

Practical test: Simba Solo 300 discs/soil loosener

Sizing up the Solo

Hampshire soils? Just boys' ground. That's what the men from the Eastern Counties call it. Stuff to play with. Puffy stuff for tillage toys. To a certain extent these orientals may be right, when comparing some of the light southern profiles to the deep, thick clays out east. Yet these Hampshire soils have problems of their own, not least of which is their variability, and that's why we were still interested to see just whether traditional heavy land tackle has a place – down south.

Kit in question? The Simba Solo 300 disc/soil loosener and trailed double press which, with a claimed effective working width of 3.3m, represents the firm's entry-level model in a line that extends up to a 4.5m mid-ranger and horse-sapping 6m flagship.

Tug for our test 3.3m Solo 300 was a 217kW/295hp John Deere 8520, booted with Kleber Topker 650/85R38 rears, 600/70R30 fronts.

One-pass disc/soil loosener sales are dominated by three names in the UK – Gregoire Besson and Quivogne from France and, from this side of the Channel, Simba. Here we test the Lincs-based company's entry-level example, its 3.3m wide Solo 300, across a range of soils in Hampshire

Not that the 300 is what we would term an easy, 'entry-level' pull. But then the inescapable fact is that this form of one-pass, disc/deep-tine cultivation design – whatever the manufacturer name on the metal – consumes power; so if the farm isn't prepared to invest in tractor muscle, it should be looking elsewhere in terms of its tillage tackle. Proving the point, even at 3.3m the Solo unit still proved capable of dragging our test John Deere 8520 (217kW/295hp) wheeled tractor on to its rpm knees as well as spinning Kleber rubber – despite albeit limited ballasting. Which begs the question: Why go for wheels rather than tracks on the test tractor in the first place? Simple.

Tracks aren't for all and, with 4.5m and 6m wide Solos requiring either a 400hp crawler or dualled artic up front, this 300 model is the only Solo suited to a conventional tractor tug. Hence our test prime mover decision – to plump for a wheeled unit to see whether this really is a tillage train for the mass market.

At this point, it's important to stress that we could have dropped the kit's horsepower requirement by towing a better matched 4.2m wide double



Our Simba Solo 300 configuration: 14 front discs, four soil loosening legs, intermediate row of 16 DD rings and ten rear discs. Trailed behind on our test train was a 4.6m wide DD double press.



Hitching Solo to double press requires two men – or a lot of patience. Most will leave the press coupled up whenever possible.



press. Availability was against us, however, and dictated the use of a 4.6m model which, though over the top in terms of working width, to be fair probably didn't add too heavily to the overall tractor load.

What undoubtedly would have had a much bigger impact would have been to go for the 'R' configuration, where the intermediate press rings are moved to the rear of the Solo – in effect removing the need to pull any form of separate press. This not only seriously reduces the power requirement, but it also improves manoeuvrability and puts the Solo more on a par, in terms of spec and price, with the integrated press type competition (see the 'Technical data in comparison' table). The reality, however, is that the Solo/separate press pairing is reckoned to do the better mixing/loosening/firming job, so again it made sense to try out the 'ultimate' combination.

As an aside, there's nothing to stop a farm from buying the 'R' layout to start with and then subsequently converting it to mid-roller format (about five hours' work) – if, as an

Manual fold is OK most of the time. One of our gangs was out of line, which meant a hernia-inducing heave on that particular set.



example, it wants to avoid spending out on a Solo and separate press in the one season. More on that later.

First, though, a brief work through the Solo 300 specification and its principles. For extra information, we recommend referring back to our original driving impression in profi international 09/01. The basic Solo theory is relatively straightforward. In essence the 300 comprises a combination of Simba 23C tandem discs, with a row of four

soil-loosening legs, a pair of beefy transport wheels and a DD ring mid-roller, sandwiched in between front and rear disc gangs. The aim is for the front disc gangs to penetrate and invert, the legs to loosen any pan and, last, for the intermediate DD press rings to firm the surface up again ahead of the rear mixing discs. That's the theory.

Working through the machine, and in relation to our test, the front Solo disc gang comprises 12 x 700mm diameter scalloped discs with a pair of additional outer 650mm units. These are matched up at the rear to 8 x 750mm scalloped discs, again with a pair of 650mm units at the outside. Spacing, as on Simba's 23C conventional-disc models, extends to 250mm at the front, 300mm along the rear gang.

On this latter subject of Solo disc spacing, the quality of the work is relatively coarse and there's a real danger of leaving ground unmoved if the operator tries to set the discs at too shallow an angle/depth on certain soil types, as we found out on some lighter greensands; wider Solos get a spring tine in the centre,



Main Solo depth adjustment comes from slipping these shims in/out of the intermediate press 'top hat'...

... and then levelling the main drawbar ram at the front.

The complete train measures just short of 20m in length, yet is surprisingly manoeuvrable on-road and around the yard. Double press tracks neatly behind the Solo.



Increasing the soil-loosening leg depth is simple. Remove a pin, and drop the leg down a hole.



so why not the 300? The flipside, of course, is that the risk of blocking is reduced, and there is no doubt that the Solo does a good job of handling trash. On our test, for example, the Solo 300 effectively buried chopped Tanker wheat straw (site D – see ‘Fuel/output measurements’ table) and the Synchro/Target bean haulm (sites A and B) in just the one pass. Disc spacing also has an effect on total working width, hence Simba’s imminent rebadging of the 300 as a 330. Why? Well, the 250mm blade spacing at the front results in an outer blade-to-blade distance that is more than 3.0m – the profi tape measured 3.08m – and this clearly

A neat feature is being able to tweak the leg break-back. On some of our test fields...



... the soil was only 8in deep. Reducing the ‘break’ pressure enables the legs to skate along the top of underlying hard rock.

It’s important to monitor leg point wear. A previous user had taken metal down beyond where the points’ roll pins could be replaced.



results in the machine moving more than 3.0m of soil. Simba claims that, depending on gang angle, the front blades are actually shifting about 3.3m of soil – thus the name change – and, given our tape readings, we reckon the firm is probably about right with its re-labelling.

While on the gang angle, it’s worth pointing out that, on the 300, this adjustment is carried out manually – by unwinding a locking crank and pulling/pushing each of the gangs into one of five positions. On our test we initially started out at a setting of 2F/1R (2 front/1 rear) on site A, theory being that it’s best to put more angle on the front to get these blades biting in. A couple of passes later, however, we opted to give the rear exactly the same angle, to try and better fill the centre hollow left by the front blades. This produced the desired, level finish result.

When we moved on to the two final sites, we altered gang angle again, this time going for 3F/2R to create even more bite into harder baked surfaces. Not only that, but we also shuffled around the shims on the drawbar and the intermediate press rams to dig in deeper. Now this may sound like too much tweaking, but then the Solo does need setting-up attention for the optimum mix/level result to be achieved; it’s not just a matter of unfolding, opening up the throttle, and then thrashing on. The big question is, will most operators bother to tinker – and could Simba make the set-up job simpler?

Answer: Operators should, to the former; the firm probably could, to the latter. A more comprehensive instruction book, with clearer set-up tips, would definitely help here. While on ‘disc finish’, we liked the

Test assessments

How profi rated the Simba Solo 300 cultivator

Ease of attachment

Tractor to discs	+
Hydraulic coupler labelling	+
Discs to press	0

Disc gangs

Angle adjustment	0
Scrapers	+
Depth of work adjustment	-
Mixing quality	+
Ability to penetrate	+

Tines

Depth adjustment	0
Wearing metal change	+
Overload protection	+
Soil loosening effect	0

Intermediate press

Depth adjustment	0
Quality of work	++

Trailed press

Consolidation	++
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Road/transport conversion

Discs	0/- ¹⁾
Intermediate press	+
Trailed press	+

Transport

Lights/warning panels	- ²⁾
Transport width	+
Ground clearance	+
Ride/manoeuvrability	0

Transport

Operator’s manual	-
Parts list	+
Build quality	+
Price	0 ³⁾

¹⁾ A manufacturing fault meant that one of our test Solo’s disc gangs didn’t have sufficient clearance to allow an easy fold;

²⁾ Solo lighting panels foul on press; ³⁾ In test configuration with separate trailed press, the Simba pairing looks expensive. Solo becomes more competitive if priced in its ‘R’ configuration (see ‘Technical data in comparison’ box – intermediate rings moved to rear of Solo, and no trailed press).

Grading system:	0 average
++ very good	- below average
+ good	-- poor

Outside covering discs tended to bung up with haulm, so we removed their scrapers.



way the Solo design puts no weight on those big transport wheels when in work, thus removing any risk of wheel compaction effect appearing in the following crop; remember the Solo, on its own, scales a hefty 6t+ (see table). Indeed, the aim is to set in-field wheel height so that the pair of Vredesteins just skim the surface, this in effect creating a hefty on-top anchor should the Solo start sinking into a soft patch.

Discs dealt with, what about those soil loosening legs? The Solo boasts a total of four tines, complete with choice of wing profile, and they're all designed to work down to either 50mm, 100mm, 150mm or 200mm below a typical discing depth of 75-100mm. Changing the leg depth is easier than it looks; admittedly it's manual, but then there are only four of them and it's just a matter of pin out, slide leg up/down, pin in. Just a couple of minutes; job done.

What we were much less convinced of was whether, on our test sites, we were getting a full width shatter. Of course, it may just have been a factor of our soil type/condition, but when we did dig down with a spade there were clearly unmoved patches between the softer areas – above/around where the legs had travelled. Perhaps there's some more work to be put in here on wing profile, leg spacing etc. To be fair to Simba, the company does offer a wider wing for shattering up at our shallower 150-200mm test depths, but then we didn't have this wing profile on our particular Solo model so can't really comment on effectiveness.

A similar test 'no comment' applies to Solo leg metal wear, because we didn't get over sufficient hectares to come to any meaningful conclusions. For the record, however – and as a

guide to the types of soil we were operating over – the leg tips lost about 25mm in overall length over the 70ha covered.

A couple of final points on the legs. First, we liked the facility to alter break-back pressure. This gives the option to reduce pressure from a standard 85-90 bar down to, say, 50 bar when on very stony or shallower ground, enabling Solo legs to still loosen the upper soil profile while skating over the underlying rock. In contrast, those on stiffer dirt can hike the pressure to 120 bar, when the aim is to make the legs almost solid. The reality is that most farm operators probably won't bother with this setting – but it's still nice to have the option. Our closing leg

On the scales

Simba Solo 300 cultivator	6.06t
Simba double press (4.6m)	3.95t
John Deere 8520 tractor (ballasted)	13.46t
Total combination weight	23.47t


NB. Machine weights were measured by profi testers on public weighbridge

setting comment is on its overall effect on horsepower and, in turn, on the output and fuel consumption. Referring to the test 'Fuel/output measurements' table displays the direct correlation between total leg depth on one side of the equation, and wheelslip, output and fuel use on the other. In site A, for example, we worked most of the field with


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the overall tine/leg depth at about 200mm – or 100mm below discing depth – to get the leg tip under a previously made plough pan. It was undoubtedly tough going and the Solo was doing some good but, even at only the second shallowest leg setting, this was all that the 8520 wanted. We just about managed to hit the target 8-11km/hr travel speed – this gives the best disc mixing/levelling effect – but it was a real struggle, and we certainly wouldn't have made the 8km/hr if we'd sunk the legs in a further hole (50mm). Wheel slip of 20%+ says it all. Granted, we were only running on 650 rear Kleber rubber, and the test tractor could have done with even more than its supplied 2.5t+ of extra weight. More rubber and ballasting,

and we could perhaps have dropped our slip figure in plot site A down to the more acceptable 8-12% achieved on site C. Nonetheless, the point is made. The Solo needs weight and hp up front, and anyone that says otherwise...? Question them – hard. And then point them in the direction of the 'Fuel/output measurements' table on the adjacent page.

Before moving on, the above hp comment does require some extra qualification. When working the legs at 150mm, to take out any disc smear or light harvest compaction on kinder land, the combination is a relatively easy pull (site C). It's only when those tines/legs are dropped in to perform a genuine structure-correcting operation that the power

Oops! Despite recent Simba mods, it's still possible to foul the Solo light units on press pipework. More design work needed here.



requirement really starts to climb. Don't forget the Solo is a serious cultivation tool that is effectively

doing three jobs in the one field pass so, with this in mind, it's hardly surprising that the unit can be heavy on tractor tug horses.

Finishing off our spec overview, behind the loosening legs appears what we believe to be the Simba Solo trimp, its mid-roller or press. A single row of 600mm DD rings, the roller re-consolidates the soil already loosened up by the front discs and four legs, so that the rear discs are given a firm surface to bite into. On our test we particularly noticed this effect on the puffier soils of site C; here conventional discs tend to stall their rear gangs, and greatly reduce overall mixing ability of the unit.

The Solo mid-roller, in contrast, removed this puffiness ahead of the rear disc gangs and, as a result, kept its blades spinning at speed and maintained the 'mix'. Before leaving our Solo spec run-through, we should briefly mention the trailed DD double press which, although not specifically part of this test, does perform a key firming roll. Of course, the Solo buyer could couple up to any

Technical data in comparison

Discs/soil looseners with integrated press and working widths of approx 3m

Manufacturer Model	Simba Solo 300	Cousins XT 3000	Gregoire Besson Discordon DXN 666-24	Quivogne Tinemaster
Working width	3.0m	3.0m	3.2m	3.0m
Transport w/l ²⁾	2.70m/8.08m ⁸⁾	2.85m/10.68m	2.90m/7.00m	2.90m/9.50m
Front discs				
Disc design	Serrated	Serrated	Serrated/plain	Serrated
No of main discs/diameter/spacing	12/700mm/250mm	14/660mm/235mm	10/660mm/230mm	14/660mm/230mm
No/diameter of outer discs	2/650mm	–	2/610mm	–
Soil-loosening legs				
No of legs	4	5	5	5
Max working depth	300mm	300mm	280mm	300mm
Rear discs				
Disc design	Serrated	Plain	Serrated/plain	Plain ³⁾
No of main discs/diameter/spacing	8/750mm/300mm	12/660mm/235mm	10/660mm/230mm	12/660mm/230mm
No/diameter of outer discs	2/650mm	4/500mm (600mm) ⁷⁾	4/510mm (610mm) ⁶⁾	4/560mm (610mm) ⁵⁾
Integrated press				
Design	16 DD rings	22 razor rings	26 Emopak rings	18 razor rings
Press diameter	600mm	650mm	600mm	660mm
Running gear				
Position	Middle	Middle	Rear	Middle
Tyres	500/50-17	550/45-22.5	14.00/65-16	11.5 x 15 ⁹⁾
Weights				
Total weight	6,000kg	6,000kg	5,000kg	6,300kg
Max weight per disc	250kg	200kg	192kg	210kg
Price				
List price excl VAT	£31,200 ³⁾	£18,830	£23,465 ⁴⁾	£21,000

¹⁾ Manufacturer information for base test spec; ²⁾ l/w=length/width; length measured from drawbar eye to rear of integrated press; ³⁾ in 'R' configuration with integrated press at rear. Price of Simba Solo 300 plus 4.2m double press is £31,200 + £15,326; ⁴⁾ hydraulic tine depth fitted as standard, integrated packer on three-point linkage; ⁵⁾ Quivogne rear disc gang diameter is graduated, outer discs being 560mm and the next ones in being 610mm; ⁶⁾ Besson rear disc gang diameter is graduated, outer discs being 510mm and the next ones in being 610mm; ⁷⁾ Cousins rear disc gang diameter is graduated, outer discs being 500mm and the next ones in being 600mm; ⁸⁾ in rear-roll format; in mid-roll format, the Solo measures 9.05m in length; ⁹⁾ The Tinemaster has four wheels

Couple of potential finger crunchers – when winding the front gang crank and/or prising up the covering disc's transport-locking cap.



suitably sized double press unit, and particularly if he already has one on the farm. But would it do the same job as a Simba DD press ring? Think on this carefully before coming to a decision. The company's DD press ring has become hugely popular in the UK over the past four seasons – and with good reason. On most UK soils, it remains the ring to beat in the minds of many growers.

Last up, what's the Solo like to live with? Clearly, with the press in tow, it's a biggish beast. And, to a certain extent, quite intimidating. But don't be put off. The 14m long train, in reality, tracks surprisingly tidily behind the towing tractor and, provided the operator has slipped into four-wheel trailer thinking, it can also be reversed comfortably, too. Like all big kit, it's a matter of getting used to it.

Converting from road to transport mode is relatively quick although, as mentioned in our 2001 driving impression, most operators would probably prefer to have hydraulic fold for the disc gangs as well as for the mid-roller. Total cost, however, is clearly the issue here.

The daily maintenance is a 15-20min chore on the 300, dispensing the better part of two grease cartridges into disc/press bearings and main pivot points. That's about six gun squirts per bearing. There is the option to go for auto lube but, at £4,315, it's expensive. In any event, at this sort of width it could well be argued that it's better to spend the maintenance time looking around the machine, checking for wear and loose pins, and saving on the auto lube money. On a 6m Solo, where manual greasing can take 45mins+, it's a different matter.

Daily grease-up takes about 20mins on the Solo 300. Auto lube is a listed option but, at £4,315, it's expensive. Time versus money!



Other points of detail:

- The frame has been strengthened since the first units were launched. Box section construction has been replaced by what, in effect, are two C sections welded back to back.
 - Simba has tidied up previously messy hydraulic plumbing.
 - It's possible to foul the Solo lights on the rear press if turning tight.
 - Hydraulic pipes are colour-coded, which makes hitching up a doddle. In contrast, coupling Solo to trailed press is a two-man operation.
 - Make sure there's no soil packed under the main frame before folding up the mid-roller for transport. Soil in here prevents the mid-roller from slotting into its stop.
- Then, of course, there's the price. No way around it. The Solo 300 unit, complete with a 4.2m wide trailed press, is expensive, listing at about £30,000 for the Solo and £15,000 for the press. As previously mentioned, there is the option to go for the 'R'

configuration – mid-roller to the rear and no trailed press – which means lower hp, more manoeuvrability and less money. But then, on most soils, the 'R' layout won't do as good a job.

Summary: The above figures make the point that heading down the Solo route is a serious business, and not a decision to be taken lightly. Firstly, there's the £45,000 for the train and, if not already available, the farm will also need a £100,000/300hp prime mover to pull it. Even allowing for the most generous of discount structures, that's still a total bill of £100,000+.

Flipside, of course, is that the buyer is getting big metal for his money. In terms of the Solo and press, it's about 10t of steel that's performing three operations in the one pass – discing, loosening and pressing – and that brings with it savings in terms of labour and tractor running costs. Forget min-till; in the case of the Solo, it is a misnomer. This is more of a min-pass tool.

Given the above, the potential Solo buyer needs to consider: Does he really want to put three operations into one? Are there sufficient acres to justify the investment? Can he shed enough labour – or utilise it in other ways – to fully realise the cost savings of switching to a one-pass system? Does he have the hp? Here, even with a 3.3m Solo, rubber tracks merit real consideration? And, most important, will the Solo actually do the required job in one pass on his ground? If the answers are all 'yes', then the Solo starts to make sense.

Andrew Faulkner

Fuel/output measurements

profi test measurements on Simba Solo 300 plus 4.6m wide double press

	Site A	Site B	Site C	Site D
Field size	21.63ha	24.66ha	21.00ha	0.75ha ¹⁾
Soil type	Medium clay	Medium clay	Greensand	Medium clay
Previous crop	Spring beans	Winter beans	Winter OSR	Winter wheat
Disc gang angle setting front/rear	2F/2R	2F/2R	3F/2R	3F/2R
Disc depth	100mm	75-100mm	75-100mm	100mm
Leg depth	200mm	150mm	150mm	250mm
Wheelslip	18-20%+	10-15%	8-10%	20%+
Average speed	8.5km/hr	10.5km/hr	11.0km/hr	6.0km/hr
Spot output	2.8ha/hr	3.5ha/hr	3.6ha/hr	2.0ha/hr
Fuel use	22.17 litres/ha	19.50 litres/ha	17.30 litres/ha	- ²⁾

¹⁾ Because of a shortage of available ground, we were restricted to a plot test on winter wheat stubble, hence the small 0.75ha plot size; ²⁾ winter wheat stubble plot size meant it was not worthwhile carrying out a fuel test. Other plots measured in excess of 20ha.