

STEELFAB

160/180

Jeremy Rowland reports on an outstanding restoration of a loader-backhoe.



'Sitting pretty' the Steelfab 160/180 shines as it stands waiting to be moved to the allotted site area for the show. The filler cap at the front of the wing is for the hydraulic oil header tank, the black flexible hose seen in front of the back wheel joins the header tank to the chassis which acts as the main oil reservoir. (Photo: Jeremy Rowland)



Julian Carder at the machine's controls during the collection of the digger. Note the different style of rear wheel fitted and the rear mudguards. (Photo: Julian Carder)



With the stripped carcass of the digger in the background, here is a shot of three of the buckets purchased for the machine. The buckets came from Devon and had been in a stream for the last 30+ years. (Photo: Julian Carder)



The Steelfab stripped right back to the chassis. Note the hydraulic pump which is mounted in the standard position for this type of machine at the front of the chassis; you can see that part of the diggers chassis acts as the main hydraulic oil reservoir. (Photo: Julian Carder)

The Steelfab breaks all of the rules in this respect and what can only be described as a 'miraculous transformation' of this restored machine was carried out in only 12 weeks.

This restoration has been aided by some new parts that had been donated by the Steelfab Company before it ceased trading a number of years previously. Also, of much help was an engineering drawing for the bushes and pins that were used

on the machine enabling new parts to be manufactured.

While restorations can be expensive there are always chances to reduce the cost. On this restoration a good example of this was that the machine's hydraulic rams were leaking oil and required a full refurbishment that was quoted at £550 per ram. Not happy with this, Julian decided to strip and rebuild the seven rams himself. He purchased a new chrome bar, the cost for

The South Wales-based company, Steel Fabricators (Cardiff) Ltd, entered the loader-backhoe manufacturing sector of the construction machinery market in the early 1960s. Its preliminary model was the Steelfab 160/180 loader-backhoe that featured a hydraulically-locked sliding kingpost that was ahead of the competition at that time.

The early units were based on a Fordson Dexta tractor skid unit. However, reliability issues lead to a recall of all of the early machines by Steel Fabricators and the skid unit was replaced by an International B2275.

These early teething troubles had an adverse effect on sales of the Steelfab 160/180 loader-backhoe of which the company would eventually sell around 500 units.

The Steelfab 160/180 loader-backhoe that is featured in this article was purchased by its first owner as a brand new unit in 1963 at a cost of £2,700.

It was originally fitted with the Fordson Dexta engine, but was recalled and fitted with the International unit. Julian Carder who has recently restored his JCB 3C MK3 which has already been featured in previous issues of this magazine, acquired the old Steelfab from the former owner's family, having known them since he was 16 years old.

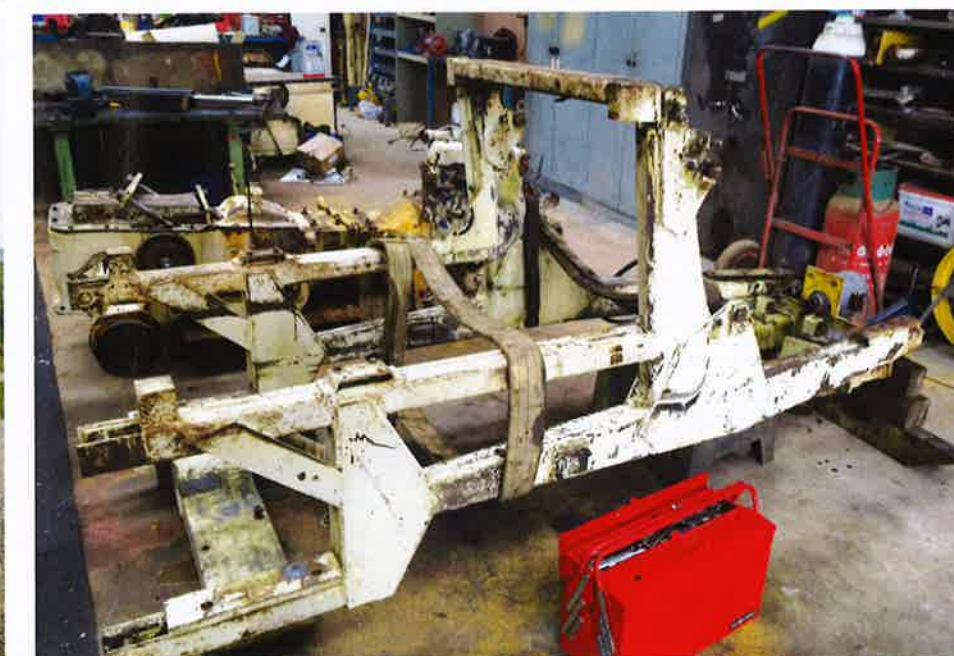
FAMILY

The machine had been promised to him because they knew of his interest in it, and in Steelfab as a company. He has now owned this machine for about the last two years and since taking a break from the restoration of the JCB 3C he decided to embark upon a full restoration of the Steelfab digger loader.

Many restorations of any type of machine are expected to take place over several years and progress at a steady pace, usually as a hobby interest of the person restoring the machine concerned.



The Steelfab digger ready for collection from the farm where it had been since it was first purchased in 1963. (Photo: Julian Carder)



A view of the offside of the stripped chassis and skid unit prepared ready for shot blasting. (Photo: Julian Carder)



A nearside view of the skid unit and chassis ready for shot-blasting. (Photo: Julian Carder)

turning each end was a mere £15 each and along with the new seals, Julian reckons that it has cost him around £45 to refurbish each ram that has given him a substantial saving on this part of the restoration. The restoration has not been carried out single-handedly, with up to 12 people working on the different parts of the machine through the various parts of the process although Julian himself has carried out the majority of the work.

PROBLEMS

As with all jobs such as this, there are problems, the first hurdle being a crack between two of the cylinders of the engine block. In this instance a second unit from another old Steelfab machine was stripped and rebuilt as a replacement.

The used engine was rebuilt using new liners, pistons, rings, shell bearings and gaskets, at the same time the fuel injectors were sent away for specialist service. The engine also had a new water pump fitted, along with a new exhaust and the radiator core was also replaced.

The digger was, of course, completely stripped down to enable this thorough rebuild of all of the machine's parts. Once stripped off the machine most parts were first jet washed down after which they were shot-blasted before receiving an undercoat of paint.

The transmission required stripping for inspection and to repair a leak that had caused oil to contaminate the brake linings, the brake linings themselves being replaced in the process at the same time the clutch release bearing was replaced.

The glass fibre cab roof and outer mudguards underwent extensive repair such items as these tend to crumble where any physical damage occurs, the rest of the steel cab frame was rebuilt utilising the original cab glass, and new inner mudguards were fitted.



The chassis is repainted after shot-blasting. Supporting the chassis in this way enables better access to ensure that every part is evenly covered with paint. (Photo: Julian Carder)



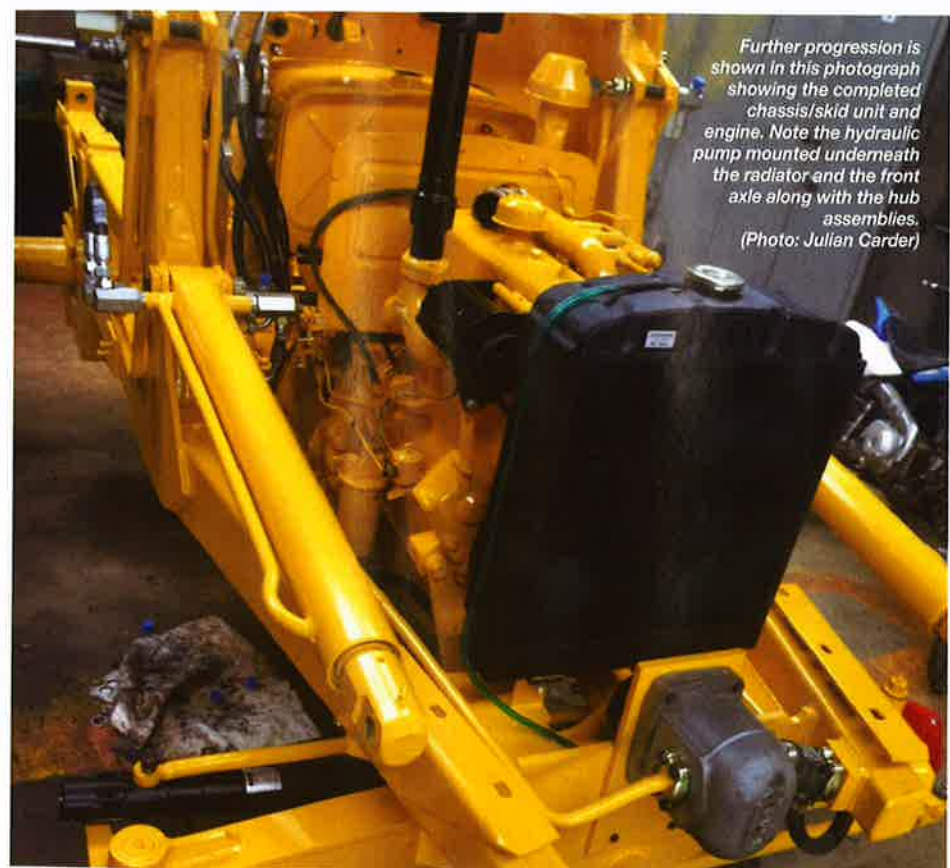
The skid unit stands re-painted ready for assembly to the main chassis. (Photo: Julian Carder)



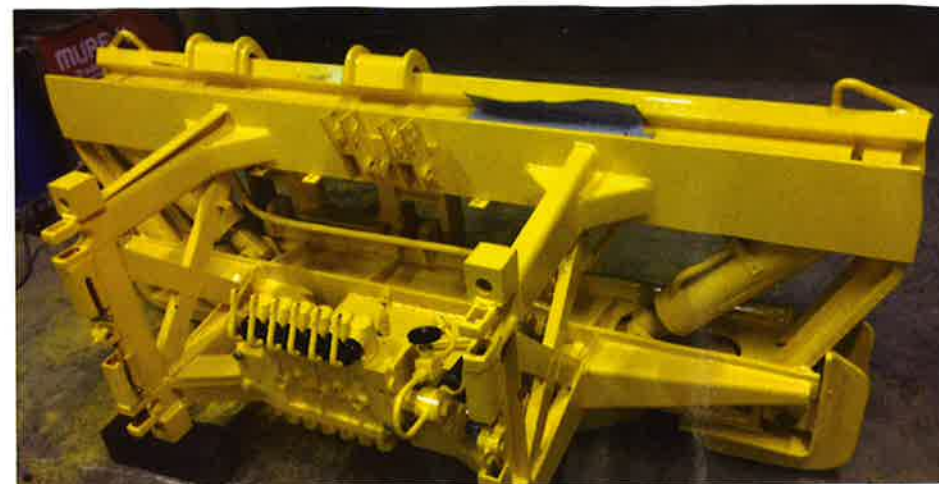
As the restoration progresses the machine slowly starts to take form once again. The re-assembled chassis and skid unit are seen along with the fuel tank, new exhaust and loader arm rams. (Photo: Julian Carder)



The backer frame along with the stabiliser legs and hydraulic control valve are ready for fitting back onto the digger. (Photo: Julian Carder)



Further progression is shown in this photograph showing the completed chassis/skid unit and engine. Note the hydraulic pump mounted underneath the radiator and the front axle along with the hub assemblies. (Photo: Julian Carder)



The boom and dipper arm after shot blasting are ready for painting. (Photo: Julian Carder)



Gleaming and looking immaculate Julian's two preserved digger loaders arrive at Lichfield for the show. (Photo: Jeremy Rowland)

The machine has benefitted from new stub axles and kingpins, also new wheel hubs along with bearings and seals all of which came from the old Steelfab Company.

The front axles pivot required re-bushing because of extensive wear, once finished the axle was ready for the stub axles and hubs to be fitted.

While the front axle was stripped the steering gear came under close scrutiny with the steering box being replaced and the steering ram refurbished, this work was complemented by the replacement of the track rod and drag link ends with new components, the link rods being straightened during the rebuild process.

The wheel rims from the digger had all been shot-blasted and were completed with the fitment of new tyres they were then ready to fit back on the machine, the front rims being from the original machine but the rear rims were from another Steelfab digger.

Wear in the loader arms pivots, along with the excavator arm, meant that they were bushed as required. They all had new mounting pins manufactured and fitted that were a zinc and yellow passivated finish.

BUCKETS

The original buckets for the digger-loader were badly worn and the front shovel had been cut down. Fortunately two secondhand ones were acquired. They had spent the last 30 years in a stream in Devon but once shot-blasted they proved



At the controls, Julian Carder prepares to reverse the Steelfab off the back of the low-loader, the engine appeared a little smoky after initial start-up but did clear as the engine warmed up. (Photo: Jeremy Rowland)

to be okay although new teeth were fitted along with a good used toe plate.

Work on the diggers hydraulics including the rebuild of all of the rams includes; a resealed main pump, the spool valve was stripped and resealed, then finally all of the flexible hydraulic hoses were all replaced which is a 'must' for any rebuild of a hydraulic system of this age.

Another component that required attention was the rotary actuator pivot shaft for the machines digging arm. This was badly corroded and required grinding back then re-chroming.

Painting the machine proved to be a problem as regards matching the original colour was concerned but after some research, Julian managed to track down the sales manager from the original paint supplier who was able to confirm the exact colour codes. The colour needed to be spot on and nothing but perfection would suffice here, so the paint was mixed



The Steelfab 160/180 has no cab doors and the machine is accessed via a partially open rear cab; the operator climbing in or out in this case next to the backacter. How things have changed! (Photo: Jeremy Rowland)



This three quarter rear photograph gives a clearer view of the cab access. The cab itself is secured by only four screw hook type fasteners. (Photo: Jeremy Rowland)



A close-up shot of the boom and dipper arm. Of interest are the square mounting linkage pins for the pivots and hydraulic rams. All of the pins on this digger have been newly manufactured. (Photo: Jeremy Rowland)



LEFT: Classic plant line-up for the 'Cars in the Park' show; the Steelfab (left) with the Massey barely visible behind it, then the JCB 1 Gravedigger and finally Julian Carder's JCB 3C. (Photo: Jeremy Rowland)

BELOW: Julian Carder drives the Steelfab 160/180 to the showground allotted area - after he had topped up the water in the cooling system because of a leak on the new water pump. Such hiccups can occur with newly rebuilt and untried machines. (Photo: Jeremy Rowland)



ABOVE: This view shows the digger's backacter and mounting. The rotary actuator that turns the arm is manufactured by Dowty and can be seen between two of the arms operating levers the lower part of the main shaft for this component was re-chromed. The whole arm assembly could slide along the rail and was hydraulically locked into position which was ahead of other competitors' machines at the time. Note the rubber 'bump stops' that prevent the arm from hitting the back of the slide frame. (Photo: Jeremy Rowland)



A view inside the cab of the Steelfab shows the basic layout that was period for that time. Of interest is the single control lever for the loader arms and shovel. Towards the top left of the cab can be seen one of four clips that secure the fibreglass cab roof. That was closest thing to air conditioning in 1963. (Photo: Jeremy Rowland)



The newly-made manufacturers' plate. It's nice touches like this that really make a restoration job stand out, note the new drag link end on the steering drop arm at the bottom of the picture. (Photo: Jeremy Rowland)



The loader arm linkages that were refurbished with new bushes and linkage pins. The linkage pins on the arms are secured only by a simple split pin. (Photo: Jeremy Rowland)



Julian Carder standing next to his JCB 3C at the show; although he is a JCB man through and through he is also a Steelfab man and thanks to his efforts many people are now able to see a perfect example of that company's products in his Steelfab 160/180 loader-backhoe. (Photo: Jeremy Rowland)



The re-bushed front axle pivot. The steering tract rod is mounted in front of the axle; this track rod required straightening prior to being refitted. (Photo: Jeremy Rowland)



The bucket pivot and ram detail show that the square linkage pins are secured on the other side by a castle nut and split pin albeit the split pins are missing in this instance. (Photo: Jeremy Rowland)

according to the original specification to include lead, which is no longer added to paint for health reasons. A good contact, who is a friend, was able to help out with this.

As far as time was concerned, the race was on because it was Julian's intention to display the Steelfab loader-backhoe at the 'Cars in the Park' event held at Lichfield along with his JCB3C and a few other items of classic plant that had been organised to attend the show.

Work on the digger continued right up until the day before the event, but as the photos show the machine looks magnificent and has been well worth the effort spent to get it looking like new once again.

DISPLAY

The 'Cars in the Park' event is held annually at Lichfield's Beacon Park and this charitable event is now host to some classic and modern plant with Julian organising the JCB stand for the show. Three other items of classic plant attended this show; Andrew McLeod of A.B.M. Plant displayed his JCB 1 Gravedigger and JCB dumper along with Richard Thorn who brought along his Massey Ferguson 203 backhoe loader.

JCB provided three of its extensive range of machines for the show these being the Fastrac, 3CX and 4CX machines together with the superbly restored JCB 3C.

The Steelfab 160/180 looked fantastic at the event and made a stark contrast to the modern machines on display there. **GPM**