

# WHAT YOU NEED TO KNOW ABOUT **AGRICULTURAL TYRE REPAIRS**

## **FOREWORD**



Purchasing new agricultural tyres represents a significant financial commitment, no matter whether it's a set of replacement boots for a skid-steer, or a pair of the latest generation Very High Flexion tyres for a high-horsepower tractor.

The likelihood is that you've spent quality time specifying precisely the right tyres for your needs and they are delivering in terms of productivity, fuel consumption and yields.

If the nightmare scenario now occurs and you suffer a tyre failure either in the field or on the road, it's important to get your asset back up and running as soon as possible. After all, time is money. But when it comes down to it, how much do you know about tyre repairs? Could you spot a professional repair from a botched job? And critically, do you know when a repair should be considered and when it shouldn't, and what type of repair is the right one?

This booklet is designed to arm you with all the information you need to know about tyre repairs to help you protect your investment.

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Visible damage: separation between crown plies

## **1. WHEN IS A TEMPORARY REPAIR THE BEST OPTION?**

Temporary repairs aren't designed to be used as a permanent fix and should only be used as a way of getting your machine back to base. Realistically, temporary repairs in the form of strings or butterfly patches are only meant to be in place for a maximum of 24 hours on all tyres – any longer and you risk voiding your tyre warranty.

Depending on the size of the damage, a short-term fix might not even be possible. If the fault is larger than the span of a butterfly patch, an internal, permanent repair would be required straight away. Multiple temporary patches are normally an alarm bell for a poor-quality repair and should be avoided at all costs.

Although it's tempting to opt for the quick fix, a thorough and professionally executed repair is far better and will help to ensure you can extract the maximum life from your tyre.



Temporary repair patches should only be in place for 24 hours



A thermopress is used during hot vulcanisation tyre repairs

## **3. I'VE DECIDED ON A PERMANENT REPAIR, BUT WHAT TYPE SHOULD I OPT FOR?**

There are two main types of permanent repairs: hot and cold vulcanising. Both can offer a safe and permanent fix to any damage, but it is important to consider the benefits and drawbacks of each, before agreeing with the recommendation of the repairer and signing on the dotted line.

Vulcanising is a chemical process where two pieces of rubber – the tyre and the repair patch – are bonded together using sulphur, which acts like welding and seals the two together.

Hot vulcanising uses extreme heat to bind the rubber together, and is best for larger areas of damage or faults that occur closer to the edge of the tread. This process is quicker than cold vulcanising, but as it takes longer to set up and requires specialist equipment, your tyre will have to be sent away – a process which normally takes a minimum of several days, depending on how close the supplier is.

Cold vulcanising is best-suited to smaller areas of damage, located in the centre of the tread. This vulcanising process takes approximately 24 hours to complete and involves bonding the patch, the solution and the tyre together at 18 degrees Celsius. This can sometimes be completed by your local tyre dealer, if they have the facilities onsite. If not, they may have to arrange to send the tyre away.

Before deciding, take the time to ensure the right method has been chosen. The wrong repair method executed perfectly can be just as bad for the tyre as a poor-quality repair. Your local Michelin Exelagri accredited dealer will be able to give you an idea of which method is likely to deliver the best results.



A flexible segmented press is used during cold vulcanisation tyre repairs

## **2. PERMANENT REPAIRS ARE MUCH MORE EXPENSIVE THAN TEMPORARY FIXES, DO I REALLY NEED TO SEND MY TYRE AWAY?**

With a temporary repair, your tyres are effectively living on borrowed time. Although these short-term fixes might seem like a cost or time saving method, this is a false economy. Consider the typical load applied to the tyres from any trailed equipment or implements, and how intensively this machine will be used, and it's not hard to see why a temporary repair might falter relatively quickly.

Be particularly wary of temporary repairs to tyres on materials handling equipment, such as telehandlers. These machines are often overlooked for permanent repairs, as they typically operate in a confined area of the yard which makes quick and cheap fixes appear more attractive. However, even if seldom used, the weights these machines lift means it is only a matter of time before the weakened tyre fails, leaving you with a costly repair and compromising the safety of the operator.





#### ***4. I SENT MY TYRE TO BE REPAIRED, BUT NOW I'VE BEEN TOLD THAT IT'S UNREPAIRABLE. HOW DO I KNOW I'VE BEEN GIVEN THE RIGHT ADVICE?***

Although from the outside the repair may seem relatively small, you can never tell how extensive the damage is on the inside until the work starts. Sometimes a tyre can be two thirds of the way through a repair before the full extent of the damage is revealed.

The first thing any repairer will do is buff away the rubber around the fault, providing an appropriate surface for bonding the repair patch to, as well as enabling the full scope of the damage inside the tyre to be investigated.

Extensive internal damage is particularly common with materials handling equipment tyres, where faults are more likely to have been left untreated or temporarily repaired for long stretches of time, allowing water and air the chance to penetrate the casing. Water reacts with the steel causing rust and rotting the inside structure – which often can't be seen until the repair is started – and ultimately can cause the tyre to be scrapped.

The position of the damage also affects how likely it is to be repaired. If a puncture occurs to the sidewall, it is generally advised that a new tyre be purchased, as the strength of sidewalls are integral to the viability of a tyre. This is particularly the case for tyres run at low pressures in the field or when trailing heavy equipment.

The closer to the bead a fault occurs, the harder the repairs are to carry out. A certain amount of surface is needed to buff away the rubber, creating a suitable surface for the repair patch to adhere to. If it's very close to the edge, then the patch is unlikely to hold.

#### ***5. HOW DO I KNOW IF THE REPAIR HAS BEEN CARRIED OUT TO A HIGH STANDARD?***

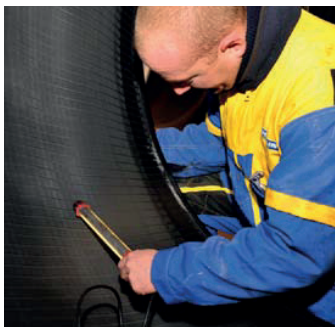
Spotting a botched repair job isn't as easy as you'd think. Poorly executed temporary repairs will be easier to identify than permanent repairs as the external patch will be clearly visible. If the edges of the patch are rough, pulling away from the tyre or bulges can be seen, then something is not right and the machine should be taken out of service whilst it is investigated by an expert.

If you can see multiple repair patches, then the wrong type of repair has been carried out, as much larger damage requires an internal fix. The patch should be a smooth area, with edges which blend seamlessly with the tyre.

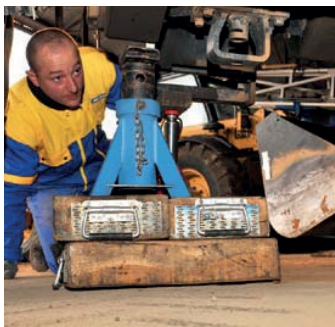
For permanent repairs, poor workmanship is harder to spot, as the majority of the repair work is carried out internally. Unless you have a specialist tool called a spectrometer to inspect the tyre with, any external sight of the patch could appear perfectly fine.

Therefore, it's always best to opt for an accredited tyre repairer from the start to ensure all repairs are carried out to a high standard. Often, if a repairer is offering rock bottom prices, they'll do a rock bottom job.





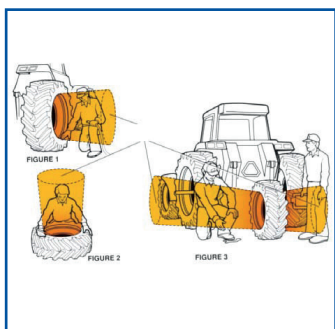
It takes a trained eye to spot the extent of damage



Skilled tyre technicians have access to the latest tools



Trained technicians will carry out a robust and long-lasting repair



Trajectories can make tyre fitting dangerous

## **6. ARE THERE STRICT RULES SURROUNDING AGRICULTURAL TYRE REPAIRS?**

Although organisations such as the Retread Manufacturers Association (RMA) clearly define the process, no official legislation exists surrounding agricultural tyre repair.

In reality, it means anyone can set-up a business repairing agricultural tyres with no skills or qualifications. The net result is that the quality of repairs varies dramatically and it's not uncommon to see tyres in operation which should not have been repaired or to see equipment suffering additional downtime after basic 'plug' repairs have failed in service.

This leaves the market open to 'cowboy' repairers so be careful who you engage, and always seek expert advice.

## **7. SHOULD I PAY FOR A PROFESSIONAL REPAIR WHEN I COULD WATCH AN ONLINE TUTORIAL AND CARRY OUT THE WORK MYSELF?**

Videos and repair materials are readily available online, and some temporary repairs can be simple to perform, but the best option is always to consult a professional.

It takes a trained eye to spot the full extent of any damage and to carry out a robust and long-lasting repair. What could save you money in the short-term, could potentially cost you dearly in the long run, if it renders a valuable casing beyond use and results in downtime when you least need it.

Remember that tyres are the only contact between your machinery and the ground. The consequences could be serious should a home-repaired tyre blow-out whilst travelling on a public road at normal operating speeds.

Due to the speed at which agricultural tyre technology has advanced within the last 15 years, Michelin no longer advocates that farmers carry out their own tyre fitting – and the same advice goes for repairs too.

We believe agricultural tyre fitting and repairs should be the domain of skilled tyre technicians who have undergone specific training, are routinely re-assessed, and have access to the latest tooling and personal protective equipment. It's simply not worth risking your life to save some cash.

## **8. I'M STILL UNSURE ABOUT MY TYRE REPAIR – WHO CAN I GO TO FOR ADVICE?**

If in doubt, contact your local Michelin Exelagri accredited dealer. Our network of 48 dealers, located across the UK and Ireland, have decades of experience under their belts and are best-placed to offer advice, and can put you in touch with an accredited repairer or arrange a fresh repair on your behalf.

You can also seek free and expert advice from your local Michelin Account Manager, or by tweeting [@MichelinAgriUK](https://twitter.com/MichelinAgriUK).