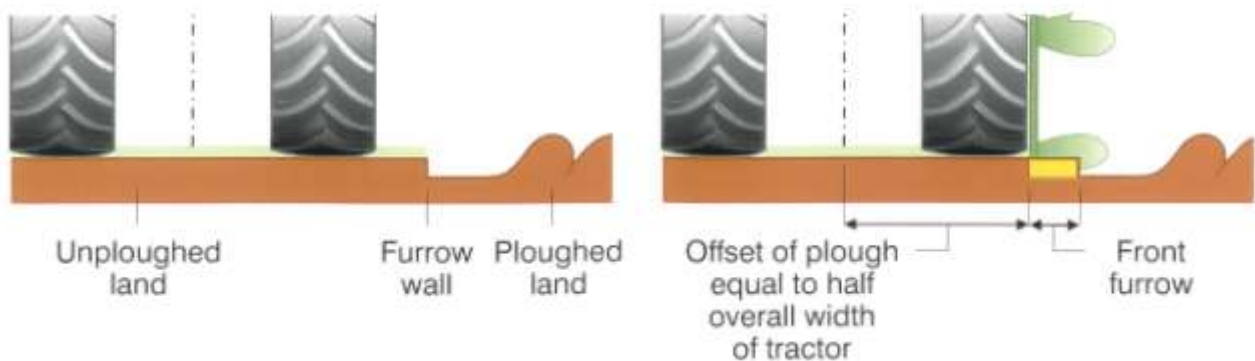
Super-wide tyres in the furrow

Ploughing in the furrow with wide tyres and a furrow widener



Super-wide tyres on the land

Ploughing on the land with wide tyres





Ploughing on the land with a purpose designed plough. The additional offset built into the plough enable the tractor's over sized tyres to run one furrow width away from the work. Accurate steering is vital.

that the tractor's wheels must run over soil pre-loosened by the furrow widener; and the increased risk of compaction and loss of traction because the left and right hand wheels are not sitting completely flat on the ground.

The alternative is to use a purpose built on-the-land plough incorporating sufficient offset in its design to enable all of the tractors wheels to run out of the furrow when ploughing in similar manner to a rubber or steel-tracked crawler.

Ideally, the plough's offset should be equal to half the overall width of the tractor, enabling the outside of the tractor's front and rear wheels to run one furrow width away from the furrow wall. While driving on-the-land demands, perhaps, even closer attention to steering accuracy to ensure evenly-turned furrows, the

technique does have a number of advantages. These include the production of the largest possible tyre footprint to evenly spread the weight of the tractor and the plough; the avoidance of compaction within the furrow bottom; and the elimination of possible damage to the tyre wall from stones and roots in the furrow wall.

In work, the weight of the

plough is also more evenly distributed laterally behind the tractor and, because the tractor is sitting level, the operator has a more comfortable driving position.

The principal disadvantage is the fact that there is no furrow or turned furrow to help steer the tractor.

It is also said that working fully on-the-land makes the tractor more susceptible to wheel slip in wet or greasy surface condition.

In practice, achieving the biggest possible footprint using the advanced tread pattern and construction of modern low ground pressure tyres provides a good counter argument to these objections.

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Working on-the-land with extra wide tyres keeps the tractor level and produces the widest possible footprint from the tyres. It is important that the tractors top link is kept in line with the direction of travel.