

Winter rain and yarded livestock make plenty of work for slurry tankers. To keep yours in good working order, follow these steps below. Words and pics by Andrew Pearce for Profi Magazine

NEXT to the humble floor squeegee and yard scraper, the vacuum tanker is probably the simplest bit of machinery on a dairy farm.

A chassis, a tank, a pump, a bunch of valves and some pipes; hook them together, add some flotation tyres and there you go. Service is as straightforward as the machines, yet often doesn't happen. As a result performance fades and the risk of pump damage goes up, while the machine itself slowly turns as crusty as an old lagoon.

So what's the procedure? Pressure wash the whole thing first, so you can see what needs doing and don't get too covered in the brown stuff while you're doing it.

Then just work methodically from the drawbar back, not forgetting the brakes. If these are not up to scratch the tractor's anchors will have to do a lot more, which — safety apart — will increase wear and raise the spectre of tractor hydraulic system problems.

Like death and taxes, ring hitch wear is inevitable. This one has already been built up with weld on both sides, but has worn again to the point of replacement. Wear is also possible at the pivot, particularly if this has not been greased (arrow).



Swivelling rings undo at the rear so changeover is relatively simple, whereas a fixed ring must be cut off (or cut back) before a new one is welded on. If you're not certain that your welding equipment and technique is up to scratch, leave the job to a dealer or specialist.



Neglect the pto guard at your peril, particularly on machines where the operator must stand alongside the pump to switch between vacuum and pressure. This one's tubes and shields are good, but string doesn't do it — especially when part-chafed through. A chain it must be.



Wriggle both pto joints to find play. Change worn items before they self-destruct. Failure will cost you time and probably one or more new yokes. See that the pto shaft is free to slide in and out without sticking. If it binds under power it can't telescope as the outfit crosses bumps and dips, so high forces are fed into the pump gearbox and tractor. Replace a binding pto shaft if separation, cleaning and re-greasing don't free it.



With the pto off, shake the pump input shaft to find play; also look for oil leaks where it leaves the casing. Wear here is common but not a disaster — input shaft bearings can be changed without stripping the pump



Key points on the pump gearbox are the filler plug (1), level plug (2) and drain plug (3).



Take out the level plug. A little clean oil should dribble out. If not, top up with good quality SAE90 gear oil. If the oil is milky, as here, it's contaminated by water.

Drain and replace before damage happens, then keep an eye on the new stuff. Don't overfill the gearbox or the seals can blow.



Hydraulic hoses are easily pinched or knicked in use. These don't look pretty but the steel braiding is intact, so they are serviceable. Substantial rusting of the braid means failure looms.

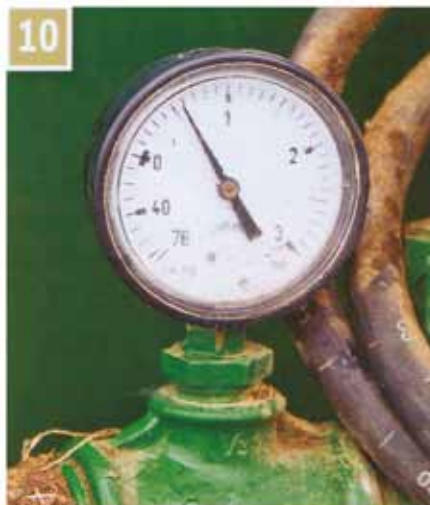


On MEC pumps a saddle tank holds lube for the pump's internal rotor vanes. Clean the area around the

dipstick before pulling it out, or dirt drops into the reservoir. This is bad news for the oil pump, the various parts supplied by it and for the tank itself, as crud can eventually block the outlet. Top up to the dipstick mark with fresh vacuum pump oil — never gear oil. Keep the tank as full as possible as this helps to cool the pump.



Adjust the oiler so that with the pump running, one drop of lube falls through the sight glass (arrow) every 2 – 3 seconds. Oil lubricates the vacuum pump vanes and diverter and leaves through the exhaust — a dry exhaust is a bad sign.



A dual-scale gauge shows tank pressure in one direction, tank vacuum in the other. This one does not return to zero, so must go. Replacement is simple.



A working pressure-side relief valve is vital to safety, but it can seize. Pull the ring and the valve should lift easily. If it won't budge, or if you hear hissing from the valve when the pump is set to pressure the tank, fit a new one. As with the gauge, replacement should be straightforward.



This contractor-spec machine has a hydraulic changeover valve (arrow). All that's needed is a visual check for ram leaks, then a tour with a spanner to see the fixings are tight. While you're at it, make sure the pump mounting bolts haven't loosened.



Now we're inside the tank's topside outlet trap. All tankers have one, put there so liquid is not sucked into the pump if the tank is overfilled: slurry and pumps don't get on for long. Most designs use two balls. The lower plastic one floats up on the rising liquid, forcing the rubber top ball against its seat and sealing the outlet.



Something as simple as a ball cant escape the ravages of time. Wrinkling on this upper ball (14A, arrow) means it sometimes won't seal properly, even though its seat (14B, arrow) is in good order. A replacement is easily available.



Some tankers have a secondary trap to catch any slurry that leaks past the outlet trap, usually with a sight glass to give the operator early warning. It also has a condenser, trapping water and keeping it from the pump when the tanker stands outside in the sun. This one had

liquid in it, perhaps from condensation or maybe allowed through by the damaged ball (see 14A). Drain the trap before every use. If liquid builds up quickly, find and fix whatever problem let liquid out of the tank.



The big-bore hoses between the pump and tank clearly must not leak. But even if all looks well on the outside, a hose can fail internally. Typically the liner collapses as the pump tries to suck air from the tank. If filling performance drops off, check for this and for leaking gate valves (see pics 18 and 19) before blaming the pump. Blank off any unused tank port(s).



Tanker sight glasses turn cloudy, may become brittle and are hard to remove without breaking. A weep of slurry would suggest the base O-Ring seal has seen better days.



The gate valves slide's leading edge (18A, arrow) can be chipped or worn by stones, preventing a effective seal. Undo the operating rod's gland nut (18B) and winkle out the O-ring seal — if this is broken, as here, then air or slurry will leak past it and performance suffers. All parts are replaceable.



The exit valve is normally held closed by a spring or gas cylinder and opened hydraulically. A worn or damaged slide, a broken spring or a failing return cylinder could mean a big mess on the road, so these parts need regular inspection. Oil leaks point to a loose union or dodgy ram seals.



Stacked rubber blocks suspend the drawbar on this Major tanker. Each block must be attached to its steel plate.



Now for the brakes. Seen from under the tank, a broken return spring on this tanker's commercial-spec axle meant the nearside brake was not released smartly when the driver's foot came off the pedal. Result, much more lining wear on that side.



Commercial-axle brakes are easy to adjust. Jack the wheel so it's just clear of the ground, supporting the axle on stands if necessary. Then twiddle the adjuster until the brake locks the wheel.

Back off the adjustment until the wheel just turns freely, then repeat for the remaining wheel(s). Earlier adjusters may have a locking collar which needs to be undone first.



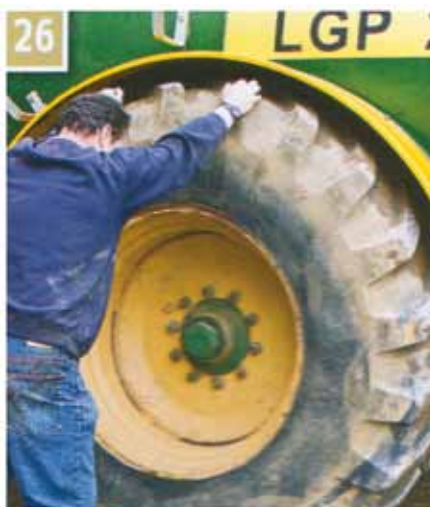
Adjusting the brakes on ag-spec axles takes a little longer. Again, jack up the relevant wheel(s). Disconnect the ram from the brake linkage. Turn the operating shaft with grips so the brake is firmly on, then reposition or adjust the brake arm so the closed ram can be easily reconnected to it. Release the shaft and check for free wheel rotation. Apply the brakes and check again. Re-adjust as necessary, then repeat for each axle or wheel.



After adjusting the brakes, see that the handbrake moves easily and that its ratchet works. With simple quadrant-and-lever systems like this one, check that the handbrake is fully applied well before the lever reaches the end of its travel. If that is not the case, shorten the cable until it is — then see that the wheels still turn freely with the handbrake off.



While in the nether regions, check that the axle-holding U-bolts are tight (arrow).



Play in wheel bearings is simple to find — jack the wheel until the weight goes off, then rock it. A little movement is OK, a lot is not. To adjust the bearings, support the axle on stand(s) and take off the hub cap. Below it you'll find a large nut, held in place by a splitpin or spring clip. Remove this, then tighten the nut a little while turning the wheel. Continue until a little play is left on rocking the wheel. Replace the pin or clip. Clean out any old grease from the cap and part-fill it with fresh stuff, then put back the cap.



Tankers carry a lot of weight so tyres need to be in good condition, especially where roadwork figures. Inflate to the tanker maker's figure, in this case 2bar.



Depending on the tanker, points for the grease gun may include pivots for the drawbar, ring hitch, brake operating rods and adjusters, the handbrake and wheel hubs.



If the bulbs are good, likely light trouble will be in the tractor-end plug (trapped or corroded) or the cabling and connections ditto).