

Heavyparts

make light work of a failed pump.

Why, oh why is it always either Monday morning or Friday afternoon when things go wrong? It just happens too often for it to be a coincidence. I had just got the harvester warmed up and had settled down to start work when the radio crackled into life. I knew straight-away that Pete was not about to tell me what a lovely morning it was and that we should be happy to be working in such lovely surroundings... No, I knew something was broken, about to break or had stopped working just before it was going to break. It would involve three things: swearing, oil and a reduction in the bank balance (or an increase in the overdraft depending on what part of the month we were in). It would not involve me smiling.

"You had better come and listen to this forwarder, there's something not right."

Sure enough, the forwarder that had been running fine on Friday afternoon was now definitely not quite right. Operating the steering without lots of revs was pulling the engine down and big flow demand operations on the crane were having a similar effect. Something had gone udders uppermost was the immediate but rather vague diagnosis.

Pete admitted he had faulted the hydraulics slightly in the later part of the previous week when he had noticed a slight vibration through the cab floor. This made the pump

an immediate suspect and pulling the tank filter out left little doubt as to what the problem was.

The old 250 Ösa we run is a good, reliable and particularly tidy machine. It has a main hydraulic filter in the tank that filters all the hydraulic and drive system oil as it circulates back through the tank. Lifting the big filter out, the problem was obvious when it refused to release the warm oil it contained – a clear sign it was well and truly blocked. The multiple magnets in the filter housing had some metal on them but nothing exceptional. The obvious answer came when we inspected the bottom of the filter and found what looked like brass fingernail clippings. Washing the filter through in a large tub also revealed a significant amount of fine brass particles that, along with the fingernails, could only have come from the pump. The particles of brass were so fine they were difficult to see until they were allowed to accumulate together against a dark background that made them show up like a gold haze in the cleaning fluid.

After ringing our local hydraulics specialist we quickly realised we needed a company with a little more expertise, and so a couple of phone calls more and it was into the ads section of FMJ for the phone number for Heavyparts Hydraulics.

The main hydraulic pump on this particular 250 Ösa is a radial piston Cessna with brass piston slippers. The



Test rigs at Heavyparts' Rochdale premises.

phone call to Heavyparts Hydraulics meant that our only option was to remove the pump and take a road trip to Rochdale to have it stripped and assessed. Quoting the numbers from the pump resulted in the usual "Parts aren't all that readily available for Cessna pumps and they are quite expensive."

After draining the oil we removed the pump, boxed it up and set off to Rochdale in a fairly glum mood. This was not helped by the fact that the oil we drained was all new and had just been used to top the tank right up on Saturday morning. It was going to have to be dumped when most of it had only done half an hour in the system. When I say dumped I do of course mean recycled and not just 'dumped' as in discarded carelessly.

Stripping and assessing hydraulic pumps, especially radial piston pumps, had always made me think of someone with fists full of high-tech measuring equipment and tables of specifications that measurements have to be checked against, but when we arrived at

Heavyparts Hydraulics it was a case of getting the pump onto a trolley and into the workshop where it was stripped down and a visual assessment was done as we looked on.

The verbal appraisal of the pump's condition was given in clear concise language that any contractor would find easy to understand – one word, rhymed with cooked*.

The options were also given in a straightforward, no nonsense fashion:

1. "We can repair it. It will take about a week to get the parts and do the work and it will be a repaired pump at the end of it."
2. "We can supply a new pump today for a little more than the cost of repairing it, if you can hang about for a couple of hours while one of the staff drives to the suppliers and collects one."

Not surprisingly option 2 was the one we chose, and we also took up Tony Murphy's offer of a guided tour of the facilities at Heavyparts

* The conversation took place in the north of England.



Out with the old and in with the new. The old pump in pieces in a cardboard box, and the new one ready to fit.

while we waited.

In between we had a lesson in why the pump we had brought down had failed. The most likely cause was that at some time it had been run short of oil which doesn't necessarily mean someone had let the tank run dry. Some machines like the Ösa have a large hose from the tank to the pump and this hose should be semi-rigid, usually with a wire coil built into its walls, like the vacuum pipe on a slurry tanker. This stops it collapsing if the pump starts to pull oil from the tank, rather than gravity allowing oil to flow freely. It also prevents it from kinking on machines where the oil tank lifts up and down when the cab tilts or swings out to provide access. It is an unfortunate fact that if this pipe needs replacing at some time, it might just be changed for a hose that is the correct size but not the correct type. The machine will work fine until everything gets hot. Then the pipe goes soft and collapses, reducing oil flow, which makes the problem worse as the pump pulls harder to get some oil, and, if it is being starved, the damage begins to accumulate.

I had been impressed with the attitude of Heavyparts Hydraulics staff right from the first phone call when I had described the pump and read out the part number, and had received an almost instant decision as to its manufacturer and type, both of which had proved accurate. This was all the more impressive considering I had never dealt with the company before.

The tour around the almost surgically clean workshops only added further to the feeling of confidence in the company. We then went into

the test area and were confronted with the motive force for the test rigs – two Rolls Royce Perkins diesels in their own custom-built facility with cooling fans and huge exhaust extractors, together with substantial sound protection. The two 300+ bhp engines power an incredibly sophisticated set of computer-controlled test rigs that can test pumps and motors separately, or can link a pump to its own, or a suitable, drive motor to test them under working conditions for instant results. They can even apply varying loads to recreate the rigours of under stress working conditions.

Whatever the fault with a hydraulic pump or motor, and however big or small, Heavyparts Hydraulics' test rig can not only find it but can also record it on a data sheet in several different formats. The benefit of this thorough diagnostic system is that pumps that do not have any faults are spotted without the need for a time-consuming strip down when, as is often the case, another component is at fault in the hydraulic system. It also allows the thorough testing and calibration of components that have been repaired. Tony told us that in the distant past they occasionally sent out pumps only to have the customer complain that the problem was still there, suggesting the pump could not have been repaired properly. It was then often the case that a long and difficult assessment of the hydraulic system of the machine was needed to reveal a fault elsewhere – sometimes a simple and inexpensive fault. This brings to mind a harvester I once ran that was sold to a new owner who rang the dealer in a panic saying it was overheating.

"He says the temperature gauge shows 110 degrees. He's fitted a new thermostat and he's blown out the radiator, but it keeps doing it. Did it do it when you had it?"

"Yes it did but I just tapped the temperature gauge with my finger. It sticks when you switch the ignition on, that's all!"

Like most machine operators, I know about enough to maintain and service the hydraulics on my machines and to do minor repairs, but hydraulics are a bit of a dark art when you start getting too involved, so having components that you know are working properly is a must. When trying to find faults, it's all too easy to start removing hydraulic pumps when the fault lies with a sticking relief valve or a failed sensor.

Our patience in Rochdale was rewarded in time for us to make the trip home in the afternoon with a new Cessna pump in the back of the van. Time didn't allow us to fit the pump until the following day, but it only took a couple of hours the following morning, and together with new filters in the hydraulic system and the transmission, and a full tank of new hydraulic oil, we had the forwarder back up and running. The new pump was filled with oil but we let gravity fill it from the hydraulic tank before starting the machine. A slightly nervous few minutes followed as the oil gradually found its way back around the system that had been completely drained, the transmission was also a little reluctant to work for a few moments, but everything soon came together and after a couple of small oil leaks were sorted out we had a forwarder back into work 48 hours after the start

of the repair, which didn't seem too bad.

A major lesson learned was that, despite the faulty pump only signalling its poor condition through obvious and excessive vibration, and through the way it was working the engine when it had to deliver a lot of oil, it would later have shed some substantial pieces of metal into the hydraulic system. This would probably have made any repairs so extensive and expensive that the forwarder became financially non-viable to repair. The problem was that it would have been perfectly possible to have carried on using the machine, had the operator not been quite so mechanically sympathetic.

Of course, fitting a new pump to an old machine is proportionally a big investment, but, if the rest of the machine is sound, it makes sense, and the truth is that, without a good pump, any machine that relies on hydraulics is on a loser from the start.

The difference the new pump has made is very obvious. The engine is getting an easier time, as it isn't having to work so hard, and the whole hydraulic system is running cooler. This combines to make the machine easier and quieter to drive, with less stress on everything including me, as even the price of the new pump was a pleasant surprise. It did make the whole process a lot easier when I paid for the pump as soon as the deal was done. I also believe it made having our Transit spoiling the overall tidiness of the Heavyparts premises more tolerable for those who work there.

Simon Bowes



(Left) The new pump finally in position. (Right) Job done! Pete Knott lowering the cab after fitting the pump and refilling the system.