SPIDER PLUS
520, 620, 720 & 820

HANDBOOK

UK

1. EDITION

MADE IN DENMARK

GREENTEC

Cutting Edge Technology

SPIDER 5-820 PLUS

(520 PLUS, 620 PLUS, 720 PLUS & 820 PLUS)

INSTRUCTION MANUAL

1. EDITION – APRIL 2023
(ORIGINAL VERSION)

! IMPORTANT !

For correct operation, this **GreenTec Spider 5-820 Plus** boom mower must be mounted on an approved vehicle with an approved GreenTec attachment tool.

It is important that the operator is given both the instruction manual, spare parts book, and all other relevant technical documentation for both the boom mower, attachment tool and vehicle before the machine is put into use for the first time.

It is important that the operator fully understands the contents of the instruction material before using the machine.

This instruction manual must accompany the machine and must always be available to the operator.

In case of later resale of the machine, all relevant technical documentation must be handed over to the new owner.

The content of the instruction manual is based on information, standards, and regulations, valid at the time of publication.

As our products are under continuous development and improvement, changes to the specifications may occur.

If there is information that differs from the current machine, updated instructions can be found on our webpage or by contacting GreenTec - Aftersales department at: service@greentec.eu

MANUFACTURER, NAME AND ADDRESS (a)

GREENTEC

Merkurvej 25
DK-6000 Kolding
Danmark

Tel: +45 75553644
Fax: +45 75554243

E-mail: info@greentec.eu
Web: www.greentec.eu

PREFACE

Dear Customer!

Your new GreenTec machine is designed based on almost 30 years of experience with vehicle-mounted machines for maintaining green areas.

The machine is manufactured based on the latest technology and approved safety regulations, standards and regulations.

We want to make a product available in a way that does not cause damage or misunderstandings either during use, during transport or during maintenance of the machine.

The instruction manual contains information and instructions that are important and useful for maintaining the operational safety, reliability and value of the GreenTec machine.

Therefore, read this instruction manual carefully, as it will make you familiar with assembly, use, care and maintenance. **Pay particular attention to instructions regarding safety!**

You are welcome to visit our website www.greentec.eu - where you can find technical documentation and access the latest updates to instruction- and spare parts books on our entire product range.

We hope that you will be satisfied with your new GreenTec machine!

Kind regards:

Signature:

John Christensen
Co-owner, Product Development
GreenTec A/S

GreenTec's vision is to develop and sell quality machines for the maintenance of green areas, i.e. in agriculture, industry, airports and the municipal sector. Through innovative product development, we strive to become a leader in our field.

All machines are developed in a simple, functional, and production-friendly design in close cooperation with dealers and end users. It is our goal to cover all needs in the market segment with a minimum of 2 different proposed solutions.

Through in-depth analysis and counseling, the customer must be offered the best possible solution, where individual needs can also be met through the modular structure of the product range.

The aim is also to offer the best possible after-sales service and a fast and efficient supply of spare parts.

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DECLARATION OF CONFORMITY (c)

MACHINERY DIRECTIVE 2006/42/EC ANNEX II.A

MANUFACTURER: GreenTec A/S
ADDRESS: Merkurvej 25
CITY: DK-6000 Kolding

We, GreenTec A/S, declare under all responsibility that the machine:

TYPE:	PRODUCT:	TO BE MOUNTED WITH:
Boom Mower	**Spider 5–820** 9992520C-85PF, 9992520C-85PH 9992620C-85PF, 9992620C-85PH 9992720C-85PH, 9992820C-85PH	Flail Mower FR 122 & FR 162 Flail Mower FR 122 B Quadsaw LRS 2002 & 2402 Rotary Hedge Cutter RC 162 Rotary Mulcher RM 232 Cutterbar HX 170 – 270 Cutterbar HS 212 & 242 Rotary Crusher GT 135 Grass Cutterbar S 165 – 240 Weed Clearing Brush BR 90 Rotary Ditch Cleaner GR 70

Table 1 – Machines covered by declaration of conformity

is manufactured in accordance with European Parliament and Council Directive 2006/42/EC and 2014/68/EU with references to the following standards associated with its design, construction, and production:

NAME:	DESCRIPTION:
EN ISO 12100:2011	Safety of machinery - General principles for design - Risk assessment and risk reduction
EN ISO 14120:2015	Safety of machinery – Guards - General requirements for the design and construction of fixed and movable guards
EN ISO 4413:2010	Hydraulic fluid power - General rules and safety requirements for systems and their components

Table 2 – Declared international standards

The declaration applies to the above-mentioned machines, including the machine's connections, or suspension and stabilization, power transmission and electrical connection.

When connecting the above-mentioned machines to a vehicle and/or with attachment tools other than those mentioned above, it is the responsibility of every operator and operator to ensure that the vehicle and the assembled machine meet the applicable requirements in the relevant directives for this.

Date: 01.07.2022

Signature:_____

John Christensen
Co-owner, Product Development
GreenTec A/S

1. MACHINE DATA AND USEFUL INFO (b)

Before the machine is put into use for the first time, the importer/retailer is responsible for ensuring that the buyer receives this document and that the machine is correctly registered via the Extranet on GreenTec's website: https://greentec.eu/user

If in doubt regarding login information, please contact GreenTec – Aftersales & Service: service@greentec.eu

The dealer/importer must also ensure that the buyer and operator fully understand the contents before the machine is put into use.

If the machine is re-sold, all the supplied technical documentation must be handed over to the new owner and must also always accompany the machine.

The fields below are filled in, for future use when ordering spare parts or other enquiries:

1.1 REGISTRATION OF GREENTEC MACHINE DATA

! THESE DATA MUST ALSO BE ENTERED VIA LOGIN IN THE GREENTEC EXTRANET BY DEALER !	
Machine description:	
Serial number:	
Date of delivery:	
Importer and/or dealer:	
E-mail:	
Phone:	

Table 3 – Machine data: form

GREENTEC

Merkurvej 25
DK-6000 Kolding
Danmark

Tel: +45 75553644
E-mail: info@greentec.eu
Web: www.greentec.eu
Opening hours: mon-fri (08:00-16:00)

DEALER STAMP

1.2 NAME PLATE

Alle All GreenTec's machines are equipped with a name plate.

The nameplate contains important information relating to the machine, including a unique serial number used for identification.

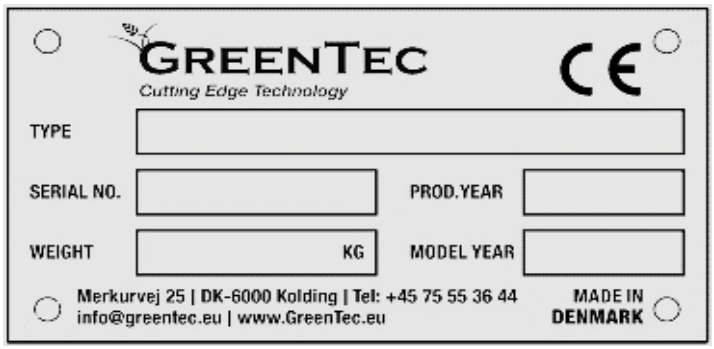


Figure 1 – Name plate for GreenTec machine

CONTENT OF THE NAME PLATE:	
Type:	Machine model and type number
Serial No.:	Unique serial number of the machine
Prod. year:	Production year
Weight:	Weight of the machine *without* optional equipment (kg.)
Model year:	The year of development of the machine model.
	The nameplate also provides address information for the manufacturer.

Table 4 – Content of GreenTec name plate

1.3 WARRANTY TERMS

For at opretholde GreenTec's 2-årige garanti samt produktansvarsforsikring, må der kun anvendes originale GreenTec reservedele på GreenTec maskiner og udstyr.

GreenTec is not liable for damage caused by illegal or incorrect use of the machine as well as incorrect connection or connected equipment, or by incorrect maintenance of the machine.

If GreenTec provides a warranty, the warranty must cover defective design, materials, and workmanship. A warranty issued by GreenTec does not cover faults and defects caused by insufficient maintenance, incorrect installation, changes made by a third party (end customer, customs etc.) due to incorrect use / handling of the goods.

GreenTec assumes no other responsibility for such errors. This applies to losses resulting from such a deficiency, including loss of profit, lost earnings, and other financial loss.

In addition, a warranty does not cover normal wear and tear. GreenTec's warranty obligation is conditioned on the customer documenting that an identified fault or deficiency is not due to circumstances that are exempt from the warranty, cf. above mentioned.

The customer must notify GreenTec in writing of errors or defects in the sold goods no later than eight days after the error was or should have been registered by the customer. If the customer does not notify GreenTec before the end of the time limit and the warranty period, the customer is not entitled to submit claims regarding errors or defects.

GreenTec is entitled and obliged to remedy all errors and defects that are covered by a guarantee/warranty from GreenTec. GreenTec shall be free to determine whether such remedy shall be in the form of repair or replacement of the defective part(s) under the conditions set forth in Section 1.4 of this document.

The road/traffic regulations must be followed! Remember to place lights and warning triangles etc. Transport wheels are used for vehicles with too wide a width.

A 24-month warranty is granted on new machines from the date of delivery of the machine. However, no compensation is provided for driving or other consequential damages.

Warranty work is settled per hour at a standard rate of DKK 450/hour. = 60 euros/hour.

Hydraulics, gear oil, fuel and various propellants are not covered by the warranty. When using non-original spare parts, GreenTec waives product liability and further warranty liability.

Guaranteed parts, unless otherwise agreed, are returned free of charge to GreenTec's service department no later than 14 days after replacement.

Please read through GreenTec's overall terms and conditions of sale and delivery here:
https://greentec.eu/en/terms-and-conditions-sale-and-delivery

1.4 COMPLAINTS

Risk for the goods is transferred to the customer immediately upon delivery. Complaints about goods must be made in writing and submitted to GreenTec without undue delay and no later than 8 days after delivery. If GreenTec has not received a complaint within the mentioned time limit, the customers lose all rights to complain about the quantity and quality of the goods delivered.

GreenTec has the right and obligation to remedy all errors resulting from defective design, materials, and workmanship.

GreenTec decides whether the remedy must be in the form of repair or replacement of the defective part(s).

If GreenTec chooses to repair the goods, the customer is obliged to deliver and collect the goods from a workshop indicated by GreenTec, without GreenTec incurring costs in this context.

If GreenTec chooses to replace the defective part(s), customers must send the defective part(s) to GreenTec without GreenTec incurring costs in this regard. Instead, GreenTec is entitled to supply replacement goods.

GreenTec's liability only applies to defects, in connection with the sold goods, which are indicated within 2 years from the delivery date.

GreenTec assumes no responsibility for defects that exceed what is stipulated in this provision. This applies to losses resulting from such a deficiency, including loss of profit, lost earnings, and other financial loss.

1.5 USE WITH OTHER MANUFACTURES THAN GREENTEC

NOTICE

When installing other makes of attachment tools than GreenTec, a new risk assessment of the equipment used must be submitted.

If the boom mower is fitted with an unapproved attachment tool, the basis for risk assessment will no longer apply, and thereby the validity and guarantee of the declaration of conformity.

It is every operator's own responsibility to risk assess this interconnection before using the machine.

2. GENERAL INFORMATION

2.1 USE OF THE INSTRUCTION MANUAL

Read this instruction manual thoroughly before assembling and putting the machine into use. If you have any questions, contact your local dealer or GreenTec - Aftersales department.

NOTICE

The illustrations in this instruction manual have the sole purpose of instructing, informing, and substantiating the general procedures and instructions.

Illustrations may appear different from the actual machine, e.g., by being fitted with additional equipment and/or in a different size variant.

2.2 DEFINITIONS OF INFORMATION SIGNS

The following definitions apply throughout this instruction manual:

⚠ DANGER

DANGER!
Warns of a potential situation that could result in death or permanent disabling injury if instructions are not followed carefully!

⚠ WARNING

WARNING!
Warns of a potential situation that could result in partially disabling injuries or serious bodily injury if the instructions are not followed carefully!

⚠ CAUTION

CAUTION!
Warns of a potential situation that could result in serious damage to the machine or equipment if the instructions are not followed carefully!

NOTICE

NOTICE!
Specific or general information deemed important or useful.

2.3 DEFINITIONS, TERMS AND DESCRIPTIONS

Operator:	Daily user and/or operator of the machine.
Owner:	Owner, buyer and/or those who are responsible for the operator and maintenance.
Boom mower:	GreenTec boom mower, support arm / lift arm which controls, handles, and carries attachment tools during operation.
Attachment tool:	GreenTec attachment tool that is handled and carried by boom mower during operation.
Vehicle:	Machine that transports boom mower + attachment tool during operation.
LH + RH:	Left Hand (LH) and Right Hand (RH) These designations are used when the machine is mounted on the vehicle, seen from the rear. Follow designations are also used when referring to the vehicle.

Table 5 – Definitions, terms and descriptions

3. SAFETY

3.1 LOCAL LEGISLATION IN THE COUNTRY WHERE THE MACHINE IS USED

The use of the machine may be restricted by the legislation of the countries where it is used. It is important that the responsible owner and operator familiarize themselves with the country's laws and regulations regarding cutting, cutting and maintenance of fences and hedges.

3.2 WARNINGS, PROHIBITIONS, AND INSTRUCTIONS

Instructions come from the applicable national accident prevention regulations, which the operator and operator must comply with.

⚠WARNING	**For all types of work on the machine, it must be disconnected from all hydraulics!**
⚠WARNING	**Only authorized personnel may carry out service and maintenance on the machine!**
⚠CAUTION	**Read the instruction manual carefully before using the machine!**

3.3 SAFETY LABELING

The machine is marked with safety and warning labels, these are placed at the identified dangers to which you are exposed when working with and staying near the machine.

3.3.1 PERSONAL SAFETY EQUIPMENT – LABELS

It is recommended that the following safety equipment is worn when working with or performing maintenance on the machine:

Figure 2 – Safety labelling: personal safety equipment

The recommended safety equipment together with the points of attention mentioned in this and the following section cover the precautions GreenTec has deemed necessary for use.

The varying circumstances that may arise when working with this machine cannot always be predicted.

No good advice can replace "common sense", "due care" and "attention", but the above recommendations are a good start to safe use of the GreenTec machine.

3.3.2 WARNING LABELS

Warning labels that identify the dangers to which you are exposed when working with and when staying near the machine:

WARNING LABELS: USE OF MACHINE	
	**Warning!** Read relevant instruction manuals carefully before using this machine. Follow all instructions and safety regulations when using the machine.
	**Warning!** Check every 8 hours of use that all bolts/nuts are tight.
	**Warning!** There is a risk of crushing and collision when the machine is running. No one must stay in the work zone.
	**Warning!** There is a risk of crushing when the machine is connected to the vehicle. No one must stay between the vehicle and the boom mower.
	**Warning!** Always pay attention to overhead lines! Between the electricity masts, there will always be a risk of touching the overhead lines. If in doubt - contact the local electricity company for instructions on safety distance.
	**Warning!** Beware of oil in case of skin contact or inhalation of oil vapours, as well as high pressure in case of leakage or handling. Switch off the engine, remove the key and apply the handbrake before maintenance or repair work.
	**Warning!** Rotating shaft! Power transmission output (PTO) Before handling: Turn off the vehicle engine, remove the key and apply the parking brake.

Figure 3 – Safety labeling: warning labels

WARNING LABELS: PTO SHAFT (RPM)

Spider 520 Plus & 620 Plus (Front mounted)	
Spider 520 Plus & 620 Plus (Rear mounted)	
Spider 720 Plus & 820 Plus (Rear mounted)	

Figure 4 – Warning labels: PTO-shaft

WARNING LABELS: TRANSPORT LOCKS / STOP VALVES

4x transport locks on all Spider models: both front and rear mounted.

The inner handle at the top, blocks cylinder 1.
(Turn of arm)

The outermost handle at the top, blocks cylinder 3.
(In- and out movement of arm)

The inner handle at the bottom, blocks cylinder 2.
(Up-down movement of arm)

The outer handle at the bottom blocks either cylinder 5 and/or the rotor cylinder.
(Tilt of head / attachment tool)

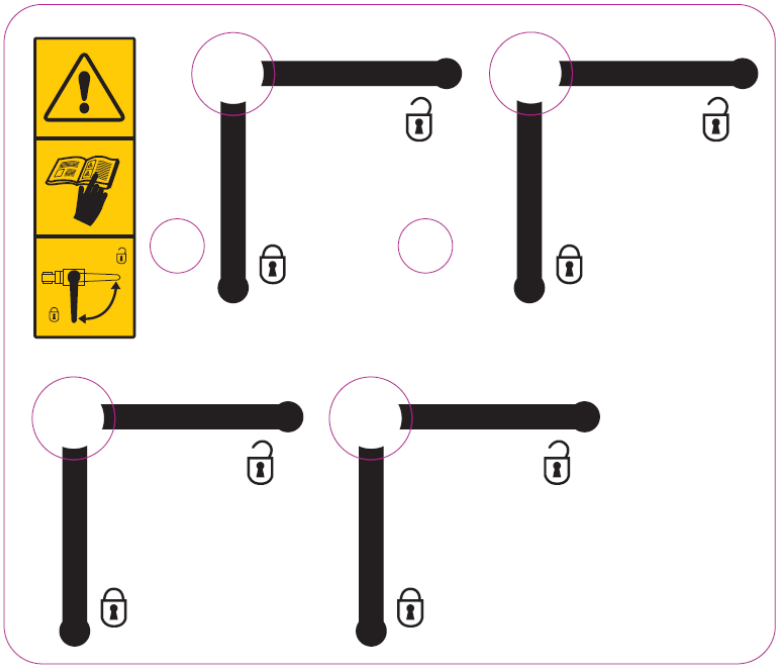


Figure 5 – Warning labels: Transport lock / stop valves

3.4 WORKING IN PUBLICLY ACCESSIBLE PLACES

When working in publicly accessible places, such as roadsides, consideration must be given to the presence of others in the area.

Immediately stop the machine when, for example, pedestrians, cyclists, horse riders etc. approach the safety zone. Only resume work when they are at a safe distance again.

When the machine is used on public roads, applicable traffic laws must be observed in every event.

3.4.1 WARNINGS SIGNS IN PUBLIC PLACES

- The work area should be marked with appropriate signage, this is a legal requirement in public places.
- Signage must be clear and correctly placed so that the danger is made clear.
- Contact the local road authority for detailed information on applicable legislation.
- The local road authority should be notified before work begins on a public road.

3.4.2 USE OF WARNINGS SIGNS

- On two-way roads, signage must occur in both directions.
- The work should be within 1 km of signage.
- Only carry out work when visibility is good and when the risk is the least – e.g., outside rush hour.
- The vehicle must be equipped with flashing orange light beams.
- Vehicles should be in a conspicuous color and the operator should be wearing visible clothing.
- Remaining material should be removed from the road and pavement as soon as practicable and at suitable intervals.
- The work must be carried out before warning signs are removed.
- Collect all road signs as soon as the work is completed.

3.4.3 SUGGESTED SIGNAGE WHEN WORKING ON PUBLIC ROADS

Keep left

Mandatory sign:

"Keep left"

White and blue arrow signage
Visibly marked on the back of the machine

Verge cutting 0-1 km

Warning sign:

"Road work"

Supplementary text for work carried out at a suitable distance

Example: "Verge cutting 0-1 km"

One lane only

Warning sign:

"Road narrowing"

Adding text: "One lane only"

Figure 6 – Proposed signage for work on public roads

NOTICE

The above signage applies within i.e., EU mainland, where traffic passes on the left of the machine working in the direction of travel.

Signage, use of and colors on arrow signs as well as indications depend on the language, laws, and regulations of the individual country.

3.5 RECOMMENDATIONS FOR OPTIMAL SECURITY AND OPERATION (I)

⚠ DANGER

Always be aware of the following risks when using the machine:

To achieve optimal safety and operation, it is important that the operator understands how dangerous the machine is, and foresees the danger before it occurs:

- ⚠ You may get stuck when the machine is engaged or disengaged and when the boom mower is moved out or in, up or down and forwards or backwards.
- ⚠ The machine can tip over when the boom mower is raised.
- ⚠ You can be caught by the rotating shaft from the PTO.
- ⚠ You can be hit or caught by the moving parts, e.g., flails, knives, drive shaft and wings from mounted attachment tools.
- ⚠ You can get hit by flying materials or machine parts in case of machine damage.
- ⚠ The machine can tip over, also when not in use.
- ⚠ The attachment tools are powered by hydraulic oil from the hydraulic system in the machine or from the vehicle.
- ⚠ The operator of the vehicle should know how the hydraulic oil should be handled! (Read in the safety data sheet for the oil)
- ⚠ Oil splashes under high pressure from damaged fittings or hydraulic hoses can penetrate the skin and cause serious injury
- ⚠ Accidents due to collisions with other vehicles or dropped objects on the road.

⚠ DANGER

Always pay attention to overhead lines!

Between the electricity masts, there will always be a risk of touching the overhead lines.

If in doubt - contact the local electricity company for instructions on safety distance.

3.6 NECESSARY SAFETY MEASURES (m)

NOTICE

The machine **must** be used in the following ways:

- ✓ Make sure that the operator of the machine has read this instruction manual, as well as the instruction manuals for both the attachment tool and the vehicle used.
- ✓ Ensure that the operator of the machine has been trained in the use of the machine.
- ✓ Use hearing protection if the machine is operated from a cabin that is not soundproof or if the cabin windows are open.
- ✓ Ensure that all warning labels are always visible and that none of them are missing, damaged or illegible.
- ✓ Check that all safety screens are correctly fitted and that there are no damaged or loose parts.
- ✓ Ensure that all hydraulic pipes and hoses are positioned correctly to avoid rubbing, stretching, pinching, or kinking damage to them.
- ✓ Check the work area and remove any rope, poles, large stones, and other dangerous objects before starting work.
- ✓ Drive at a safe speed that is tailored to the terrain and any other vehicles and obstacles.
- ✓ Make sure the vehicle is stable and meets the machine manufacturer's minimum weight recommendations - if necessary, use additional counterweight.
- ✓ Pay attention to power lines, if in doubt about the distance, contact the local power plant.
- ✓ It is recommended to use impact resistant screens on the vehicle.
- ✓ Check that the machine's fittings, screws, and couplings are in good condition.
- ✓ Follow the manufacturer's instructions for removing and installing the machine from the vehicle.
- ✓ Disconnect the hydraulics to the machine, stop the engine, pull the handbrake, and remove the key before leaving the cab.
- ✓ If necessary, remove nuisance material residues left behind from the area.
- ✓ Great care must be taken when inspecting, repairing, or doing other work on the stationary machine.
- ✓ Always use protective gloves, safety shoes, safety glasses and appropriate tools to perform the work.

3.7 WARNINGS ON HOW THE MACHINE MUST NOT BE USED (h)

DANGER

The machine must **never** be used in the following ways:

- Do not operate the machine until relevant instruction manuals have been read and understood. Likewise, the operator must be familiar with the operating levers according to the instruction manual for the connected attachment tool!
- Do not operate the machine if there are others within the safety distances of the machine!
- Never let an inexperienced person operate the machine without supervision!
- Do not go inside the machine's working area / safety zone!
- Never try to locate a hydraulic leak by hand, use a piece of cardboard instead!
- Never allow children to play on or near the machine!
- Do not perform any maintenance or adjustment without first removing the hydraulic pressure from the machinery, lowering the boom mower to the ground, stopping the vehicle engine, and applying the parking brake and removing the key!
- Do not use and/or mount the machine on a vehicle that does not comply with the manufacturer's specifications!
- Never use the machine if the hydraulic system shows signs of damage / defects!
- Do not stop the engine while the hydraulic pressure is activated!
- Never attempt to use the machine for any purpose other than that for which it is intended!
- Do not leave the vehicle cabin without removing the ignition key!
- Do not transport the machine while the hydraulic pressure to the attachment tool is activated!
- Do not use a machine that has not been maintained or if any of its screens are missing or damaged!
- Never operate the vehicle or any of the control levers from a position other than the driver's seat!
- Do not drive with mounted attachment tools where rotating parts are facing the cabin, as this entails the risk of stones and material residues being hurled at the driver!

3.8 SAFETY INSTRUCTIONS FOR MAINTENANCE, ADJUSTMENT, AND INSPECTION WORK (s)

NOTICE

The machine **must** be maintained in the following ways:

- The operator must ensure that all maintenance, inspection, and assembly work is carried out by authorized and qualified specialist personnel who, after thorough reading of relevant instruction manuals, possess sufficient knowledge.
- Maintenance, inspection, and assembly work may only be carried out with the hydraulics disconnected.
- When carrying out maintenance work under the boom mower etc., securing with suitable support elements must be carried out.
- When replacing attachment tools, the hydraulic system is checked for residual pressure.
  A possible residual pressure is reduced to zero (0bar).
- Use only suitable tools and wear heavy-duty gloves, safety shoes and safety glasses.
- Handle the hydraulic oil and grease according to regulations. Always be familiar with the safety data sheets.
- Immediately after finishing work, all safety and protective devices must be installed and activated again.

3.9 SAFETY INSTRUCTIONS FOR THE OPERATOR / USER

- It is important to familiarize yourself with all operating elements and equipment and their function before starting the work. Once the work has started, it may be too late.
- Check the immediate area before starting and during operation of the work the machine is to perform (people, children, animals, or obstacles, e.g., stones, fence posts, steel wire).
- Ensure sufficient visibility and a well-lit work area. The safety distances specified in the attachment tool's instruction manual must be followed without fail.
- The operator's clothing must fit tightly. Avoid loose clothing.
- The operator must be fresh and rested before using the machine, and take breaks when tired, to ensure his own safety and that of others.
- The operator should ensure varying working positions and take frequent breaks to avoid disorders in the musculoskeletal system.
- The operator must not leave the driver's seat while driving.
- It is not permitted to have the attachment tool, or the boom mower activated during transport.
- When working near high-voltage lines, additional distance and caution are required.

4. MACHINE DESCRIPTION, COMPONENTS AND SPECIFICATIONS

4.1 MACHINE DESCRIPTION (d)

GreenTec Spider 5-820 Plus boom mower: rear-mounted on tractor

SPIDER 520 PLUS & 620 PLUS

SPIDER 720 PLUS & 820 PLUS

The Spider 5-820 Plus series contains the largest models of GreenTec's boom mowers and are therefore particularly useful for work where an extra-long reach is required. For the same reason, the boom mowers must be mounted on a relatively large tractor.

The Spider 5-820 Plus series is available in different sizes; all as PTO driven rear mounted models:

Spider 520 & 620 Plus (Front)
PTO-driven, with internal hydraulic system: pump, oil tank and return filter:
Front Mounted w/ Vehicle 3-Point Suspension (Category 2 & 3) (Max. 600-1000 RPM)

Spider 520 & 620 Plus (Rear)
PTO-driven, with internal hydraulic system: pump, oil tank and return filter:
Rear Mounted w/ Vehicle 3-Point Suspension (Category 2 & 3) (Max. 450-750 RPM)

Spider 720 & 820 Plus
PTO-driven, with internal hydraulic system: pump, oil tank and return filter:
Rear Mounted w/ Vehicle 3-Point Suspension (Category 2, 3 & 4) (Max. 450-750 RPM)

The Spider 5-820 Plus series is suitable for mounting on medium tractors, front loaders, telehandlers, backhoes, and loaders with a min. own weight of between **5000 – 8000kg.** depending on the model of the Spider 5-820 Plus boom mower.

Mounting Spider boom mowers in the 5-820 Plus series is quick and easy by using GreenTec's **patented 4-point linkage system** that connects vehicle and machine 100% stably. (The 4-point linkage system is designed based on the Category 2, 3 or 4 standard)

Up to **20 different attachment tools** can be selected for boom mowers in the Spider 5-820 Plus series, where it is possible to easily mount and/or remove and attachment tools without the use of hand tools, using additional equipment such as **hydraulic quick release couplings** and **mechanical quick coupling of attachment tools**.

Trimming hedges and branches or cutting grass and shrubbery in flower beds and ditches is easily done with the correct attachment tool, via this versatile and flexible machine.

No slope or trench is too long or steep, as the Spider 5-820 Plus boom mower has horizontal working widths from **5.2 – 8.2 m.** The boom mowers can also be used in areas with particularly tall trees, as tall branches can be easily cut with the large vertical reaches of **5.1 – 8.1 m.**

The arm system on the Spider 5-820 Plus boom mower is built on powerful turning and lifting cylinders with power steering, which ensures that the arm can turn and move in a **working range of up to 270°.**

The main frame and arm system of the Spider 5-820 Plus series are constructed in **Strenx high-performance steel**, which ensures a 50% stronger construction and 25% lower weight.

The Spider boom mowers **hybrid arm system with dual function** makes it easy to switch between parallel and non-parallel action of the boom mower and/or attachment tool during use.

The hybrid arm system has a built-in **hydraulic collision protection (AHS) with "Break-back" function.**
The collision protection optimizes the work process, protects against overloading the arm, and at the same time acts as a pre-pressure for some of the attachment tool used – e.g., GreenTec LRS Quadsaw.

The Spider boom mowers all have **hydraulic float of arm and cutting angle**. This function ensures that the lift arm and attachment tool can be made adaptive against changes in the contour of the ground, when driving forward along the ground.

Spider boom mowers in the 5-820 Plus series have a **RotorFlex double pivot system with AutoFlex.** The RotorFlex pivot joint at the end of the boom mower allows for up to 270° rotation of the attachment tool and up to a 180° cutting angle. The AutoFlex function also ensures automatic vertical alignment of the attachment tool.

Spider boom mowers in the 5-820 Plus series have an integrated **oil cooler with a thermostat** that turns the fan on/off based on the hydraulic oil temperature.

Spider boom mowers in the 5-820 Plus series are available with **AHC (Auto Height Control)** as optional equipment. The AHC function is used for mowing on roadsides and ensures that the attachment tool floats over the ground surface and follows the contours of the terrain, without the driver having to correct the arm via the joystick.

All Spider boom mowers can be used with **bio-oil**. (*Must be selected as optional equipment before purchase!*)

The Spider 5-820 Plus boom mower has a tank capacity of 220 liters with a pump capacity of **125 l/min @ 315 bar.** The machine is easily set to either **50 or 85 l/min**. (The required amount of oil to be supplied to the Spider 5-820 Plus boom mower depends on the attachment tool used!)

The Spider boom mower's hydraulic functions are controlled by a **Danfoss PVG proportional valve system** that controls the boom mower's cylinders and functions via a control panel and a joystick with a total of 4 proportional functions.

As standard equipment, all Spider boom mowers in the 5-820 Plus series come with:

STANDARD EQUIPMENT: SPIDER 5-820 Plus	
- Strenx 700 steel construction - 270° hydraulic turn of arm system with power steering - Hybrid arm system with dual function and hydraulic collision protection ("Break Back"-function) - Hydraulic float of arm - RotorFlex, double pivot system (270° rotation of attachment tool and 180° cutting angle) - AutoFlex (Auto vertical alignment of attachment tool) - Danfoss PVG proportional valve system - Oil cooler w. Air Stream Control - 2 oil volumes: 50 and 85 l/min - 4-linkage system for category 2, 3, or 4	Spider 520 Plus Spider 620 Plus Spider 720 Plus Spider 820 Plus

Table 6 – Overview of standard equipment

The Spider 5-820 Plus boom mower is available with several different types of additional equipment and options:

OPTIONAL EQUIPMENT: SPIDER 5-820 Plus	
- AHC (Auto Height Control) - Hydraulic quick-release couplings - Mechanical quick-coupling - Leaf Blower (LG) - K80 hitch for 4-point mounting - Bio hydraulic oil - Oil filter set incl. seals (Pressure and return filter)	Spider 520 Plus Spider 620 Plus Spider 720 Plus Spider 820 Plus

Table 7 – Overview of additional equipment and options

NOTICE

See the section in the instruction manual about optional equipment – site 49, and get more information about the different options for the machine on GreenTec's webpage.

4.2 USE OF THE MACHINE

4.2.1 INTENDED USE OF THE MACHINE (g)

NOTICE

For any use of the machine other than that described in this section, GreenTec is not liable for damages as a result. The risk then rests solely with the operator and/or the user.

The Spider boom mower is available in several different sizes, but they all have the same basic construction and operation and are therefore the same.

The machine is used to handle, control, and carry various appropriate attachment tools for grass, hedge and fence cutting, ditch cleaning, cleaning pavements etc.

See the machine specifications for attachment tools intended for use with the Spider 5-820 Plus boom mower. (Table 26 – page 61-62)

4.2.2 APPLICATION AND RESTRICTIONS OF THE MACHINE (h)

The Spider boom mower can be mounted as a rear mounted PTO driven machine on many different vehicles, such as medium tractors, front loaders, telehandlers, backhoes, and loaders.

Minimum unladen weight of the vehicle from 5.000 – 8.000 kg, depending on the model of the Spider 5-820 Plus boom mower.

GreenTec designs many different types of suspensions, loader brackets and adapters for many different vehicles: Mounts/adapters according to model and vehicle type and/or patented 3- or 4-point suspensions

The capacity of the various Spider boom mowers depends on the specifications of the attachment tool used, the hydraulic pressure it is supplied with, the type and amount of material to be processed and the speed at which it is driven.

⚠ DANGER

The owner of the machine / operations manager is responsible for observing the following rules:

- The vehicle on which the machine is mounted must meet the requirements for machines approved for agriculture
- All safety values must under no circumstances be exceeded. (Safety distances, pressure, flow, rpm, etc.)
- Never use the machine with an attachment tool without fitted guards.
- The machine must never be used to transport people, animals or other equipment than described in this instruction manual.
- That the stability of the supporting vehicle is sufficient. See section: Stability (o) – page 90-91, as well as the instruction manual for the attachment tool and vehicle used.
- Multi carrier and/or attachment tool must never be used as a "crane" or other form of lifting equipment.

⚠ DANGER

Safety shields on the used attachment tool can never work 100%!

Depending on the driving conditions, there will be the possibility that serious fragments/material can come flying and damage people or equipment. **Always** keep your distance!

4.3 COMPONENTS / MAIN PARTS OF THE MACHINE

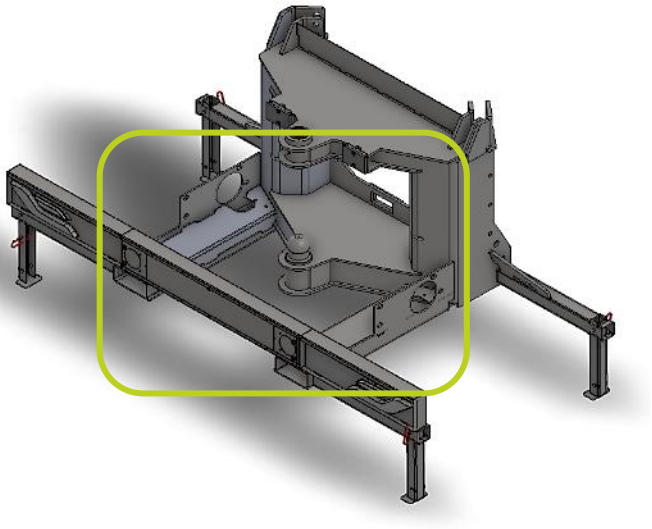
4.3.1 MAIN FRAME IN HIGH STRENGHT STEEL

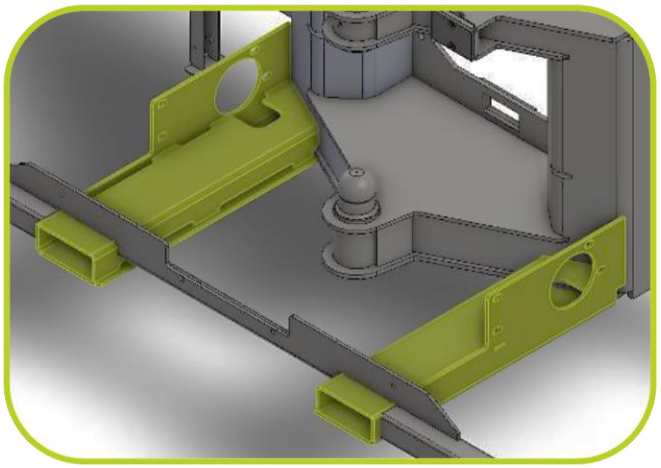
Parts of the Spider 5-820 Plus boom mower are constructed of extra durable Strenx-700 high-strength steel. Strenx is described as the world's strongest production steel and is supplied by the Swedish steel group SSAB.

By using this type of high-strength steel, a 50% stronger construction is achieved, and up to 25% weight savings.[1]

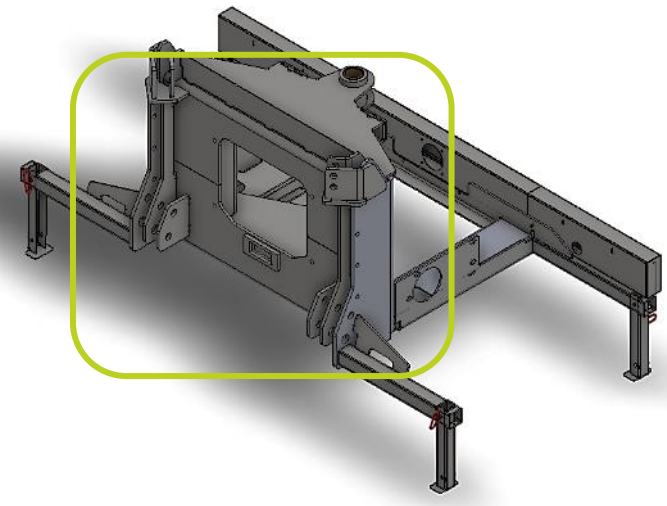
The main frame is built with brackets adapted to the forks of a forklift, for easy handling, as well as 4x support legs for support.

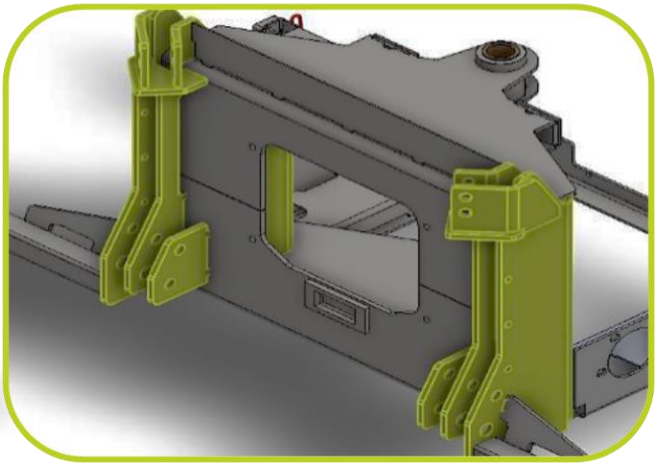
The main frame is also built and adapted for mounting of vehicle-specific loader brackets or GreenTec's 4-point linkage system: adapted to category 2, 3 (Spider 5-620) or 3, 4 (Spider 7-820) standard.





Brackets for forklift to lift/move the boom mower





Brackets for 4-point linkage sytem: Cat. 2, or 3

[1] *Compared to standard S235 structural steel.*

4.3.1.1 SUPPORT STANDS

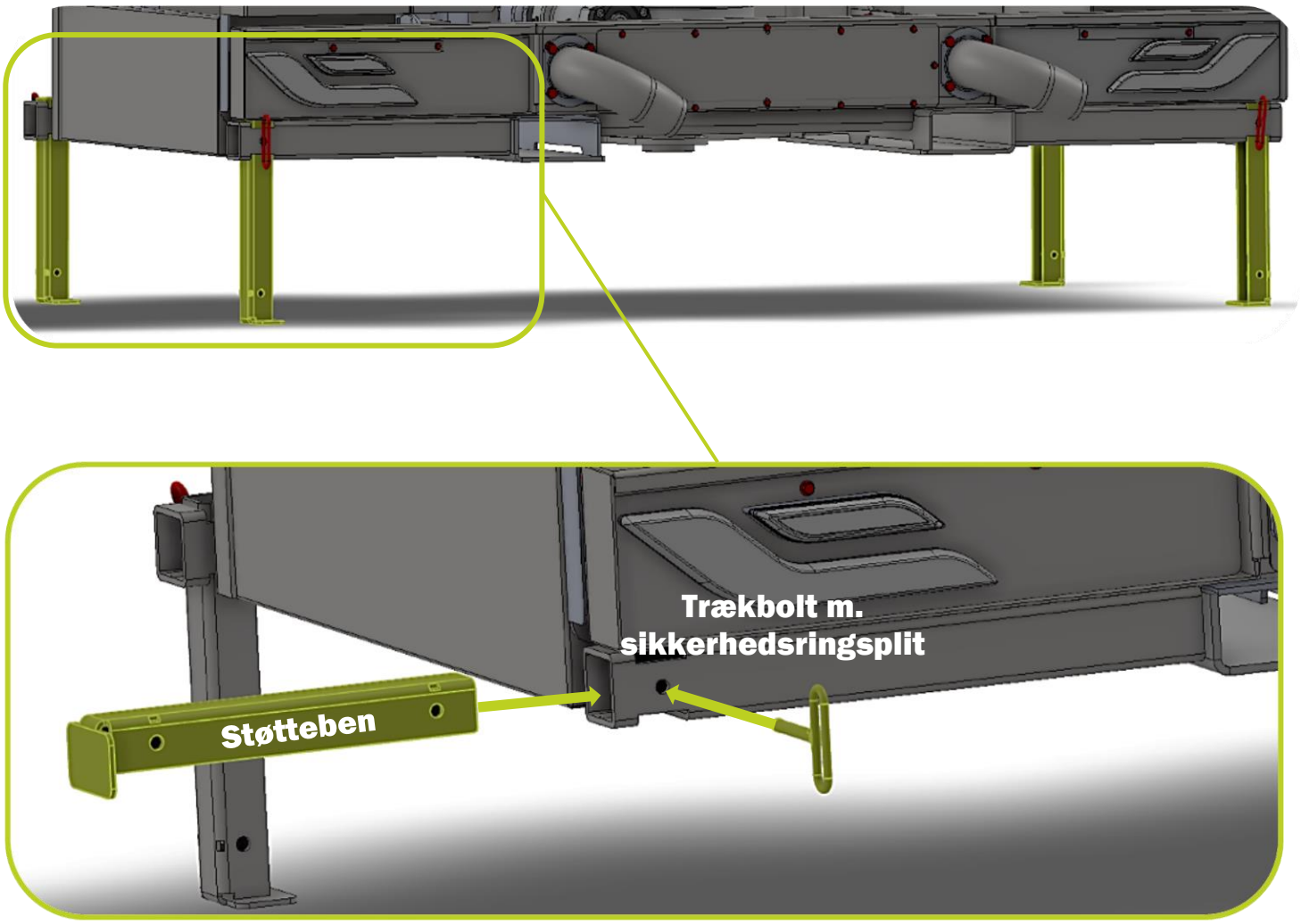
There are a total of 4 metal stands in each bottom corner on the Spider boom mower, which can be easily applied using the red handled hitch pins.

When using the machine, the support legs are inserted horizontally into the steel profile as shown in the picture below.

⚠CAUTION

The support stands of the machine must always be in the raised position during driving and use!

Support legs should ONLY be used when the machine is put away for storage or when servicing and maintenance of the machine is carried out.



The location and functionality of the support stands

GREENTEC
Cutting Edge Technology

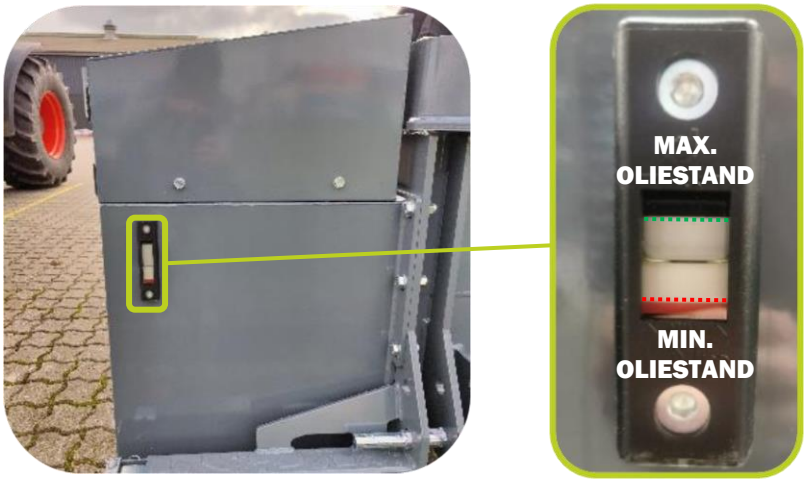
MADE IN DENMARK

4.3.2 OIL TANK AND RETURN OIL FILTER

The oil tank on the Spider 5-820 Plus boom mower has a total volume of: **220 liters.**

The oil level is checked on the gauge at the oil tank, on the back of the boom mower:

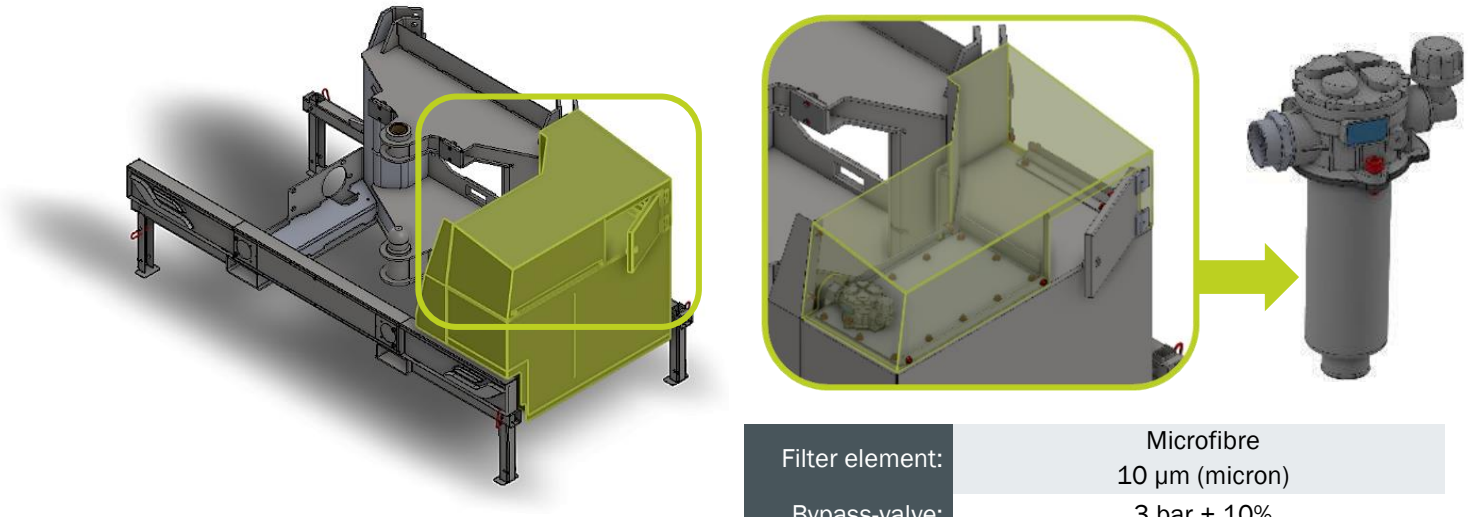
As standard, GreenTec supplies all machines with high-quality "Shell Tellus S2 VX 46"-hydraulic oil.



Oil level gauge location on Spider 5-820 Plus boom mower

4.3.2.1 RETURN OIL FILTER

The return oil filter on the Spider boom mower is fixed on top of the oil tank, and access maintenance and replacing the return oil filter can be obtained here.



Location of return oil filter on the Spider 5-820 Plus boom mower

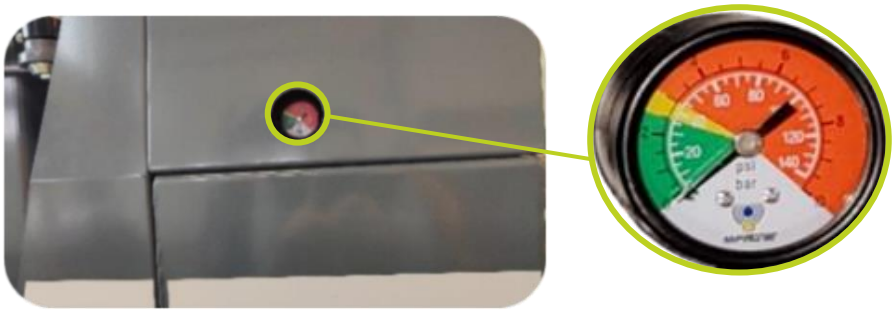
Filter element:	Microfibre 10 µm (micron)
Bypass-valve:	3 bar ± 10%
Max. pressure:	8 bar

Table 8 – Spec. sheet: Return oil-filter

NOTICE

The manometer measures the resistance in the return filter, and indicates whether the return filter is clogged and should be changed.

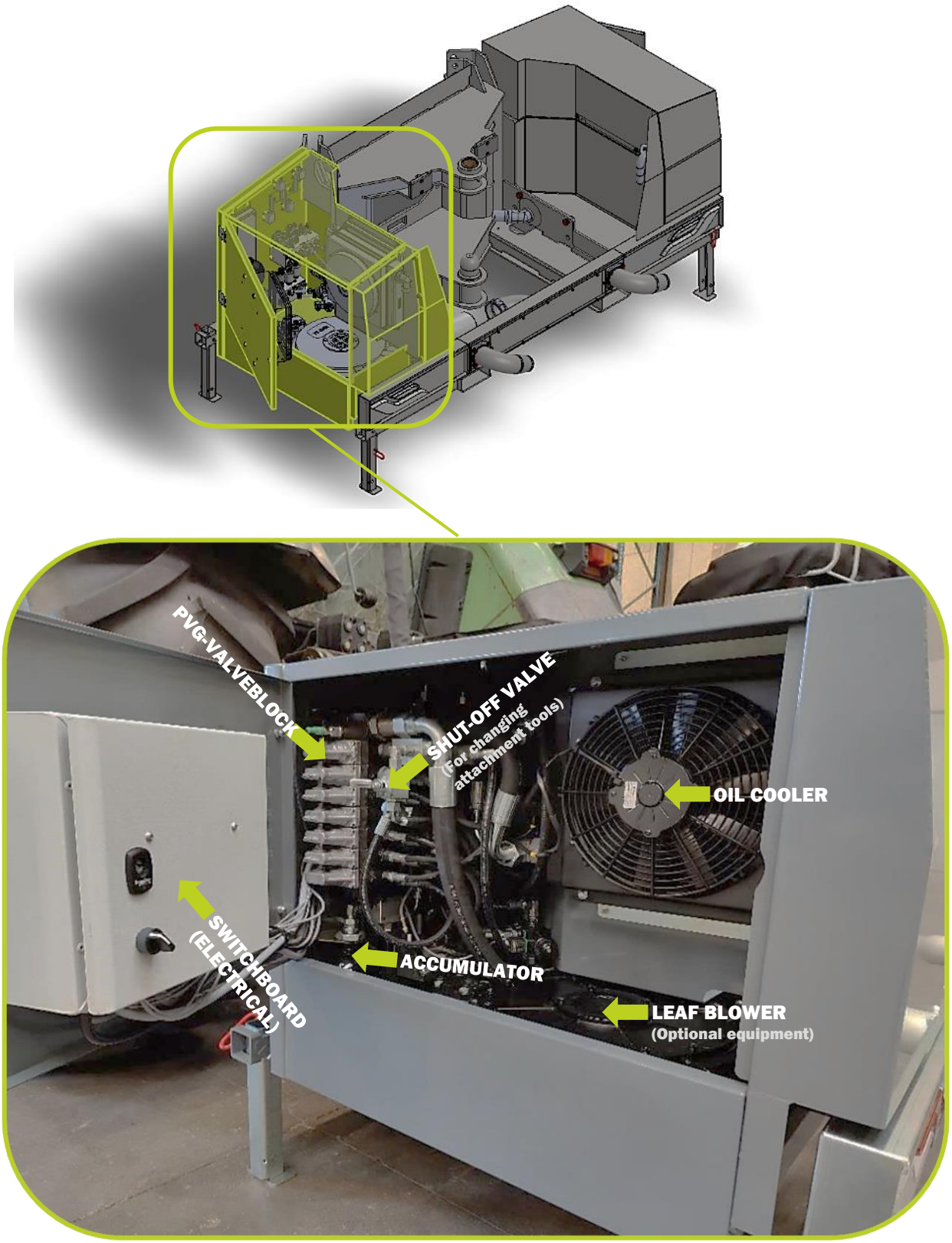
See section: Filter kit incl. seals – page 60 + Replacing filter elements – page 113-115



Manometer/indicator for change of oil return filter

4.3.3 TECHNICAL CABINET (HYDRAULIC AND ELECTRICAL)

The technical cabinet of the Spider boom mower contains the following components which are important for the operator to know in relation to controlling and operating the machine – both hydraulic and electrical:



Technical cabinet on the Spider 5-820 Plus boom mower

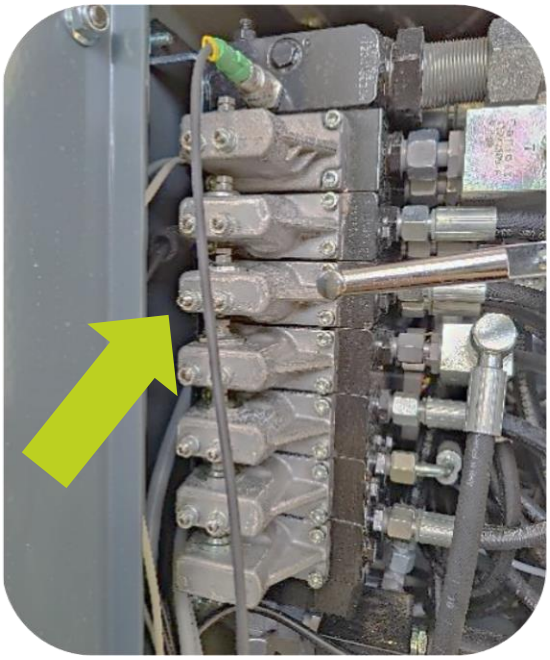
4.3.3.1 PVG VALVE BLOCK

The PVG valve block on the Spider boom mower is the machine's primary valve block, developed in collaboration with Danfoss.

The PVG valve block consists of a configurable modular structure, which makes it possible to collect all the hydraulic primary functions of the Spider boom mower in one valve block.

The valve block receives and controls the incoming flow from the machine's hydraulic pump at **115 l/min @ 220 bar** or **125 l/min @ 315 bar**

The valve block always prioritizes the attachment tool first and distributes the right amount of oil to the attachment tool from: **50 l/min @ 180 bar**, and up to → **85 l/min @ 315 bar**.[2]



Danfoss PVG valve on Spider 5-820 Plus boom mower

The remaining amount of oil on the machine is used to control the various modules, and thereby functions/movements on the boom mower.

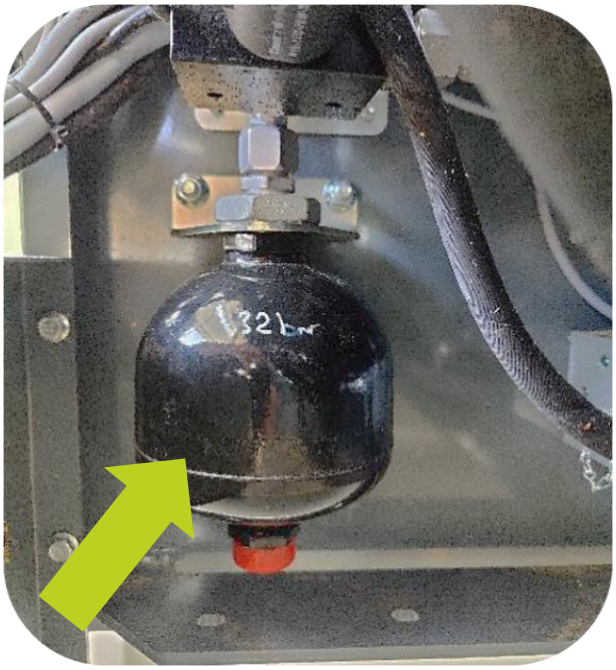
4.3.3.2 ACCUMULATOR FOR HYDRAULIC FLOAT OF ARM

The accumulator has a charging pressure of 32 bar and is activated when the "Float of arm" function is used on the Spider boom mower.

See section: Control panel and joystick – side 38-47 + Operating and driving instructions – side 95-104

Here, the accumulator creates a back pressure in the lifting cylinder of the arm, which gives the arm a soft springy effect, so that an attachment tool used along the ground (e.g., GreenTec FR Flail Mower) can avoid up to 10-15 cm unevenness in the ground surface.

The accumulator is controlled using a hydraulic valve with electric coil that communicates with the machine's electrical control system.



Accumulator (32 bar) on Spider 5-820 Plus boom mower

[2] *These specifications depend on the GreenTec attachment tool on the Spider 5-820 Plus boom mower.*

4.3.3.3 LOCKING VALVES FOR TRANSPORT

There is 4x locking valves on the Spider 5-820 Plus boom mower, used to hold/lock the arm of the machine in position so that the arm does not move or sink unnecessarily during transport or storage of the machine.

When turning the valves into locked (unlocked position, the oil supply for the 4 cylinders on the boom mower is then closed/opened, and the arm of the machine is thereby locked in the selected transport position.

NOTICE

See section: Transporting boom mower w/ attachment tool on vehicle (p) – page 93-94

The stop valves for blocking the cylinders are located on the back of the machine and are clearly marked:

Stop valves (4x) for blocking cylinders under transport and storage

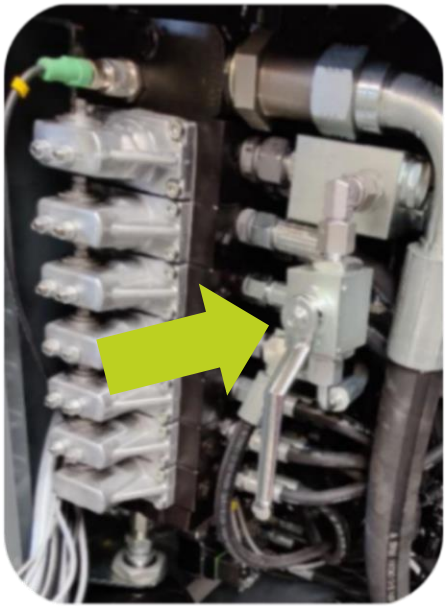
4.3.3.4 SHUT-OFF VALVE FOR TOOL SHIFT

The shut-off valve for tool shift provides clear passage to the oil tank, which removes any pressure in the hoses to the attachment tool.

This function makes it easier to change attachment tools, as it can be difficult to un-hook the hydraulic quick-release couplings when the hydraulic system is still under pressure.

NOTICE

See section: Un-mount attachment tool on boom mower – page 89



Shut-off valve (1x) for changing attachment tools

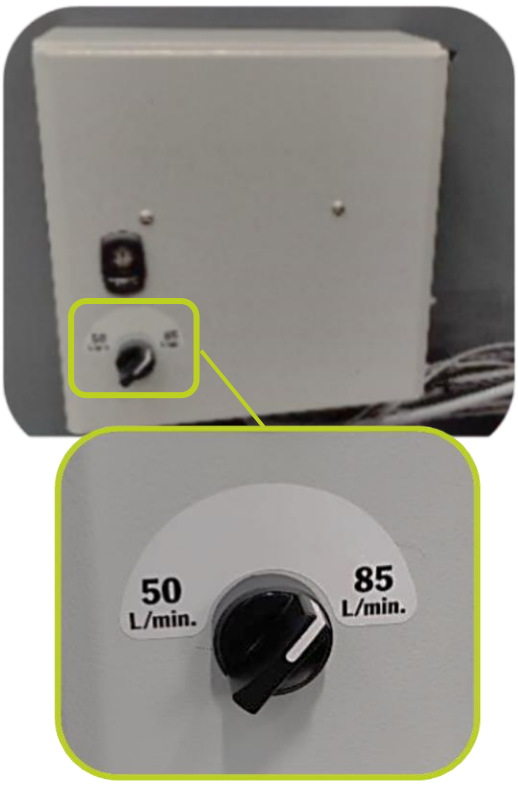
4.3.3.5 ELECTRICAL CABINET (SWITCH BOARD AND POWER SUPPLY)

The electrical cabinet on the Spider 5-820 Plus boom mower, contains the machine's electrical components: main board, fuses, relays, controllers etc.

The electric system of the boom mower has the following specifications:

Voltage:	12-volt DC
Fuse:	15A (Max.)
Sealing:	IP54 (dust- and splashproof)
ISO-standard:	EN 60204-1

Table 9 – Spec. sheet: electrical system



Switch for changing the oil supply to the attachment tool: 50 or 85 l/min.

On the side of the electrical cabinet there is a switch which makes it possible to change the oil supply between **50 l/min and 85 l/min**, depending on which attachment tool is used together with the boom mower.

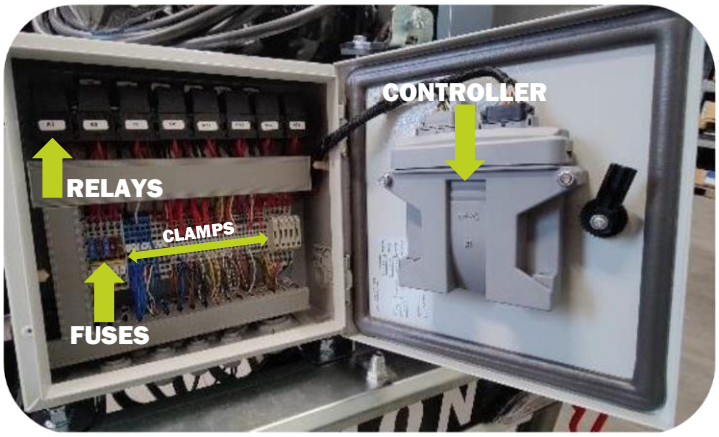
NOTICE

Always check the correct oil-quantity and associated pressure specifications for the attachment tool used before choosing the correct oil supply!

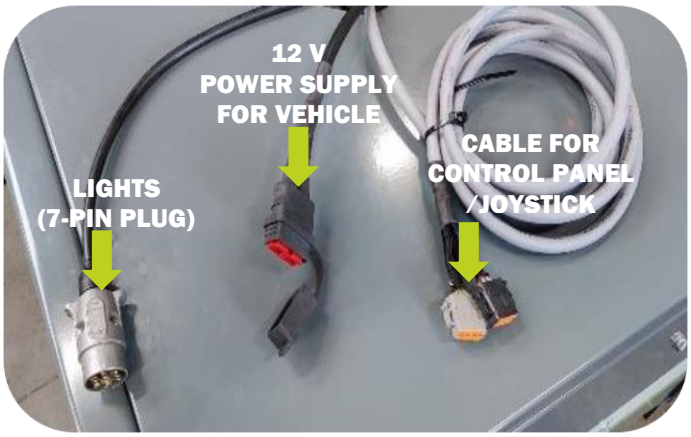
Complete electrical diagram of the Spider 5-820 Plus boom mower with additional specifications can be found under sections of this instruction manual: Electrical diagrams – page 133.

Power supply and connection of the Spider 5-820 Plus boom mower is done with the 12V power supply cable for the vehicle, 7-pin plug for lights/lamps, and cables for connection to the boom mower's control panel and joystick.

See section: Connecting the power supply from the boom mower to the vehicle – page 79



Components inside the cabinet (relays, fuses, clamps, controller etc.)



Connecting power to the boom mower - 3 types of different cables

4.3.3.6 OIL COOLER

The oil cooler on the Spider 5-820 Plus boom mower cools the hydraulic oil before it is returned to the tank.

The oil cooler is equipped with a thermostatic sensor that switches the fan on/off based on the temperature of the hydraulic oil.

The oil cooler is equipped with a 12V power supply and has a **max. working pressure of 5 bar.**

Oil cooler on the Spider 5-820 Plus boom mower

The cooler has a bypass valve between the inlet and outlet of the cooler to ensure that max. permissible pressure in the cooler is not exceeded. This is activated at 4.5 bar.

NOTICE

The thermostat is set so that the fan on the oil cooler switches on at an oil temperature of 65 °C and switches off again at 55 °C.

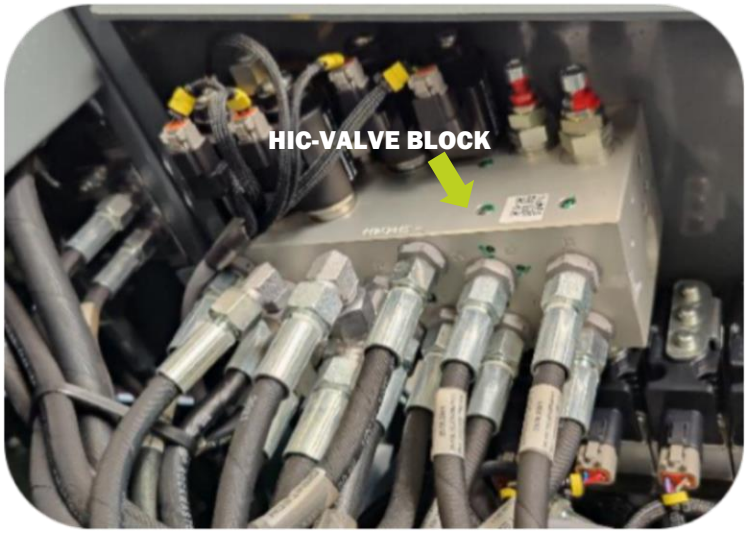
⚠CAUTION

If the oil temperature continues to rise up to and above 90 °C, a warning light will light up and a constant alarm (beep) will sound from the boom mower's control panel. See section: Logitec Safe control panel – page 39

4.3.3.7 HIC-VALVE BLOCK (HYDRAULIC INTERNAL CIRCUIT)

The HIC valve block on the Spider 5-820 Plus boom mower is a smaller secondary valve block that controls the "dual function" of the hybrid arm system and the “hydraulic collision protection” on the boom mower.

The valve block is controlled by various electric coils using signals from the boom mower's control system, sensors, etc. This ensures that the “hybrid arm function” can be utilized and that the pressure on the “hydraulic collision protection” is regulated based on the position of the arm on the machine.



HIC-valve block on Spider 5-820 Plus boom mower

See section: Hybrid arm system w/ dual function and hydraulic collision protection (AHS) – page 32-36

NOTICE

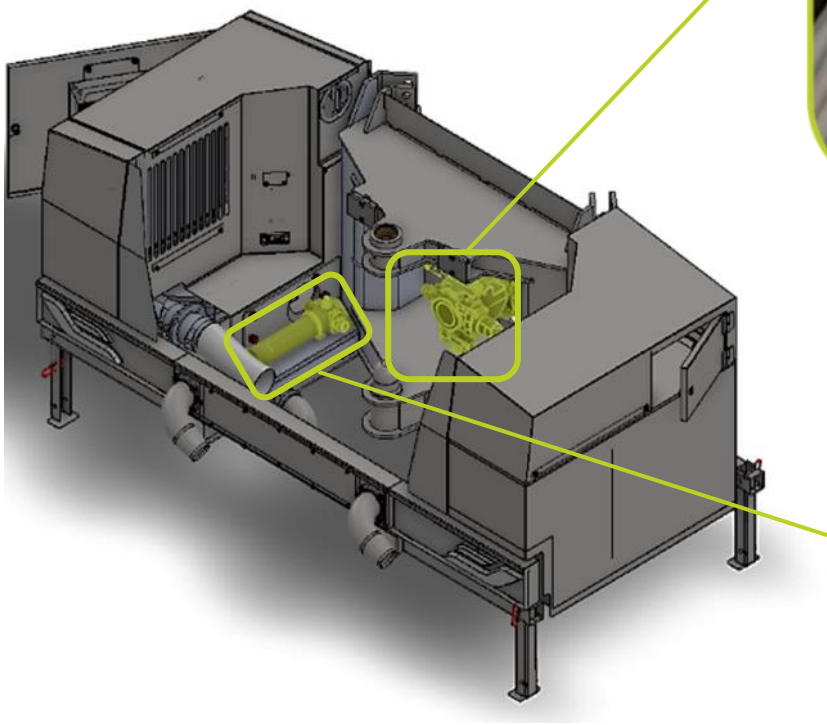
The overpressure valves on the HIC block can be adjusted if a softer/firmer response of the "Break-back" function / collision protection is desired.

Contact a GreenTec dealer for further information.

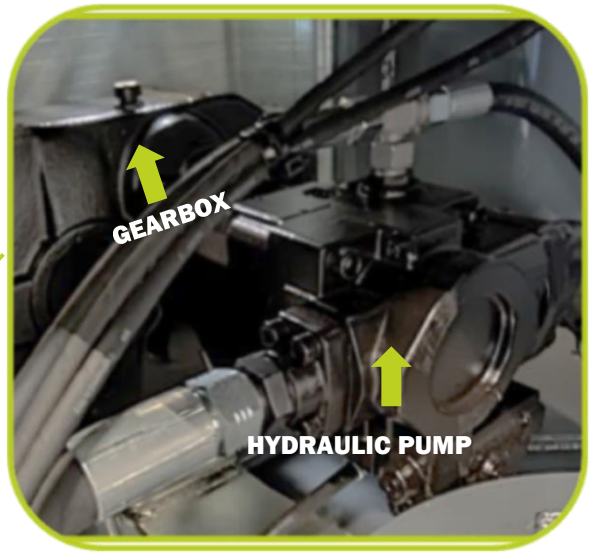
4.3.4 GEARBOX, PTO-SHAFT & HYDRAULIC PUMP

The hydraulic system is a closed system, with tank, pump system, filters, valves, hoses, cooler etc.

The hydraulic system and oil flow on the Spider 5-820 Plus boom mower is driven by a powerful gearbox incl. a PTO shaft that drives the hydraulic pump, through a high-pressure filter, after which the oil is distributed via the machine's valve blocks that control the arm's cylinders and other hydraulic functions.



Location of gearbox, hydraulic pump and high pressure filter on Spider 5-820 Plus boom mower



Hydraulic pump and gearbox on the Spider 5-820 Plus boom mower

High pressure filter on Spider 5-820 Plus boom mower

NOTICE

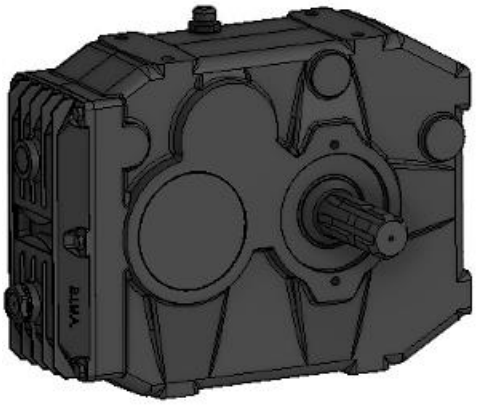
See section: Specifications – page 61-62, for correct pressure, oil quantity and flow the Spider 5-820 Plus boom mower is specified for based on which attachment tool is used on the machine.

To get an overview of the entire hydraulic system, see section: Hydraulic diagrams – page 129

4.3.4.1 GEARBOX

The gearbox on the Spider 5-820 Plus boom mower has the following specifications:

Description:	M9 1 : 2.6
Gear ratios:	**Front-/rear-mounted PTO: Spider Plus** 1 : 2.6 Input: Min. 450 RPM / Max. 750 RPM (Rear) Min. 600 RPM / Max 1000 RPM (Front) Output: Min. 1170 RPM / Max. 1950 RPM (Rear) Min. 1560 RPM / Max. 2600 RPM (Front)
Shaft type:	1 3/8" Z6
Rev./min- (PTO):	**Spider 5-820 Plus boom (rear-mounted)** min. 450 – max. 750 RPM **Spider 5-820 Plus boom mower (front-mounted)** min. 600 – max. 1000 RPM
Volume (litre):	M9: 1.70 litres
Recommended gear oil:	Shell Spirax S3 AX 80W-90 See section: Change of gearbox oil – page 116



Gear box M9: Spider 5-820 Plus boom mower

Table 10 – Spec. sheet: gearbox

WARNING

Information about the speed of the gearbox in Table 10 above must always be observed and within the specified values:

Rear-mounted Spider 5-820 Plus:
(min/max): **450 – 750 RPM**

Front-mounted Spider 5-820 Plus:
(min/max): **600 – 1000 RPM**

See section: Warning labels (Figure 4) – page 7

4.3.4.2 PTO-SHAFT

Spider 5-820 Plus boom mowers comes with a Binacchi PTO shaft:

Binnachi PTO shaft for Spider 5-820 Plus boom mower

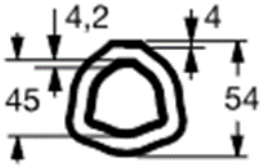
Description:	PTO-shaft B6
Dimensions:	PTO-shaft B-series (triangular profile), Size 6 w/ standard alloy. (N). 
Length:	1010 mm
CE:	Type of protection/screening: (CE marked, approved for use in EEC-EFTA countries)
Connection:	1" 3/8 Z6 coupling w/ click-lock (connected to boom mower) 1" 3/8 Z6 coupling w/ click-lock (connected to vehicle)

Table 11 – Spec. sheet: PTO-shaft

⚠ WARNING

For adjustment and installation and maintenance of the PTO shaft, always follow the manufacturer's instructions: https://www.binacchi.it/

(Instruction material is also always attached to the individual PTO shaft delivered with the machine)

If any other manufacturer of PTO shafts are used, follow the manufacturer's instructions accordingly!

See section: Mounting and connecting the machine (i) – page 69

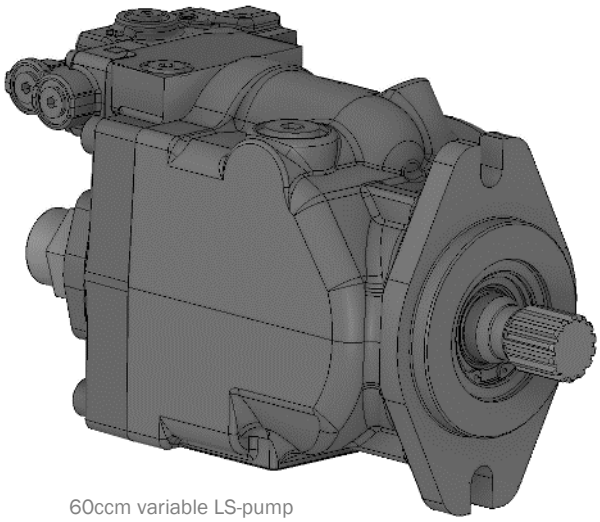
4.3.4.3 HYDRAULIC PUMP

The hydraulic pump receives hydraulic oil directly from the tank through the inlet hose. The pump's output is routed through a high-pressure filter to the machine's PVG valve block and additional hydraulic system that controls the boom mower's functions and movements.

The hydraulic pump on the Spider 5-820 Plus boom mower comes in two sizes:

Description:	Piston pump LS 60
Volume (ccm)::	60 ccm
Max. pressure: (Continuous)	315 bar @ 125 l/min.
Recommended hydraulic oil:	Shell Tellus S2 VX 46

Table 12 – Spec. sheet: hydraulic piston pump: Spider 5-820 Plus



60ccm variable LS-pump
for Spider 5-820 Plus-models

NOTICE

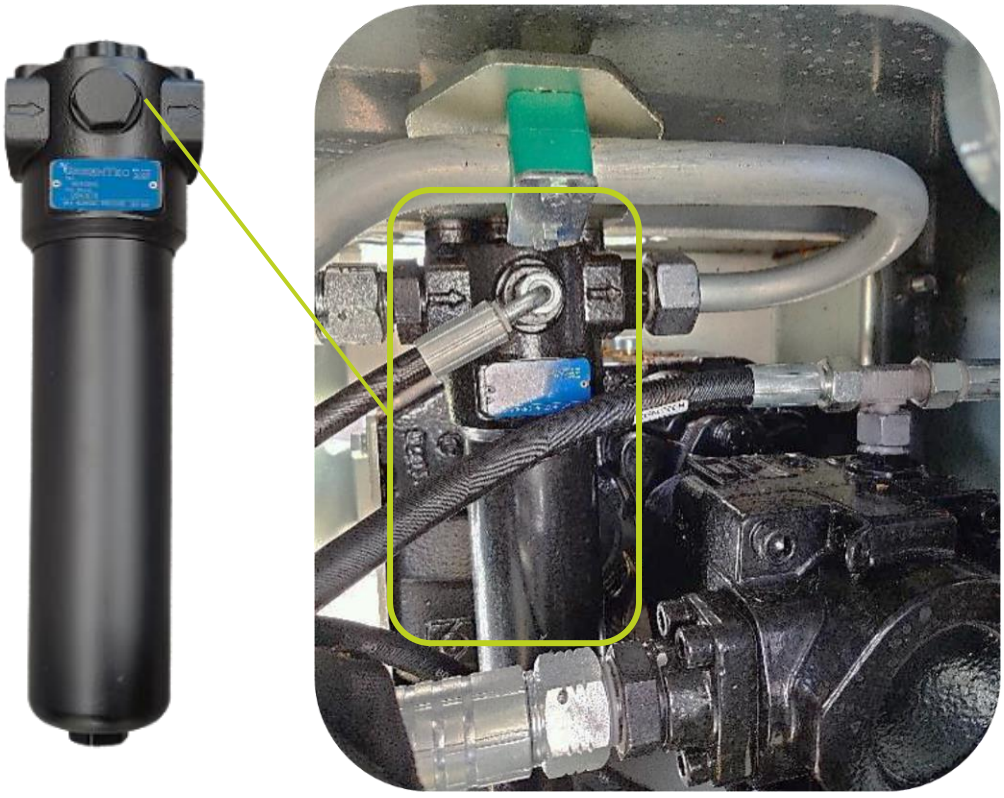
See section: Specifications – page 61-62, for more information on pressure and oil flow on the various attachment tools.

4.3.4.4 HIGH PRESSURE FILTER

The high-pressure filter on the Spider 5-820 Plus boom mower ensures that the hydraulic oil from the pump system is filtered before the oil is released to the rest of the machine's hydraulic system.

Description:	High pressure filter (135 L/min 3/4")
Filter element:	Microfibre: 20 bar 10µm (micron)
Bypass-valve:	6 bar ± 10%

Table 13 – Spec. sheet: high pressure filter



Outlet/connector for manometer on the high-pressure filter

NOTICE

There is an outlet for measurement with pressure gauges on the high-pressure filter, for diagnosing on the machine in case of faulty conditions.

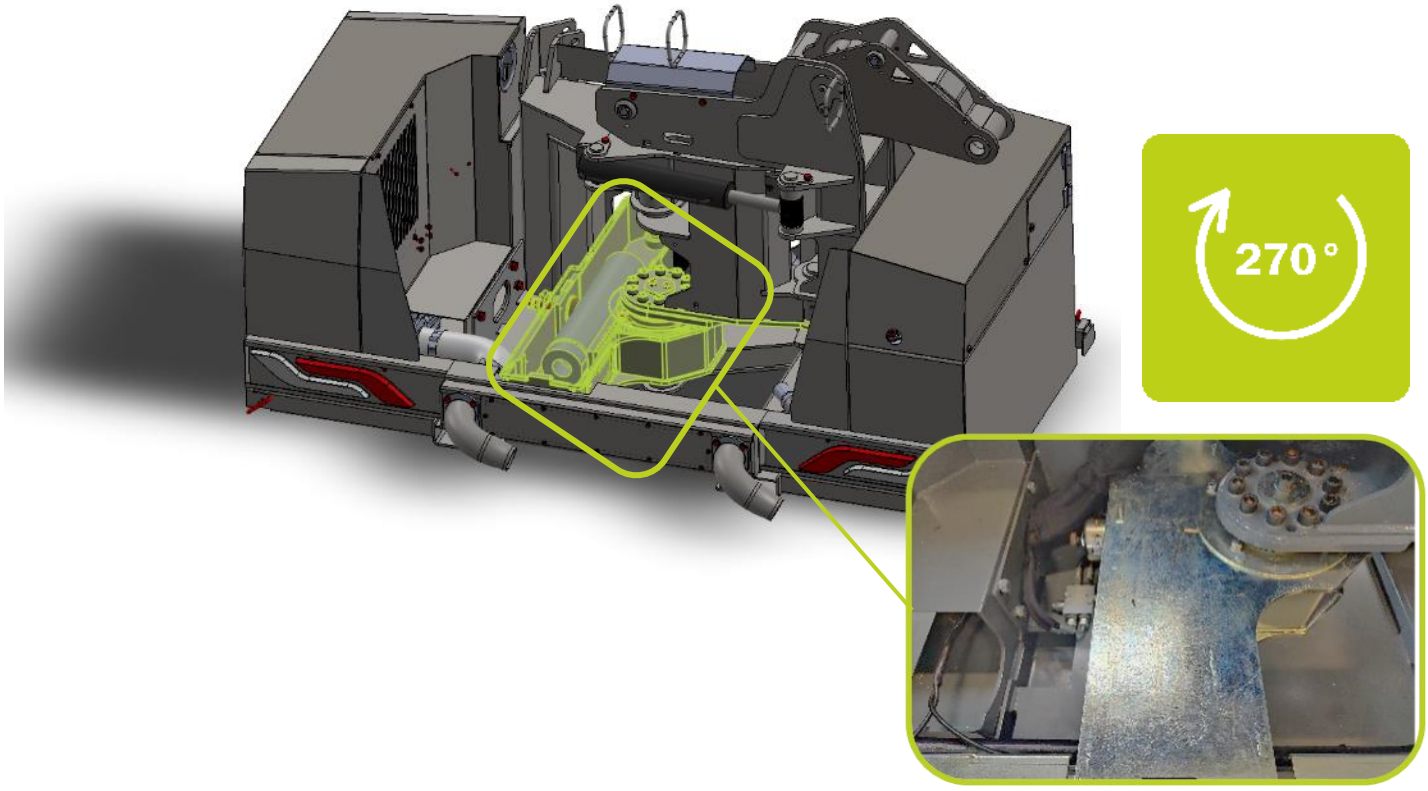
See section: Checking the pressure specifications – page 118

See section: Filter kit incl. seals – side 60 + Replacing filter elements – page 113-115 for information on service and maintenance of the high-pressure filter.

4.3.5 270° SLEW DRIVE FOR SIDE SHIFT OF MOWER ARM (ORBITAL FUNCTION)

The swivel unit construction on the Spider Plus boom mower can be swiveled/rotated up to 270° using a powerful hydraulic slew drive at the bottom of the machine.

The slew drive ensures that the mower arm can be moved orbitally and can be turned safely and stably on a strong platform.



270° slew drive unit on Spider Plus arm mower

NOTICE

Slew drive maintenance and lubrication is necessary for smooth operation of the complete unit on the Spider Plus boom mower.

See section: Lubrication of the machine – page 125

4.3.6 HYBRID ARM SYSTEM W/ DUAL FUNCTION AND HYDRAULIC COLLISION PROTECTION (AHS)

The arm system of the Spider 5-820 Plus boom mower is, like the rest of the machine, constructed in Strenx high-strength steel.

The construction of the arm consists of a strong lower part for lifting and turning the arm, and an upper part consisting of a 3-part arm system. The entire arm system is powered by a total of 5 hydraulic cylinders.

The hybrid arm system has a dual function which provides several options and advantages on the Spider 5-820 Plus boom mower, as the arm can be operated both with and without parallel guidance, whereby the advantages of both systems can be utilized with the same machine.

The parallel function is used especially for hedge and fence mowing, where the advantages of the non-parallel function are used in narrow conditions (forest roads etc.) - including certain situations when mowing grass and on steep slopes/ditches, road signs, etc.

Another advantage of the hybrid arm's flexibility is that telescopic variants can be avoided, as the two outermost arms are more compact:

- Via the inner short arm, the flexibility that a telescopic extension would normally have, is achieved. Thereby, a simplification of the construction and a significant weight saving on the machine.

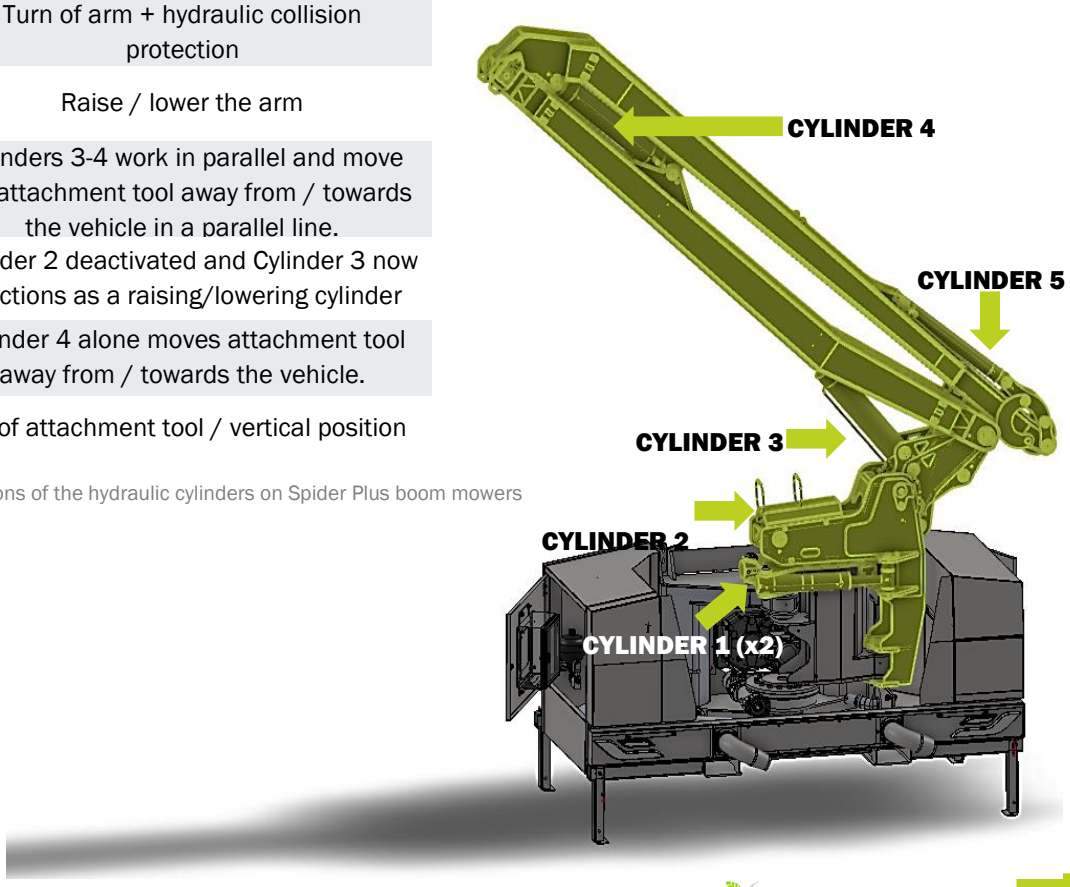
- On the control panel, it is selected whether to drive with parallel guidance or non-parallel guidance, and the function of the hybrid arm is operated via the joystick.

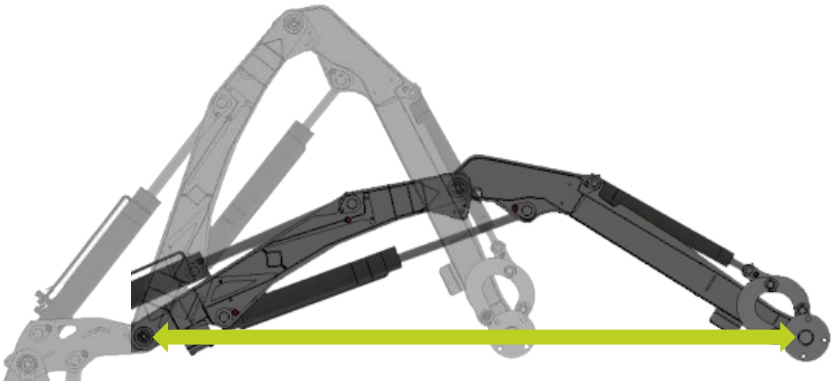
NOTICE

See section: Control panel and joystick – page 38-47 + Operating and driving instructions – page 95-104 for more information on the functions and use of the arm system.

FUNKTIONER FOR HYDRAULISKE CYLINDRE	
Cylinder 1 (x2):	Turn of arm + hydraulic collision protection
Cylinder 2:	Raise / lower the arm
Cylinder 3 & 4: (Parallel function)	Cylinders 3-4 work in parallel and move the attachment tool away from / towards the vehicle in a parallel line.
Cylinder 3: (Hybrid-funktion)	Cylinder 2 deactivated and Cylinder 3 now functions as a raising/lowering cylinder
Cylinder 4: (Hybrid funktion)	Cylinder 4 alone moves attachment tool away from / towards the vehicle.
Cylinder 5:	Tilt of attachment tool / vertical position

Table 14 – Functions of the hydraulic cylinders on Spider Plus boom mowers

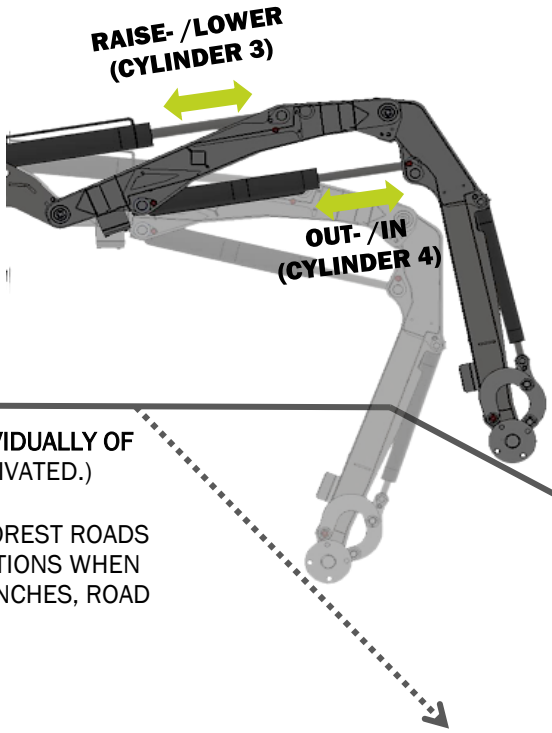




CYLINDERS 3 AND 4 WORK AT THE SAME TIME: **PARALLEL TO EACH OTHER.**

CYLINDER 2 WORKS AS THE RAISING/LOWERING CYLINDER FOR THE ENTIRE ARM SYSTEM.

USED WITH ADVANTAGE FOR HEDGE AND FENCE TRIMMING.



CYLINDERS 3 AND 4 **FUNCTIONS INDIVIDUALLY OF EACH OTHER**. (CYLINDER 2 DE-ACTIVATED.)

USED UNDER NARROW CONDITIONS (FOREST ROADS AND ETC.) - INCLUDING CERTAIN SITUATIONS WHEN MOWING GRASS, ON STEEP SLOPES/DINCHES, ROAD SIGNS, ETC.

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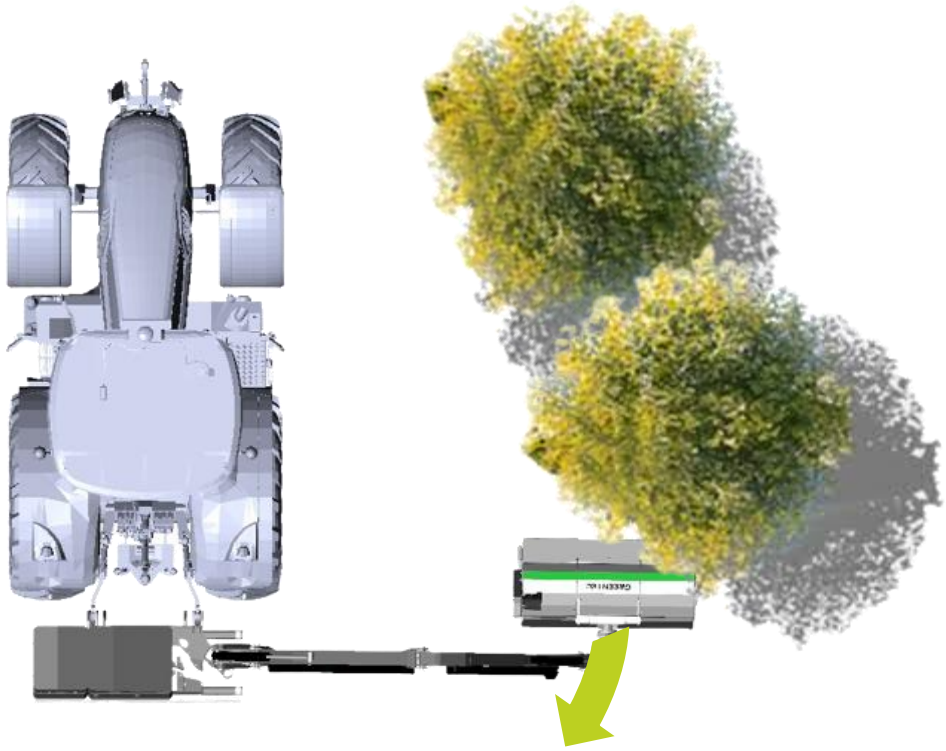
4.3.6.1 HYDRAULIC COLLISION PROTECTION (AHS: AUTOMATIC HYDRAULIC SECURITY)

The lower part of the arm system has a built-in double-acting hydraulic collision protection: ("Break back" system). The system helps to ensure against overloading the boom mower during use.

When the attachment tool on the boom mower hits a tree or other fixed obstacle, the arm's collision cylinder (Cylinder 1) will relieve the pressure on the structure by letting the arm move backwards, or forwards if reversing.



⚠WARNING

Hydraulic collision protections only work until the bottom/stop of the break back cylinder's movement is reached! (Cylinder 1)

If the impact continues thereafter, the arm can be damaged, as the load during impact is thereby transferred directly to the boom mower.

The impact protection on the Spider 5-820 Plus boom mower is therefore active in what corresponds to Cylinder 1's total stroke - in both directions.

See sections: Operating and driving instructions – page 95-104

⚠CAUTION

The hydraulic collision protection can be triggered if the attachment tool is overloaded, either because of moving at too high speed in relation to the amount of material being processed, if the attachment tool is pressed too hard against the ground, or when working uphill / on slopes.

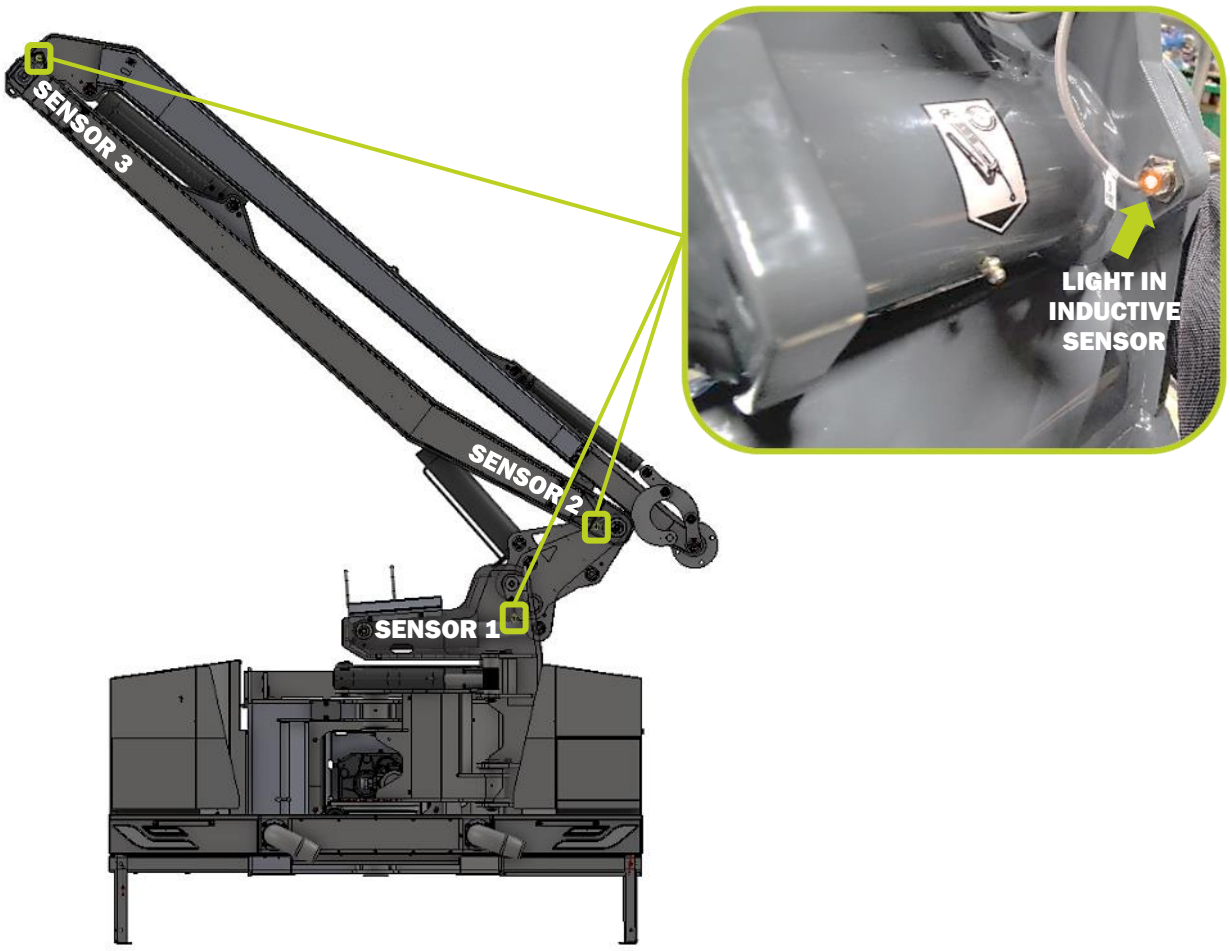
When the arm has been pushed backwards during a collision, the operator must turn the arm back into the desired position by operating the joystick in the driver's cabin.

The double-acting collision protection does not exempt the operator from liability. One should always be aware of dangerous objects and avoid hazards. It is up to the operator to ensure that the machine has a long life and reliable operation.

4.3.6.2 INDUCTIVE SAFETY SENSORS

On the Spider 5-820 Plus boom mower, 3 inductive safety sensors are installed.

These sensors are located in the following places on the boom mower:



Location of inductive safety sensors on Spider 5-820 Plus boom mower (3 pcs.) – 1/2

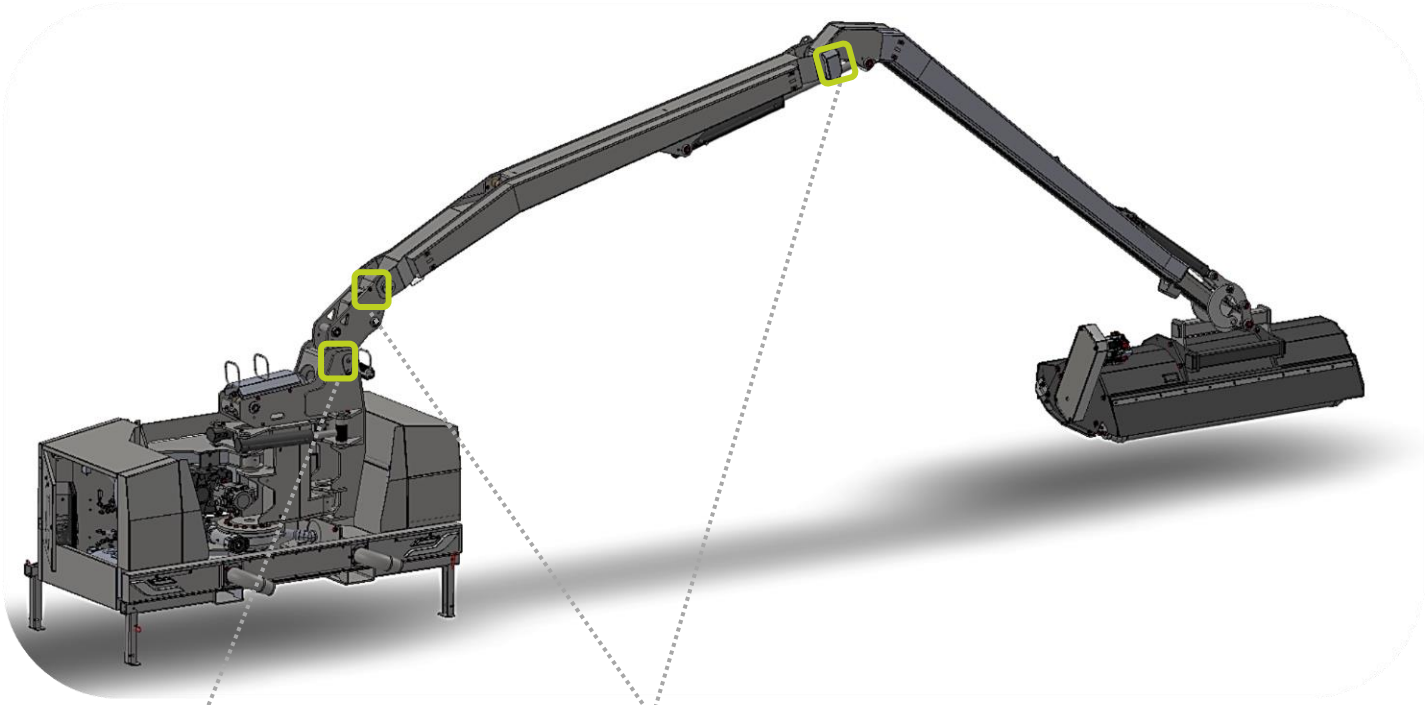
The 3 inductive sensors help determine which functions and movements are permitted on the boom mower in relation to the position of the arm.

The inductive sensors are activated/deactivated as the arm system moves:

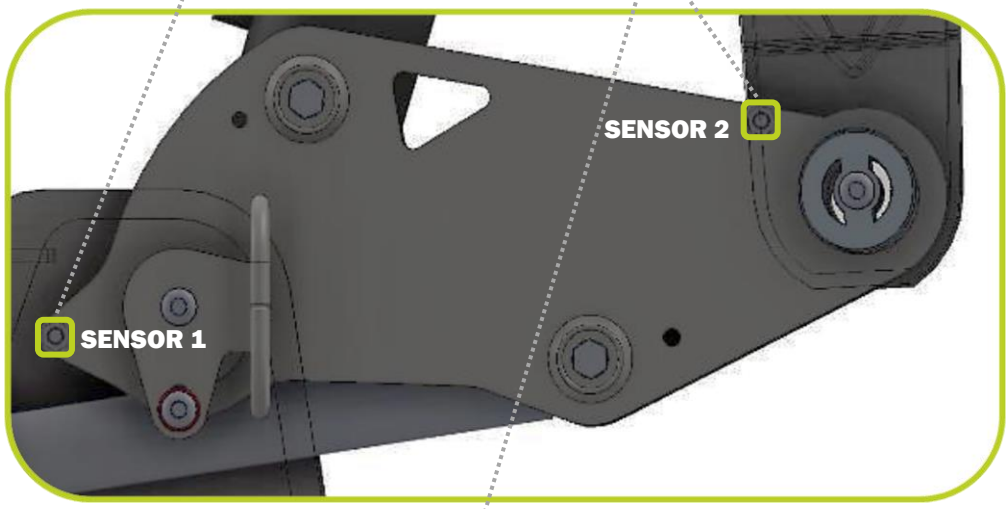
- A sensor is activated as soon as it is physically blocked by a metal surface: all depending on the position of the arm.

- A sensor is deactivated when it is no longer blocked by a metal surface: all depending on the position of the arm.

When activated, the inductive sensors provide feedback to the machine's electrical controllers, where they indicate how far out/in the arm is working.



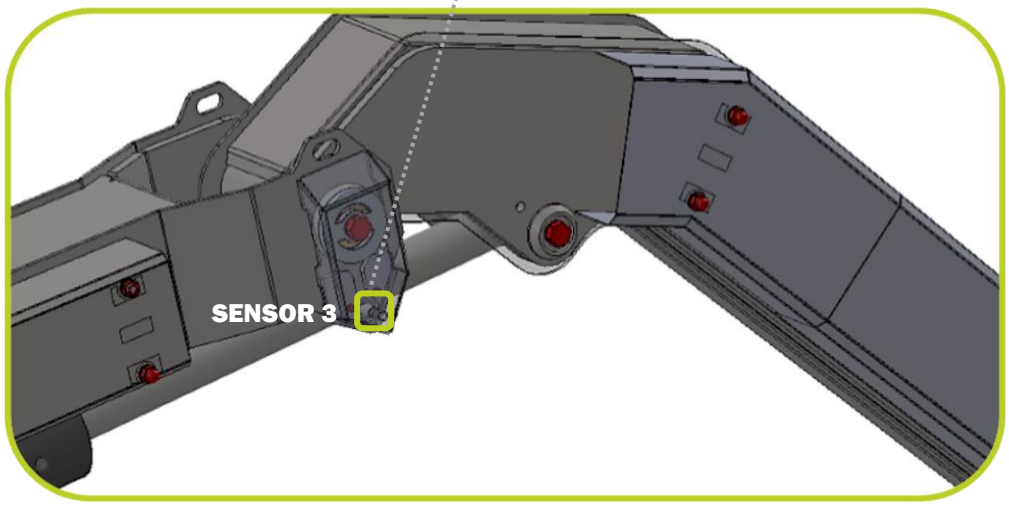
Location of inductive safety sensors on Spider 5-820 Plus boom mower (3 pcs.) –



Both sensor 1 and 2 are located on the lifting arm of the Spider 5-820 Plus boom mower.

Sensor 1 is activated/deactivated by raising or lowering the **lifting arm** itself. (Cylinder 2)

Sensor 2 is activated/deactivated by raising or lowering the **inner arm.** (Cylinder 3)



Sensor 3 is located at the top of the inner arm of the Spider 5-820 Plus boom mower.

Sensor 3 is activated/deactivated by raising or lowering the **outer arm.** (Cylinder 4)

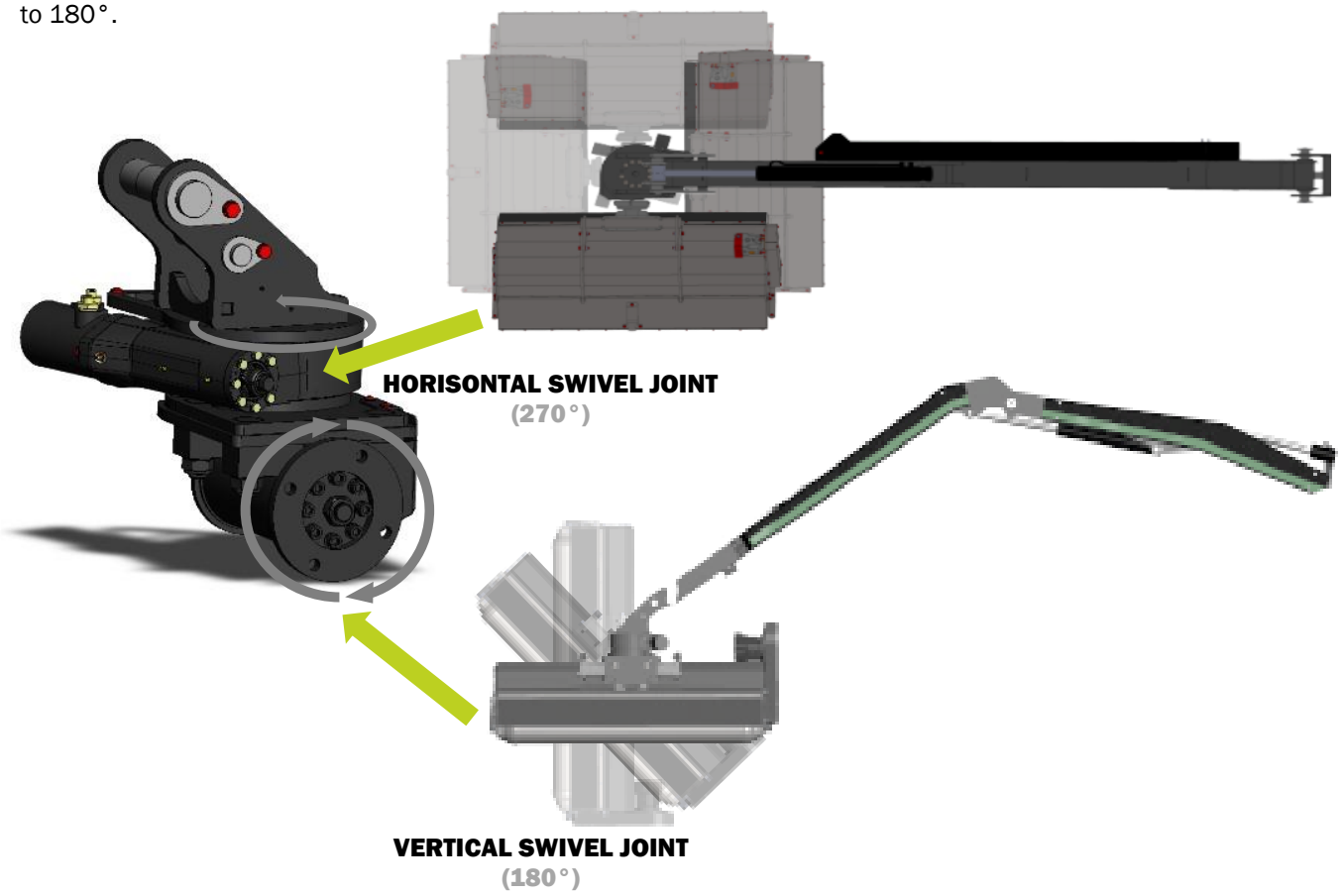
4.3.7 ROTORFLEX DOUBLE PIVOT SYSTEM W/ AUTOFLEX (PLUS-MODELS)

The RotorFlex double pivot system can, in conjunction with the boom mower's 155° turn, move the attachment tool forward freely in the operator's natural field of vision.

This allows the operator to see both the attachment tool and the material to be processed. This gives the operator greater flexibility and guaranteed capacity increase.

With the RotorFlex double pivot system, it is also possible to mow "around corners", behind trees, and to mow behind the vehicle. This function is used when mowing on narrow roads and/or where there is oncoming traffic.

The Rotor Flex double pivot system consists of a horizontal swivel that can rotate the attachment tool up to 270°. In addition, the cutting angle can be further adjusted by means of a vertical smaller swivel joint by up to 180°.



Functions/movements: RotorFlex double pivot system

NOTICE

Rotor Flex has a built-in function (AutoFlex) that ensures automatic vertical positioning of the swivel joint and thereby the attachment tool.

This relieves the driver, and is advantageously used when cutting fences, as the attachment tool is thereby automatically positioned vertically.

See section: AutoFlex (Automatic vertical positioning) – page 43 + Operating and driving instructions – Page 95-104

4.3.8 CONTROL PANEL AND JOYSTICK

The various functions of the Spider 5-820 Plus boom mower are operated using the LogiTec Safe control panel and a Danfoss joystick with 4 proportional functions, located in the vehicle's cab.

The control panel and the functions/buttons of the joystick are described on the following pages, and further under the section on Instructions for mounting, connecting and disconnecting (j) – page 68-89 + Operating the machine (e) – page 92-109

NOTICE

Not all buttons on the LogiTec Safe control panel are used for functions on the Spider 5-820 Plus boom mower:

The following 3 buttons are therefore not active:

- AUX 2: 

LogiTec Safe control panel on the Spider 5-820 Plus boom mower.

Joystick on the Spider 5-820 Plus boom mower

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4.3.8.1 LOGITEC SAFE CONTROL PANEL

The control panel shows which functions are active using LED lighting, issues alarms for temperature and pressure, and shows the total number of running hours for the machine.

CONTROLPANEL ON / OFF

The LED lights up when the control panel is switched on.

⚠CAUTION

Always switch off the control panel after using the machine. (Battery can be discharged)

NOTICE

If the LED does not light up when the ON button is pressed, check that the emergency stop is not activated.

EMERGENCY STOP

Immediately switches off all operation of the machine.

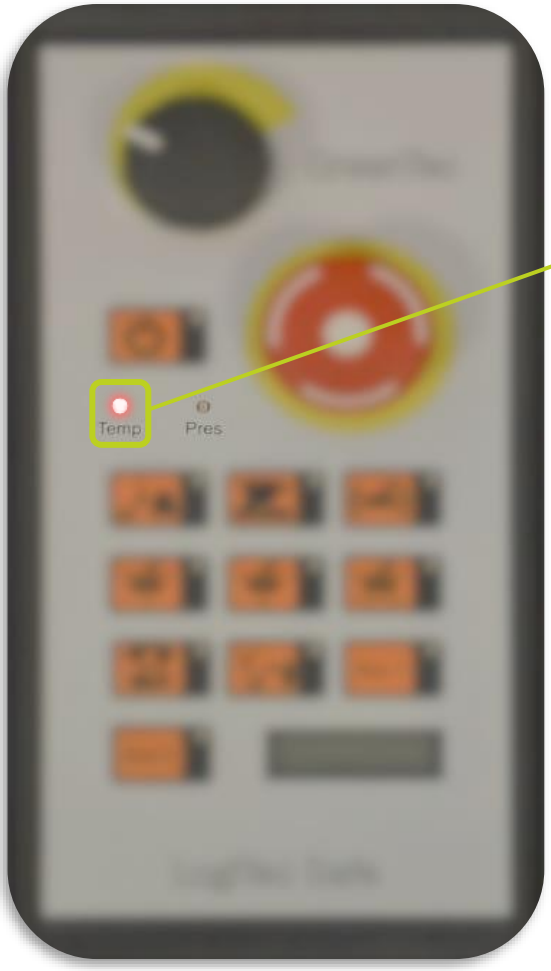
⚠DANGER

The PTO shaft of the vehicle is not stopped when the emergency stop is activated on the control panel!

NOTICE

The control panel cannot be switched on if the emergency stop is activated.

(Then turn the knob counterclockwise)



TEMPERATURE WARNING

The "Temp" LED indicates when the oil temperature on the machine is too high.

If the oil temperature exceeds +65°C, the oil cooler starts, and the lamp lights up to draw attention to the rising oil temperature on the machine.

At an oil temperature of 90°C, the control panel emits a constant alarm. (Beep sound)

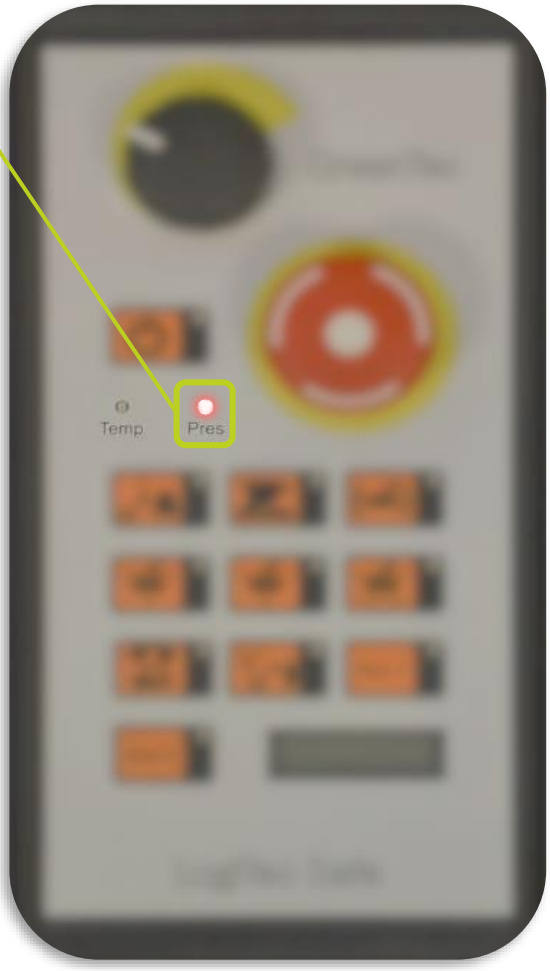
⚠CAUTION

If the oil temperature is too high: Stop the machine immediately and find the cause of the high oil temperature.

See section: Troubleshooting – side 127-128

PRESSURE WARNING

The "Pres." LED lights up and gives an alarm if there is too much pressure on the machine. (Max. 315 bar)



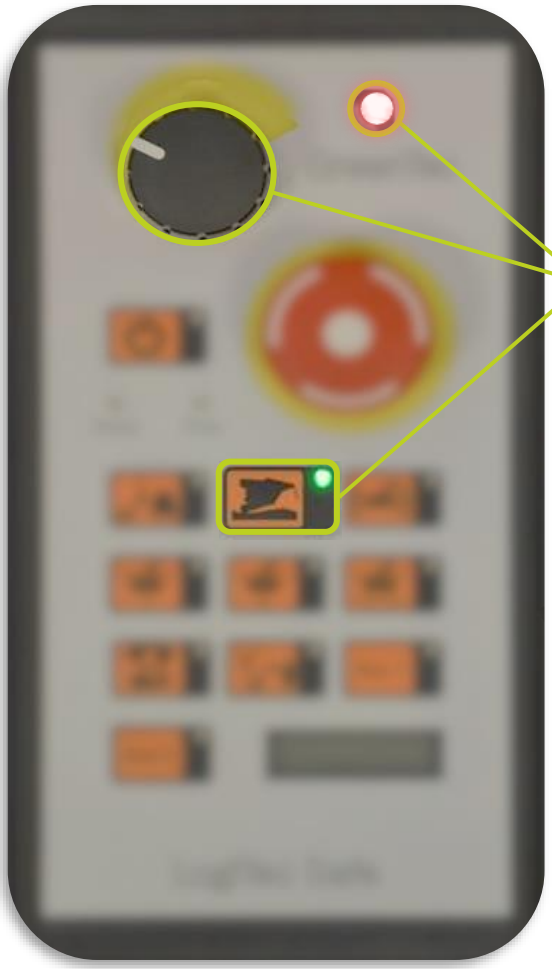
NOTICE

Single short alarms indicate that the machine is running at maximum capacity. Persistent alarms, on the other hand, indicate that the machine is overloaded. Drive slower!

⚠CAUTION

Attachment tools with pressure relief valve set lower than max. pressure on the boom mower, does not activate the alarm! The RPM's, on the other hand, will decrease on the attachment tool.

(When this happens, the max. capacity of the machine is exceeded!)



AHC (AUTO HEIGHT CONTROL)

AHC is used for hedge mowing and ensures that the attachment tool floats over the ground surface and follows the contours of the terrain, without the operator having to correct the arm via the joystick.

The AHC function is infinitely adjustable using the rotary knob that increases the hydraulic pressure on the mowing arm's raising/lowering cylinder.

(The more the knob is turned, the more load the mower arm takes from the attachment tool on the ground.)

The driver can therefore focus on the traffic and any obstacles on the road.

NOTICE

The red LED indicates that the AHC function is activated. See section: Operating and driving instructions – Page 95-104

HYDRAULIC FLOAT (ARM)

Always activated on attachment that must run along the surface of the earth. (Ex. FR Flail Mower) The hydraulic float of arm-function works by the boom mower's lifting cylinder (Cylinder 2) forming a connection with the hydraulic accumulator, which gives the entire arm a slightly springy effect. The attachment tool can thereby avoid unevenness on the surface by 10-15 cm (up/down).

The function protects the arm as the weight of e.g., the FR Flail Mower's rear roller is reduced, so that the attachment tool is able to follow small changes in the surface contour during forward travel.

NOTICE

Hydraulic float (arm) should NOT be used in conjunction with the AHC function. Use hydraulic float (attachment tool) instead in combination with the AHC-function. See section: Operating and driving instructions – Page 95-104

HYDRAULIC FLOAT (ATTACHMENT TOOL)

Activated on all attachment that must run along the surface of the earth. (Ex. FR Flail Mower)

The hydraulic float of attachment tool-function works by connecting the tilting cylinder (Cylinder 5) directly to the oil-tank, and the attachment tool will therefore be able to freely follow the contours of the surface.

NOTICE

Even if the float of attachment tool is activated, you can still tilt the head using the joystick in the driver's cab.

See section: Danfoss joystick – page 46-47

⚠CAUTION

The float of attachment tool-function must always be disabled before the boom mower is folded into transport position!

VERTICAL ADJUSTMENT: ATTACHMENT TOOL

These two buttons are used when the boom mower needs to be folded into transport position.

Using the outermost cylinder on the arm (Cylinder 5), the attachment tool can be tilted up/down, into position.

Vertical adjustment 1: Cylinder 5 is extended.
Vertical adjustment 2: Cylinder 5 is shortened.

NOTICE

Vertical adjustment of the attachment tool is only used when the attachment tool itself must be placed in the most appropriate position during transport of the boom mower on the vehicle.

See section: Transport of boom mower with attachment tool on vehicle (p) – page 93-94

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AUTOFLEX (AUTOMATIC VERTICAL POSITIONING)

AutoFlex (Automatic vertical positioning) should always be activated and is used both for hedge cutting as well as fence cutting. The automatic vertical positioning constantly monitors that the RotorFlex double pivot system of the boom mower remains vertical.

The AutoFlex function works by activating the outermost cylinder (Cylinder 5) in one direction or the other, within a tolerance of 3°.

The RotorFlex is therefore always kept in a vertical position, regardless of the angle or position of the arm. The operator can drive more efficiently with the boom mower and concentrate on the execution of the work and traffic conditions.

⚠CAUTION

AutoFlex must always be disconnected before the boom mower is folded into the transport position!

START / STOP ATTACHMENT TOOL

Starts/stops attachment tool.

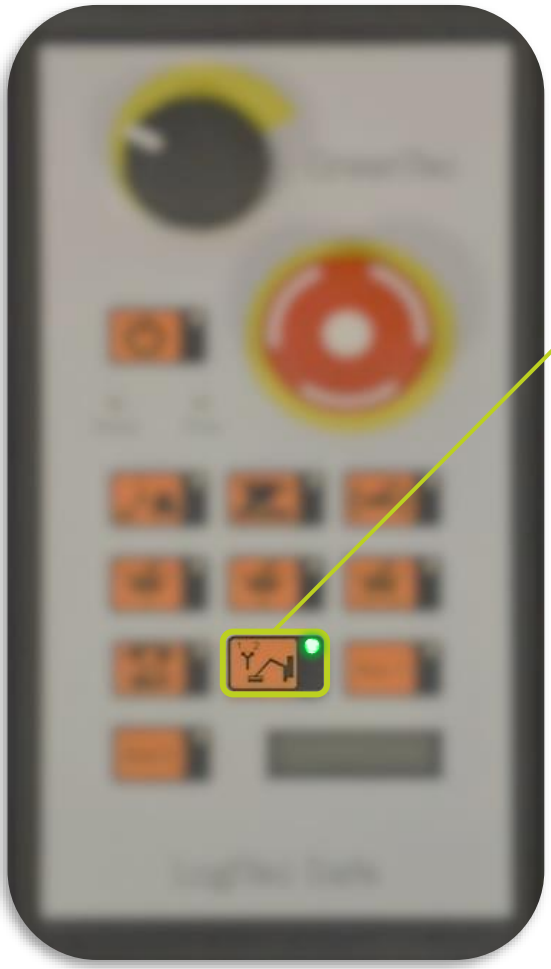
When the button is pressed, the main valve for the attachment tool is opened. The oil supply to attachment tool is always prioritized first on the boom mower.

(Example: If the attachment tool needs a 85 l/min. oil supply, the hydraulic system is delivering 85 l/min. immediately, before providing oil to any of the cylinders/functions of the arm)

NOTICE

If the attachment tool is started at too low RPMs on the PTO shaft, the boom mower cannot be operated as sufficient oil flow is not delivered to the attachment tool.

Se section: Specifications – page 61-62 + Starting / stopping attachment tools – page 107-108



HYBRID DUAL FUNCTION
(PARALLEL FUNCTION / NON-PARALLEL FUNCTION)

This function enables the arm of the boom mower to be moved in/out through parallel function or non-parallel function.

Parallel function of the arm: Cylinder 3 (master cylinder) and Cylinder 4 (slave cylinder) are connected in serial to ONE function, and thereby work in parallel with each other. Cylinder 2 (raise/lower) is active here.

Non-parallel function of the arm: puts Cylinder 2 (raising/lowering) out of function, and Cylinders 3 & 4 are controlled individually from the joystick in the cabin.

NOTICE

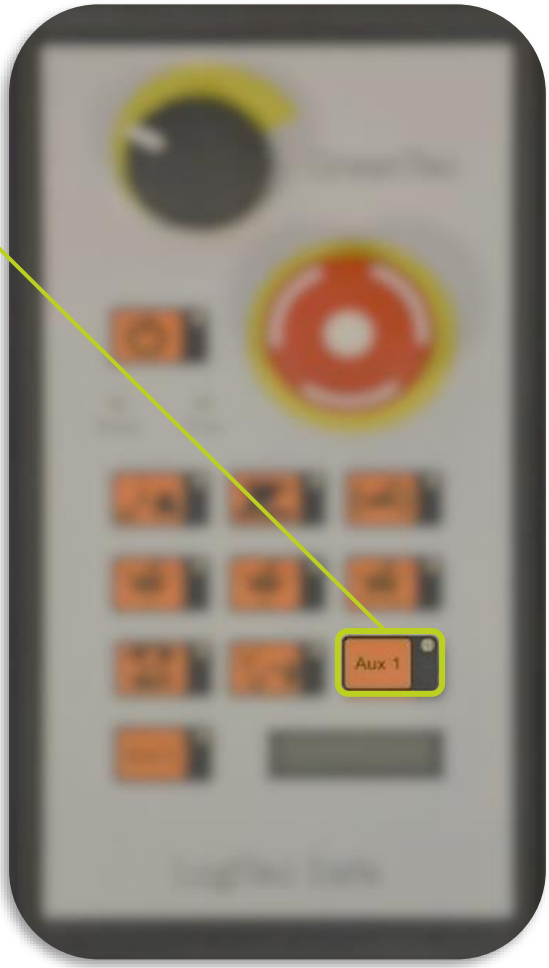
Which function is the most appropriate depends on the working conditions.

See section: Operating and driving instructions – page 95-104

AUX 1: CHANGE THE ROTATION FUNCTION

The Aux 1 button toggles between operation of the RotorFlex double-pivot system at the end of the arm, and the bigger 270° slew drive for side shift of the mower arm.

When the AUX 1 button is off, the RotorFlex swivel is operated.



NOTICE

The AUX 2 button has no current function on the Spider 5-820 Plus boom mower.

RUNNING HOURS

At the bottom of the control panel there is a display that shows the total driving hours the machine has been used for.

NOTICE

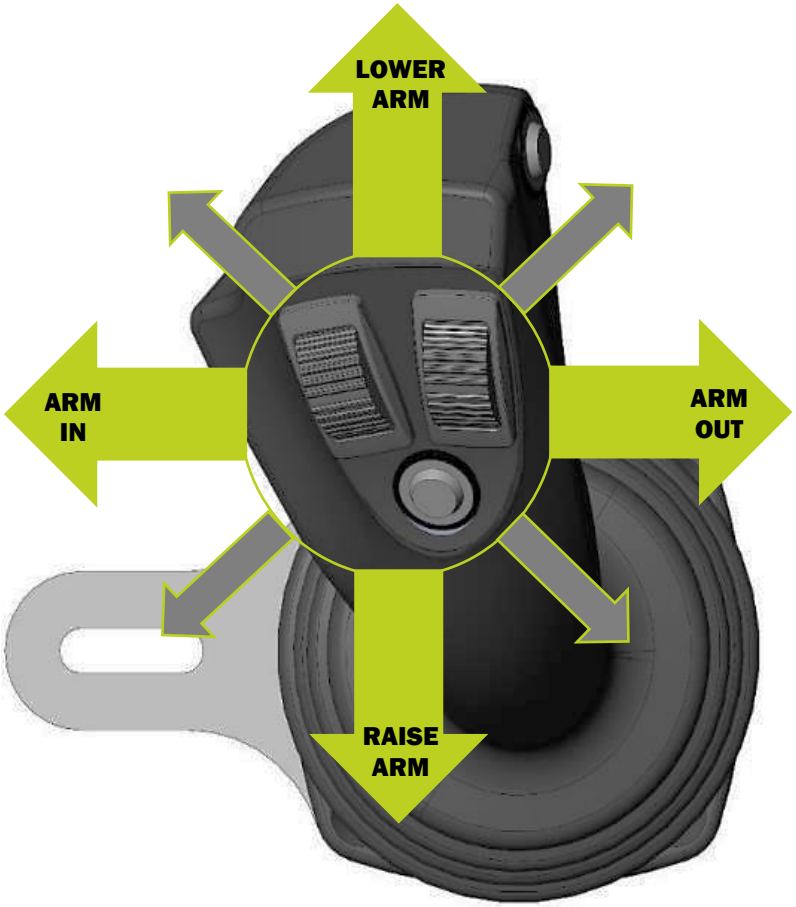
See section: Operating the machine (e) – Page 92-109 or more information about the control panel and the functions.

4.3.8.2 DANFOSS JOYSTICK

The movements and functions of the Spider 5-820 Plus boom mower are controlled using a Danfoss joystick with 4 proportional functions.

The joystick has an ergonomic grip and an internal spring system designed to ensure a smooth return of the handle to the neutral position.

In addition to the proportional functions, the joystick has right/left scrollers and furthermore 2 functions/buttons:



NOTICE

See section: Operating the machine (e) – page 92-109 for more information on joystick functions.

Below are the functions/buttons that, in conjunction with the functions on the Logitec Safe control panel, control the movements and functions of the boom mower:

TILT ATTACHMENT TOOL

The left scroll button on the joystick is used to tilt the attachment tool.

(Also works when float of attachment tool is activated)

TURN ARM

The right scroll button on the joystick is used to position the arm-system in the desired working position.

⚠CAUTION

Pay special attention to the function of the hydraulic collision protection (AHS) when operating the boom mower. See section: Operating and driving instructions – page 95-104

ROTORFLEX / ORBITAL FUNKTION

These two buttons on the joystick are used to turn either the RotorFlex swivel joint, or the slew drive for side shifting of the mower arm using the AUX 1 function on the control panel.

AHC (AUTO HEIGHT CONTROL) ON / OFF:

If an obstacle is encountered (road sign, driveway, tree or similar), the AHC-function can be temporarily bypassed on the back of the joystick by pressing the button once.

After the arm has been maneuvered past the obstacle, the AHC-function can be activated again by pressing the button on the back of the joystick once.

4.4 APPROVED ATTACHMENT TOOLS AND OPTIONAL EQUIPMENT (n)

⚠ WARNING

Remember that when assembling with attachment tools other than those produced or approved by GreenTec, it is every operator's own responsibility to ensure that the vehicle and the assembled machine meet the applicable requirements and relevant directives for this!

When mounting on other manufacturers of attachment tools than GreenTec, a new risk assessment of the equipment used must be submitted!

The operational safety of the machine can only be guaranteed if it is used in accordance with its intended use.

If the machine is mounted with an unapproved attachment tool, the basis for risk assessment is void, and thereby the validity and guarantee of the declaration of conformity!

The Spider 5-820 Plus boom mower is intended for assembly with the following approved GreenTec attachment tools and possible optional equipment:

Description:	APPROVED ATTACHMENT TOOLS AND EQUIPMENT Spider 5-820 Plus boom mower (All models)
Flail Mower FR 122	●
Flail Mower FR 122 B	●
Flail Mower FR 162	●
Quadsaw LRS 2002	●
Quadsaw LRS 2402	●
Rotary Hedge Cutter RC 162	●
Rotary Mulcher RM 232	●
Cutterbar HX 170 – 270	●
Cutterbar HS 212 & 272	●
Rotary Crusher GT 135	●
Grass Cutterbar S 165 – 240	●
Weed Clearing Brush BR 90	●
Rotary Ditch Cleaner GR 70	●
Optional equipment:	
4-linkage system for category 2, 3, 4	●
AHC (Auto Height Control)	●
Hydraulic quick-release couplings	●
Mechanical quick-coupling	●
Leaf Blower (LG)	●
Bio hydraulic oil	●
Oil filter set incl. seals (Pressure and return filter)	●

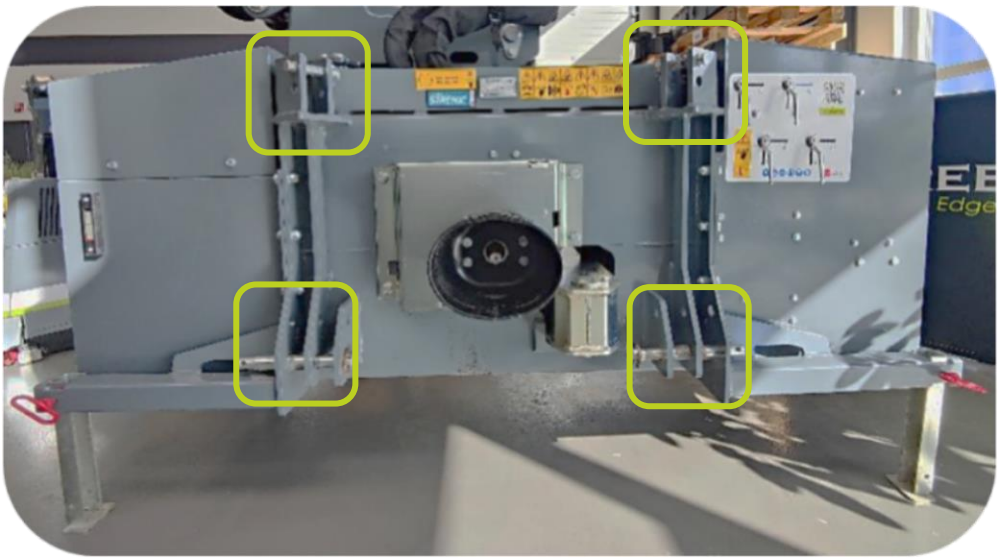
Table 15 – Approved attachment tools and optional equipment

4.5 OPTIONAL EQUIPMENT

4.5.1 4-POINT LINKAGE SYSTEM (CATEGORY 2, 3 & 4)

All Spider boom mowers are all supplied with GreenTec's patented 4-point linkage system system.

Instead of the traditional three-point suspension, all Spider 5-820 Plus models have four mounting points on the main frame:



Mounting points on Spider 5-820 Plus boom mower (Cat. 2, 3 or 4)

NOTICE

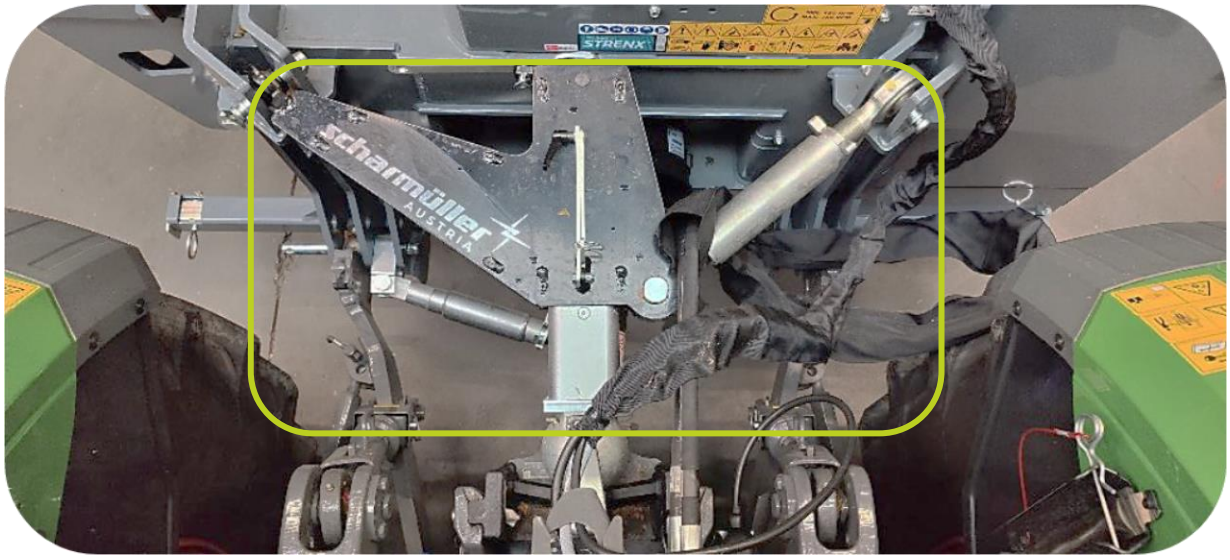
When mounting with the 4-point linkage system, the correct dimensioning ("A-measure" + "B-measure") must be carried out before delivery, in consideration of the 4-point linkage system with which the machine is delivered. An order form for 4-point linkage system must therefore be completed before purchase.

When delivering a new Spider 5-820 Plus boom mower, the 4-point suspension w/ top bar attachment incl. accessories are first adapted to the vehicle where the machine is to be installed. See section: Mounting and connecting the machine (i) – side 69-78

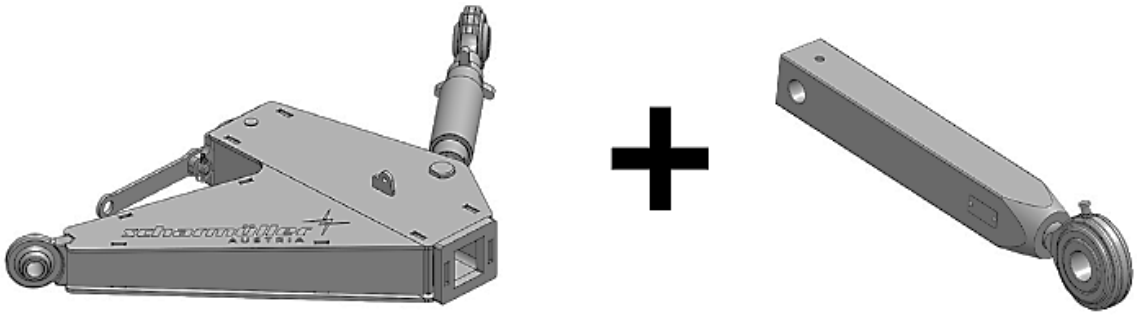
Measurement of 4-point linkage system on vehicle: "A" measure (upper) and "B" measure

4.5.1.1 UPPER STABILIZATION

The two lower points are traditionally mounted in the tractor's lift arms, while the two upper points are connected with a top bar attachment to the tractor's upper draw point using either a top draw bar, K80 coupling or Zugmaul hitch.

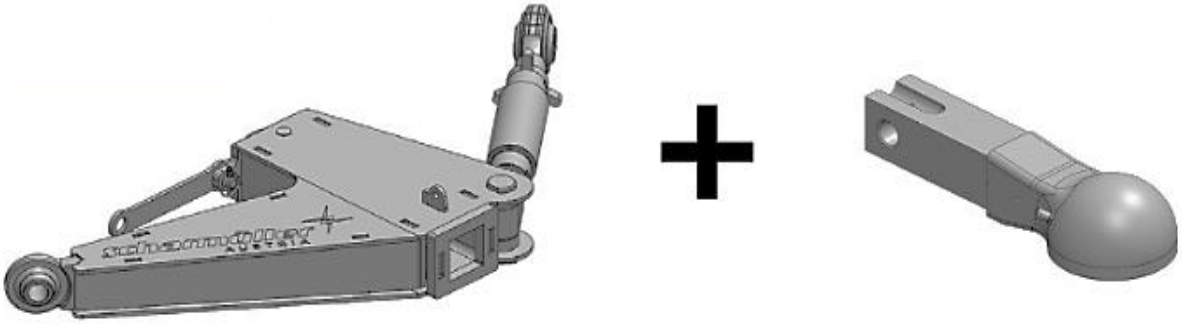


4-point linkage system: top stabilization on Spider 5-820 Plus boom mower



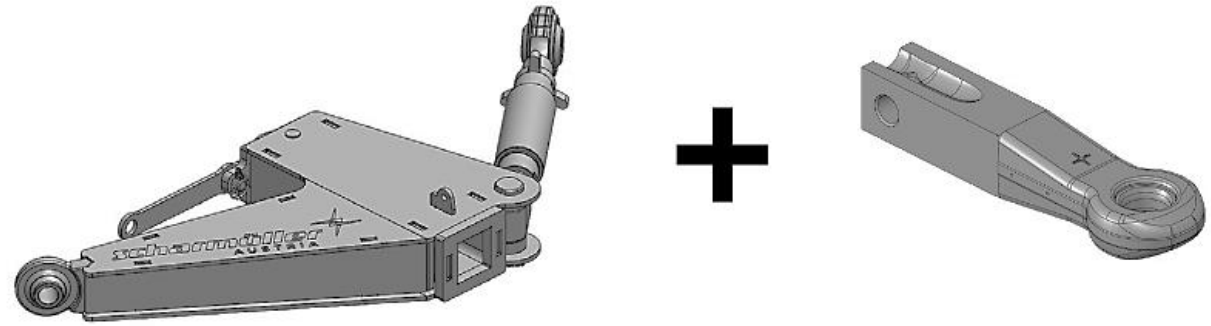
UPPER STABILIZATION WITH TOP DRAW BAR	
Description:	
OPTE1161.10	Mounting with top bar (Cat 2): short (A-measure: **595 – 715** mm)
OPTE1161.11	Mounting with top bar (Cat 2): medium (A-measure: **695 – 935** mm)
OPTE1161.12	Mounting with top bar (Cat 2): long (A-measure: **815 – 1055** mm)
OPTE1161.8	Mounting with top bar (Cat 3): short (A-measure: **595 – 715** mm)
OPTE1161.2	Mounting with top bar (Cat 3): medium (A-measure: **695 – 935** mm)
OPTE1161.3	Mounting with top bar (Cat 3): long (A-measure: **815 – 1055** mm)
OPTE1161.9	Mounting with top bar (Cat 4): long (A-measure: **815 – 1055** mm)

Table 16 – Types of 4-point linkage: upper stabilization with top bar



UPPER STABILIZATION WITH K80 COUPLING	
Description:	
OPTE1161	Mounting with K80-coupling: short (A-measure: **395 – 515** mm)
OPTE1161.1	Mounting with K80-coupling: medium (A-measure: **475 – 595** mm)
OPTE1161.7	Mounting with K80-coupling: long (A-measure: **565 – 805** mm)

Table 17 – Types of 4-point linkage: upper stabilization with K80 coupling

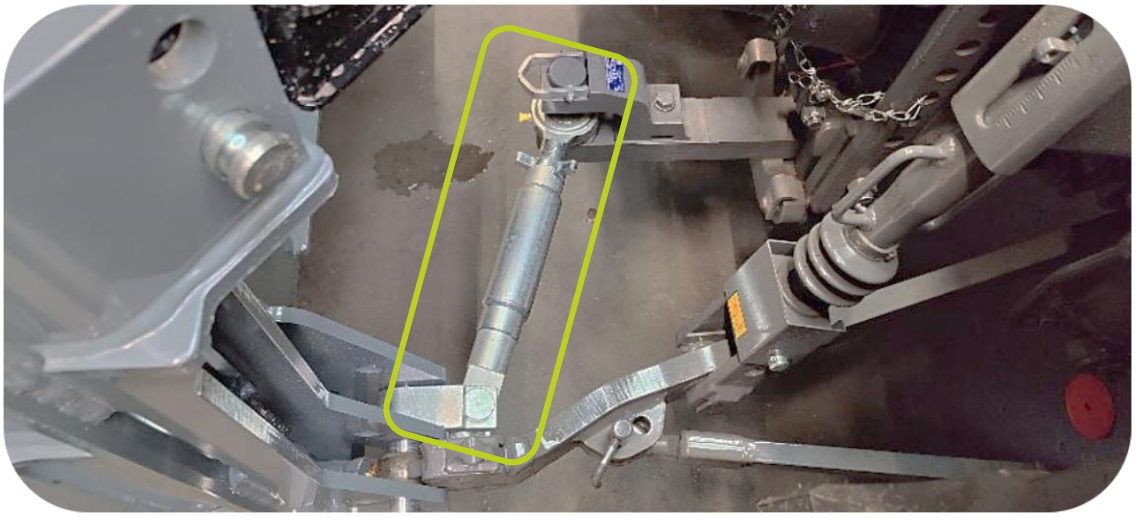


UPPER STABILIZATION WITH ZUGMAUL HITCH	
Description:	
OPTE1161.4	Mounting with Zugmaul-hitch: short (A-measure: **403 – 523** mm)
OPTE1161.5	Mounting with Zugmaul-hitch: medium (A-measure: **483 – 603** mm)
OPTE1161.6	Mounting with Zugmaul-hitch: long (A-measure: **573 – 813** mm)

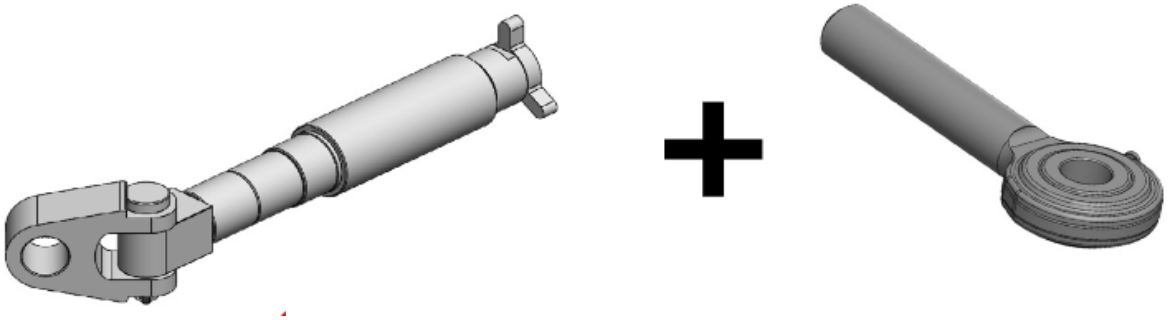
Table 18 – Types of 4-point linkage: upper stabilization with Zugmaul hitch

4.5.1.2 LOWER STABILIZATION

For reaches **over 7 metres**, the machine is further stabilized with a connection from the machine to the tractor's lower hitch point using either a drawbar, Zugmaul hitch or K80 coupling:

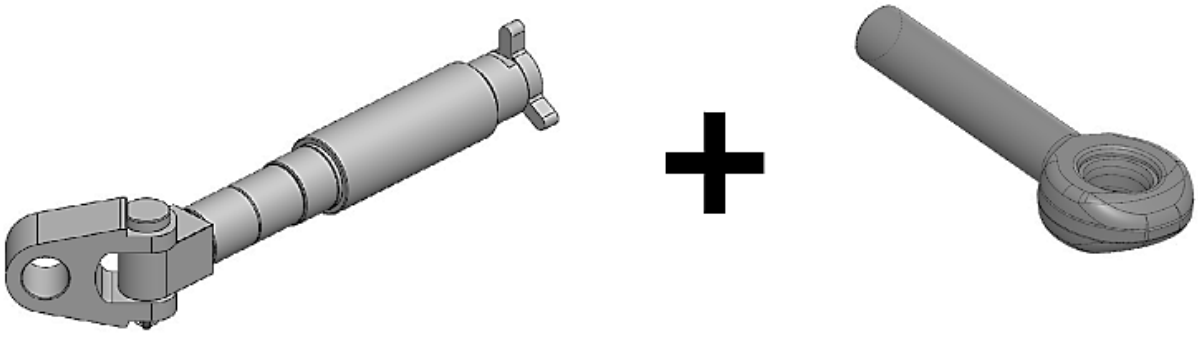


4-point linkage system: lower stabilization on Spider 5-820 Plus boom mower



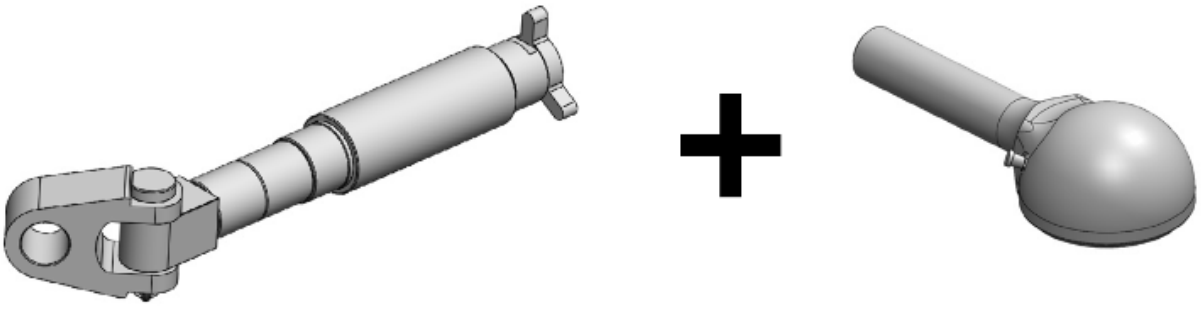
LOWER STABILIZATION WITH DRAW BAR	
Description:	
OPTE1156.5	Drawbar: lower (B-measure: **0 – 430** mm)

Table 19 – Types of 4-point linkage: lower stabilization with drawbar



LOWER STABILIZATION WITH ZUGMAUL HITCH	
Description:	
OPTE1156.4	Zugmaul-hitch: lower (B-measure: **0 – 430** mm)

Table 20 – Types of 4-point linkage: lower stabilization with Zugmaul hitch



LOWER STABILIZATION WITH K80 COUPLING	
Description:	
OPTE1156.8	K80-coupling: lower (B-measure: **0 – 430** mm)
OPTE1156.9	K80-coupling: lower (long) (B-measure: **700 – 800** mm)

Table 21 – Types of 4-point linkage: lower stabilization with K80 coupling

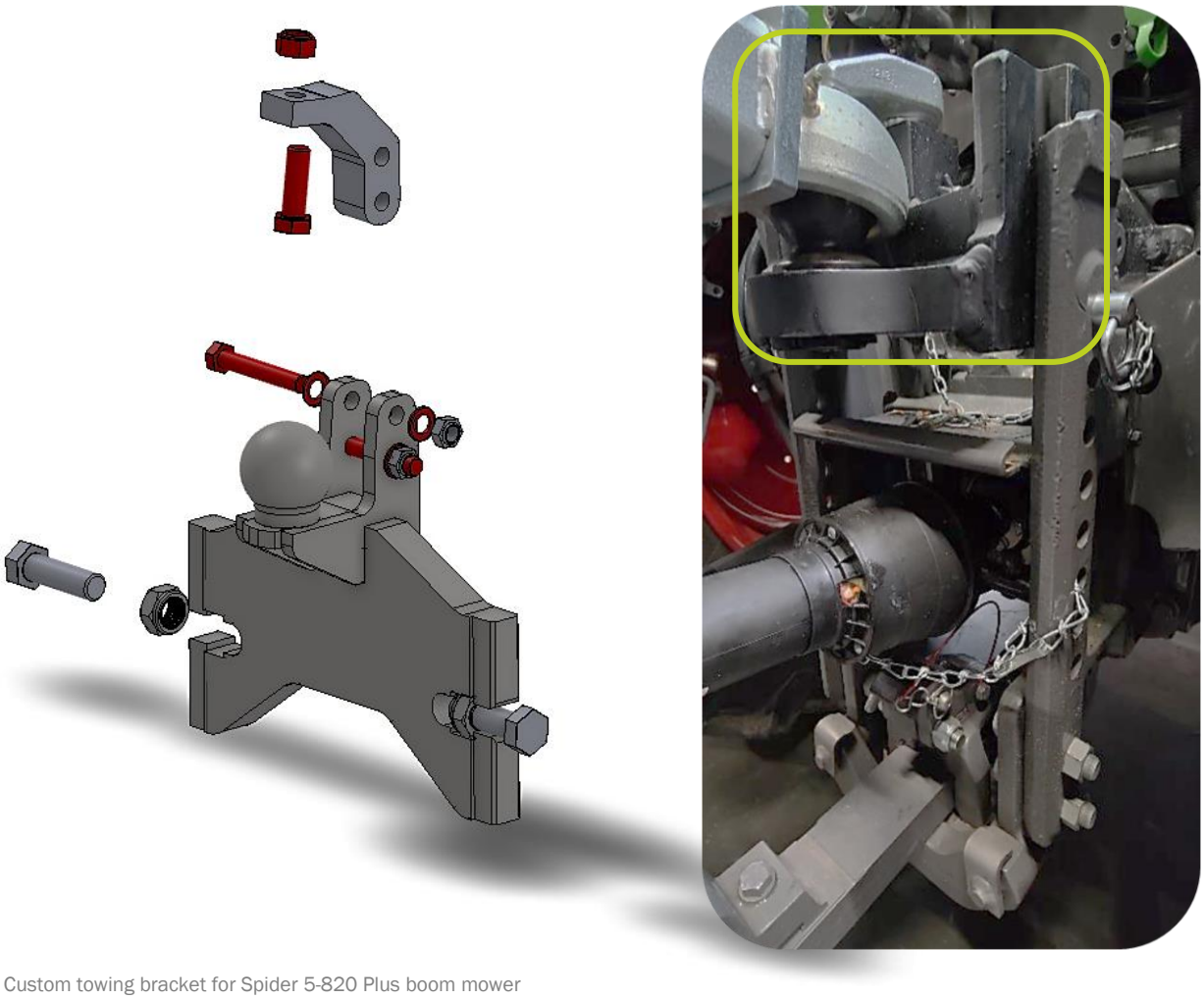
4.5.1.3 CUSTOM TOWING BRACKETS:

On request, GreenTec can produce custom-made towing brackets for K80-coupling or Zugmaul-hitch for installation in the vehicle's ladder-/rail system.

NOTICE

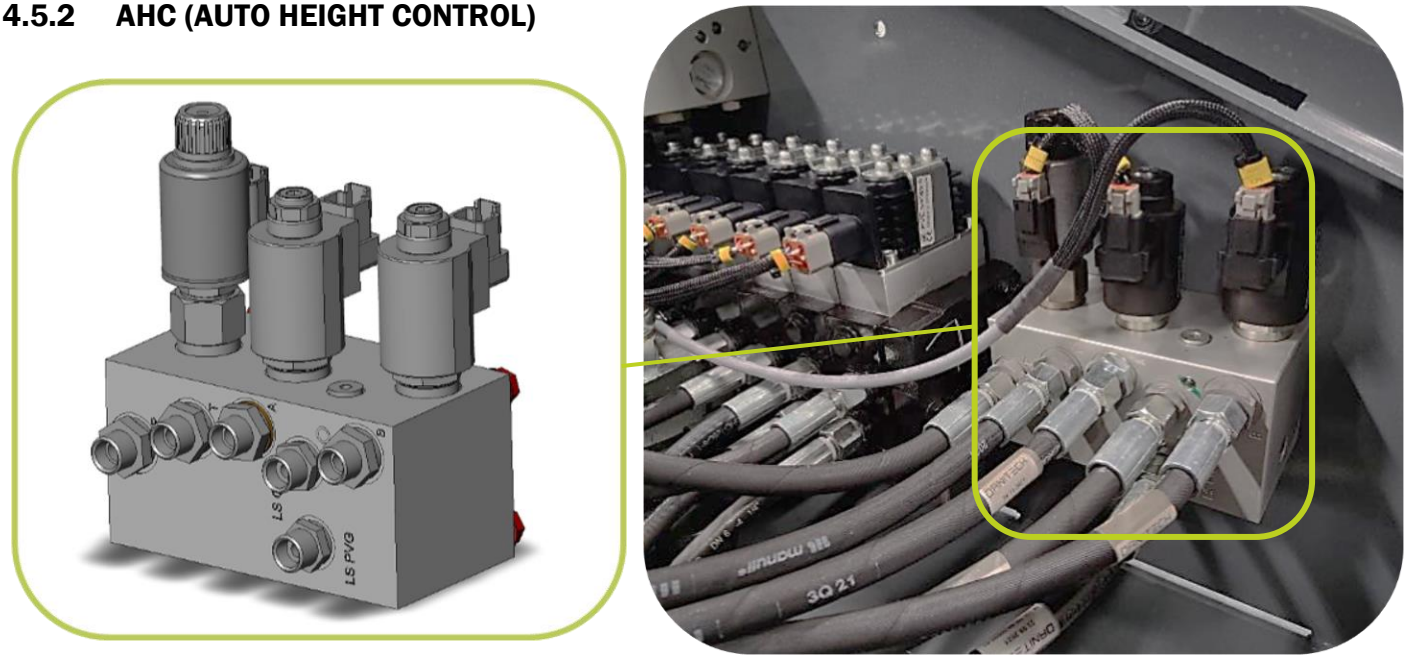
Before construction and delivery of the towing bracket, the correct dimensioning and measurement of the vehicle's ladder system must be carried out. (Distance between the rails, hole dimensions in the ladder, size of the slots)

View and complete an order form for 4-point linkage system here before purchase.



Custom towing bracket for Spider 5-820 Plus boom mower

4.5.2 AHC (AUTO HEIGHT CONTROL)



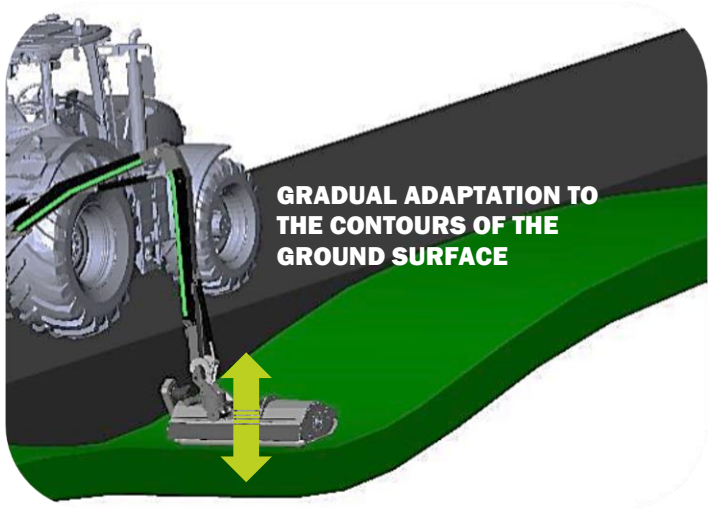
AHC-valveblock on Spider 5-820 Plus boom mower (Optional equipment)

The AHC-function is available as an option on Spider 5-820 Plus boom mowers and consists of a smaller hydraulic valve block with adjustable electric coils that gives the operator the functionality to set a specific pressure on the boom mower's lifting cylinders.

The AHC-function is used for roadside mowing and ensures that the attachment tool "levitates" over the ground surface and follows the contours of the terrain, without the driver having to correct the position of the arm using the joystick.

The AHC-function is set gradually from the cabin using a potentiometer on the control panel, after which the driver can focus on the traffic and any obstacles in the roadside. See section: Control panel and joystick – page 41

With the arm adapting itself over the ground, a significantly lower workload is created on the attachment tool itself.



AHC (Auto Height Control) on a Spider 5-820 Plus boom mower (Optional

Advantages of AHC: (Auto Height Control):

- Relieving the driver.
- Increased traffic safety.
- Reduced maintenance costs.
- Increased capacity.

NOTICE

AHC (Auto Height Control) is optional and cannot be retrofitted to the Spider 5-820 Plus boom mower!

The AHC function should not be used together with the float (arm)-function, or vice versa! Instead, use the float (attachment tool)-function together with the AHC function. See section: Operating and driving instructions – side 95-104

The innermost inductive sensor on the arm of the boom mower is blocked and cuts off the AHC when working in a position too high. Lower the arm/att. tool so that the sensor is no longer activated and the AHC functions optimally again.

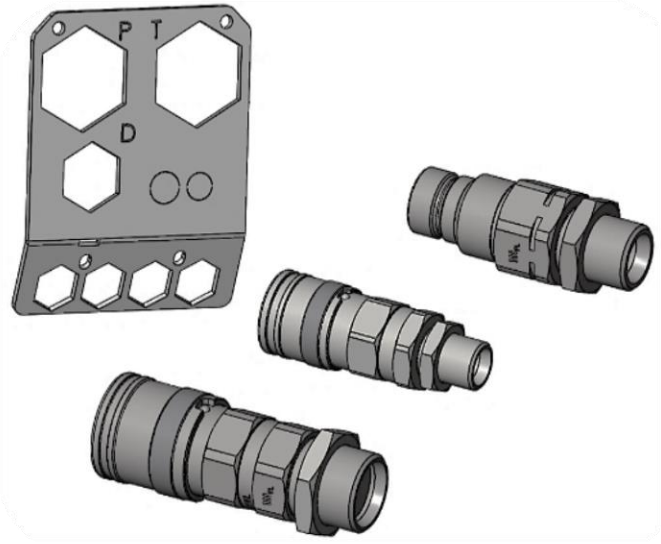
See section: Inductive safety sensors – page 35-36

4.5.3 HYDRAULIC QUICK-RELEASE COUPLINGS

All Spider 5-820 Plus boom mowers are available with hydraulic quick-release couplings as an option, for easier connection and disconnection of hydraulic hoses between attachment tool and boom mower.

The hydraulic quick-release couplings are of the "Flat-face" type and are designed for leak-free connection and disconnection with a safety lock, to prevent accidental disconnection during use and operation.

The quick release-couplings are located on the outside of the boom mower and consist of the following connections:



Flatface quick-release couplings for Spider 5-820 Plus boom mower

HYDRAULIC QUICK-RELEASE COUPLINGS: SPIDER 5-820 Plus	
Quick release (female):	**T-outlet** (Tank): Flatface 3/4xM36x2 – 28 L
Quick release (female):	**D-outlet** (Drain): Flatface 1/2xM22x1,5 – 15 L
Quick release (male):	**P-outlet** (Pressure): Flatface 3/4xM30x2 – 20 S

Table 22 – Types of "Flat-face" quick-release couplings on the machine

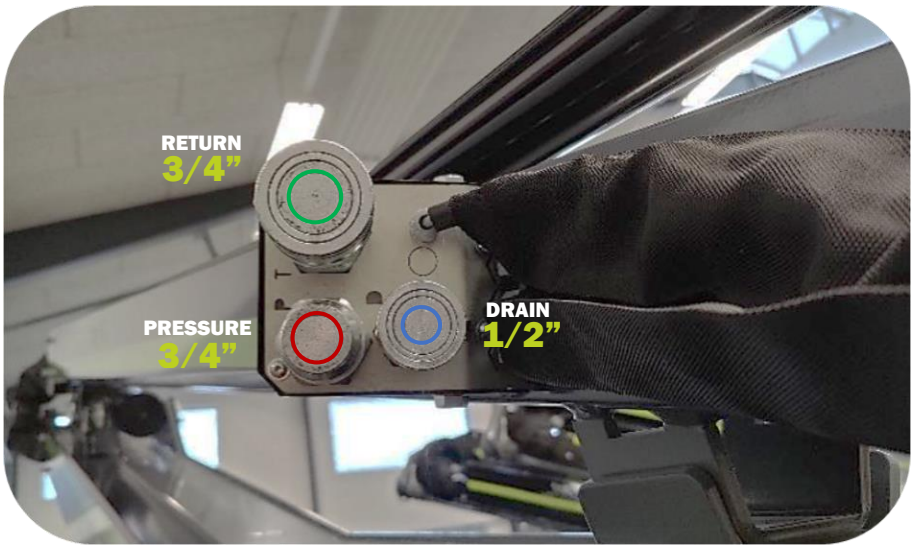
GreenTec always recommends that hydraulic hoses are fitted with "Flat-face" quick-release couplings when mounting/un-mounting attachment tools, as this ensures easy maintenance and cleaning, and that the hoses do not have to be screwed together using traditional hydraulic fittings.

NOTICE

When connecting with hydraulic quick-release couplings on the Spider 5-820 Plus boom mower, these are also required on the hydraulic hoses: from the attachment tool to the boom mower.

Hydraulic quick-release couplings on the boom mower must be selected as optional equipment when purchasing the machine!

See section: Mounting and connecting the machine (i) – page 69



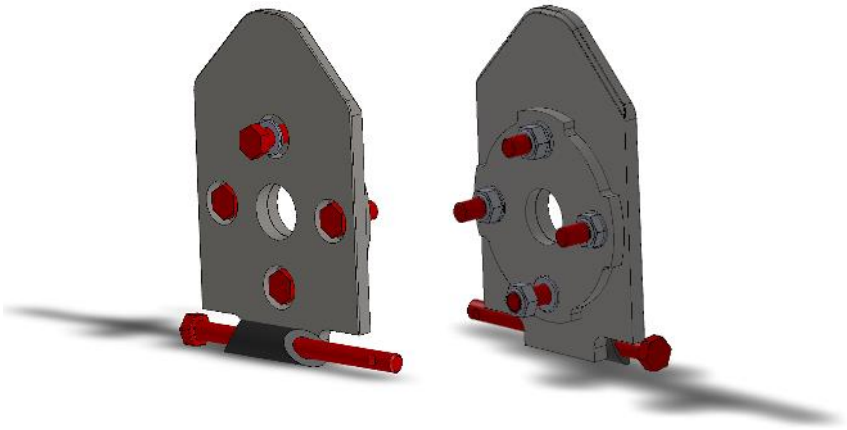
Connections/outlets for hydraulic quick-release couplings on the outside of the boom mowers lift arm

4.5.4 MECHANICAL QUICK COUPLING

All Spider 5-820 Plus boom mowers are available with a mechanical quick-coupling as optional equipment, for easier connection and disconnection of attachment tools on the boom mower.

The mechanical quick coupling -system consists of a "male"-part that is mounted on the boom mower, and a "female"-part that is mounted on the attachment tool.

When mounting with the mechanical quick coupling, it is secured with a bolt, locking nut and lynch pin.



Mechanical quick coupling for Spider 5-820 Plus ("male"-

In combination with the hydraulic quick-release couplings, the mechanical quick coupling ensures an overall easy removal and attachment of attachment tools on the Spider 5-820 Plus boom mower, without the use of any tools.

NOTICE

When using the mechanical quick coupling on the Spider 5-820 Plus boom mower, an adapter is also required on the attachment tool itself.

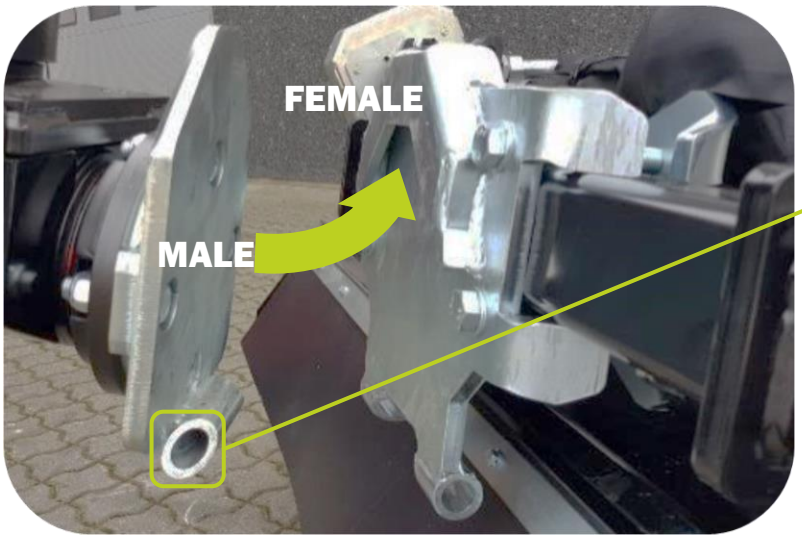
Examine the optional equipment for the selected attachment tool!

See section: Mounting and connecting the machine (i) – page 69

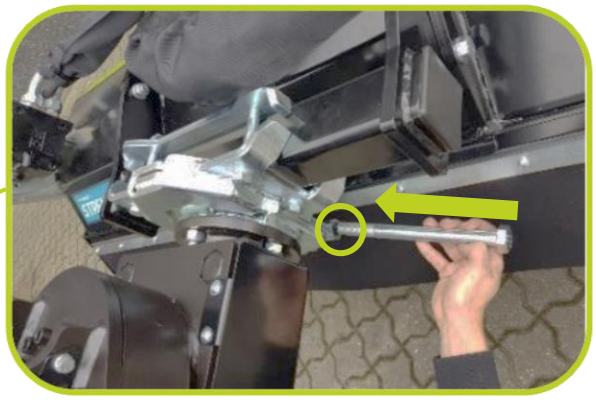
Mechanical quick coupling for attachment tools on a Spider 5-820 Plus boom mower

When choosing mechanical quick coupling as optional equipment, it is always fitted to the Spider 5-820 Plus boom mower on delivery.

The quick change can also be retrofitted and/or angled as needed afterwards if the attachment tool needs to have a specific angle when working.



Mechanical quick coupling mounted on Spider 5-820 Plus boom mower with RotorFlex + "female" adapter mounted on the attachment tool



The mechanical quick coupling is always locked with the supplied bolt, locking nut and lynch pin

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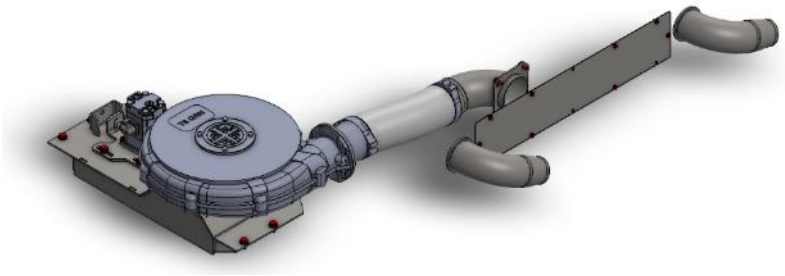
4.5.5 LEAF BLOWER (LG)

Spider 5-820 Plus boom mowers in all models can be equipped with a Leaf Blower (LG).

The Leaf Blower (LG) is a high-pressure blower used for landscaping, to keep roads, pavements, cycle paths etc. free of leaves, grass, and other extraneous materials.



Leaf Blower (LG) for Spider 5-820 Plus boom mower

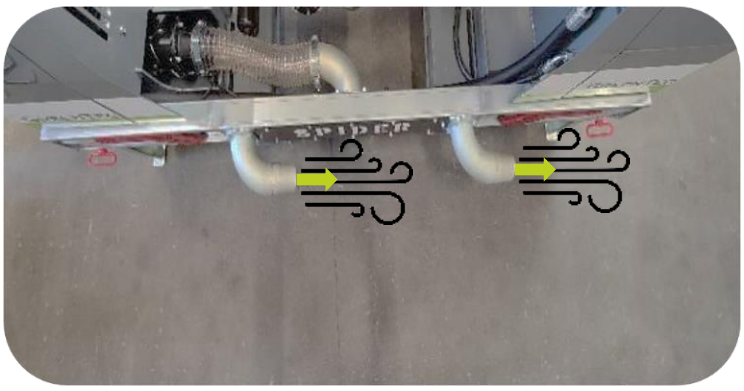
The machine is often used in combination with, for example, a hedge trimmer or flail mower, with which you can cut hedges, bushes, and roadsides at the same time as you clean up after the effort.

The Leaf Blower (LG) consists of the following components.

- A fan housing with mounting bracket and shaft for belt drive.
- Belt box with belt drive and built-in belt tensioner.
- Hydraulic motor incl. flow divider for correct oil flow.
- Flexible hose with blower nozzle, which can be mounted according to individual wishes.

SPECIFICATIONS: LEAF BLOWER (LG)	
Hydraulic connection:	1 x DW 41 l/min @ 190 bar (Recommended return pressure: min. 5 bar – max. 15 bar)
Air volume:	38 m³/min.
Air pressure:	10150 Pa
Weight:	71 kg.
Recommended hydraulic oil:	Shell Tellus S2 VX 46 or equivalent Shell Naturelle S2 Hydraulic Fluid 46 or equivalent
Recommended oil filtration:	10-Micron-oil filter

Table 23 – Specifications: Leaf Blower (LG)



Adjustable blower nozzles for mounting in the Spider 5-820 Plus arm mower's forklift

The blower nozzles is integrated into one of the lifting-brackets of the boom mower and can be adjusted-/turned to either the right or left as required

The leaf blower is mounted under the boom mower and a **1 x DW outlet is connected from the vehicle's hydraulic system.** The Leaf Blower (LG) is operated through the vehicle's hydraulic system.

NOTICE

The LG leaf blower is pre-assembled and ready for connection and use upon delivery of the machine. *If retrofitting on a machine, a guide for mounting the leaf blower on the Spider 5-820 Plus boom mower is included.*

⚠ WARNING

Safety glasses must always be worn when driving the LG leaf blower, as it can throw dust, pebbles, branches, grass, etc. into the air during use.

See section: Personal safety equipment – page 6

4.5.6 BIO HYDRAULIC OIL

Biodegradable hydraulic oil can be selected as an optional extra when purchasing a new Spider 5-820 Plus boom mower. GreenTec uses Shell "Naturelle S2 Hydraulic Fluid 46": an advanced hydraulic fluid for use in hydraulic systems. Easily biodegradable with low ecotoxicity, this hydraulic oil is particularly suitable for use in particularly environmentally sensitive areas.

NOTICE

Biodegradable hydraulic oil should be selected upon purchasing a new machine!

Normal hydraulic oil can in principle be replaced by bio-hydraulic oil in an older machine, but here the old oil must be drained completely first, all filters should be changed, and the hydraulic system must then be flushed through with bio-oil to minimize the amount of normal oil.

The two oils are miscible, but do not meet the requirement of sufficient biological degradation.

(The requirement for bio-oil is that 80% of the oil must have degraded after a maximum of 30 days in nature!)

GreenTec therefore recommends not changing to biodegradable oil when the machine was "born" with normal hydraulic oil.

4.5.7 FILTER KIT INCL. SEALS

The following filter inserts are available for replacement on the Spider 5-820 Plus boom mower.
(When purchasing the machine, one complete filter set including seals is always included)

HYDRAULIC FILTRES: SPIDER 5-820 Plus	
Spider 5-820 Plus:	Return oil-filter and high-pressure filter + breather cap (oil tank) (Seals etc. incl.)

Table 24 – Filter elements (hydraulic)

GreenTec offers a complete filter set incl. seals for service and maintenance of the Spider 5-820 Plus boom mower.

For more information on inspection, maintenance and replacement of filter elements see section: Replacing filter elements – page 113-115

Filterkits and seals for Spider 5-820 Plus boom mower

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4.6 SPECIFICATIONS

SPEC. SHEET: SPIDER 5-820 PLUS				
	Spider 520 Plus	Spider 620 Plus	Spider 720 Plus	Spider 820 Plus
Width:	2.5 m			
Depth:	1.20 m			
Reach:	5.2 m	6.2 m	7.2 m	8.2 m
	(See section: Positions and reach of boom mower – page 63-64)			
Weight (kg):	2170 kg.	2195 kg.	2355 kg.	2385 kg.
Min. weight of vehicle:	5.000 kg.	6.000 kg.	7.000 kg.	8.000 kg
	See section: Stability (o) - page 90-91			
A-weighted sound power level (>80dB):	Not above > 82 dB			
Oil amount for attachment tools (Adjustable)	50 l/min. or 85 l/min. @ 150 - 315 bar **(See approved GreenTec attachment tools below)**			
Required oil quantity: Flail Mower FR 122 - 162	1 x DW 85 l/min @ 315 bar + retur + trykløst dræn			
Flail Mower FR 122B	1 x DW 85 l/min @ 315 bar + retur + trykløst dræn			
Quadsaw LRS 2002	1 x DW 85 l/min @ 150 bar + retur + trykløst dræn			
Quadsaw LRS 2402	1 x DW 85 l/min @ 150 bar + retur + trykløst dræn			
Rotary Hedge Cutter RC 162	1 x DW 50 l/min @ 180 bar + retur + trykløst dræn			
Rotary Mulcher RM 232	1 x DW 50 l/min @ 180 bar + retur + trykløst dræn			
Cutterbar HX 170 – 270	1 x DW 50 l/min @ 190 bar + retur + trykløst dræn			
Cutterbar HS 212 & 242	1 x DW 50 l/min @ 190 bar + retur + trykløst dræn			
Rotary Crusher GT 135	1 x DW 85 l/min @ 280 bar + retur + trykløst dræn			
Grass Cutterbar S 165 – 240	1 x DW 50 l/min @ 180 bar + retur + trykløst dræn			
Weed Clearing Brush BR 90	1 x DW 50 l/min @ 190 bar + retur + trykløst dræn			
Rotary Ditch Cleaner GR 70	1 x DW 85 l/min @ 320 bar + retur + trykløst dræn			
Recommended hydraulic oil:	Shell Tellus S2 VX 46 or equivalent Shell Naturelle S2 Hydraulic Fluid 46 or equivalent Oil tank: **220 litres**			
Recommended oil filtering:	10 Micron-oil filter (Bypass)			
Hydraulic valve (main):	Danfoss PVG 32 - proportional valve system			
Hydraulic pump:	60 ccm variable piston pump (Plus) **125 l/min @ 315 bar**			
Gearbox:	M9 **1 : 2.6** (600 - 1000 RPM, PTO front mounted) M9 **1 : 2.6** (450 - 750 RPM, PTO rear mounted)			
Recommended gear-oil	Shell Spirax S3 AX 80W-90 or equivalent M9: **1.70 litres**			

(continued) →

← (continued page 61)

Hydraulic connections: (ATTACHMENT-TOOLS)	DK : TRYK UK: PRESSURE D: DRÜCK Max. pressure allowed:	**150 – 320 bar** (Applies to all attachment tools approved for use with the Spider 5-820 Plus boom mower) **(Always check the instruction manual for the attachment tool in use!)**
	DK : RETUR UK: RETURN D: RÜCKLAUF Recommended return pressure:	**Max. 5 – 15 bar.** (Applies to all attachment tools approved for use with the Spider 5-820 Plus boom mower) **(Always check the instruction manual for the attachment tool in use!)**
	DK : DRÆN UK: DRAIN D: LECK Max. allowed drain pressure:	**Pressureless (Max. 0 – 2 bar)** (Applies to all attachment tools approved for use with the Spider 5-820 Plus boom mower) **(Always check the instruction manual for the attachment tool in use!)**
Working season:		All year. Legislation in individual countries may limit the season.
Lubrication:	Quantity / interval:	See section: Lubrication of the machine – page 124-125
	Type:	Texaco Multifak EP 2 lithium-grease or equivalent (Safety data sheet)
Materials:		Hydraulic hoses: Steel reinforced, rubber coated Hydraulic valves: Cast iron and aluminum Paint (color code): Grey (Gloss 70-80) = RAL 7011 (Iron Grey) Black (Gloss 70-80) = RAL 9005 (Graphite Black)
Power supply / battery		12-volt DC (40A fuse between vehicle battery and machine)
Lights:		LED light beam: 7-pin trailer connector
Data transfer:		Can-bus system

Table 25 – Machine specification data sheet

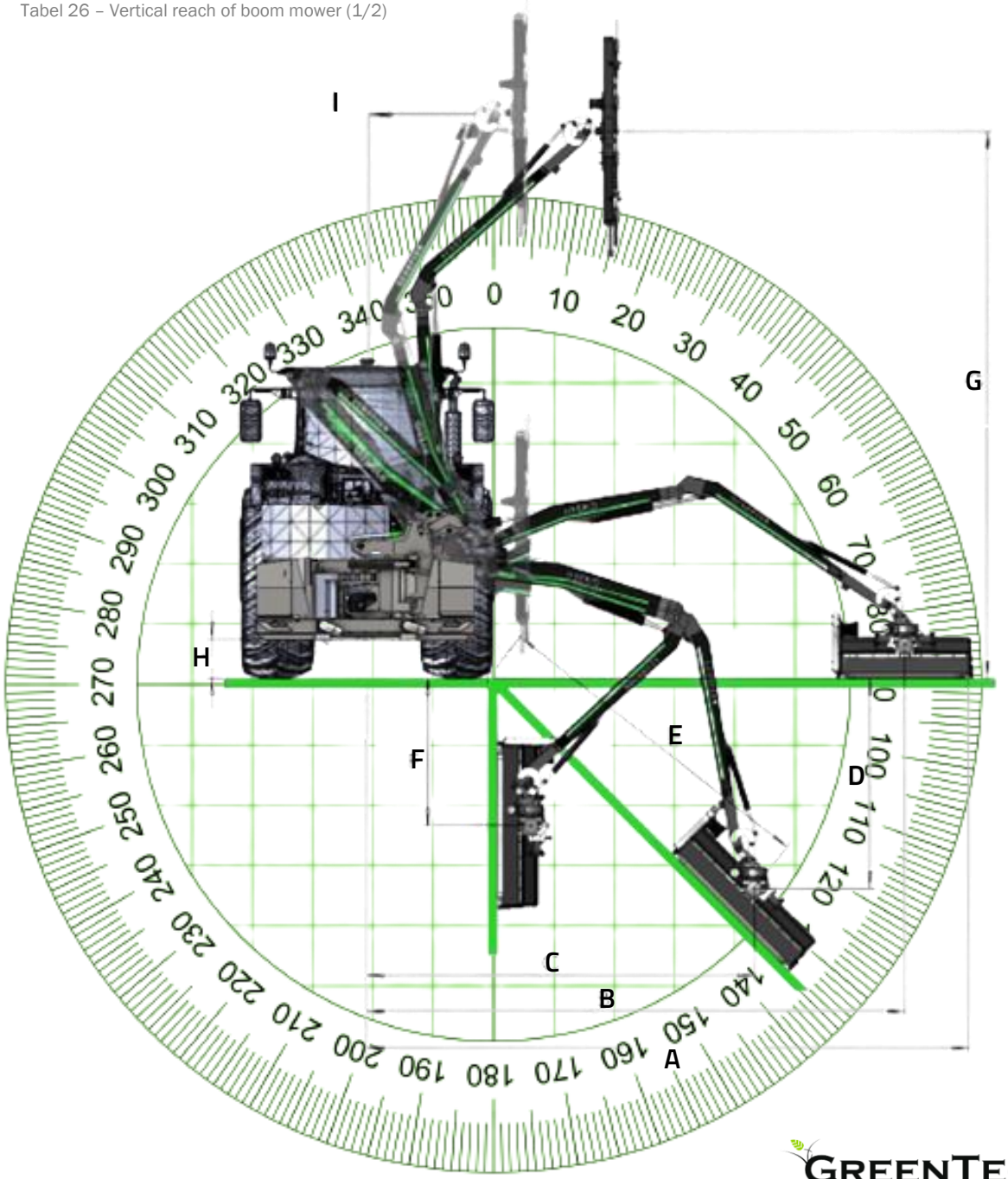
4.6.1 POSITIONS AND REACH OF BOOM BOWER

NOTICE

Please note that some of the positions below on the Spider 5-820 Plus boom mower can only be used on Plus models with RotorFlex double pivot system w/ AutoFlex .

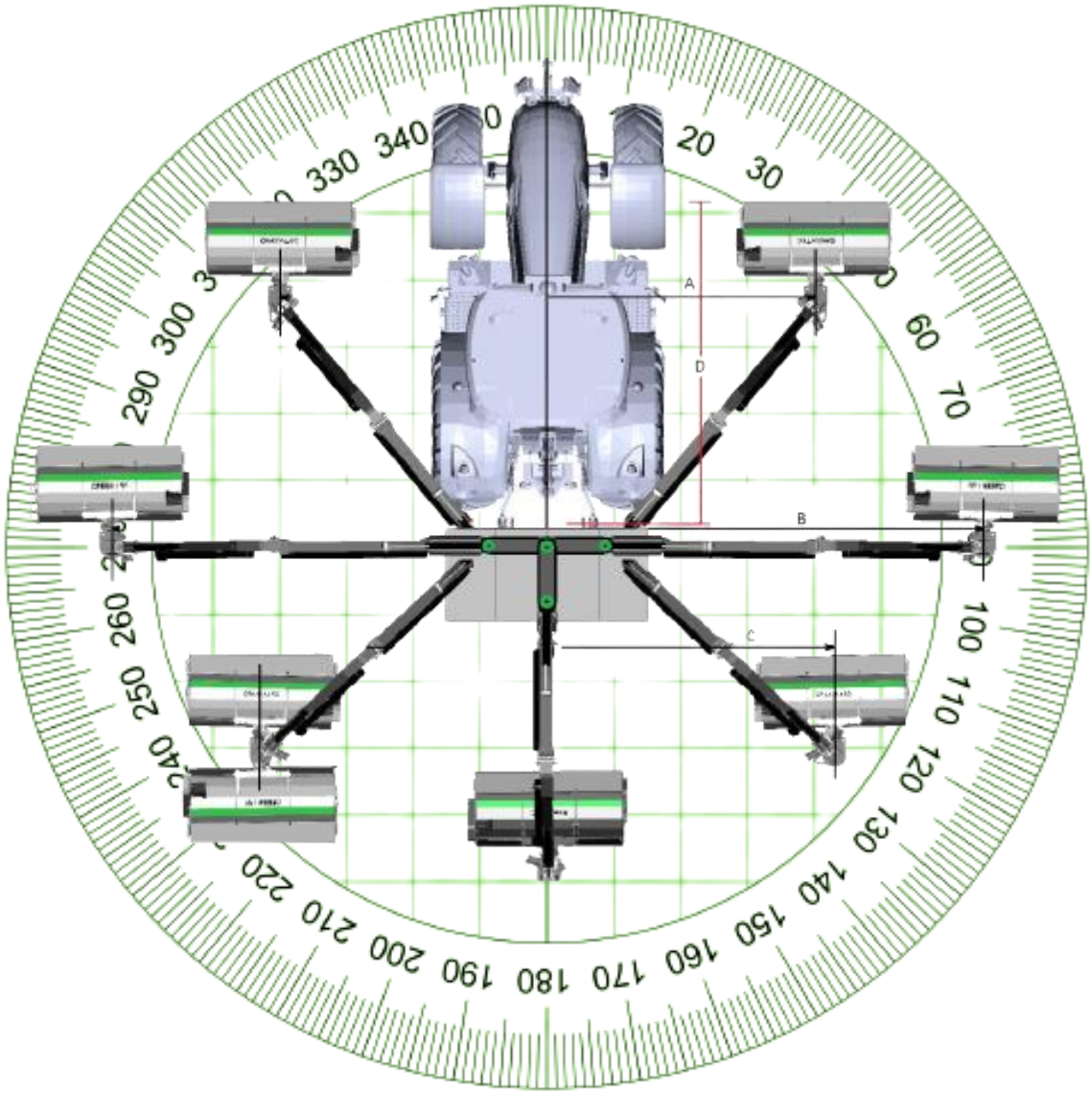
	VERTICAL REACH OF BOOM MOWER			
	SPIDER 520	SPIDER 620	SPIDER 720	SPIDER 820
A:	5,2 m	6,2 m	7,2 m	8,2 m
B:	4,7 m	5,7 m	6,7 m	7,7 m
C:	3,4 m	4,1 m	4,8 m	5,6 m
D:	1,8 m	2,2 m	2,6 m	3,1 m
E:	3,0 m	3,7 m	4,4 m	5,0 m
F:	1,5 m	1,8 m	2,2 m	2,6 m
G:	5,1 m	6,1 m	7,1 m	8,1 m
H:	0,4 m	0,4 m	0,4 m	0,4 m
I:	2,0 m	2,0 m	2,0 m	2,0 m

Tabel 26 – Vertical reach of boom mower (1/2)



RÆKKEVIDDE FOR ARMKLIPPER: HORISONTALT				
	SPIDER 520	SPIDER 620	SPIDER 720	SPIDER 820
A:	2,6 m	3,2 m	3,8 m	4,3 m
B:	4,7 m	5,7 m	6,7 m	7,7 m
C:	3,0 m	3,6 m	4,2 m	4,9 m
D:				

Tabel 27 – Horisontal reach of boom mower (2/2)



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4.7 NOISE MEASUREMENT OF AIRBORNE NOISE (u)

Noise measurements were carried out on the machine under normal operating conditions at GreenTec A/S in Denmark, with a Delta OHM sound meter - type HD 8701.

Measurements were carried out 1 meter from the machine's critical noise generators at a height of 1.50 meters from the ground, without starting or using the attachment tool.

Noise level changes in relation to the season and the material being processed; therefore, the noise level may differ to a lesser extent.

The boom mower's noise level will always be lower than the noise level from the attachment tools, as well as the noise from the vehicle in use.

Always follow the precautions intended for the attachment tool and vehicle used.
See section: Safety – page 6-14

PRODUCT:	A-WEIGHTED SOUND POWER LEVEL > 80 dB
Spider 5-820 Plus boom mower (All models)	Approx. 82 dB

Table 28 – Measurement of A-weighted sound power level (>80 dB)

5. INSTRUCTIONS FOR USING THE MACHINE (k)

5.1 INSTRUCTIONS REGARDING DELIVERY OF THE MACHINE

BEFORE USING THE MACHINE CHECK THE FOLLOWING:

1. **Check the boom mower and all included parts for transport damage.**

NOTICE

GreenTec is neither liable nor can be held responsible for transport damage that is not registered with the forwarder **immediately upon delivery of the machine!**

Spider 5-820 Plus boom mower as delivered from the factory incl. transport pallet with various loose parts

NOTICE

Please take notice that the Spider 5-820 Plus boom mower is supplied with all support legs folded up at delivery of the machine.

Before and after initial assembly and use, as well as during subsequent storage, the 4 support legs should always be used on the Spider 5-820 Plus boom mower for storage.

2. **Check that the correct components are included with the Spider 5-820 Plus boom mower:**

(All loose parts for a Spider 5-820 Plus boom mower are supplied in a transport pallet along with the machine at delivery)

The parts included are packed in the supplied transport pallet when the machine is delivered.

- 4-point linkage system incl. loose parts – page 49-53
- PTO-shaft – page 29
- Power supply – page 25
- Control panel and joystick (incl. mounting kit)– page 38-47

- Instruction manual.
- Parts book.
- Manometer kit. (See section: Checking the pressure specifications – page 118)
- Handle for manual emergency operation. (PVG-valve system)
- Key for the electrical cabinet.
- Filter set incl. gaskets.

***If any optional equipment is pre-fitted to the machine from the factory:**
(Hydraulic quick-release couplings – page 55, Mechanical quick coupling – page 56, Leaf blower – page 58 and Bio-hydraulic oil – page 59)

5.2 INSTRUCTIONS ON MOUNTING, CONNECTING AND DISCONNECTING (j)

Initial assembly and connection of the machine should ALWAYS be carried out by the dealer with the necessary knowledge and experience!

When the Spider 5-820 Plus boom mower is initially mounted on the vehicle, in some cases it may be necessary to make further adjustments, especially in relation to stabilization - this should also be carried out at the dealer of the machine!

See the section in this instruction manual: Stability – page 90-91

⚠ DANGER

The instructions for the machine must be fully understood before attempting to assemble, connect or use the machine.

If there is any doubt, contact the dealer or GreenTec's Aftersales & Service department!

⚠ WARNING

Remember that when mounting and connecting with attachment tools other than those produced or approved by GreenTec, it is every operator's own responsibility to ensure that the vehicle and the assembled machine meet the applicable requirements and relevant directives for this!

When installing with other manufacturers of attachment tools than GreenTec, a new risk assessment of the equipment used must be submitted!

If an unapproved vehicle and/or attachment tool is fitted together with the boom mower, the basis for risk assessment is void, and thereby the validity and guarantee of the declaration of conformity!

5.2.1 PREPARATION OF VEHICLE AND OPERATOR

Before attachment tools and machines are put into use, it is important that the vehicle incl. the operator is properly prepared. This must be done both to achieve maximum safety and to ensure optimal operation and stability of the vehicle.

As an extra safety: safety glass/windows (polycarbonate), safety nets and/or other protective devices can be fitted to the vehicle when it is used together with GreenTec's machines.

In general, the driver of the vehicle should always use safety equipment to reduce the risk of serious injuries such as:

- Eye protection: Net/visor (DIN/EN1731) and/or safety glasses (DIN/EN166)
- Hearing protection (DIN/EN352), safety helmet (DIN/EN297), gloves and visible work clothes.

If the vehicle does not have a cab, safety glasses/shields, hearing protection and a helmet MUST be used:

- Bare skin should be protected with suitable thick clothing against possible plant debris that can hit the driver of the vehicle. See section: Personal safety equipment – page 5.

5.2.2 MOUNTING AND CONNECTING THE MACHINE (i)

DANGER

Never use the Spider 5-820 Plus boom mower with attachment tools on an unstable or unsuitable vehicle!

There must be no people or animals near the vehicle due to the risk of collision and/or overturning! The vehicle and the machine are operated from the driver's seat of the vehicle.

The vehicle and machine must be operated from the driver's seat of the vehicle:

Never allow other people to stand on or near the arm- and/or lift system during use, due to the risk of crushing!

WARNING

Mounting and connecting the machine must only be carried out by professionals who have knowledge and understanding of hydraulic systems, in order to avoid pollution of the environment, leaks and contamination of the closed hydraulic system!

WARNING

Mounting the boom mower on a vehicle must take place on a level and safe surface.

Great care must always be taken when mounting and connecting the boom mower to the vehicle!

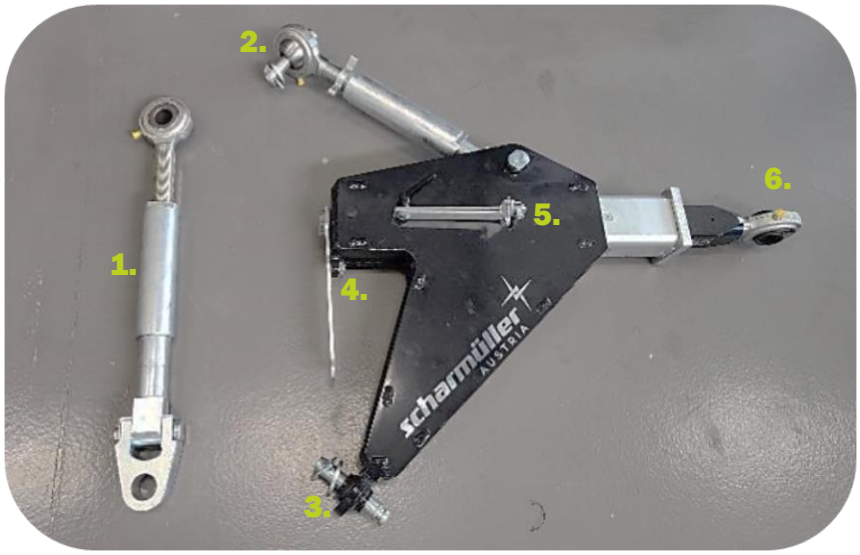
The procedure may differ from vehicle to vehicle! Always use the instructions of the vehicle used and combine them with the Spider 5-820 Plus boom mower instructions.

In this instruction manual, it is shown and explained how to mount the Spider 5-820 Plus boom mower on a tractor using: 4-point linkage system

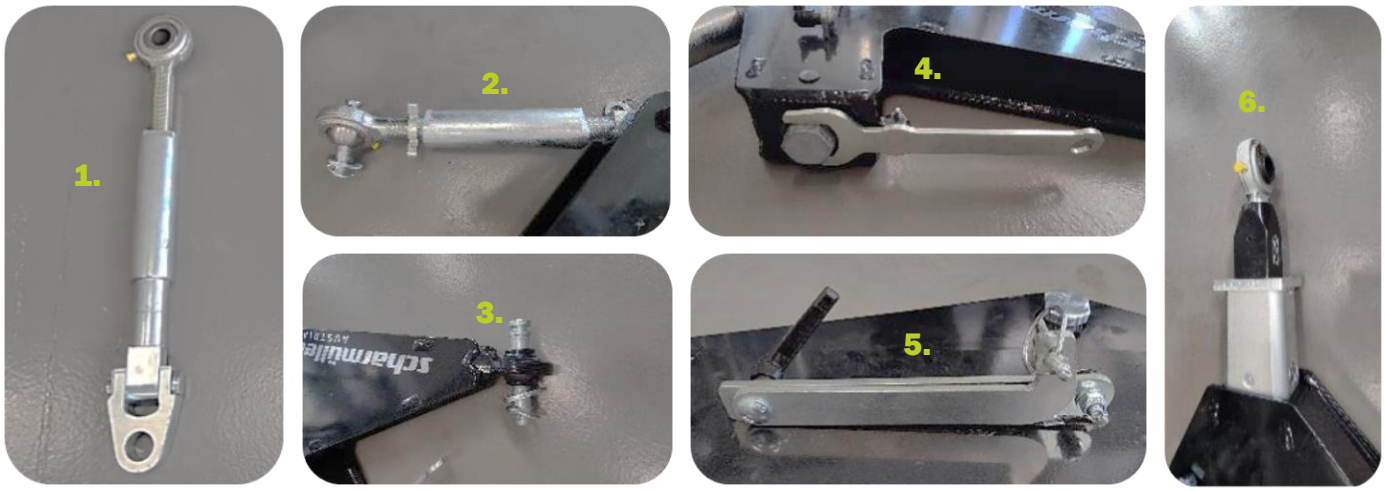
Mounting and connecting on different types of vehicles, I done by using the same procedure in a broad sense, but always investigate the procedure for the vehicle used on your own.

5.2.2.1 MOUNTING ON VEHICLE WITH 4-POINT LINKAGE SYSTEM

The 4-point linkage system consists of the following components to be used and installed on the Spider 5-820 Plus boom mower:



Components for 4-point linkage system on Spider 5-820 Plus boom mower



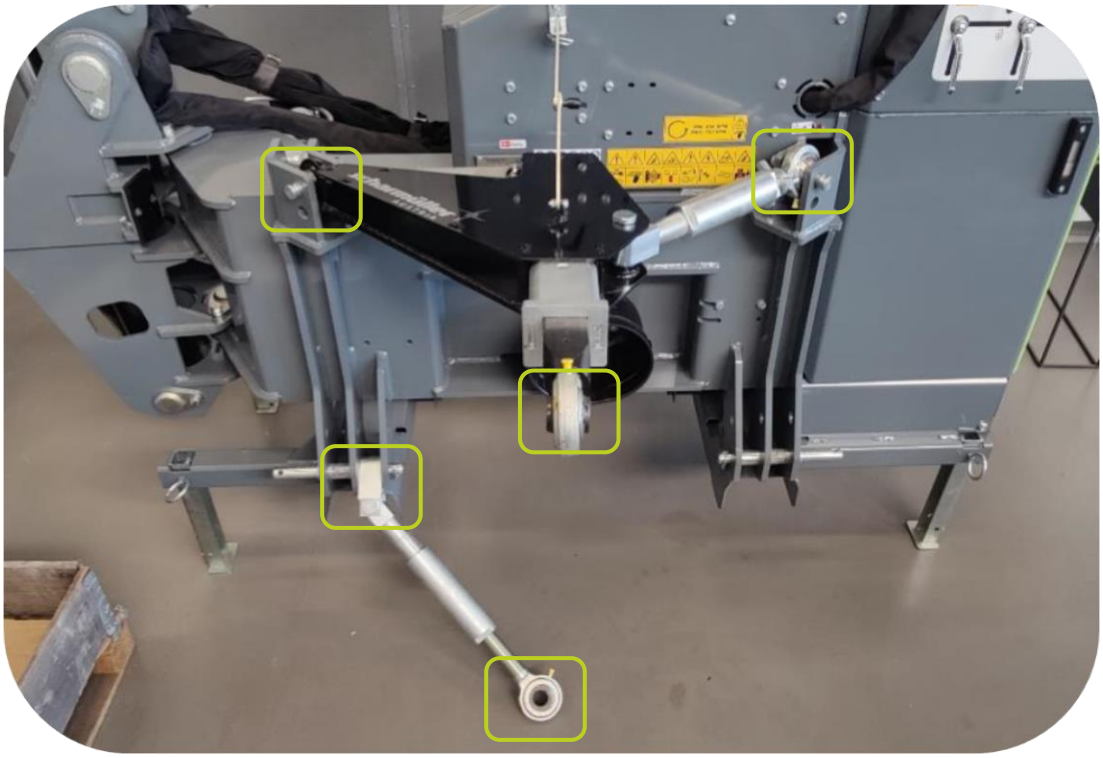
NO.	DESCRIPTION:	PCS:
1	Adjustable stabilizer link (bottom)	1
2	Adjustable top draw bar, incl. bolt w/ lynch pin	1
3	Draw bar with spacers/washers, bushing and lynch pin	1
5	Wrench and bolt for adjustment/tightening	1
5	Adjustable suspension/sliding rail for easy installation	1
6	Adjustable top draw bar incl. bushing	1

Table 29 – Component list: 4-point linkage system

NOTICE

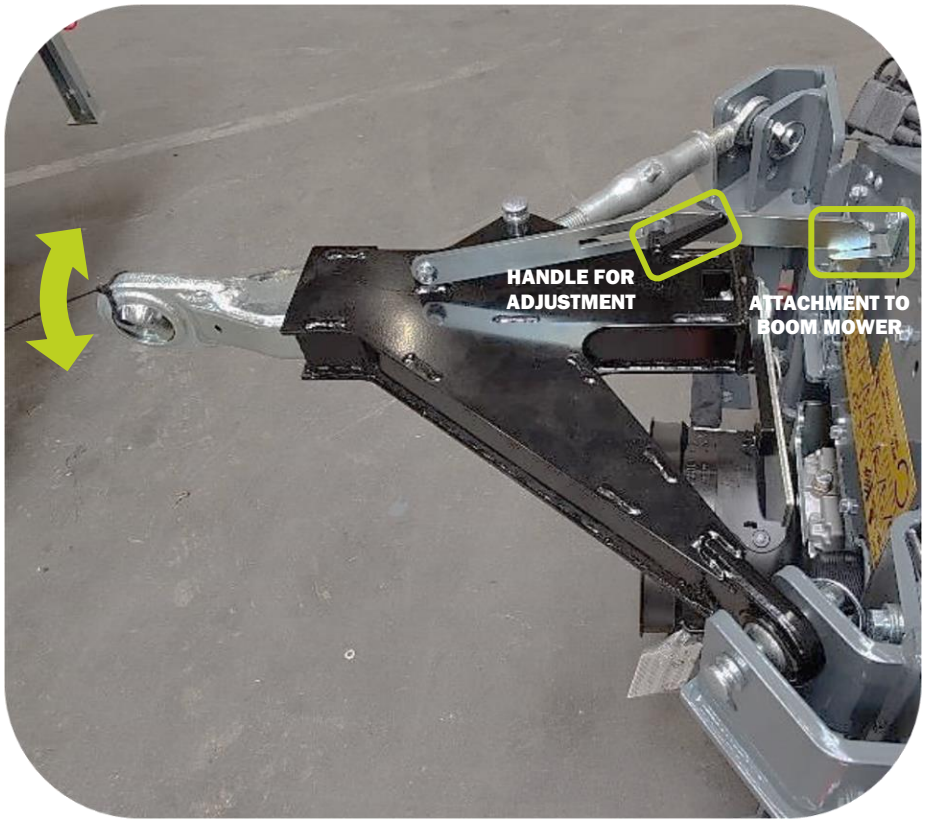
Bushings and/or spacers for mounting the upper and lower stabilization on the boom mower should be used to minimize possible veil!

These components are already attached to the individual components upon delivery:



Placement of components incl. bushings and/or spacers in connection with 4-point linkage system

During mounting, the adjustable sliding rail at the top of the 4-point linkage system can be hooked onto the small bracket on the boom mower using a lynch pin. This makes assembly easier as it holds the entire top-linkage at the desired angle to the vehicle's towing point:



Auxiliary devices for attaching the upper 4-point linkage is adjusted using a sliding rail with a small handle

NOTICE

When installing a 4-point linkage system, the correct dimensioning must be carried out before delivery of the machine, considering the length of the linkage system, in which the machine is delivered with.

When delivering a new Spider 5-820 Plus boom mower, the drawbar of the 4-point linkage must be adapted to the vehicle based on the top "A-dimension", on which the machine is to be mounted.

See section: 4-point linkage system – page 49-53 + order form for the 4-point linkage system.

Dimensioning of "A" and "B" measures on vehicles when mounting with 4-point linkage system on the Spider 5-820 Plus boom mower

1. **Before mounting between the vehicle and the boom mower, adjust and check the vehicle's lift arms and tire pressure (if necessary):**

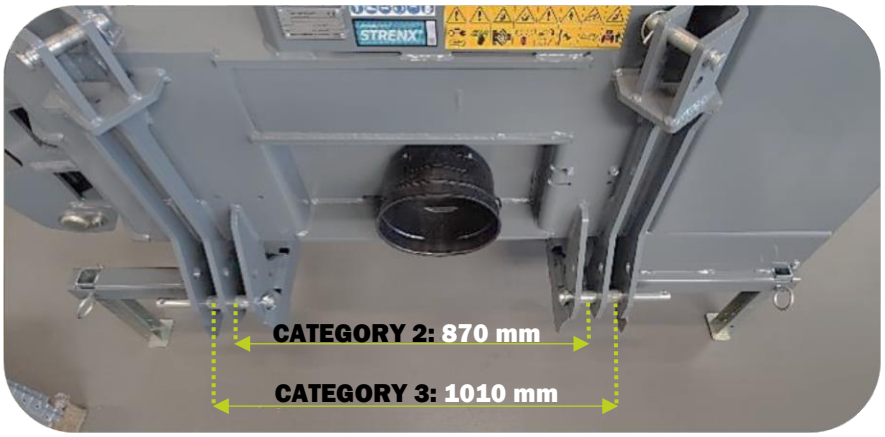
a. The tire pressure on the vehicle must be the same on both sides of the vehicle.

See section: Stability (o) – page 90-91, incl. the vehicle's instructional material for recommended tire pressure.

Follow the vehicle manufacturer's instructions for recommended tire pressure when using the boom mower

b. The vehicle's lift arms must then be adjusted so that the distance matches the lower mounting points from the category 2 or 3 standard on the Spider boom mower:

Standard hydraulic lift arm system on vehicles



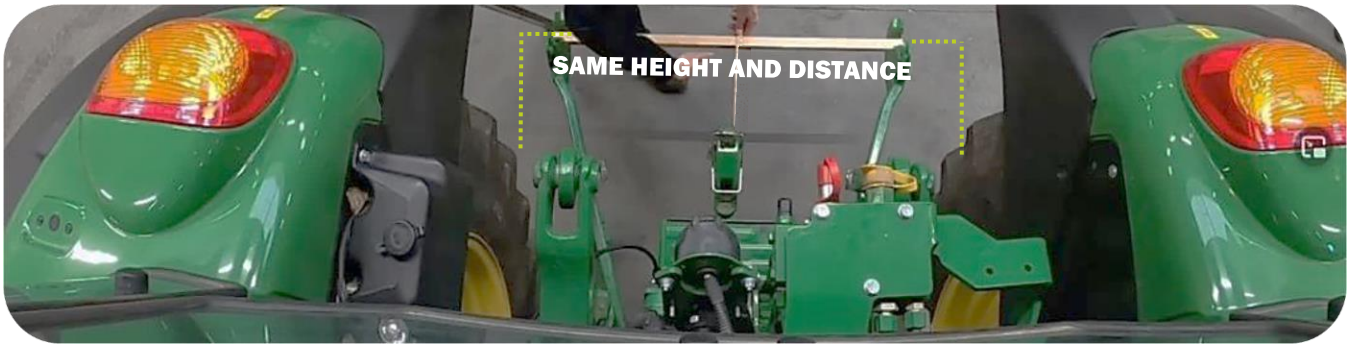
Lower mounting brackets for vehicle lift arms - category 2 (inner) & category 3 (outer)

NOTICE

GreenTec always recommends using the largest possible category between vehicle and boom mower as possible when mounting according to Category 2 or 3!

(The larger the category, the greater the stability!)

c. The lifting arms must always be set to be at the same height and adjusted to the center of the vehicle: (The distance from the lift arm to the wheel must be the same on both sides!)



Adjusting the vehicle lift arms at the same height and distance

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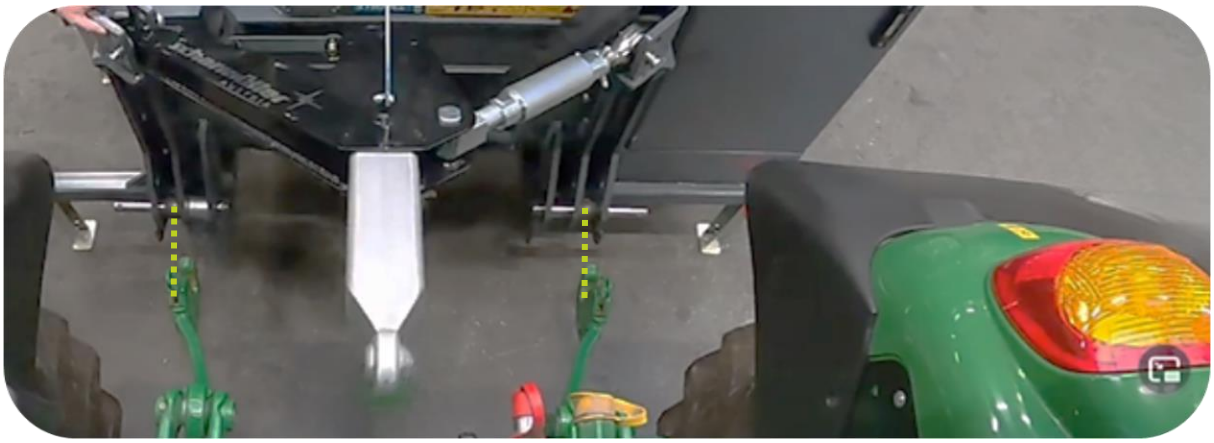
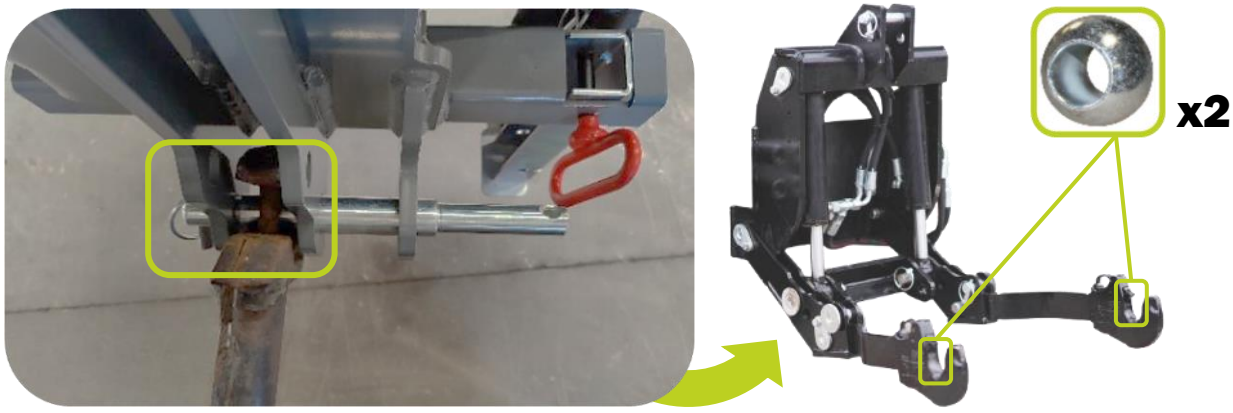
2. **With the lift arms aligned on the vehicle, slowly back the vehicle up to the boom mower until the vehicle lift arms are flush with the lower mounting brackets of the Spider 5-820 Plus boom mower:**



Carefully back the vehicle up to the mounting points on the Spider 5-820 Plus boom mower

3. **The lift arms are locked using their locking mechanism around the lower lift bolts:**

   a. Use lower lift balls on each side, in either category 2 or 3, to minimize any clearance around the lower lift bolts

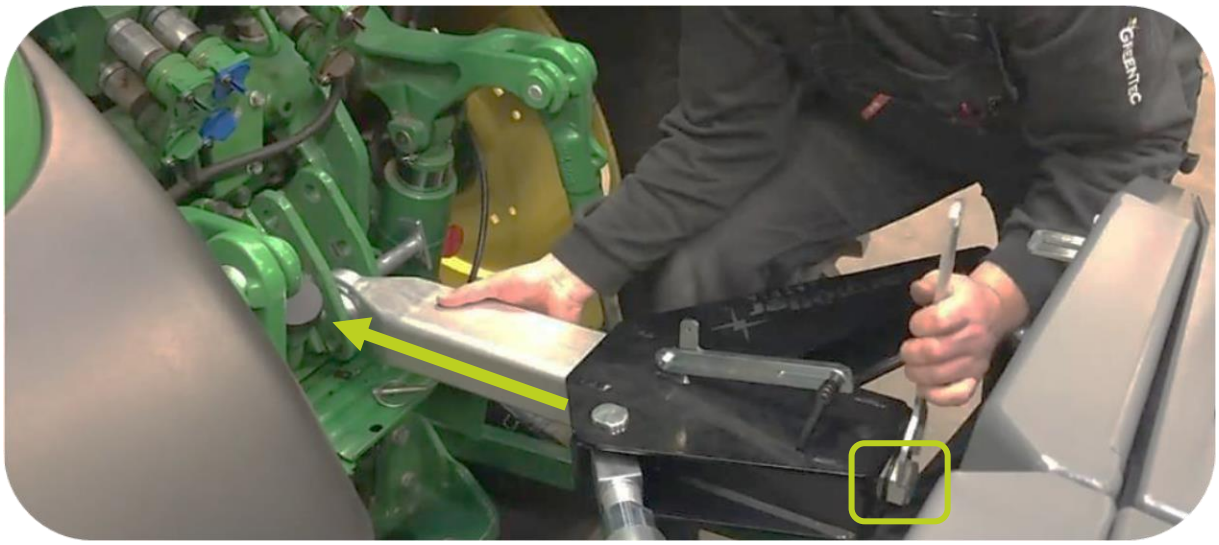


Lift arm of vehicle locked around a Spider 5-820 Plus boom mower lift

4. **With the lower lift arms mounted on the boom mower, the top draw bar can now be mounted on the vehicle's upper towing point:**

   a. The length of the adjustable top draw bar must be adapted to the vehicle's upper towing point:

   (Adjust the M24 bolt at the using the supplied wrench until the adjustable top draw bar for the upper stabilization can be connected to the towing point on the vehicle)



Adjustment of upper stabilization with top-drawbar to the vehicle's towing point using a spanner

b. Now, tighten the transversely adjustable top draw bar.

(It is tightened with a wrench until the adjustable top draw bar tightens on the opposite side of the vehicle's upper towing point)

Adjustment of transverse top draw bar for tensioning of the stabilization between vehicle and boom mower

5. The upper stabilizer is now fitted and adjusted, and the Spider 5-820 Plus boom mower can be slowly lifted off the ground using the vehicle and its lift arms:

(Check here whether the machine is in a vertical position when it is lifted!)

6. With the machine raised in a vertical position on the vehicle, mount the PTO shaft between the Spider 5-820 Plus boom mower and the vehicle:

⚠ WARNING

The PTO shaft will have to be adapted (shortened) for some vehicles!

For installation, adjustment and maintenance of the PTO shaft, always read and follow the manufacturer's instructions: https://www.binacchi.it/

Instruction material is also always enclosed with the individual PTO shaft delivered with the machine

If other makes of PTO shafts are used, the manufacturer's instructions must be followed accordingly!

NOTICE

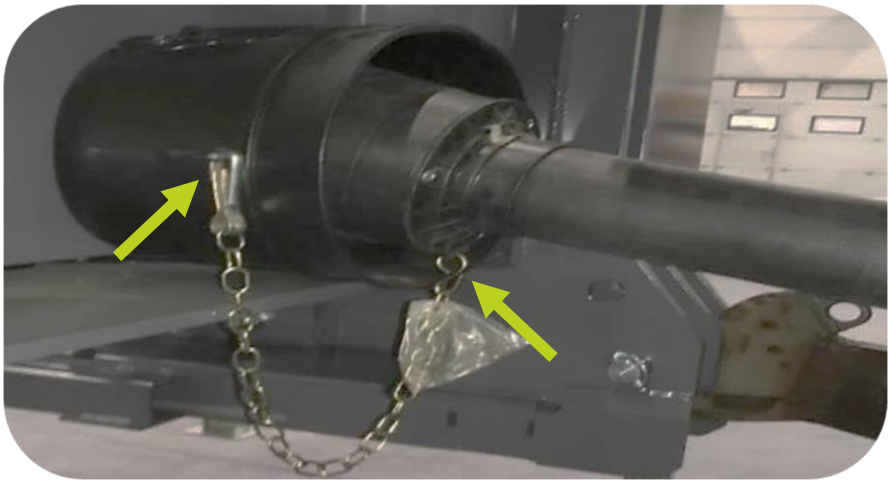
Remember to lubricate all the parts during initial assembly. Especially the telescopic tubes, after any adaptation/shortening.

See section: Lubrication of the machine – page 124-125

⚠ DANGER

The safety chains for the PTO guards must always be fitted at both ends!
The length of the chains should be adjusted to allow enough slack for full movement of the driveline during cornering, operation, and transport.

Excessive chain slack could cause the chains to roll around the PTO shaft itself!



Safety chains are mounted at both ends of the PTO shaft!

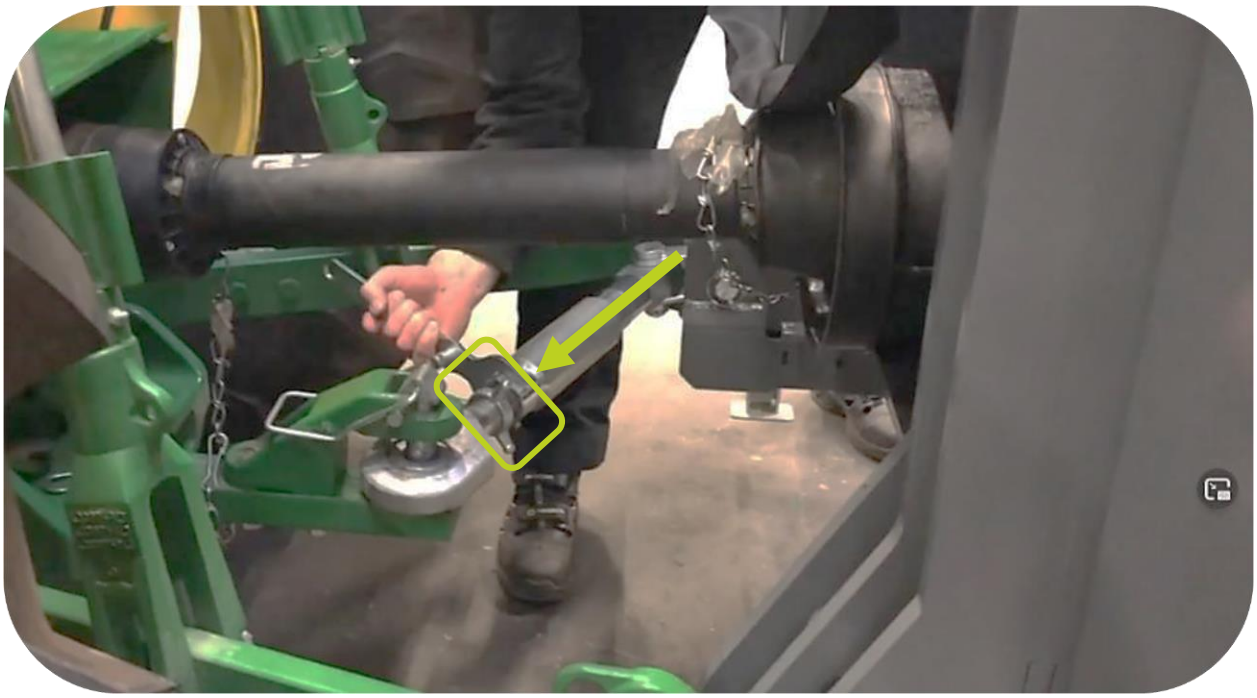
7. **With the PTO shaft properly installed, the lower stabilizer link between the Spider 5-820 Plus boom mower and the vehicle's lower hitch point can be clamped.**

NOTICE

The lower stabilizer bar must ALWAYS be mounted on the side where the arm of the boom mower is located.

The lower stabilizer is tightened by hand until it buckles at the vehicle's lower draw point.

See section: Lower stabilization – page 52-53 for different types of stabilizer bars/links.



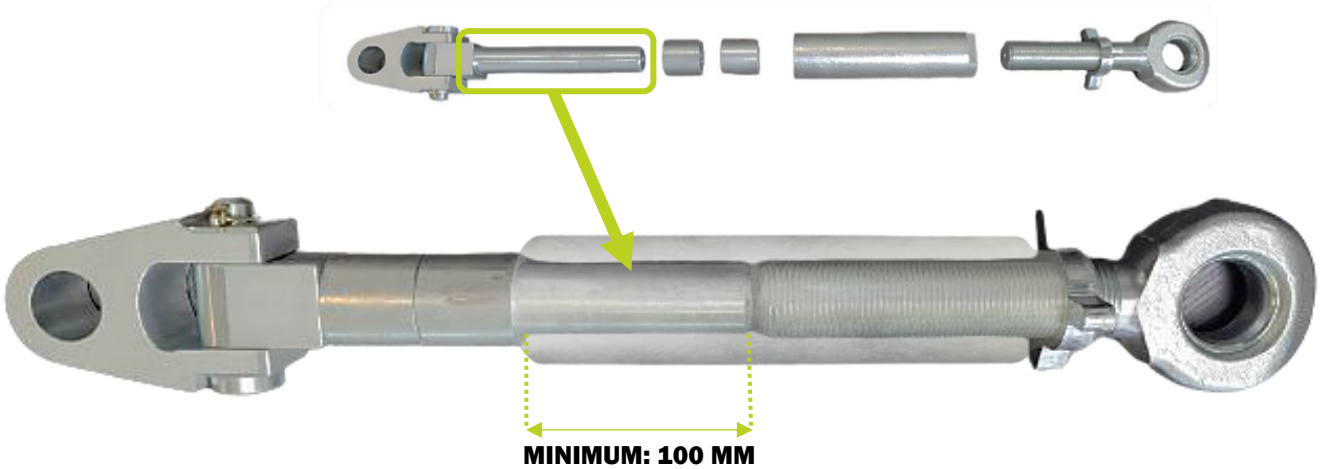
The lower stabilizer link is mounted between the lower bracket on the boom mower and the vehicle's lower hitch point.

⚠ WARNING

Adjustment work must be expected when mounting the lower stabilizer link on the Spider 5-820 Plus boom mower

The smooth shaft on the lower stabilizer bar must ALWAYS **be minimum 100 mm into the joint piece**. Therefore, only use the necessary number of spacers.

(Standard length w. 2x spacers = 120 mm)



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8. **Use a wrench/spanner to ensure that both the upper and lower stabilization are as long as possible. (Without over-tensioning)**

NOTICE

To adjust the bolt for the adjustable top draw bar at the back of the upper stabilization, the boom mower must be lowered onto the legs again

(Possibly only on the support rear legs). Make the adjustment and then raise the machine again.

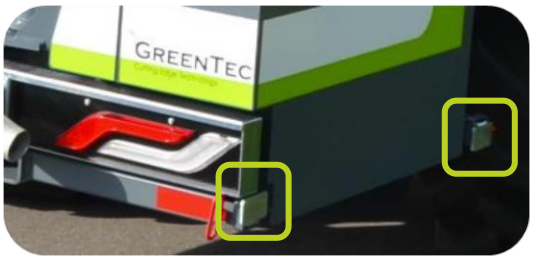
The two adjustable top draw bars and the stabilizer link at the bottom are tightened/made as long as possible

9. **The best possible stabilization between vehicle and boom mower is now achieved. Raise the boom mower using the vehicle's lift arms to a suitable height:**

⚠CAUTION

Always remember to raise all 4 support legs on the boom mower as soon as the machine is raised from the ground, to prevent these from bumping into things during driving and use.

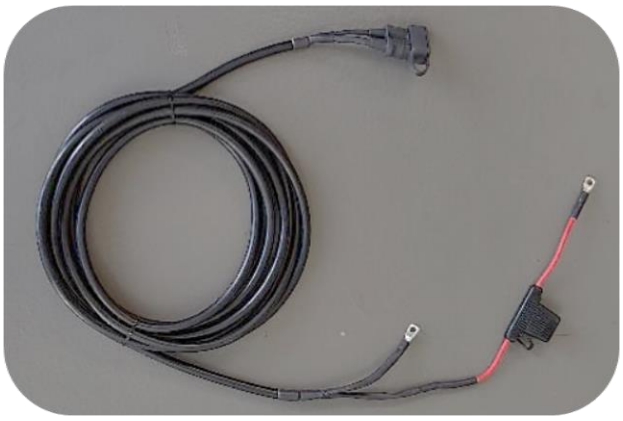
Spider 5-820 Plus boom mower raised on vehicle



Support legs on Spider 5-820 Plus boom mower

5.2.3 CONNECTING THE POWER SUPPLY FROM THE BOOM MOWER TO THE VEHICLE

To ensure sufficient voltage and current for the boom mower and its functions, a power cable must be installed between the vehicle's battery and the boom mower + a 7-pin connector for lights and lamps must also be connected:



Vehicle power supply cable for Spider 5-820 Plus boom mowers

Connections (3 pcs) from Spider 5-820 Plus boom mowers to the vehicle

The power supply cable is included with the machine, and it is supplied with a 40A fuse mounted just after the cable's + Pole:

+ Pole: (red)
– Pole: (black)

⚠CAUTION

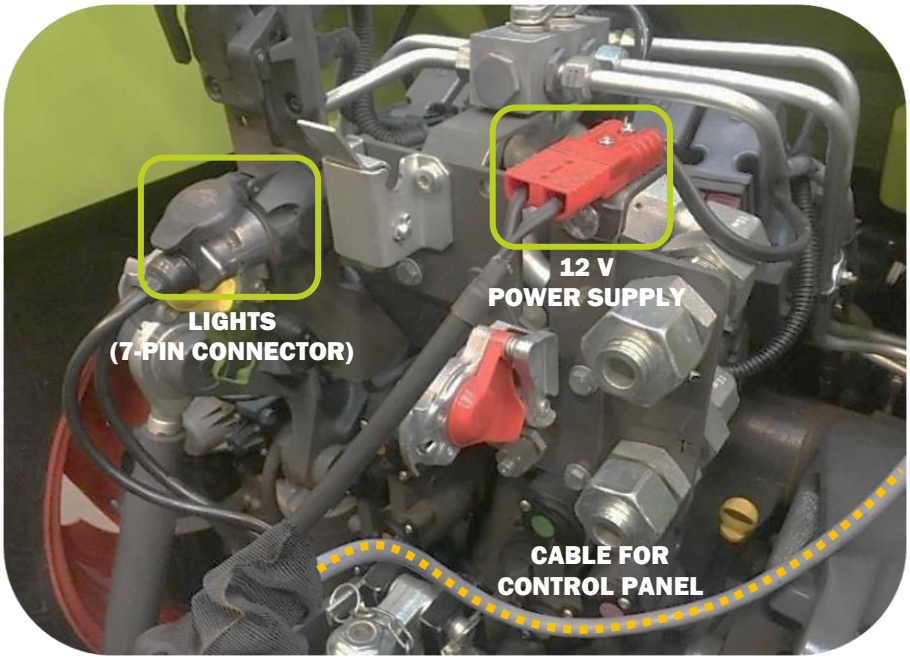
Cables / wires must be routed and mounted so that they can move freely with both the vehicle and the boom mower's movements, without getting pinched, detached, or otherwise damaging the machine or equipment!

NOTICE

The two connectors for the 12V supply must be screwed/fitted onto a suitable bracket, and minor adjustment work must be expected.

The location of this bracket must also be near the vehicle's 7-pin connector for connecting lights/lamps.

Cable for connection to control panel is led further into the driver's cab for further installation.



Connecting the Spider 5-820 Plus boom mower to the vehicle

5.2.4 INSTALLING AND MOUNTING CONTROL PANEL AND JOYSTICK

The control panel with associated joystick for the boom mower must be installed on the vehicle and mounted in the most appropriate place in the cabin. Follow the guide for installing and mounting in the section below:

⚠CAUTION

All wires and cables must be fixed / tied so that they do not pose any risk to the operator's movements in the cabin and thus operation of the assembled vehicle when using the boom mower.

Think especially about the operator's view, comfort and ergonomics when operating!

See section: Operator's workplace (f) – page 92

NOTICE

The procedure and principles for mounting the control panel and joystick are the same for all Spider 5-820 Plus models.

5.2.4.1 GENERAL PRINCIPLES FOR INSTALLATION OF CONTROL PANEL AND JOYSTICK

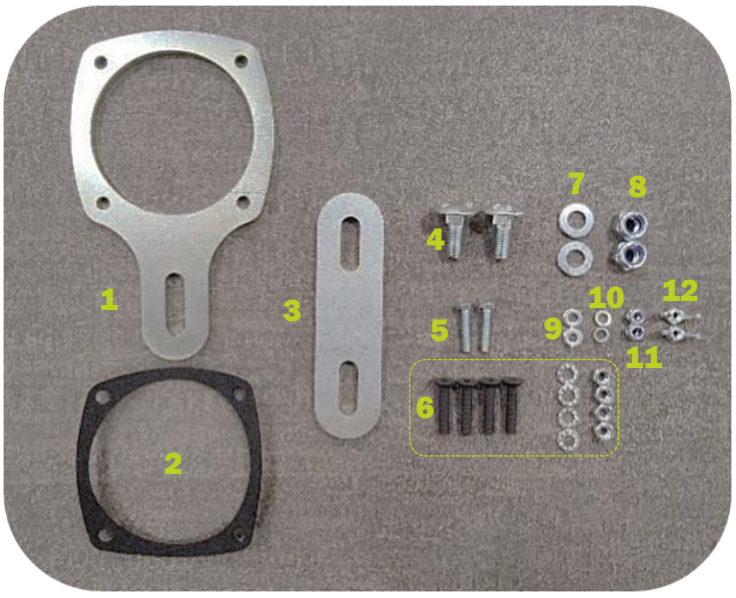
1. **The cable for the control panel from the Spider 5-820 Plus boom mower is fed into the vehicle cabin:**

Routing of cable from boom mower to the cabin of the vehicle in use

2. **A mounting kit is included with the boom mower, for installation and mounting of the control panel and joystick in the vehicle cabin:**

NO.	DESCRIPTION:	PCS:
1	Mounting bracket f. control panel	1
2	Mounting bracket f. joystick (part 1)	1
3	Foam padding f. joystick	1
4	Mounting bracket f. joystick (part 2)	1
5	Bolt M8x20	2
6	Steel set screw M4x20	2
7	Bolt kit f. Danfoss-joystick	N/A
8	Spacer Ø8	2
9	Locking nut M8	2
10	Washer Ø4.3	2
11	Spring washer Ø4.1	2
12	Locking nut M4	2
13	Wing nut M4	2

Table 30 – Components list: mounting kit for control panel and joystick



Components in the mounting kit for control panel and joystick

NOTICE

Mounting brackets (parts 1 & 2) can be bent and angled, so that it is possible to position the control panel and joystick as best as possible in the cabin.

Adjustment work must be expected under installation and assembly of the control panel and joystick in the vehicle cabin, depending on the individual vehicle.

However, the general principles for installation and assembly should always be followed!

3. For mounting of the control panel, remove the end plate at the top of the control panel using the 4 small screws:

End plate removed from control panel

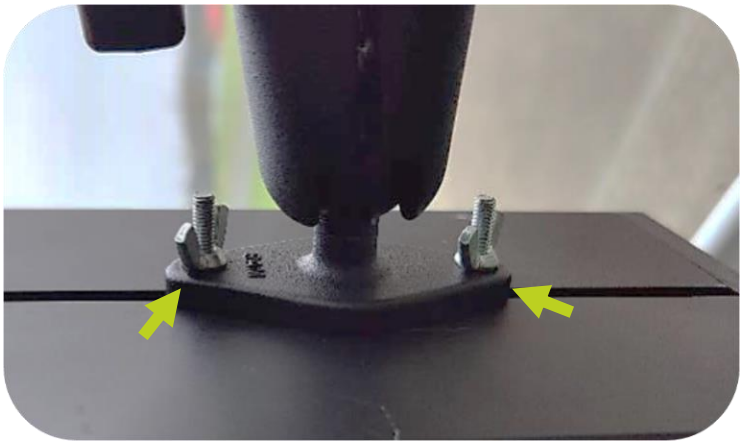
4. On the back of the control panel, insert 2x steel set screw M4x20 into the cutout:

   (Then screw the end plate firmly onto the control panel again)

Cutout for steel set screws on the back of the control panel

5. The control panel is now ready for mounting in the vehicle cabin using2x Wing nuts M4

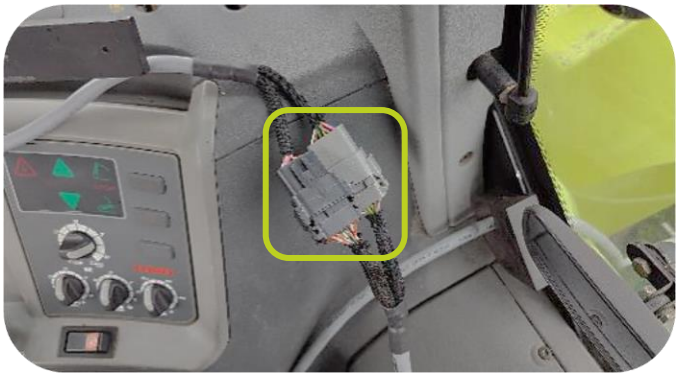
   (The control panel should be placed in the cabin where it is most convenient for the operator!)



Control panel ready for installation

6. Mount the control panel in the cabin and connect the cable from the control panel to the 2 connectors that are led into the cabin by cable from the boom mower:

Control panel mounted up in the cabin of a vehicle using ram-mount



Connecting the control panel using 2 plugs/cables from the boom mower and into the vehicle cabin

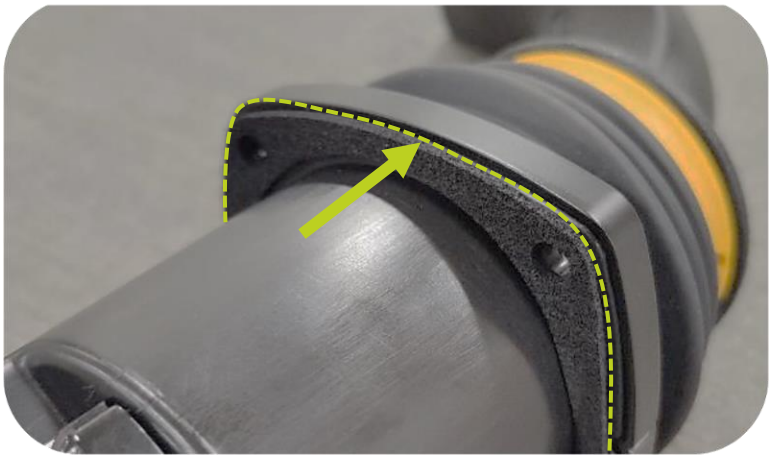
7. With the control panel mounted and connected in the cabin, the joystick can now be mounted in the cabin and connected to the control panel:

   The mounting bracket for the joystick must be attached to the underside of the joystick

   Use the components in the bolt-kit for the Danfoss-joystick:

Danfoss joystick incl. bolt-kit

8. **First fit the adhesive foam padding to the bottom of the joystick to protect it from the metal from the mounting bracket and possibly vibrations during use.**

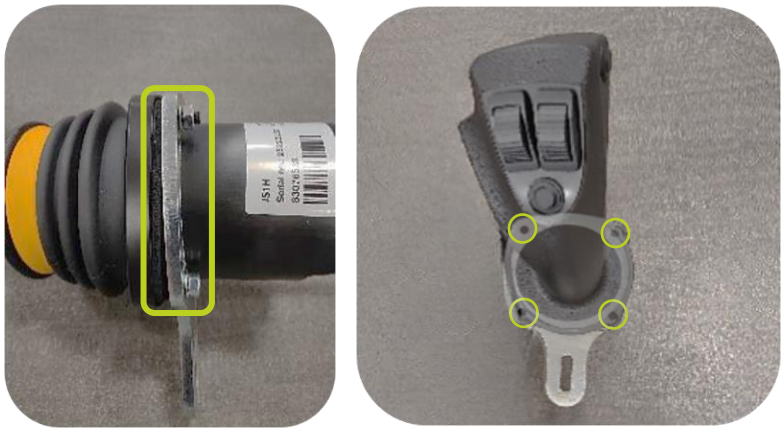


Foam padding on bottom of joystick for protection

9. **Fasten the mounting bracket (part 1) in the desired position using:**

- 4x machine bolt 5X25
- 4x washer Ø5.1
- 4x locking nut M5

(If the mounting bracket needs to be angled and/or bent, this is done before the bracket is clamped onto the joystick!)



Attaching the mounting bracket (part 1) to the underside of the joystick

10. **Mounting bracket (part 2) is then fastened to mounting bracket (part 1) using:**

- 1x bolt M8x20
- 1x spacer Ø8
- 1x locking nut M8

(This part of the bracket provides for adjusting the angle of the joystick during use. The outermost bolt can be inserted loosely by hand as shown, for later tightening):

Attaching the mounting bracket (part 2)

11. **The joystick is now ready for mounting in the cabin using the mounting brackets and is mounted with:**

- 1x bolt M8x20
- 1x spacer Ø8
- 1x locking nut M8

(In the picture, the user of the machine has chosen to angle the mounting bracket in order to achieve the best possible installation in the cabin of the vehicle used. The most optimal solution will, however, vary from vehicle to vehicle, as the cabins are not designed the same):

Angle of mounting bracket

12. **The position when mounting the joystick in the cabin depends, as mentioned above, on the individual vehicle; as all cabins cannot be furnished the same. Below is an example where the user of the machine has mounted the joystick using the console/armrest in the vehicle's cabin:**

    In this location, the operator has natural and easy access to operate the joystick when using the boom mower:

    (Additional mounting brackets may need to be engineered for the best possible placement in the vehicle cabin)

Joystick with angled mounting brackets, bolted onto vehicle console/armrest

13. **With the joystick mounted in the cabin, the cable from the control panel can be connected to the joystick:**

    (Ensure here that the two cables/connectors do not interfere with other functions in connection with driving and using the vehicle and the boom mower)

Connection of joystick using 1 plug/cable from control panel

14. **The control panel and joystick are now both mounted and connected to the boom mower.**

    Both control panel and joystick are mounted and positioned ergonomically for the operator. Here, they do not interfere with other functions and operating options in the cabin of the vehicle:

Control panel and joystick mounted and installed in cabin of vehicle

5.2.5 MOUNTING OF ATTACHMENT TOOLS ON BOOM MOWER

NOTICE

Installation instructions for attachment tools on the Spider 5-820 Plus boom mower are individually adapted to each attachment tool.

Instructions regarding mounting of the specific attachment tool must therefore always be found and followed in the attachment tool's instruction manual!

Common to all GreenTec attachment tools is that these are mounted either with 4 bolts on the standard attachment, or via mechanical quick coupling which is secured using a bolt and lynch split.

1. With the boom mower mounted on the vehicle, place the boom mower using the control panel and joystick in a position so that the mechanical male-quick coupler adapter at the end of the boom mower can be connected to the female-quick coupler adapter on the attachment tool.

2. Drive the vehicle over to the side of the attachment tool, so that from the driver's cab, you have a good view of the boom mower and the attachment tool, as well as the arm can reach the attachment tool without being in an outer position.

3. Turn on the Spider 5-820 Plus boom mower wi  on the control panel (Green LED lights up)

4. All transport locks on the boom mower must be moved into open  (horizontal) position:

DANGER

After all transport locks are opened, the boom mower can now move!

Therefore, no people or animals must stay in the entire working area of the boom mower.

4x transport locks on Spider 5-820 Plus boom mower

5. The PTO shaft is then started via the vehicle while idling. The boom mower can now be moved out and towards the attachment tool. Use the control panel and joystick functions to control the movements of the boom mower. See section: Control panel and joystick – page 38-47

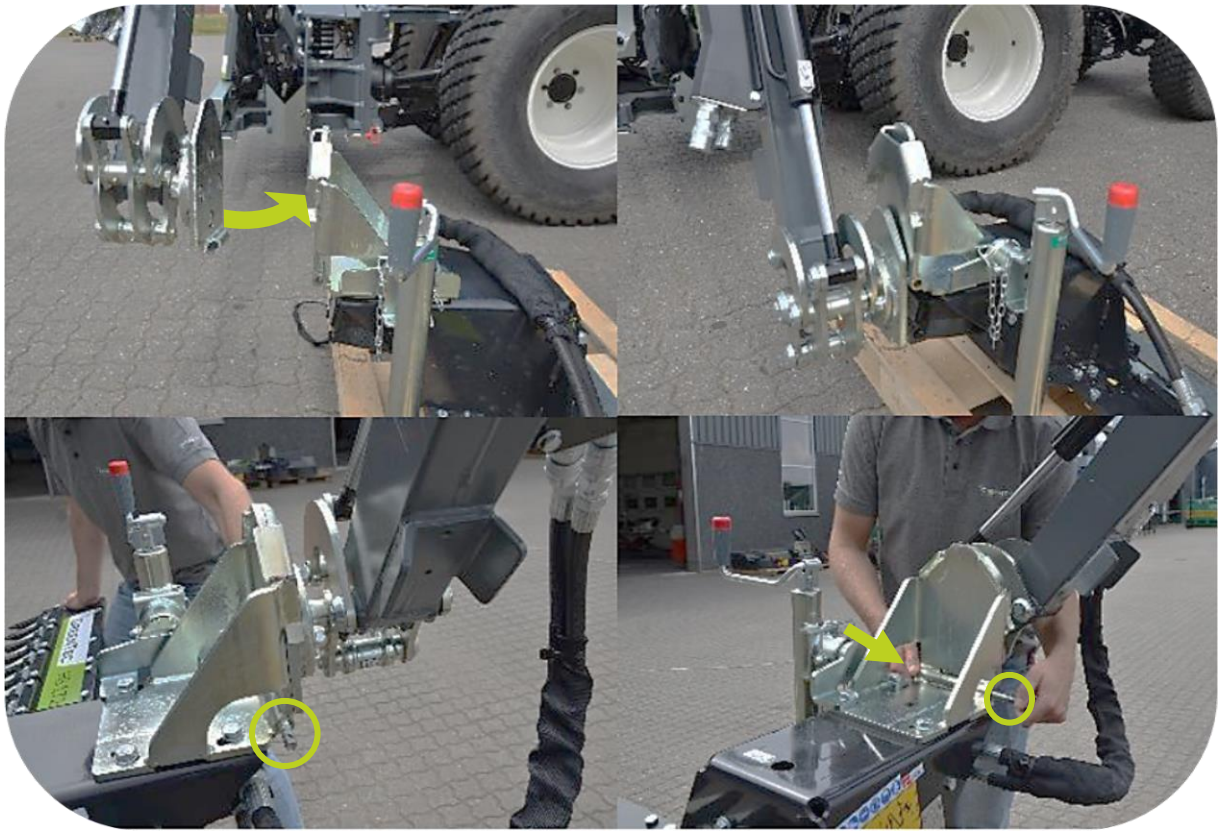
WARNING

The boom mower must not come closer than 30 cm from the cab of the vehicle. The operator must be very aware of the movements of the arm and that it can hit the cab!

6. As an example, this instruction manual shows the installation of a GreenTec HS 172 Cutterbar on the Spider 5-820 Plus boom mower using the mechanical quick coupling:

   (If the attachment tool is not equipped with a mechanical quick coupling, it is possible to move its position using a pallet lifter and then mount with 4x bolts and 4x locking nuts. Bolts for mounting on the standard bracket are always tightened after Table 36 – page 122.)

   Spider 5-820 Plus boom mower WITH quick release coupling: Male adapter at the end of the boom mower is added together with female adapter on the attachment tool and secured using 1x bolt, nut, and lynch pin.



Mounting of attachment tool using mechanical quick release on the Spider 5-820 Plus boom mower

⚠WARNING

The operator must ensure that the attachment tool is fully connected before it is lifted from the ground and before leaving the cabin of the vehicle!

NOTICE

For detailed instructions on mounting a specific attachment tool on the boom mower, refer to the individual attachment tool's instruction manual and instructions therein. Instruction manuals and other material are always available on GreenTec's website: Technical documentation - GreenTec attachment tools

7. With the attachment tool mounted and secured on the boom mower, the hydraulic hoses from the attachment tool can be connected to the outlets on the boom mower:

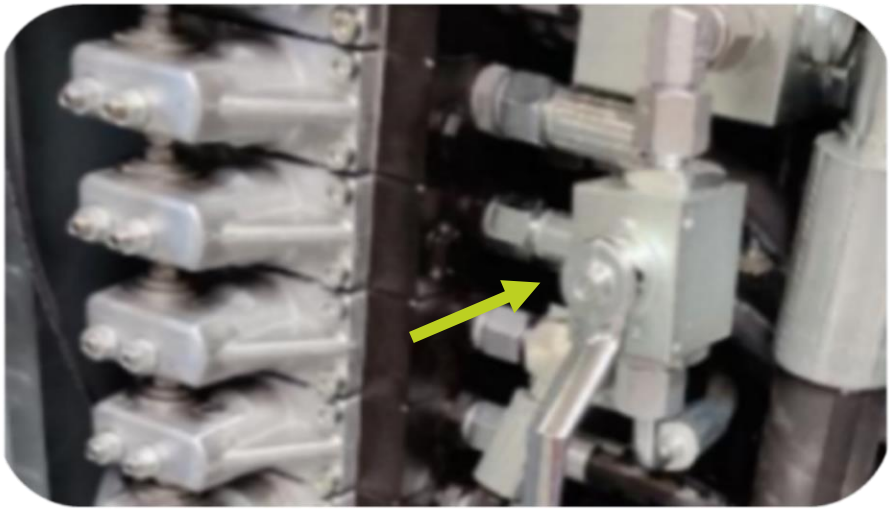
   - Mounting with standard hydraulic fitting → tightened according to Table 37 – page 122
   - Mounting with hydraulic quick-release couplings. “Flat face”

NOTICE

If there is pressure in the hydraulic system, the hydraulic quick-release couplings cannot be assembled on the machine.

Use the shut-off valve for tool shift – page 24, to remove any residual pressure in the hydraulic system before coupling.

Remember to close the shut-off valve after mounting with the hydraulic quick-release couplings, as otherwise the machine will run with too low at the hydraulic flow and thereby poorer performance.



The shut-off valve ensures a free flow-connection to the boom mower's tank by removing residual pressure in the hydraulic system.

⚠CAUTION

Always remember to lock the hydraulic quick-release couplings by turning the release ring on them.

This is to avoid accidental disconnection when branches etc. sweeps over the couplings.

Quick-release mechanism for hydraulic outlets on the Spider 5-820 Plus boom mower

8. As soon as the boom mower and attachment tool are fully connected and ready for use, prepare the boom mower for transport according to the section: Transporting boom mower w/ attachment tool on vehicle (p) – page 93-94

9. Drive the Spider 5-820 Plus boom mower out to a large area with firm ground, plenty of space and no people/animals within a 20-meter radius.

   - Start the Spider 5-820 Plus boom mower, without starting the attachment tool, and follow the procedures before use and about stability in section: Preparing the machine for use – page 90-91

   - The section: Stability (o) – page 90-91, is carefully reviewed point by point, with the goal of increasing the stability of both the vehicle and the boom mower

NOTICE

If the operator assesses that the vehicle with boom mower and attachment tool is not stable, all connections between vehicle and boom mower are to be reviewed once again according to section: Mounting and connecting the machine (i) – page 69-78

⚠CAUTION

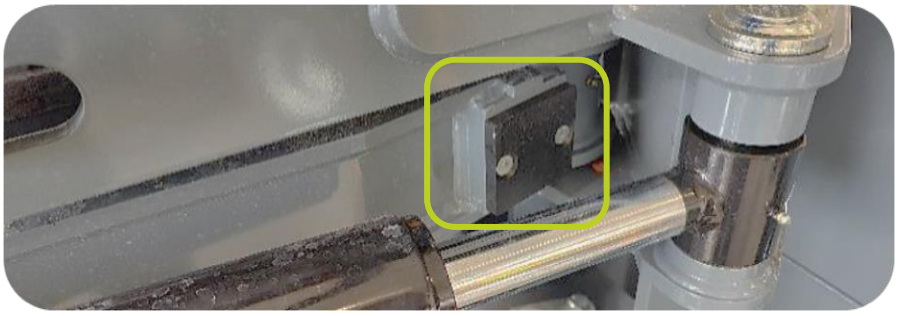
If there is a risk of the boom mower hitting the vehicle going forward, either at the rear fender or rear wheel: a larger bottom stop must be fitted to the boom mower.

There are different stop blocks to limit the movement of the boom mower, which are easily mounted/replaced using 2 bolts.

The larger the block that is installed, the further away the arm of the boom mower and attachment tool are from the vehicle:

A 0° degree stop block is fitted as standard, while a 5° degree or 10° degree stop block can be purchased alongside the machine.

Stop blocks for Spider 5-820 Plus boom mower



Stop block for limiting the rotation of the Spider 5-820 Plus boom mower arm-system

5.2.6 UN-MOUNT AND DISCONNECT BOOM MOWER FROM VEHICLE

Un-mounting and disconnection of the Spider 5-820 Plus boom mower is carried out in the reverse order of the section: Mounting and connecting the machine (i) – page 69-78.

⚠WARNING

Un-mounting and disconnection of the boom mower from a vehicle must take place on a level and safe surface.

Great care must always be taken when un-mounting the boom mower and disconnecting it from the vehicle!

⚠CAUTION

Attachment tools must always be removed before the boom mower is removed from the vehicle!

Always follow the instructions in the instruction manual of the attachment tool in use and see the section: Un-mount and disconnect attachment tool on boom mower – page 89

When disconnecting and replacing attachment tools, **always** check the hydraulic system for residual pressure!

A possible residual pressure in the system must always be reduced to zero (**0 bar**) before disconnecting the hydraulic hoses!

5.2.7 UN-MOUNT AND DISCONNECT ATTACHMENT TOOL ON BOOM MOWER

Un-mounting and disconnection of attachment tools on the Spider 5-820 Plus boom mower takes place in reverse order of the section: Mounting of attachment tools on boom mower – page 85-88.

NOTICE

The attachment tool can be placed on a transport pallet when un-mounting and disconnecting. The attachment tool can then be moved around more easily.

⚠CAUTION

Attachment tools must always be removed before the boom mower is removed from the vehicle!

Here, always follow the instructions in the instruction manual of the attachment tool in use.

When disconnecting and replacing attachment tools, **always** check the hydraulic system for residual pressure!

A possible residual pressure in the system must always be reduced to zero (**0 bar**) before disconnecting the hydraulic hoses!

5.3 PREPARING THE MACHINE FOR USE

After complete assembly and connection of the Spider 5-820 Plus boom mower + selected attachment tool to the vehicle, the following procedures in this section are carried out before putting the machine into use:

5.3.1 INITIAL START-UP AND FIRST USE OF THE MACHINE

⚠CAUTION

Always start up carefully when using for the first time and only drive in a private area until familiarity is achieved in using the boom mower with the attachment tool mounted!

NOTICE

GreenTec recommends letting the machine run at idle before use, to warm up the hydraulic oil before use.

It helps to protect the hydraulic components and significantly extend the life of both motor and pump!

5.3.2 PROCEDURES BEFORE USING THE MACHINE

The operator of the machine must always have read and understood the instruction manuals, both for the vehicle, boom mower and the attachment tool used!

Be sure, before commissioning, to have completed all steps and procedures in the following sections of this instruction manual:

- Instructions for using the machine (k) – page 66-67
- Instructions on mounting, connecting and disconnecting (j) – page 68-89
- Stability (o) – page 90-91
- Daily- and routine inspections (e) – page 112-113

5.3.3 STABILITY (o)

When driving the Spider 5-820 Plus boom mower, the operator must always be aware that the machine's center of gravity shifts during work:

⚠DANGER

After assembly and connection for the first time, it must always be ensured that the complete vehicle is stable enough to be able to carry the boom mower with the attachment tool mounted.

Especially that the vehicle is stable enough sideways, also when the attachment tool is working at a greater height and hangs on the side of the vehicle, as well as when driving on an uneven surface and/or when turning.

NOTICE

Depending on the weight and stability of the vehicle carrying the boom mower, front-side or rear counterweights may be necessary to maintain stable rear axle pressure on the opposite wheels from which the boom mowers lift arm is working.

The suggestions below are only indicative in terms of stability and are not an instruction to strengthen the stability of the complete vehicle.

It is recommended that the dealer of the vehicle is always contacted for specific advice on increased stability, and/or for advice and guidance on tire pressure etc. for the vehicle on which the boom mower is to be mounted.

5.3.3.1 CHECKING THE STABILITY

⚠CAUTION

Carefully check the stability of the vehicle, boom mower and the attachment tool mounted!

Slowly move the arm of the boom mower all the way out at low height. Let the attachment tool hang at max. ½ meter above the ground.

(The attachment tool **must not** be started during this check!)

Perform the following procedures:

1. Make sure the machine is in working position with the boom mower fully extended. Let the attached tool hang at max. ½ meter above the ground.

2. Carefully move the vehicle and/or front loader, as well as move the working angle of the attachment tool around the entire range of movement: both horizontally and vertically.

   a. Is the vehicle stable on all 4 wheels?
   b. Are the lift arms between the vehicle and boom mower stable?

3. Is the vehicle stable when turning and driving around - also on uneven terrain?

4. An individual assessment must be carried out in each individual situation, and it is the full responsibility of the operator and operational manager to ensure this that the vehicle does not overturn or tip over. If the vehicle and the boom mower are stable, the boom mower can be moved up step-by-step.

5. If the operator is of the impression that the boom mower and the vehicle are not stable, the vehicle must be stabilized. (Always follow the instruction manual for the vehicle in use!)

5.3.3.2 STABILITY CAN BE INCREASED BY:

- Installing counterweights on the vehicle / boom mower.

- Top up water in the tires of the vehicle. (Check with the tire manufacturer, and remember frost protection at temperatures close to or below freezing)

- Track width of the vehicle; the longer the wheels are out, the greater the stability.
  (Check options with the vehicle dealer)

- Stabilizer on the front axle, especially on the side the attachment tool is working on (Right- or left side)
  (Check options with the vehicle dealer)

⚠DANGER

It is very important that the operator understands the stability and to always drive according to the conditions!

Never use the boom mower on an unstable or non-suitable vehicle!

5.3.3.3 FACTORS INFLUENCING THE STABILITY

- The center of gravity of the machine combination and the height at which it is being worked, in combination with the weight hanging out on the side of the vehicle.

- Weight, counterweight, track width and vehicle wheelbase.

- Acceleration, braking, reversing and the relative position of the attachment tool during these maneuvers.

- The nature of the terrain: is driven uphill, downhill or on a slope? What is the type of surface: soft, hard, or uneven?

- Pay particular attention to the fact that articulated loaders shift the weight balance significantly to the side the sharper the turn.

5.4 OPERATING THE MACHINE (e)

This section describes the handling of the Spider 5-820 Plus boom mower, the operator's workplace when the machine is used, and the operation and use of the machine.

5.4.1 TRAINING OF THE MACHINE OPERATOR BEFORE USE

The Spider 5-820 Plus boom mower may only be used fitted with approved GreenTec attachment tools, and on an approved vehicle as a single unit.

The operator of the vehicle, boom mower and attachment tool must therefore both review and understand this instruction manual as well as the instruction manuals for the attachment tool and the vehicle, before putting the machine into use. The operator must be competent and fully capable of working with this machine in a safe and efficient manner before using it in a public place.

⚠ DANGER

The instructions must be completely understood before attempting to assemble, connect or use the machine.

If there is any doubt, contact the dealer or GreenTec's Aftersales & Service department! GreenTec offers initial-start up of the machine with the customer when purchasing a machine!

5.4.2 OPERATOR'S WORKPLACE (f)

The Spider 5-820 Plus boom mower must always be mounted on a vehicle and is to be handled when operating from the vehicle.

NOTICE

Knowing and understanding the operation of both the vehicle and the boom mower in order to operate the machines safely is essential.

The boom mower must be operated so that the attachment tool is controlled in the most appropriate way, according to their instruction material. The operator's workplace is always the vehicle's cab, where the boom mower's control panel etc. are placed.

⚠ WARNING

The operator must take breaks if this is deemed necessary and be aware of the strain from the working position.

Very much depending on how the Spider 5-820 Plus boom mower is positioned in relation to the operator, there can be stressful working positions

It is important that the operator can follow and control the work of the machinery, while at the same time being aware of the course of the road, traffic conditions etc. It is many things at once, and often with a twist on the back and/or neck.

In the long term, this can strain the body's musculoskeletal system and it is therefore recommended to take breaks during use.

5.4.3 TRANSPORTING BOOM MOWER W/ ATTACHMENT TOOL ON VEHICLE (p)

When transporting the boom mower with an attachment tool, the most appropriate transport position depends both on the attachment tool in use and also on the vehicle used together with the boom mower.

Common for all transport positions for attachment tools on the Spider 5-820 Plus boom mower is that the positioning must not block either vision or lights; both on the vehicle as well as the boom mower's lights.

You MUST ALWAYS drive with ALL safety guards on the attachment tools, e.g., saw blades, when transporting the boom mower. Likewise, always try to turn attachment tools IN towards the vehicle and away from other traffic / pedestrians.

ALWAYS REFER TO THE INSTRUCTION MANUAL FOR THE ATTACHMENT TOOL FOR THE MOST APPROPRIATE TRANSPORT POSITION!

NOTICE

When driving on public roads, it is always the operator's responsibility to always comply with applicable traffic laws and regulations!

GreenTec cannot be held responsible for any violations of traffic laws and regulations while driving with boom mowers and/or attachment tools!

The attachment tool must never cover either the vehicle's or the boom mower's lighting and/or the operator's view! Otherwise, additional lighting should be installed!

⚠ WARNING

Accompanying safety devices must **always** be fitted when transporting all types of GreenTec attachment tools on the vehicle.

(Safety shielding, locking mechanisms, etc.)

Example of transport position: Spider 5-820 Plus boom mower and FR 92 Flail mower (rear mounted): **All lights free on the mower and vehicle**

Spider 5-820 Plus boom mower and LRS 1402 Quadsaw (rear mounted): **Safety shielding mounted on saw blades**

Since there are many combinations of the boom mower with different types of attachment tools mounted, as well as options for mounting additional equipment, it is important to find the best transport position for exactly your combination of machine / vehicle.

In particular, the Spider 5-820 Plus models with Rotor-Flex double pivot system, offers extra opportunities to place the attachment tool appropriately behind the boom mower in transport position.

The installation of various additional equipment can limit the position of the attachment tool during transport, and the design of the vehicle can also change the possibilities for the transport position of the boom mower.

1. Fold the boom mower to the desired position using the joystick. It is particularly important that Cylinder 3 and Cylinder 4 are completely aligned! See section: Hybrid arm system w/ dual function – page 32-36

   If one cylinder reaches the bottom position before the other, use the hybrid arm function to switch between parallel function  or non-parallel function. 

   For Spider 5-820 Plus models with Rotor-Flex double pivot system, the AutoFlex  nction must **always** be deactivated before folding the boom mower into the transport position.

2. When the boom mower with attachment tool is folded into the transport position, press either Vertical adjustment 1  or Vertical position 2 on the control panel. 

   See section: Logitec Safe control panel – page 42

   (Vertical adjustment 1 or 2 ensures that the attachment tool can tilt into the desired transport position on the vehicle, using the outermost cylinder (Cylinder 5) on the boom mower)

⚠CAUTION

The operator must handle the movements of the boom mower with care since the boom mower has the option of driving towards the driver's cabin.

It always is it is the responsibility of the operator / user to keep a minimum distance of 30 cm from the driver's cab!

3. When the boom mower has been positioned into the desired transport position, all cylinders are locked/secured using the 4x locking valves on the boom mower. All 4 valves on the boom mower must be moved to the "Locked"  (vertical) position:

   See section: Locking valves for transport – page 24

4. The PTO-shaft can now be switched off on the vehicle. The control panel for the boom mower can also be switched off using:  From here, the boom mower can be safely transported on the vehicle.

5.4.4 OPERATING AND DRIVING INTRUCTIONS

The Spider 5-820 Plus boom mower must always be operated in the most appropriate way, so that you achieve the best possible result during use, and that the attachment tool that is mounted is always used as intended.

NOTICE

Specific operating and driving instructions cannot be described in this instruction manual alone:

Always use the attachment tool's instruction manual for guidance on proper operation and use, in combination with the information provided in this section.

The prescribed operating and driving instructions for the boom mower are based on the fact that the operator has understood the operation and functions of the machine, as well as completed a full review of all instructions cf. section: Procedures before using the machine – page 90.

All the functions of both the vehicle, the boom mower's control panel and joystick, as well as the functions of the attachment tool should be agreed with the operator, as it is a combination of these that must control the overall result for e.g., cutting fences/hedges. See section: Control panel and joystick – page 38-47

The Spider 5-820 Plus must be controlled and adjusted as follows:

1. Switch on the Spider 5-820 Plus boom mower usin  on the control panel (Green LED lights up)
2. Make sure that all 4x locking valves for the cylinders are in the open position: 
3. Start the PTO on the vehicle.

NOTICE

For PTO-driven machines: Always start with the attachment tool hovering above the ground, and preferably in a place where there is room for extra movement, to find the correct PTO-shaft RPM.

4. Use the joystick and the functions of the control panel to control and position the boom mower to the position that is most appropriate for the work to be done: See section: Adjusting and setting the machine (r) – page 105-106.

DANGER

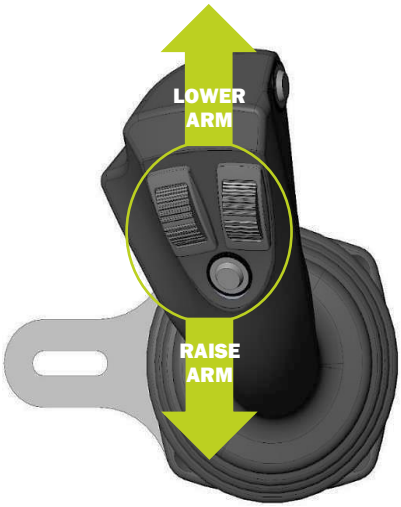
No people or animals must stay in the entire working area of the machinery!

5. When using attachment tools that must work along the ground (Ex. FR Flail Mower); use *either* the hydraulic float-function for the boom mower and attachment tool, or the AutoFlex-function:

   ACTIVATING HYDRAULIC FLOAT (ARM AND/OR ATTACHMENT TOOL):

   - To activate the hydraulic float-function for the boom mower, the attachment tool must be lowered to the ground using the joystick.
   - Then press the hydraulic float (arm) button on the control panel: 
   - The hydraulic float-function for the arm is now activated. (Green LED lights up). The entire arm will now have a subtle springy movement, and the attachment tool now follows the contours of the ground within 10-15 cm - the desired height of the attachment tool is adjusted using the joystick.

- The arm is now adaptive against changes in the contour of the ground, when with driving along the ground. If there are changes in the contours of the soil over 10-15 cm, the attachment tool must be re-adjusted (raised/lowered) manually using the joystick.



Driving with hydraulic float-function (arm) on Spider 5-820 Plus boom

- The hydraulic float function for the attachment tool  is also activated/deactivated using the control panel. The outermost vertical pivot joint on the arm is depressurized, and the attachment tool can follow the upcoming changes in the earth's surface. The attachment tool can still be tilted using the joystick's 2-way rotary knob when the hydraulic float-function is activated.
  See section: Adjusting and setting the machine (r) – page 105-106.

Driving with hydraulic float-function (att. tool) on Spider 5-820 Plus boom mower

NOTICE

The hydraulic float-function should always be used with attachment tools that are used along the surface of the earth. For this purpose, a simple check of the hydraulic float-function can easily be carried out:

See section: Testing the hydraulic float-function (arm) – page 121

For attachment tools that are not to be used along the ground, the buttons for the hydraulic float-functions should be deactivated.

⚠WARNING

Always remember to deactivate the hydraulic float-function before folding the boom mower into transport position!

Remember both hydraulic float-functions: for the arm and the attachment tool.

ACTIVATING AHC-FUNCTION (AUTO HEIGHT CONTROL):

- On Spider 5-820 Plus boom mowers with AHC (Auto Height Control) this function is used instead of the hydraulic float-function (arm). See section: AHC (Auto Height Control) – page 54

- To activate the AHC function on the boom mower, the attachment tool must be lowered to the ground using the joystick. Then press the button for the AHC function on the control panel: 

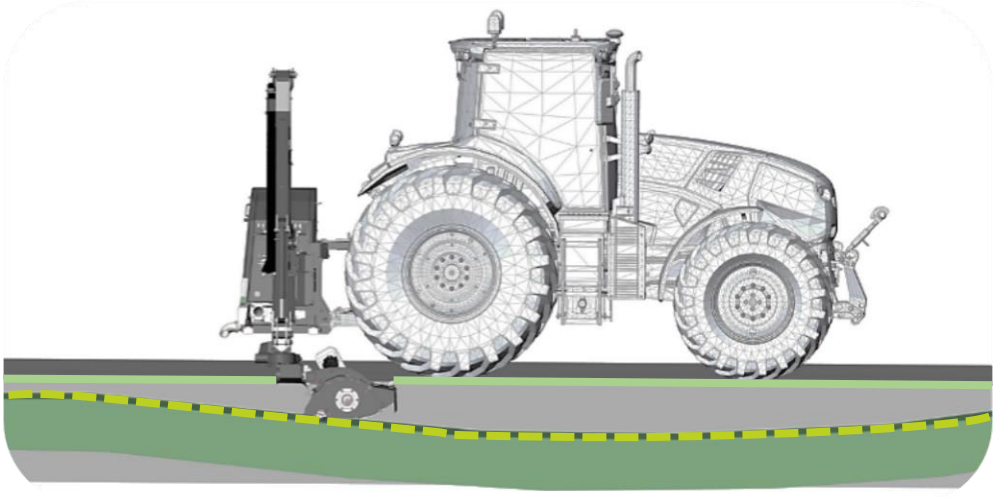
- Always first ensure that the potentiometer on the control panel is turned to the "0" position.

AHC potentiometer on control panel in "0" position

- After activating the AHC function with the potentiometer in the "0" position, slowly turn upwards until the attachment tool leaves the ground. Then turn the potentiometer down a little again until the attachment tool starts to sink slowly. (Red LED = AHC activated)

AHC potentiometer on control panel: enabled and adjusted

- The AHC function on the arm is now calibrated to work with the machine. The attachment tool will now adapt and "levitates" over the surface of the earth, which will put far less strain on the machinery and thus lower maintenance costs.



Driving with the AHC function activated

- The AHC function can be easily switched on/off during use using the button on the back of the joystick. See section: Adjusting and setting the machine (r) – page 105-106.

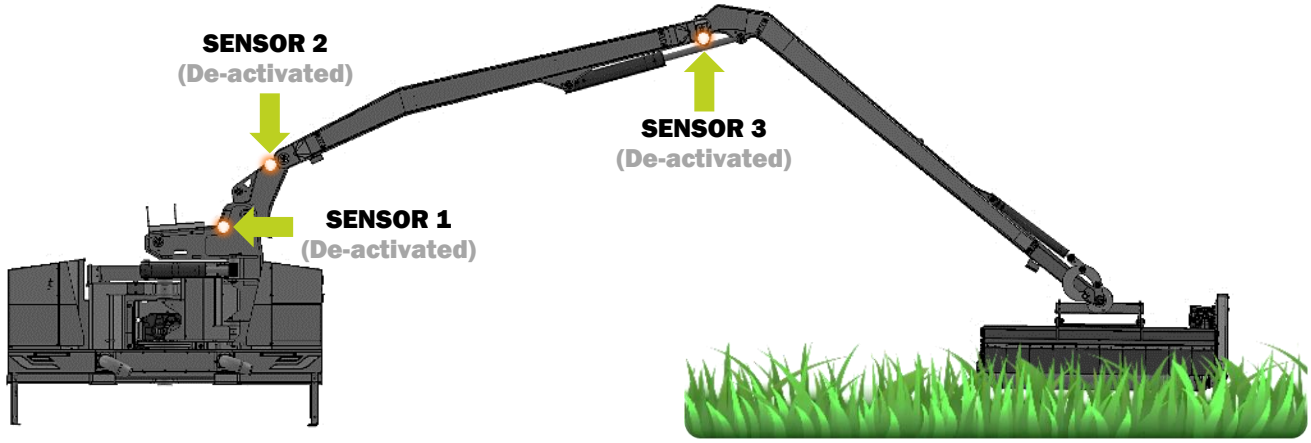
- Be aware that when the arm of the boom mower has been driven completely or partially towards the vehicle that the "AHC function" is deactivated for safety reasons using inductive safety sensors on the arm. See section: Inductive safety sensors – page 35-36

⚠ WARNING

Always remember to deactivate the AHC function on the control panel before folding the arm into transport position!

Spider 5-820 Plus boom mower in extended position:

With the arm in extended position, all inductive sensors are free: *the AHC function can be activated and used.*

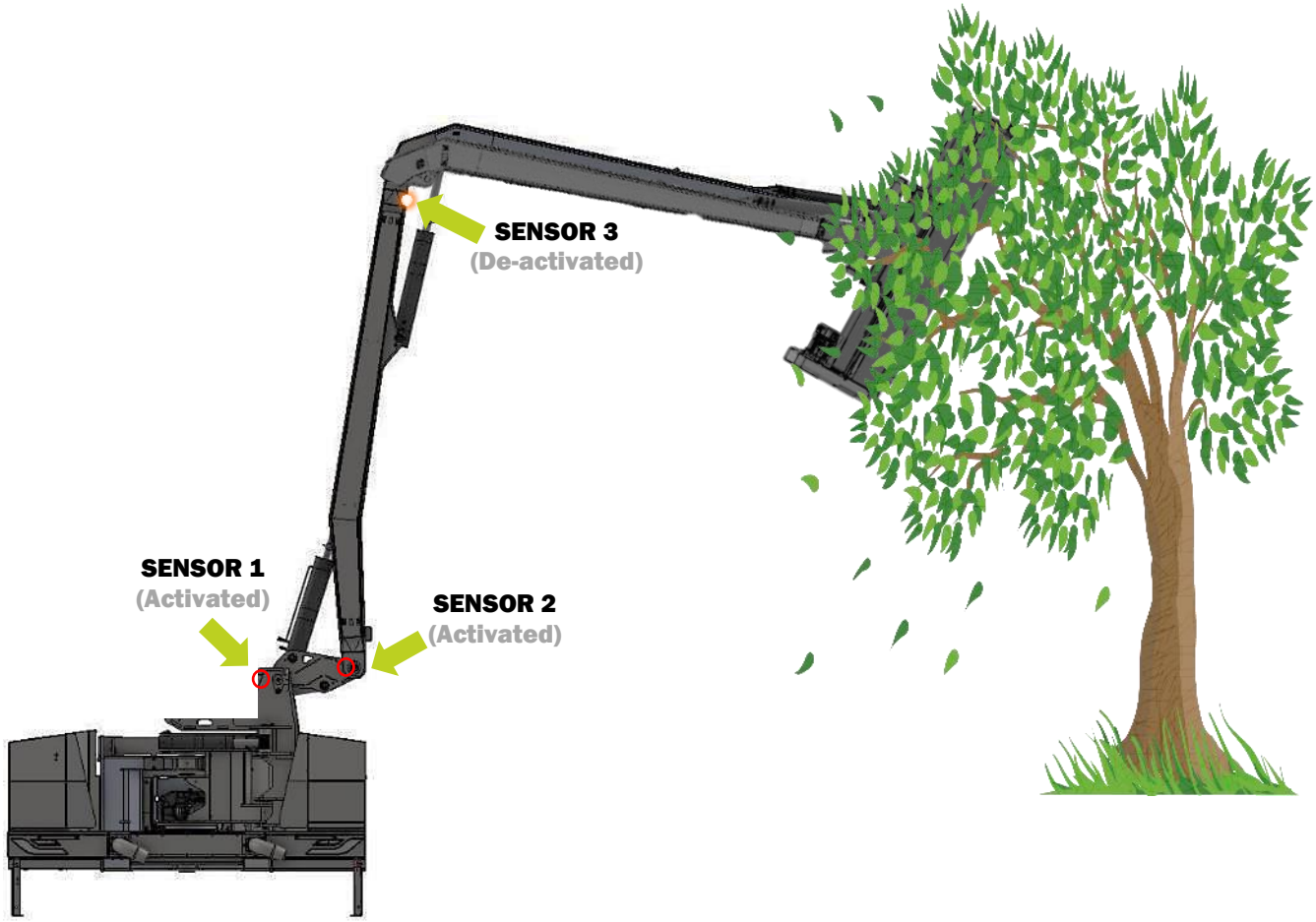


Safety sensors with arm in extended position: Spider 5-820 Plus boom

Spider 5-820 Plus boom mower partially or fully driven towards vehicle:

With the arm approx. halfway driven towards the vehicle, the innermost inductive sensor is activated/blocked.

With the sensor activated (Sensor 1), the AHC function cannot be activated or used due to excessive working height.



Safety sensors with arm in partially extended position: Spider 5-820 Plus boom mower

6. **On Spider 5-820 Plus-models with RotorFlex double pivot system, the AutoFlex function (Automatic vertical positioning) is used both for roadside, and/or hedge cutting.**

   - After the arm is folded out to the desired working position, the function is activated by pressing the machine's control panel:  (Green light in LED)
   - With the AutoFlex function activated, the outermost tilting cylinder on the arm (Cylinder 5) will detect changes in the position of the attachment tool within 3º. At the same time, the RotorFlex double pivot system is always kept vertical, regardless of the placement or position of the arm.

Driving with the AutoFlex-function (Automatic vertical positioning) activated: Spider 5-820 Plus boom mower

NOTICE

The AutoFlex function (automatic vertical positioning) should always be activated when used on Spider 5-820 Plus-models with Rotor-Flex double pivot system.

See section: RotorFlex double pivot system w/ AutoFlex – page 37 + AutoFlex (Automatic vertical positioning) – page 43

⚠CAUTION

AutoFlex must always be disconnected before the arm is folded into the transport position!

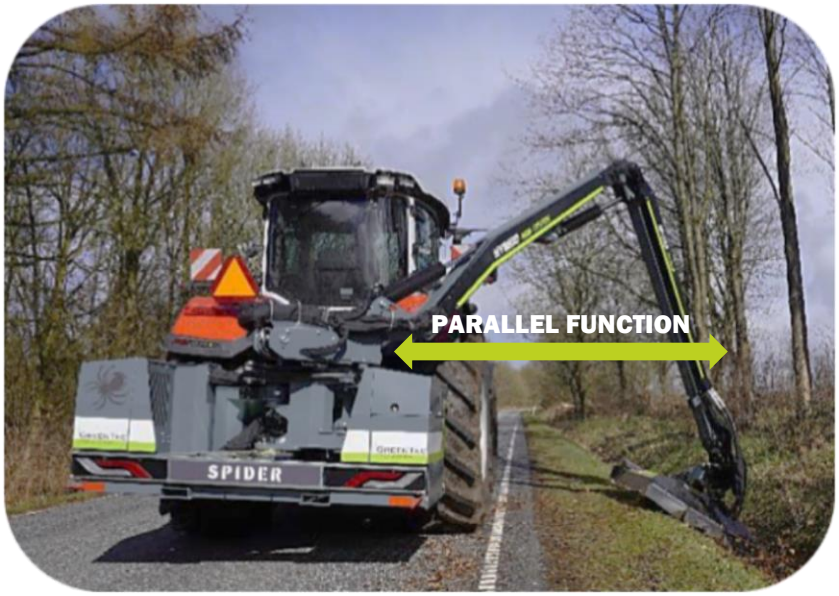
See section: Transporting boom mower w/ attachment tool on vehicle (p) – page 93-94

7. **For every use of the boom mower, a decision must be made on the part of the operator whether to drive with or without parallel functioning, using the hybrid arm system:**

   Activation/deactivation of the hybrid arm system is done using  on the control panel

   By deactivating the hybrid function:  **(No light in LED = parallel movement of arm)**

   *Spider 5-820 Plus boom mower using the parallel function, where both Cylinder 3 + 4 move so that the arm moves **in a straight, parallel line**. Cylinder 2 (lifting cylinder) is activated.*

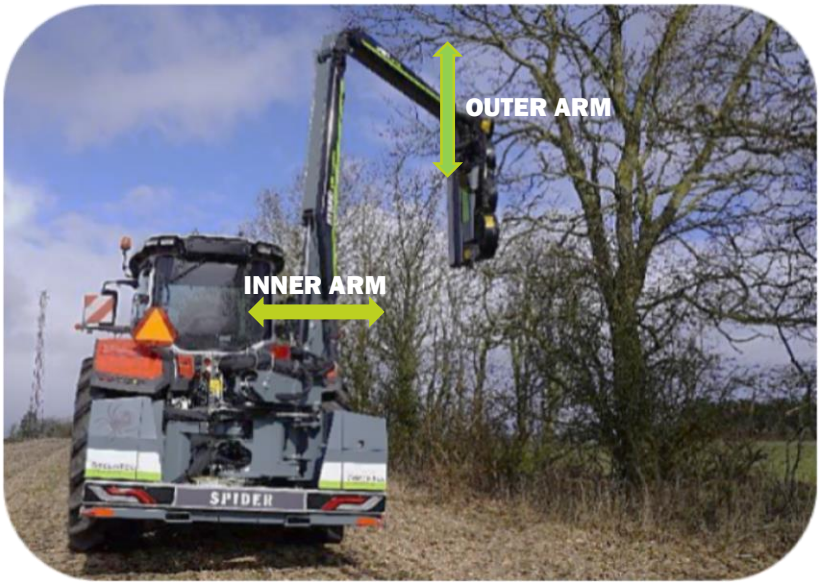


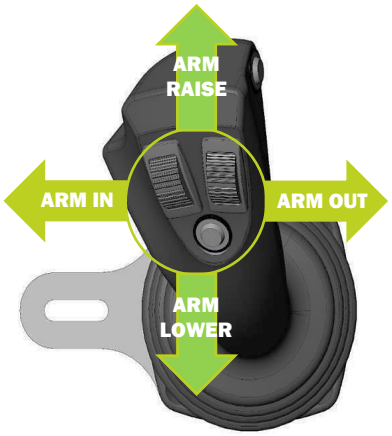
Spider 5-820 Plus boom mower in use with parallel-functioning activated

By activating the hybrid function:  **(Green light in LED = non-parallel movement of arm)**

Spider 5-820 Plus boom mower without parallel function activated.

*Cylinder 3 controls the movement (**out/in**) of the inner arm. Cylinder 4 controls the movement of the outer arm (**raise/lower**), while Cylinder 2 (lift cylinder) is deactivated.*





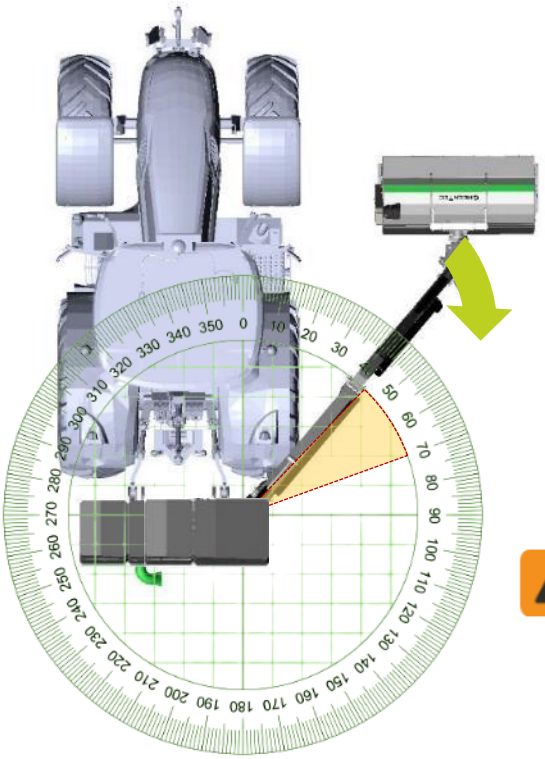
Spider 5-820 Plus boom mower in use with non parallel-functioning activated

8. **The direction of travel with attachment tools should take place in forward direction of travel, and should follow the line of the "fence":**

   - The hydraulic collision protection (AHS) is activated in both forward and reverse direction, depending on the position of the arm of the boom mower. See section: Hydraulic collision protection (AHS) – page 34

   - The position/angle of the arm is controlled using the right scroll button on the joystick, (rotate the arm) and on Spider 5-820 Plus models with RotorFlex double pivot-system, the position of the attachment tool can also be adjusted using the functions of the joystick.
     See section: Adjusting and setting the machine (r) – page 105-106

= *Indicates the active working area for the hydraulic collision protection / "Break-back" function in different positions*



45⁰ arm on boom mower:
Driving with attachment tool in forward direction

Normal working position for mowing grass. Can also be used for hedge and fence trimming.

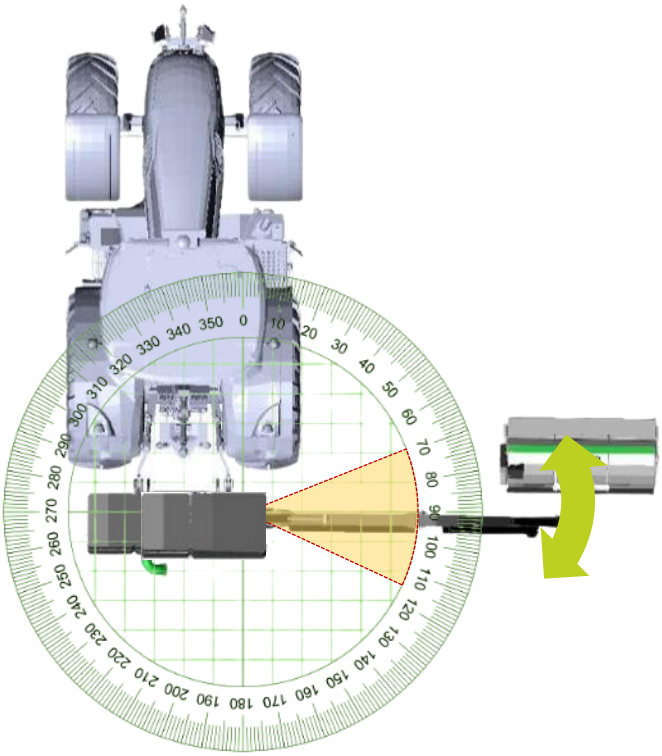
The collision protection works effectively within the marked area when driving forward in this position.

(Only Spider Plus models with RotorFlex double pivot system)

WARNING

There is no collision protection in both directions in this position!

The impact cylinder is fully extended when the boom mower is advanced in a forward going direction of 45⁰ and therefore only works in one direction.

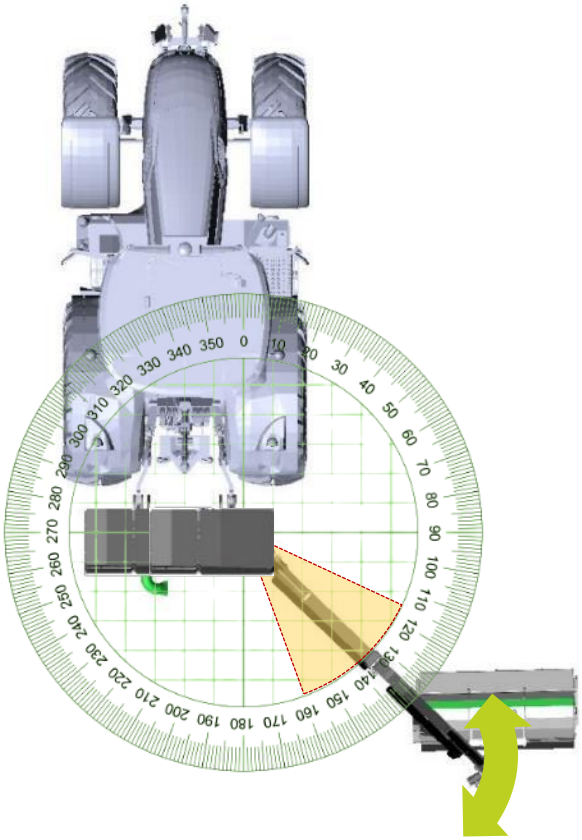


90⁰ arm on boom mower:
Driving with attachment tool in forward direction

Normal working position for mowing grass. Can also be used for hedge and fence trimming.

The collision protection functions effectively within the marked area, both when driving forward and backwards in this position.

(Spider Standard and Plus-models)

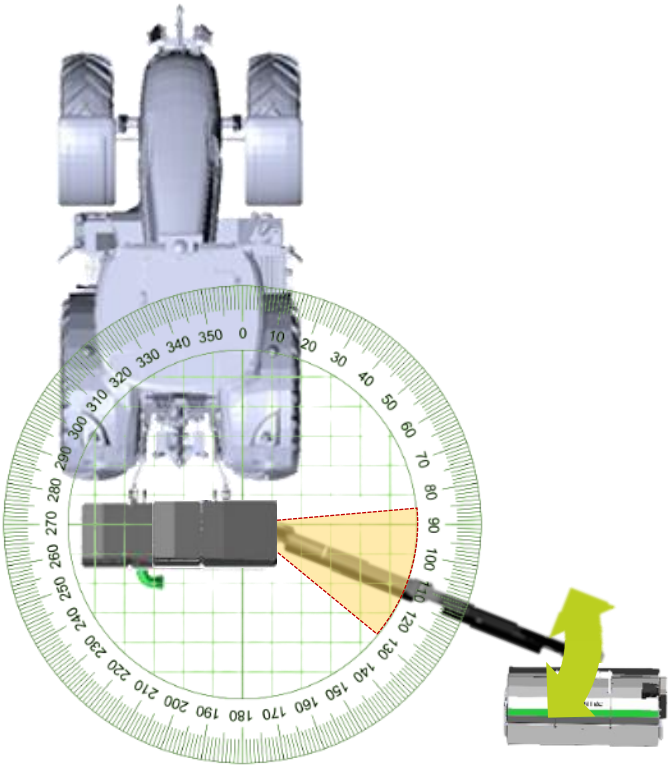


135⁰ arm on boom mower:
Driving with attachment tool in forward direction

Possible working position for mowing grass in narrow places, such as forest paths and forest roads. Special care must be taken when driving in this position. (Risk of rocks hitting the vehicle)

The collision protection works effectively within the marked area, both when driving forwards and backwards in this position.

(Only Spider Plus models with RotorFlex double pivot system)



110⁰ arm on boom mower:
Driving with attachment tool in reverse
(Only possible with FR Flail Mower mounted!)

Cut backwards and avoid reversing. Possible working position for mowing in narrow ditches on the outside. (Here, the motor and belt box on the FR Flail Mower will face upwards and away from the vehicle)

The collision protection works effectively within the marked area, both when driving forwards and backwards in this position.

(Only Spider Plus models with RotorFlex double pivot system)

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9. Be aware that when the arm of the boom mower has been driven completely or partially towards the vehicle that the "Break-back"-system gradually reduces the backpressure. This is controlled by the 3 inductive safety sensors

⚠CAUTION

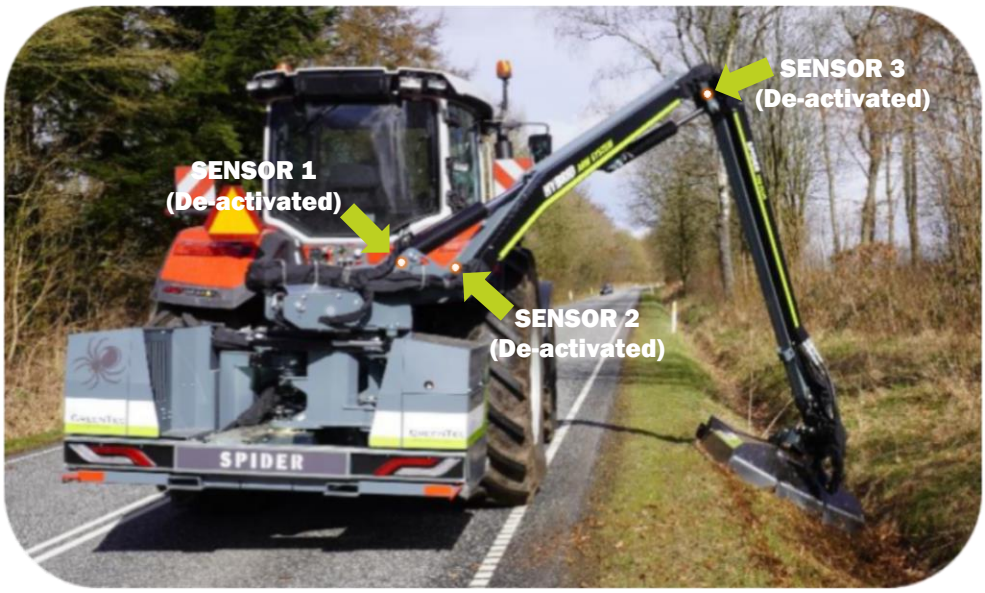
The further inside the boom mower works, the faster the double-acting collision protection will reach the bottom/stop of the “Break-back”-system!

See section: Inductive safety sensors – page 35-36

- **All safety sensors free (de-activated):**

  With the arm of the boom mower in the fully or partially extended position, all 3 inductive sensors are free and there is light in all 3 sensors/LED(s).

  (With all sensors free, the hydraulic system runs with maximum backpressure on the "break-back"-system)



All safety sensors free, and deactivated: Spider 5-820 Plus boom mower

- **Safety sensor blocked (activated):**

  With the arm of the boom mower fully or partially driven towards the vehicle, another inductive sensor is activated/blocked. **(Sensor 2)**

  (With this sensor activated, the hydraulic system runs with the lowest backpressure on the "break back" system)

Safety sensor 2 is blocked and hereby activated: Spider 5-820 Plus boom mower

10. The speed going forward when using the boom mower with attachment tool mounted, must always be adjusted so that the mowing result is optimal.

    The individual attachment tool and the conditions under which the work is done determine the speed at which it should be driven.

    - **Always see the instruction manual for the in-use GreenTec attachment tool at www.greentec.eu**

Spider 5-820 Plus boom mower w/ RX 133 Rotary Mulcher

Spider 5-820 Plus boom mower w/ LRS 2002 Quadsaw

Spider 5-820 Plus boom mower w/ FR 162 Flail Mower

Spider 5-820 Plus boom mower w/ HX 230 Cutterbar

5.4.5 ADJUSTING AND SETTING THE MACHINE (r)

Adjusting and setting up the boom mower in the right position always depends on the attachment tool that is mounted. In general, the boom mower must be handled and adjusted so that the attachment tool that is mounted does the best possible job.

Common for all attachment tools is that they must be mounted on the boom mower, connected, and then moved from the transport position into the working position.

Below, selected functions for setting and adjusting the boom mower are briefly described. Specific application procedures are also described in the section on: Control panel and joystick – page 38-47 + Operating the machine (e) – page 92-109. Handling of specific attachment tools is described in their individual instruction manuals:

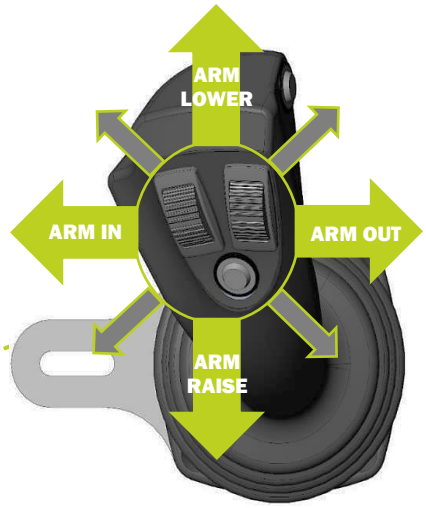
ON / OFF

PARALLEL FUNCTION OR NON-PARALLEL FUNCTION

Switch between paralleling-function (ON) or non-paralleling (OFF) of the arm, using this function on the control panel.

The proportional functions of the joystick are shown in the figures to the right.

(The function is activated using the Logitec Safe control panel – page 39)



ON / OFF

HYDRAULIC FLOAT (ATTACHMENT TOOL)

With this function activated (ON), the attachment tool will follow the contours of the ground.

(The function is activated using the Logitec Safe control panel – page 39)

Even if the hydraulic float is activated, the attachment tool can still be tilted by operating the left scroll button on the joystick.

ON / OFF

AHC (AUTO HEIGHT CONTROL)

If an obstacle is encountered (road sign, driveway, tree or similar), the AHC-function can be temporarily bypassed on the back of the joystick by pressing the button once.

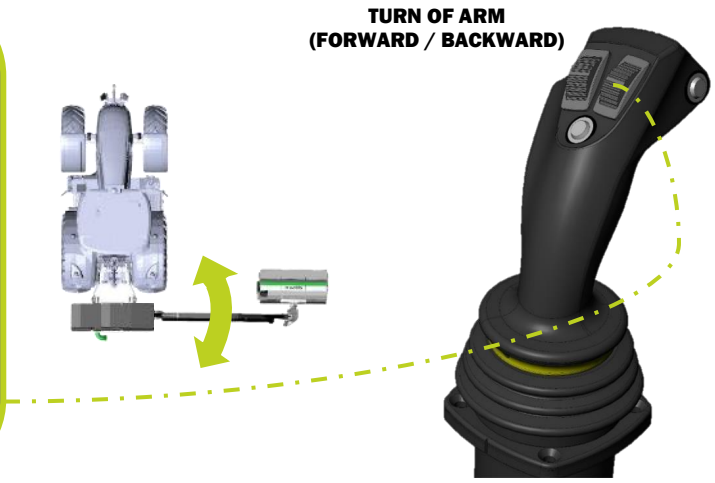
After the arm has been maneuvered past the obstacle, the AHC function can be activated again by pressing the button on the back of the joystick once.

TURN OF ARM

The right scroll button on the joystick is used to position the arm in the desired working position.

The arm of the Spider boom mower can be rotated to adapt a working range of up to 155°

From 45° forward, to 135° backward arm position.



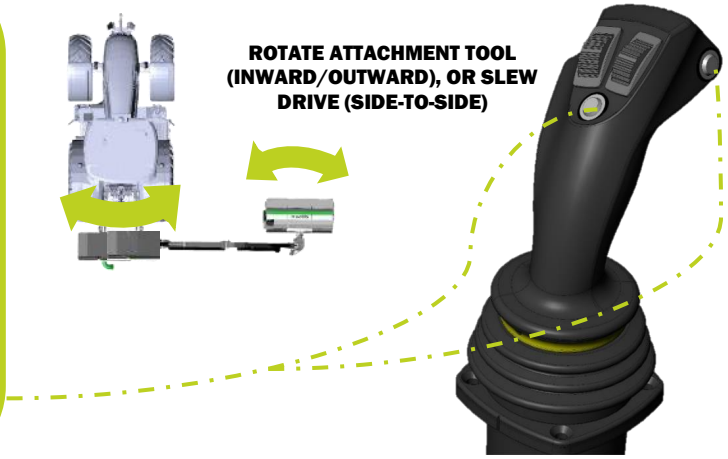
⚠CAUTION

Pay particular attention to the function of the hydraulic collision protection ("Break-Back"-funktion) – page 34, when the arm of the boom mower is turned into working position.

See section: Operating and driving instructions – page 101-102

ROTATE ATTACHMENT TOOL / SIDE SHIFT OF MOWER ARM

These two buttons on the joystick are used to move the horizontal RotorFlex pivot joint in either direction, on Spider 5-820 Plus models, or to control the slew drive for side shifting of the mower arm using the AUX 1 function on the control panel.



GREENTEC
Cutting Edge Technology

MADE IN DENMARK

5.4.6 STARTING ATTACHMENT TOOLS

The attachment tool can be started as soon as it is mounted correctly, and the arm of the boom mower is in the desired working position:

See section: Instructions on mounting, connecting and disconnecting (j) – page 68-89, Preparing the machine for use – page 90-91 and Operating the machine (e) – page 92-109

SPIDER 5-820 PLUS-MODELS:

1. The attachment tool is started by starting the vehicle's PTO shaft at low RPM. (Idle)
   (Always refer to and follow the vehicle instructions used as these will vary from vehicle to vehicle!)
2. Then press  on the control panel in the cabin. (Green LED lights up and the attachment tool starts)
3. Let the attachment tool run without any load until the hydraulic oil in the system is heated.

NOTICE

A cold machine should run at idle for 10 – 15 minutes before use, to get warm and ready to carry out the work.

4. When the hydraulic oil is at operating temperature, the PTO speed (RPM) for the machine is found as follows:

⚠ DANGER

Always make sure to check the immediate area around the machine and the vehicle before starting and during operation of the work the machine has to perform.

The size of the area depends on which attachment tool is used.

Always handle the arm of the boom mower with care and caution, and always follow the instructions described in the individual attachment tool's instruction manual!

   a. With the attachment tool running with the vehicle PTO speed at low RPM, pull the joystick back toward the operator to raise the arm of the boom mower.

   b. While retracting the joystick, slowly increase the RPMs of the vehicle's PTO shaft until the arm of the boom mower rises.

   c. Stop increasing the RPM of the PTO shaft when the motion of the arm is smooth and continuous. (Here, several movements can be made at the same time - move the joystick around!)

NOTICE

The right RPM on the PTO shaft ensures the most comfortable use of the boom mower's functions and minimizes fuel consumption on the vehicle and excessive heat in the hydraulic system.

The PTO shaft speed (RPM) must always be kept within the specifications for the Spider 5-820 Plus boom mower, and must never be exceeded:

See sections: Warning labels – page 7 + Specifications – page 61-62

5.4.7 STOPPING ATTACHMENT TOOLS

SPIDER 5-820 PLUS-MODELS:

1. The attachment tool is stopped by first reducing the PTO speed (RPM) back to idle on the vehicle!
   (Always refer to and follow the vehicle instructions used as these will vary from vehicle to vehicle!)
2. Then press  on the control panel in the cabin. (Green LED turns off and the attachment tool stops)
3. Allow the attachment tool to run until it stops completely, then switch off the vehicle's PTO shaft.

Many attachment tools have heavy rotors and/or blades. Therefore, these will often rotate for up to 30 seconds after the hydraulic supply is cut off!

Never go near any attachment tools without making sure that the rotating parts have come to a complete stop!

5.4.8 START-UP AFTER UNINTENDED / ACCIDENTAL STOPPAGE OF OPERATION q)

NOTICE

In the event of an unintended / accidental stoppage of the boom mower and/or the attachment tool, always follow the instructions given in the machine's individual instruction manuals.

An unintended / accidental stoppage of operation can occur at any time. There can be various reasons, but most times, downtime can be avoided if the operator uses and maintains the machine correctly and avoids hitting:

Larger stone
Tree stumps
Fence wire
Manhole covers
Litter/garbage
Plastic and other packaging
Bicycles/scrap

If the attachment tool hits any of the above objects, strong vibrations and/or increased noise will typically occur.

If any signs of strong vibration/noise in connection with the above mentioned, or in the event of e.g., leakage, lost and/or loose parts on the machine, the operator should do the following:

1. Stop all operation IMMEDIATELY!

2. Tilt the attachment tool around and lower to a low height so that the machine's elements can be inspected.

3. **Pull the handbrake, switch OFF the vehicle, take out the key and make sure that the machinery has come to a COMPLETE STOP!**

4. Attachment tool and / or boom mower are inspected and checked:

   - If foreign bodies are found, these are released manually. (Fence wire, plastic etc.)
   - Check the machine and its parts for cracks, missing parts, or any damage etc.
   - Do not continue driving until all damage has been repaired!

Follow the recommendations below when starting up after a shutdown:

- Be sure that the entire machine is inspected and in working order!

- Slowly start the attachment tool again. (See the instruction manual for the attachment tool in use and section: Starting attachment tools – page 107
- Pay particular attention that both the boom mower and the attachment tool functions in accordance with all the guidelines specified in their individual instruction manuals.

6. SERVICE AND MAINTENANCE (e, r)

To ensure a long working life of the machine, good and careful service and maintenance is required.

Remember that the machine is designed to withstand the harshest conditions, and that with a little care and attention it will be able to give you many years of trouble-free operation.

To avoid problems and ensure that the warranty covers, **always** use originals GreenTec spare parts and ensure that the machine is not used for anything other than described in the instruction material.

The owner or operator must ensure that the machine is only used, maintained, inspected, and repaired by individuals who are familiar with the procedures associated with it and are instructed in the associated dangers

If doubts arise in connection with some of the procedures mentioned, then contact an authorized specialist workshop or importer. (See: www.greentec.eu)

Repair work that is not described in the instruction manual may **only** be carried out by authorized specialist workshops.

IGNORING ONE OR MORE OF THE SAFETY INSTRUCTIONS MAY CAUSE:

⚠ DANGER	Great danger to people due to mechanical and chemical influences!
⚠ WARNING	Danger to the environment due to leakage of hydraulic oil! Damage and faults to the boom mower, attachment tool or the vehicle!
NOTICE	The warranty on the machine is void if one or more of the safety instructions are disregarded. GreenTec is not liable for compensation claims for damages caused by incorrect use of the machine and incorrect connection or connected equipment, or by incorrect maintenance of the machine!

6.1 INSTRUCTIONS ON SAFE SERVICE AND MAINTENANCE (s)

TO AVOID ACCIDENTS DURING SERVICE AND MAINTENANCE, THE FOLLOWING POINTS MUST ALWAYS BE OBSERVED:

⚠ DANGER

All work on the machine must only be done when the machine is stopped, the vehicle is switched off, the handbrake is applied, and the key is removed from the ignition lock on the vehicle!

During maintenance work on a up-lifted attachment tool, securing with suitable support elements must be carried out!

Only use suitable tools and use the prescribed personal protective equipment prescribed in this instruction manual!

Great care should be taken when working with the machines, as there is a danger of fingers and hands being trapped by e.g., drive belts, pulleys, blade blades, rotors, guards etc.!

⚠ WARNING

Immediately after finished work, all safety guards and protective devices etc. must be mounted and activated again!

During maintenance, you can often come into contact with hydraulic oil, gearbox oil and grease. Always avoid skin contact, inhalation, etc.!

⚠ WARNING

Always use the correct protective equipment and use the safety data sheets for these!

ALWAYS dispose of oil and grease in a regulatory and environmentally sound manner!

6.1.1 MOVING AND STORING YOUR GREENTEC MACHINES

GreenTec recommends storing and moving machines and attachment tools on their supplied support solutions, or transport pallets (EU standard) if support solutions are not available.

If machines are to be moved, always use a forklift or pallet lifter.
Always check the weight of your GreenTec machine under the machine specifications.

Materials and components used in when moving the machines must be approved for *more than the stated weight of the machine.*

⚠ DANGER

There is a risk of crushing as the machine can tilt/overturn during transport/movement.

There must never be people on both sides of the machine during lifting, or in the area where the machine can tilt.

Never try to lift or move the boom mower with the attachment tool still mounted!

Boom mowers and attachment tools are to be un-mounted from each other and then moved separately from time to time.

The boom mower and attachment tool should only be transported/moved when mounted together on a vehicle!

6.2 DAILY- AND ROUTINE INSPECTIONS (e)

NOTICE

Always remember to check the entire machinery, both the vehicle, the boom mower, and the attachment tool in use.

It is important that the operator knows the machines and carries out the inspections necessary for the vehicle, the boom mower, and the attachment tool in use.

For correct service and maintenance, the instruction manuals for the respective machines must be used at all times. (Vehicle, boom mower and attachment tool)

Always be safe in the daily routines and inspection of machines!

⚠CAUTION

Before starting up a new machine, a daily inspection is carried out before starting up, and again already **after 3-5 operating hours.**

After this, a daily inspection after using the machine is sufficient, combined with a 6-monthly inspection of the machine!

At the beginning of the machine's service life, extra attention should be paid to the tightening of bolts, shielding and any belt tension on attachment tools.

DAILY INSPECTION:	
Daily inspection is always carried out after the first 3-5 operating hours. All points MUST be reviewed! Daily inspection is then carried out daily / after each time the machine is used.	**General overall impression of the machine:** (Any damages and/or errors must be corrected immediately) **Intact guards, incl. rubber flaps on attachment tools + belt housing and its shielding must be intact.** **Cracks in the frame's sides, corners and around the mount:** (Incl. bumps and/or bent parts.) **Loose parts or missing bolts:** Retighten all bolts! (Section 6.8 – page 122) **In the case of belt traction on attachment tool(s):** Check belt tension and tighten the belt, if necessary, on the attachment tool. (Follow the attachment tool's instruction material!) **Inspect the hydraulic system for leaks from fittings, hoses and possibly motors.** **Check hydraulic hoses and hose sleeves for correct routing:** Wear marks and/or displaced hose sleeves. (Section 6.9 – page 123-124) **Lubrication of the entire machine:** Best done after finished work, as bearings on the attachment tool are warm and possible water/moisture is thereby pressed out of the bearing. (Section 6.11 – page 124-125)

Table 31 – Checklist for daily inspections

6 MONTH INSPECTION OF THE MACHINE	
Inspections are carried out every 6-months. All points MUST be reviewed!	**General overview of machinery:** Cleaning and maintenance + lubrication so that general maintenance is minimized. (Section 6.11 – page 124-125 + (Section 6.12 – page 125) **Carefully check the condition of hydraulic hoses:** Pay attention to that no hoses do not rub against edges, flanges, bolts and the like. Sleeves on the hoses must be correctly fitted so that the hoses are always protected as best as possible. **Clean the entire machine of loose branches and dirt, wash, and lubricate the machine with anti-corrosion oils/grease around the grease nipples:** especially on the shiny worn areas/parts of the machine. Do a careful daily inspection. (Section 6.12 – page 125 + Table 32 – page 112) **Inspect all bushings, rivets and/or bearings on the machine:** (Section 6.10 – page 124) **Store the machine well protected and dry:** Protect especially the hydraulic couplings on the boom mower and attachment tool, and possibly bearings on the attachment tool against continuous rain, moisture, and temperature fluctuations. (Section 6.13 – page 126)

Table 32 – Checklist for 6 month inspection: Preventive maintenance

6.3 REPLACING FILTER ELEMENTS

There are 2 types of filters on the Spider 5-820 Plus boom mower:

Return oil filter – page 21 + High pressure filter – page 31

All the filters on the machine are bypass filters, which means that if the filters are clogged, the hydraulic oil still passes the filter without being cleaned. This means that cavitation is avoided, but the wear on all hydraulic components increases if the filters are not changed in time!

NOTICE

If the hydraulic oil is worn out, the entire hydraulic system wears out unnecessarily. (Pump, motor, valves, and cylinders)

When purchasing the machine, one complete filter set is always included, incl. seals for replacement after the first 50 operating hours!

Additional filter sets can always be ordered through a dealer at GreenTec spare parts.

⚠CAUTION

Always focus on cleanliness and collection of spills before changing filter elements:

- Have a tray ready for the old filter elements and waste material.
- Clean the area around the filters.
- Change and lubricate all affected o-rings with hydraulic oil.
- Old filters incl. old oil is disposed of as chemical waste, according to the applicable regulations.

PERIODIC MAINTENANCE: HYDRAULIC FILTERS	
After the first 50 operating hours ⬇ Then every 500 operating hours	**Hydraulic filter change:** - Return oil filter - High pressure filter

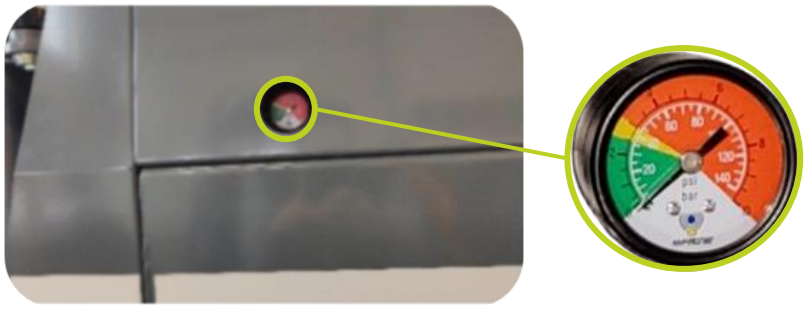
Table 33 – Intervals for changing filter elements

6.3.1 RETURN OIL FILTER REPLACEMENT

1. Unscrew the top/lid of the return oil filter on the machine, and replace the o-ring for the lid *(*A complete set of o-rings and seals is always included for the entire return oil filter – additional o-rings and/or seals which are not specified here, are always changed before 500 operating hours, or at signs of wear!)*

2. The existing filter element is lifted up and replaced with a new one.
3. Screw the top lid back on and tighten it with the torque indicated on the top of the lid: **30 Nm**
4. Replace the breather cap for the return filter with a new one.
5. Additional O-rings and seals included for complete replacement as needed.

Return oil filter on Spider 5-820 Plus boom



Manometer/indicator for changing the return filter

NOTICE

The manometer measures the resistance in the return filter and indicates whether the return filter is clogged and should be changed.

The filter insert on the return filter must **ALWAYS** be changed before the meter hits the red field to ensure that the hydraulic oil is always kept clean and in good condition. (Approx. 2.5 ± 10% bar reading on manometer)

See section: Filter kit incl. seals – page 60

6.3.2 HIGH PRESSURE FILTER REPLACEMENT

1. The filter housing on the high-pressure filter is removed by unscrewing the bottom of the filter using a M30 wrench. Replace the 3 different o-rings around the thread of the filter housing.

   **(A complete set of o-rings and seal for the entire high-pressure filter is always included - additional o-rings and/or seals not specified here are always changed within 500 operating hours or sooner, if there are signs of wear!)*

2. The existing filter element is detached and replaced with a new one.

3. The filter housing is screwed on again, and then tightened with a torque of: <u>40 Nm</u>

High pressure filter on Spider 5-820 Plus boom

6.4 CHANGING HYDRAULIC- AND GEARBOX OIL

⚠CAUTION

Always focus on cleanliness and collection of spills before changing hydraulic and or gearbox oil:

- Have a tray / waste container ready for the old hydraulic or gear oil.
- Clean the entire area around the tank and/or gearbox.
- Change and lubricate all affected o-rings with hydraulic oil.
- Old oil is disposed of as chemical waste, according to applicable regulations.

PERIODIC MAINTENANCE: HYDRAULIC AND GEARBOX OIL	
After the first 50 operating hours ↓ Then every 500 operating hours	- **Gearbox oil is changed** - **The hydraulic oil is examined for contamination**

Table 34 – Intervals for changing hydraulic and gearbox oil

6.4.1 CHANGING THE GEARBOX OIL

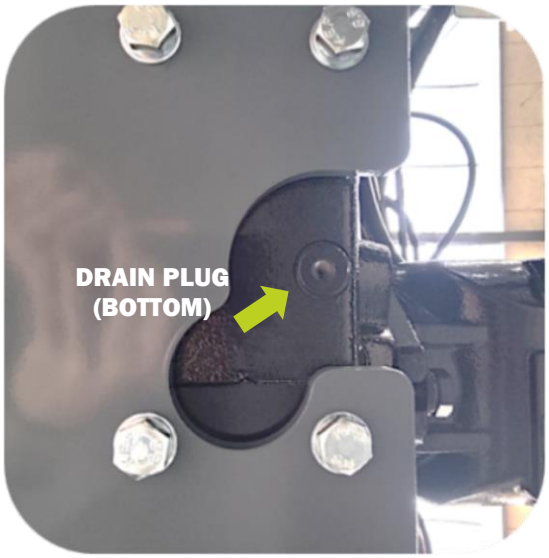
The gearbox on the Spider 5-820 Plus must all be maintained in the same way. Gear oil must be changed after the **first 50 hours of operation**, and then **every 500 hours of operation**.

It is stated in the specifications how much and which oil the gearbox contains:
See section: Gearbox – page 28 and/or Specifications – page 61

1. Unscrew the drain plug (Socket-head - Size 8) from the gearbox and let the oil drain into the tray.

2. The drain plug is magnetic; examine it for possible metal shavings etc.

3. Screw the drain plugback into the gearbox using an M22 wrench.



Drain plug for gearbox on Spider 5-820 Plus boom mower

4. The top plug for filling is unscrewed using a M22 wrench.

5. New gear oil can now be filled.
   Use a funnel down the opening to avoid oil spillage!
   It is filled with approx. 1.70 liters for M9 gearbox

6. The oil level in the gearbox is checked using the indicator on the side of the gearbox:


Sight glass for checking gear oil level on the gearbox

6.4.2 CHANGING THE HYDRAULIC OIL

The hydraulic oil is very durable on its own, but its lifespan is shortened when it is exposed to temperatures above 100 C°, or if water or other contaminants get into the oil. Careful monitoring of the hydraulic oil, combined with correct filter changes in time, gives the hydraulic oil a long service life.

GreenTec recommends checking the hydraulic oil every **500 operating hours** as a minimum. If you suspect that the oil is contaminated or has been too hot, GreenTec recommends sending an oil sample to a local oil supplier as soon as possible.

It is stated in the specifications how much and which hydraulic oil the boom mower contains.
See section: Oil tank and return oil filter – page 21 and/or Specifications – page 61

NOTICE

When changing the hydraulic oil on the Spider 5-820 Plus boom mower, it is also recommended to change all filters on the machine

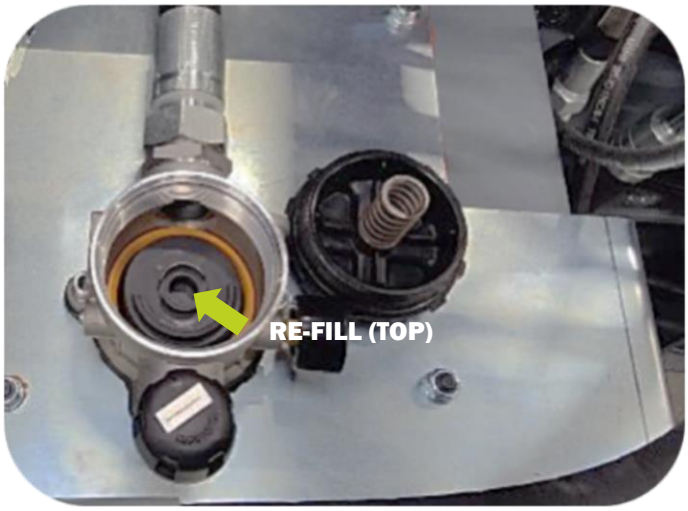
1. Unscrew the bottom plug at the bottom of the oil tank and let the oil drain into the waste container. (Approximately 220 litres)

2. The drain plug is magnetic; examine it for possible metal shavings

Drain plug for oil tank on Spider 5-820 Plus boom mower

3. Filling of hydraulic oil takes place down into the return filter. Screw the lid on/off here when filling and tighten it with the torque indicated on the top of the lid: 30 Nm

4. The new hydraulic oil is poured on top of the return filter so that the new hydraulic oil is filtered before it hits the oil tank. (Approximately 220 litres)



Adding hydraulic oil to the Spider 5-820 Plus boom mower

5. The oil level in the gearbox is checked using the indicator on the side of the oil tank:


Sight glass for checking hydraulic oil level in tank

6.5 CHECKING THE PRESSURE SPECIFICATIONS

During service and maintenance of the machine, there may be a need to check, diagnose, or verify the boom mower's pressure specifications. The total pressure of the machine is measured using the included manometer kit.

It is stated in the specifications which pressure/flow the boom mower, incl. the attachment tool must be running at. See section: Specifications – page 61-62

1. Connect the manometer at the outlet on the boom mower AHC-valve block. The manometer outlet is located on this valve block, as the machine's max. incoming pressure is located here in the hydraulic system.

2. Start up the boom mower and attachment tool under normal operating conditions, and then operate the machine's various functions using the control panel and joystick.

3. Simultaneously read out the pressure on the manometer using the various functions of the arm of the boom mower and the attachment tool.

Connection of manometer at the outlet on the high-pressure filter

6.6 TESTING THE HYDRAULIC COLLISION PROTECTION (AHS: AUTO HYDRAULIC SECURITY)

It is important that the hydraulic collision protection -function is checked before each start of the machine. The check is carried out via a "push"-test, where min. 2 people are required for correct execution:

NOTICE

The check should be carried out when the hydraulic oil on the machine is at operating temperature. (Cold oil gives a less precise adjustment)

The machine should be warmed up to operating temperature by idling for approx. 15-20 minutes depending on the outside temperature: until the oil is above 40 C°

⚠ DANGER

As long as an operator is sitting in the cab of the vehicle, no one may be around the machine. Crushing hazard!

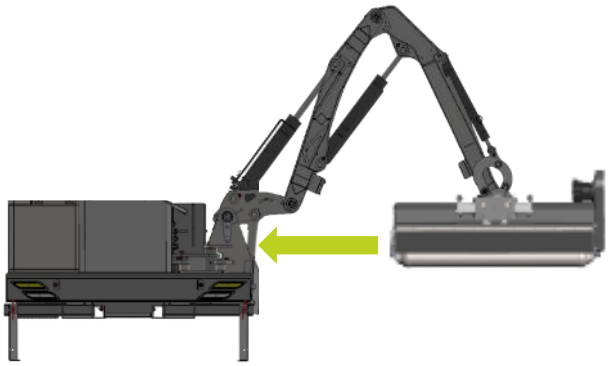
Perform the following procedures:

1. Start by checking the overpressure valve for the highest pressure → When the attachment tool is mounted, and the arm of the boom mower has been moved out as far as possible.

   - Carry out a "push"-test with the boom mower in this position as described in the next section:

2. Next, the lowest pressure setting is checked → When the attachment tool is mounted, and the arm of the boom mower is moved into the upper inductive sensor, where the light is turned off in its LED. See section: Inductive safety sensors – page 35-36

   - Carry out a "push"-test with the boom mower in this position as described in the next section:



6.6.1 ”PUSH”-TEST

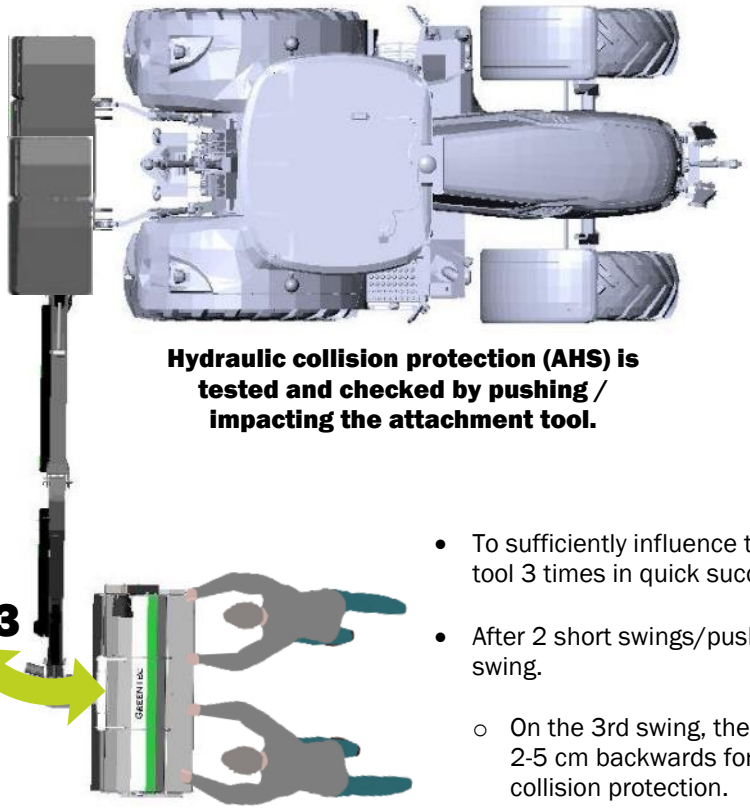
Let the attachment tool hover in a fully extended arm, about 70-90 cm above the ground. 2 adults should be able to push the attachment tool enough by hand, for it to move a few centimeters backward/forward.
(The attachment tool must move when pushed but must be pushed very hard!)

1. The Power supply must be connected and active on the boom mower

2. The hydraulic pump on the boom mower or the vehicle **must not** be started:

   (The hydraulic pump is only needed when the boom mower has to be moved in and out of position to perform the "push" test - always switch off the hydraulic pump afterwards during the test!)

3. The attachment tool is physically pushed backwards using one or two people. The arm of the boom mower is thereby set into oscillations, and the collision protection is thereby affected:



Hydraulic collision protection (AHS) is tested and checked by pushing / impacting the attachment tool.

- To sufficiently influence the boom mower, push the attachment tool 3 times in quick succession to achieve the correct ratio.
- After 2 short swings/push, push as hard as you can on the 3rd swing.
  - On the 3rd swing, the attachment tool should move between 2-5 cm backwards for correct operation of the hydraulic collision protection.
  - If pushed in the opposite direction (in the direction of travel) with the same force, the attachment tool should move by 4-7 cm for the hydraulic collision protection to function correctly.

NOTICE

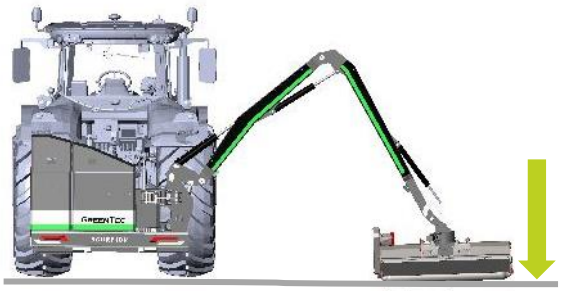
The hydraulic collision protection-function can in some cases be adjusted using the overpressure valves on the HIC valve block if a softer/firmer response of the "Break-back" function is desired.

Contact a GreenTec dealer for further information.

6.7 TESTING THE HYDRAULIC FLOAT FUNCTION (ARM)

The floating position system consists of a hydraulic accumulator controlled by an electric valve. A test of the floating position function of the boom mower is carried out as follows:

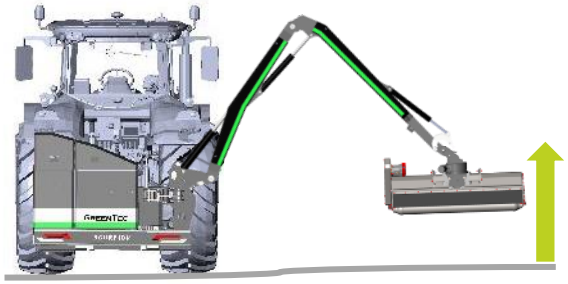
1. Lower the arm of the boom mower and attachment tool to the ground using the joystick in the cabin, so that the boom mower is relieved 100% on the ground surface:



2. Hydraulic float of arm is activated using the button  on the control panel. (Green LED lights up) (Accumulator is now 100% depressurized)

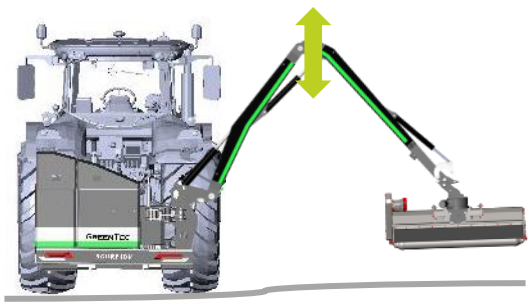
3. Hydraulic float of arm is de-activated again using the button  on the control panel. (Green LED turned off)

4. Raise the arm of the boom mower at approx. **½ meter height** using the joystick in the cabin:



5. Hydraulic float of arm is activated once again using the button  on the control panel. (Green LED lights up)

6. The arm of the boom mower must now visibly lower **approx. 10-15 cm** and you will be able to feel a smaller "spring-like" effect in the arm (If the attachment tool does not lower, contact the GreenTec dealer)



6.8 TIGHTENING TORQUES OF BOLTS AND HYDRAULIC CONNECTIONS

6.8.1 TIGHTENING TORQUES: BOLTS

All bolts and nuts on the machine are provided with quality grade marking, ordinary machine steel bolts have quality grade 8.8: bolts marked with 8.8, and nuts marked with 8.

Hardened steel bolts may be marked 10.9 or 12.9: bolts marked 10.9 or 12.9, and nuts marked 10 or 12.

Individual bolts and nuts have no markings: these are always ordinary steel bolts and/or nuts in grade 8.8.

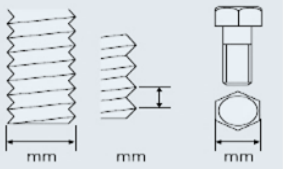
TIGHTENINGS TORQUES: BOLTS / NUTS ISO-metric standard: Bolt grades					
			Nominal tightening torques for steel bolts (**Nm**)		
			Regular (Quality grade 8.8)	Hardened steel (Quality grade 10.9)	Hardened steel (Quality grade 12.9)
M6	1,00	10	**9,8 Nm**	**14,0 Nm**	**17,0 Nm**
M8	1,25	13	**24,0 Nm**	**33,0 Nm**	**40,0 Nm**
M10	1,50	17	**47,0 Nm**	**65,0 Nm**	**79,0 Nm**
M12	1,75	19	**81,0 Nm**	**114,0 Nm**	**136,0 Nm**
M14	2,00	22	**128,0 Nm**	**181,0 Nm**	**217,0 Nm**
M16	2,00	24	**197,0 Nm**	**277,0 Nm**	**333,0 Nm**
M18	2,50	27	**275,0 Nm**	**386,0 Nm**	**463,0 Nm**
M20	2,50	30	**385,0 Nm**	**541,0 Nm**	**649,0 Nm**
M22	2,50	32	**518,0 Nm**	**728,0 Nm**	**874,0 Nm**
M24	3,00	36	**635,0 Nm**	**935,0 Nm**	**1120,0 Nm**

Table 35 – Tightening torques for bolts AND NUTS

6.8.2 TIGHTENING TORQUES: HYDRAULIC CONNECTIONS

All hydraulic connections used are all in metric threading: (Couplings, fittings etc.)

Hydraulic connections are available in 2 series:

- **Light-serie (L)** – used where the pressure does not exceed 250 bar.
- **Heavy-serie (S)** – used where the pressure exceeds 250 bar up to 320 bar.

TIGHTENING TORQUES: HYDRAULIC CONNECTIONS Indicative values: Hydraulic connections (± 5%)		
Size	Series	Tightening torque (Nm):
Metric	Light-series	
M12	**L 6**	**20,0 Nm**
M14	**L 8**	**30,0 Nm**
M16	**L 10**	**40,0 Nm**
M18	**L 12**	**50,0 Nm**
M22	**L 15**	**70,0 Nm**
M26	**L 18**	**90,0 Nm**
M30	**L 22**	**120,0 Nm**
M36	**L 28**	**160,0 Nm**
Metric	Heavy-series	
M14	**S 6**	**25,0 Nm**
M16	**S 8**	**40,0 Nm**
M18	**S 10**	**50,0 Nm**
M20	**S 12**	**60,0 Nm**
M24	**S 16**	**85,0 Nm**
M30	**S 20**	**140,0 Nm**
M36	**S 25**	**190,0 Nm**

Table 36 – Tightening torques for hydraulic connections

6.9 HYDRAULIC HOSES

⚠ WARNING

When inspecting hydraulic hoses, any damage/defect must be rectified immediately. When searching for leaks, due to the danger, suitable aids must be used: protective glasses, work gloves + a piece of cardboard that quickly reveals a leak!

Thin jets of hydraulic oil under high pressure can penetrate the skin and cause serious injuries! In the event of injuries of this nature, seek immediate medical attention: **DANGER OF INFECTION!**

Check the condition of all hoses at regular inspections. Pay particular attention that they do not rub against edges, flanges, bolts etc., and that the protective sleeves are correctly fitted, so that the hoses are always protected as best as possible.

Check all hydraulic hoses and fittings daily. Any damage or leakage must be repaired immediately. Hoses with damage/defects must be replaced immediately.

GreenTec's hydraulic systems work at a very high pressure. (From 250 bar up to 320 bar)
Therefore, use only original hoses and spare parts for these. A burst hose can be very dangerous.

When replacing hydraulic hoses, avoid twisting hoses and fittings.

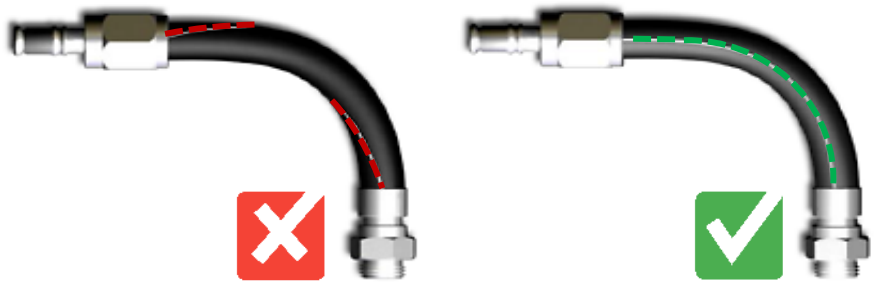
- Use 2 spanners to loosen and tighten the hoses!
- Avoid over-tightening! (Correct tightening torques are stated in Table 37 – page 122
- If fittings or screw connections continue to leak, they **must be** replaced!

⚠ WARNING

A flexible hose must not be twisted/twisted during installation, as this will significantly reduce the life of the hose and may cause the connections to loosen.

To determine if a hose is twisted or not, the specification line running the length of the hose must be straight.

Hvis specifikationslinjen spiralformer omkring slangen, er slangen snoet:

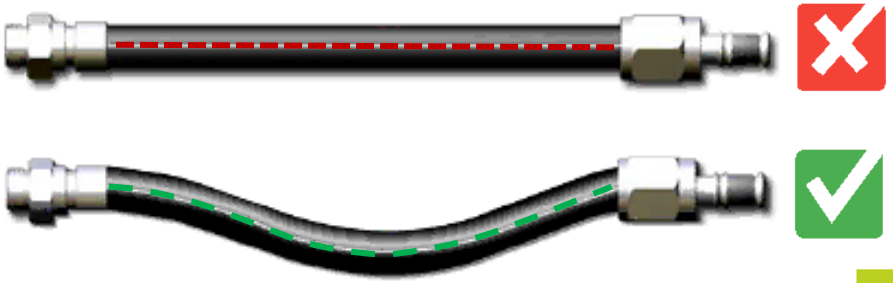


⚠ WARNING

A flexible hose must never be stretched tightly between two fittings.

Approx. 5 to 8 (%) percent of the total length should be allowed as slack to allow free movement under pressure.

Under pressure, a flexible hose is compressed in length and expands in diameter.



NOTICE

The warranty of the hydraulic hoses is limited to the replacement of hoses due to defective material or manufacturing. The warranty for hydraulic hoses is void if:

- **Hoses are damaged due to wear and tear.**
- **If the hoses have been cut or pinched during work.**
- **If threading etc. be damaged due to over-tightening.**

6.10 BUSHINGS, RIVETS AND BEARINGS

All pivot points on GreenTec's machines are equipped with replaceable bushings, rivets and/or bearings.

If they show signs of wear, they must be replaced. All bushings, rivets and bearings etc. can be delivered from GreenTec's spare parts warehouse.

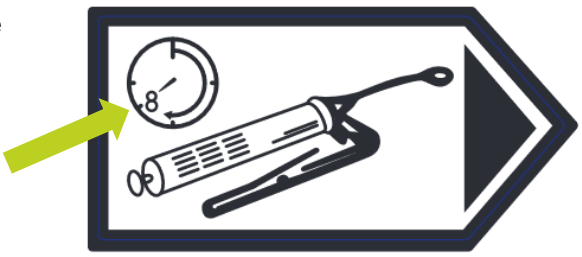
The correct spare parts for your GreenTec machine can always be found in the machine's parts book which can always be downloaded and/or printed for personal use on our website: www.greentec.eu.

6.11 LUBRICATION OF THE MACHINE

The moving parts of the Spider boom mower must be lubricated and there are grease nipples at all joints on the machine and at both ends of all cylinders on the machine.

All lubrication points at moving joints and cylinders on the Spider boom mower are clearly marked with the following mark:

The number on the dial indicates that lubrication must be done after **every 8 hours of work.**



Lubrication interval indicator

It is stated in the specifications which type of grease (or equivalent) to be used for the machine.
See section: Specifications – page 61-62

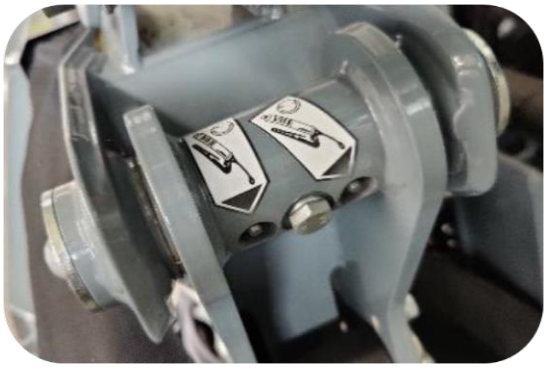
With each lubrication, a few squeezes is given from a standard hand spray/grease press.
Always stop when you can see that grease is coming out of the greasing spot!

⚠CAUTION

GreenTec ALWAYS recommends using a manual hand sprayer/grease press to lubricate the Spider boom mower.
Filling grease with compressed air and the like. can damage gaskets etc.

NOTICE

GreenTec ALWAYS recommends lubricating both the boom mower and the attachment tool after each work cycle, as the greasing spots that have been most heavily loaded are still hot, and possibly dirt, acid, moisture, water, and grass are therefore pressed out immediately.


Marking of lubrication spots: example 1/2


Marking of lubrication spot: example 2/2

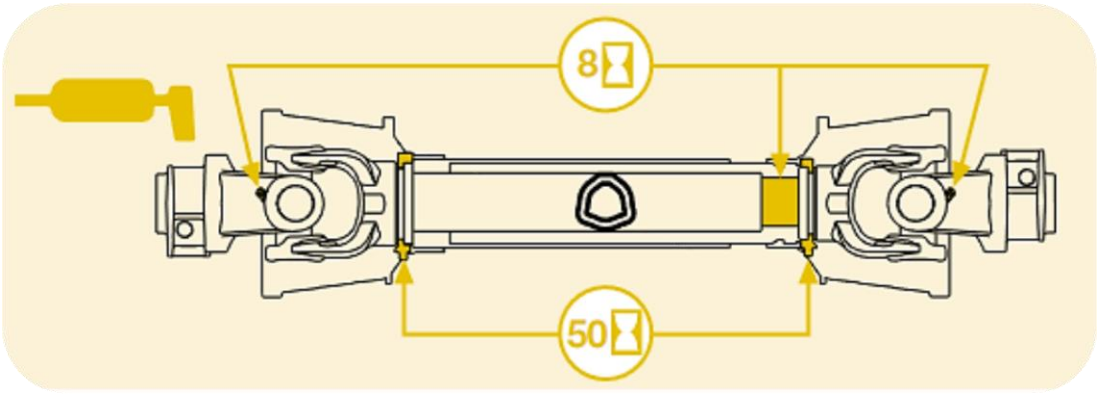
6.11.1 PTO SHAFT LUBRICATION

⚠CAUTION

For maintenance and lubrication of the PTO shaft, always follow the manufacturer's instructions: https://www.binacchi.it/

(Instruction material is also always attached to the individual PTO shaft delivered with the machine)

If another manufacturer of PTO shafts is used, follow the manufacturer's instructions accordingly!



Lubrication intervals and location: PTO shaft

Above is the location of the grease nipples with associated intervals for greasing the PTO shaft:

- The number "**8**" indicates where on the PTO shaft lubrication should take place after **every 8 hours of work.**
- The number "**50**" indicates where on the PTO shaft lubrication should take place after **every 50 hours of work.**

6.12 CLEANING / WASHING THE MACHINE

⚠CAUTION

Be careful when using high-pressure water cleaners close to the paintwork!

Use steam cleaners with great care!

Avoid harsh cleaning agents to avoid discoloration or damage to the paint!

It is important to store the machine covered so that it is protected from rain and sunlight. It must be placed on a flat surface or pallet!

Make sure that when storing the machine, there is no risk of it tipping over or falling down. Make sure for a suitable storage location or support of the machine!

Lubricate the machine with anti-corrosion oil afterwards, especially on the worn parts, also on the blades, rotors and internal shields of the attachment tool. This minimizes the formation of rust and prolongs the life of the machine significantly!

⚠DANGER

Anti-corrosion oils are dangerous on the skin and by inhalation!
Know and use all safety regulations when using the oil!

6.13 STORAGE OF THE MACHINE

Always store the machine so that it is protected from moisture, wind and weather. Before putting the machine away for storage, it must be washed and dried carefully. Also remove all traces of leaves / branches and dirt.

⚠CAUTION

GreenTec's machines MUST be stored dry, due to the risk of water in bushings, bearings and electrical parts.

NOTICE

Do not leave hydraulic hoses on the floor. They pose a tripping risk and there is a chance of contamination of hydraulic interconnections!

Always lay all hoses over the machine/attachment tool!

NOTICE

Always store the machine and attachment tools in clean condition!
Dirt attracts moisture and can thus result in increased rust formation.

Paint damage on the machinery must be repaired immediately!

6.14 DISPOSAL OF MACHINE/MACHINE PARTS

NOTICE

To ensure the most environmentally sound disposal method, the machine / machine parts must be separated and the disassembled parts sorted into the following categories below:

CATEGORY:	DESCRIPTION:
Rubber and plastic parts	Hoses, rubber guards, support wheels, plastic components, etc.
Technical components	Motors, flow dividers, hydraulic hoses, etc.
Metal parts	Plates, profile piped / tubes, bearing housings, knives, pulleys, etc.
Liquids (chemical)	Hydraulic oil, grease etc.

Table 37 – Overview of the disposal/scrapping of machine parts

7. TROUBLESHOOTING

7.1 TROUBLESHOOTING PROCEDURES

If the Spider boom mower is not working properly, the source of the fault must be located on the machine. Faulty conditions on the machine can be isolated by examining the following:

- Is the source of failure a **mechanical** problem? (Error on the mechanical parts of the machine)
- Is the source of failure a **hydraulic** problem? (Error on the hydraulic system of the machine)
- Is the source of failure an **electrical** problem? (Error on the electrical system of the machine)

NOTICE

When troubleshooting attachment tools and/or vehicles, refer to the instruction materials for these.

PROBLEM:	CAUSE:	SOLUTION:
Lack of power / transfer of power	Oil flow too low for the attachment tool.	Examine and verify PTO revolutions (RPM)
Overheating of gearbox	Incorrect PTO speed.	Check that the RPM is within the allowable range. (min. – max.)
	Oil level and/or type incorrect	Check the oil level and/or oil type.
Wear of PTO shaft (Cross joint or telescopic wear)	Too large/steep working angle.	Reduce the working angle of the PTO shaft.
	Incorrect length of PTO shaft.	Adjust the length as recommended by the manufacturer.
	Lack of maintenance.	PTO shaft is maintained and lubricated as recommended by the manufacturer.
Oil tank overheating	Too much oil flow / too high PTO speed (RPM)	Examine and verify PTO revolutions (RPM)
	Clogged radiator.	Cooler is cleaned and checked. (Remove leaves, dirt and debris)
	Machinery overloaded.	Reduce forward speed and/or increase cutting height.
	Incorrect PTO speed.	Check that the RPM is within the allowable range. (min. – max.)
	Oil level and/or type incorrect	Check the oil level and/or oil type.
Hydraulic collision protection (AHS) is activated too often	Machinery overloaded.	Reduce the forward speed and/or increase the cutting height.
	The machine is used on a too steep of a slope.	Reduce forward speed and angle.
	Too much of the machine's weight is carried on the attachment tool along the ground.	Apply and/or check the hydraulic float function. Testing the hydraulic float function – page 121
	Boom mower not mounted vertically on vehicle.	Adjust the upper part of the 4-point linkage system between the boom mower and the vehicle.

(continued) →

Errors on the hydraulic system	Oil level too low.	Fill the vehicle with oil to the correct level.
	Ingoing flow / PTO-RPM too low	Check PTO RPMs
	Pressure hose pinched/bent.	Check all hydraulic hoses for pinching and damage
	Oil leak in hydraulic system.	Check hydraulic system for leaks. Possibly. retighten or repair of hoses and fittings.
Errors on the electrical system	Incorrect / insufficient power supply from vehicle.	Check for poor battery connection. Check the fuse (8A) in the power plug.
	Electrical switches exposed to water/moisture	The machine and associated equipment must be stored under a roof or covered.
	Defective wiring harness.	Check wiring, fuses, and switches.
	Impurities in valve-modules.	Checked by an authorized workshop.
	Valve-modules is stuck.	Checked by an authorized workshop.

Table 38 – Identifying errors / faulty conditions

8. APPENDIX

8.1 HYDRAULIC DIAGRAMS

8.1.1 SPIDER 5-820 PLUS

NOTICE

(IN PREPARATION)
Contact GreenTec's Aftersales & Service department.

8.1.2 SPIDER 5-820 Plus

NOTICE

(IN PREPARATION)
Contact GreenTec's Aftersales & Service department.

8.2 ELECTRICAL DIAGRAMS

NOTICE

Electrical diagrams / schematics of the machine's power supply can be found any time at the following link: https://greentec.eu/da/support/
or by contacting GreenTec's Aftersales & Service department.

NOTES:

GREENTEC

MADE IN DENMARK

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