

FORD & FORDSON

Tractor Collection: Issue 4

FORD 1000 SERIES



★ BUYING ★ OWNING ★ RUNNING ★ RESTORING



WORKING TRACTORS



BRILLIANT CREATIONS!



RARE CONVERSIONS

STILL AVAILABLE FORD&FORDSON

Tractor Collection: Issue 1



FORDSON DEXTA

This edition spotlights the Fordson Dexta; one of the most desirable, affordable and popular vintage tractors from the late 1950s and early '60s. The Dexta's appealing combination of straightforward design, reliable engineering and classic, visual appeal mean that it's become a firm favourite with enthusiasts around the world.

Tractor Collection: Issue 2



FORDSON E27N

This issue spotlights the fabulous Fordson E27N. This tractor, launched just after the Second World War as something of a 'stepping stone' model between the pre-war Standard N and the early '50s New Major E1A, is a much worthier and more capable machine than its 'stopgap' reputation would suggest. Here we celebrate all aspects of the E27N; a tractor which turned out to be far more successful than anyone at the time probably expected.

Tractor Collection: Issue 3



FORDSON MODELS 'F' & 'N'

This issue spotlights Henry Ford's first production tractor, the Model 'F' which made its first appearance in 1917, followed by the improved version in 1927, known as the Model 'N'. The 'N' was probably the most important tractor in the UK during WW2, with over 136,000 built. This edition is packed with content that really gets under the skin of these pioneering Fordson models.

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WELCOME

If you're interested in something from the Ford 1000 Series of tractors, then you're already on to a winner. As you'll see from the collection of articles gathered in this latest edition in the *Ford & Fordson Tractor Collection* series, there's plenty to get your teeth into. These models offer a great option for the first-time tractor owner as they're generally easy to handle, simple to drive and straightforward to maintain.

Both the original 1000 Series models and the later, revamped Ford Force models were built in an age when machines were engineered to last, when electronic control was minimal and when service requirements were completely within the grasp of the enthusiastic owner. Fast-forward 50 years and we find ourselves in a world where the 1000 Series models have become desirable, collector's tractors with genuine classic status.

So, I hope that the content that follows both opens your eyes to some new possibilities, and helps you appreciate just what this appealing generation of Ford tractors has to offer. There isn't really a bad one in the bunch, and their size ensures that they remain easy to transport on a trailer pulled by a decent 4x4. So, attending shows, working days and ploughing matches is all perfectly doable without too much extra expense. What's

more, if you have a bit of work in mind, the 1000 Series tractors are all still capable of being useful around the farm, smallholding or stable yard. They have the power and specification to be viable workers and, with entry-level

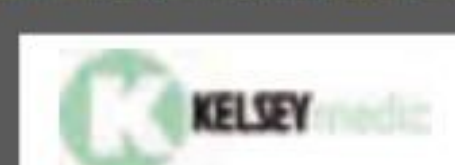
values sitting at £2,000-£3,000 for an original runner, I hope you'll agree that there's very little excuse for not giving one a try.

Chris Graham, Editor



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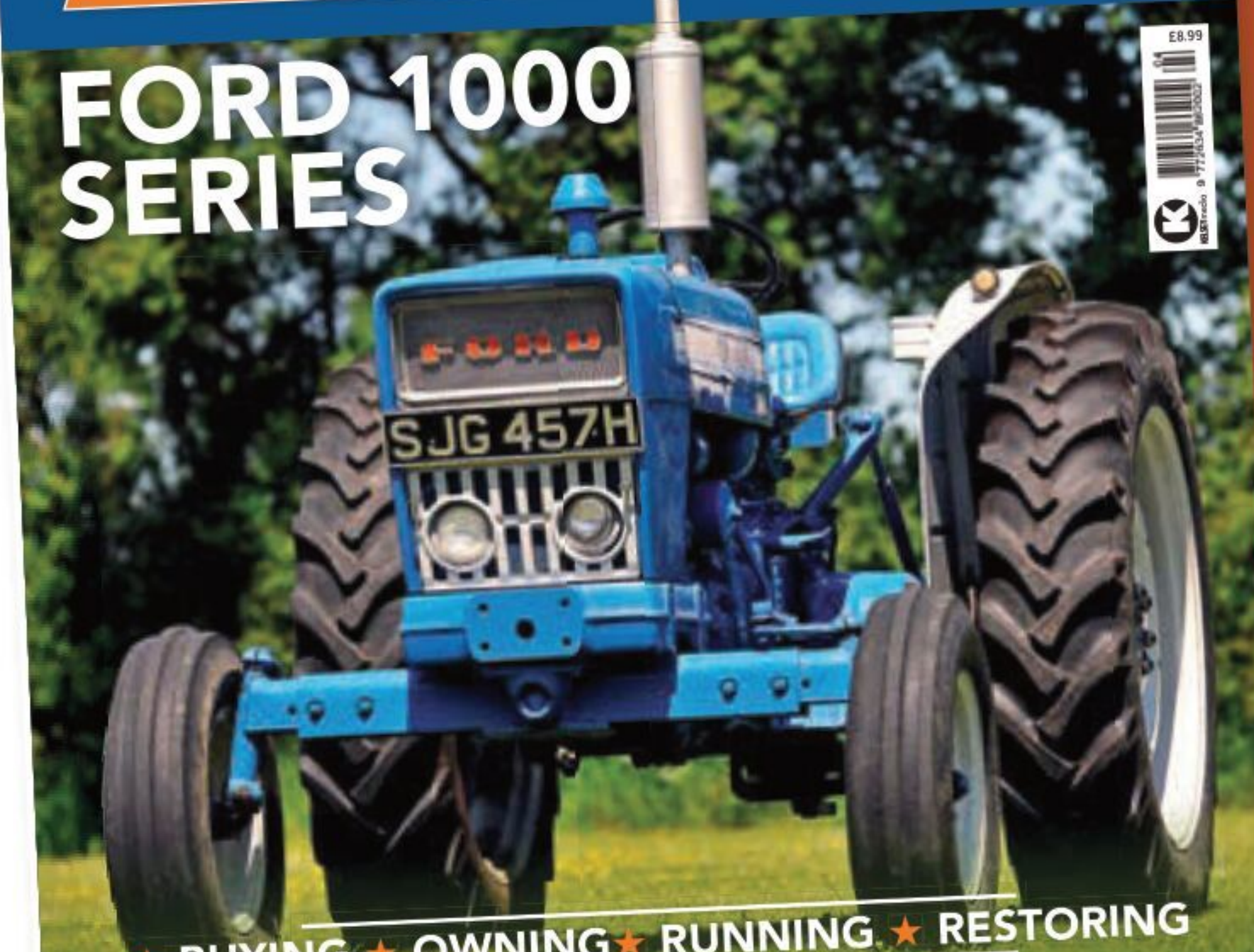


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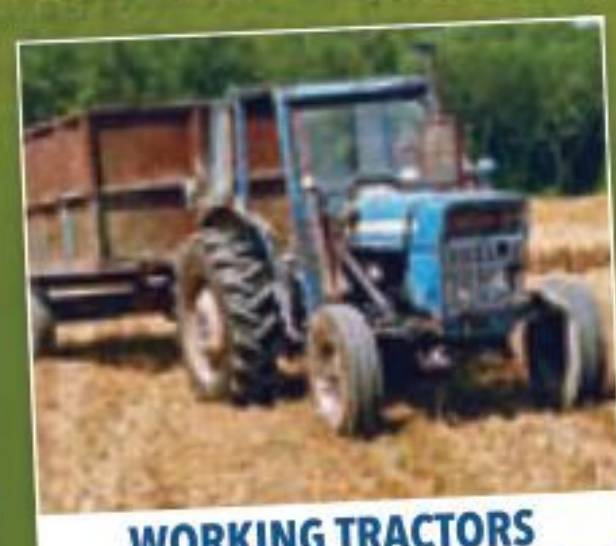
FORD & FORDSON

Tractor Collection: Issue 4

FORD 1000 SERIES



★ BUYING ★ OWNING ★ RUNNING ★ RESTORING



WORKING TRACTORS



BRILLIANT CREATIONS!



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BUYING GUIDE

May the Force be with you?

Chris Graham gets under the skin of the Ford Force 3000 to discover the secrets of buying a good one

The 3000 model was one of a series of machines that represented a significant turning point for Ford. Arriving in the mid-1960s as a part of a four-model line-up (2000, 3000, 4000 and 5000), the new 1000 Series machines marked Ford's progression from the popular and trusted Fordson-branded machines, into a fresher, more modern era.

The new models looked sharper and much more in keeping with the times but, ever wary of upsetting its customer base with too much of a product shock, Ford retained some of the traditional model names in the UK, to help keep long-time users feeling comfortably on-side.

New design

The four new models in the range - codenamed 6X by Ford - were completely new machines, designed from the ground up. The baby of the range, the 2000, was available with a diesel- or petrol-powered, three-cylinder engine producing 37hp. The 3000 delivered 46hp, and the petrol version of this model was badged as the 'Super Dexta'.

Those with bigger budgets could opt for the 55hp 4000 version, branded as the 'Major', or the top-of-the-range 5000 'Super Major', with a hefty 65hp. In the UK the smaller, 6X models came with a six-speed transmission, but the larger variants could also be specified with an eight-speed unit or an advanced, 10-speed Select-O-Speed transmission.





Launched in 1968 as a
successor to the original Ford
3000, the Force version was
superior in many respects, and
makes a better buy today.



BUYING GUIDE



This meticulously restored Ford Force 3000 is a credit to Edward Underdown, who did all the renovation work himself.

Unfortunately, things didn't run smoothly following the launch and, once tractors started being put to use on UK farms in 1965, the reliability problems started. There are all sorts of theories about why these models proved so troublesome, ranging from suggestions that they were rushed to market too soon, or that there were issues at Ford's new factory in Basildon that led to production inconsistencies.

However, Ford stuck to its guns, rode through the troubled times and dealt with all the issues under

warranty as best it could. Ultimately, this proved to have been the right decision as the 1000 Series became a worldwide sales success, with the 4000 model proving the most popular with buyers overall.

Range update

However, Ford wasn't content to sit on its corporate laurels regarding the 1000 Series line-up and, in 1968, it announced a significant raft of mechanical improvements and exterior styling tweaks, and introduced the 6Y, 'Ford Force' range. The model choice stayed the same,

with the 2000 and 3000 variants benefitting from improvements to the hydraulics, transmission and PTO systems - dry brakes and a dual-clutch system to engage the PTO. Externally, they also got smoother bodywork and a revised front grille.

The more expensive 4000 and 5000 models got the same styling tweaks, but also wet brakes (oil-cooled discs running inside the differential) and an independent, hydraulic PTO - operated at the flick of a lever. They also benefited from more power, with engine improvements boosting outputs to 62 and 75hp (four-cylinder engine)

RIGHT: Simple but effective instrumentation, but the wiring that supplies this cluster can suffer with age.

BELOW RIGHT: The three-cylinder diesel engine that powers the Force 3000 suffered with internal wear issues but, overall, is a robust and reliable unit.

BELOW: This more modern, sharper-looking front grille was one of the most obvious, defining features of the Force models.



respectively. The improvements made represented money well spent by Ford, producing demonstrably better end products that continued to sell extremely well right up until production came to an end in 1975.

Today, the Ford Force 3000 model sits comfortably in the middle of the 6Y range, and represents a good ownership proposition for the novice

enthusiast. It's a tractor that isn't too large or powerful, and for which routine servicing and maintenance requirements are straightforward.

The mechanicals are simple and generally reliable, and these machines are certainly still sturdy enough to be put to use on grass-cutting and ploughing duties, if required. Consequently, this model

- as well as the others in the range - is becoming increasingly sought after, and values are starting to head upwards. For the time being, though, the Force 3000 remains pretty affordable in most conditions and specifications, so now could be the perfect time to buy.

Hints and tips

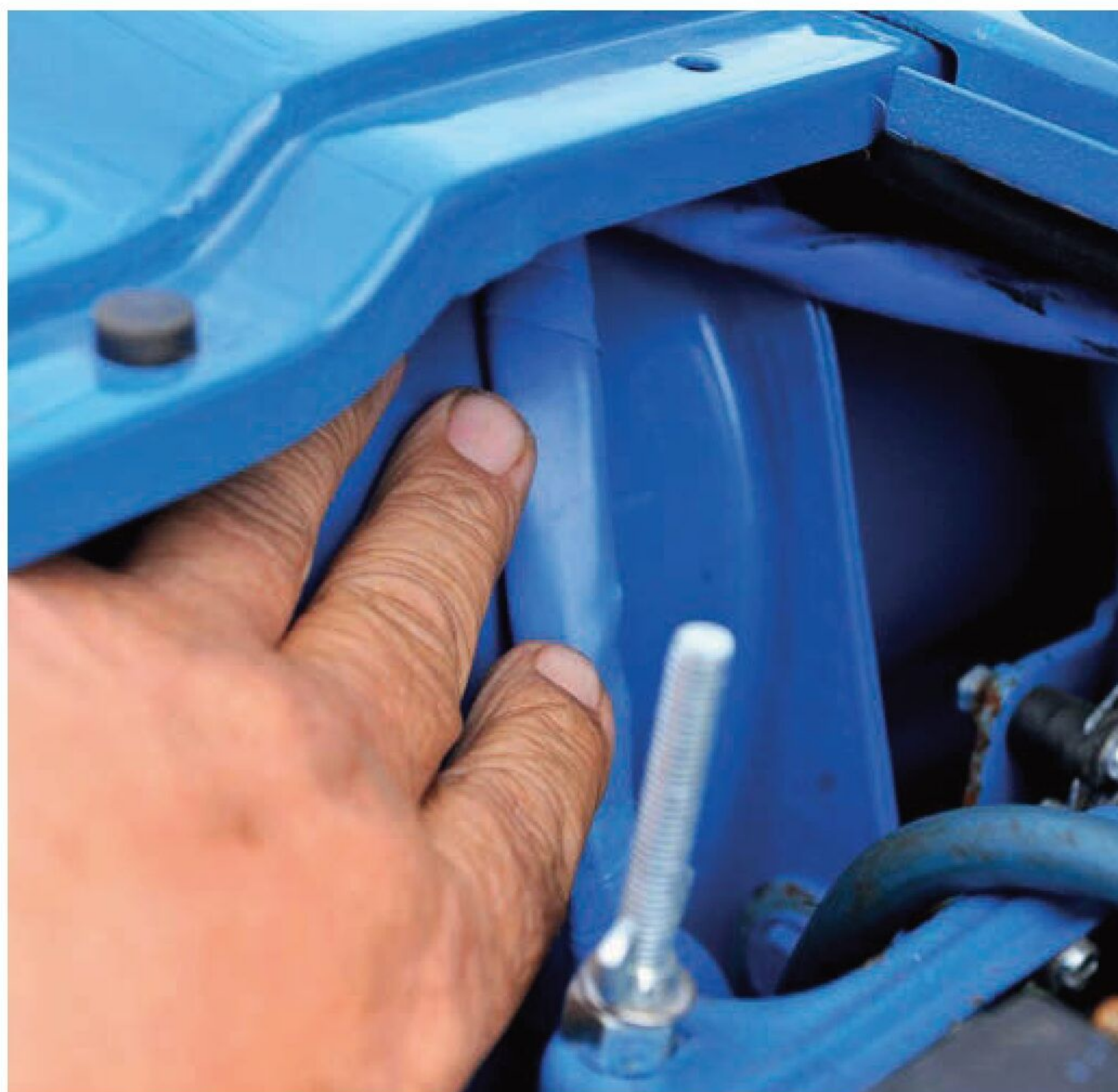
For the low down on what to expect with the Force 3000, and some practical advice about what to look for when assessing a potential purchase, I took a trip to the rolling countryside of Devon where, on the banks of the river Otter, I met long-time Ford tractor enthusiast, Edward Underdown.

Edward has owned - and continues to own - a great many Ford tractor

WHAT TO PAY?

The days of being able to find a Ford Force 3000 advertised for a few hundred quid are long gone, I'm afraid. Prices are on the up and, nowadays, for an original, running Ford Force 3000, you should expect to pay about £4,000. Of course, prices will vary according to condition, history, running hours etc. 'Ex-farm' examples can be picked-up for about £1,200, if you're lucky, while a runner that needs work is likely to set you back just over £2,000. At the top of the price range, fully-restored examples are now fetching £9,000-£9,500. Rare petrol-powered models demand a small price premium across the board, as do those models fitted with a cab.

BUYING GUIDE



Clockwise from top left: Test for steering bush wear by rocking the main arm • If there's a large gap visible here between the kingpin and the top of the drag arm, the thrust bearings will need to be replaced • Check this section of loom that runs up over the fuel tank, just behind the battery. Age and contamination-related insulation breakdown can lead to electrical shorts and fire • This is where the clutch pedal can be adjusted.

models, and his current collection includes a pair of Force 3000s; one with a cab and one without. He knows the model inside out, having recently finished an exacting renovation of his cabless model, so is ideally placed to offer buying hints and tips for potential owners. As we chatted over a mug of coffee, Edward's first point to me concerned the overall qualities of the Force 3000.

"It's a fundamentally good tractor," he told me. "Ford worked hard on the improvements to the original, pre-Force range, and the new versions were much more reliable and usable. The 3000 was a very manoeuvrable, well-liked tractor in its day, and continues to be now. Of course, the enhanced brakes and PTO made the 4000 a little bit better again, but it was more expensive.

There are still plenty of Force 3000s around, so finding one to buy isn't a problem."

Pre-purchase inspection

When looking at a prospective purchase, you first need to find out as much as you can about the tractor's history. There are plenty of 3000s on the market, so there's no need to rush out and buy the

first you see. Take your time and be prepared to walk away if the vehicle isn't as described in the advert.

Given that these tractors are starting to appreciate these days – and with the growing popularity of the classic tractor hobby – the reality is that more sellers and dealers are starting to see the money-making potential of machines from the 1960s and 1970s, and will be looking to turn a quick profit. So never be hassled into a purchase and, if you buy, do so on your own terms.

So, when faced with a tractor to inspect, Edward's first piece of advice was to check the condition of the oil and coolant. It's important to establish that the two fluids aren't mixing inside the engine. "Check the dip stick to make sure that the oil is the colour it should be; if it's at all grey-coloured or creamy-looking, then you'd probably be best advised to walk away. Carry out the same check by opening the radiator cap; any sign of a mayonnaise-like emulsion is a tell-tale sign of trouble.

"The three-cylinder diesel engine used in the 3000 had a problem with its block, which often suffered with electrolysis-driven porosity. This seems to have happened at different times with different tractors, so may have been put right under warranty, or may not."

Edward's theory is that the porosity problems were regional, and related to the hardness of the water in an area. But he also thinks that the original owner's meanness with the use of antifreeze was another important factor. "The higher the concentration of antifreeze kept in the coolant solution, the lower the chances of porosity problems," he explained. "Of course, back in the day, antifreeze wasn't nearly as good as it is now, and didn't benefit from the additive packages that modern products now include."

Start it up!

As a rule, it's always best to try and



Although petrol-powered versions were available, diesel-engined models were the big sellers here in the UK.

make sure that you're able to start the tractor from cold. "If it takes a lot of turning to get it started," Edward said, "then that could point to a lack of compression caused by internal engine wear. Such problems do occur and can be an indicator of a hard working life and/or a lack of servicing/maintenance down the years. Skimping on oil changes was a common practice among cash-strapped farmers. Worn engines will generally burn more oil so, if the level's showing low on the dip stick, or there are clouds of blue smoke from the exhaust, then beware.

"It's also worth inspecting the engine carefully for signs of oil leaks and, once the unit is running, listening for signs of uneven running or misfires. The latter can be an indicator of injector or fuel pump problems. A fault with the pump can be expensive to sort out as the number of specialists tackling this sort of repair work is dwindling. Fortunately, there are still a few around."

Moving towards the front of the tractor, take a close look at the front axle, especially if you know that it's been fitted with a loader at some point in the past. Check for kingpin and thrust bush wear. If there's a noticeable gap between the kingpin and the top of the drag arm, this will

FORD FORCE 3000 PARTS PRICES	
Front grille (upper and lower)	£100
Mudguard	£270
Battery tray	£54
Dynamo	£84
Starter motor	£180
Wiring loom	£60
Seat assembly	£102
Instrument cluster	£156
Short motor	£2,400
Gasket set (top)	£18
Oil pump	£60
Oil filter	£6-£9.60
Water pump	£54
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Brake shoe kit	£50.40
Kingpin	£62.40
Track rod end	£15
Steering wheel	£30
Front wheel and tyre	£102
Rear wheel (rim only)	£54
'Ford 3000' decal set	£18
All prices include VAT and were supplied by Old 20 Parts Company (tel: 01332 792698, old20tractorparts.com)	

BUYING GUIDE



The Ford Force 3000 remains a very usable and nimble tractor that's great to drive and work.

be an indicator that the thrust bearings will be going at the bottom. Also, from a few metres in front of the tractor, check that the front wheels are sitting properly upright. If they're leaning in towards the body noticeably at the top, then this is another indicator of wear in the system.

At the back end of the tractor, Edward advises checking for oil that might be leaking out of the axle, past the half-shaft seals. This can find its way out onto the brake shoes, with obviously serious effects on stopping power. If this is the case, the half-shaft seals will need to be replaced.

Pedal checks

With the engine running, get yourself into the driver's seat and test the clutch. Depress the pedal,

select a gear and then note the position of the bite point. If you find it's near the top of the travel, then the chances are that the clutch will be running out of adjustment and will need to be replaced.

Incidentally, Edward says: "If you look at the front end of the clutch rod, you'll see a pair of mounting holes that allow for a lowering of the clutch pedal to make it easier to use. But the position chosen can also affect the two-stage clutch operation with regard to the PTO, so bear this in mind during your check."

It's also important to test the operation of the hydraulic system. "What you're after is a smoothness of operation," says Edward, "any jerkiness or unusual slowness in the movement will indicate a problem, such as cavitation (air pockets in

the system). Oil is channelled from the rear axle in metal pipes to the hydraulic pump, and these are routed under the footplate. Years of dirt build-up under here can promote corrosion on the pipes and even the formation of pinholes. If this happens, air will be sucked into the system.

"Also, if the oil level in the axle becomes low because there's a leaking seal somewhere, then hydraulic efficiency will suffer. Dirty, neglected oil can also lead to the suction filter becoming clogged, starving the system of oil and stopping the hydraulics working at all. Changing the filter will necessitate splitting the tractor, because it's located very low down in the back axle. This issue was dealt with on the 4000 because Ford

repositioned the hydraulic pipe inside the rear axle, and it can be changed without the need to detach the axle."

Good gears

By and large, the transmissions used on the Force 3000 are very reliable, so problems are rare. However, Edward would recommend that new owners always make a point of changing engine, gearbox and axle oil (and associated filters) as a matter of course as soon after purchase as possible.

It's also important to check the operation of the brakes, and the degree of travel on the pedals. "If nothing much happens until you get right to the end of the travel," Edward says, "then you know that new brake linings will be required. The brakes weren't the greatest on this model, anyway, and old linings will harden, which can diminish their effectiveness significantly. Being conventional, dry brakes, though, replacing the shoes isn't a difficult or expensive job, once the rear wheels and brake drums have been removed."

As far as the electrics are concerned, Edward advises carefully checking the condition of the wiring loom, especially just behind the battery, where it's routed up over the top of the diesel tank, on its way to the instrument cluster. A



OWNER'S VIEW: EDWARD UNDERDOWN

"I bought my first Ford 3000 in 1965, and kept it until 1990. This current example arrived about six years ago, and I bought it purely because I have a collection of Ford tractors, and the Force 3000 fitted in perfectly with the model sequence I have. I admit to having gone to town on the renovation of my Force 3000, and the paint alone cost nearly as much as the tractor did when it was new! It spent five years in my workshop as I ummed and ahed about how best to deal with it.

"I wanted it finished for the centenary celebrations in 2017, but that didn't happen – there were too many other distractions. So, then I set a deadline of 2018 to get it finished, and planned to put it on display at the Devon County Show that year. I achieved this, but there was a lot of hard work involved in getting it to the standard I wanted.

"My aim was to produce a tractor that was right, and which looked stunning, and I'm delighted with the results I achieved. It's a game little tractor although, of course, very underpowered by modern standards. However, the power-to-weight ratio it enjoys means that it remains a lively performer, and I really enjoy driving it.

"Another big plus point for me of a smaller tractor like this one is that it falls well below the legal 3.5-tonne weight limit for towing. So, even with a two-furrow plough fitted, it'll sit quite happily on my big, three-axle trailer and I can take it wherever I want. I like to get out and about to shows and ploughing matches with this tractor, so the ease with which it can be trailered around is an important aspect for me.

"I've been a Ford tractor enthusiast for many years now and buying something else like a Massey Ferguson is simply unthinkable!

combination of age and spilt diesel will cause insulation hardening and cracking in this area, leading to electrical shorting and the risk of fire. Replacement looms are available and aren't too complicated to fit as it's a relatively simple electrical system on this model. Otherwise, the electrics should prove both durable and reliable.

Externally, the level of corrosion is going to vary from tractor to tractor, being completely dependent on the way it's been used and looked after in the past. Sadly, many smaller tractors like the 3000 tended to end their working lives as uncared for yard-scrappers. As such, they were typically neglected and rarely cleaned, which promoted corrosion. When rust does occur, it's most commonly found at the back end – the front generally stays pretty clean.

Mud and dirt that's allowed to build up will promote rusting at the

base of the mudguards. Edward also says that rusting is often worse on cabbed versions (more nooks and crannies), so pay particular attention if you're considering one of these.

So, there you have it; buying a Ford Force 3000 makes a lot of sense for anyone looking for a smart little first-time tractor that's not going to break the bank.

The 1000 Series models proved to be a landmark range for Ford, that heralded the arrival of the modern tractor as we know it today. And yet now, some 50 years on, the 6Y models have attained a degree of classic status that makes them extremely attractive to those looking for a machine that's affordable, easy to maintain and still capable of doing a decent day's work, if required. But, as I've already mentioned, values are on the up, so it could well be that now is the perfect time to ensure that the Force is with you! ■

A HYBRID 5000

An old friend



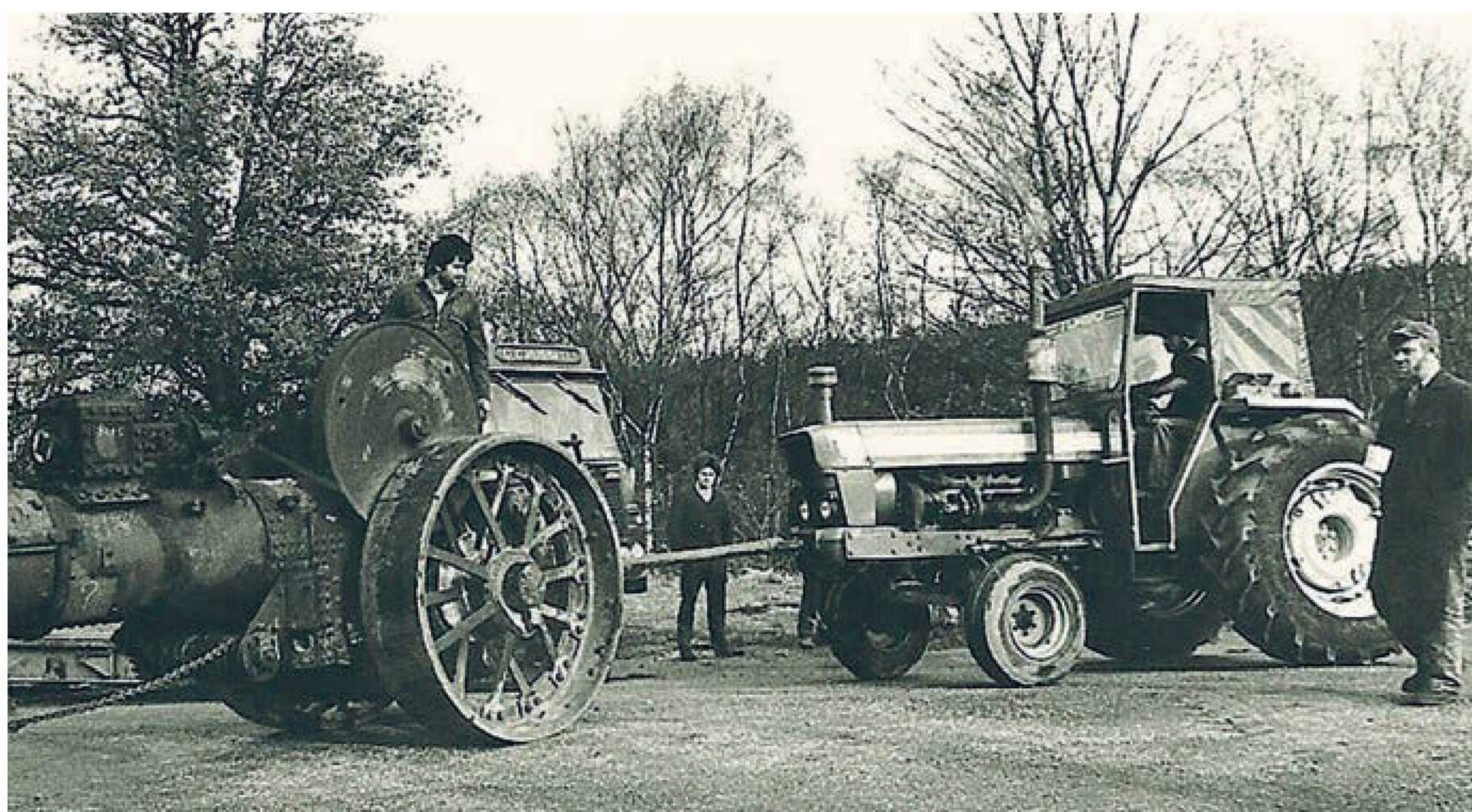
The sun was shining at the Bicknell works near Liphook, in Hampshire, and the Ford Hybrid 5000 was out and ready for work.



Back in June 1986, the Hybrid 5000 is used to move the 1891 Ransomes portable, ready for loading, all in two-wheel-drive configuration.

You'd be hard-pressed to meet a more dedicated, Ford-derived tractor enthusiast than David Bicknell. He's owned this interesting Hybrid 5000 for 37 years, having bought it for £1,000 in the early 1980s

AG Bicknell & Co Ltd is probably one of the country's leading steam boilermakers. Its works is based down on the West Sussex/Hampshire border, and the family has been involved with very many famous steam engines from all around the world over the years.



Gerald Russell steers a Burrell 8-ton road roller, over from the Isle of Wight, with the Hybrid doing all the work at the backend.

The Ford Hybrid 5000 featured here has been used to move many of these veteran machines around when they've visited for rebuilding or other sorts of repair work.

For me, talking about this Hybrid 5000 is an emotional experience, as I came to know this tractor

pretty well back in 1986. I first got acquainted with the Bicknell family in 1984, when I asked David's late uncle, Alec, to make a new firebox for my 100-year-old Marshall 59763 3hp portable, which was undergoing an extensive rebuild at the time.



Ticking over in the sunlight; David Bicknell has adapted this tractor well to his own, serious requirements.

A helping hand

Back in 1986 I was on an employee sabbatical and, having heard on the 'grapevine' that I was on leave for a few weeks, who should phone but Alec Bicknell. He wanted to know if I was available to help with a few outstanding jobs at the company workshops in Liphook? I was more than happy to help, and the work was very enjoyable. Tragically, though, Alec broke his back in an industrial accident during that period.

I was sad to leave, but more skilled workers were on hand to take over from me. Later on, in April 1988, David Bicknell (Bob's son and Alec's younger brother), joined the company, and this very gifted engineer hasn't looked back since, going on to run the company very successfully.

“Talking about this Hybrid 5000 is an emotional experience, as I came to know this tractor pretty well back in 1986”

However, while I was there during the summer of 1986, there were several occasions when I was called upon to drive David Bicknell's Hybrid 5000 tractor. For me, working full time on the shop floor was pretty stressful and, on one

of these occasions, I accidentally bent the drawbar on David's trailer while manoeuvring it with the 5000, to load a 1891 Ransomes Sims & Jefferies 8613 3hp engine. You can imagine how that went down!

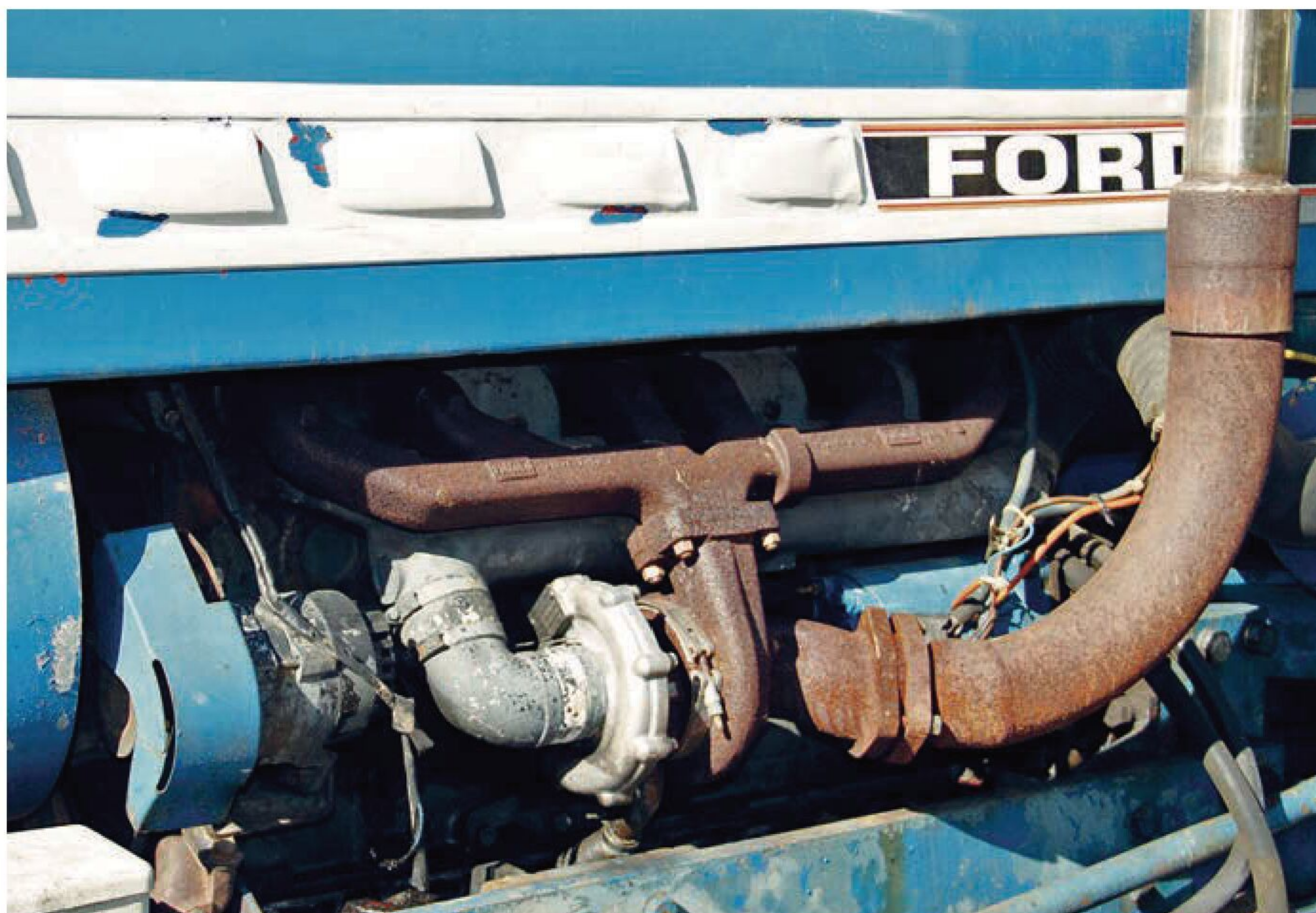
Hot stuff!

On another occasion, I was asked to take the Hybrid from the works to Alton, to deliver some gears and other parts that needed work. The trip was to be very slow because, as soon as I got going using my own 'dreaded' Yeoman trailer behind, the tractor's water gauge shot straight up to the red section. I didn't take much notice at first but, as I went through the eight gears, it climbed higher and higher until the needle appeared to be trying to burst through the end of the gauge! I thought that it would be just my luck for the head gasket to have blown, so I stopped at a telephone box to talk with base, but couldn't get through.

However, having checked the water level and found it to be perfectly



No mod cons here, but everything is where it should be.



“ I accidentally bent the drawbar on David’s trailer while manoeuvring it with the 5000... You can imagine how that went down! ”

LEFT: That Ford 360T D series engine sits snugly under the Ford Hybrid 5000’s bonnet.

BELOW LEFT: The Roadless 95 axle brackets, once sorted out, made the job very easy to assemble.

BELOW: Looking from the front. No oil leaks to be seen here.



OK, I opted to press on with the journey, limiting myself to 10mph. When I eventually arrived in Alton, the water and oil were both checked and, much to my relief, were found to be fine. Things were exactly the same with the gauge on the return journey, but with the added complication of an empty, snaking trailer behind!

Just as I reached Liphook, I met a search party coming the other way, which had been sent out to see what had happened to me. I explained what had happened and, when the Hybrid’s owner spoke to me later that night he said: “It always runs in the red; don’t take any notice of the gauge!” So, I felt somewhat relieved about that, but couldn’t help thinking that it would have been

handy to have been told that at 9.30am that morning, when I set off!

Significant change

At that stage, the Hybrid 5000 was in two-wheel-drive, short-wheelbase configuration. Now, nearly 40 years later, it’s more or less the same although, significantly, now carries a fully working four-wheel-drive Selene front axle.

David started at the Watson & Haig, Alton branch on June 6th, 1979, where he worked on all the Ford 1000 and 600 Series tractors. He also saw various County models that were popular on home soil, but very few Roadless machines; these were evidently few and far between in that part of Hampshire.

David, having successfully served

his time, then went off to join AF Wiltshire, at Dunsfold, in April 1984. He worked on the 5000 before it was part-exchanged at Wiltshire’s, for a 6600. The Pre-Force 5000 had originally been supplied by Rose of Chichester, and was known to have a poor engine. Albert Wiltshire charged David £1,000 in October 1984 for the tractor and, from my understanding of things, it was new in 1965 to Longhurst Farms, Lockwood, near the Goodwood estate, in West Sussex.

After some initial fun with the 5000, the engine was stripped and, in 1985, a very secondhand D series six-cylinder truck engine was found, which, after a rebuild, was placed in with a new Garrett turbocharger. The extended bonnet section came from

A HYBRID 5000



With its excellent turning circle, the Hybrid manoeuvres well in the confined space of the yard.

LEFT: Off to pull out another engine from the newly-constructed storage unit.

“As soon as I got going using my own ‘dreaded’ Yeoman trailer behind, the tractor’s water gauge shot straight up to the red section”

“The engine had eventually ‘cooked’, so the decision was taken to completely rebuild it, adding a 360 Turbo from a generator set”

another Force 5000, but that was not all. A Lambourn cab was added, and the steering was all turned around, as per a Roadless, to give it a 118, short-wheelbase effect. Power steering went on, 16-34 tyres were fitted to the rear wheels and wider front wheels and tyres were added, having been scavenged from a fertiliser spreader that had turned up at Wiltshire’s at some stage.

In that configuration, the tractor towed David’s kit to many ploughing matches and rallies in Hampshire and Sussex. It also provided the muscle for moving various ‘dead’ steam engines around the yard. These included the

Bicknell’s famous ex-1920 Ransomes Sims, and the Jefferies works single-cylinder crane engine, Hooky, which had been through the works there.

Necessary restoration

Time caught up with the Hybrid 5000 in 2001, when it once again underwent a full rebuild, and the four-wheel-drive Selene kit, which had come from Steve Hogbank, was installed. The Roadless 95 adaptor plate and brackets came from Graham Tractors at Ropley, Hampshire.

Unfortunately, the engine had eventually ‘cooked’, so the decision was taken to completely rebuild

it, adding a 360 Turbo from a generator set, supplied via Dave Gardner. The electrics also got a thorough ‘going over’ and a pair of Roadless-style, front rims were fitted, as well as lug-grip tyres.

Mike Ellis, from Petersfield, found a more appropriate Ford Safety cab for the tractor, and the horrible-looking Lambourn cab that had served so well, was finally ousted. As for the engine cooling, this was sorted at last, thanks to the fitting of a larger radiator from a County 1174.

The end result is a very clean machine that does all it should. Of course, I was interested to discover what speed the tractor could now manage, without its temperature gauge running for the red. Well, David tells me that it’s perfectly capable of a good 20mph, and that the steering is excellent! ■



The old, WW2 searchlight trailer holds an Aveling & Porter steam tractor boiler assembly, which has just been collected by the Hybrid.

MODEL IN FOCUS

A '70s ICON

Jane Brooks takes a look at the fabulous Ford 7000; one of the most iconic and sought-after of the 1000 series of tractors





Steven Brooks' 1974 Ford 7000 is a completely original and standard, eight-speed tractor, with no optional extras. Being a short wheelbase tractor, it really needs a set of weights on the front for heavy fieldwork.

Conceived in the 1960s, the Ford 7000 burst on to the farming scene in 1971. Although introduced to dealers earlier in the year, its general launch at the Royal Smithfield Show, Earls Court, London in December of 1971, took the farming community by storm.

Ford had finally given farmers what they wanted; a tractor based on the Ford 5000 that came off the production line already turbo-charged. Roadless had already fitted turbos to Ford 5000 tractors with the Ploughmaster 80, County did the same with its 854T, as did Northrop with the 5004T. However, these were only offered in very limited

LEFT: Originally launched in 1972, the Ford 7000 was only available with an eight-speed transmission. The Dual Power model was introduced at the Smithfield Show, in 1973.

numbers, and such modifications also invalidated the important Ford warranty.

More power

The 6X engine had originally been designed with more power in mind, and work had already started on improvements at Ford's US headquarters. Back in 1967, John Foxwell, the chief engineer of Ford Tractor Operations, looked at developing a model to fit in between the four-cylinder 5000 and the soon-to-be-released, six-cylinder 8000. The Ford 8000 was launched in the US in 1968. It was built at Highland Park, Michigan, but was sold by Ford in the UK, although a few models were imported.

In fact, the majority of the development work for the 7000 was carried out in the US, with several improvements made to the existing

WHAT TO PAY?

Ford 7000 tractors have become incredibly sought after in recent years. The standard, eight-speed model used to be considered the poor relation when compared to the dual power 16/4 speed model, but both seem equally popular at auction these days.

The 7000 was also converted into four-wheel drive tractors such as the Roadless 94T and the County 944, but these models are extremely rare and desirable today, so command very high prices.

At its launch, a basic-spec 7000 cost just under £3,000, but you're unlikely to find one at that price today. Even the most basic model in ex-farm condition today will cost about £9,000 while, at the top of the range, you'll pay over £20,000 for a good dual power model, or a fully restored example. Recently, a Ford 7000 tractor sold by Cheffins Auctioneers fetched the grand total of £27,825, including commission.

MODEL IN FOCUS



The Ford, factory-fitted Safety Cab on all 7000 tractors is the forerunner to the Q Cab that was fitted to its successor, the 7600.

OWNER'S VIEW: STEPHEN BROOKS

The 1974 Ford 7000 featured here belongs to Stephen Brooks, and spent all its working life on a small livestock farm in South Warwickshire. It's completely original, has a standard, eight-speed, constant-mesh transmission and no optional extras. Stephen is the second owner; he's had it for a few years and keeps it in ex-farm condition.

"I consider myself really fortunate to have been able to purchase this tractor," he explained.

"For me, original condition and a local provenance are really important. I've been lucky and any problems have been minor, but there are a few common faults that do occur with this model."

As a user and collector of classic Ford tractors, Steven had long wanted to add a 7000 to his fleet. "I run 40 series Fords on my own land and in my contracting business, but the 7000 has been used in anger a few times since I brought it; more because I enjoy driving it than because I needed to use it.

"However, I'm a firm believer in actually using tractors. Leaving them standing for months or years, even if they're undercover, is a really bad idea. Just putting a few hours a year on them helps to identify any problems that may arise."

6X four-cylinder engine, to ensure top-end turbo power. Pistons, piston rings, valves and valve seats were modified, the drive train strengthened and the water pump was redesigned to allow better cooling. The turbocharger was developed by Garrett AiResearch.

The transmission was beefed up and, to keep the turbo sufficiently supplied with air, a pre-cleaner, catchment bowl and two-stage paper filter were incorporated. The large pre-cleaner stack is a distinctive fitting on the Ford 7000, positioned next to the exhaust on the bonnet. It's very important to stop dust getting into the turbo, and the Ford 7000 was one of the first tractors to have a warning light to remind the driver to service the air filter.

Load monitor

The 7000 also boasted Ford's brand new load monitor system, designed by one of Foxwell's engineers, Chuck McKeon, to give improved handling to semi-mounted implements. Ford modestly marketed this as the 'Greatest advance in tractor hydraulics since draft control'.

The load-monitoring sensor was fitted in the centre housing forming part of the driveline from the transmission to the rear axle, and sensed changes to the driveline torque then sent a signal to the hydraulic system to vary the implement's load.

Basically, it was an electrohydraulic replacement for the Ferguson-type draft control system that had been used on previous 1000 series tractors. Load Monitor was also made available as a factory-fitted option on the Ford 5000. The linkage was Cat II and mechanical upper link sensing was still used for mounted implements.

Also marketed as 'hydraulics with a

RIGHT: All Ford 7000 tractors were equipped with an assister ram. It was marketed as the tractor 'designed and powered to use larger and more productive equipment'.

difference', Ford suggested that the new system delivered single-lever operation for maximum simplicity and gave non-stop, high-capacity hydraulic power whenever the engine was running. The Position Control - or Top Link Draft Control - was instantly available and, in addition, each 7000 hydraulic system incorporated Load Monitor, which worked side-by-side with conventional position and draft controls. Either system could be selected at a moment's notice.

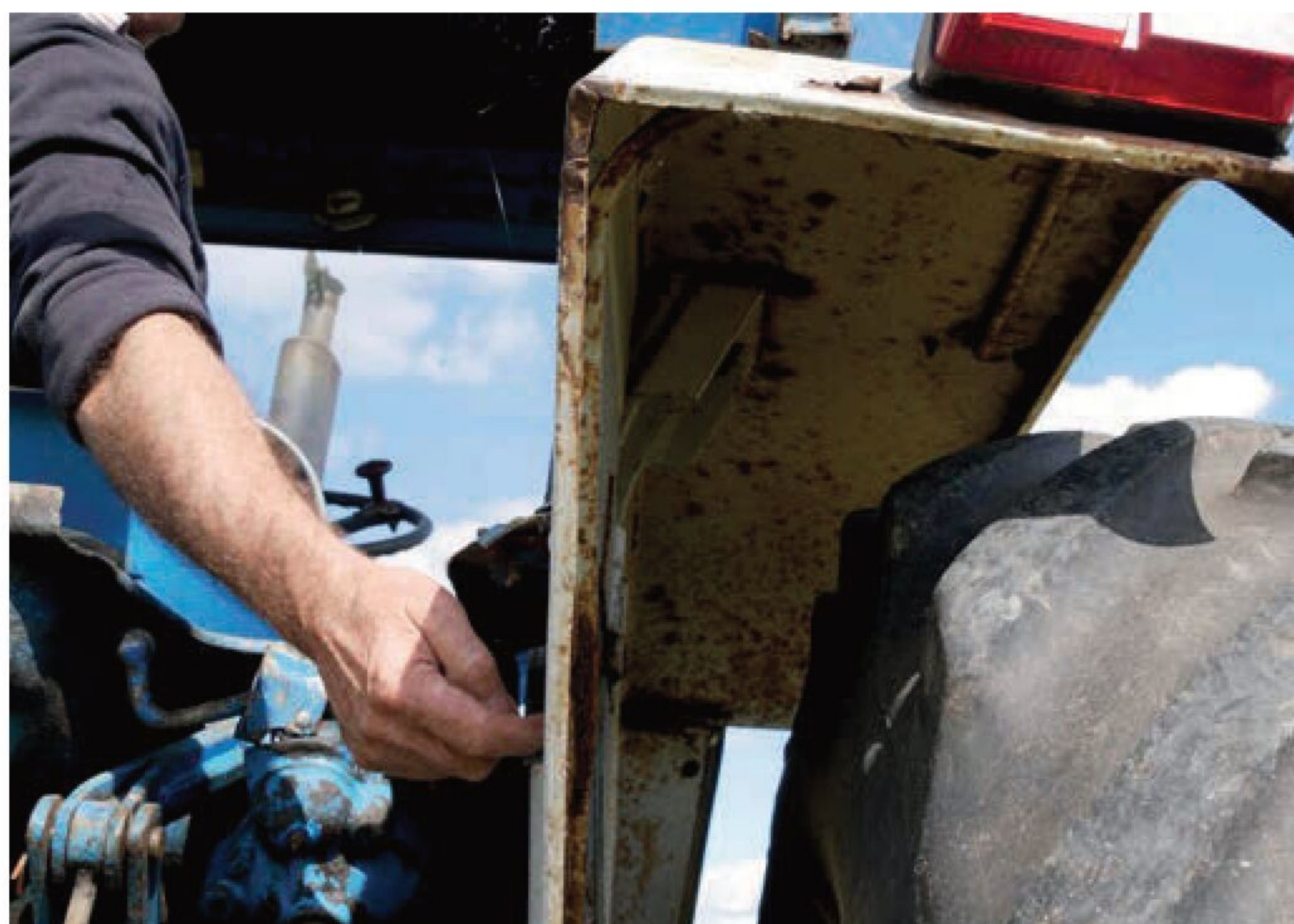
Pre-production tractors came off the Basildon line early in the summer of 1971, with full production commencing in the autumn. The Ford 7000 had the distinction of being the first mass-produced, turbo-charged tractor made in the UK. It had a four-year production and was replaced, in 1975, by the Ford 7600.



To ensure top-end turbo power, Ford made several improvements to the existing 6X, four-cylinder engine, that had been used in the Ford 5000. The pistons, piston rings, valves and valve seats were modified, the drive train was strengthened and the water pump was redesigned to ensure better cooling. The turbocharger was developed by Garrett AiResearch.



MODEL IN FOCUS



CLOCKWISE FROM TOP-LEFT: In common with most 1000 Series Ford tractors, the 7000 can rust on the wings – particularly along the seams – so check carefully when buying • It's always worth checking the track rod ends for wear, as it is on any classic tractor • On original engines, the unit's serial number is found on the upper right front corner of the transmission housing • Inspect the steering arm and make sure it's not cracked.

British-built competition for the Ford 7000 arrived in 1974, in the shape of the 91hp David Brown 1410, which was another four-cylinder, turbo-charged tractor.

1000 Series issues

Regrettably, the 1000 series Ford tractors do share a lot of similar problems, as experienced, enthusiast owner Stephen Brooks explained to me. "Some common points are the wings, particularly on the seams, which can rot away." Other aspects that need checking by potential buyers include the track rods ends, the steering arm and the service history.

The Ford 7000 was fitted with hydraulically power-assisted, recirculatory ball-type power steering as standard and with

time and use, the steering box can develop a lot of play. The O ring in the front of the box has a tendency to perish, but you can usually tell this has happened thanks to visible oil leaks from the box.

Because the Ford 7000 was such a workhorse, the clutch is another weak point, although many may well have had a new one fitted. Another couple of things to check are that there are no oil leaks from the assister ram seals and that the PTO doesn't keep turning when it's disengaged – replacing brake bands isn't cheap.

Stephen also pointed out that, when first started, the Ford 7000 will smoke as the fuel pump gets going. However, this should turn to a clean smoke plume as the turbo kicks in, and any lingering or long-lasting

smoke is a sign of engine trouble. Also, if the turbo is noisy as it runs (rather than whistling happily to itself) this is another bad sign.

Porous blocks

One of the most common problems – shared by other 1000 Series tractors – is a high incidence of porous blocks. "Many may have had their cylinders sleeved," Stephen explained to me, "while some will have been fitted with a criss-cross block; as used on the later 10 Series, but never originally on the 1000s. Personally, I wouldn't buy a tractor with a later engine, but it really is a matter of choice. If the one you're considering buying does have a later engine, then you should make sure that's reflected in the price."

As a rule, any tractor that Stephen

TECH SPECS: 1972 FORD 7000

Engine:	Ford four-cylinder, Turbocharged diesel
Power:	94hp
Bore:	4.4in
Stoke:	4.2in
Capacity:	256cu in
Rated engine speed:	2,100rpm
Max torque:	248 lb ft @ 1,600 rpm
No. crankshaft bearings:	5
Fuel injection:	Direct, in-line
Air cleaner:	Dry type (21cu ft/min)
Service warning light	
Clutch:	Heavy -duty, single-plate, 13in diameter Total friction area 162in ²
Transmission:	Eight-speed, two reverse, constant mesh with safety start. Foot-operated differential lock standard. Sixteen-speed, four reverse, Dual Power optional
Power Take Off (PTO):	Standard, fully-independent, hydraulically-actuated PTO with multi-plate wet disc clutch Hand control provides 540rpm at 1,700rpm, and 650 PTO shaft speed at 2,100rpm. Easy-remove PTO guard. Shaft height from ground 25in. Two-speed 540/1000rpm PTO optional.
Hydraulic power:	Fully independent, single-lever hydraulics giving Position Control, Draft Control and Load Monitor Operations. Fully oil-immersed gear pump capacity 5gpm at 2,100rpm. Auxiliary services control valve. Max operating pressure 2,500psi
Linkage:	Category II-type implement linkage with flexible link ends. Linkage assist ram. Top link and Load Monitor draft sensing. External check chains as standard
General:	Handbrake, toolbox, vertical exhaust, deluxe seat incorporating dual-ride field/road suspension control, foot throttle
Steering:	Hydraulically power assisted, recirculatory ball-type, ratio 3271. Turning radius without brakes, 12ft
Electrical:	22A generator, 12V battery, 128 amp/hr capacity fitted in swivel tray over engine, for easy servicing. Current voltage control. Safety start. Full lighting kit, including licence plate bracket and illumination

Instruments:	Illuminated instrument cluster with proof meter, hour meter, fuel gauge, water temperature gauge, oil pressure, generator and air cleaner service warning lights
Swinging Draw bar:	Bar and clevis lateral adjustment each side of centre 9in. Height from ground 14¼ in and 18in
Weight:	Total weight with safety cab 6,300lb (approx.)
Dimensions:	Overall length – 144in Overall width – 80in Height with safety cab – 97in Wheel base – 88in Ground clearance, under front axle – 19in under transmission – 16.5in (on standard tyres)
Capacities:	Engine (less filter) – 13.5 pints Filter (disposable type) – 1.6 pints Transmission/rear axle/hydraulics (common sump) – 11.45 gallons Cooling system – 24 pints Fuel tank – 16.5 gallons
Tyres (standard):	Front – 7.50x18, eight-ply Rear – 14x34, six-ply
Accessories:	Remote cylinder control valves – one and two spools Quick-release hydraulic pipe and coupling Weights – front end (kit of 3, 240lb, kit of 5, 400lb) Weights – front wheels (kit, 180lb) Weights – rear wheels (kit of 6, 600lb) PTO belt pulley and guard Linkage stabilisers Linkage draw bar Grease guns Ploughing lamp
Serial number	Year made
C292100	1971
C327200	1972
C367300	1973
C405200	1974
C450700	1975
(Serial number found on the upper-right front corner of transmission)	

buys gets a full service as soon as he gets it home, which includes draining the oil and diesel, especially if the vehicle has been standing, unused for any length of time. This is particularly important for the Ford 7000, because dirty and/or aged oil and air filters will take their toll on the turbo, and engine performance will suffer.

Dual Power was launched at The Smithfield Show, in 1973, and was

available on both the 5000 and 7000 models. This doubled the range from 8x2 to 16x4, and gave a clutchless gear change. If it's fitted to a prospective purchase, always check that the system works effectively.

The Ford 7000 was a short-lived, mainstream tractor that was worked hard. A good many were exported and, of those that remained in the UK, plenty got broken for spares.

As a result, it's a relative rarity today. Its successor, the 7600, came equipped with a new Q cab, to meet the mid-1970s, in-cab noise regulations. But it wasn't until 1983 that the problems with porous blocks were finally addressed by Ford, with a redesign that ensured the necessary mechanical strength needed to cure the inherent weakness that had dogged so many engines in the 7000. ■

MODEL HISTORY

The 3000: history and development





With so many Ford 3000s still about, we take a closer look at this ever-popular, three-cylinder tractor's background, development and ownership potential

The Ford 3000 tractor was born as part of a huge revamp of the whole Ford tractor range. Its predecessor had been the very successful Fordson Super Dexta; a 44hp tractor that had created a popular niche for itself as a general runabout machine that was bigger than the Dexta, but much smaller and more nimble than the Super Major. As with previous Fordson machines, these tractors were all built in Dagenham, Essex, but this was all set to change in 1964, when the all-new Ford tractors began production in a new factory at Basildon.

Three becomes four!

Originally the new '6X' range was due to encompass just three models – the 2000, 3000 and the four-cylinder 5000 – but this all changed

just two years before launch date, when the three-cylinder 4000 was added into the mix. This went on to become the most popular model in the whole range, somewhat overshadowing the smaller 3000.

All four tractors were made in three factories, then sold worldwide with just regional variations. The Basildon plant is most familiar to us, but the tractors were also built in Antwerp, Belgium, and at Highland Park, Dearborn in the USA. Although the models were of a new design, the 2000 and 3000 did owe quite a bit to the Dexta models they replaced. The eight-speed transmission was based on that used in the Dexta, and a single-reduction rear axle was also fitted that was very similar to that used on the old Dexta models. Even the

drum brakes used on the 2000 and 3000 were Dexta items!

The three-cylinder engines, however, were completely new and had been designed by Ford's engine division based at Dearborn, in the United States. Top-link draft control sensing was standard on all the four new models, but the two smaller tractors used a feature of the old American tractors that they were replacing on that continent, in the shape of engine-driven piston pumps to power the hydraulic system.

Impressive launch

The Smithfield Show of 1964 saw the public launch of the new 1000 Series tractors. The 3000, like all the models in the range, was most often specified with diesel power, in the form of a 2,868cc, three-cylinder engine developing 46hp. A 2,590cc petrol engine was also offered, this being the same power unit as fitted to petrol-powered versions of the smaller 2000 tractor.

ABOVE: It might be the second smallest in the range, but the 3000 is still a very capable ploughing tractor for matches.

LEFT: The original 6X Ford 3000 – also known as the 'Super Major'.

MODEL HISTORY

An eight-speed transmission was standard, although the 10-speed Select-O-Speed was available as an option.



Sharing the same styling as the rest of the '6X' range, the 3000 certainly looked different to the Super Dexta that it replaced, with much squarer bonnet lines, distinctive side grilles and a top grille at the front that sat slightly proud of the lower panel. To make the transition from the old Fordson models to the brand new machines easier in the UK, Ford put the model number on the side panels, but also added 'Super Dexta' as well. With 46hp compared to the Super Dexta's 44, the new 3000 settled right into the gap left by the cessation of the older model.

As the development of the new range reached a climax, it turned

“All four tractors were made in three factories, then sold worldwide with just regional variations”

out that the 2000 would only be offered with a six-speed manual gearbox, leaving the 3000 as the smallest tractor in the range to be offered with either an eight-speed manual transmission, or the new 10-speed Select-O-Speed option. This early form of powershift gearbox was pretty revolutionary back in 1964, offering 10 forward speeds and two reverse with clutchless, on-the-move shifts. However, the system had been around since 1958 in America and, as things turned out, it didn't prove to be a popular option with buyers on this side of the Atlantic.

Teething troubles

The massive project of bringing all these new models and features to the marketplace did have repercussions, however. There were quite a few problems with early tractors across the range, with the 3000 in particular suffering from problems with the piston pumps that worked the hydraulics, which

sucked in air and slowed the rate of implement lift.

The Select-O-Speed transmission caused plenty of problems too, and the unit fitted to the 3000 was perhaps one of the most complicated by design. This led to misalignment issues between the input shaft and overload clutch in the flywheel. Eventually, Ford managed to iron out most of the problems, but the Select-O-Speed never really recovered from the 'Jerk-O-Matic' reputation that it acquired.

From 1965, the 3000 became available as a factory-fitted option with a Weathershield cab designed to keep the worst of the elements off the driver. It featured a metal frame with a fabric roof, and so was quite light and airy compared with many other 'off the peg' weather cabs then available.

Roadless also used the 3000 as the basis of its little four-wheel-drive Ploughmaster 46, giving a very compact but powerful tractor

that was ideal for working in sticky conditions, or with heavier implements than the standard model could handle comfortably.

The Force arrives

The first full upgrade of the new range came four years after its initial launch, in 1968. The Ford Force range saw many small improvements, as well as the introduction of less fussy tinwork. The bigger 4000 and 5000 models saw several engine improvements and more power, but the 2000 and 3000 remained unchanged. It was also in 1968 that Industrial and Highway versions of both the 2000 and 3000 appeared, the specification for these including hand and foot throttles, speedometers, dual brakes and full all-round lighting.

In 1970, a safety cab was introduced across the Force



In 1968, the Ford Force range arrived, and this is a lovely example of the Force 3000, owned by a Suffolk collector.

range, built by the Ford Industrial Equipment Company based in Copenhagen. These were introduced to meet new safety legislation and, although the 4000 and 5000 cabs had steel roof panels, the cabs used

on the 2000 and 3000 featured a vinyl roof attached to the metal frame itself. The smaller models also retained rounded mudguards when fitted with the new cab.

Then, in due course, the standard



Roadless took the Ford 3000 and added the Selene four-wheel-drive front axle to produce a lightweight machine with incredible amounts of traction for its size.

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MODEL HISTORY

3000 was also offered as a narrow tractor, with a maximum height of 54in and width of 53in, while a vineyard version was even narrower at a width of 44.5in. These tractors usually featured a down-swept exhaust, giving a lower overall profile. The Industrial version of the 3000 was built with heavier castings.

An interesting development was the introduction, in 1972, of the 3055 model, built specially for the French market and featuring a 52hp engine. It used the 3000 block but the crankshaft from a 4000, and shared the larger model's gearbox, hydraulics and rear axle, combined with the 3000 front axle.

Further development

The Force range of tractors had been an unqualified success, and was extremely popular all over the world. Times move on, though, and at the 1975 Smithfield Show, a new replacement range was introduced. In this '7A' range the 3000 became the 3600, and the piston pumps were

finally replaced by gear pumps and also a new autoflow hydraulic system. Quiet cabs were introduced in 1976, and this saw the 3600 gain a higher profile with the new Ford Q cab fitted. As an alternative, a Lambourn lower-profile cab was also offered.

In 1980, four-wheel-drive was offered as a factory-fitted item for the first time on just the three-cylinder models, including the 3600 and, gradually, the successors to the 3000 model developed along with the rest of the Ford tractor range, with the 3610 making its debut in 1981 complete with 50hp and a new Synchroshift, eight-speed transmission.

In 1983, the 3910 replaced the 3610, which became a Force II model in 1985, until it was replaced by a new 4110 model in 1986. The final flowering of the 3000 was the launch of the 54hp 3930 in 1990, which survived well into the New Holland era, before being replaced by new models that finally broke the Ford family lineage.



This Irish example is fitted with a Duncan cab.



What of the competition?

The 3000 was, like the rest of the Ford range of the time, a very popular and high-selling machine here in the UK. But it did have stiff competition, perhaps no more so than in the shape of the slightly smaller and more compact Massey Ferguson 135; a three-cylinder machine of around 46hp that was also launched in 1964, as part of the 'Red Giants' range. This tractor – more than any other – gave Ford a run for its money, and was one of the best-selling machines of the mid-to late-1960s, and is still well thought of today.

David Brown had been producing the 42.5hp 880 since 1961 as part of the Implematic range, later being fitted with the Selectamatic system



from 1965. In 1971, the popular 880 was replaced by the three-cylinder, 48hp 885 model, which enjoyed even more success, taking many sales away from the 3000. International Harvester had its B414 launched in 1961, which was a 36hp machine, while the better equipped 454 arrived in 1972 with a 50hp engine, which was semi-successful and certainly underrated.

The John Deere 1020 featured a three-cylinder, 47hp engine and was

ABOVE: This is a still working example of the Force 3000, shown hauling a grain trailer somewhere in East Sussex.

RIGHT: The Ford safety cab was equipped with a vinyl roof on the smaller models in the 1000 Series range, such as this 3000.



MODEL HISTORY

available in the UK from 1967, while Nuffield offered the well-equipped 10/42 from 1964, complete with 10-speed gearbox and three-cylinder 45hp engine. This changed with the introduction of the 3/45 in 1967, and finally gave way to the Leyland 344 in 1969.

Real competition for the 3000 came in 1971, with the launch of the three-cylinder Perkins-powered 47hp 253, which was rebadged as the '245' in 1972 and continued to take sales away from Ford for many years to come, despite not being as reliable as the Ford product. Zetor also offered competition in the shape of the 47hp 4011 and later 4511.

Despite all this, the 3000 still managed to keep near the top of the sales in its power class, but it never did manage to sell in as many numbers as its bigger sister, the 4000. Then again, the iconic 5000 didn't either.

The 3000 at work

Farmer Brian Barker now lives in Suffolk, but has strong memories of



Ready for action with a topper, this 3000 also still earns its keep.

working with a 3000 on the family farm in Derbyshire when he was growing up. This was a 1968 Force model, complete with Lambourn safety cab, on a 'G' registration plate.

It was used for many and various tasks around the farm, which also ran a 2000 and two 4000 tractors. Jobs included cutting pasture with a 6ft topper, hay-turning with a PZ300 Haybob and even baling with a New Holland 377 square baler when it was the only tractor available.

Its main use was with the Horndraulic loader that it was equipped with shortly after arriving on the farm from its previous owners; a hospital nearby that used it as part of a ground-care fleet. As the main yard tractor, it was used every day for bedding cattle and also muck-loading. It would often be used to go fencing, complete with a transport box on the rear linkage, as well as bale-carting and a host of other everyday jobs, especially when hitched to a three-ton Massey Ferguson 200 trailer. It would also be used to load round bales in the field, leaving another loader-equipped 4000 to stack them in the barn as it had a higher overall reach.

Mixed memories

On the whole, Brian hasn't got the



An unusual crawler conversion based on the 3000, by Mailam, from Italy.

best of memories of this little tractor preferring, as he did, the bigger and more versatile 4000 model. The biggest downside he reckoned was with the PTO, because it wasn't live. Also, the hydraulic pump would occasionally get an air lock and pack up. A couple of gallons of hydraulic oil placed in the back axle would soon fix it, though!

Also, he hated the 3000's 'horseshoe'-type brake drums, which he reckoned squeaked continuously! What's more, the front wishbone axle wasn't really robust enough for front loader work, and he didn't like the lack of a foot-operated throttle.

However, he does praise the 3000 for its tight turning circle, which proved really valuable in the farm's old-fashioned, low-roofed buildings. He also says that it was extremely economical to run, even when being used all day. In addition, Brian thinks that the 3000 was less prone to the dreaded porous block syndrome than other tractors in the Ford range because 'the engine had a smaller bore and, therefore, a thicker cylinder wall than, say, the 4000'.

But when it came to some farming jobs, the 3000 was just not up to it. "We tried it on the buckrake once but didn't like it - it was just useless, and we ended up going back to the 4000. It was nippy on the road for its day though, but it was no good for the arable side of the farm. However, having said all that, it was a lightweight tractor for its size, and a gutsy performer generally. I guess we tended to use it for larger jobs than it was really built for!"

This trend to use it for the bigger tasks seemed to be a common thing as Brian had a neighbour who, for many years, used his 3000 to pull a 14-ton silage trailer every year during the 1970s. "It pulled it fine," he recalled! After not owning a 3000 for many years, Brian has finally given in to acquiring one, and this early example is destined to find its niche on the farm's yard-scraper,



The 3055 was made specifically for the French market, and wasn't sold in the UK, although this example turned up at a Cheffins vintage sale. (Pic: Kim Parks)



The 3600 replaced the 3000 in 1975 and, the following year, it gained the new, Q cab.

to replace a 4000 for more general tasks.

Bought recently from Sussex as a non-runner, due to a porous engine block, Brian is in the process of

fitting a new engine and giving it a good overall. So, despite his reservations, a Ford 3000 will soon be part of his working life once again! ■

OWNER'S STORY



The only real war wound the 5000 has is a slight bend in the step; to straighten it I must take it off so I can get a decent swing at it with the sledgehammer (only joking!).



FORD FORCE 5000 EAN



OWNER'S STORY

By nature, farmers can be suspicious of change so, when the 1000 Series Fords arrived, it took some time for Dave Taylor to learn to love the Ford 5000

Once Ford stopped building Fordson Majors and brought out the new 1000 Series machines, I didn't like them at all. I'd grown up with Diesel Majors and felt tremendously loyal to them. I didn't like the styling of the new models, didn't like the shape of the exhaust pipe with its 'rattly' little flap and, worst of all, didn't like the sound that the engines made, which was nothing like a Major!

However, I used to help a friend, David Turner, whenever I could and it wasn't too long before he bought a new D-reg Ford Major 4000. There was no doubt it performed better than his Super Major, and was easier to drive, but I still didn't take to it.

Amazing decision

The following spring, my dad still had fields to plough as well as

some contract ploughing to do for neighbours, so he decided to hire a bigger tractor for a week from our local Ford dealers. Not having driven one, I asked him to get a Ford 5000 (never imagining that he actually would), so you can imagine my surprise when I discovered that that was exactly what they'd delivered. I was on holiday at the time, so was more than happy to spend most of the week ploughing with the big Ford.

It still had the funny-shaped exhaust pipe and the rattly flap, but that didn't seem half so bad when it was pulling hard with the plough on the back - I was starting to like these tractors!

Then, about two years later, when I found myself lying in a hospital bed recovering from a bad motorcycle accident (13 weeks in traction), my mother happened to bring me in a copy of *Farmers Weekly* to look at. Well, the big news that caught my eye was that Ford had revamped the 1000 range, and was introducing the Force models.

Well, I loved them from the moment I first saw them! It was as if Ford had looked at my 'hate list' and put everything right. Gone was the crooked exhaust pipe and the moulded front grille. The names were changed, too, with all references to 'yesterday's' Major and Dexta having been dropped. The new models were now simply Ford 2000, 3000, 4000 and 5000.

But it was some time before I drove a Force 5000 and, once again, it was for David Turner. I was helping him get ready for silage when a lorry turned up with a brand-new Ford Force 5000 on the back. The original, D-reg 4000 was loaded up and taken back as the trade-in, and the new 5000 was left in its place.



They say the camera never lies but, in this case, it does because I'm really very happy on my Ford 5000!



All the original lights, reflectors and plugs are still in place. The vicious looking bits of steel poking out from behind the mudguards are aftermarket fittings, intended to scrape mud off the tyres.

Who would get the first drive?

Well, amazingly, I was the lucky one! I had to drive the new 5000 into town to pick up the New Holland double-chop forage harvester, which had been serviced ready for the first cut. Next day, the 5000 was set to work with the forage harvester, and was worked hard for about two weeks after that. I was horrified, as the only 'running in' for the engine was my trip into town. Immediately after that, it was virtually flat out from then on.

Still no rest

Once silage-making was finished, I thought the 5000 would take things

“I didn't like the styling of the new models, didn't like the shape of the exhaust pipe with its 'rattly' little flap and, worst of all, didn't like the sound that the engines made, which was nothing like a Major!”

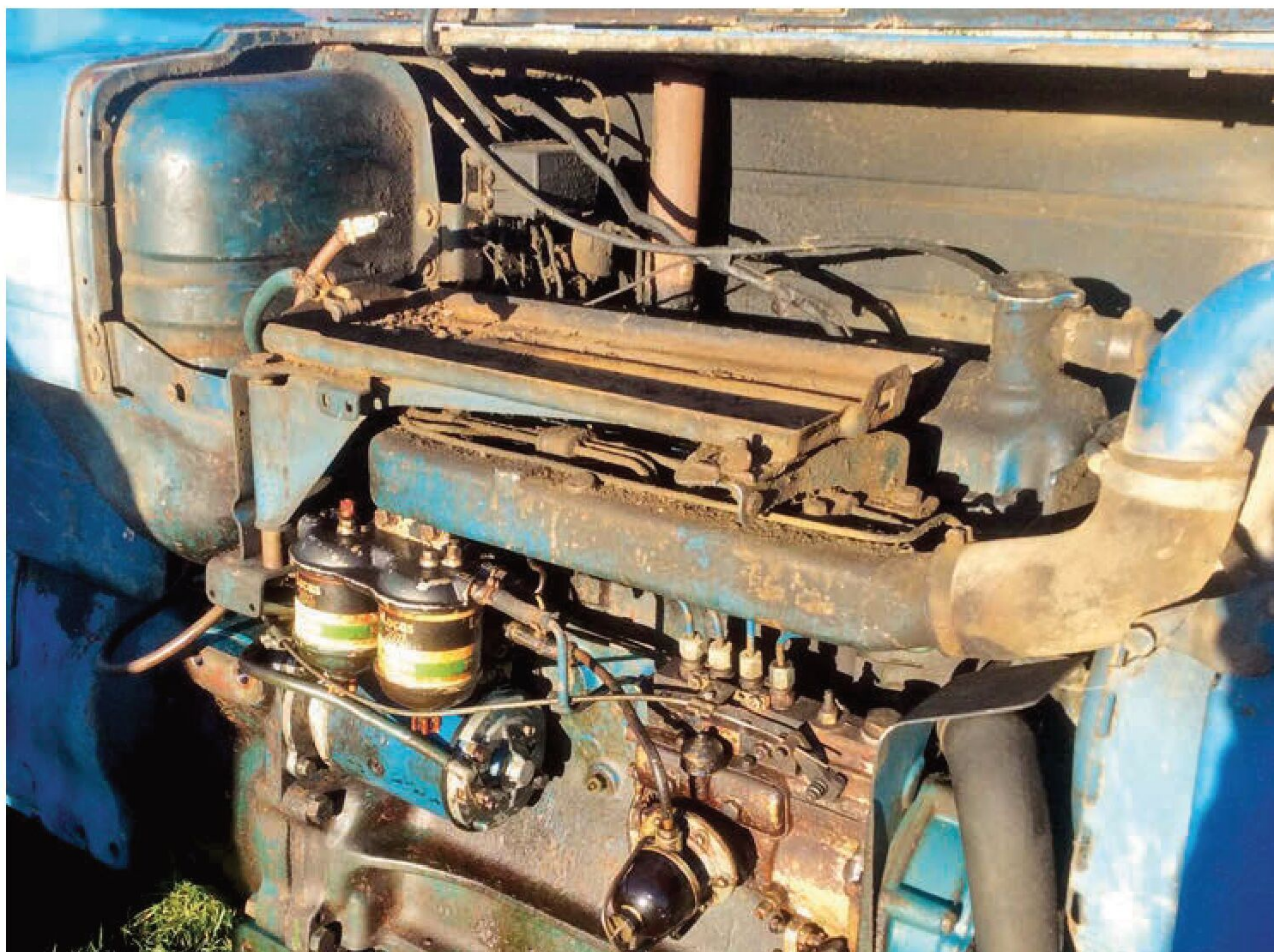
easier, but it was a dry season and David needed grass for his cows. So, he set us on putting out the irrigation kit, and the 5000 was put on the pump. Apart from stopping to move the pipes and rain-guns, and to fill up with diesel, the 5000 continued to work hard 24 hours a day, for another three weeks.

I honestly thought the tractor would be ruined but, as it turned out, things proved to be just the opposite. The heavy, constant work must have bedded everything in well and, in the time that the 5000 was on the farm, it never used any oil and always pulled like a train.

Although the 5000 was rooted to

OWNER'S STORY

“ I was horrified, as the only ‘running in’ for the engine was my trip into town. Immediately after that, it was virtually flat out from then on ”



ABOVE: A steam clean would probably improve the looks but, if it's going to stay original, I really don't think it matters.

LEFT: This 5000 is fitted with the Continental hitch. I don't think it affects anything, and the swinging drawbar (not shown) still works, so I'll leave it in place.

BELOW LEFT: The Kleiber radial tyres have still got plenty of life left in them, although they are showing signs of age-related cracking now.



ABOVE: The ploughing light is fitted to the left-hand mudguard, instead of the right. There must be a good reason for this but, when doing conventional ploughing, the bit you really want to see would be in a shadow! French logic, perhaps?



a spot by the river as it powered the pump throughout those three weeks, it still brings back memories because we had some fun with it. It was always a two-man job to move the irrigation pipes. If you were fortunate enough to do it with someone who hadn't done it before, the story we always explained was that the rain gun needed to be checked so that we could be sure it was working properly, once everything was back in place.

Both guns would be going full-bore, and you simply had to check the ratchet that rotated it was working OK. It was no trouble to walk up behind the gun and the rookies always followed, but they soon learned that you didn't want to be the second man to arrive. The trick was to get there just in front of your mate and, in one movement, grab the back of the gun, lift the ratchet and spin it round to aim at him. You then had charge of what amounted to a water cannon and, because they always opted to run away (bad mistake!) they got drenched. It could cover a radius of 70ft radius, so there was no escape without a soaking!

Great performer!

Anyway, back to the 5000 which, although I didn't drive it very often, my brother Graham did, as the full-time tractor driver. So, he used to keep me up to date with how well it was performing. He, like me, didn't particularly like the sound of it but, when the exhaust pipe snapped off and a Power Major one was fitted as a temporary replacement, it sounded so much better. I don't think it ever got changed again!

My experiences with the 5000 meant that it was always on my wish list of tractors to own. However, as the secondhand value of David Browns was so much less, I settled for 1200s and 1212s for several years, before a 5000 finally came along at the right price.

However, that one left me well



over 20 years ago and, although it's always been one of my favourite tractors, it's only recently that another one has joined my collection. What a beauty it is, though. Apart from having wider back tyres, this one is identical to the brand new one I drove almost

50 years ago. It spent its working life in France and, I'm delighted to say, is virtually corrosion-free. It needed a new clutch and seat but, apart from that, is essentially as I bought it. It drives beautifully and deserves its place in my shed full of memories. ■



ABOVE: The 5000 without a cab was always easy to get on and off, and Ernie particularly likes the spacious footplates because he gets somewhere to sit.

LEFT: Ernie in his two favourite positions; by my feet, and on a tractor going for a ride!

HEAD-TO-HEAD

ICONS COMPARED

Ben Phillips referees as two of the most powerful 1960s tractors – the Ford Pre-Force 4000 and the Massey Ferguson 165 – go head-to-head





The Massey Ferguson 165 replaced the 65, which was the 35's bigger brother. It was fitted at first with a Perkins four-cylinder diesel engine that produced 58hp, while the Ford 4000 was equipped with a three-cylinder diesel engine producing 55hp. The Perkins motor was well tested, as the 65 used a very similar engine, but Ford's engine was all new and, as a result, it wasn't long before reliability issues started to appear.

Getting at the engine on the MF 165 is difficult, as the bonnet is bolted firmly down. A centre flap opens providing access to both the water and fuel fillers, and there's a further flap under the dash that allows operators to get at the tractor's battery. The Ford, on the other hand, is much more user-friendly in basic

maintenance terms. It features a bonnet that, on one side, can be simply lifted to reveal the battery, and will also swing out to provide an excellent view of the engine.

What's in a name?

It was easy for customers to determine which MF model replaced their old one, as all Massey Ferguson had done was to add a '1' to the existing '65'! But Ford was more concerned that starting to identify its models with numbers might confuse its existing, loyal customer base, so it opted for a kind of half-way house approach that combined numbers with model names from the past. So, when the first 4000 arrived, it also carried the 'Major' name, linking it to the model it was replacing and, Ford hoped, providing reassurance for existing users.

Being able to look at good, clear instrumentation is important and useful for any tractor driver, and the MF 165 certainly delivered in that regard. The designers included an attractive array of five, easy-to-read gauges to keep the driver informed about all the important details, such

ABOVE: Red, grey, silver and black were the colours of the 100 range Massey Ferguson tractors; the 165 was at the higher end of that range.

LEFT: Blue and grey made up the Ford colours on the new 1000 Series range, introduced during the mid-1960s.

HEAD-TO-HEAD



The front of the 165 had the famous three-triangle MF badge clearly visible. Two round headlamps and a detachable section on the grille completed the front-end styling.



The 1000 Series tractors featured the word 'Ford', in bright red lettering, on the upper grille section. The whole grille could be removed by undoing a couple of bolts.

as engine speed, fuel level and water temperature. Ford opted for a more modern approach on the 4000, replacing traditional dials with a single, rectangular instrument cluster that grouped all the important read-outs in one place. It was also decided that simple warning lights were a better option

for the charging circuit and oil pressure, rather than conventional gauges. Another important factor for any driver using a tractor for any length of time is a comfortable seat, and the MF 165 had the best available at the time, which featured a two-section cushion set. The seat on the Ford

4000 was slightly different and, as far as many are concerned, not as good. It featured a hard-plastic, grooved cover that wasn't as comfortable, and it didn't look as good, either.

Excellent hydraulics

Massey Ferguson tractors had long been famed for the quality of their



The early Perkins A203, four-cylinder diesel engine was tried and tested and proved reliable in the 165. It provided the benchmark for tractor engines at that time.



The Ford engine had been newly-developed and had well documented problems. On these early Ford 4000s, the word 'Major' was used predominantly as a comforting link to past models.



The Massey Ferguson 165 had a well-equipped dash featuring five useful gauges; tractormeter, fuel level, ammeter, water temperature and oil pressure.



The Ford 4000 had a rectangular dash with tractormeter, fuel level and water temperature gauge, the oil pressure and charging circuit was catered for with warning lights.



The Massey Ferguson's bucket seat could be tilted or tipped, and featured relatively comfortable cushion pads.



The plastic-covered Ford seat did tip slightly, but it was hard to sit on in comparison to the 165's so not as comfortable for prolonged periods of use. The design also allowed drivers to slide around more, which wasn't ideal.

“ Ford's engine was all new and, as a result, it wasn't long before reliability issues started to appear ”



The rear wheels on the 165 featured centres that had dishes that could be split, allowing for a greater variety of widths.



The Ford had one, solid centre dish; the rims were 36in, which were 4in larger than those on the 165.

WHICH WOULD I CHOOSE?

Well, after restoring examples of both of these popular, 1960s tractors, and having given the matter of which I prefer more a great deal of thought, I can honestly say that I remain undecided!

I like certain aspects of both these machines, but there are downsides to each, as well. Ultimately, these are both great machines and I think that the final choice much always come down to personal preferences. Both are satisfying and fun to own.

HEAD-TO-HEAD



The hydraulic system on the 165 was a continuation of the one Harry Ferguson had developed years earlier.



The rear of the Ford looks rather basic and uncluttered when compared to the 165.

“ Getting at the engine on the MF 165 is difficult, as the bonnet is bolted firmly down ”

hydraulic systems, and the MF 165 offered response control. However, the lifting rate couldn't be varied whereas, on the Ford 4000, it could; when the hydraulic lever was lifted, it speeded up automatically. In practice, though, whether or not this was a good system remains open to debate.

By the mid-1960s, lighting kits were being offered on all tractors. Manufacturers had come to appreciate that increasing numbers of farmers needed to use their tractors in the dark, and Massey Ferguson and Ford were certainly both quick to embrace this trend, and fitted generous lighting set-ups

on these two models. The MF 165 featured headlamps that were enclosed in small cowls on either side of the radiator grille, while those on the Ford 4000 were positioned more inboard, within the grille itself. With the benefit of hindsight, it's probably fair to say that Ford's approach was the more practical option, simply because the lights on the 4000 were less vulnerable to impact damage. Both models also featured front-facing side lights located on the front of the wings, and rear-facing ones at the back. The Massey also boasted a good plough lamp that lit up the working area well. ■



This extra step fitted to the early 165 makes getting on much easier, especially as the tractor is quite high.



Trying to remove the starter motor on the Ford is a tricky job due to the close proximity of the double fuel filters and injector pump.

TECHNICAL SPECIFICATIONS		
	Massey Ferguson 165	Ford 4000
Engine	Perkins 203, 4-cylinder diesel	Ford 3-cylinder diesel
Power	58hp	55hp
Brakes	Dry disc	Wet disc
Front wheels	6:00/16	6:00/16
Rear wheels	11/32	11/36

“ The seat on the Ford 4000 was slightly different and, as far as many are concerned, not as good ”



To Force or not?

Ben Phillips compares the Ford Pre-Force 3000 with its Force 3000 successor, in a bid to determine which is the better machine

In 1964, a new breed of tractor was introduced by the Ford Motor Company. The 'Fordson' name had been dropped for good and the big, chunky models like the Major were replaced with a new range of tractors that became commonly known as the Ford 1000 Series.

The 3000 was always going to be a popular model due to it being the mid-range machine. As such, it appealed to many farmers but, as with the rest of the models in the new range, the 3000 was unfortunately beset with engine problems right from the off. However, Ford worked extremely

hard to deal with the crisis, keep customers happy and repair everything as quickly as possible.

Oil on troubled waters

Fortunately, the company's swift and effective actions proved sufficient to keep customers on side and avoid what could have turned into a public

HEAD-TO-HEAD



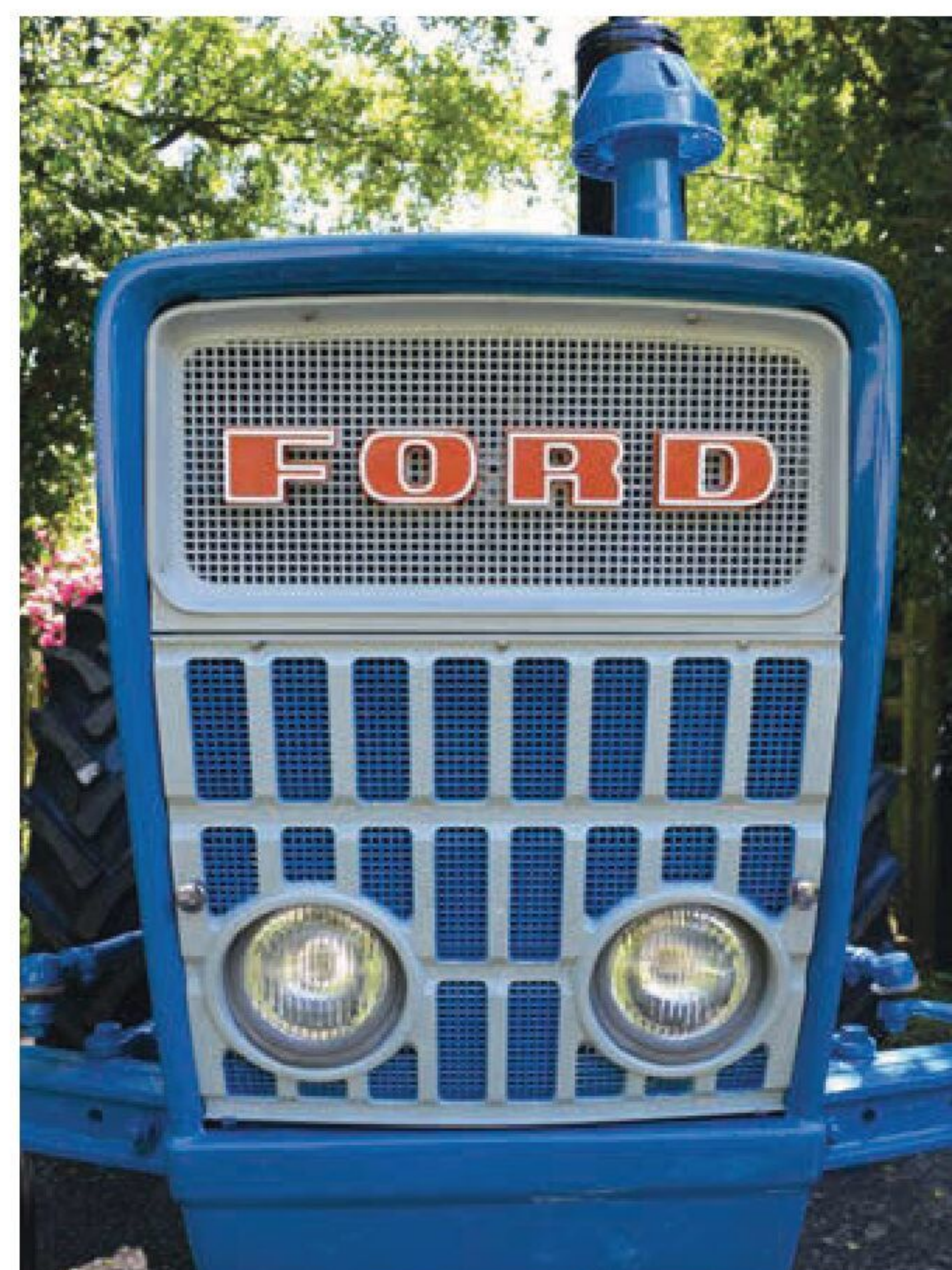
ABOVE: The updated Ford Force 3000, featured a few styling changes. The design was smoother, the painted stripes were replaced by decals and model designation switched to numbers only.

PREVIOUS PAGE: The original Ford 3000 (Pre-Force), with its grey wheels and strip down the length of the sharper-edged bonnet, signalled a new beginning for Ford's worldwide tractor production.

RIGHT: As with previous Fordson tractors, the 3000's headlights were positioned in the grille panel, for maximum protection against accidental damage. Two hand-tightened screws allowed for easy removal of the lower grille panel.

FAR RIGHT: The most obvious styling change on the Force model was the different front grille; plastic had arrived to save weight and money, but made it more vulnerable to knocks.

“The 3000 was always going to be a popular model due to it being the mid-range machine”





On the Pre-Force 3000, the white strip across the bonnet included four vents and a decal proclaiming 'Ford Super Dexta'.



The painted white strip might have been time-consuming and expensive to apply at the factory, so the feature was dropped in favour of decals on the Force models.

“Ford was correct to maintain its confidence in the new tractor range, customer loyalty was retained and the 1000 Series was destined to go on to great things”



ABOVE AND RIGHT: The instrument clusters used on Pre-Force and Force 3000s were largely the same, featuring a tractormeter, fuel and water temperature gauges, plus warning lights for the charging system and oil pressure.



relations nightmare. As things turned out, Ford was correct to maintain its confidence in the new tractor range, customer loyalty was retained and the 1000 Series was destined to go on to great things.

The Ford 3000 entered production with '3000 Super Dexta' decals fitted; these were so farmers could relate to where this new model fitted into their existing knowledge of the Fordson tractors they'd already been using. The new wording and numbers were found on the tinwork, and were part of a light grey, painted strip that went

along the tank cover, bonnet and finished halfway across the cowl. There must have been a fair bit of careful masking going on in the Basildon factory paint shop!

The grey theme carried on to the wheels, which were 16-inch in diameter at the front, and 28s at the back, and all were painted in the same light grey that had first been seen on the last of the Fordson models. The front grille, which contained the lights, was also painted grey, and the bottom section featured a couple of finger-tight, screw fastenings. The simple

removal of these allowed the grille to be set aside so that any debris build-up behind - which might be affecting engine cooling - could be easily removed.

Powerful branding

At the top, on the upper grille panel, in large, chrome-edged red letters, was the word 'FORD'. This panel, too, was easy to remove (with a screwdriver) and provided access to the oil bath air cleaner assembly that lay behind it.

As far as I'm concerned, comparing the 3000's hydraulic

HEAD-TO-HEAD



The original, Pre-Force 3000 engine blocks suffered with well-documented problems, which Ford eventually got to grips with. This side of the engine was rather cluttered.



A CAV rotary pump replaced the Simms unit found on the early 3000s, and this one only had a single fuel filter.



This decal was fitted to the early model to help farmers work out where the 3000 fitted, in relation to the model they might have owned before; in this case, the Super Dexta.



The Force 3000 saw the 'Super Dexta' reference dropped altogether as Ford adopted a simplified, number-only model naming system designed to work better around the world.



Both Pre-Force and Force 3000s used the same seats, which had a degree of adjustment and a one-piece, ribbed cover intended to help stop water puddling.

system with the main opposition at the time, the Massey Ferguson 135, leads to a straight win for the Massey. I don't think that Ford's system at that stage was anywhere near as good, although others may beg to differ!

The shell wings were painted blue, provided quite good protection, and offered plenty of metal that extended out over the wheels and right down to the footplates. A neat little side light was fitted towards the rear, although I always feel that this looks rather awkward.

The updated, Force model featured slightly modified tinwork, although the changes made to the front cowl were the most obvious differences. The front grille was now plastic, although still in two sections with the bottom, easy-to-remove portion still incorporating the headlights.

WHICH WOULD I CHOOSE?

Either of these models appeal to me, and I've worked on many examples of them both. Nevertheless, I would be inclined to have the Ford Force 3000, if I had to choose. There are a couple of main reasons for this:

- I prefer the wings painted in the light grey colour, as I think there just a bit too much blue otherwise.
- For purely sentimental reasons, I remember watching a Ford Force 3000 drive past our house in the early 1980s. As a child growing up in the countryside I loved tractors and, seeing this smart blue and grey machine go by a couple of times a day, was a real treat!

ABOVE RIGHT: The familiar, three-point linkage adorned the rear of the 3000 from day one; the wings on the early models were always painted the same blue as the skid unit.

RIGHT: On the Force 3000, the wings were painted light grey, although the rest of the rear end remained much about the same.

However, the attractive, chrome-edged 'Ford' lettering was replaced with versions that were moulded into the plastic grille, which didn't really look as good to me.

What's more, the painted grey stripe along the bonnet was replaced with a decal of a similar colour; maybe the paint masking process was taking too long, and the sticker provided a quicker and cheaper alternative. The wings were exactly the same shape (until the square-topped ones appeared), although their colour was changed from blue to grey.

The seat, which featured an adjustment knob just behind it, remained the same on both Pre-Force and Force models, being covered in the same, ribbed plastic. It was said that the one-piece cushion design, and its ribbed covering, were intended to help rain water run off more effectively but, in my experience, sometimes this worked, sometimes it didn't! ■



TECHNICAL SPECIFICATIONS		
	Ford 3000 Pre-Force	Ford Force 3000
Engine	Ford three-cylinder diesel	Ford three-cylinder diesel
Power	38hp (PTO)	38hp (PTO)
Gears	12 forward 3 reverse, 8 forward 2 reverse	6 forward 2 reverse
Front tyres	6:00/16	6:00/16
Rear tyres	11/28	11/28



The Force 4000 was one of an initially four-model range that succeeded the 'pre-Force', 1000 Series models in 1968, and was a tremendous sales success for Ford. John Vowell restored this 1969 model to a fine standard.



ME AND MY TRACTOR

PRIDE and JOY!

Michael Moore is the proud owner of a unique, home-built, Doe-style, four-wheel-drive, articulated tractor. Chris Graham meets the man and his fantastic machine



Restoration stories are nothing unusual these days in the classic and vintage tractor world. Plenty of owners are working hard to produce beautifully renovated machines that, in many cases, are actually better than what left the factory. However, vehicle building projects are a good deal more out of the ordinary, especially when they involve transforming two tractors into one.

But that's exactly what Michael Moore has done in a Herculean task that involved combining two tractors to create one machine. His idea was inspired by a long-held admiration

for those articulated, four-wheel-drive and powerful workhorses produced by Essex-based Ernest Doe & Sons Ltd during the 1950s. What he's produced is both a significant engineering feat and a testament to his design and workshop skills.

Impressive achievement

This achievement is even more impressive given the fact that Michael isn't a trained engineer, and has had no experience in the commercial vehicle manufacturing sector. But, at the same time, he's far more than just an enthusiastic amateur, having spent several years

designing, manufacturing and selling specialist ploughs and other agricultural implements.

"I started by working on a farm for a year after leaving school, then joined my father, who was an agricultural contractor," Michael explained. "The first tractor I bought was a Massey Ferguson 1200, back in the mid-1970s, which I used for contracting work all over south Essex.



You can't fail to be impressed by Michael Moore's mechanical masterpiece.

ME AND MY TRACTOR

"Water-logging affected that area badly, and was something that we were regularly having to deal with. I started investigating the use of mole ploughs to break up the pan that forms under the sitting water, to accelerate the draining process.

"I borrowed a single-beam unit to try, but my tractor wouldn't pull it. So, after giving the problem some thought, I decided that switching to a twin-beam set-up might be better. I built a prototype and it worked beautifully with my tractor. I was then able to demonstrate my new design at a *Farmer's Weekly*-sponsored land drainage event in Colchester, and there was so much interest in it that I decided to start building the ploughs commercially. I wasn't set up to do so, so got an engineering shop to produce the first few examples."

Ploughing on!

"Things went from strength to strength and, in no time, we had enough orders to set up our own workshop, employ a full-time welder/fabricator, and the Michael Moore Mole Plough was born. The business grew organically and, by the early 1980s, had taken over from the contracting work altogether.

"We branched out into the manufacture of different sorts of agricultural implement, as I spotted gaps in the market, but it was while I was out demonstrating our products and chatting to farmers, that my interest in old tractors started to develop. Most farms I went to had an ageing tractor in the barn and, as I was driving an articulated lorry, I'd often make an offer for those I fancied for cash, and was able to take them home there and then.

"My initial idea was to build a collection of restoration projects that would keep me busy with challenging projects, once I retired, and I probably bought 25 machines during that period. When I retired in 2004, I started bringing them back to life. One of the first I completed was a Roadless 45, which I still own. I also



The sheer scale of the project required heavyweight workshop equipment.

started to get into the competition ploughing scene, which, initially, I found quite a challenge.

"With my contracting background, I couldn't believe that competitors were given four hours to plough a single plot - I'd been used to doing things as quickly as possible. The exacting nature of the techniques involved came as quite an eye-opener, but I soon got hooked, and have enjoyed some decent competition results since."

Doe memories

"It was about then that my mind drifted back to an experience I'd

had with a Doe 150 belonging to a neighbour. He'd had two of them for years, using them in his business, but decided to sell one in the late 1980s. As I had a low-loader at the time, he asked if I'd deliver it to the sale for him, which gave me a chance to get behind the wheel. I was instantly impressed with everything about the machine and, given that he was selling it for £2,000, was sorely tempted to buy it myself.

"But the timing was wrong. I was far too busy with work in those days, and knew that if I bought it, it would simply sit, rotting in my yard, which would have been a terrible waste.



The found-under-a-hedge-in-Kent Ford 3000 was in quite a state when it arrived but, once the engine had been rebuilt, provided the basics needed to create the rear half of 'Mini D'.

Michael had to design and build his own structural fixings to connect the two tractors, mount the turntable and attach the hydraulically operated steering.

Nevertheless, I've regretted that decision ever since! That experience took me back even further, to when I was contracting in the mid-1970s and had a secondhand Doe Super Major on demo for a fortnight. It was a bit of a dog, to be honest, and I remember being really disappointed by the fact that it didn't have 'live drive'; as soon as you dipped the clutch, everything was dead. Overall,

though, I really appreciated and liked the Doe concept of more power and four-wheel-drive."

So, fast-forward to about three years ago and, with the idea of a Doe tractor still lodged in his mind, Michael decided to have a crack at making his own Triple D (Doe Dual Drive). "Looking ahead, though, one problem I could see related to transportation. I'd sold my lorry by

that stage, and was relying on a Land Cruiser and trailer for towing tractors to ploughing matches and shows."

Weighty matters

"The Doe Triple D based on the Ford 5000 weighed about nine tons, so there was no way that such a machine could be towed behind an SUV. However, using a pair of lighter 3000s might just work, on an



Putting the two halves together required the help of a fork-lift truck as both the tractors became awkwardly immobile once their front wheels had been removed.



extended trailer, which would be a very convenient solution.

"My tractor collection included one complete 3000 that I regularly used as a mowing tractor, and another that wasn't a runner, having been rescued from under a hedge in Kent. But, between the pair of them, I had the basis of a unique Triple D project – Ernest Doe Ltd didn't bother with anything smaller than the Ford 5000, considering that engine power levels produced by combining smaller tractors simply wouldn't deliver the performance they were after.

"As can be seen in the photograph here, the rescued tractor was in a pretty poor state, although, this

didn't stop the previous owner from assuring me that the engine was OK. Predictably, though, this turned out not to be the case, as I soon discovered that it had a badly cracked block. Clearly, that engine was going to require a complete rebuild and, as things turned out, it had a rebore, new liners and pistons, new bearings and the cylinder head was re-ground."

Solid foundation

"All this work gave me a good engine, so I opted to make the 'Kent tractor' the rear one in the combination, and to put my 'mowing machine' at the front. I knew that the rear engine would be somewhat

boxed-in by all the additional superstructure needed to connect the two tractors so, having the most reliable unit at the back would make most sense."

The mechanics of undertaking the project at home were made possible for Michael by the fact that he was able to equip his workshop with some of the large machinery that had been used in his plough manufacturing business. Kit such as a lathe, pillar drill, mechanical saw, heavy-duty welder and a whole array of hand tools and equipment, made the job a practical proposition.

Altogether, the project took about 18 months to complete and, once the rear engine's rebuild had been completed, Michael got straight into the design and manufacture of the chassis rails and strengthening members needed to connect the two tractors securely to the hydraulically-operated turntable in the middle. "Because Doe never worked with the 3000, I had nothing to base my design on," he explained, "so had to fabricate bespoke fixings at the back end of the rear tractor, to fit the bolt layout around the bell housing."

Simple approach

"With regard to the turntable needed to provide the articulation at the centre of the tractor, I opted



The central articulation makes 'Mini D' surprisingly manoeuvrable, given its length. The steering lock available is far greater than on a conventional tractor.



to follow Doe's earlier, three-plate design. They switched to a ball bearing-based system on later models, but I couldn't deal with that, so stuck with the simpler approach. Of course, manoeuvring the two tractors around inside the workshop was no easy job, once the front wheels and axles had been removed. All the positioning work had to be done very carefully with fork-lift trucks."

With his engineering experience, and the heavy equipment he had to hand, Michael was able to tackle just about every aspect of the build. "The only item that I couldn't manufacture myself was the main pivot pin for the turntable, at the centre of the two tractors. This needed to have a 60mm diameter and be threaded. To begin with, I made a smaller version, but it simply wasn't strong enough to take the loadings, so I had to outsource the making of that.

"Doe used 20mm steel plate for the turntable and, because my machine was going to be smaller and less powerful, I thought I'd be able to get away with 12mm steel. But, once I'd put the two halves together and carried out a few field trials, it was clear from the distortion that 12mm plate wasn't up to the job. So, I was forced to cut-out the whole turntable assembly and replace it with one made from 20mm thick steel."

Convenient hydraulics

"One of the beauties of the 3000, and its suitability for this conversion, was that the engine features an external hydraulic pump, which allowed me to simply tap the hydraulics for the steering off that. The steering is very powerful, and can rotate the front tractor with ease, even with the vehicle at a standstill. The hydraulic rams used (two on each side) were taken from Massey Ferguson loaders. Explaining how the engines, gearboxes, clutches and other control mechanisms were linked and synchronised, would take another dedicated article. But, after some reference to the way Doe did things, I'm happy with my solutions, and can confirm that all aspects perform well.

"One of the most frustrating aspects of the whole build was the painting. I'd put everything together to make sure it was all fully functional but, of course, when it came to painting, the whole lot had to be stripped down again. This really was the worst part of it; a real chore that was very boring and took me about three months to complete. It's all such heavy work – and I'm not getting any younger – but, luckily, I have a friend who was happy to give me a hand when needed. I did all the painting myself, spraying with traditional cellulose. I'm not a fan of

At some 35 feet long with the Ransomes TS91 plough fitted, Michael considered that a rear-steer, hydraulically-adjustable wheel was needed at the back of the plough. He used one of the Ford 3000 front wheels for this.



Michael says that it's harder to plough well with 'Mini D' than with a conventional tractor, but he's getting better at it and really enjoying the challenge.

using modern, two-pack paints on old tractors, preferring to stick with an original-type finish.

"Once I'd finished the tractor and it was running as I wanted, the initial, shake-down testing revealed a ground clearance issue necessitating the fitting of larger wheels. You might imagine that that would be a simple operation, but far from it. The Ford

ME AND MY TRACTOR

3000 runs on 28in-diameter rear wheels, and I reckoned that an increase up to 32-inch ones ought to do the trick. However, the only suitable replacements I could find were from a David Brown

but, they wouldn't fit on to the Ford hubs. The only option was to cut out the centres from the new wheels, and replace them with new dishes fabricated to match the Ford hub."

RIGHT: Neatly-packaged gear and drive selection.

BELOW: Seeing double! Driving this tractor isn't nearly as daunting as you might imagine, and is helped enormously by finger-light steering.



Which plough?

"One of the main objectives for the new tractor was to use it for competitive ploughing, but selecting a suitable plough wasn't straightforward, either. The problem with the regular 3000 is that it doesn't have very much lifting capacity, and standard setup would certainly have struggled to manage the four-furrow plough I wanted to use; the top link simply wouldn't be strong enough. My solution was to use a semi-mounted plough, and I found a four-furrow, Ransomes TS91 on eBay, that was in surprisingly good condition. But I had to drive to Cumbria to collect it!

"However, in standard trim, the TS91 was far too heavy to be picked up by the tractor, so I decided to fit a hydraulically-operated wheel at the back to lift and support that end, and rely on the hydraulics on the tractor to take care of the front end. Then I realised that, with the tractor/plough combination measuring about 35 feet long, general manoeuvrability would be greatly enhanced if the rear wheel on the plough was made steerable.

"To achieve that, I fitted a rigid linkage between the rear wheel - which was one of the surplus, 3000 front wheels - and the cross-shaft at the front of the plough so that, when the angle between the plough and the tractor altered during turning, the rear wheel moved an appropriate amount to steer the back of the plough in the correct direction."

Movement issues

Another consequence of the new machine's length - and weight - was that conventional, twin-axle trailering was out of the question. "I didn't manage to hit my three-ton weight target," Michael told me, "and the finished unit ended up tipping the scales at nearer four tons. Factor-in the plough, and the payload became even heavier and more awkward to move. So the only solution was to buy another lorry with a flatbed that could carry the

tractor, and a tow hitch so that the plough could be pulled on a trailer behind.

"Concerning choice, I had some quite specific requirements. I wanted an older vehicle without the complication of computer-controlled engine management, and with a paper disc-type tachograph. I also wanted a hydraulically-operated tailgate plus a sleeper cab that I could use at shows. I eventually settled on a 1996 Iveco which, although it wasn't the make and model that I'd have gone for out of choice, is 28 feet long and meets all my requirements.

"It's a simple vehicle, which is great. I can switch off the batteries and it's dead, without causing any electrical issues, which means it doesn't matter how infrequently I use it. On the downside, I bought it with a short MoT, which has now expired, and I know that it requires some structural repairs

underneath. So it's going to become a bit of a project over the winter, and I'm planning to remove the body so that I can sort out the chassis properly.

"I used it to transport the tractor and plough successfully to half a dozen local shows during the season, before the MoT ran out, and everything was fine. It's certainly a long vehicle with the trailer attached, but my previous HGV experience means I'm not fazed by that.

"I've not come across anyone else ploughing with a similar vehicle, so 'Mini D' always causes quite a stir. I would say that it's harder to plough well with it than it is with a conventional tractor and, using the four-furrow plough makes opening-up quite a challenge. I compete in the 'two-furrow classics' class and, so far, have managed a couple of thirds and two second places. Working with this combination is certainly

a learning process, but I'm getting better and am loving the challenge. I plan to do more in future, and to travel further afield."

Michael should be justifiably proud of what he's achieved with this unique project. He's created a machine that very much follows the aims and objectives of Ernest Doe & Sons, and yet he's done so in a way that required so much more ingenuity and mechanical know-how than would have been the case if he'd simply copied an existing model.

'Mini D' is a fully-functional and utterly capable tractor, which, as I can confirm from personal experience, is easy and addictive to drive. You can't fail to be impressed by the presence of the thing, and the quality to which it's been finished - without over-egging the pudding - makes Michael's creation a very special and desirable tractor indeed. ■

Michael loves driving and using his creation, and really appreciates its power delivery and four-wheel-drive capability.



The 3000-based Invicta

Peter Love takes a look at a very interesting and rare Ford 3000-based conversion, the Invicta

The Invicta Ford 3000 conversion is a fascinating and rare tractor. I was lucky to see an example about 15 years ago, at a Lambert & Foster sale in Faversham, but I'm not sure who

bought it or where it went.

In this case, ex-Invicta employee Dick Hubbard is my expert guide to this very interesting machine, which was produced by Invicta Motors Limited of Wheatsheaf

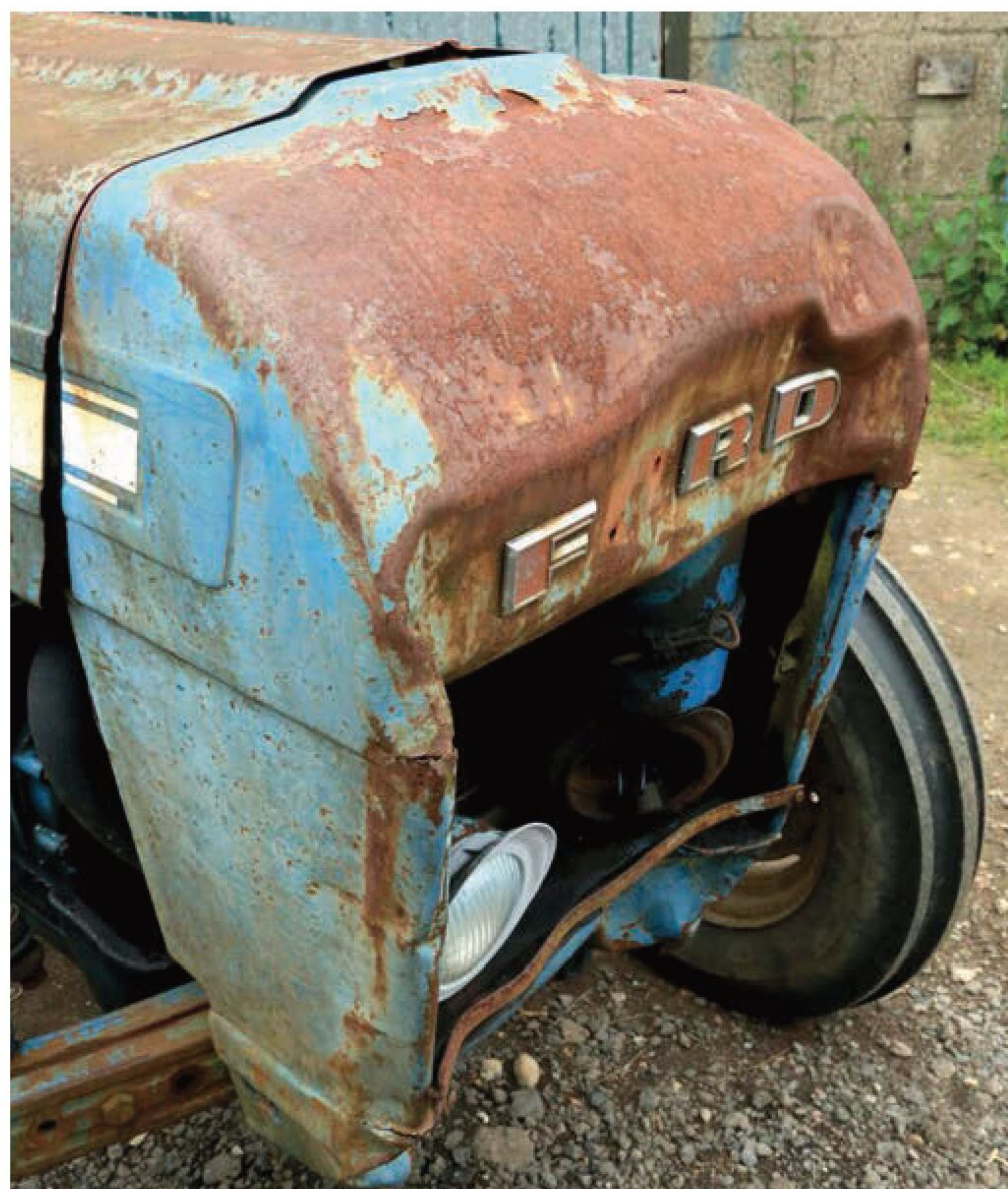
Road, in Sturry, Kent. Dick began by explaining that the whole idea behind the Invicta conversion was to produce a simple tractor that sat four inches lower than a standard model.

The Invicta; a Ford 3000-based orchard/hop garden conversion.





The rear end of the Invicta.



The Invicta's nosecone design was certainly different.

Interesting panelwork

The Invicta's half-curved nosecone is certainly different to the standard 3000's, and definitely gives the tractor a very different appearance. Yes, this example is a bit banged about, but it could easily be put right. These nosecone modifications were rolled and created at Blythe's of Canterbury. The mudguards were also fabricated specially for the Invicta, and a Richford roll bar is present on the tractor, too.

Steering set-up

The front axles were an in-house modification, and the key to the conversion was the fact that the axle section was bent backwards, and the king pin housings were cut, repositioned and welded in-house. As a result of this process, the whole tractor was lowered by four inches, which resulted in 11 inches of clearance between the ground and the bottom of the engine sump.

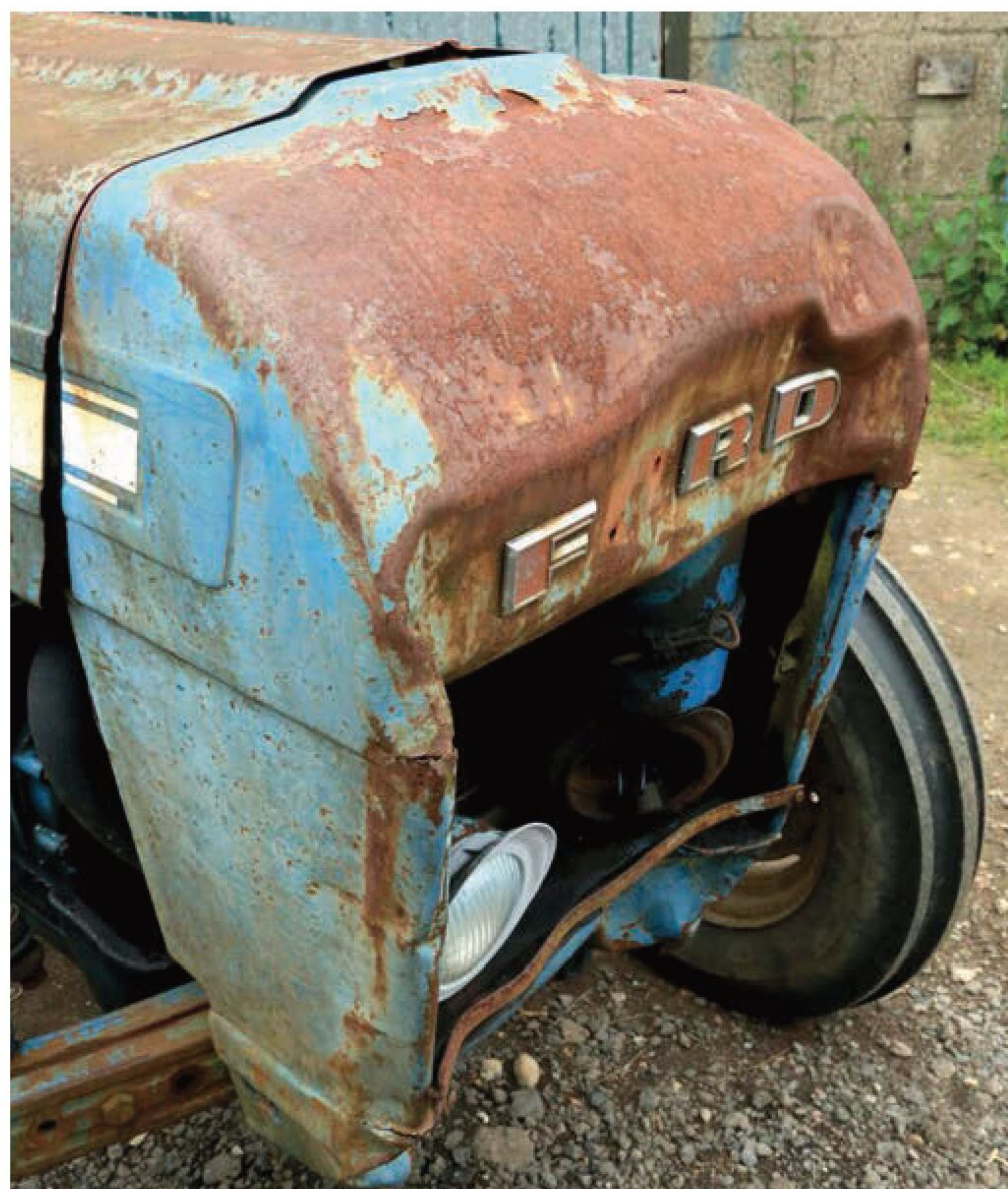
The king pins' top arms were also altered, and the radius rods



The mudguards and rollbar were all part of the original equipment supplied with the Invicta conversion.



The rear end of the Invicta.



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A RARE CONVERSION

The Ford 3000-based Haynes

Peter Love discovers more about the interesting and unique tractor conversions made in Kent for hop farm and orchard applications

Buying farm machinery was big business in the 1960s, when more than 100,000 tractors were sold each year in the UK alone. In Kent, specialised tractors were needed to serve in the orchard and hop-farming markets which flourished in this fertile county.

Tractors produced especially for

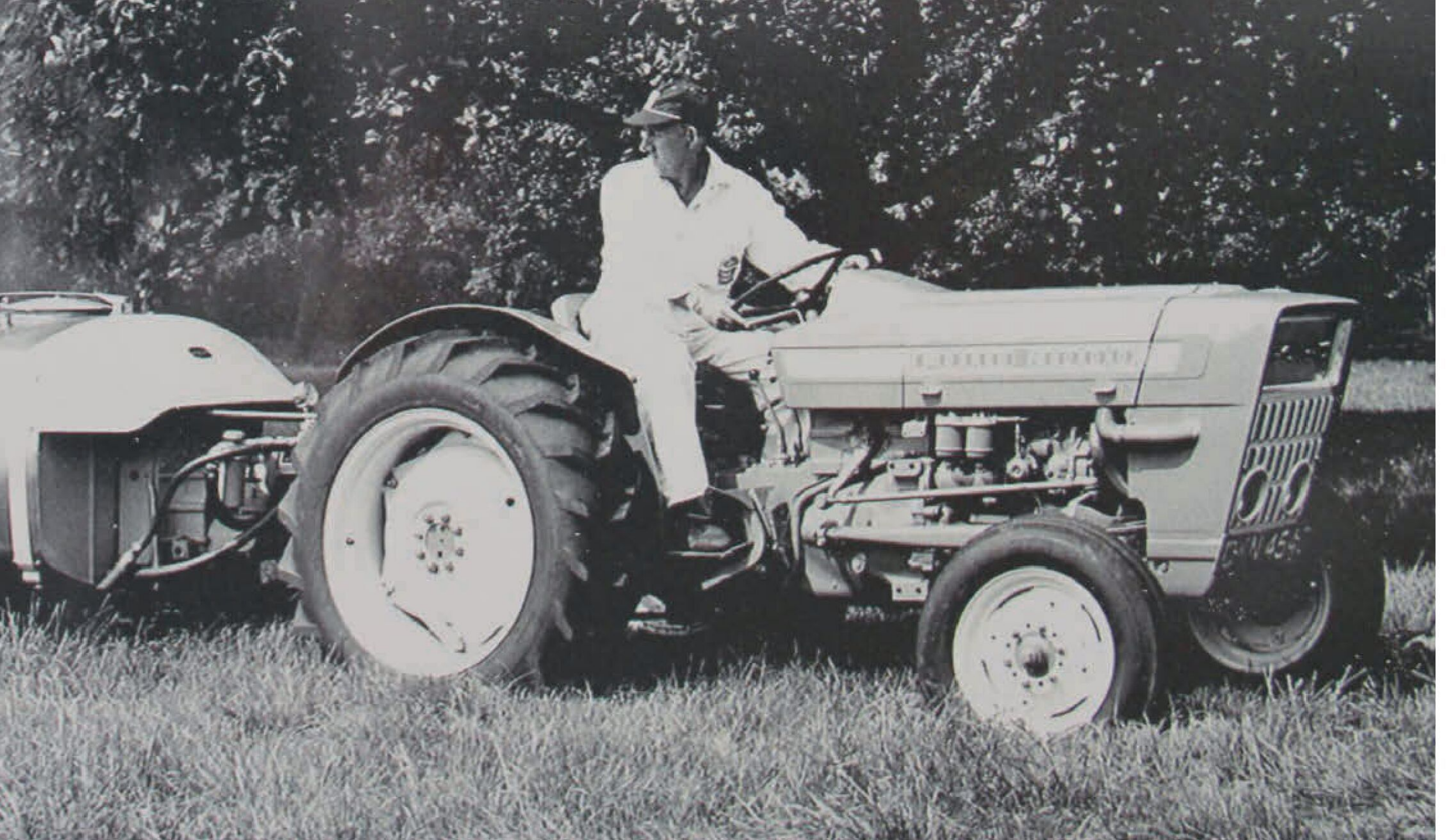
this type of work weren't a new idea, and started with the Weeks-Dungeo, which was built in Maidstone and first appeared in 1915. It was refined in 1919 and the result was the New Simplex model. Unfortunately, it turned out to be too expensive to produce, and just couldn't compete with the Fordson Model F.



ABOVE: Senior demonstrator Frank Winch showing off the Haynes conversion.

BELOW: The Haynes, Ford 3000-based orchard/hop garden conversion was a neat package that was built to a high-standard and met the demands of customers very well.





Changing tack

So, William Weeks' Perseverance Works changed tack in 1922, cutting down a Fordson Model F, making it more suitable for specialised use. It was a success, and blazed the trail for a number of Kent companies in the years that followed. Operations such as Stanhay of Ashford and Heath Engineering of Horsmonden, produced their own versions based on the Model N.

After the Second World War, Stormont Engineering appeared and got together with other Kent Ford dealers to produce the KFD range of narrow tractors, based on the new Fordson E1A Major. This was produced at the company's workshop in Tunbridge Wells then, later, in Hildenborough, and the tractor was available in 52, 54 and 68in widths.

The early, 52in model wasn't a great success, though. It used Stormont's own steering box, which was expensive to produce and very heavy to turn. After a redesign, the later models (utilising Ford's own steering box) were much easier to use and steer. However, these tractors were only made in very small numbers, right into the New

Performance Super Major era.

The new, dedicated Ford tractor factory at Basildon came on line in July 1964, producing the 6X range of machines, but the 6Y Series was in production before there was deemed a need to produce a Kentish Ford orchard/hop garden tractor again. At the time, Massey Ferguson had the majority of this market.

In mainland Europe, Ford offered various options for this type of application, one being the French 3055, but these and various other conversions were never offered to UK dealers. There was certainly a hole in the market for tractors of this nature, so two of Kent's largest Ford dealers decided to produce conversions to meet the demand.

Opportunity knocks

At the end of the 1960s, when Ford's 6Y tractors were available, Stormont was concentrating on Ford cars and commercial vehicles more than agricultural machinery, and so Haynes of Maidstone was the first to produce a narrow tractor based on a Ford 3000.

Haynes can trace its origins back to 1790, when the business was

“Tractors produced especially for this type of work weren't a new idea, and started with the Weeks-Dungey”

founded as an ironmongery and general store in the Edgware Road, London (now the site of the Metropole Hotel). William Haynes travelled to Maidstone and went into partnership with John Gurney, who'd acquired an ironmongery business in 1817 on the corner of Weeks Street and Kings Street in Maidstone, and had been trading there since 1771.

The Gurney & Haynes partnership continued until 1856, when John Gurney retired from the business and William Haynes bought his shares and took control. In 1857, William Haynes took his eldest son, William Haynes Jnr, into the business, and traded as Haynes & Son until 1863, when George Haynes - the second son - joined as a partner, and the business became Haynes & Sons. From the records that remain, the operation expanded under the management of the father

A RARE CONVERSION



Haynes was part of the KFD syndicate. An example of one of its machines is seen here at work with a MIL loader.

and his two sons, serving a large area of mid- and west Kent, and part of East Sussex.

The business had active workshops and specialised in, among other things, agricultural ironmongery, heating installations, kitchen ranges and developing patents. It secured important trading connections with the rising industries in the Maidstone area, particularly papermills, breweries and cement works. In 1872, following the death of William Haynes, the company changed its name to Haynes Brothers, the name of the holding company today. The business also continued to expand in the cycle market.

Haynes empire grows

Motorcycles followed and, in 1903, the firm sold its first motor car – a Humber – and so the motor business was born with agencies for Darracq, De Dion, Sunbeam and

the American Hupmobile to follow. To house the expanding motor business, additional premises in Kings Street were bought in 1906. In 1911, one of the most significant events in the company's long history took place, when Bernard Haynes was taken for a demonstration ride in a Ford Model T. He was so impressed with its performance when climbing Boxley Hill, together with its competitive price, that he ordered one immediately, at £180.

From this small beginning started the firm's long connection with the Ford Motor Company of Great Britain. It was the first Ford main distributor in Kent, and the 12th in the UK. In 1922, Ronald Haynes (eldest son of Bernard) joined the company after studying at Cambridge and training with the Ford Motor Company. He played a key role in the expansion of the developing motor business, and was joined by his brother, Philip, in

1928. Both became directors in 1936. Together they expanded the business and also bought the first 1.25 acres of the company's current, five-acre Ashford Road head office site.

As times changed, the company took the decision to focus on its motor and agricultural business, acquiring its current Parkwood, Maidstone site in 1966 for its agricultural operation and body and paint division, which is where the mainly Ford 3000 conversions were made.

Market forces

However, in the late 1960s, Haynes wasn't the only company developing a Ford orchard/hop garden tractor in Kent. In Canterbury, Invicta Motors Limited of Wheatsheaf Road, Sturry was working on its own design, too. The company had been incorporated in 1922, when the Thompson family created a petrol station, service and repair workshop,

“ Haynes of Maidstone was the first to produce a narrow tractor based on a Ford 3000”

and went on to be Ford dealers for many years.

The building was damaged in 1936, when a rogue cigarette caused an explosion at the petrol station, resulting in the complete rebuild of the site. The company then expanded to include an agricultural dealership, truck dealership and bodyshop. Invicta progressed further to include businesses in Margate and Ramsgate during the 1980s. Then, in September 1991, it ceased operating its agricultural division.

Invicta Motors Ltd was acquired in 1996 by Summit Motors Investment (UK) Ltd, a subsidiary of the Sumitomo Corporation of Tokyo. It was then expanded to incorporate

the Ford Folkestone dealership, with an Ashford site also added to the portfolio. Invicta extended further in 2010, when the brand acquired the Maidstone and Tunbridge Wells Drake & Fletcher car businesses.

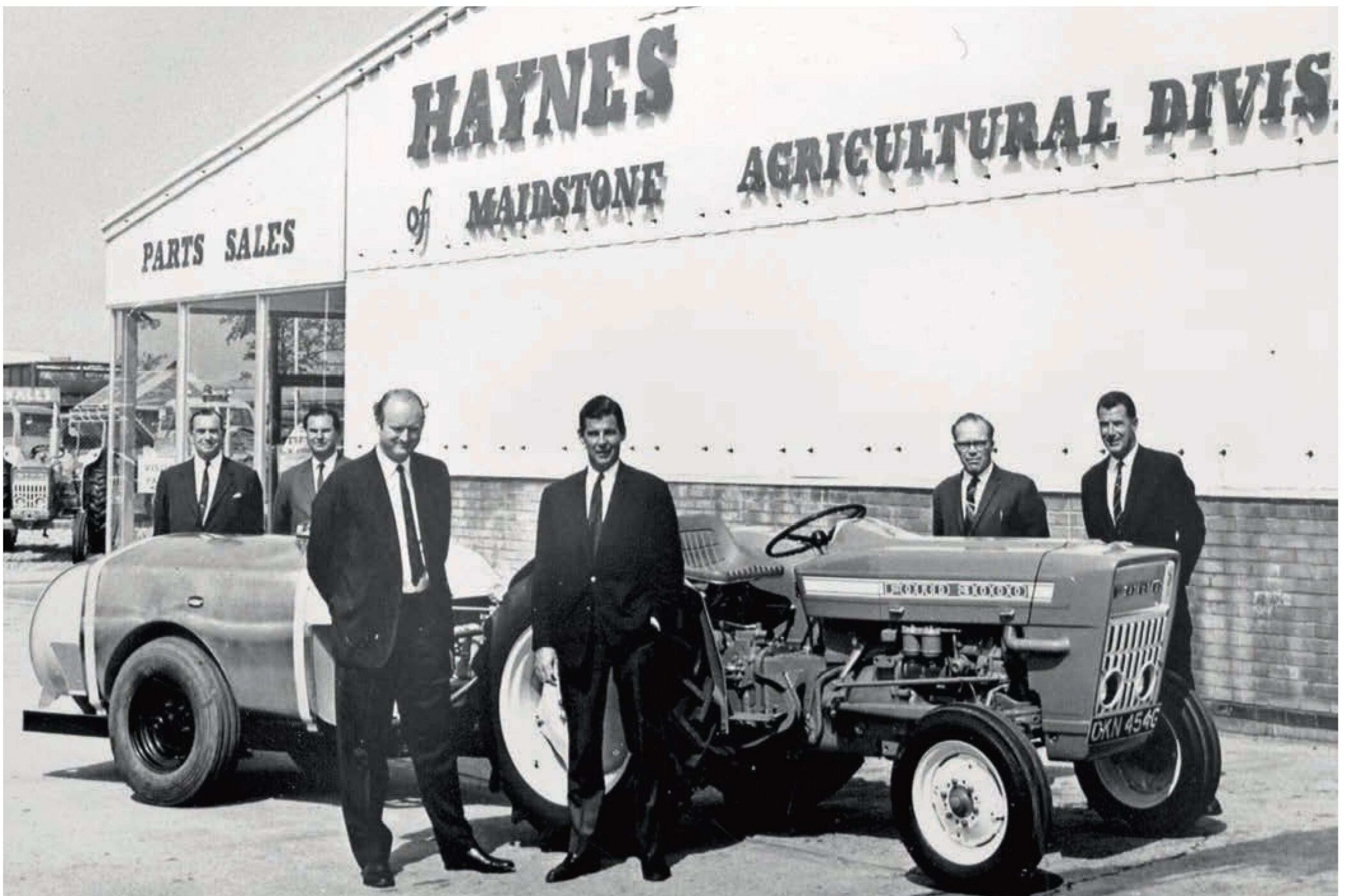
Drake & Fletcher had been John Deere, Bedford and David Brown agents for many decades, but had given up the agricultural side of things in the 1990s. The company produced a plethora of fruit and hop garden machinery over the years, and I'm proud to note that my great-grandfather was the company's designer.

David Brown alternative

Decades later it produced the David Brown narrow and lower 885 model,

which was a great competitor to the Ford 3000 conversions. In fact, there were possibly more 885 orchard/narrow tractors working in certain parts of the county than the special 3000s.

Thanks to the co-operation of various people, particularly Rodney Broadly, I was able to inspect a pair of Ford 3000-based orchard conversions; one made by Haynes and the other by Invicta. Rodney is a former farm contractor from Rhodes Minnis, near Folkestone, and remembers these conversions well. Also invited on the day was Dick Hubbard, who worked for Invicta as an apprentice from 1958, and was sales manager when it all came to an end in 1991. He certainly has great



The Haynes Ford 3000 conversion. From the left are Ken Trowbridge, sales manager, Vernon Cruttenden, service manager/engineering designer and David Haynes, managing director. The remaining people are, unfortunately, unidentified.

A RARE CONVERSION



Dick Hubbard, Nick Wright, Rodney Broadley and Peter Kirby all have experience of tractors like the Haynes conversion.

experience with the Invicta orchard/hop garden 3000.

We were also joined by the highly-respected Peter Kirby, who is now Haynes' service administration assistant manager, and has been with the company since he joined as an apprentice in 1969. He has worked on all aspects of the agricultural business with the company. Nick Wright, Haynes' service controller at Great Chart attended, too. He started 35 years ago as an apprentice with Ernest Doe at Sutton-at-Hone, based at the former Garrett premises. Naturally, he's a Ford man through-and-through.

Although neither tractor is in perfect order, they provided an opportunity to compare the differing

approaches to the conversions made by Haynes and Invicta. The Haynes conversion is halfway through a full restoration, while the Invicta machine is still used daily by its current owner, David Lilley. This tractor was new to SW Mount of Petham and Canterbury, and was one of two it purchased from Invicta, Dick Hubbard explained.

The essential aim of both conversions was to lower the tractors by four inches, so that they could be driven around in orchards without disturbing the overhanging growth.

The Haynes 3000

Rodney purchased his Haynes 3000 in 2017 and has made great progress with the restoration,

although further work is still required before a full respray is undertaken.

Peter Kirby explained: "When I started my apprenticeship, way back in 1969, my manager, Vernon Cruttenden, was designing and manufacturing front-mounted mowers, named Foremower, to fit mostly the Ford 2000/3000 range.

"This innovative machine was very successful and well received, as it allowed far greater control when mowing around standard fruit trees. There was also the need for a suitable tractor to work in the rather restricted orchards of the day, and the Ford 3000 provided a suitable platform for that. But the only problem was that it stood somewhat tall, and fouled the trees.

"Vernon Cruttenden turned his attention to lowering the profile of the 3000 to create a more generous clearance between tractor, driver and the branches above. I can't establish exactly when this occurred, but I would guess it was in 1970.

“Vernon Cruttenden turned his attention to lowering the profile of the 3000 to create a more generous clearance between tractor, driver and the branches above”

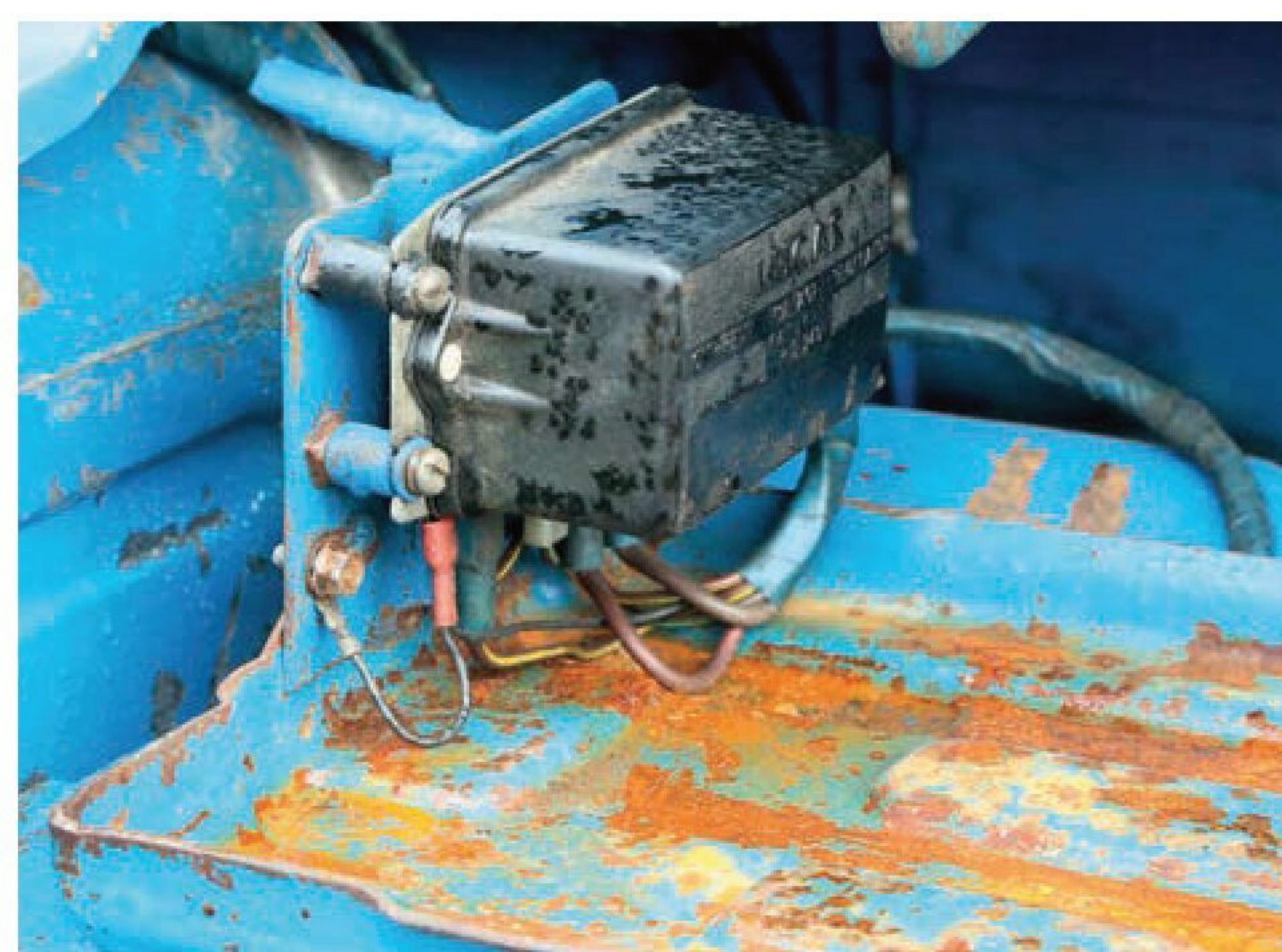


LEFT: The special cover associated with the Haynes conversion.

RIGHT: The rear fender brackets were lowered and braced and in the process of the conversion.

BELOW LEFT: This is the area in which the fuel tank was modified.

BELOW: The control box and battery were repositioned.



"I understand that the first tractors were modified for the home market, and that a good number were sold. Consequently, the model soon attracted the attention of the Ford Motor Company, which was looking at a wider market. It's in the hazy past now, but many went overseas, possibly even as far afield as Greece, but more of that anon.

"The finer details are lost to me, as I was just 16 years old then and certainly not privy to such information. Suffice to say that we soon received a batch of tractors for modification, and our workshop took on the appearance of a production line as we systematically stripped the units down and implemented the various reworks.

"You'll appreciate that the modifications entailed quite considerable fabrication, and were very interesting for a young lad like

me, involving many skills lost on our apprentices today. To give an overview of what was involved, I'll list those that I can remember."

Rear mudguards

"These were removed and the mounting brackets were cut away. Some four inches of material was removed from the mudguard and the mounting welded back into place. This was a difficult operation as the reinforcement gussets no longer merged, and had to be brazed; MIG welding wasn't an option in those days."

Steering column

"The upper steering box was stripped and the driveshaft removed, together with the column tube. Once again, four inches of material was removed from both parts, before the shaft was welded

back together in the lathe, for alignment purposes – a task for a trusted apprentice!"

Fuel tank cowl

"Access for the throttle had to be relocated as, by lowering the cowl, alignment to the original hole was lost. Various brackets were fabricated to secure the cowl in its lowered position."

Fuel tank

"The fuel tank was removed and sent away for specialist rework, where four inches of the upper profile was removed before soldering the top back on. The front tank mounting also carried the voltage regulator, which had to be removed and remounted on the battery tray. The fuel level sender was also cut to suit the modified tank."

A RARE CONVERSION



The battery was moved to the left-hand footplate.



RIGHT: The fuel filter bracket was lowered with a piece of 3/4in plate – it certainly wasn't going to break!



The front cowl and radiator header tank were revised...



... to keep the tractor looking neat.

Battery tray

"With the lowered bonnet, the battery no longer fitted the tray, so a new location – for a smaller battery – was made on the left-hand footplate."

Fuel filter

"To maintain clearances, the fuel filter was dropped thanks to a revised mounting bracket."

Front cowl

"By far the most labour-intensive part of the modifications was the cowl, as the mountings were lowered by four inches using extension brackets, which necessitated remounting

the headlamps. There were several changes in this area, as the oil bath air cleaner had to be lowered, as well.

"This saw examples where the outlet of the cleaner exited the right-hand side of the cowl. However, other designs involved cutting the radiator header tank to allow the access to the inlet manifold, while keeping everything neatly under the tinwork. With the lowering of the cowl, fouling of the axle beam became an issue, but this was resolved by re-profiling the cowl to allow full axle pivot.

"Obviously, there were many other tasks to achieve the end

result, involving the fabrication of many small fixings and addressing paintwork defects. The finished product was a neat package built to a high-standard that met the demands of our customers very well.

"Although the home market was brisk, several batches were sent to Greece, Turkey, Austria and Switzerland, and examples of these tractors still appear from time to time. Of particular note is the fact that the rework produced a tractor with a reduced height profile, yet which still retained the all-important ground clearance.

"As the aforementioned Foremower relied upon belt-drive



ABOVE: The Parkwood workshop production line about 1971, with Peter Kirby fitting the steering wheel, and fruit, vine and machinery sales specialist Jeremy Cloude kneeling down by the front wheel.

RIGHT: A Ford 3600 conversion by Haynes.

from a PTO driven by a 90-degree gearbox, this clearance was an important factor, and allowed for package marketing with no compatibility issues. The success of the project saw the design carry over to include the Ford 3600 range of tractors, and carried the Haynes name to many locations across mainland Europe."

It was certainly interesting for those assembled to see all of the modifications to the tractor, and how well-engineered they were. One wonders if the conversion was a profitable product to produce but, as Peter says, they've stood the test of time very well indeed. ■



A rarity restored

Jim and Jamie Barron discovered and then restored an unusual Ford 3000 narrow tractor with an interesting history. This is their story

Having recently restored a Massey Ferguson 135 vineyard, the ever-expanding collection of father and son team, Jim and Jamie Barron from Dungarvan, in County Waterford, has just been augmented by another rare gem. This time it's painted blue and is a 1969 Ford Force 3000 narrow (54.5in) which, when new, was known technically to Ford and its dealers as the 3310 model, but not badged as such.

The 1964 Smithfield Show was the venue chosen for the public launch of the Ford's new '6X' 1000 Series

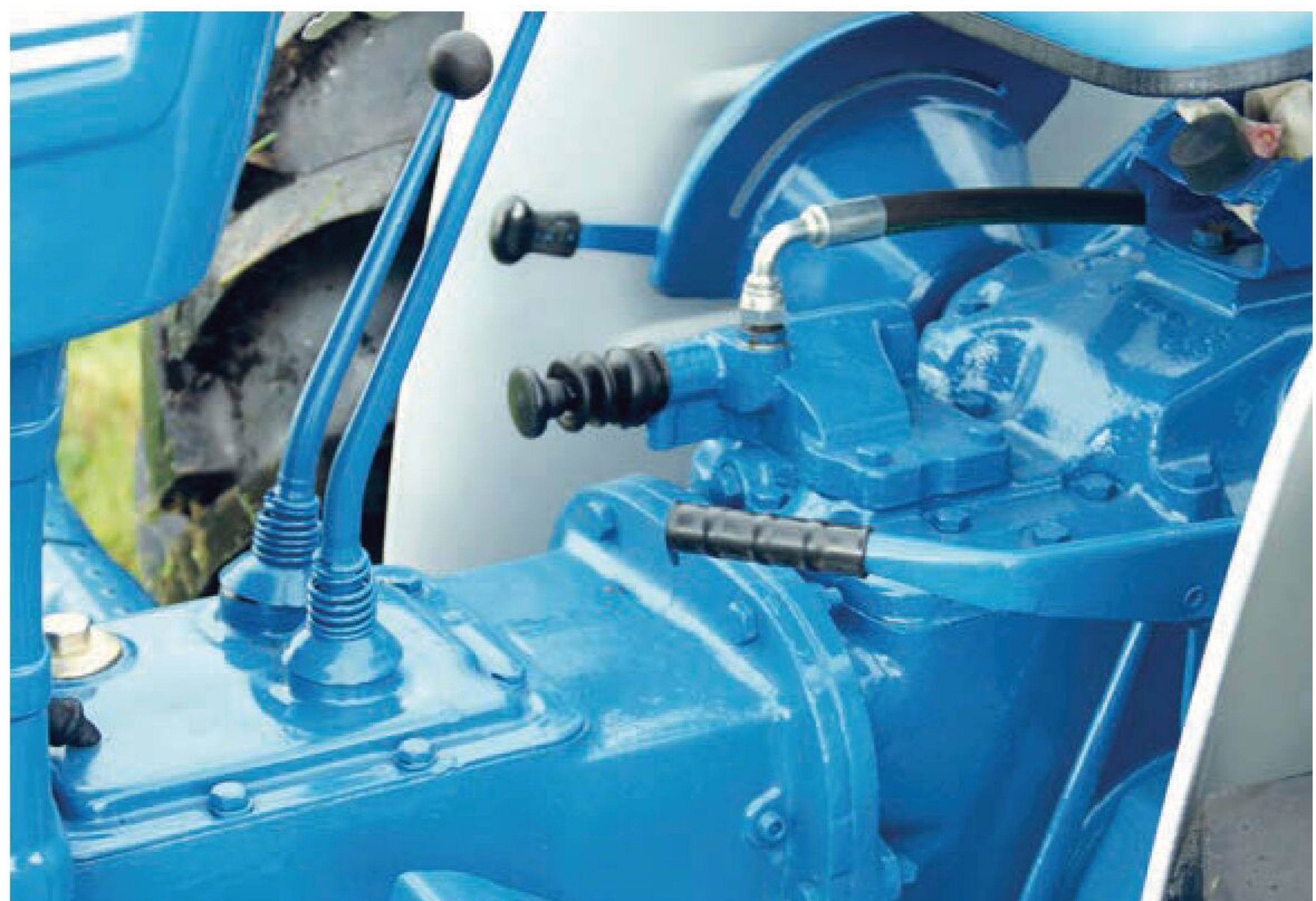
range of tractors, and the 3000 model, with its over-square, three-cylinder, 2,868cc 46hp engine, was part of the totally different range that Ford was introducing.

International effort

The tractors were made in three locations across the globe; Highland Park, Detroit, USA, Antwerp in Belgium and the new Basildon factory in Essex, England, and the range consisted of 2000, 3000, 4000 and 5000 models. In fact, the 2000 utilised the same engine as the 3000, but carried smaller bores and



One has to say that the detail certainly looks impressive on Jim and Jamie's Ford 3000 narrow.



New hydraulic hoses were all part of the restoration.



We've done it again, and made the show with a newly-restored tractor!

pistons. As for the larger 4000, which became the biggest seller in the range, that also has a three-cylinder, over-square engine.

The low-slung 3010 was aimed principally at UK fruit farmers in Kent, Hereford and the Clyde valley, but was also sold to vegetable growers elsewhere in the UK. In addition, parts kits were shipped to France, where Ford France assembled this type of tractor in a number of batches between 1970 and '73. These were sometimes badged as the '3010', but mostly just as a 3000.

Ford at Basildon also made batches of what it knew as the 3300

vineyard (44.5in) but, once again, these were badged as the 3000. Both the models mentioned mostly had low-slung exhaust systems, although the standard, upright silencer was sometimes fitted, too. A number of the French models have been brought back to the UK from mainland Europe, and examples have also been spotted in places like The Netherlands, Germany and even Greece.

Returning to Ford France for a moment, it introduced the rather strange-to-us '3055', in 1972, which featured a 52hp engine. It was based on the 3000 engine block,

but used the crankshaft and back end (transmission, hydraulics and rear axle) from the 4000. Up front, though, it was fitted with an axle from the 3000.

Many variations

When the 3000 was updated in 1975, as part of the new 600 range, 3600 narrow production carried on as such, and at least two of these very rare machines are now in preservation. There were many other variations sold under the '3000' model designation, but those will have to be the subject of another feature!

3000 RESTORATION



This is certainly a rare type of tractor to have stumbled across around Waterford.

One thing's for sure, Ford never sold vast numbers of narrow and vineyard models compared to Massey Ferguson, which did particularly well in that sector. The 100 Series 135, 152 and 158 were the market leaders, and the French 158 Mk3 continued to be made into the 1980s.

One Sunday back in 2010, Jim Barron was driving around County

Waterford when he came across the Mount Melleray Abbey estate and spotted the Ford 3000 narrow tucked away in a shed and looking very much abandoned. So, he made some enquires with the Cistercian monks at the monastery, which is well worth a visit set, as it is, on the edge of the Knockmeadow mountains in the Waterford area. They told him that the tractor had

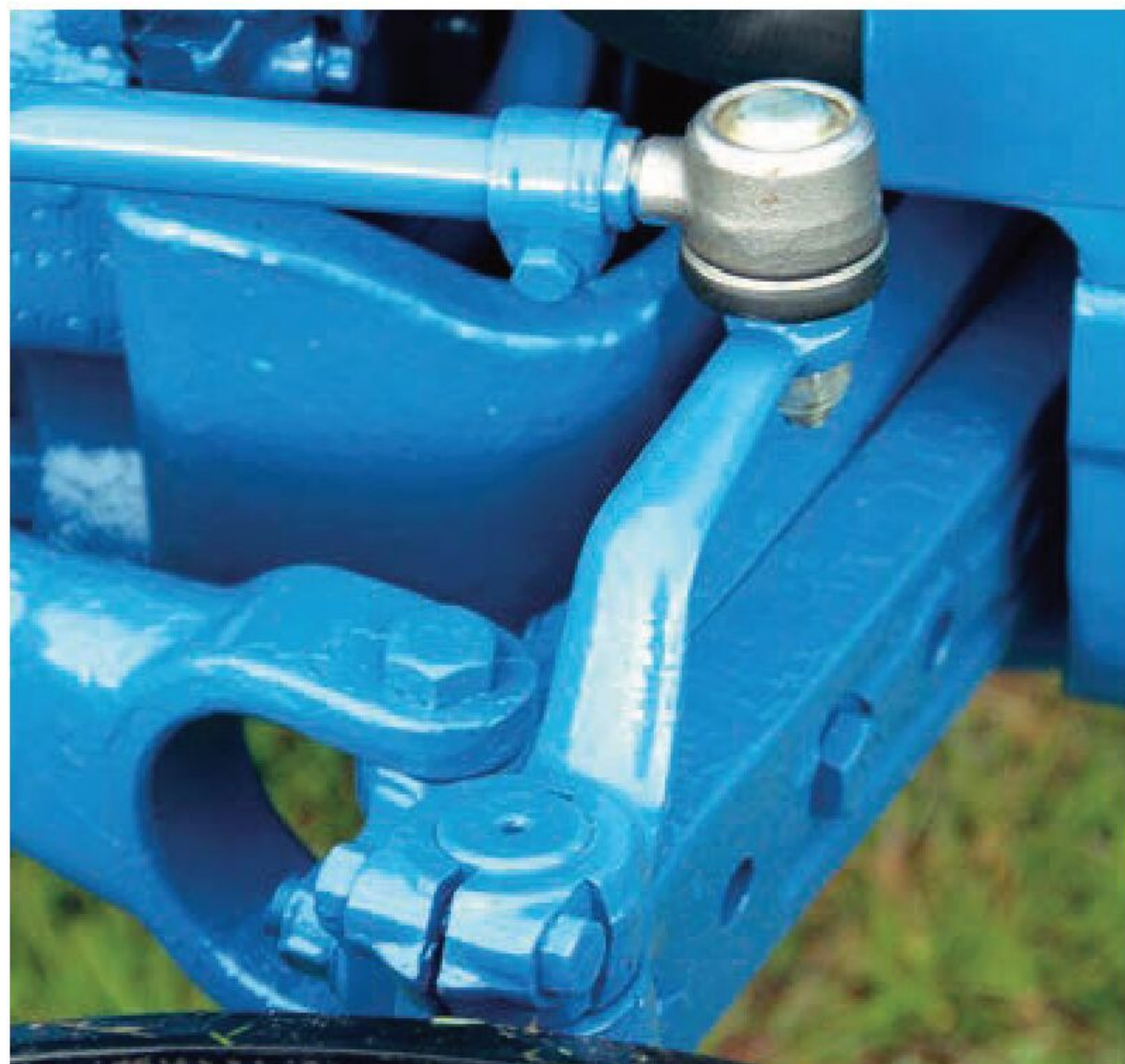
“The low-slung 3010 was aimed principally at UK fruit farmers in Kent, Hereford and the Clyde valley”

originally been used in the estate's orchards, but that it had been retired several years earlier.

It was clear that the tractor had seen a lot of use, but it certainly had plenty of potential as a restoration project. What's more, there were only 5,837 hours showing on the clock. Of course, it was a non-runner, but the engine and block looked original. However, the main reason for going ahead with the purchase was that 3000 narrows are so rare in the Republic of Ireland; it just isn't the sort of place you'd expect to find one of these machines.

Saved from oblivion

The deal was done in October 2010, and the tractor was transported to its new home. It came with all the original documents but, as there were other tractors being restored at the time, the 3000 had to wait for its turn. Jamie finally rolled it into the workshop in June, 2011, and, after removing the panels (some of which could be used again) he was



The short front axle is a tell-tale feature of the narrow 3000.



All looking tidy, including the fuel filter.

able to set about the engine. The cylinder head was removed and the bores were found to be very worn. Removal of the pistons followed then, after some effort, the liners came out, too.

As for the heart of the engine - the oil pump - a new unit was fitted as a precaution against any future problems. New liners were installed, followed by pistons and new rings, small end bearings and oversize big end shells. While all this was happening, the cylinder head was skimmed, the valves were recut and the guides replaced. A new head gasket went on next with sealant, as required, before the head went back on and the head bolts were tightened down equally, from either side. Jim then took care to torque them all carefully; a process that has to be repeated once the engine has been run up to normal operating temperature.

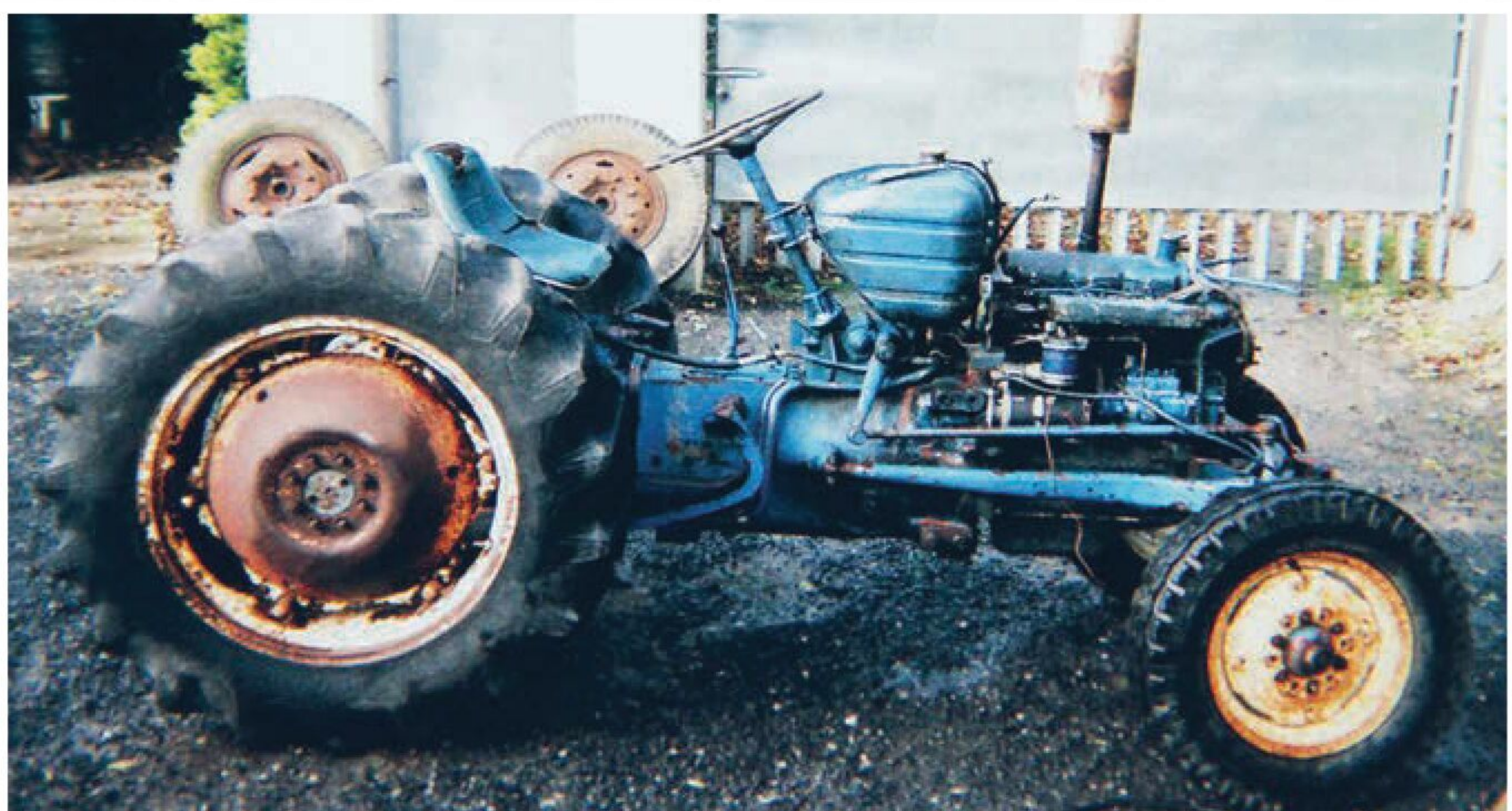
All the injection gear was checked carefully and replaced as necessary, as were some of the injector pipes. As for the fuel tank, all that was needed was a good steam clean, before painting and adding new piping. After replacing the fuel filter and bleeding the system through



Nearly completed with just a few more parts to paint.



This is as the tractor arrived in the workshop; let the restoration commence!



Interestingly, this tractor carried American Firestone tyres for many years.

by winding the engine over to clear any air trapped within, things were nearly ready for the big day. The water pump was good, but the radiator needed the full works, with the core evidently having taken a lot of abuse over the years. All new hoses and the correct clips went on, as did a new air filter assembly, replacement silencer and 'U' bolt.

Excellent transmission

Before the engine was finally wheeled into place and with new seals installed, a new clutch was fitted plus a spigot bearing on the flywheel. Luckily, the transmission

was found to be in excellent order, so required no work.

New brake linings, rear half-shaft seals and wheel bearings were fitted and attention then turned to the electrics. A new loom was ordered and fitted, the dynamo was replaced, but the original starter seemed OK. However, the dynamo drive to the instrument head was broken (a common fault), so a replacement was bought, but the head itself was perfectly good after a thorough clean-up.

After fitting a new battery, the engine started very easily, but it was found that the hydraulic lift wouldn't

3000 RESTORATION



Father and son certainly work well together on their fleet of restored tractors.

work. This is quite a common issue on Ford tractors, particularly on the earlier Dexta. However, new oil had been used so it wasn't that but, after removing the cover, the valves were found to be stuck. Cleaning and then grinding them in with new seals eventually did the trick.

With regard to the front axle, this again received 'the works', benefitting from new thrust bearings on the king pins, new hubs and seals, plus drag link ends. But the steering box itself was good, as was the steering top shaft bearing; one of the typically weak spots in the Ford

steering system. A new seat was also sourced and fitted, together with new number plates and light.

Careful preparation

As for the panels, some of the originals could be reused, but not all. These, like the skid unit, were all wire-wheeled down and etch-primed before heavy-build primer was applied. This was followed by a two-pack top coat as the pressure mounted to get the tractor finished in time for an appearance at Tractor World Ireland at Corrin Mart, Fermoy in County Cork.

New wings were supplied by Spirex, and fitted well first time after being painted. As for the wheels, new rims went on the rear, with the original centres getting the works with new, 12.4-11x28 rear tyres and 600x16s on the fronts. Then, with all the panels on and new head and side lights fitted and wired, the only job that remained was to apply the new decals. On the day of the show, a new steering wheel was fitted on site to finish the job off beautifully.

The tractor went on to take third place at the event; something that was very commendable given the quality of the other tractors at that prestigious show. So that was yet another one completed by Jim and Jamie, but there are still more waiting to be done! ■

“It was clear that the tractor had seen a lot of use, but it certainly had plenty of potential as a restoration project”

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A WILLING WORKER

A faithful 5000



Everyone has their favourite tractor and this market garden's is a trusty old Ford 5000, as Gary Hawkins explains

Kent-based Messrs AJ Clements & Sons have a farming history that extends back to before the turn of the 20th century. As a market garden and arable enterprise, theirs was one of the first farms in Britain to turn to mechanisation, and completely away from horses during the late 1920s.

This period saw them take ownership of a number of Caterpillar crawler tractors, which were imported from the United States; they were some of the first used for agricultural purpose in the UK. Keen to maximise the ground-covering potential of these

mechanical marvels, Alex Clements and his brother, Bernard, went about converting horse-drawn equipment into larger working units in whatever form they could.

Market changes

Along with this, more equipment from the United States – where bigger was already better – was obtained. While this transformation was taking place, their father managed the staff and market garden sales, running vegetables every day to Borough Market in London.

The market garden's profits,

having always been good, dropped off in the 1960s as supermarkets took more of the overall sales, so the Clements' crop choice moved more towards arable and cereal production.

At that stage, they were running Fordson Power Majors, which were soon followed by the arrival of their now-revered Ford 5000. Bought as a replacement for an F-registration Ford 5000 Super Major, from Testers of Edenbridge in 1970, it was to be the main workhorse on the farm.

The new tractor cost £1,250, and did all the main jobs, including ploughing with a Ransomes TS 90



BELOW: In 1970, the new Ford 5000 cost £1,250 which, as it turned out, was definitely money very well spent.



ABOVE: The 41-year-old Ford 5000 is still in use with its original owners, AJ Clements and Sons.

LEFT: The Clements' trusty old Ford 5000 continues to enjoy a usefully active working life, albeit engaged in lighter duties on the farm.

RIGHT: Wider rear wheels and tyres replaced the 5000's originals some time ago.

four-furrow plough. This was heavy work that pushed the limits of the 5000; it always had to be revved to the maximum to get everything done. Part of this was due to the nature of the engine, which only delivered the best power output from the middle-to-top-end of its rev range. Below 1,500rpm, the lack of torque was very obvious, but this really was the only notable downside of an otherwise perfect tractor.

Seasonal duties

Over the winter months, hedge-cutting took priority before seed-sowing started again in the spring.



A WILLING WORKER



ABOVE: A 6600 seat sits on an otherwise original tractor chassis.

BELOW: The clutch pedal shows what years of left foot pressure can do.



“The new tractor cost £1,250, and did all the main jobs, including ploughing with a Ransomes TS 90 four-furrow plough”

Cultivating was undertaken with a Kongskilde Triple K cultivator and turbo-tiller on ploughed ground. Using these implements achieved a good forward speed and tilth, making these combinations a great success across the seasons. Sowing, fertiliser-spreading and rolling seedbeds would be the final jobs in

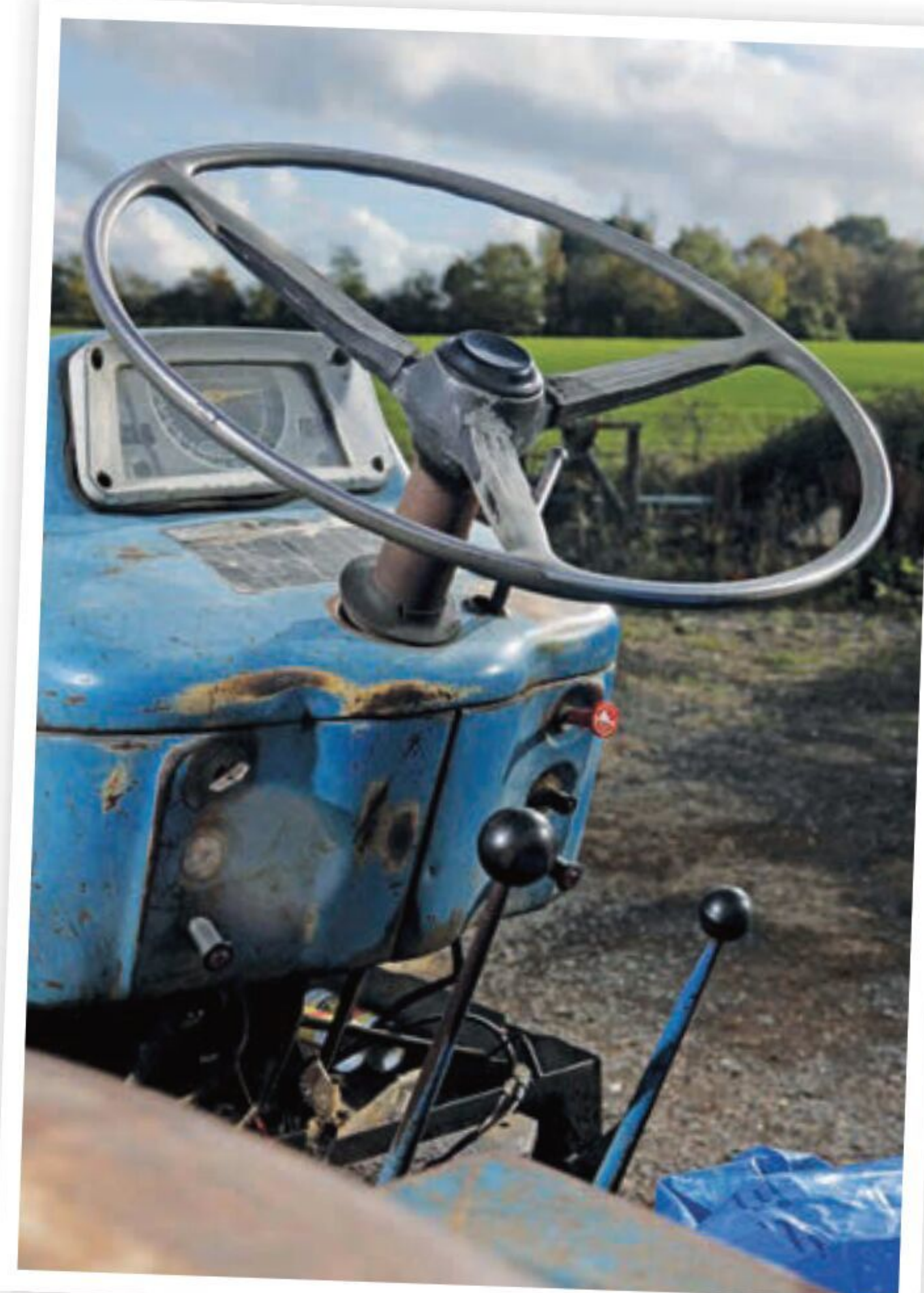
seed-drilling terms, with spraying and more top dressing completing springtime tasks. Summer would see the tractor hard at work baling and bale-carting, plus undertaking lighter haymaking duties, including hay turning, with various Lely and New Holland equipment.

Like its predecessor, the tractor was fitted with a lightweight, Lambourn cab and canvas. This suffered from the wear of work over the years, and so was eventually removed completely when the tractor was no longer the number one workhorse. A good heavy coat became the replacement cab!

Fondly known as ‘the 5000,’ the tractor retained its lead role until 1973, when another (N-reg) 5000, with a Lambourn safety cab, was bought to add to the workforce. This became the new Number One machine, with the J-reg version being relegated to lighter duties, involving all the cultivating for seedbed preparations.

Interestingly, the newer model was disliked for being too noisy; its mudguards resonated and vibrated far too much, which was a common trait of the Lambourn conversion, apparently!

Ford tractors have remained the



The Bakelite steering wheel has worn through to the metal over time.

Clements’ preference, however, and subsequent machines have included three Ford 6600s, a 6610, a 7610, a TW-30, a 8870 and, more recently, a 235hp 7050 model.

Great reliability!

Over the years, there have been very few mechanical problems with ‘our’ 5000, probably due to the combination of a simple, strong



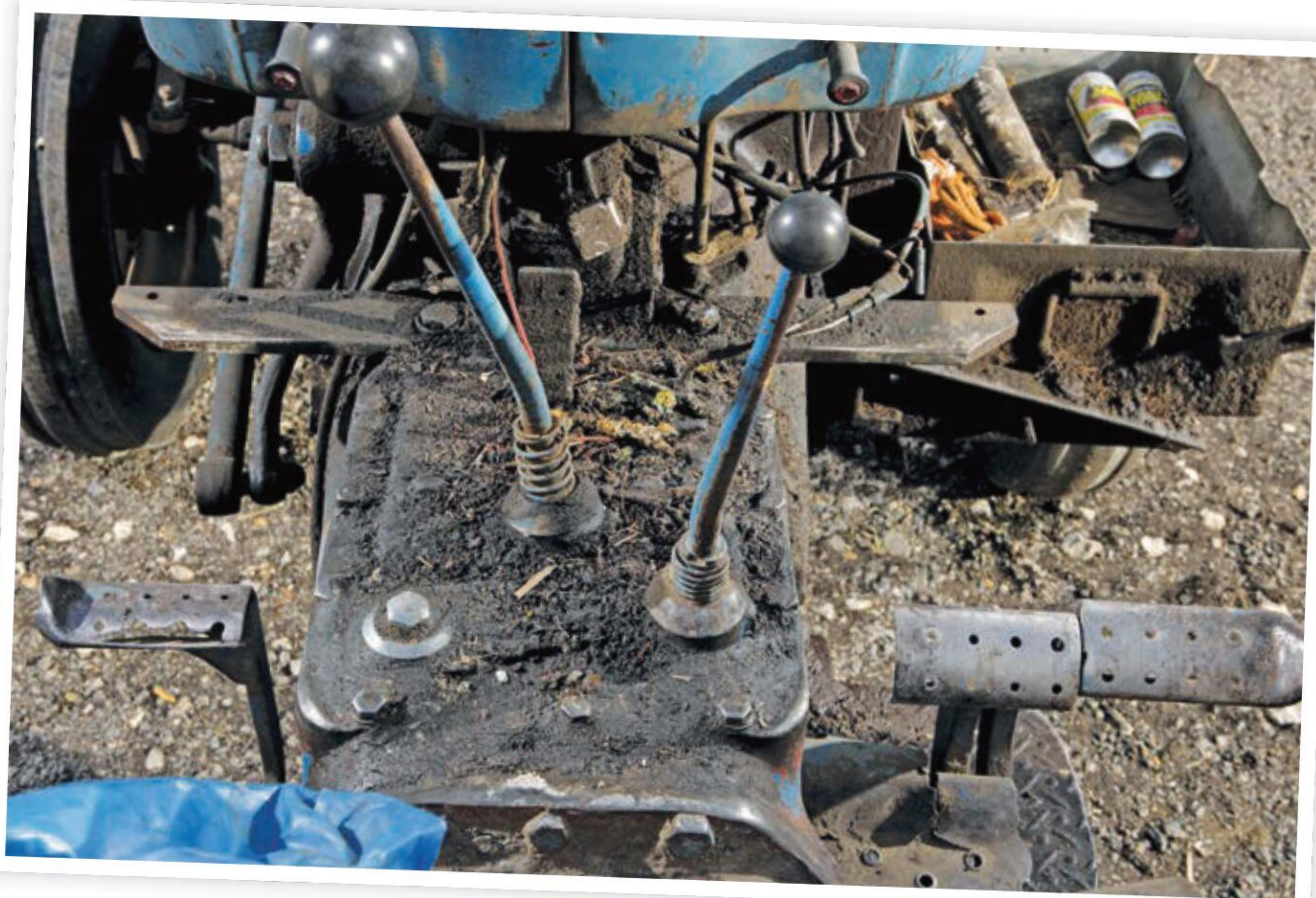
The Lambourn cab, which was on the tractor when new, was fitted to the angled plate just ahead of the gearbox, seen here.

design and lack of complicated electronics and hydraulic systems. A benefit of this has been that any maintenance could be tackled easily at home.

The biggest mechanical problem occurred much later in this tractor's life, when the engine oil wasn't changed for ages and it seized while ticking over, pumping up a tyre. Fearing the worst, David Clements took the engine apart and checked for damage. However, once the shells on the crank were replaced, and the sump filled with fresh oil, the engine burst into life and has been good ever since.

One quirk in design has seen wear problems with the kingpin thrust bearings, which have been a recurring issue. This, together with a rather worn steering box, makes easy steering a Herculean effort these days. A good overhaul in this area to fix the problem is on the horizon.

The only other major failure with the 5000 was the reverse selector on the gearbox. This required the tractor to be split into three, with the engine and diff' assembly being removed from either side of the gearbox, to gain access to the selector and gearbox internals.



The gearbox had a replacement reverse selector fitted some time ago, to correct one of the few problems this tractor has had.

In later life, the 5000 has had a few replacement parts. A Ford 6600 seat has been fitted, this later design giving a slightly better ride. The once silver tin radiator grille and red Ford logo have now been superseded with, again, the black and white 6600 equivalent.

Better stability

A want for better stability and rear end grip was realised by swapping

the standard rear hubs and wheels with some old Claas Matador combine front wheels. A local blacksmith cut and re-welded the wheel stud centres to allow a Claas/ Ford swap to happen, and the 'new' red wheels now proudly sit on the present Ford 4000 forklift, and also on the Ford 5000 featured here.

Even now, at 41 years young, the tractor still starts on the key, with a little help from a squirt of Easystart when cold, wanting nothing more to get it out into the field. Everyone in the Clements clan still holds the 5000 in their hearts, and regards it highly against any of their more modern tractor line-up.

As a friend of the Clements family, I've grown up alongside this wonderful workhorse and still remember, as an excitable seven-year-old, being woken at 5.30am by the distinct and triumphant sounding engine note and scrambling out of bed to see Mr Clements turn at the top of my garden and drop the new plough and tractor into the return furrow of that new autumn's first ploughing. It's a great memory to treasure and keep alongside this farming family's favourite tractor, the 5000. ■



The engine is still original, and fires-up on the key without hesitation.

FORD 7000

The first pocket rocket!

A Ford 7000 had always seemed out of reach for Dave Taylor's collection but, finally, his star tractor was found and restored, with a little brotherly help



When the new Ford range was first introduced, it took me a while to get used to them, after being brought up with the good old Fordson Majors. The new Ford 4000 was the first one I had a go on but, it wasn't until we hired a 5000 to do some ploughing, that the new range from Ford finally started to grow on me.

There was one tractor in that range, though, that I had no doubts about. I'd known that I wanted one from the moment I saw it, and it was the Ford 7000.

First 'Pocket rocket'

This was the biggest tractor in the range and, you could say, the first of the 'pocket rockets'! Rated at 94hp, the 7000 is often described as a turbocharged 5000, but it was always something more than that. You needed to have a full set of weights on or it would spin the wheels on almost every task, and I guess this was when Ford realised that if it continued to increase the horsepower, four-wheel-drive was going to become the only option.

The 7000 was out of my price range when I was farming, and when I stopped in the early 1990s, there were still a few working hard on local farms. However, they were in



The old girl wasn't very appealing when I first saw her, but the '7000' badge on the side was the spur I needed to make Timmy an offer.

demand for export, and so all but disappeared from the local scene as soon as they were traded-in. So, even as a collector in later years, the cheap tractor I was looking for, simply didn't seem as though it would ever materialise.

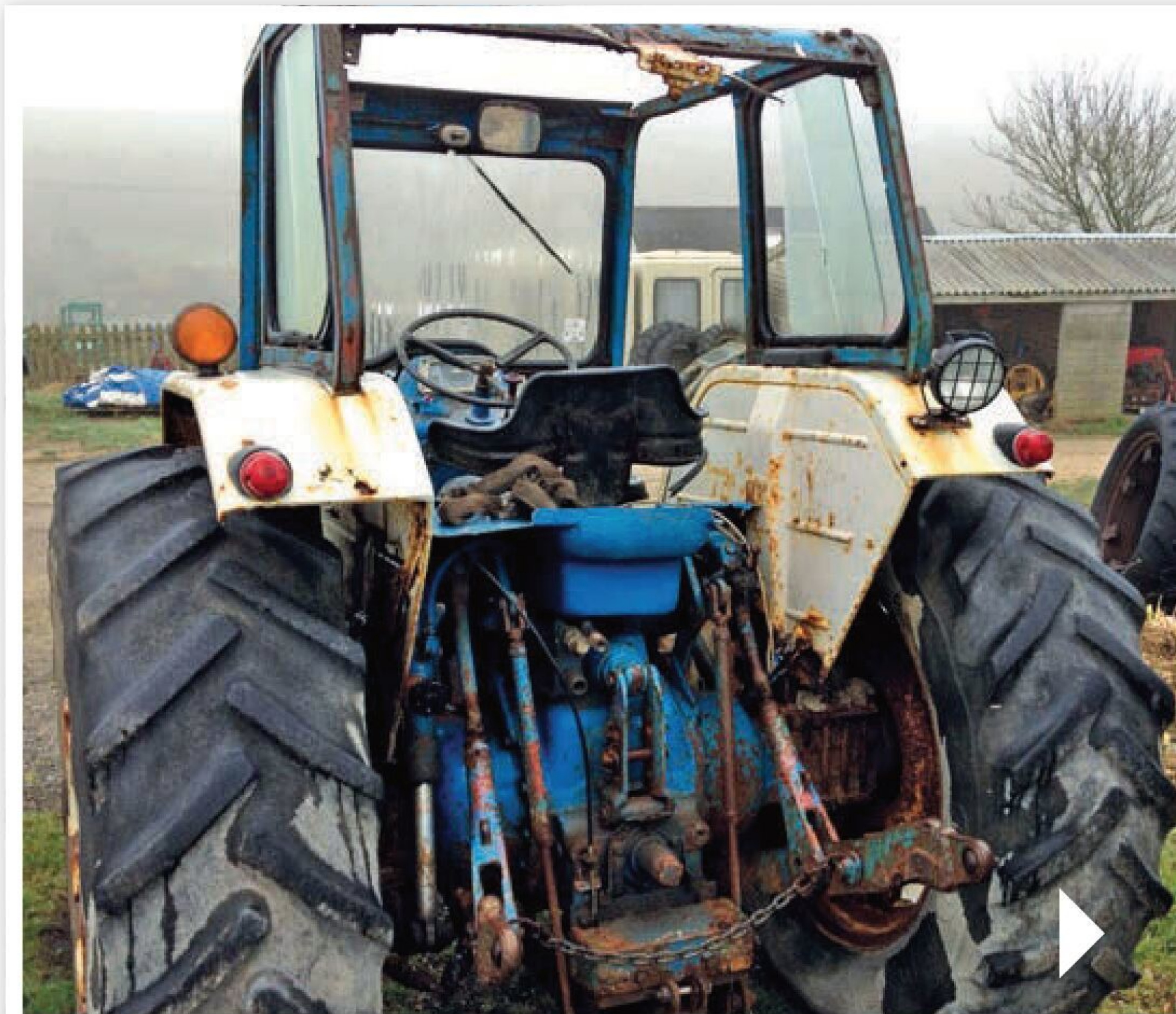
But, patience is a virtue and, nine

years ago, my good friend, Timmy Michell, went out tractor-hunting and returned with the news that he'd found a 7000 - and a County 1124 - for sale in a boatyard, near Wadebridge, in Cornwall. However, the condition of both tractors was challenging. It was Timmy's deal

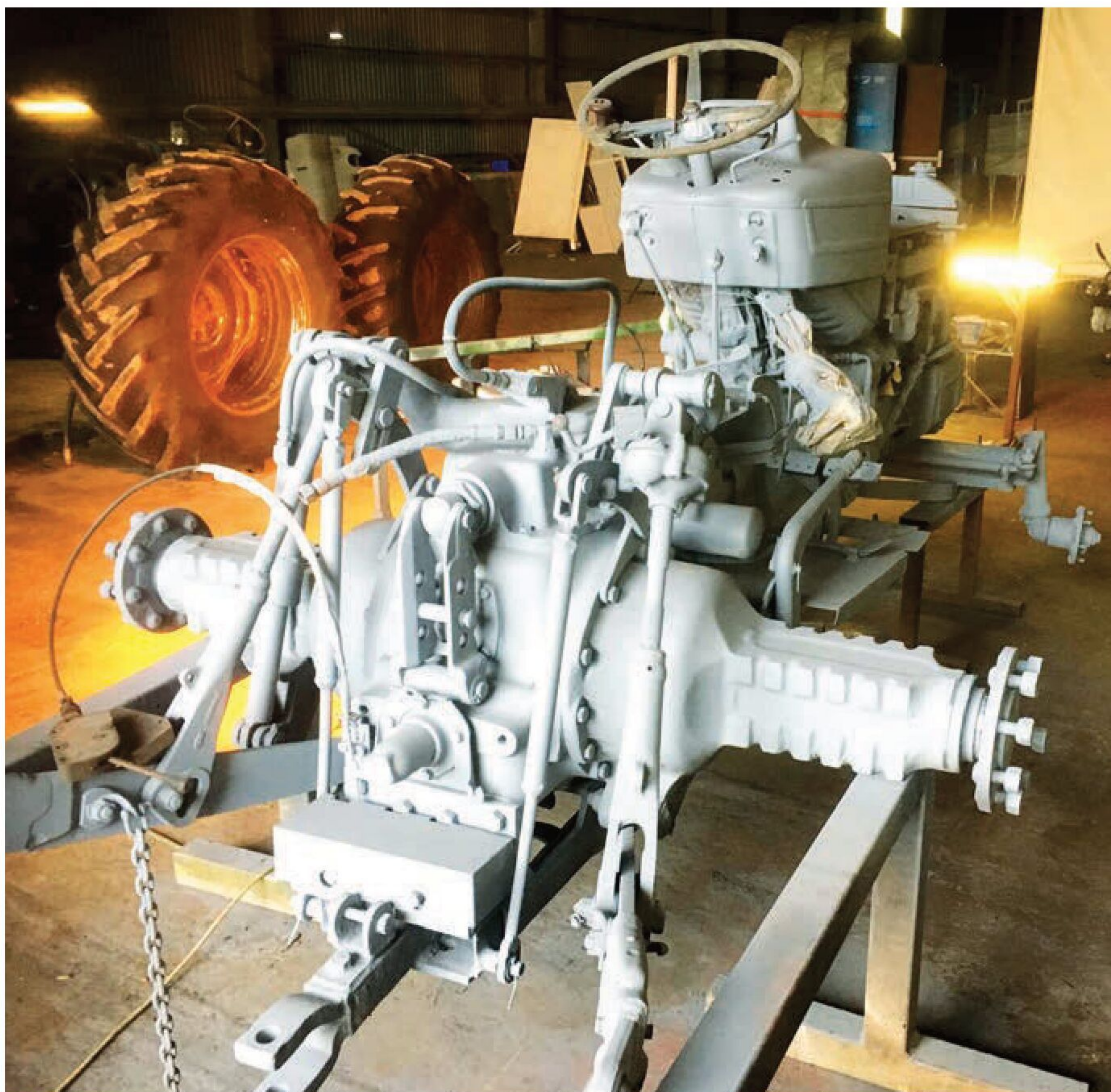


ABOVE: When I got it, the 7000 was in a shocking state. RIGHT: The cab was too far gone to save.

LEFT: The 7000 has turned out well, but I still need to wire-up all the lights and tidy around the edges.



FORD 7000



Several years of service in a boatyard meant the back end was badly corroded; I've chosen to leave the pitting on the back axle as part of the tractor's history.



Graham's team did an excellent job bringing the Ford 7000 back to its former glory: (left to right) Peter, Daniel, Fred the dog, Lucas, Gregor and Graham.

and, as usual, it involved a lot of haggling as well as the part-exchange of a vintage motorbike, before the price was agreed and the tractors arrived back in Timmy's corner of my yard.

Neither tractor excited me, but I knew 7000s were getting harder to find so, in a mad moment, I made Timmy an offer for it. He took about a fortnight to decide and, when he did, I wondered what I'd let myself in for. The tinwork was all in a shocking state; the turbo was off and the clutch was stuck.

Luckily, my brother Graham was coming to Cornwall for Christmas so I decided that, as a special treat, he could help me sort it out! After all, isn't that what brothers are for? We got the tractor into the workshop and that's when we had our first bit of luck, because the clutch freed itself. Once that was working, it was possible to try it out properly and drive it around a bit for a proper assessment.

Decent, mechanically

Mechanically, it wasn't too bad, apart from some rusted-up parts due to seawater contact at the boatyard. But copious amounts of WD40 and the subtle use of a hammer soon sorted most of that out. All that was left was the tinwork.

I bought a few essential pieces from Agriline, so that the old girl was safe to use, and then we squared-up the tinwork so it looked like a 7000 again. I knew there was a lot more to do but, until I'd gathered up some more bits, I was happy to leave it in the shed. We still took it to our local rally, though, and, for a few years, it was the only 7000 on the field. However, at the 2016 St Mawgan Rally, I was busy describing the different tractors in the parade when I saw my 7000 enter the ring, followed by another one!

I knew my tractor was a long way from rally condition, but seeing it next to a nice one made me realise

“It wasn’t until we hired a 5000 to do some ploughing, that the new range from Ford finally started to grow on me”

how rough it looked, and I realised at that moment that it was now time to do something about it. Brother Graham had the solution. He has a team of Polish workers who help him build exhibition trailers and restore Airstream caravans and one of them, Gregor, is a brilliant bodywork man. We took a lorryload of my more challenging tractors up to his workshop in Oxfordshire so, when they had a quiet moment, they’d set about making them look respectable.

There are many opinions about how tractor collections should be kept, and nobody is wrong. If you want to do a full, nut-and-bolt restoration, I say good for you; it’s a good job somebody does! Then there’s the oily rag, original brigade. They’re right as well, and I have some in my collection. However, in this



My brother, Graham, deserves most of the credit for the restoration. This tractor reminds him of a 5000 he once used when he was a full-time tractor driver.



It’s a small world; I’ve discovered the 7000 once belonged to a local contractor – Broom Brothers – and was regularly driven by my good friend, Roger Carhart.

Cornish air, the only real way to stop further deterioration is to get some paint on. I’m not too worried about the odd oil or diesel leak because you can always put more liquids in but, when the rust starts eating the metal, it doesn’t take long for your pride and joy to lose a lot of value.

The final push

Once the 7000 was in his workshop, I had to wait weeks until there was a slot, but then the team attacked it with vigour. Wheels, cab, tinwork and diesel tank were all off within a day, then they set about it with wire brushes to get all the old paint off. The engine and transmission was soon ready for primer, but the cab was a different matter. It was severely corroded and putting it back to rights would be a major task. Luckily, I’d got a cab off a 5000, which I’d half-heartedly put on my 4000, but never finished, so we stole

it back for the 7000, and returned the 4000 back to its original, cab-less state.

Things still needed doing though, with the doors providing the biggest challenge. But it wasn’t too long before the finishing line was in sight. Another order to Agriline got us the final few missing pieces, and the tractor was reassembled.

What a difference to when it first drove into my workshop, four years earlier. It may not be original and, no doubt, the purists will have a field day telling me what I’ve done wrong. But in the real world, I could still sell it and make a profit. Had I done a complete nut-and-bolt job, I’d struggle to find a buyer for what it cost, never mind see a return on my investment. Regardless of anyone’s opinion, what’s important to me is that I’ve finally got the 7000 I dreamed of, and now it’s safely tucked away in my shed! ■

3000 RENOVATION

Feeling the Force!



FORD 1000 SERIES

**Ben Phillips
brushes up on the
tinwork of one
of his favourite
tractor models, the
Ford 3000, recently
rescued from a
life of shunting
caravans**



The tractor's original cowl was so bent and twisted as to be unusable. The towing hitch was used to move caravans.

Working on many different tractors, as I do, there are always some I like more than others and, for me, the Ford 1000 Series models are right up there. So, when Tony Maiklem gave me a ring about his 1969 Ford Force 3000, I couldn't wait for it to arrive! The first Ford 3000 I restored was Alan Braithwaite's early example and, with Tony being one of Alan's friends, it's no wonder this one found its way into my workshop.

By 1969, the 1000 Series Fords were undergoing an update, so this one of Tony's is different to the one I worked on for Alan; the new cowl and grille were the obvious differences on the Force models, and it's this style of Ford tractor that I remember watching drive by when I was an awe-struck child!

New and old

When Tony's tractor arrived with me, it was clear that there had been a

lot of new parts bought and fitted, either by the previous owners or Tony himself. Walking around the machine I spotted a new cowl, grille, fuel tank and wings straight away. The cowl actually came with the tractor when Tony bought it; the original was so bent and twisted that the previous owner had sent a new one.

The 3000 had spent much of its working life in a caravan park, where it had obviously been used for shunting caravans around. The tell-tale give-away was the crudely-mounted towing hitch at the front, and this helped explain why the original cowl had been so battered.

Tony had tidied-up the front end considerably, although he'd left the hitch bolted in place as it provided a useful and strong anchor point. He thinks it'll be useful when securing the tractor on a trailer, on the occasions when he wants to take it

3000 RENOVATION



match ploughing.

The rear tyres were grass-pattern types and slightly on the small side. But Tony explained that they, together with the rims, were due to be replaced. The rubber was to be supplied by Bridgnorth Tyres, which pleased me as I always like a restored tractor on new tyres!

Ideal conditions

Pukka Blast, a mobile sandblaster, arrived on a day when it was dry, sunny and windy, which was great as

LEFT: This is how the Ford Force 3000 arrived; the cowl is a different colour because it's new. The wings were also new, but the rest was original.



The gearbox and hydraulic system seemed to work well and needed no attention; the clutch pedal foot grip had been repaired.



The step plates had been welded-up because, as normal, they were rotten in places; all the new panels had been fitted first to ensure a good fit.



Many of the original engine blocks went porous and so were replaced with ones with criss-cross ribs; this one looks original.



The engine seemed OK, so a simple oil and filter change would be done after sand-blasting. The original paint was interspersed with rust.



Sand-blasting effectively removed all the old paint and surface rust.



Red oxide is a perfect primer coat to start with. Be prepared, though, to use a lot, as a good coat around all the awkward areas is essential.

most of the dust blew away. I then wasted little time in applying a good covering of red oxide primer to the bare castings. A day later, a layer of grey undercoat was applied, to provide the perfect base for the spray-painted, blue top-coat layers.

I always paint the awkward areas in the final colour early on in the process, and start building it back up as much as possible so that no spanners have to go near any painted nuts and bolts, just the zinc-coated ones.

I painted the skid unit on the day I was due to attend a wedding (not my own, I hasten to add!). I finished leaving myself just enough time to get ready and complete the 20-minute drive to the church, where Amy was waiting as a bridesmaid. On the way, I had to frantically rub a smudge of Ford blue off my face

and, during the service, kept finding more bits of blue in various places!

With the skid unit painted, my attention turned to the tinwork. As

some of it was new, there weren't a lot of repairs to make, and all I had to work on was the tank cowl and the bonnet. These were only



Grey undercoat followed the red oxide and, as soon as it was hard, the final colour was applied so that components could start being refitted.



These reproduction wings were of reasonable quality and fitted well. The toolbox was also a good copy of the original.



Tony had bought new tyres from Bridgnorth Tyre Centre, which were BKT 12.4/28; the rims were also new, from Agriline.

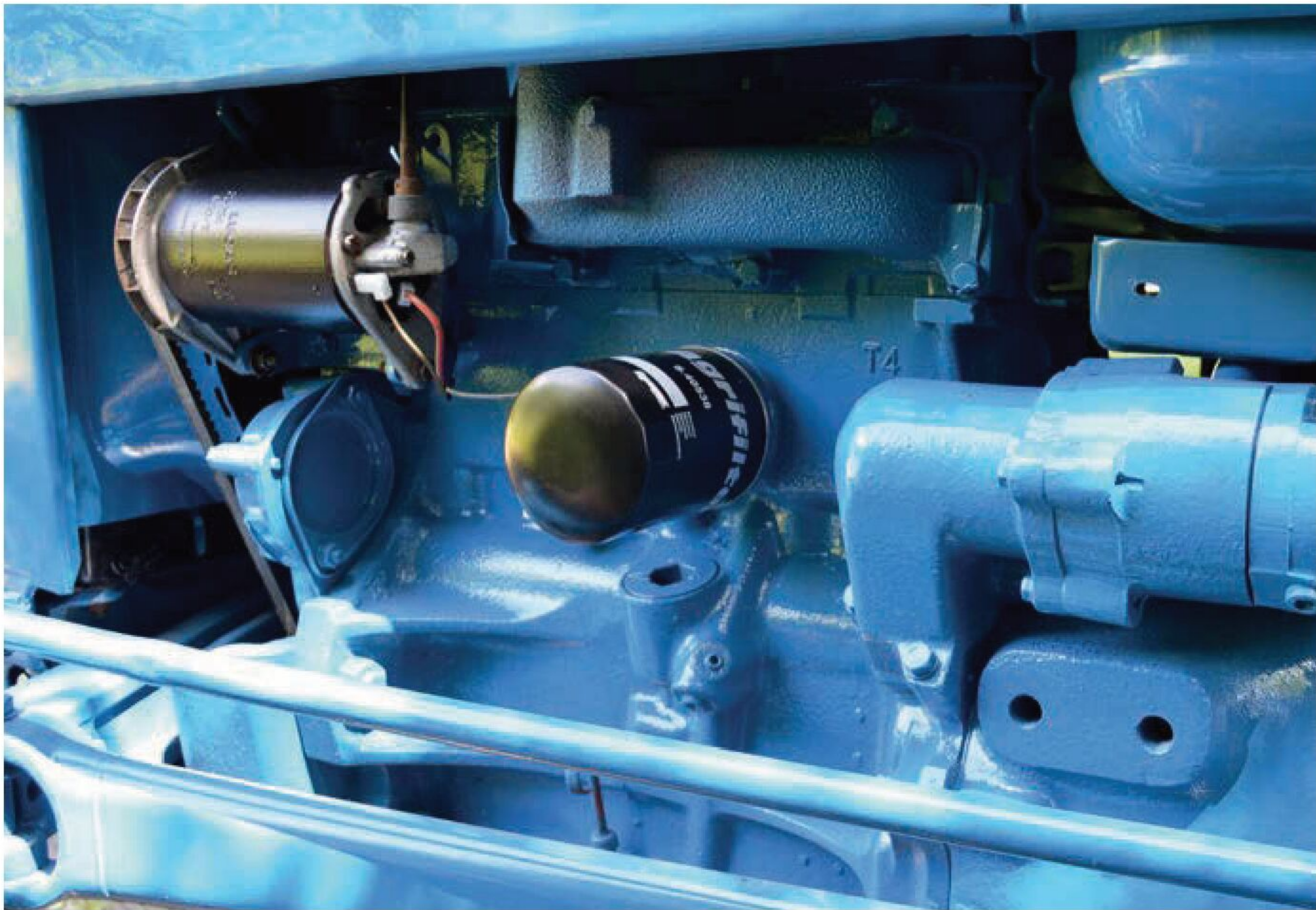


The wings needed very little work once they'd been sand-blasted. Four coats of paint got the finish looking right. The lights are exact copies of the originals.

3000 RENOVATION

suffering with minor ripples, so didn't take long to smooth out. Once all was ready, I applied four coats of Ford blue to all the panels; two were done first, then the whole lot was rubbed down carefully before the final two went on top. Although I always use Vapomatic paints, some colours give better results than others and, fortunately, Ford blue is one of the best.

Re-assembling a tractor after it's been painted takes both care and patience; it's all too easy to accidentally cause a chip here or a scratch there. However, seeing a tractor gradually come back together is always the most rewarding part of the process, as far as I'm concerned. ■



A new oil filter was supplied by Sparex, while the black-painted dynamo stands out from all the blue.



A new Sparex fuel filter was fitted and, like the dynamo, the starter was painted black. The CAV rotary pump had replaced the Simms unit found on the earlier 3000.



The repaired foot plates looked OK and, when located to the wings via the three bolts, made a sturdy place to step on to the tractor.



Not one for the purist! This non-genuine seat came with the tractor. Although it's comfortable, Tony now thinks that he may replace it with an original-style version.



LEFT: The original clock still worked OK. I masked it up and repainted the outer casing, which made it look like new. The gear selection decal beneath was new and really looked good.



The Ford Grey wings look great against the Ford Blue; this tractor was fitted with two levelling boxes due to it being used for match ploughing.



G&W Lea Ltd in Nantwich supplied the tractor originally; it's a nice touch to have a dealer badge still attached.



The new cowl, headlamps and grille make for a great-looking front end. The lower towing point (see pic on page 87) was left on as it helps anchor the tractor when on a trailer.



New decals were applied to the whole length of the bonnet.



'Ford 3000' is splashed in big, red letters and stands out well. New chrome latches were also fitted.



The Ford 3000 looks very neat in this side view. The extra step you can see is to help Tony get onto the tractor.



Andy Selfe advises on the do-it-yourself repair of a Ford 3000's faulty gearbox

The call came from a farm with the news that their Ford 3000 tractor's gearbox was making expensive noises, and that they'd carefully towed it back to the shed and put it away. I had to drive it back and forth in the shed to see what they were talking about.

From the left-hand rear wheel there was a terrible noise every turn, which

was quickly diagnosed as being a loose wheel weight. Could that be all? If so, it was a wasted trip. No, there was more of a noise from the gearbox itself, sounding very much as if it was being caused by a broken-off tooth.

I removed the gearbox cover to reveal that the oil was badly emulsified with water, but no teeth seemed to be missing there. In this section one can

see gears one to three and reverse, but 4th is at the bottom, at the back. The noise was particularly bad in 4th, I was told.

I jacked up one rear wheel and ran the engine with the gearbox in each gear in turn. As they suggested, fourth was indeed the noisiest, but the sound was audible in all the gears. In reverse, there seemed to be a variation in the



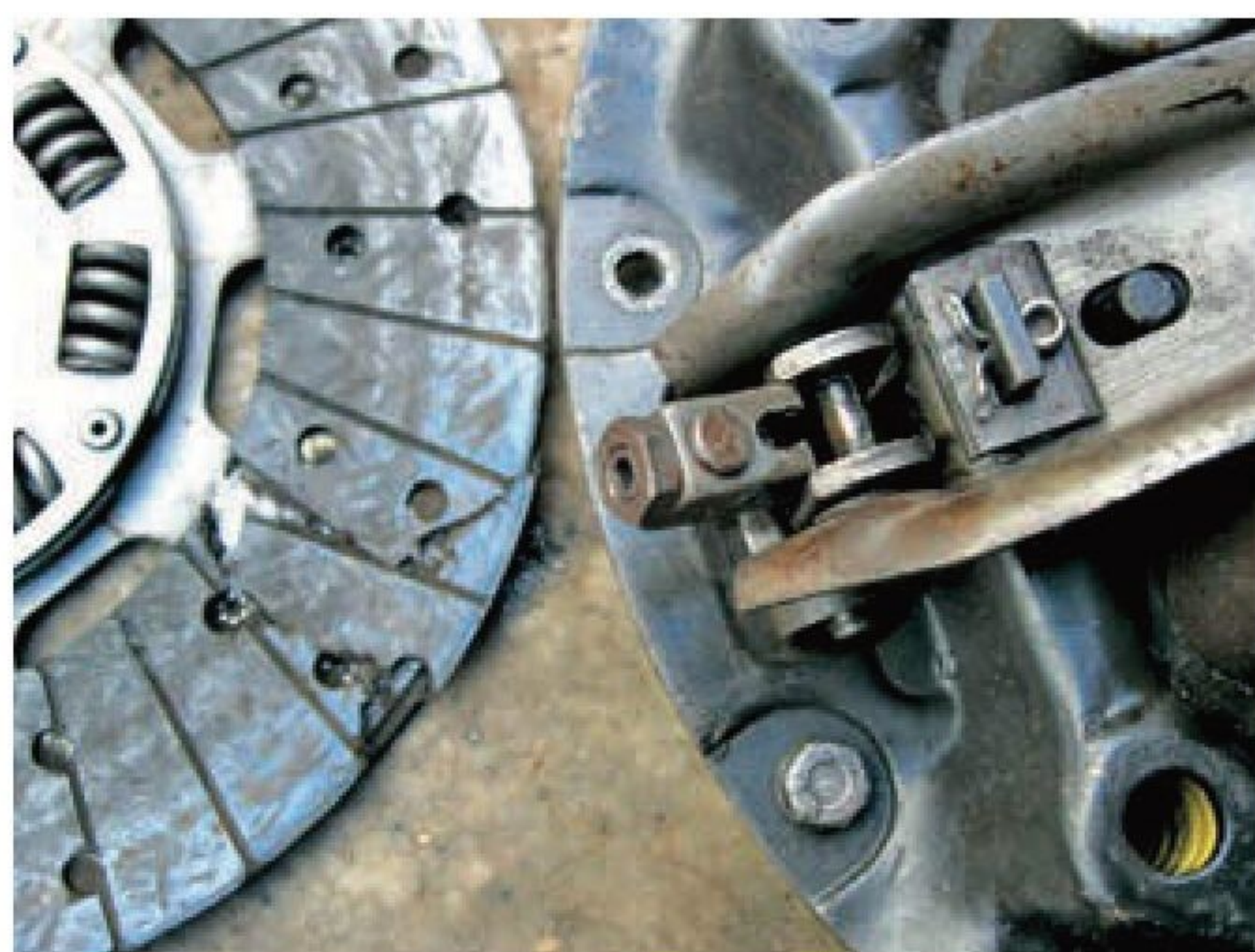
Testing the gearbox in each gear, listening for the source of the noise. The oil is badly contaminated with water. Split sleeves, held in place with hose clamps, can be seen on the selector rods to prevent them from moving too far. This was a temporary repair carried out several years ago.



One rear wheel is jacked up to allow testing in each of the gears. The noise seemed to come from between the gearbox and the diff housing, where the high-low reduction gears are.



The pinion wasn't loose, so the problem must be from the high-low reduction gears which are not accessible unless the gearbox is removed from the differential.



The ends of two of the three clutch fork links have broken and swung outwards. How the clutch still worked is a mystery! The lining of the driven plate has started breaking off, probably from coasting downhill in a low gear, with the clutch pedal depressed.



The hollow PTO input shaft and its housing have been removed, then the large, round cover. The special circlip and oil thrower were loose on the shaft, having been held in place by the PTO input shaft.

speed of the wheel and, after a short while, the gear would slip out of mesh. I thought the noise might be coming from the crown wheel and pinion; maybe a loose bearing on the pinion?

It seemed to be a good idea to disconnect and remove the hydraulic lift cover, to see whether that would expose any problems. But this simply confirmed that there was nothing wrong with the pinion or the crown wheel. Listening carefully as the gears turned, the noise seemed to be coming from between the gearbox and the differential housing, in the high-low reduction gear section, which has no inspection cover.

So, the decision was taken to



The splitting jig makes it easy to roll the tractor apart for access to the clutch and, in this case, to remove the gearbox from the differential housing.



A forklift was the ideal tool for removing the gearbox from the differential casing. We supported the differential with a jack, took the weight of the gearbox with suitable spacers to level it and, after the last bolts were removed, operated the side-shift and it came away.

split the tractor, first at the clutch, then between the gearbox and the differential housing. First the oil was drained and discarded; it didn't look good, anyway! Then the rails could be fitted and wedges knocked in at the front axle.

After disconnecting all wires, pipes and linkages between the front and rear of the tractor, the bell-housing bolts could be removed and the

tractor pushed apart. How the clutch still worked is a mystery, but the PTO clutch links had worn through or broken on the inside, and had swung outwards, waiting for an opportunity to hit the bell-housing and then what? So, a new or possibly reconditioned pressure plate was added to the 'parts needed' list!

With the pressure plate removed, another surprise was in store; the

GEARBOX REPAIR



The hydraulic pump was modified years ago to work with threaded nipples instead of push-in pipes. Hydraulic hoses have replaced the steel pipes.



Two different-sized steel balls and the broken clip of a captive nut were found in the bottom of the differential casing, after splitting the gearbox off.



Driving the front PTO shaft out towards the rear, leaving the large input gear and bearing behind.



The whole gearbox is hanging from the forklift, with a bucket underneath to catch the remainder of the old oil and the paraffin we used to wash it out thoroughly.

LEFT: Flat-ended circlip pliers are used to open the retaining clip for the PTO dog clutch driving hub. The flange for the reduction box output gear bearing above has been removed already.

lining had started coming off the driven plate. I suspect the plate was over-revved by coasting downhill in low gear, with the clutch pedal depressed. The driven plate, which is meant to run at engine speed, compressed by the pressure plate, can end up spinning many times that speed, driven by the rear wheels through the gearbox, with no clamping action from the clutch. This causes the lining to fly off!

The clutch release bearing, fork and shaft could then be removed, for access to the front cover and the PTO

step-down gear pair. The remains of the bushes in the bell-housing fell out when the fork shaft was extracted. More for the shopping list!

With the big, round cover off, the PTO input hollow shaft and pinion could be removed. That exposed the gearbox primary pinion, showing that the circlip had jumped its groove a long time ago, and it and the oil thrower were rattling around, only held in place by the PTO input pinion.

There wasn't much more to do in the front (it's only on the Fendt Einman - to my knowledge - where the entire



One tooth of the 30-tooth gear at the rear of the gearbox top shaft has chipped, and the piece is lodged in the valley, two teeth along. This is what was causing the noise!



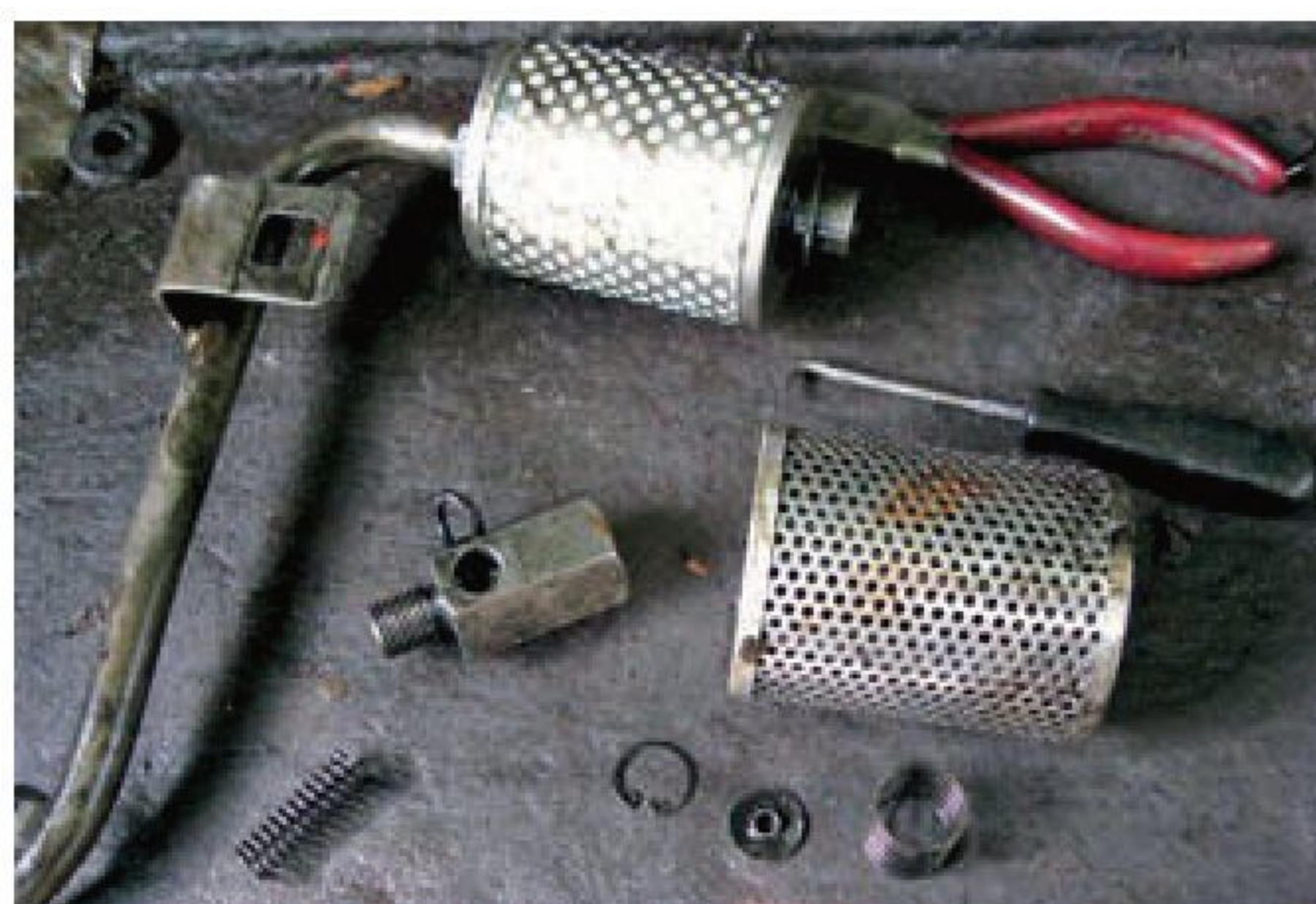
The two filters are refitted to the casing after cleaning it spotlessly. At this stage, new seals should have been fitted to the brake shaft passing through the casing. Both ends sweated slightly when all was assembled. The PTO sliding dog, selector fork and output shaft could then be refitted.

gearbox can be withdrawn at the bell housing, all in a sub-assembly!), so the next stage was to split the tractor again at the back of the gearbox.

The foot-rests had to be loosened off the bell-housing and, because the hydraulic suction and pressure pipes hug the right-hand side of the gearbox and bell-housing, it was better to remove the right-hand foot-rest entirely, to take off the pipes. I should mention that we had long since modified the rather dubious method of attachment of both pipes at the pump, substituting hydraulic hoses



The primary pinion bearing is retained by a circlip in the housing, and the shaft is held in place in the bearing by a special circlip and oil-thrower. The circlip had come out of the groove and the thrower was loose on the shaft, held more or less in position by the PTO input hollow pinion.



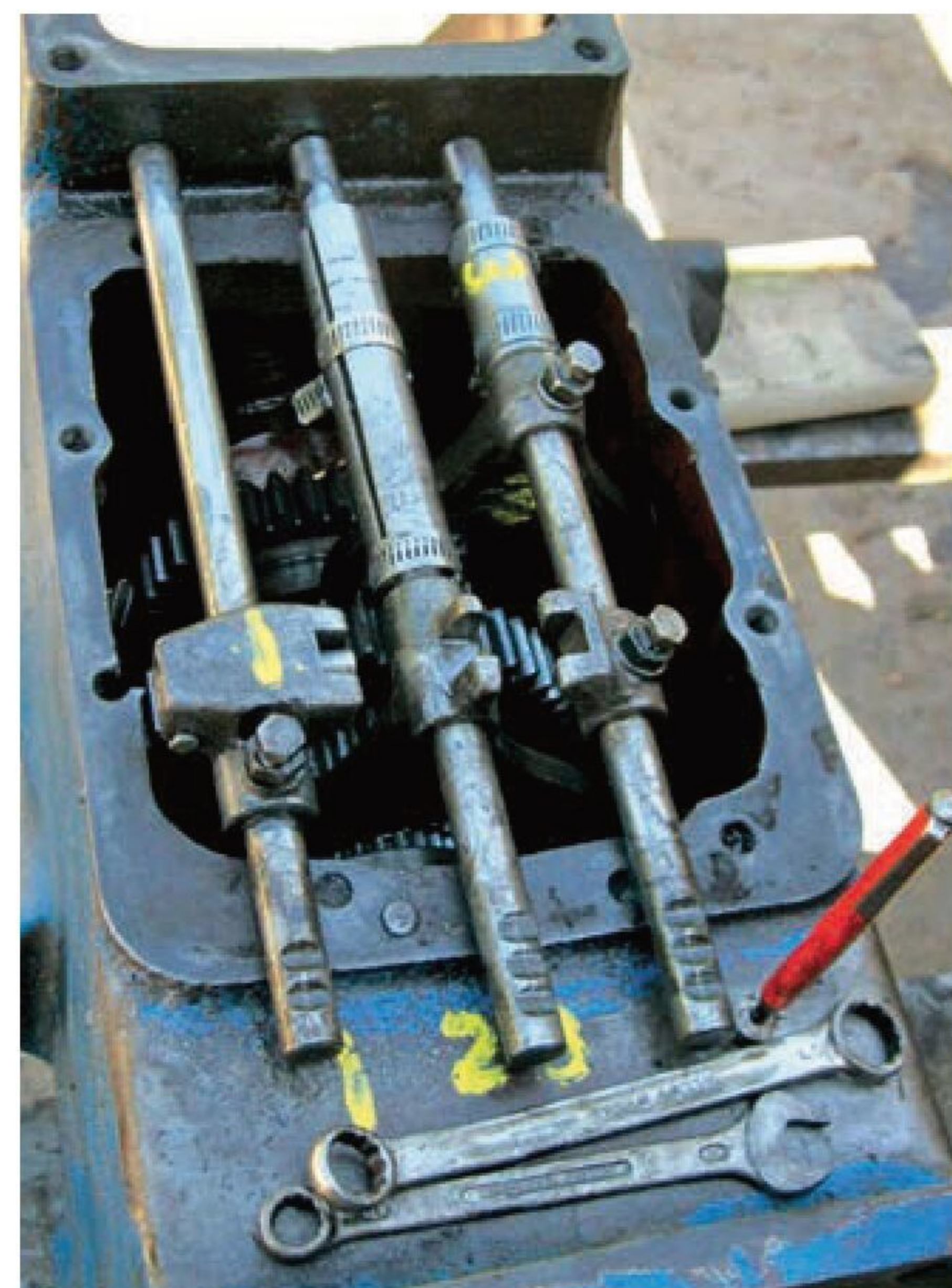
An O-ring was stuck in the relief valve of the small filter.



Tightening the locating screw of the selector on the middle shaft is tricky; it's fitted from underneath and once it's tight, the lock-nut must be secured. It helped to have a selection of bent spanners!

and threaded nipples.

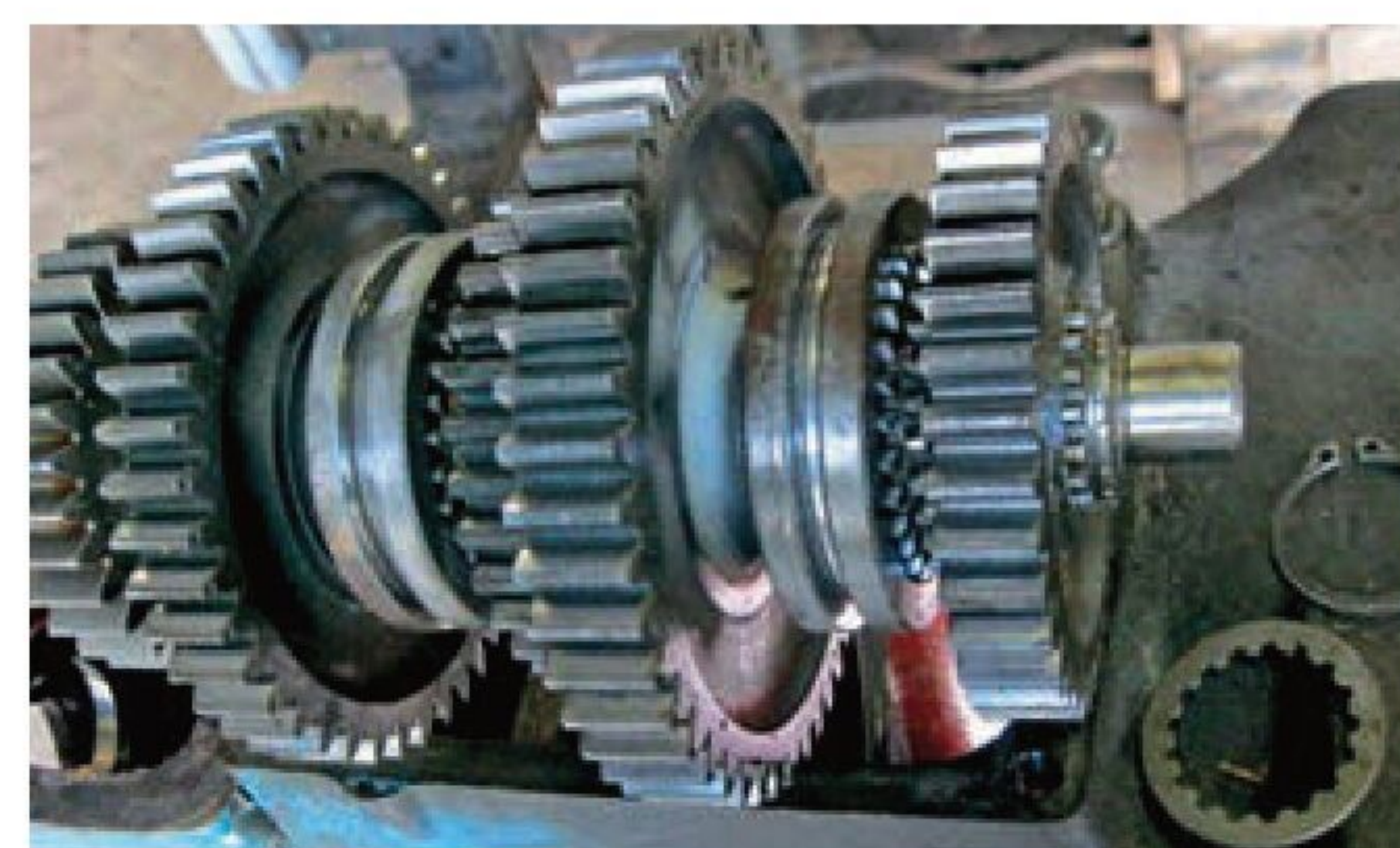
With a jack under the differential housing and a forklift under the



The three selector shafts and forks are loosely reassembled and numbered. The split sleeves were fitted years ago to limit rod travel.



The main hydraulic pick-up filter was badly blocked! We couldn't get a new one, so this one was cleaned thoroughly.



Testing that nothing was missing from the assembly on the new output shaft. With all the gears and thrust washers, plus the new splined spacer, the circlip just snapped into the groove.

gearbox, the bolts could be removed at the joint of the casings. Carel just side-shifted the forks and the gearbox

GEARBOX REPAIR



LEFT: Driving out the bearing cup from inside the end of the output shaft, with two punches.



The old, back-to-back seal on the upper housing has to come out towards the larger of the two bearings. It cannot pass through the smaller bearing.



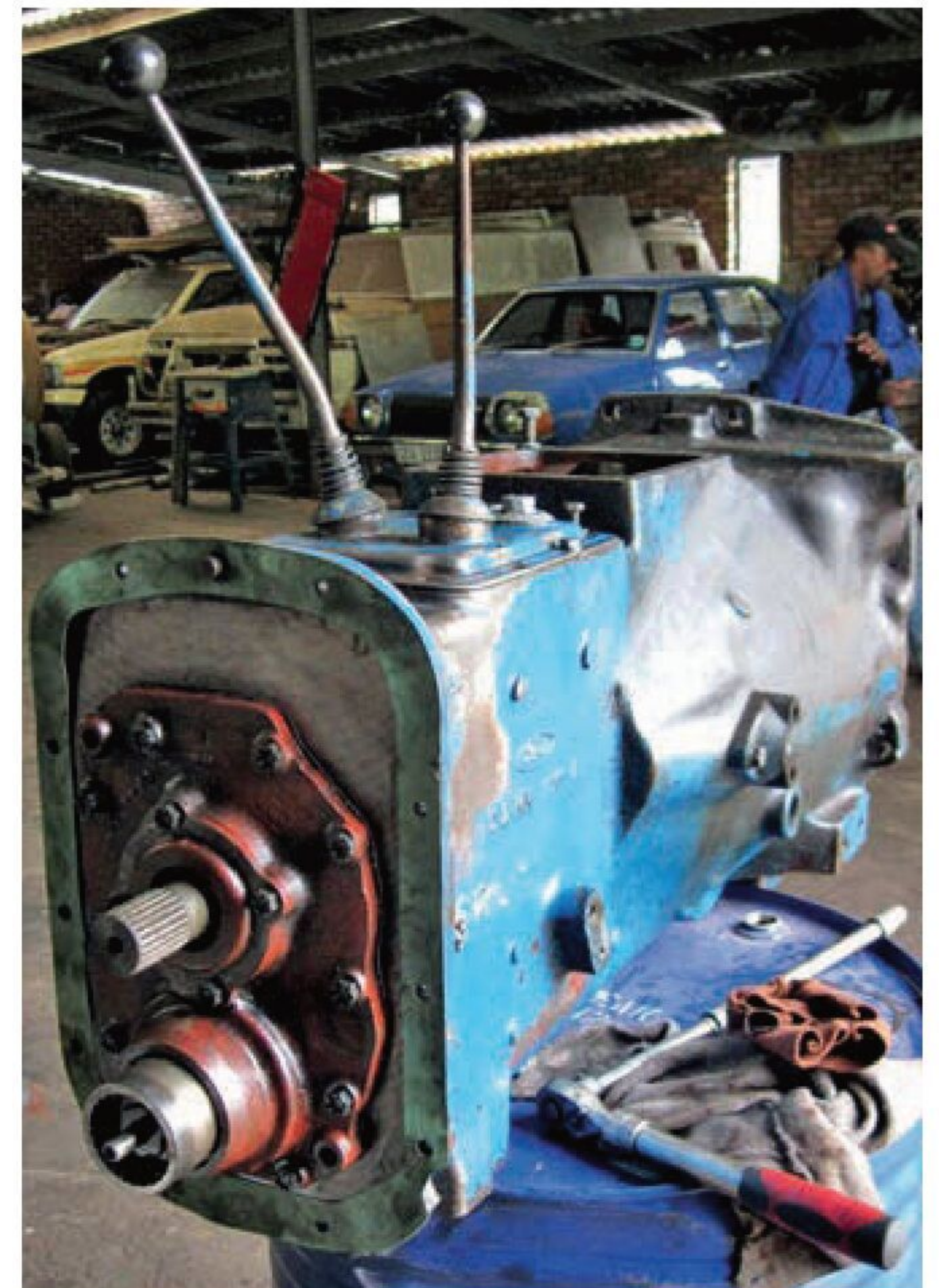
The upper bearing flange has shims with which the play on the output shaft bearings is set. In this case, with all the shims removed, the bearings felt just right! The PTO front shaft could be refitted, remembering first to fit the large gear into the bell-housing, followed by the output driving dog and circlip.



The tell-tale hole to show when the outer seal in the release bearing support tube housing is leaking, is handy to punch the old seal out.



The reduction box output shaft is refitted, followed by the rear cover.



The gearbox is now ready to refit to the differential. A new gasket is glued to the rear face of the 'box.

was free, and could be driven away.

Wedged in the bottom of the differential housing was another surprise; two different-sized steel balls, and the broken cage of a captive nut.

To remove the rear cover of the reduction box, a circlip has to be removed from the PTO sliding-dog clutch collar below and at the top, the flange for the taper roller bearing at the back of the reduction box output shaft.

Once the rear cover is off, the PTO shaft can be driven out to the rear, leaving the front bearing and the large gear behind at the front.

To remove the input shaft/primary pinion, it was only necessary to remove a circlip in the casing around the bearing and to pull hard. It isn't

necessary to lower the layshaft as it is in so many gearboxes. As usual, the needle bearing between the primary pinion and the output shaft fell apart in the process. There are 14 slots in the cage; we counted 15 rollers when we'd cleaned them all out!

The selectors and shafts are always in the way, so we dismantled them next. I was careful to catch the balls and springs when the shafts came out. It was easy to see why the gears weren't staying in mesh, and why the gearshift felt so 'soft'. The springs were rusted off, so the pressure on the balls was too weak. Maybe the travel-limiting split sleeves made and fitted years ago and held in place with hose clamps, can be dispensed with when new

balls, springs and the correct plugs are fitted.

I was surprised to see no drilling in the middle selector rod, with a short pin to push the lock-out shuttles across to the left or right, to make sure that when the gears selected by the left-hand rod (1st & 3rd) cannot engage when 4th is engaged, and vice versa.

On the front of the output shaft there's a circlip to remove, then a spacer with an internal spline. Our spacer was in pieces in the bottom of the gearbox! This gave the gears on the output shaft several millimetres of longitudinal play. Then all the gears come off, along with thrust washers as the output shaft is withdrawn towards the rear.

Only then could we see where our noise was coming from! A piece of tooth had come off the output gear and was lodged in the root of the gear, two teeth away! Actually, the piece was easy to chip out, but we couldn't see it from the outside; the reduction box is enclosed. Anyway, we don't want to re-use this output gear and shaft. Who can say whether another piece won't break off?

Inquiring at the spares shop, the price for a replacement shaft with its gear was so reasonable that it was ordered without even referring the decision to the owner.

We decided to leave the lower shaft in place, as it didn't seem as if there were any problems with it. With the forklift, we suspended the gearbox from the bell-housing and washed it thoroughly and wrapped it to prevent dirt getting in while we waited for spares.

When the parts arrived, (just the shaft, splined spacer, seals, filter, gaskets and overhauled clutch), I returned to the farm. I had asked Carel to wash out the diff' casing, but he couldn't get the filters out and there was a lot of muck at the back. The smaller filter was available, so that could be replaced, but in removing it, I found an O-ring stuck in the relief valve.

The suction strainer probably hasn't been removed in many years and looked like it. One has to remove the PTO shaft and sliding dog before the assembly comes out. We couldn't get a new one, so resorted to washing the old one.

With both filters out and the diff' casing angled downwards, it was possible to spray out the casing until it was spotlessly clean. The filters could then be refitted, followed by the PTO output shaft, sliding dog and fork.

I'd decided to re-use the bearings, so the large taper roller cone had to be removed from the old output shaft and transferred to the new one. Two levers did the trick. There is an internal taper roller cup inside the end, and two holes are conveniently placed to



New balls, springs and spacers will ensure the correct amount of resistance on the selector rods.

drive it out.

I could then assemble all the gears, thrust washers and spacers onto the new shaft, to check there were no missing components; another thrust washer, perhaps? But the circlip just snapped in after the new splined spacer; broken parts of the old one had been found in the bottom of the gearbox.

Once I was happy with this, I could refit the top shaft to the gearbox, followed by the gears and thrust washers, the new spacer and circlip. With a new needle roller assembly installed, the primary pinion could be refitted and held in place by its circlip in the bell-housing. I couldn't get a replacement circlip for the shaft and oil thrower, so that had to be re-shaped and refitted back-to-front.

Selectors followed... the middle fork has a locking screw fitted from underneath, and it helps to have some bent spanners!

These Ford tractors are known for having separate oil in the gearbox and diff' housings. Between the two are back-to-back seals on the top and bottom shafts. The lower one is



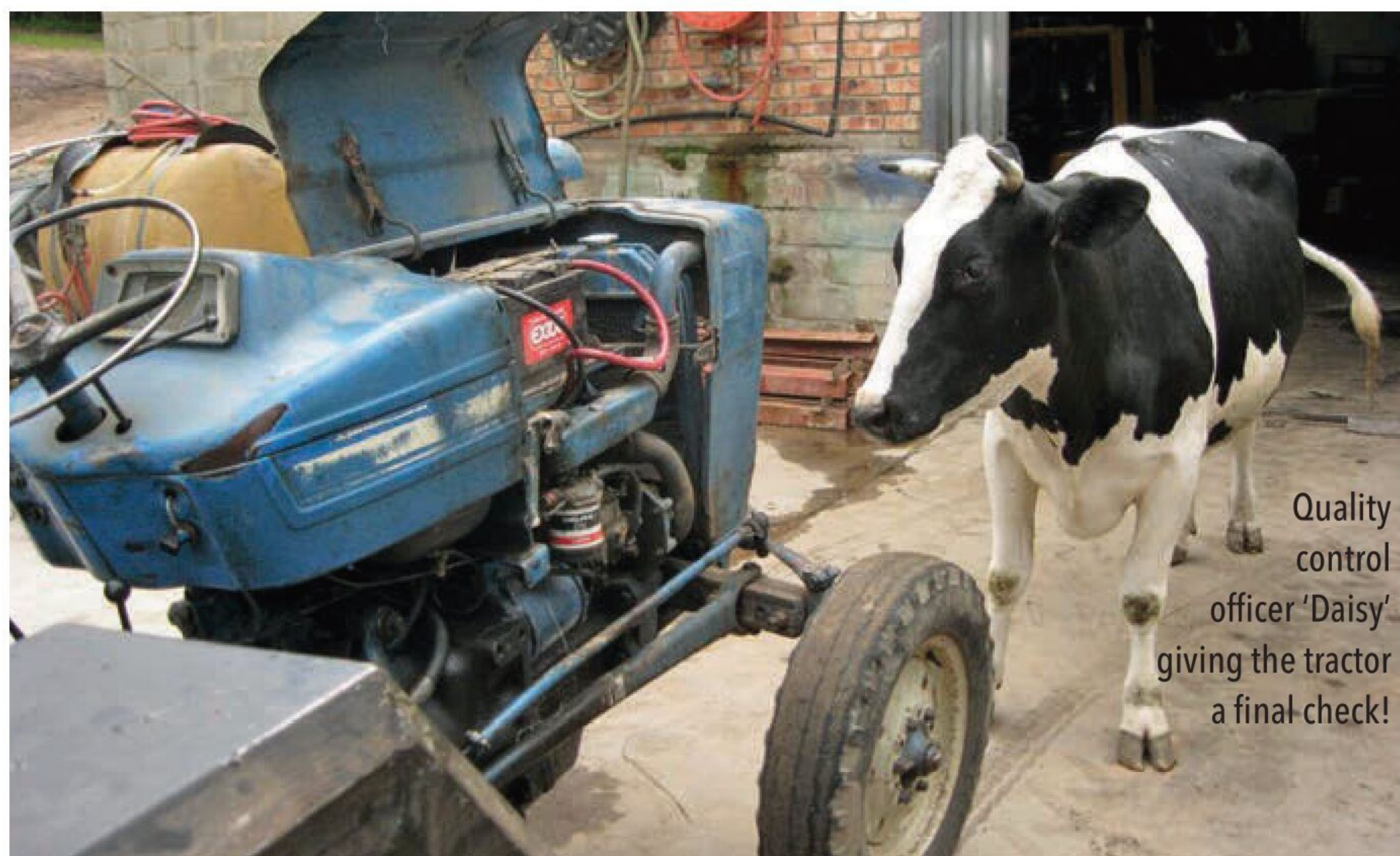
New bushes were fitted to the bell-housing before refitting the clutch shaft, fork and release bearing.

between two bearings and it helps to note that the seal has to be removed towards the larger bearing; the bore of the smaller one is less than that of the seal, as I found to my cost! The old ones were also very tight in their housings!

The high-low reduction gears are then fitted to the back of the gearbox, followed by the cover with the two seals. The loose flange with the upper seal in it has shims to set the output shaft bearings. In this case, with all the shims removed, the play on the bearings disappeared and the beginnings of pre-load could be felt.

At the front of the gearbox, the round cover could be refitted. New seals went in to keep the oil off the clutch; one inside the PTO input hollow shaft, the other in the support tube housing for the release bearing.

All new balls, springs and spring-tensioning spacers were fitted. These will position the gears properly in mesh. Before refitting the gearbox top cover, each of the holes was cleaned out and a 3/8" UNC tap was used to a reasonable depth. I made a thick gasket and used several new bolts. ■



Quality control officer 'Daisy' giving the tractor a final check!

NEXT ISSUE – DON'T MISS IT!

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