SIP Silvercut Disc 340 F S-Flow + Disc 340

Gold for Silvercut

The Slovenian agricultural machine manufacturer SIP now also offers a towed linkage for its Silvercut front mowers. We have taken a close look at the device in combination with a 3.40 m wide rear mower.

By Johannes PAAR, Editor of LANDWIRT

Field test

Less than ten years ago, SIP, a Slovenian forage harvesting equipment specialist, developed the Silvercut series of disc mowers. In 2010, we published the first field test of the 3 m wide Silvercut 300 F front mower under the title "Silver, but not yet Gold". With the new towed "S-Flow" linkage, SIP has now finally become one of the competitors for the gold medal in terrain adjustment. And the manufacturer has improved in other areas as well.

Since there was no 3 m wide front mower available for the first time, we opted for the striking 3.4 m wide version, the Silvercut Disc 340 F. The only problem is the road transport, because the device with upfolded curtain protection rails is still 3.35 m wide. If you travel a lot on public roads, you should opt for the 3 m wide front mower. Although the rear mower has a transport width of only 1.86 m, it extends beyond the right tractor side. Since the bar pivots obliquely to the centre, it is also stable at high transport speeds. A choke prevents it from swivelling over the tipping point too quickly in the 90 ° position. Unfortunately, the protective tarpaulins often remain on the mower when they are unfolded and must be pulled down by hand. We liked the fact that the rear mower can now also be stored in a space-saving position for transport.

The rotation directions of the eight cutting discs can be combined in three different ways depending on the requirements.

Excellent terrain adjustment

The highlight of this mower combination is without doubt the towed front linkage called the S-Flow. The cutter bar can move 20 cm downwards and 30 cm upwards. It rotates actively up to –6 ° moving downwards and +14 ° moving upwards. In addition, the bar can be tilted by +/–28 ° transversely to the direction of travel, which allows for great freedom of movement in all directions.

As stated by SIP, they have invested a year and a half in developing this kinematics. We also enjoyed the hydropneumatic suspension of the cutter bar.

It is located in the front part of the linkage and transfers the weight of the bar to the frame. The system operates independently of the tractor. An elongated hole in the lifting cylinder ensures that the weight of the load is kept constant over the entire range of movement.

In order for this sophisticated system to work properly, you have to take into account a few points, which are clearly displayed on stickers: If the mower is connected to the quick A Frame linkage, the lower links must be lowered to a height of 77 cm. The front support leg is removed and “hidden” in the frame's cross pipe. To ensure that the installation height is always the same, SIP also delivers chains that prevent the lower links from sinking further. The front lifting mechanism should always remain in the floating position during mowing, so that the lower links can move away in case of major obstacles. Instead of the limiting chains, we have “locked” the lifting mechanism downwards and ensured the additional freedom of movement upwards with the elongated holes in the lower links. If the upper frame is parallel to the ground, the mowing height is between 5 and 6 cm. With the length of the upper link, this can be easily adjusted again slightly.

The following three functions are controlled by a double-acting control unit and a three-way valve on the linkage. In the “Float” position, the bearing pressure can be adjusted continuously

Hydropneumatic suspension

Excellent terrain adjustment

The FPT four-cylinder engine The towed S-Flow linkage with hydropneumatic suspension allows the cutter bar to move freely in all directions and quickly adapts to the terrain. The system operates independently of the tractor.

Quick blade change system

The towed S-Flow linkage of the front mower adapts to big changes in terrain even when driving fast.

The rear mower is suspended in the middle and is hydropneumatically relieved of the load, like the front mower.

according to the requirements. It is displayed on a easily legible manometer. If the value is set, the line is disabled. In the "Lift" operating mode, the cutter bar can now be lifted and lowered. In the intermediate "Close" position, the oil flow is blocked for road transport. Lateral pendulum motions are blocked by an additional mechanical locking mechanism.

Clean cut with elevated cutting discs

Since our last test in 2010, the manufacturer has made only small changes to the cutter bar.

According to their own data, SIP optimised the skids and the spaces between mowing discs. The gearbox is much more advanced in the S-Flow front mower compared to the comparatively short, pushed linkage. Therefore, there is no problem with the length of the PTO shaft. The cutter bar is driven by means of an angular gear, another PTO shaft with freewheel and a friction clutch (1,200 Nm) and via a double universal joint to the first cutting disc. Both test mowers, measuring 3.4 m wide, had eight cutting discs each. SIP uses the standard transmission for the 1,000-PTO shaft. On request, 540 rpm are also possible with the rear mower. The manufacturer specifies the cutting disc speed at 3,000 rpm. Each disc is protected against overload with four brass shear pins. Since the entire mowing unit is screw-fastened, parts can be replaced easily. According to the manufacturer, the cost of spare parts for such repairs is about 5 euros.

The SIP offers a great deal of flexibility when depositing feed. The swath width can be adjusted from a minimum of 1.6 m to a maximum of 2.6 m–on the one hand with the rotation direction of the mowing discs, ~~and on the other with adjustable, rotating swath discs.~~ You can choose between three options. If all discs turn to the centre, narrow swaths are also possible on slopes. If they are directed to each other in pairs, the feed is transported backwards faster and is then deposited over a wide area, which is advantageous, for example, when using a forage pick-up head. The third option is the combination of the two, as used in our front mower. The two outer cutting discs are turned inwards. In the test rear mower, all the discs counter-rotated in pairs. As a consequence, when driving in rows on steep slopes, the feed tended to flow downhill, which interfered with the otherwise excellent cutting quality. The manufacturer has remedied this phenomenon with additional extensions on the cutting discs. In the front mower with the "combined" disc direction, the feed flow and the cutting quality were always fine without any disc extensions.

Large, solid wear skids made of Hardox steel protect the underside of the cutter bar. Even an optional backside cutter bar protection is available.

Quick blade change system in the series

There was a lot of praise for the mowing blades. They are characterised by their very long service life. If they do wear out and need to be replaced, the mower will be ready for use in a very short time. The front curtain protection–just like the side protective cloths–can simply be folded up and locked in position automatically with a spring-loaded lever. However, the front mower with the S-Flow hitch protruding far forward must

LANDWIRT Evaluation Table

General:
+ low self-weight
+ good and fast terrain adjustment
+ clean cutting pattern
+ easy blade change
+ screw-fastened blade holder bolts
+ various disc rotation directions possible
+ installation of various forage pick-up heads possible

Front mower:
+ swath width adjustment
+ support foot holder
+ rubber bands for securing the tarpaulin in transport position

Rear mower:
+ suspended in the middle with hydropneumatic suspension
+ adjustable suspension during travel
+ stable transport position
+ throttle for folding
+ can be stored in transport position

Front mower:
– protection wider than the mower despite folding

Rear mower:
– suspension pressure must be adjusted anew each time
– it extends right below beyond the tractor in the transport position
– protective tarpaulins often remain on the frame when unfolding

Collision protection: if you drive towards an obstacle, the bar pivots away backwards and upwards, and then returns automatically.

Wear skids made of Hardox steel protect the cutter bar from below.

rest on the ground. The disadvantage here is that you have to kneel on the ground when changing blades. The spanner for the quick change system is fixed in its holder at the top of the mower with a linchpin. There is also a small storage box for spare blades. If the same spanner is used to remove the largest dirt residues underneath the cutting disc, you can press the holder down without any trouble and replace the worn blade with a new one.

The cutter bar gets only slightly soiled during use. Reamers between the discs and the bars prevent the accumulation of feed residues. The massive blade holders themselves are screwed to the cutting disc. Once the carrier pin wears out, you do not need to replace the entire disc.

Silvercut rear disc mower

The cutter bar is the same as in the front mower and is also driven via angle gears and PTO shafts directly to the first cutting disc. It is suspended in the middle and can adjust to inclinations from –15 ° to +20 ° transversely to the direction of travel. The hydropneumatic suspension must always be adjusted before you start mowing. In contrast to the front mower, this can be changed in the rear mower even while driving. If the mower is removed from the tractor in the operating mode, you must first remove the pressure from the cutter bar. This is not necessary when removing it using the supporting feet.

If you flip down the light racks on the front mower, you get a clear view of the mowing edge. *All photos: Paar*

The collision protection can be set as desired. If the bar bounces against an obstacle, it deflects backwards and upwards simultaneously. Then it automatically returns to the initial position.

We must also commend the road safety equipment (warning signs) and the lighting equipment. In the front mower, the holders can be folded with the warning signs to get a better view of the mowing edge. In all Silvercut mowers, SIP uses Walterscheid PTO shafts with the largest possible lubrication intervals.

The mower combination left a good overall impression on our test team. The new S-Flow linkage has kept the manufacturer's promise. The terrain adjustment is excellent even when driving fast on uneven surfaces. Of course, this added value in terms of technology also has its price. According to the price list, the Silvercut Disc 340 F S-Flow front mower costs € 16.722, inclusive of VAT. The rear mower of the same width will cost you €14.946.

Overview of the technical data		
	Silvercut Disc 340 F S-Flow	**Silvercut Disc 340**
working width	3.32 m	3.25 m
transport width	3.35 m	1.86 m
number of discs	8	8
number of blades per disc	2	2
blade dimensions	110x48x4 mm	110x48x4 mm
cutting height	40–70 mm	40–70 mm
linkage	towed, hydropneumatic suspension	suspended in the middle with hydropneumatic suspension
PTO rotation speed / disc rotation speed	1,000 / 3,000 rpm	1,000 (option 540 rpm) / 3,000 rpm
swath wheels	1 – standard (2 – option)	option
swath width	1.6–2.6 m	1.8–2.2 m
self-weight	603 kg	850 kg
catalogue prices, VAT incl.		
standard equipment	€16.722	€14.946
test equipment	€17.798	€15.314

LANDWIRT Tip

You can find a video and more pictures of SIP's Disc 340 F S-Flow and Disc 340 mowers at www.landwirt.com/landtechnik