

Scraper tractor service:

## Give the old girl a birthday



*It's time to see if there still is any machinery left inside that mobile ball of poo, as Andrew Pearce sets out to service the farm's trusty scraper tractor*

**A**t the considerable and real risk of being tracked down by a posse and hung, it's fair to say that most dairy farmers (and herdsmen in particular) are not noted for their inbuilt desire to cherish machinery. So it is that some small tractors, having led entirely blameless lives elsewhere, find themselves press-ganged into scraper duty and then largely ignored until something breaks or falls off.

**Older, smaller models – usually from MF and Ford – are ideal scraper candidates.** Able to slot into tight shed passageways and turn on the proverbial sixpence, they are above all simple and tough. But certainly no longer cheap, as collectors and others with deep pockets are keen to snap them up. Service work is simple and parts are readily available; so before the cows come back in and your old scraper tractor goes back to hard labour, why not give it a pre-winter treat? Here we run through the main points on a MF135, although the principles apply just as well to any similar brand and model.



*Scraper tractors come in all shapes, sizes and vintages – from, say, a tidy MF352 to a 135 that has clearly seen better days. Our detailed pictures refer to a typical 135 service, although the same basics apply to other makes and models.*

### SECTION 1: OILS

*The MF135's engine takes around 7 litres of good-quality SAE 15W-30 engine oil or the equivalent Universal. Caution: Wear suitable protection when dropping the old oil and replacing with new. Nitrile rubber gloves are good, though a double layer of the dairyman's latex variety will do*

*With the engine warm, drain the old engine oil and take off the filter. This may be a spin-on type as here, or a steel bowl with an internal cartridge. To undo the spin-on sort you'll need a strap wrench or similar; for a bowl design, a spanner. Collect the washer and spring which should be in the bowl, below the filter element.*

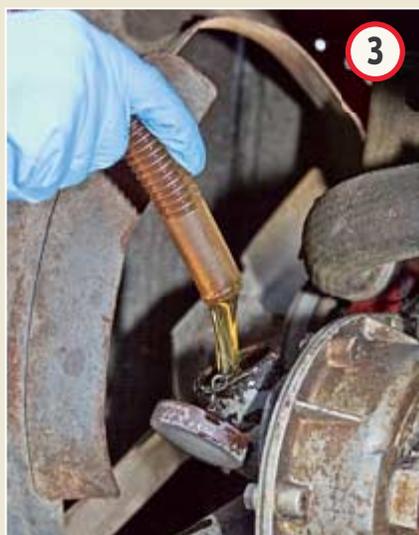


*First find the tractor. A thorough wash-off makes servicing much easier, plus you can see any damage. Include the tyres as you'll be working close by them.*





When replacing a spin-on filter, wipe a little clean oil round the rubber top seal and hand-tighten it until the seal just contacts the housing. Then give it half a turn more. With replaceable-element designs, clean the steel bowl thoroughly. New seals should be in the box. Prise out and replace the seal that lives up inside the filter head: The arrangement will be similar to the fuel version shown in picture 10, but without the small central seal. Pop the spring and then the washer into the bowl. Renew any seal on the holding bolt, drop in the new filter cartridge and replace the bowl. Tighten the holding bolt a little, making sure that the bowl is properly seated in its housing. Then nip it up.



Give the sump plug a new copper washer, or if the old one is in good order, soften it by heating to cherry red and quenching in cold water. Replace the plug. Add fresh oil until just past the 'full' mark on the dipstick to allow for filter volume, then fire up the engine and check for leaks. Recheck the dipstick and top up.



Transmission dipstick lives on the offside of the tractor, just ahead of the back axle. Oil should be up to the mark. If not, top up with a big-name brand Universal.



Add transmission oil through this big plug on top of the gearbox.

## Next month

In the January '09 profi issue, Andrew Pearce provides tips on ATV servicing.

## SECTION 2: ELECTRICS

*The battery needs to be in good order to face a winter without fading, and be able to crank the engine effectively when bleeding the fuel system during service. The engine may carry an alternator or a dynamo. Dynamos don't supply as much charge at low revs as alternators, which is something to keep in mind if the tractor is used gently or not very often*

Clean straw and crud from between the battery terminals; a film of oil or dampness encourages battery discharge. Disconnect the battery leads. Caution: Take off the negative side first, then the positive. Melt any greenish-blue corrosion from clamps and battery posts with hot water. Clean the posts until they are silver-grey and coat them with Vaseline, not grease. If the battery has removable cell caps, check the electrolyte level and top up to above the internal plates with clean distilled water. Replace the lead clamps (+ first, - last) and coat their outsides with Vaseline. Charge the battery as necessary.



The dynamo or alternator drive belt needs to be in good order and tensioned properly; around 19mm (3/4in) deflection mid-way down a long belt run is good (7a). Slacken the unit's top pivot bolts a little, loosen the single anchor bolt underneath and swing it to adjust. Use a voltmeter or the tractor's ammeter to confirm a healthy charge (7b); a voltmeter connected between the battery terminals should show 13.5V-14.2V at medium rpm.

## What's needed to do the job

The simplicity of most scraper tractors means you won't need much kit or time. Half a day will comfortably see a service done, given a set of spanners and sockets, a filter wrench, a grease gun, some engine oil, a set of filters covering fuel, oil and maybe air, an airline for the tyres and a pressure washer. There is a healthy spares aftermarket for most older tractors. If your local Ford or MF

dealer can't get a part, ask a specialist. Massey Ferguson owners are particularly well catered for. Try: Friends of Ferguson Heritage Ltd ([www.fofh.co.uk/yellowpg.asp](http://www.fofh.co.uk/yellowpg.asp)) Vintage Tractor Company ([www.thevintagetractorcompany.co.uk](http://www.thevintagetractorcompany.co.uk)) Old 20 Parts Company ([www.old20.com](http://www.old20.com)) Fergiland.com ([www.fergiland.com](http://www.fergiland.com))

SECTION 3: FUEL SYSTEM

Depending on the tractor, the fuel system may have a tank outlet tap, a sedimenter bowl before the lift pump, a lift pump, one or two filters and the injector pump. After changing the filter(s), manual bleeding is needed to chase air from the system. See below for tips on how to do the job



Before changing fuel filters, turn off the tank tap. If the tractor has a sedimenter – a primary dirt/water trap, usually with glass-bottomed bowl – clean it now. Tighten the glass bowl firmly as you don't want any air to be drawn in later. Then undo the filter(s).



Wriggle off the old filter element(s). Take a look inside each base and clean out all the crud; these were dire.



The filter head has two seals (arrows) which must be replaced, partly so the filter is not bypassed and partly to head off leaks. Replacements should come with the new filter; the bigger-diameter ring goes in the filter head. Grease the fresh seals and install, making sure neither is twisted. Grease holds the big seal in place.



Fit the new filters, using the smaller square-section ring seal between filter and base. Tighten the holding bolt firmly, but don't go bananas or you'll do damage.



Open the tank tap. Open both injector pump bleed screws and work the lift pump's manual lever (arrow, 12a). If you feel no resistance as you work the lever, even at the end of its stroke, kick the engine over very briefly on the starter; you should then feel resistance. If not, try again until you do. Pump away until bubble-free fuel arcs from the bleed screws, as above. Ideally have someone gently tighten the screws as you pump; this avoids drawing air back in. Or stop pumping and tighten the small screws yourself - but not too tight.



Start the air-bleed procedure by finding the lift pump (a) and injector pump bleed screws (arrows, b). On a 135 the lift pump is on the offside, the injector pump on the near.



Follow each injector pipe up past the exhaust manifold; you're looking for the union nut where it joins the injector at cylinder head level. Using a short spanner, slacken each nut by a couple of flats.



With the stop control in the 'run' position and the hand throttle opened up wide, spin the engine on the starter in ten second bursts until you see bubble-free fuel pulsing from the injector unions. **Caution:** Look but never touch – high-pressure fuel injected into the skin has extremely unpleasant consequences. Tighten the unions and try starting the engine. If it doesn't fire up, bleed again.



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## SECTION 4: OTHER BUSINESS

Now for all the rest – the coolant, brakes, clutch, greasing and so on



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Cold-weather starting may be helped by a thermostart unit. This uses an electrical element and a dribble of diesel to make a little bonfire in the inlet manifold, warming the incoming air and combustion chambers. Check that it's working by holding the key in the 'heat' position for ten seconds but not cranking the engine; the base of the unit should get hot. Smoke from the air cleaner intake confirms thermostart operation.



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Air cleaners use a dry element (as here) or an oil bath. Clean a dry element's outer filter by tapping it on a tyre and/or by blowing it out with an air line. Renew the outer element when it's sooty, oily or wet; this one is OK. Leave any inner element where it is. When the inner element needs changing, the filter's service indicator will turn red even with a clean outer filter. Otherwise change inner element when it's dirty.



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A working parking brake is not optional, it's essential. Adjust the brakes (see 19), then free off the handbrake linkage and lever button. On tractors with a pawl-type parking latch on the foot pedals, make sure the pawl is free to pivot and is effective at locking the pedals down. See that the parking brake holds on a slope, or you and your tractor could end up in the pit.



17a



17b

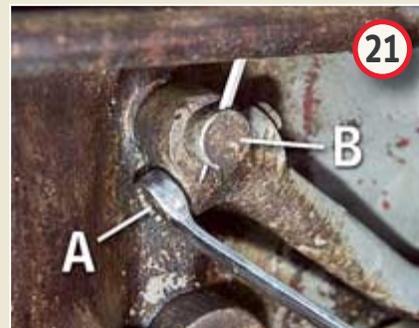
Top up the radiator with a 50:50 mix of antifreeze and water (17a). Antifreeze is necessary even in summer to lubricate the water pump and minimise corrosion. Run the engine until it's warm, then ideally check antifreeze concentration with a tester. If concentration is below 30%, drain off some coolant at the cylinder block tap (arrow, 17b) and add neat antifreeze to the radiator. Run the engine to mix the coolant and recheck: Aim to reach 50% antifreeze but never higher. Caution: After running the engine, remove the radiator cap slowly.



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Working brakes on a scraper tractor at least give the option of not cannoning off cubicles. Brake adjusters on a 135 are inside the rear wheels, under small covers on the drum

backplate. Jack up back wheels and make sure the parking brake is off. Caution: Use axle stands. Click each adjuster round with a screwdriver until the shoes touch the drum and the wheels won't easily turn, then back off the adjusters until each wheel just turns freely. If the adjusters have seized, then the wheels and drums will have to come off; that's beyond the scope of this article. After adjustment, check balance by latching the pedals and driving forward. The tractor should not pull to one side as you apply the brakes. If it does, back off the adjuster on that side and recheck.



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Scraper duty gives the clutch plenty of work - along with the potential for abuse. As the plates wear, free play at the pedal disappears and ultimately the clutch will slip. To set a 135's free play, slacken the pedal's pinch bolt (A), then turn the central shaft (B) clockwise with a punch or screwdriver. Hold the shaft where it is and tighten up the pinch bolt. Check for 19mm-25mm (3/4in-1in) free play at the pedal pad. Repeat adjustment until this is achieved.

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Grease every nipple you can find. If grease won't go in, swap the nipple for a new one. Key locations are front kingpins (picture) and the front axle's centre pivot. Pump away until water and old grease are driven out. Depending on the tractor, other grease points are on the steering joints, the steering column below the steering wheel, the brake pedal pivots, the front wheel hubs and the rear linkage lift rods.

### Now and again

Scraper tractors are seldom in their first flush of youth. So several other areas are worth a look, particularly if nobody can remember the last time your particular yard machine saw a spanner.

■ Transmission oil. Change this if the dipstick shows dirty or milky fluid.

■ Fuel tap filter. This lives in the tank, so you'll have to drain the fuel first. Then unscrew the tap. Replace the filter (or the whole tap unit) if the element is torn; otherwise clean it up. If you don't give this filter any attention, sooner or later it'll block with sediment. Power will probably fade and eventually the motor won't run.

■ Front wheel bearings. Beyond the greasing job, these need occasional adjustment or they will fail before their time. Jack up each wheel in turn (caution - use axle stands), grab the wheel at 12 o'clock and 6 o'clock, then rock it from top to bottom. If play at



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Finally, check the tyres. For a MF 135, the maximum pressure for 11.2x28 rear tyres is 14psi (4 ply) or 22psi (6 ply); for 6.00x19 front rubber it's 26psi.

the tyre is more than 3mm, adjustment is needed. We'll cover how to do this job, plus the adjustment of bearings on trailer and implement axles, in a future profi article.

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