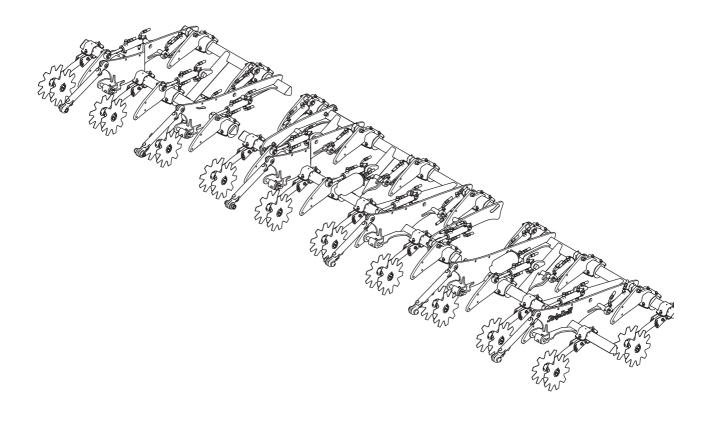


series ST 400-600C StripDrill

Manufacturing No. 909-



Instructions

902626-en 01.03.2014 2

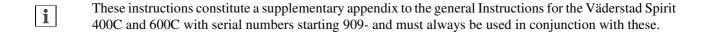
1 **Instructions and settings** 1.3.1 1.3.2 Filling the seed hoppers, ST 400C.....8 1.5 1.5.1 1.5.2 1.6 1.8.1 182 Setting the working depth, Spirit 400C.....14 1.9.1 1.9.2 1.9.3 1.9.4 1.9.5 1.10.1 1.10.2 2 **Maintenance and service** 2.3 3 **Appendices** 3.3 3.3.1 3.4 3.4.1 3.4.2 3.5 3.5.1 3.6 3.6.1 3.7

INTRODUCTION

StripDrill is a front tool for the Spirit seed drill and is used for drilling and fertilising on light to medium soils. The front tool is equipped with so-called StripDrill tines and extra fertiliser coulters located behind these. StripDrill tills the soil down to a depth of 30 cm and places fertiliser at two different levels while the machine is drilling. The fertiliser coulters distribute the amount of fertiliser between these two levels.

The depth setting of the fertiliser levels and the working depth of the tines can be adjusted during operation. The depth setting can be monitored and adjusted from ControlStation during operation.

It is also possible to change the working depth for the fertiliser coulters on the tines.





Before bringing the seed drill into service, read carefully all of the safety precautions in the Instructions for the Spirit 400C and Spirit 600C.

In respect of the machine width, the settings for the Spirit 400C and Spirit 600C in the general Instructions apply.



EC DECLARATION OF CONFORMITY FOR THE MACHINERY according to EU Machinery Directive 2006/42/EC

Väderstad-Verken AB, Box 85, SE-590 21 Väderstad, SWEDEN hereby confirms that the drilling machines hereunder have been manufactured in accordance with Council Directives 2006/42/EC and 2004/108/EC.

The above declaration covers the following machines: ST 400C and ST 600C with serial no. 909-

Väderstad, 01/02/2013

Lars-Erik Axelsson Legal Requirements Coordinator Väderstad-Verken AB Box 85, SE-590 21 Väderstad

The undersigned is also authorised to compile technical documentation for the above machines.

1 Instructions and settings

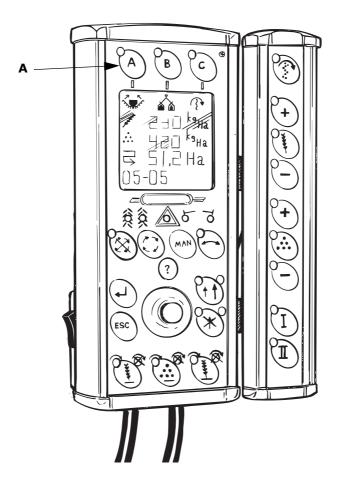


Figure 1.1

1.1 ControlStation

See also the Instructions for the Spirit 400-600S, 400C and Spirit 600C; this Appendix only illustrates those menus and functions of ControlStation that differ or are additional for StripDrill.

1.2 Programming

For ST 400C

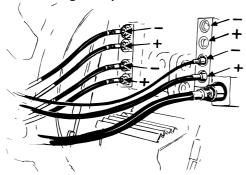
In programming menus: Front tool. Select System Disc by pressing the A button (A) while scrolling with the selection dial.

For ST 600C

Select StripDrill by pressing the A button (A) while scrolling with the selection dial.

1.3 Connection and disconnection

1.3.1 Connecting the hydraulic hoses, ST 400C



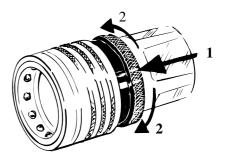


Figure 1.2 Figure 1.3

i

Also see the section "Tractor hydraulic system requirements" in the Instructions for the Spirit 400C.



Carefully check that all hoses are connected in pairs to the correct hydraulic couplings on the tractor.

- 1 1 x 1/2" hose + 1 x 3/8" hose (marked with red plastic rings) for driving the fan connect to a double-acting hydraulic coupling.
- 2 1 x 3/4" hose connects to a pressure-free return input. Lock the return input quick-release coupling female connection. See "Figure 1.3".
- 3 2 x 1/4" hoses (marked with blue plastic rings) for folding wing sections and adjusting the working angle on the StripDrill tines connect to a double-acting hydraulic coupling.
- 4 2 x 3/8" hoses (marked with yellow plastic rings) for raising/lowering the seed drill unit and the front tool as well as operating the bout markers connect to a double-acting hydraulic coupling.
- 5 2 x 1/4" hoses (marked with white plastic rings) for setting the working depth for the front tool connect to a double-acting hydraulic coupling.

Carefully wipe the couplings and outlets dry! This is a good way to avoid unnecessary problems and wear in the hydraulic system.

Read the section "Setting the amount of air" in the Instructions for the Spirit 400C before starting the fan.

1.3.2 Connecting the hydraulic hoses, ST 600C

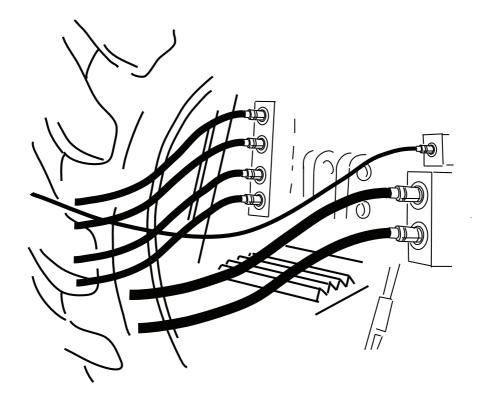


Figure 1.4



The tractor must always be switched off during connection and disconnection of the hydraulic hoses, otherwise the seed drill's hydraulics can be damaged.



Also see the section "Tractor hydraulic system requirements" in the Instructions for the Spirit 600C.



Carefully check that the hoses are fitted to the correct hydraulic coupling on the tractor. Always connect the hydraulic hoses, in the order set out below, to the tractor's LS hydraulics.

- 1 Connect 1 x 1" hose to a pressure-free return input. Lock the return input quick-release coupling female connection. See "".
- 2 Connect 1 x 3/4" hose for the pressure line system.
- 3 Connect $1 \times 1/4$ " hose for the load signal.
- 4 Connect 2 x 1/2" hoses for the filling auger (option/accessory).
- i
- The couplings conform to ISO 7241-1, series A.
- i

Carefully wipe the couplings and outlets dry! This is a good way to avoid unnecessary problems and wear in the hydraulic system.

1.4 Preparations before filling the seed hoppers

The front seed hopper is used for seed and the rear hopper for fertiliser on the 400C.

The front seed hopper is used for fertiliser and the rear hopper for seed on the 600C.

Otherwise, follow the instructions in the section "*Preparations before filling the seed hopper*" in the Instructions for the Spirit 400S and the Spirit 600C.

1.5 Filling the seed hoppers, ST 400C

1.5.1 Filling from a bulk bag



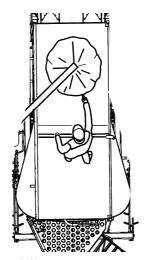
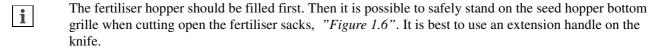


Figure 1.5

Figure 1.6





Put safety first: never stand under a suspended load! Make sure nobody is present on the drill when the seed and fertiliser are brought up to it. Avoid contact with and inhalation of seed dressing.

1.5.2 Filling from small bags

The fertiliser hopper should be filled first. Then it is possible to safely stand on the seed hopper bottom grille when cutting open the fertiliser sacks, "Figure 1.6".



The ladder and platform on the machine are not intended to be used for manual loading from small bags. The best method of filling is by using a loader and having the bags on a pallet.



Put safety first: never stand under a suspended load! Make sure nobody is present on the drill when the seed and fertiliser are brought up to it.



Avoid contact with and inhalation of seed dressing.

1.6 Filling the seed hopper, ST 600C



The seed drill is hydraulically pressurised when the tractor is connected and in operation.

- The safety valve on the front hydraulic block must always be closed during calibration, when setting the drilling depth and during transport on public roads.



All top grilles must always be lowered when filling the seed hopper. See "Figure 1.5".

Filling from a bulk bag



Put safety first: never stand under a suspended load! Make sure nobody is present on the drill when the seed and fertiliser are brought up to it. Avoid contact with and inhalation of seed dressing.



Figure 1.7

On the ST 600C the front part of the seed hopper must be used for fertiliser and the rear part of the seed hopper for seed.

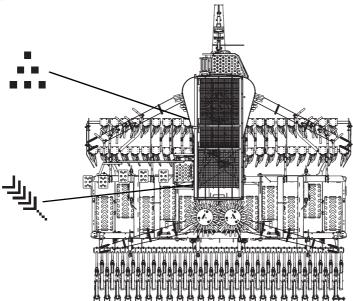


Figure 1.8

Also see section 13 "Platforms and access routes" in the Instructions for the Spirit 600C.



Filling from small bags



Put safety first: never stand under a suspended load! Make sure nobody is present on the drill when the seed is brought up to it. Do not go up to the seed hopper unless absolutely necessary. Avoid contact with and inhalation of seed dressing.



The platforms are not intended to be used for manual loading from small bags. If small bags are to be used, the best way to fill the seed drill is to use a loader with the bags on a pallet.

1.7 Setting the amount of air, Spirit 400C

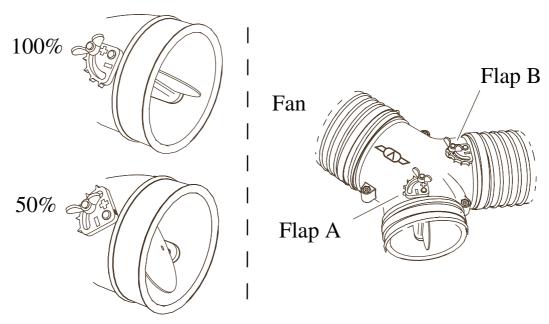


Figure 1.9

The seed drill fan is located on the front wall of the machine and is driven by the tractor's hydraulic system.

The amount of air in the feed system is regulated by the fan rotation speed and by a flap in the air hose's distributor to the two seed meters.

The rotation speed of the fan is adjusted by the tractor flow valve and displayed on ControlStation.

Set the fan rotation speed and flap position in accordance with the following tables.

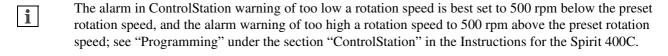
Table 1.1 With seed in the front hopper and fertiliser in the rear hopper

	Fan rotation speed (rpm)	Flap A (seed)	Flap B (fertiliser)
Small size seeds	3800	50% open	100% open
Grain	4200	100% open	100% open

Table 1.2 With seed in the front hopper and an empty rear hopper

	Fan rotation speed (rpm)	Flap A (seed)	Flap B (fertiliser)
Small size seeds	2200	100% open	fully closed
Grain	3600	100% open	fully closed

Alarms



1.8 Setting the amount of air, Spirit 600C

1.8.1 Air Balance

The seed rate fan is located on the front wall of the seed hopper and is driven by the tractor's hydraulic system.

The amount of air to the metering units is regulated using the air balance system. The fan's direction of rotation is marked on the fan grille.

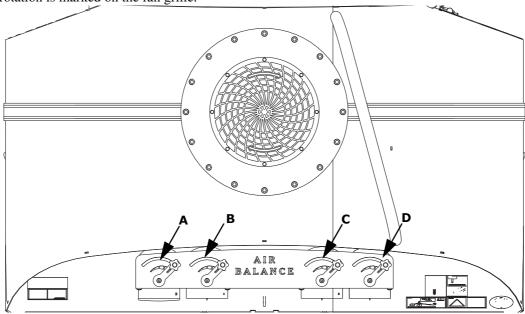


Figure 1.10

The right output is intended for fertiliser (D), the two in the centre are intended for seed (B and C) and if the machine is equipped with BDA the left output (A) is intended for this.

Table 1.3

Default setting		%
Fertiliser		100
Grain		100
Rape		50
BDA with grass seed	_	25

If you drive with seed-seed in the seed hopper, the air balance setting for fertiliser must be set to 0%. If full fan speed is not required, the fan's rotation speed should be lowered on ControlStation. (See "Functional description" in the Instructions for the Spirit 600C.)

1.8.2 Amount of air

Set the fan rotation speed in accordance with the table. Check the fan rotation speed in the display on ControlStation.

Normal mode fan rotation speed: 2800-3400 rpm

Table 1.4 Recommended fan rotation speed

	Rotation speed (rpm)
Small size seeds	2800
Grain	3400

The alarm on ControlStation warning of too low a rotation speed is best set for 300 rpm below the preset rotation speed, and the alarm warning of too high a rotation speed to 300 rpm above the preset rotation speed. (See "General settings" in the user manual for the Spirit 600C.)

1.9 Setting the working depth

The fertiliser coulters are fitted on the StripDrill tines of the front tool and the depth setting is adjusted by changing the working depth of the front tool. When the machine is lowered to the working position, the front tool and the seed drill unit go down to the set working depth.

Make sure that all sections of the front tool work at the same working depth along the entire working width of the machine, and that both shafts of the front tool work in parallel. See the section "Setting the front tool" in the Instructions for the Spirit 400-600C.

1.9.1 Setting the working depth, Spirit 400C

When the machine is lowered to the working position, the front tool and the seed drill unit go down to the set working depth. See also the section "Setting the drilling depth" in the Instructions for the Spirit 400C.

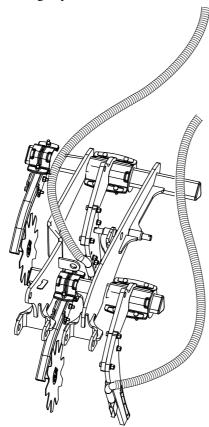


Figure 1.11

Adjustment of the working depth should always be done in the field immediately prior to operation.

The working depth of the front tool in relation to the drill unit is set with the aid of a separate hydraulic circuit. This circuit includes a 'memory cylinder', which means that the front tool returns to the set working depth when the machine is lowered, for example after turning. Also see the section "Setting the working depth for the front tool" in the Instructions for the Spirit 400C.

Adjustment of the working depth is performed as follows:

- 1 Lower the front tool and seed drill unit with the hydraulic circuit for machine raising/lowering (hoses marked yellow). The front tool stops at the depth at which the memory cylinder is set.
- 2 Adjust the working depth for the front tool by altering the position of the memory cylinder with its hydraulic circuit during operation (hoses marked white). The working depth can be displayed by

selecting the symbol _____ in the third line of the operating menu on ControlStation.

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The value of 1–100 displayed is not the actual working depth but only a scale where the low value indicates shallow working depth and the high value indicates deep working depth.

1.9.2 Setting the working depth, Spirit 600C

When the machine is lowered to the working position, the front tool and the seed drill unit go down to the set working depth.

Adjustment of the working depth should always be done in the field and as follows:

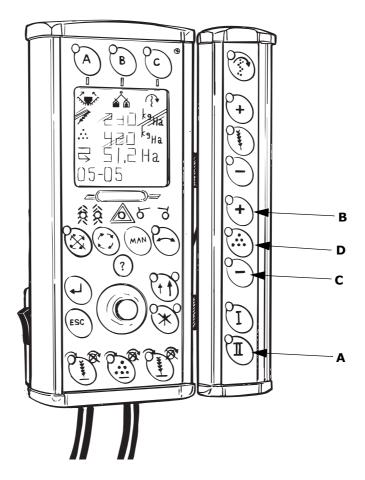
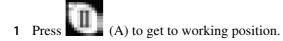


Figure 1.12





3 Once the desired working depth has been reached, save the setting by holding in the for 3 seconds.

i

1.9.3 Checking the working depth

Always check the working depth in the field.

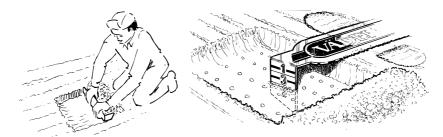


Figure 1.13

The actual working depth can only be checked in the field. It is therefore important to make the settings in the field immediately prior to operation so that the working depth can be adjusted to the prevailing conditions.

The working depth should be regularly checked during the day. An appropriate interval might be once an hour. Also see the section on "Drilling depth and coulter pressure" in the Instructions for the Spirit 400C and Spirit 600C.

1.9.4 Setting the working depth of the fertiliser coulters

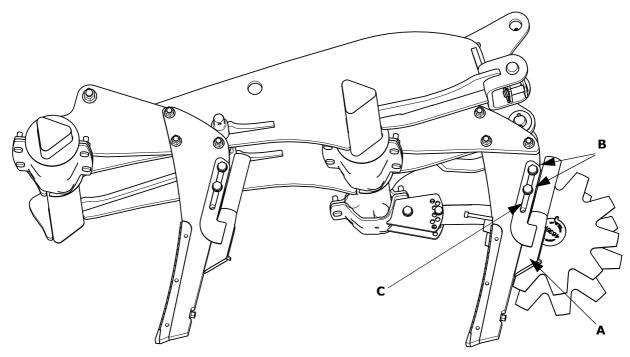


Figure 1.14

Setting the fertiliser coulters (A):

- 1 Undo the screws (B).
- 2 The height of the fertiliser coulter holder can be continuously adjusted in the oval hole (C).
- 3 Tighten the screws (B) in the screw holes after making the adjustment.

1.9.5 Setting the spill prevention plates

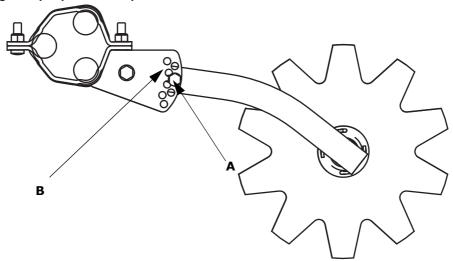


Figure 1.15

The spill prevention plates which are mounted on StripDrill must work approx. 1 cm below ground level. Note that the vertical setting of the spill prevention plates should be adjusted in cases of considerable changes to the working depth.

To adjust the height of a plate, remove the screw (A) and move the holder up or down in the hole series (B) to the desired position.

1.10 Switching between oilseed and grain

(!)

When switching from the setting for oilseed to the setting for grain and transport, you must remember that the furrow must be moved 8 cm to the side when drilling oilseed so as to centre the machine and then readjusted before drilling grain and transport.

When drilling oilseed, the front tool's drawbar (A) must be in position 1 ("Figure 1.16"). Remember that when drilling oilseed the outermost, long, coulter does not drill. When drilling grain, the front tool's drawbar (A) must be in position 2 ("Figure 1.17").

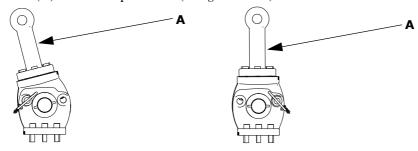


Figure 1.16 Position 1

Figure 1.17 Position 2

1.10.1 Drilling grain

When drilling grain, the rows must be 16.7 cm apart. Ensure that all outputs in the seed distributor head are open.

Switching from drilling oilseed to drilling grain and transport

To centre the machine for drilling grain and for transport, the drawbar must be moved 8 cm to the side and be in position 2. See "Figure 1.17".

- 1 Place the drawbar (A) in position 2. See "Figure 1.17".
- 2 Remove the spacer (B) from the front tool ("Figure 1.18").
- 3 Slide the front tool over to the other end position.
- 4 Fit the spacers (B) to the other side of the bolts.

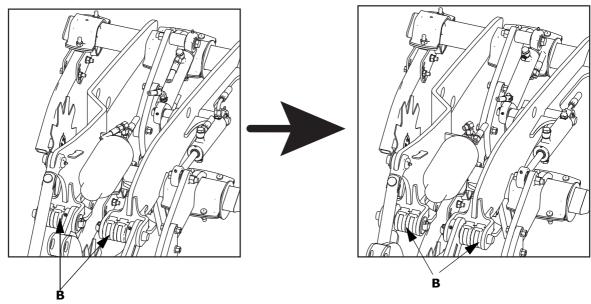


Figure 1.18 From drilling oilseed to drilling grain

5 Fasten the pin (C) as in "Figure 1.19".

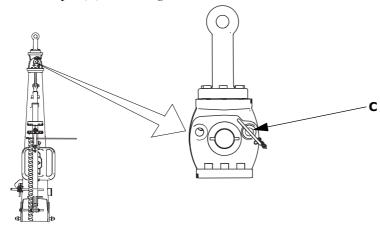


Figure 1.19 Drawbar in position 2, for drilling grain and for transport

6 Remove or push up all spill prevention plates between the StripDrill tines but leave the outer spill prevention plates where they are.

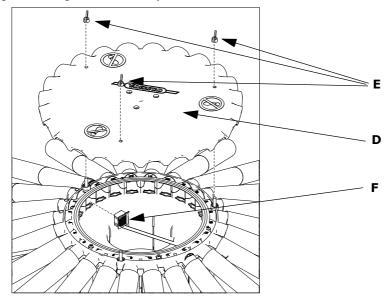


Figure 1.20

- 7 Remove the cover (D) from the distributor head by unscrewing the three wing nuts (E).
- **8** Remove all plugs (F) from the holes on the seed distributor head so that the hoses for all seed drill units are open.
- **9** Replace the cover and fit the wing nuts.
- **10** Adjust the bout marker arms according to the section *Bout markers* in the Instructions.

1.10.2 Drilling oilseed

When drilling rapeseed and other oilseed, the rows must be 33.4 cm apart. Half of the seed coulters must be closed.

When drilling oilseed, the spill prevention plates must be in place between the front and rear rows of the StripDrill tines. These plates prevent soil and straw from getting into the seed furrow. This ensures the rows stay clean and the conditions for the seeds are good.

Switching from drilling grain to drilling oilseed

When drilling oilseed, the machine must be moved 8 cm to the side in order for it to be centred.

- 1 Place the drawbar (A) in position. See "Figure 1.16".
- **2** Remove the spacer (B) from the front tool ("Figure 1.21").
- 3 Slide the front tool over to the other end position.
- 4 Fit the spacer (B) to the other side of the bolts.

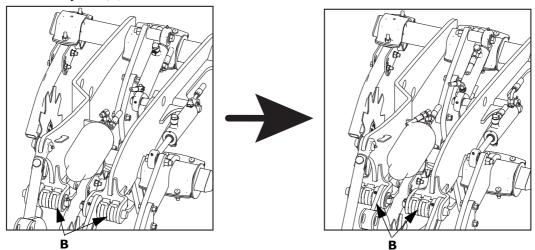


Figure 1.21 From drilling grain to drilling oilseed

5 Fasten the pin (C) as in "Figure 1.22".

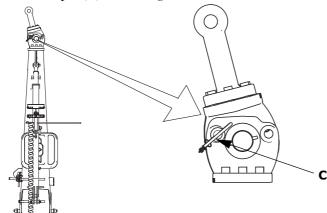


Figure 1.22 Drawbar in position 1, for drilling oilseed.

- **6** Remove or fold down all the spill prevention plates between the StripDrill tines. To set the spill prevention plates, see "1.9.5 Setting the spill prevention plates" on page 20.
- 7 Remove the cover from the seed distributor head. Close every other hole on the seed distributor head by inserting plugs into the holes for all long seed drill units.
- 8 Replace the cover.
- 9 Adjust the bout marker arms according to the section "Bout markers" in the Instructions.

For the machine to be centred for transport the drawbar must be in position 2, see "Figure 1.17" and "Switching from drilling oilseed to drilling grain and transport" on page 21.

2 Maintenance and service

2.1 Lubrication points



Put safety first! Do not crawl under the machine. Lubricate from above or support the machine securely on trestles or similar supports. Also see instructions in the Instructions.

Lubricate according to the figures below, using 2–3 pump strokes per nipple.

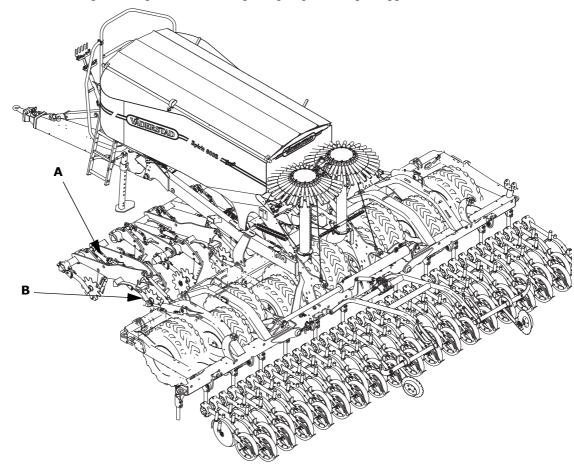
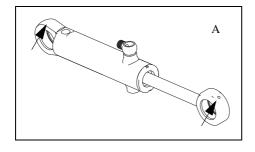


Figure 2.1 Lubrication points



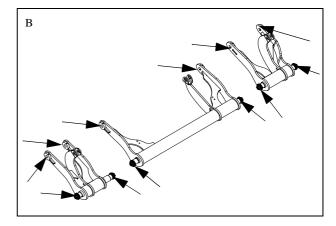


Figure 2.2 Lubrication points

2.2 Changing discs

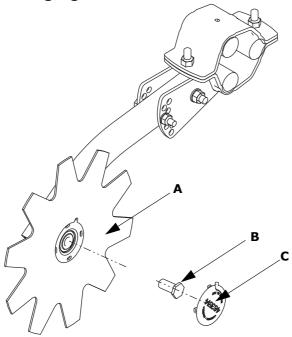


Figure 2.3



Make sure the front tools are securely supported.



Be sure to keep dirt away whenever work needs to be performed on the bearing!

To change the disc (A):

- 1 Remove the cover and seal (C).
- 2 Undo the screw (B).
- **3** Take out the disc and fit a new one (A).
- 4 Replace the cover and seal (C).

2.3 Changing the tine blade

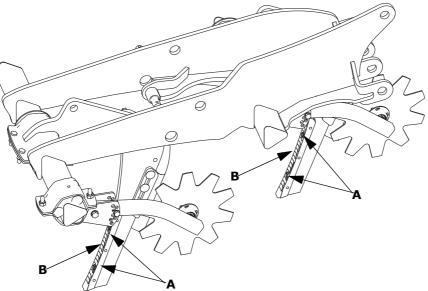


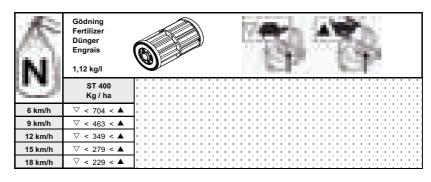
Figure 2.4

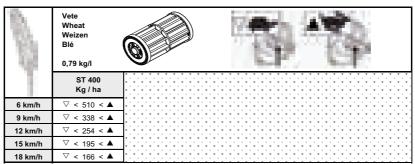
To change the tine blade:

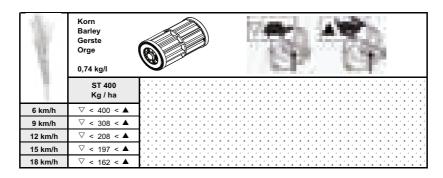
- 1 Undo the screws (A).
- 2 Take out the blade and insert a new one (B).
- **3** Fasten the screws (A) to a tightening torque of 26 Nm.

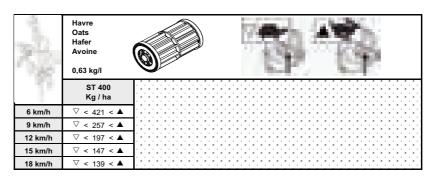
3 Appendices

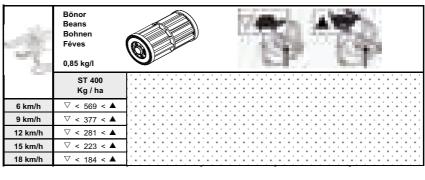
3.1 Seeding table for Spirit 400C

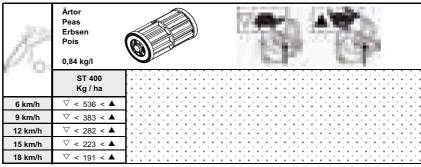


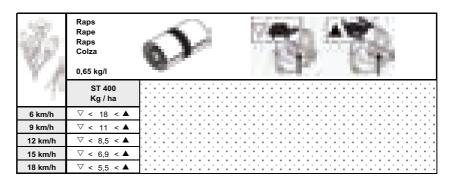


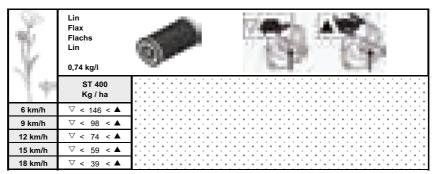


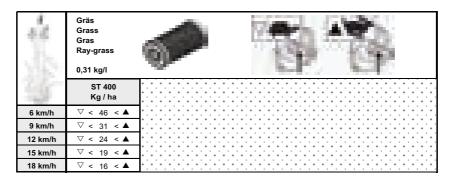




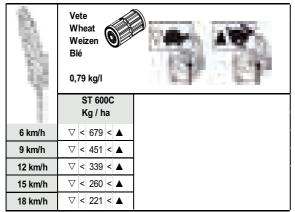


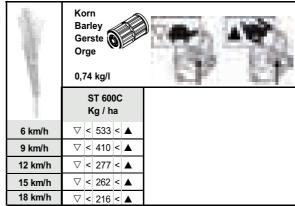


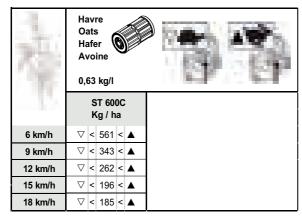


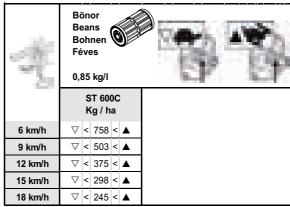


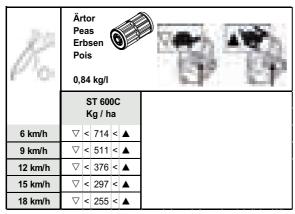
3.2 Seeding table for Spirit 600C

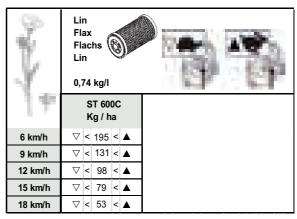


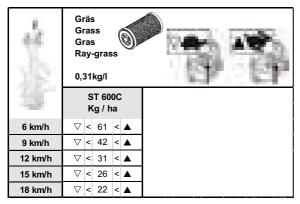


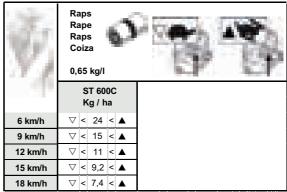












3.3 Electrical components for ST 400C

3.3.1 WorkStation connections

Table 3.1

WorkStation connection	Function	Hydraulic block connection
WS6-1	Level guard, right*	
WS6-2	Level guard, left**	
WS6-3	Rotation guard, right* metering unit	
WS6-4	Rotation guard, left** metering unit	
WS6-5	Rotation counter, seed rate fan	
WS6-6	Radar	
WS6-8	Rotation guard, BioDrill	
WS6-9	Mini Remote, plus button	
WS6-10	LowLift sensor, seed drill units	
WS6-11	LowLift sensor, front tool	
WS6-13	Lift stop, front tool	С
WS6-14	Lift stop, seed drill units	F
WS6-15	Pre-emergence bout marker	D
WS6-16	Tramlining, right	
WS6-17	Tramlining, left	
WS6-20	Bout marker, right-hand	В
WS6-21	Bout marker, left-hand	A
WS6-22	Wing locking valve	L
WS6-23	Mini Remote, cereal ear button	
WS6-24	Level guard, BioDrill	
WS6-25	Wing folding sensor, left-hand side	
WS6-M1	Electric motor for feed, left**	
WS6-M2	Electric motor for feed, right*	
WS6-M3	Electric motor for feed, BioDrill	

^{*} Right = fertiliser

^{**} Left = seed

3.4 Electrical components for ST 600C

3.4.1 Connections, WorkStation WS6

Table 3.2

WorkStation connection	Function	Hydraulic block connection
WS6-1	Seed level guard, right	
WS6-2	Seed level guard, left	
WS6-3	Rotation guard, right metering unit	
WS6-4	Rotation guard, metering unit	
WS6-5	Rotation counter, seed rate fan	
WS6-6	Radar	
WS6-7	Following harrow up	
WS6-8	StripDrill up	
WS6-9	Mini remote	
WS6-10	Position sensor, seed drill unit	
WS6-11	Position sensor, front tool	
WS6-12	Fan control	F8
WS6-13	Fertiliser auger	F3
WS6-14	Hydraulic lock, StripDrill	
WS6-15	Pre-emergence bout marker	B15
WS6-16	Half-machine shut-off, Flex right-left – Relay box	
WS6-17	Half-machine shut-off – Relay box	
WS6-18	Half-machine shut-off, centre position sensor fertiliser – Relay box	
WS6-19	Directional valve, fertiliser auger	F2
WS6-20	Bout marker, right-hand	B13
WS6-21	Bout marker, left-hand	B11
WS6-22	Safety valve/Wing activation	
WS6-23	Activation, LS signal	F9
WS6-24	Level guard, BioDrill (accessory)	
WS6-25	Level guard, fertiliser	
WS6-M1	Electric motor for feed, left	
WS6-M2	Electric motor for feed, right	
WS6-M3	Electric motor for feed, BioDrill (accessory)	

3.4.2 Connections, Work Station WS2

Table 3.3

WorkStation connection	Function	Hydraulic block connection
WS2-1	Right wing up	
WS2-2	Right wing down	
WS2-3	Rotation guard, BioDrill (accessory)	
WS2-4	Left wing down	
WS2-5	Left wing up	
WS2-6	Revolution speed, fertiliser auger	
WS2-7	Right wing down	B9 low

Table 3.3

WorkStation connection	Function	Hydraulic block connection
WS2-8	Right wing up	B9 high
WS2-10	Wing pressure sensor	
WS2-11	Coulter pressure sensor	
WS2-12	Front tool up	B6 low
WS2-13	Front tool down	B6 high
WS2-14	Seed drill unit up	B1
WS2-15	Following harrow down	
WS2-16	Tramlining, right	
WS2-17	Tramlining, left	
WS2-18	Tramlining monitoring RH sensor	
WS2-19	Hydraulic valve, front tool	
WS2-20	Coulter pressure	B3
WS2-21	Hydraulic lock, seed drill unit	B2
WS2-22	Bout marker activation	B10
WS2-23	StripDrill pressure	

3.5 Hydraulics for ST 400C

3.5.1 Overview of hydraulic system

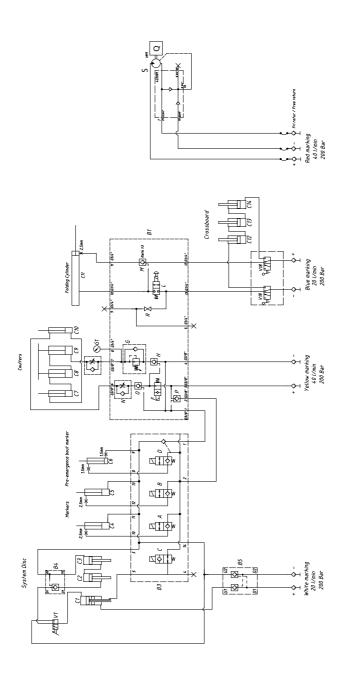


Figure 3.1 492552

3.6 Hydraulics for ST 600C

3.6.1 Overview of hydraulic system

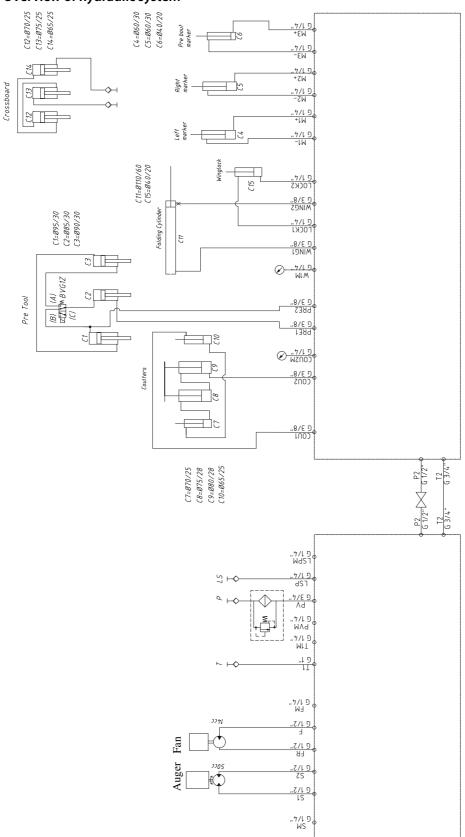


Figure 3.2

3.7 Technical data

Table 3.4

Machine	ST 400C StripDrill	ST 600C StripDrill
Working width (m)	4.0	6.0
Transport width (m)	3.0	3.0
Transport height (m)	2.65	3.55
Length (m)	8.20	8.40
Total volume, seed hopper (litres)	3900	5000
Tare weight of the basic machine (kg) *	5000	6700
Maximum total weight (kg)	8600	11700
Maximum permitted payload (kg)	3600	4800
Maximum permitted axle load (kg)	7400	9400
Maximum permitted coupling load (at the tractor hitch) (kg)	2000	2400

^{*} including StripDrill and following harrow



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