

SCORPION 4 S/PLUS

490



HANDBOOK

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2025 - GREENTEC

EN

1. UDGAVE

 **GREENTEC**

Cutting Edge Technology



SCORPION 4 PLUS

(490)

INSTRUCTION MANUAL

1. EDITION – November 2025
(ORIGINAL Version)

!IMPORTANT!

For correct operation, this **GreenTec Scorpion 490** 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



GREENTEC

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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.

CONTENTS

MANUFACTURER, NAME AND ADDRESS	A
PREFACE	B
LIST OF TABLES AND FIGURES	G
DECLARATION OF CONFORMITY	1
1. MACHINE DATA AND USEFUL INFO	2
1.1 REGISTRATION OF GREENTEC MACHINE DATA	2
1.2 NAME PLATE	3
1.3 WARRANTY TERMS	3
1.4 COMPLAINTS	4
1.5 USE WITH OTHER MANUFACTURES THAN GREENTEC	4
2. GENERAL INFORMATION	5
2.1 USE OF THE INSTRUCTION MANUAL	5
2.2 DEFINITIONS OF INFORMATION SIGNS	5
2.3 DEFINITIONS, TERMS AND DESCRIPTIONS	5
2.4 LOCAL LEGISLATION IN THE COUNTRY WHERE THE MACHINE IS USED	6
2.5 WARNINGS, PROHIBITIONS, AND INSTRUCTIONS	6
2.6 SAFETY LABELING	6
2.6.1 PERSONAL SAFETY EQUIPMENT – LABELS	6
2.6.2 WARNING LABELS	7
2.7 WORKING IN PUBLICLY ACCESSIBLE PLACES	9
2.7.1 WARNINGS SIGNS IN PUBLIC PLACES	9
2.7.2 USE OF WARNINGS SIGNS	9
2.7.3 SUGGESTED SIGNAGE WHEN WORKING ON PUBLIC ROADS	10
2.8 RECOMMENDATIONS FOR OPTIMAL SECURITY AND OPERATION	11
2.9 NECESSARY SAFETY MEASURES	12
2.10 WARNINGS ON HOW THE MACHINE MUST NOT BE USED	13
2.11 SAFETY INSTRUCTIONS FOR MAINTENANCE, ADJUSTMENT, AND INSPECTION WORK	14
2.12 SAFETY INSTRUCTIONS FOR THE OPERATOR / USER	14
3. MACHINE DESCRIPTION, COMPONENTS AND SPECIFICATIONS	15
3.1 MACHINE DESCRIPTION	15
3.2 USE OF THE MACHINE	18

3.2.1	INTENDED USE OF THE MACHINE	18
3.2.2	APPLICATIONS AND LIMITATIONS OF THE MACHINE	18
MACHINE COMPONENTS / MAIN PARTS		19
3.1.1	MAIN FRAME IN HIGH-STRENGTH STEEL	19
3.1.1.1	SUPPORT LEGS	20
3.1.1	OIL TANK AND RETURN OIL FILTER (STANDARD AND PLUS MODELS)	21
3.1.1.1	RETURN OIL FILTER	21
3.1.2	TECHNICAL CABINET (HYDRAULICS AND ELECTRICAL SYSTEM)	22
3.1.1.2	PVG VALVE BLOCK	23
3.1.1.2	AKKUMULATOR FOR FLYDESTILLING AF ARMKLIPPER	24
3.1.1.3	STOP VALVES FOR CYLINDER LOCKING / TRANSPORT POSITION	24
3.1.1.3	STOP VALVE FOR ATTACHMENT TOOL CHANGE	25
3.1.1.3	ELECTRICAL CABINET (CONTROL BOARD AND POWER SUPPLY)	25
3.1.1.4	OIL COOLER	26
3.1.1.5	HIC VALVE BLOCK (HYDRAULIC INTERNAL CIRCUIT)	26
3.1.2	GEARBOX, PTO SHAFT & HYDRAULIC PUMP (STANDARD AND PLUS-MODELS)	27
3.1.2.1	GEARBOX	28
3.1.2.2	PTO-SHAFT	29
3.1.2.3	HYDRAULIC PUMP	30
3.1.2.4	HIGH PRESSURE FILTER	30
3.1.3	HYDRAULIC CONNECTION DIRECT TO VEHICLE (BASIC-MODELS)	31
3.1.4	HYBRID ARM SYSTEM W/ DUAL FUNCTION AND HYDRAULIC COLLISION PROTECTION (AHS)	32
3.1.4.1	HYDRAULIC COLLISION PROTECTION (AHS: AUTOMATIC HYDRAULIC SECURITY)	34
3.1.4.2	INDUCTIVE SAFETY SENSORS	35
3.1.5	ROTORFLEX DOUBLE PIVOT SYSTEM W/ AUTOFLEX (PLUS-MODELS)	37
3.1.6	CONTROL PANEL AND JOYSTICK	38
3.1.6.1	LOGITEC SAFE CONTROL PANEL	39
4.2.10.2	DANFOSS JOYSTICK	46
5.1	APPROVED ATTACHMENT TOOLS AND OPTIONAL EQUIPMENT	48
5.2	OPTIONAL EQUIPMENT	49
5.2.1	4-POINT MOUNTING (CATEGORY 1 & 2)	49
5.2.1.1	4-POINT LINKAGE SYSTEM (ONLY STANDARD & PLUS-MODELS)	49
5.2.1.2	4-POINT MOUNTING WITH LOADER BRACKET (ONLY BASIC-MODELS)	50
5.2.2	HYDRAULIC QUICK-RELEASE COUPLINGS	51
5.2.3	MECHANICAL QUICK COUPLING	52
5.2.4	COUNTERWEIGHTS (120 KG)	54
5.2.5	BIO HYDRAULIC OIL	54
5.2.6	FILTER KIT INCL. SEALS	55
5.3	SPECIFICATIONS	56

5.3.1	POSITIONS AND REACH OF BOOM BOWER	58
6.4	NOISE MEASUREMENT OF AIRBORNE NOISE	59
6.	INSTRUCTIONS FOR USING THE MACHINE	60
6.1	INSTRUCTIONS REGARDING DELIVERY OF THE MACHINE	60
6.2	INSTRUCTIONS ON MOUNTING, CONNECTING AND DISCONNECTING	62
6.2.1	PREPARATION OF VEHICLE AND OPERATOR	62
6.2.2	MOUNTING AND CONNECTING THE MACHINE	63
6.2.2.1	MOUNTING ON VEHICLE WITH 4-POINT LINKAGE SYSTEM (STANDARD AND PLUS-MODELS)	63
6.2.2.2	MOUNTING ON VEHICLE WITH LOADER BRACKET / SPECIAL ADAPTER (BASIC-MODELS)	71
6.2.3	CONNECTING THE POWER SUPPLY FROM THE BOOM MOWER TO THE VEHICLE.....	75
6.2.4	INSTALLING AND MOUNTING CONTROL PANEL AND JOYSTICK	76
6.2.4.1	RAL PRINCIPLES FOR INSTALLATION OF CONTROL PANEL AND JOYSTICK	76
6.2.5	MOUNTING OF ATTACHMENT TOOLS ON BOOM MOWER	81
6.2.6	UN-MOUNT AND DISCONNECT BOOM MOWER FROM VEHICLE.....	85
6.2.7	UN-MOUNT AND DISCONNECT ATTACHMENT TOOL ON BOOM MOWER	85
6.3	PREPARING THE MACHINE FOR USE	86
6.3.1	INITIAL START-UP AND FIRST USE OF THE MACHINE.....	86
6.3.2	PROCEDURES BEFORE USING THE MACHINE.....	86
6.3.3	STABILITY	86
6.3.3.1	CHECKING THE STABILITY	87
6.3.3.2	STABILITY CAN BE INCREASED BY:	87
6.3.3.3	FACTORS INFLUENCING THE STABILITY.....	87
6.4	OPERATING THE MACHINE.....	88
6.4.1	TRAINING OF THE MACHINE OPERATOR BEFORE USE	88
6.4.2	OPERATOR'S WORKPLACE	88
6.4.3	TRANSPORTING BOOM MOWER W/ ATTACHMENT TOOL ON VEHICLE.....	89
6.4.4	OPERATING AND DRIVING INTRUCTIONS	91
6.4.5	ADJUSTING AND SETTING THE MACHINE	101
6.4.6	STARTING ATTACHMENT TOOLS	103
6.4.7	STOPPING THE ATTACHMENT	105
6.4.8	RESTARTING AFTER AN UNINTENTIONAL SHUTDOWN	106
7.	SERVICE AND MAINTENANCE.....	107
7.1	INSTRUCTIONS ON SAFE SERVICE AND MAINTENANCE.....	108
7.1.1	MOVING YOUR GREENTEC MACHINES	108
7.2	DAILY- AND ROUTINE INSPECTIONS	109

7.3	REPLACING FILTER ELEMENTS	110
7.3.1	RETURN OIL FILTER REPLACEMENT	111
7.3.2	HIGH PRESSURE FILTER REPLACEMENT	112
7.4	CHANGING HYDRAULIC- AND GEARBOXOIL	112
7.4.1	CHANGING THE GEARBOX OIL	113
7.4.2	CHANGING THE HYDRAULIC OIL	114
7.5	CHECKING THE PRESSURE SPECIFICATIONS	115
7.6	TESTING THE HYDRAULIC COLLISION PROTECTION (AHS: AUTO HYDRAULIC SECURITY)	116
7.6.1	"PUSH"-TEST	117
7.7	TESTING THE HYDRAULIC FLOAT FUNCTION (ARM).....	118
7.8	TIGHTENING TORQUES OF BOLTS AND HYDRAULIC CONNECTIONS	119
7.8.1	TIGHTENING TORQUES: BOLTS	119
7.8.2	TIGHTENING TORQUES: HYDRAULIC CONNECTIONS	119
7.9	HYDRAULIC HOSES.....	120
7.10	BUSHINGS, RIVETS AND BEARINGS	121
7.11	LUBRICATION OF THE MACHINE	121
7.11.1	PTO SHAFT LUBRICATION	122
7.12	CLEANING / WASHING THE MACHINE.....	122
7.13	STORAGE OF THE MACHINE.....	123
7.14	DISPOSAL OF MACHINE/MACHINE PARTS.....	123
8.	TROUBLESHOOTING.....	124
8.1	TROUBLESHOOTING PROCEDURES.....	124
9.	APPENDIX.....	125
9.1	HYDRAULIC DIAGRAMS	125
9.1.1	SCORPION 490 BASIC PLUS	125
9.1.2	SCORPION 490 PLUS	125
9.2	ELECTRICAL DIAGRAMS	125

LIST OF TABLES AND FIGURES

TABLES IN THIS INSTRUCTION MANUAL

Table 1 – Machines covered by declaration of conformity	1
Table 2 – Declared international standards	1
Table 3 – Machine data: form	2
Tabel 4 – Mærkepladens indhold.....	3
Table 5 – Definitions, terms and descriptions	5
Tabel 9 – Datasheet: Electrical system.....	25
Table 10 – Datasheet: Gearbox.....	28
Table 11 – Datasheet: PTO-shaft	29
Table 12 – Datasheet: Gearpump	30
Table 13 – Datasheet: High pressure filter.....	30
Table 15 – Approved attachment tools and optional equipment.....	48
Table 16 – Types of 4-point linkages w/ topbar	49
Table 17 – Types of “Flat-face” quick-release couplings on the machine	51
Tabel 18 – Filterindsatser (hydraulik)	55
Table 21 – Horizontal reach of boom mower (2/2)	59
Table 22 – Measurement of A-weighted sound power level (>80 dB).....	59
Tabel 23 – Komponentliste: 4-punkts ophæng m. topstang	64
Tabel 24 – Connection of hydraulic hoses.....	73
Table 25 – Checklist for daily inspections	109
Table 26 – Checklist for 6 month inspection: Preventive maintenance	110
Table 27 – Intervals for changing filter elements.....	111
Table 28 – Intervals for changing hydraulic and gearbox oil	112
Tabel 29 – Tightening torques for bolts and nuts	119
Table 30 – Tightening torques for hydraulic connections.....	119
Table 31 – Overview of the disposal/scraping of machine parts	123
Table 32 – Identifying errors / faulty conditions	125

FIGURES IN THIS INSTRUCTION MANUAL

Figur 1 – Mærkeplade for GreenTec-maskine.....3

Figure 2 – Safety labelling: personal safety equipment6

Figure 3 – Safety labeling: warning labels7

Figur 4 – Sikkerhedsmærkning: PTO-aksel8

Figure 5 – Warning labels: Transport lock / stop valves.....8

Figure 6 – Proposed signage for work on public roads..... 10

DECLARATION OF CONFORMITY

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	Scorpion 490 (Plus, Basic Plus) 9992490R-50PBF, 9992490R-50BF, 9992490R-50PF, 9992490R-50PR, 9992490R-50SF-9992490R-50SH 9992490R-50SR-9992490R-50SBF 9992490L-50PBF, 9992490L-50BF, 9992490L-50PF, 9992490L-50PR, 9992490L-50SF-9992490L-50SH 9992490L-50SR-9992490L-50SBF,	Rotary hedge cutter RC 132 Quadsaw LRS 1602 Flail mower FR 92 Flail mower FR 112 Cutterbar HS 172 – 242 Cutterbar HL 152 – 242 Grass cutterbar S 165 – 240

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:
DS/EN ISO 12100:2011	Safety of machinery - General principles for design - Risk assessment and risk reduction
DS/EN 14120:2015	Safety of machinery – Guards - General requirements for the design and construction of fixed and movable guards
DS/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

SCORPION 490

1. MACHINE DATA AND USEFUL INFO

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

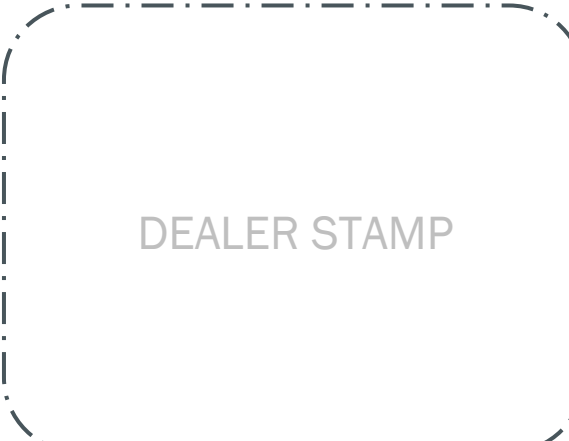
! THESE DATA MUST ALSO BE ENTERED VIA LOGIN IN THE GREENTEC EXTRANET BY DEALER !

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

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.

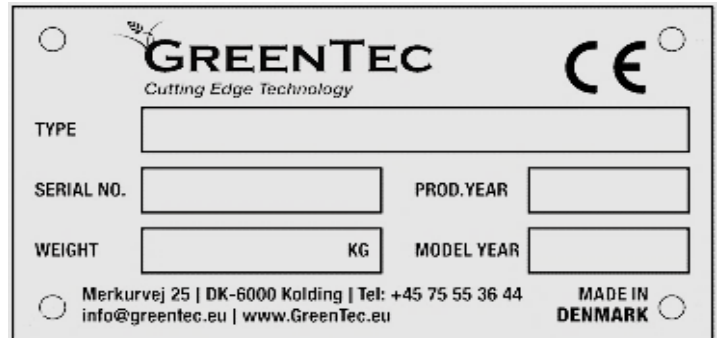


Figure 1 – Name plate for GreenTec machine

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 <i>without</i> optional equipment (kg.)
Model year:	The year of development of the machine model.
<i>The nameplate also provides address information for the manufacturer.</i>	

Table 4 – Content of the GreenTec name plate

1.3 WARRANTY TERMS

In order to maintain GreenTec's 2-year warranty and product liability insurance, only original GreenTec spare parts may be used on GreenTec machines and equipment. 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 goods sold, 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

Følgende definitioner gør sig gældende for hele denne instruktionsbog:

⚠ 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

2.4 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.

2.5 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!

2.6 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.

2.6.1 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 covers 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.

2.6.2 WARNING LABELS

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

ADSVARSELSMÆRKATER: ANVENDELSE			
	Warning! Read relevant instruction manuals carefully before using this machine.		Warning! Always pay attention to overhead lines! Between the electricity masts, there will always be a risk of touching the overhead lines.
	Follow all instructions and safety regulations when using the machine.		If in doubt - contact the local electricity company for instructions on safety distance.
	Warning! Check every 8 hours of use that all bolts/nuts are tight.		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! There is a risk of crushing and collision when the machine is running.		Warning! Rotating shaft! Power transmission output (PTO)
	No one must stay in the work zone.		Before handling: Turn off the vehicle engine, remove the key and apply the parking brake.
	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.		

Figure 3 – Safety labeling: warning labels

WARNING LABELS: PTO SHAFT (RPM)

Scorpion 490
Standard / Plus
(Front mounted)



Scorpion 490
Standard / Plus
(Rear mounted or
reverse-mounted)



Figur 4 – Sikkerhedsmærkning: PTO-aksel

WARNING LABELS: TRANSPORT LOCKS / STOP VALVES

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

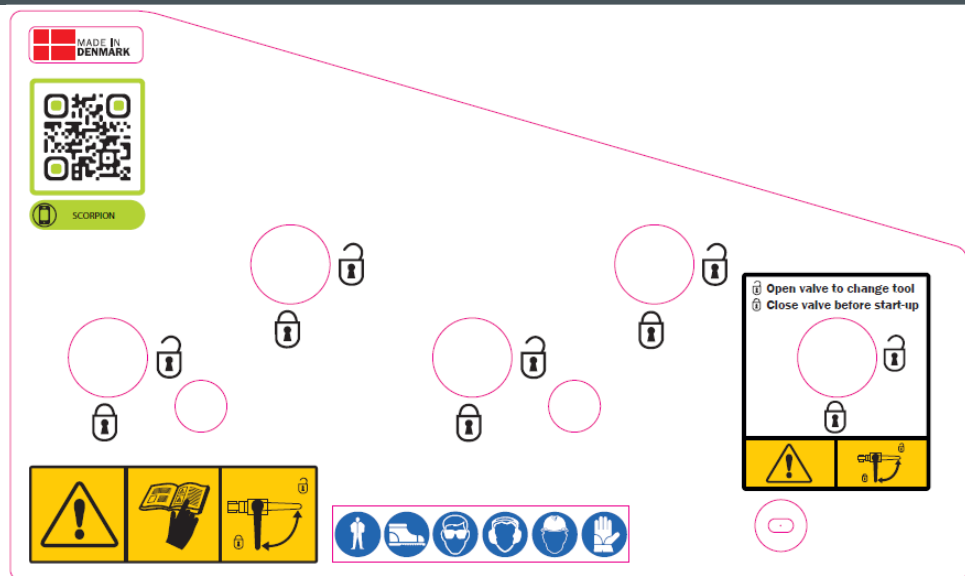
The inner handle at the
top,
blocks cylinder 1.
(Turn of arm)

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)

The handle closest
towards the center of the
machine, blocks the
attachment tool



Location of transport locks / stop valves on Scorpion 490 boom mower

2.7 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.

2.7.1 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.

2.7.2 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.

2.7.3 SUGGESTED SIGNAGE WHEN WORKING ON PUBLIC ROADS



Hold til venstre

Mandatory sign:

"Keep left"

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



Rabatklipping
0 - 1 km

Warning sign:

"Road work"

Supplementary text for work carried out at a suitable distance

Example: "Verge cutting 0-1 km"



Kun en vejbane

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.

2.8 RECOMMENDATIONS FOR OPTIMAL SECURITY AND OPERATION

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.

2.9 NECESSARY SAFETY MEASURES

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.

2.10 WARNINGS ON HOW THE MACHINE MUST NOT BE USED

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!

2.11 SAFETY INSTRUCTIONS FOR MAINTENANCE, ADJUSTMENT, AND INSPECTION WORK

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 (Obar).
- ✕ 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.

2.12 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.

3. MACHINE DESCRIPTION, COMPONENTS AND SPECIFICATIONS

3.1 MACHINE DESCRIPTION



GreenTec Scorpion 490 boom mower: rear-mounted on compact tractor

SCORPION 490 STANDARD & PLUS

(INCL. BASIC STANDARD & BASIC PLUS)



The Scorpion 490 series combine the compact build of our smallest models (SC 330 and 430) with a longer range. It easily gets into areas with limited space and with the strengthened hydraulic pump, it provides both the right power and reach for both grass, hedge and tree pruning.

The boom mower on the machine can be fully folded, with a low transport width of 2.2 m for the Scorpion 490. The low transport height of 1.45 m also ensures a perfect view of the attachment tool, especially when mounting the machine at the front.

The Scorpion 490 series is available in both left/right front, rear, and reverse mounted models, and is available as either PTO-powered versions, or with oil supply directly from the vehicle:

Scorpion 490 Plus:

PTO-driven, with internal hydraulic system: pump, oil tank and return filter:

- Rear Mounted w/ Vehicle 3-Point Suspension (Category 1 & 2) (Max. 540 RPM)
- Front Mounted w/ Vehicle 3-Point Suspension (Category 1 & 2) (Max. 1000 RPM)
- Reverse Mounted w/ Vehicle 3-Point Suspension (Category 1 & 2) (Max. 540 RPM)

Scorpion 490 Basic Plus:

Hydraulic connection via external hydraulic system from loader, multi carrier or vehicle:

- Front mounted with loader bracket. (20 different vehicle-specific brackets/adapters)
- Front-mounted in the vehicle's 3-point suspension. (Category 1 & 2)

With its compact size, the Scorpion 490 series is particularly suitable for smaller compact tractors, loaders and tool carriers. The only requirement is a minimum vehicle unladen weight of **2,500 kg**, depending on the model of the Scorpion 490 boom mower.

Counterweights of up to 120 kg are available as optional equipment for the Scorpion 490 series.

Mounting the Scorpion boom mowers in the 490 series is quick and easy, either with model-specific **headstock brackets/special brackets**, or by means of GreenTec's **patented 4-point mounting system**, which connects the tractor and machine with 100% stability. (The 4-point system is designed according to Category 1 and 2 standards.)

For Scorpion 490 series boom mowers, up to **11 different attachment tools** can be selected, with the option of easy attachment and removal of tools without the use of tools, using optional equipment such as quick couplings and quick hitch.

Trimming hedges and branches or cutting grass and brushwood along verges and ditches is easily carried out with the correct attachment tool using this versatile and flexible machine.

The Scorpion 490 series can be used in ditches and verges, with horizontal working reaches from **4.9 m**. The boom mowers can also be used in areas with trees, where branches can easily be pruned with vertical reaches from **4.8 m**.

The arm system on the Scorpion 490 boom mower is built with powerful slew and lift cylinders with power control, ensuring that the arm can slew and move within a working range of up to **155°**.

The main frame and arm system on the Scorpion 490 series are constructed from **Strenx high-strength steel**, ensuring a 50% stronger construction and 25% lower weight.

The Scorpion boom mower has a **hybrid arm system with dual function**, making it easy to switch between parallel and non-parallel operation of the boom mower and/or attachment tool during use.

The hybrid arm system has an integrated **hydraulic collision protection system (AHS) with a "Break-back" function**. The collision protection system optimizes the work process, protects the arm against overload and also provides pre-pressure for the attachment tool in use, e.g. the GreenTec LRS Quadsaw.

The Scorpion boom mower is equipped with a **hydraulic float function** for both the boom mower and the cutting angle. This function allows the arm and attachment tool to adapt to changes in the ground contour when the attachment tool is operated along the ground.

Scorpion boom mowers in the 490 Plus and Basic Plus series feature a **RotorFlex double pivot joint with AutoFlex**. The RotorFlex pivot joint at the end of the boom mower allows the attachment tool to rotate up to 220° and provides a cutting angle of up to 180°. The AutoFlex function also ensures automatic vertical alignment of the attachment tool.

Scorpion boom mowers in the 490 series are equipped with an **oil cooler** with a thermostat that switches the fan on and off according to the hydraulic oil temperature.

All Scorpion boom mowers can also be operated with bio-oil. (Must be selected as optional equipment before purchase!)

The Scorpion 490 boom mower has a tank capacity of 100 litres and a pump output of **73 l/min @ 280 bar**, and can easily be set to **40 or 50 l/min**. *(The required oil flow supplied to the Scorpion 490 boom mower depends on the attachment tool in use.)*

The hydraulic functions of the Scorpion boom mower are controlled by a **Danfoss PVG proportional valve system**, which controls the boom mower cylinders and functions via a control panel and a joystick with a total of four proportional functions.

All Scorpion boom mowers in the 490 series are supplied with the following standard equipment:

STANDARD EQUIPMENT: SCORPION 490	
- Strenx 700 steel construction	Scorpion 490 Plus Scorpion 490 Basic Plus
- 155° hydraulic slew of the arm system with power control	
- Hybrid arm system with dual function and double-acting collision protection ("Break-back" system)	
- RotorFlex double pivot joint (220° attachment tool rotation and 180° cutting angle) (SCORPION 490 PLUS & BASIC PLUS ONLY)	
- AutoFlex (automatic vertical alignment of the attachment tool) (SCORPION 490 PLUS & BASIC PLUS ONLY)	
- Danfoss PVG proportional valve system	
- Two oil flow settings: 40 and 50 l/min	
- Oil cooler	

Table 6 – Overview of standard equipment

The Scorpion 490 boom mower is available with several types of optional equipment and selectable options:

OPTIONAL EQUIPMENT AND OPTIONS: SCORPION 490	
- 4-point mounting system for Category 1 or 2 (SCORPION 490 S+PLUS ONLY)	Scorpion 490 Plus Scorpion 490 Basic Plus
- Headstock bracket, special bracket or adapter (SCORPION 490 BASIC ONLY)	
- Quick couplings for hydraulic hoses	Scorpion 490 S Scorpion 490 Basic S
- Quick hitch for attachment tools	
- Counterweights (120 kg)	
- Bio-hydraulic oil	
- Oil filter kit including seals (pressure and return filters)	

Table 7 – Overview of optional equipment and options

NOTICE

See the section in this instruction manual on [optional equipment](#), and find more information about the equipment options for the machine on GreenTec's [website](#).

3.2 USE OF THE MACHINE

3.2.1 INTENDED USE OF THE MACHINE

NOTICE

GreenTec accepts no liability for damage resulting from any use of the machine other than that described in this section.
The risk is borne solely by the person responsible for operation and/or the operator.

The Scorpion boom mower is available in several different sizes, but all models share the same basic design and operation.

The machine is used to handle, control and carry various dedicated attachment tools for cutting grass, hedges and fences, cleaning ditches and pavements, etc.

See the machine specifications for attachment tools intended for use with the Scorpion 490 boom mower.

3.2.2 APPLICATIONS AND LIMITATIONS OF THE MACHINE

The Scorpion boom mower can be mounted at the front or rear of many different smaller vehicles, such as compact tractors, loaders and tool carriers.

The vehicle must have a minimum unladen weight of 2,500 kg, depending on the Scorpion 490 boom mower model.

GreenTec designs many different types of mounting systems, brackets and adapters for a wide range of vehicles: model- and vehicle-specific headstock brackets/adapters and/or patented 3- or 4-point mounting systems.

The capacity of the different Scorpion boom mowers depends on the specifications of the attachment tool used, the supplied pressure, the type and quantity of material being processed, and the operating speed.

⚠ DANGER

The machine owner/person responsible for operation must ensure compliance with the following rules:

- The vehicle on which the machine is mounted must comply with the requirements for machinery approved for agricultural use.
- All safety limits must never be exceeded under any circumstances. (Safety distances, pressure, flow, rpm, etc.)
- Never use the machine with an attachment tool unless all guards are fitted.
- The machine must never be used to transport people, animals or any material other than that described in this instruction manual.
- Ensure that the stability of the carrying vehicle is adequate. See the section: [Stability](#), as well as the instruction manuals for the attachment tool and vehicle used.
- The boom mower and attachment tool must never be used as a crane or any other type of lifting equipment.

⚠ DANGER

The safety guards on the attachment tool used can never provide 100% protection. Depending on the operating conditions, dangerous fragments or material may be ejected and cause injury or damage to property. A safe distance must therefore **always** be maintained.

MACHINE COMPONENTS / MAIN PARTS

3.1.1 MAIN FRAME IN HIGH-STRENGTH STEEL

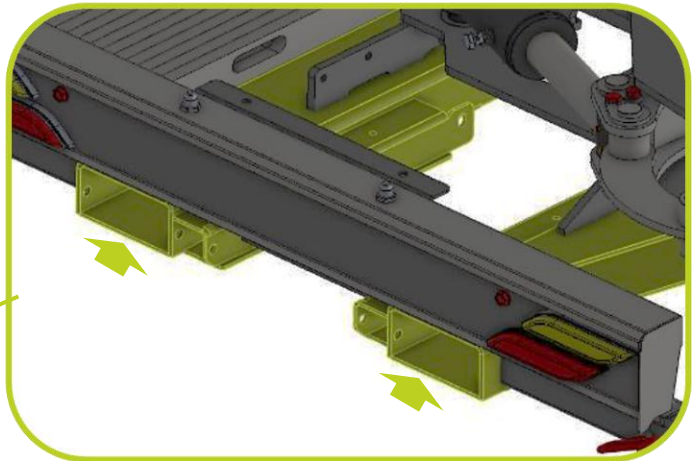
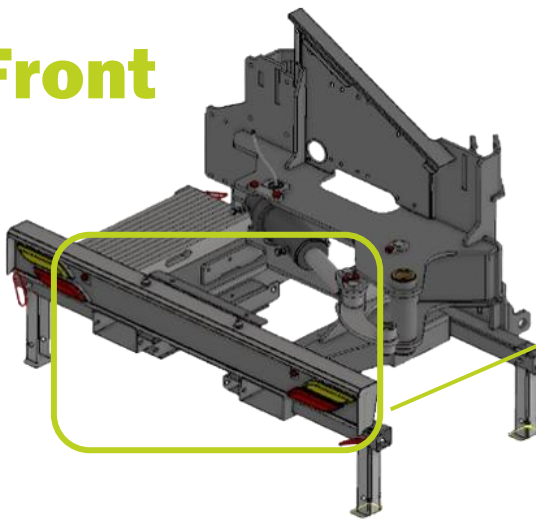
Parts of the Scorpion 490 boom mower are constructed from exceptionally durable Strenx 700 high-strength steel. Strenx is described as the world's strongest structural steel and is supplied by the Swedish steel group SSAB.

The use of this type of high-strength steel results in a 50% stronger construction and a weight reduction of up to 25%.

The main frame is constructed with continuous beams adapted for forklift forks for easy handling, as well as four support legs for parking the machine.

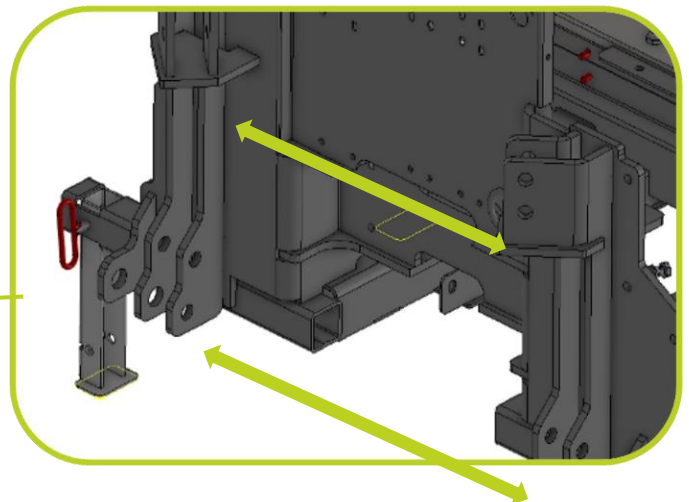
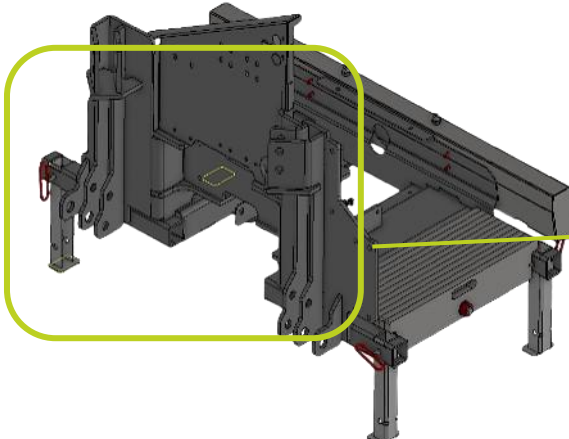
The main frame is also constructed with beams adapted for both 4-point mounting with vehicle-specific headstock brackets and a 4-point mounting system designed in accordance with Category 1 and 2 standards.

Front



Forklift pockets for lifting and moving the boom mower

Rear



Beams for 4-point mounting: Category 1 and 2, or for mounting with a headstock



3.1.1.1 SUPPORT LEGS

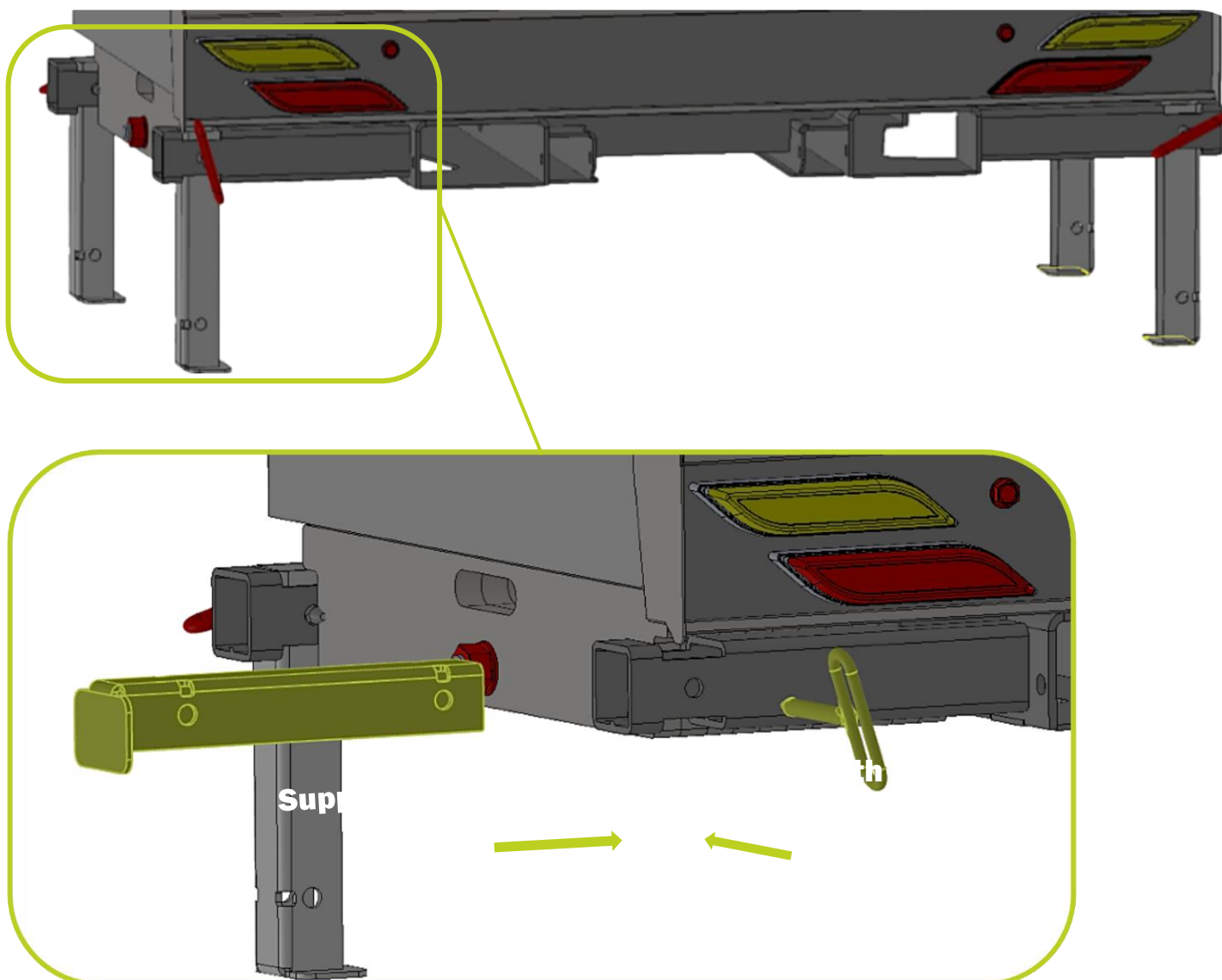
The Scorpion boom mower has a total of four support legs, which are easily removed and installed using draw pins with linchpins.

During operation of the machine, the support legs are inserted horizontally into the steel sections as shown in the image below.

CAUTION

The support legs on the machine must always be in the raised position during transport and operation!

The support legs should therefore only be used when the machine is parked for storage or when service and maintenance work is carried out on the machine.



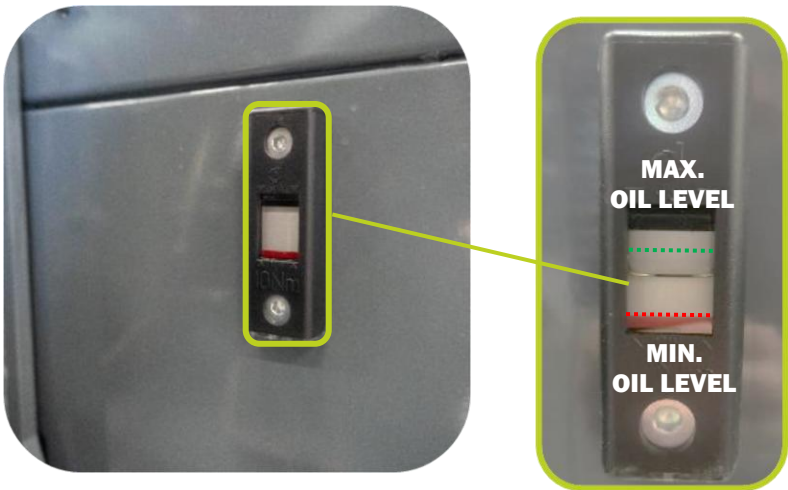
Support legs on the Scorpion 490 boom mower

3.1.1 OIL TANK AND RETURN OIL FILTER (STANDARD AND PLUS MODELS)

The oil tank on the Scorpion 490 boom mower has a total capacity of: **100 litres**.

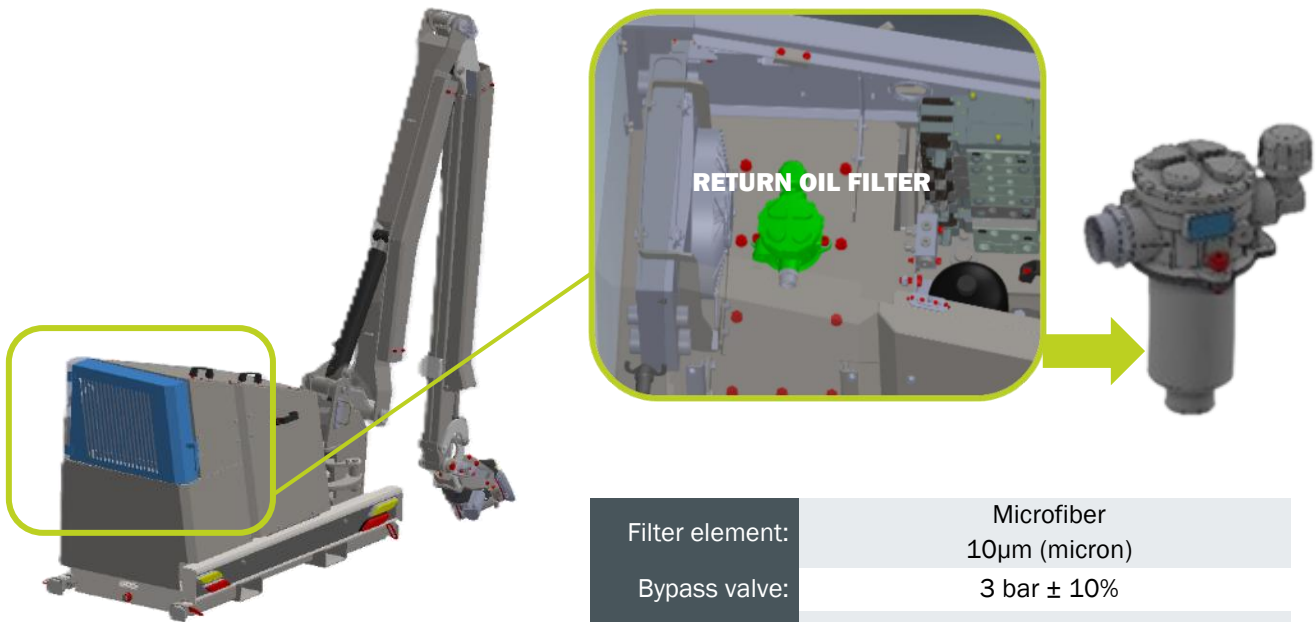
The oil level is checked through the sight glass on the oil tank, located on the rear side of the boom mower:

GreenTec supplies all machines as standard with high-quality hydraulic oil.



3.1.1.1 RETURN OIL FILTER

The return oil filter on the Scorpion boom mower is mounted on top of the oil tank, providing access for checking and replacing the return oil filter.



Location of the return oil filter on the Scorpion 490 boom mower

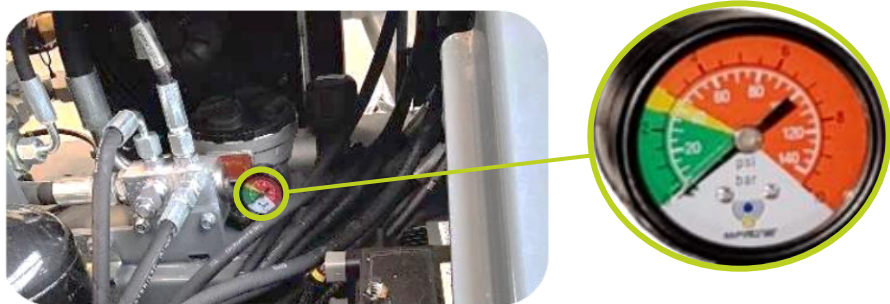
Filter element:	Microfiber 10µm (micron)
Bypass valve:	3 bar ± 10%
Max. pressure:	8 bar

Table 8 – Data sheet: Return oil filter

NOTICE

The pressure gauge measures the resistance in the return filter and indicates whether the return filter is clogged and should be replaced.

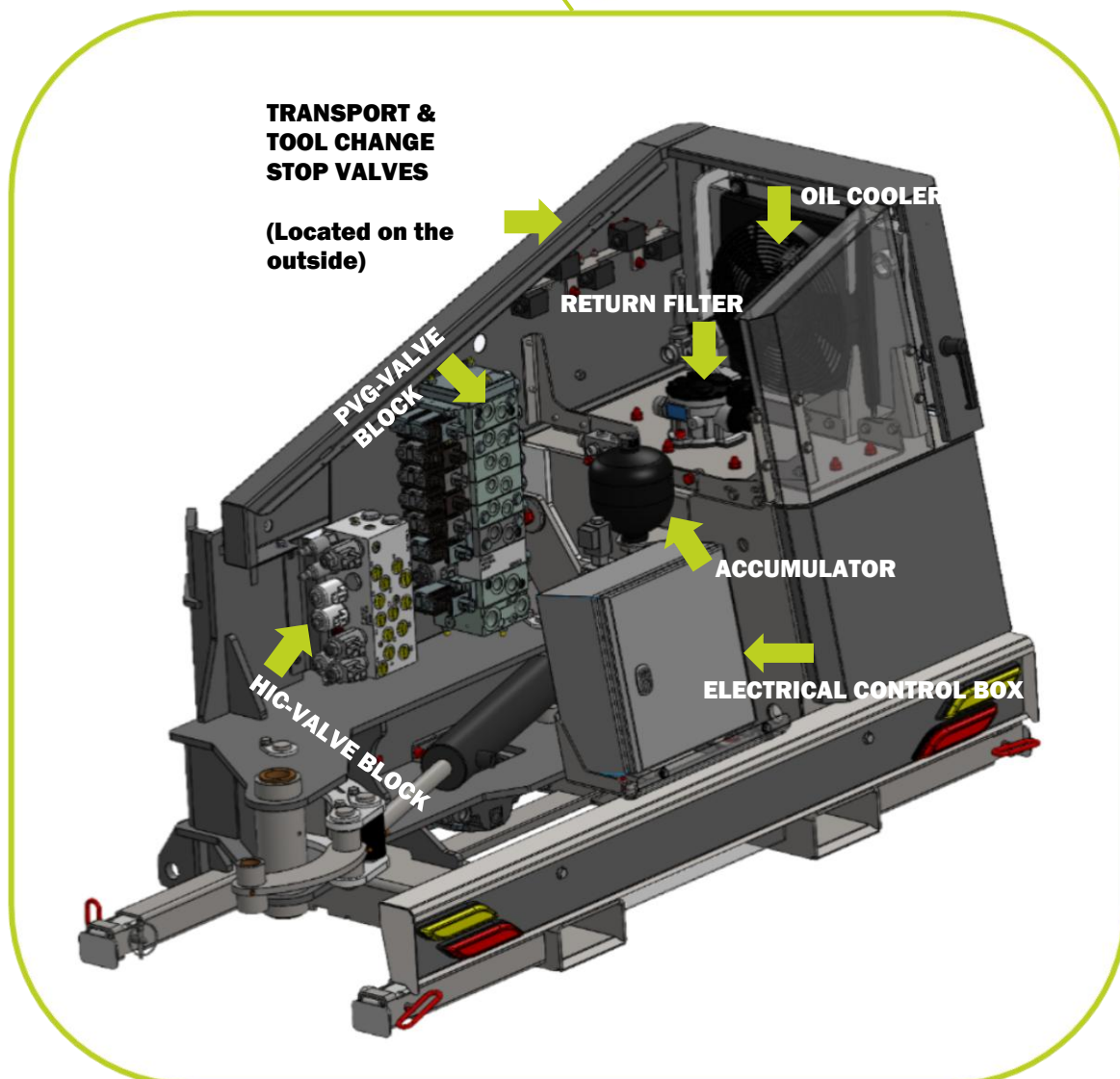
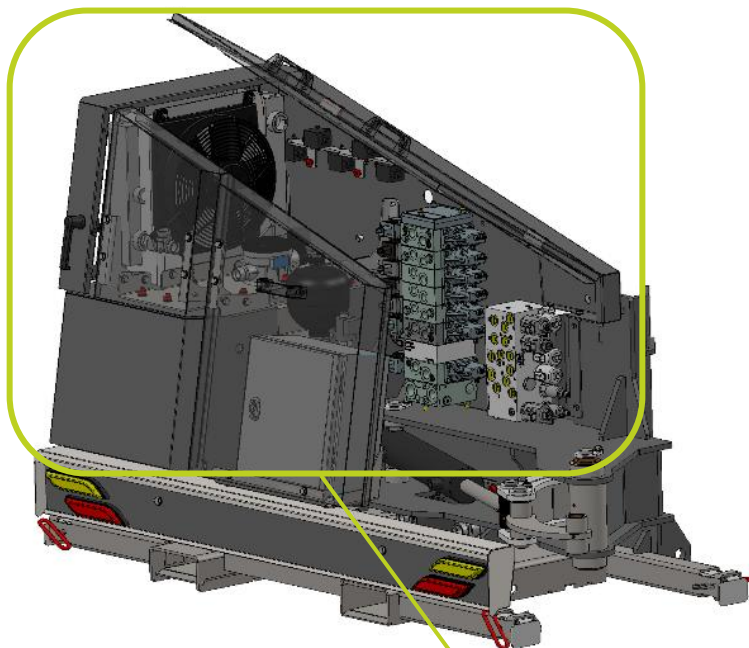
See also the sections: [Filter kit including seals](#) + [Replacement of filter elements](#)



Pressure gauge/indicator for return filter

3.1.2 TECHNICAL CABINET (HYDRAULICS AND ELECTRICAL SYSTEM)

The technical cabinet on the Scorpion boom mower contains the following hydraulic and electrical components, which are important for the operator to know in order to control and operate the machine:



Technical cabinet on the Scorpion 490 boom

3.1.1.2 PVG VALVE BLOCK

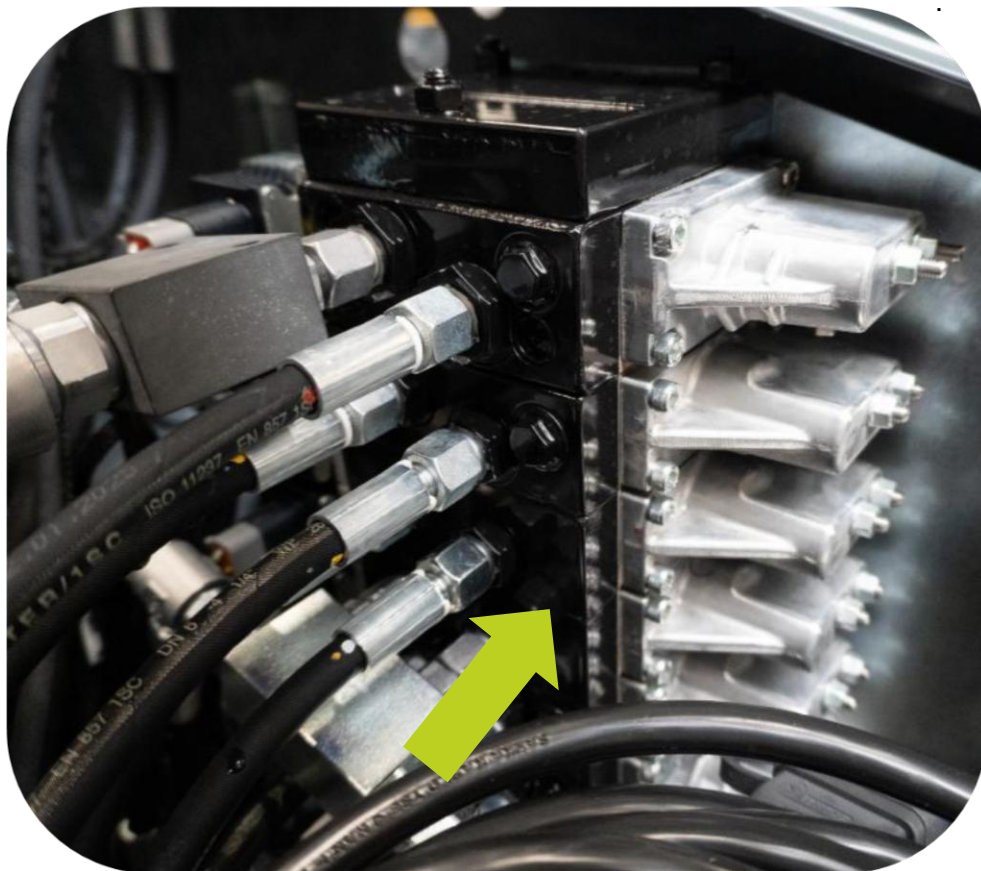
The PVG valve block on the Scorpion boom mower is the machine's primary valve block, developed in cooperation with Danfoss.

The PVG valve block has a configurable modular design, allowing all the primary hydraulic functions of the Scorpion boom mower to be integrated into a single valve block.

The valve block receives and controls the incoming working flow from the machine's hydraulic pump at **73 l/min @ 280 bar**.

The valve block always gives priority to the attachment tool and supplies it with the correct oil flow, from **40 l/min @ 200 bar** up to **50 l/min @ 280 bar**.

The remaining oil flow in the machine is used to control the various modules and thereby the functions and movements of the boom mower arm.



Danfoss PVG valve on the Scorpion 490 boom mower

3.1.1.2 AKKUMULATOR FOR FLYDESTILLING AF ARMKLIPPER

The accumulator has a pre-charge pressure of 32 bar and is activated when the “Float” function is used on the Scorpion boom mower.

See section: [Control panel and joystick](#) + [Operating and driving instructions](#)

The accumulator creates back pressure in the boom mower's lift cylinder, giving the arm a soft, spring-loaded effect. This allows an attachment tool used along the ground, such as the GreenTec FR flail mower, to follow surface irregularities of up to 10–15 cm.

The accumulator is controlled by a hydraulic valve with an electrical solenoid that communicates with the machine's electrical control system.



Accumulator (32 bar) on the Scorpion 490 boom mower

3.1.1.3 STOP VALVES FOR CYLINDER LOCKING / TRANSPORT POSITION

The four stop valves on the Scorpion 490 boom mower are used to secure the boom mower in the transport position, preventing the arm from moving or lowering unintentionally during transport.

Turning the stop valves opens or closes the oil supply to the four cylinders on the boom mower, thereby locking the machine arm in the selected transport position.

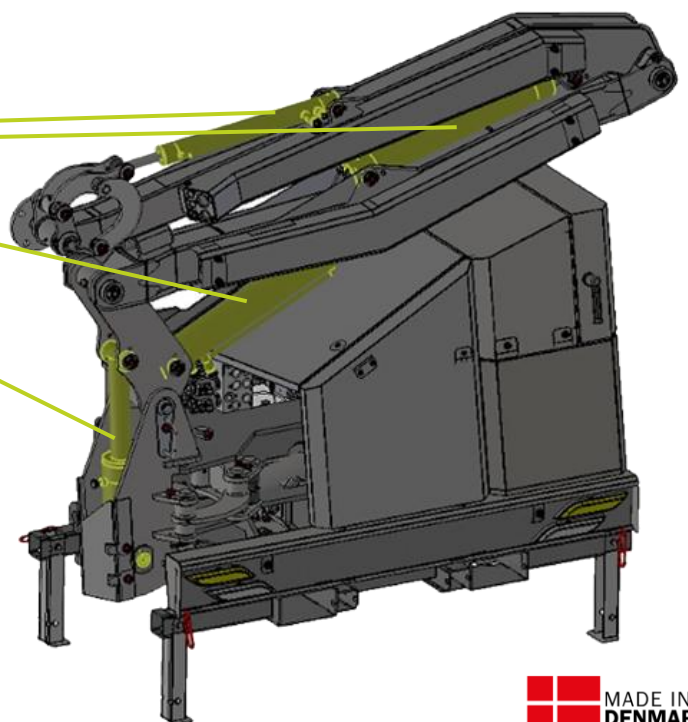
NOTICE

See section: [Transporting boom mower w/ attachment tool on vehicle](#)

The stop valves for cylinder locking are located on the rear of the machine and are clearly marked:



Stop valves (4 pcs.) for cylinder locking/transport position, plus 1 for attachment tool change



3.1.1.3 STOP VALVE FOR ATTACHMENT TOOL CHANGE

The stop valve for attachment tool changes opens a free passage to the oil tank, relieving all pressure in the hoses to the attachment tool.

This function makes it easier to change the attachment tool, as connecting or disconnecting the hydraulic quick couplings can be difficult when the hydraulic system is pressurized.

NOTICE

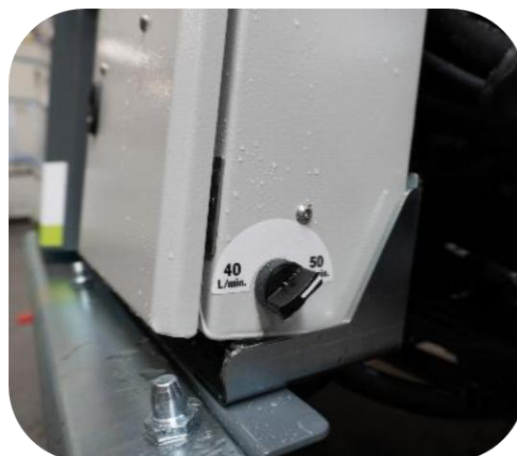
See section: [Un-mount and disconnect attachment tool on boom mower](#)

3.1.1.3 ELECTRICAL CABINET (CONTROL BOARD AND POWER SUPPLY)

The electrical cabinet on the Scorpion 490 boom mower contains the machine's electrical components: main board, fuses, relays, controllers, etc. The electrical system on the boom mower has the following specifications:

Voltage:	12 volt DC
Fuse:	15A (Max.)
Protection:	IP54 (Dust and water resistant)
Standard:	EN 60204-1

Tabel 6 – Datasheet: Electrical system



On the side of the electrical cabinet there is a switch that makes it possible to switch the oil supply between 40 l/min and 50 l/min, depending on which work tool is used with the boom mower.

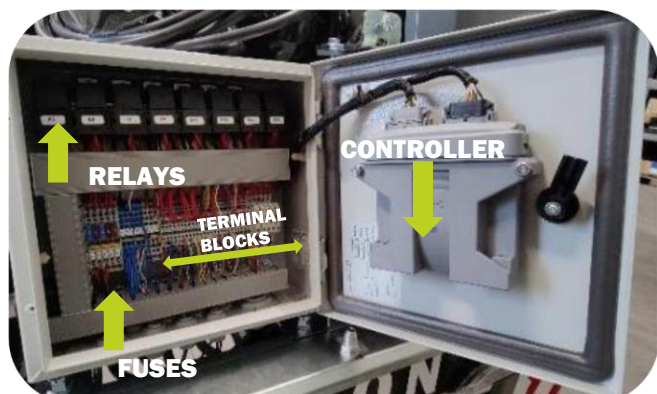
NOTICE

Always check the correct oil quantity and associated pressure specifications for the work tool used when selecting the oil supply!

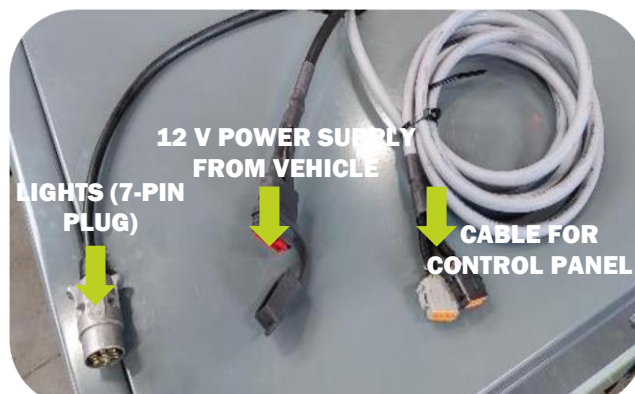
Complete electrical diagram of the Scorpion 490 boom mower with additional specifications can be found under section in this instruction manual: [Electrical diagrams](#)

Power supply and connection of the Scorpion 490 arm mower is via a 12V power supply cable for the vehicle, a 7-pin connector for lights/lamps, and a cable for connection to the boom mower's control panel.

See section: [Connecting the power supply from the boom mower to the vehicle](#)



Components in the electrical control panel (Relays, fuses, controller, terminal blocks)



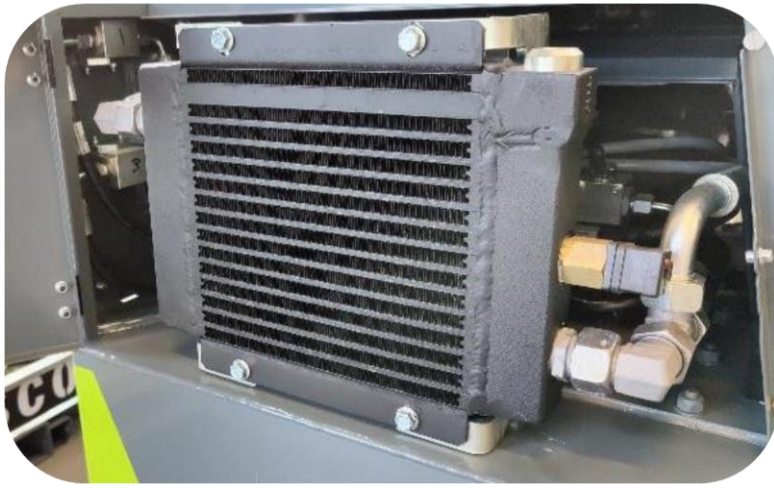
Connecting power to arm mowers – 3 types/different cables

3.1.1.4 OIL COOLER

The oil cooler on the Scorpion 490 boom mower cools the hydraulic oil before it is returned to the tank.

The oil cooler is equipped with a thermostatic sensor that turns 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 maximum working pressure of 15 bar.



Oil cooler on Scorpion 490 arm mower

NOTICE

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

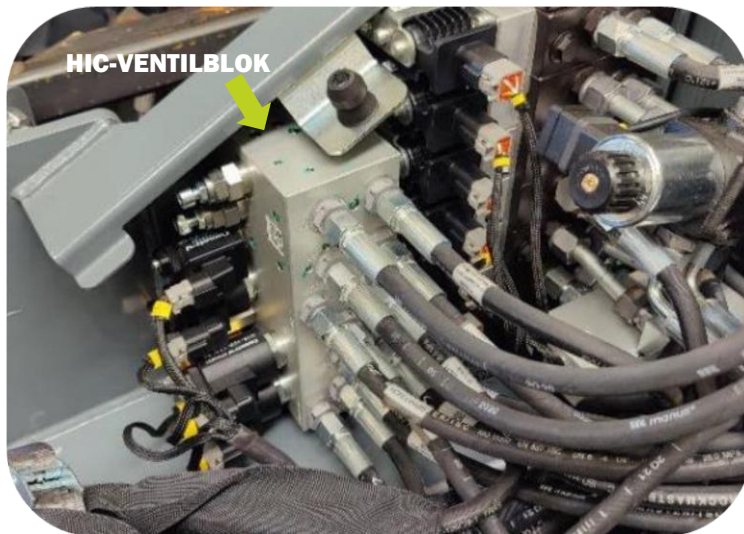
CAUTION

If the oil temperature continues to rise to 90 °C, a warning light will illuminate and a constant alarm (beep) will sound from the arm mower control panel. See section: [Logitec Safe control panel](#)

3.1.1.5 HIC VALVE BLOCK (HYDRAULIC INTERNAL CIRCUIT)

The HIC valve block on the Scorpion 490 boom mower is a smaller secondary valve block that controls the “dual function” of the hybrid boom system, the double-acting collision protection and the float position function on the boom mower.

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



HIC valve block on Scorpion 490 boom mower

See section: [Hybrid arm system w/ dual function and hydraulic collision protection \(ahs\)](#)

NOTICE

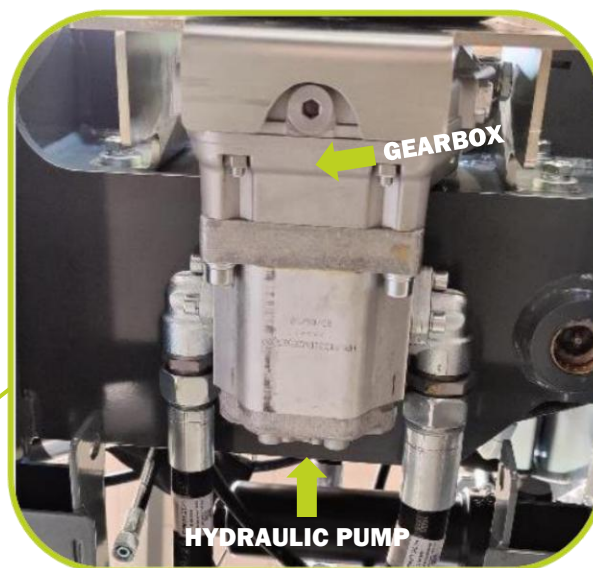
The pressure relief valves on the HIC block can be adjusted if a softer/firmer response of the “Break-back” function / collision protection is desired.

Contact your GreenTec dealer for more information.

3.1.2 GEARBOX, PTO SHAFT & HYDRAULIC PUMP (STANDARD AND PLUS-MODELS)

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

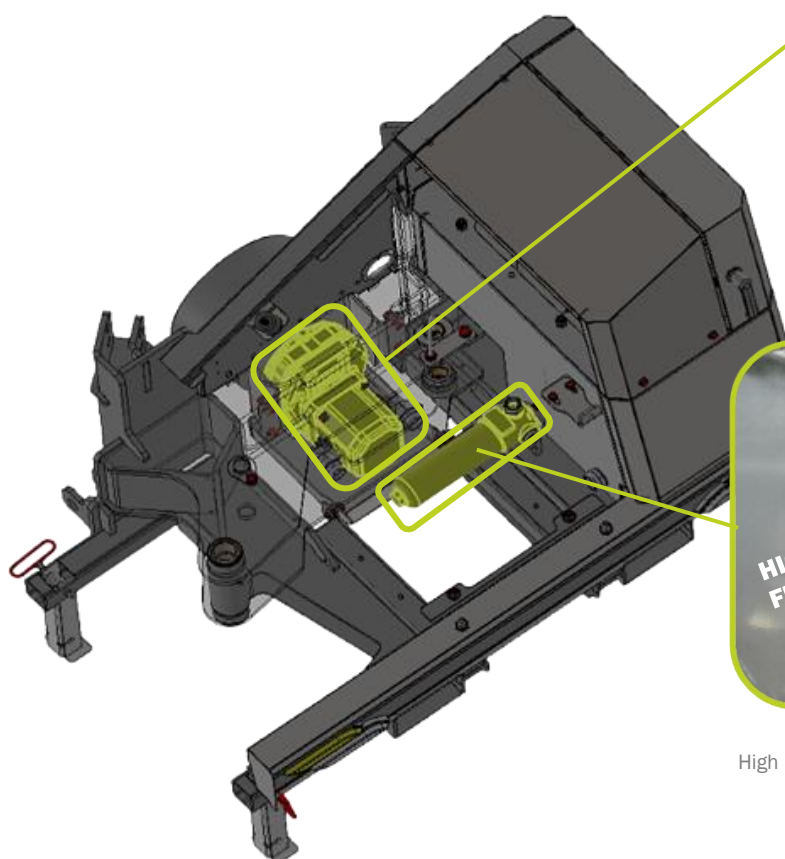
The hydraulic system and oil flow on the Scorpion 490 boom mower is driven by a powerful gearbox including the included PTO shaft that drives the hydraulic pump, through a high-pressure filter, after which the oil is distributed via the machine's valve blocks that control the arm's cylinders and other hydraulic functions.



Hydraulic pump and gearbox
(View from the bottom of the Scorpion 490 boom mower)



High pressure filter on Scorpion 490 boom mower



Location of gearbox, hydraulic pump and high-pressure filter on Scorpion 490 boom mower

NOTICE

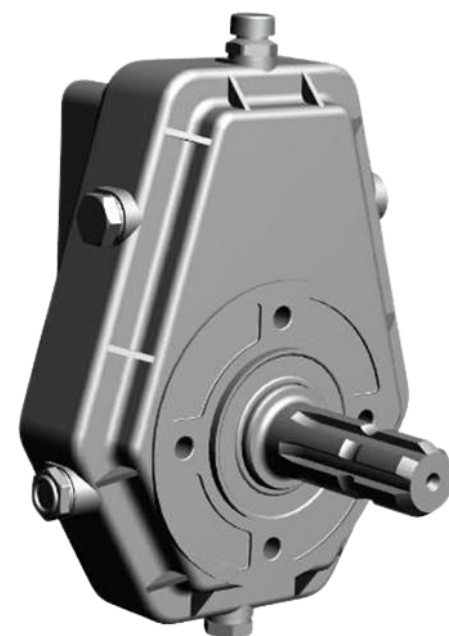
See [Specifications](#), to see what pressure, oil volume and flow the Scorpion 490 boom mower is rated for based on which work tool is used on the machine.

For an overview of the entire hydraulic system, see section: [Hydraulic diagrams](#)

3.1.2.1 GEARBOX

The gearbox on the Scorpion 490 boom mower has the following specifications:

Designation:	ML52-1-1/2,0 ell. ML52-1-1/3,4
Gear ratio:	Front mounted PTO: 1: 2,0 Input: Min. 600 RPM / Max. 1000 RPM  Output: Min. 1200 RPM / Max. 2000 RPM
	Rear mounted PTO: 1 : 3,4 Input: Min. 350 / Max. 600 RPM  Output: Min. 1190 RPM / Max. 1836 RPM
Axle type:	1" 3/8 Z6
RPM (PTO):	Scorpion 490 boom mower (front mounted) min. 600 – max. 1000 RPM Scorpion 490 boom mower (rear mounted) min. 350 – max. 600 RPM
Volume (liters):	approx. 0.40 liter
Recommended gearbox oil:	See section: Changing the gearbox oil



Gearbox: Scorpion 3-430 boom mower

Table 7 – Datasheet: Gearbox

Information regarding the speed of the gearbox on the table above must always be observed and remain within the specified values:

⚠ WARNING

Front mounted Scorpion 490 boom mower(min/max): **600 – 1000 RPM**

Rear mounted Scorpion 490 boom mower (min/max): **350 – 540 RPM**

See section: [Warning labels](#)

3.1.2.2 PTO-SHAFT

Scorpion 490 arm mowers (Standard and Plus models) come with a Binacchi PTO shaft:



Binacchi PTO-shaft for Scorpion 490 boom mower

Designation:	PTO-shaft B4	
Dimensions:	PTO shaft in B series (triangular tube profile), in size 4 with standard alloy (N).	
Length:	1010 mm	
CE:	Type of protection/shielding: (CE marked, approved for use in EEC-EFTA countries)	
Coupling:	1" 3/8 Z6 coupling w. ratchet/click lock (connects to arm mower) 1" 3/8 Z6 coupling w. ratchet/click lock (connects to vehicle)	

Table 8 – Datasheet: PTO-shaft



For adjustment, installation and maintenance of the PTO shaft, always follow the manufacturer's instructions: <https://www.binacchi.it/> (Instruction material is also always included with the individual PTO shaft delivered with the machine)

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

See section: [Mounting and connecting the machine](#)

3.1.2.3 HYDRAULIC PUMP

The hydraulic pump on the Scorpion 490 boom mower is a gear pump, with a max. output of 73 l/min @ 280 bar.

The 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.



36 ccm hydraulic gearpump
for Scorpion 490-boom mower

Designation:	Gearpumpe 36
Volume (ccm):	36 ccm
Max. pressure: (Continuous)	280 bar @ 73 l/min.
Axle type:	Tapered: 1:8
Direction of rotation:	Depends on front or rear mounted machine.
Recommended hydraulic oil:	Renolin B 46 HVI Bulk

Table 9 – Datasheet: Gearpump

NOTICE

See section: [Specifications](#), for more information about pressure and oil flow on the various attachment tools.

3.1.2.4 HIGH PRESSURE FILTER

The high-pressure filter on the Scorpion 490 arm 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.

Designation:	High pressure filter (80 L/min 3/4")
Filter element:	Microfiber: 20 bar 10µm (micron)
Bypass-valve:	6 bar ± 10%

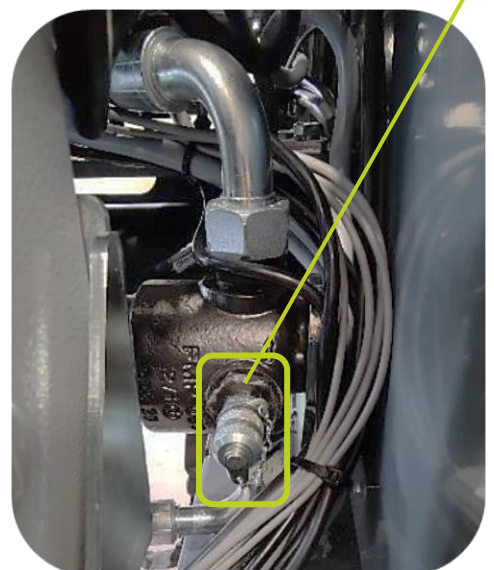
Table 10 – Datasheet: High pressure filter

NOTICE

A measuring port for a pressure gauge is fitted to the high-pressure filter, allowing diagnostics to be carried out on the machine in the event of fault conditions.

See section: [Checking the pressure specifications](#)

See section: [Filter kit incl. seals + Replacing filter elements](#) for information regarding inspection and maintenance of the filters.



Measuring port on the high-pressure filter

3.1.3 HYDRAULIC CONNECTION DIRECT TO VEHICLE (BASIC-MODELS)

The Scorpion 490 Basic Front boom mower is connected using the hydraulic system from the vehicle on which the boom mower is mounted.

There is neither an oil tank nor a hydraulic pump on the machine, and the machine is instead supplied with oil flow and pressure from the vehicle.

A total of 3 connections must be connected from the boom mower to the vehicle, with either quick-release couplings or standard hydraulic fittings: **PRESSURE**, **RETURN** and **DRAIN**.



Hydraulic connections between Scorpion 3-430 Basic-model og køretøj



Hydraulic hoses (pressure, return and drain) on the Scorpion 490 front boom mower

TILSLUTNING TIL KØRETØJ:

DK : TRYK
UK: PRESSURE
D: DRÜCK

180 – 280 bar
(Depending on attachment tool)

DK : RETUR
UK: RETURN
D: RÜCKLAUF

Max. 8 bar
(See specifications!!)

DK : DRÆN
UK: DRAIN
D: LECK

Max. 2 bar
(See specifications!!)

NOTICE

See section: [Specifications](#) + [Mounting and connecting the machine](#), for more information regarding hydraulic connection of the Scorpion 490 Basic.

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

The arm system on the Scorpion 490 boom mower is, like the rest of the machine, constructed of Strenx high-strength steel. The arm construction consists of a strong lower part for lifting and rotating the arm, and an upper part consisting of a 3-part arm system. The entire arm system is driven by a total of 5 hydraulic cylinders.

The hybrid arm system has a dual function that provides several options and advantages on the Scorpion 490 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.

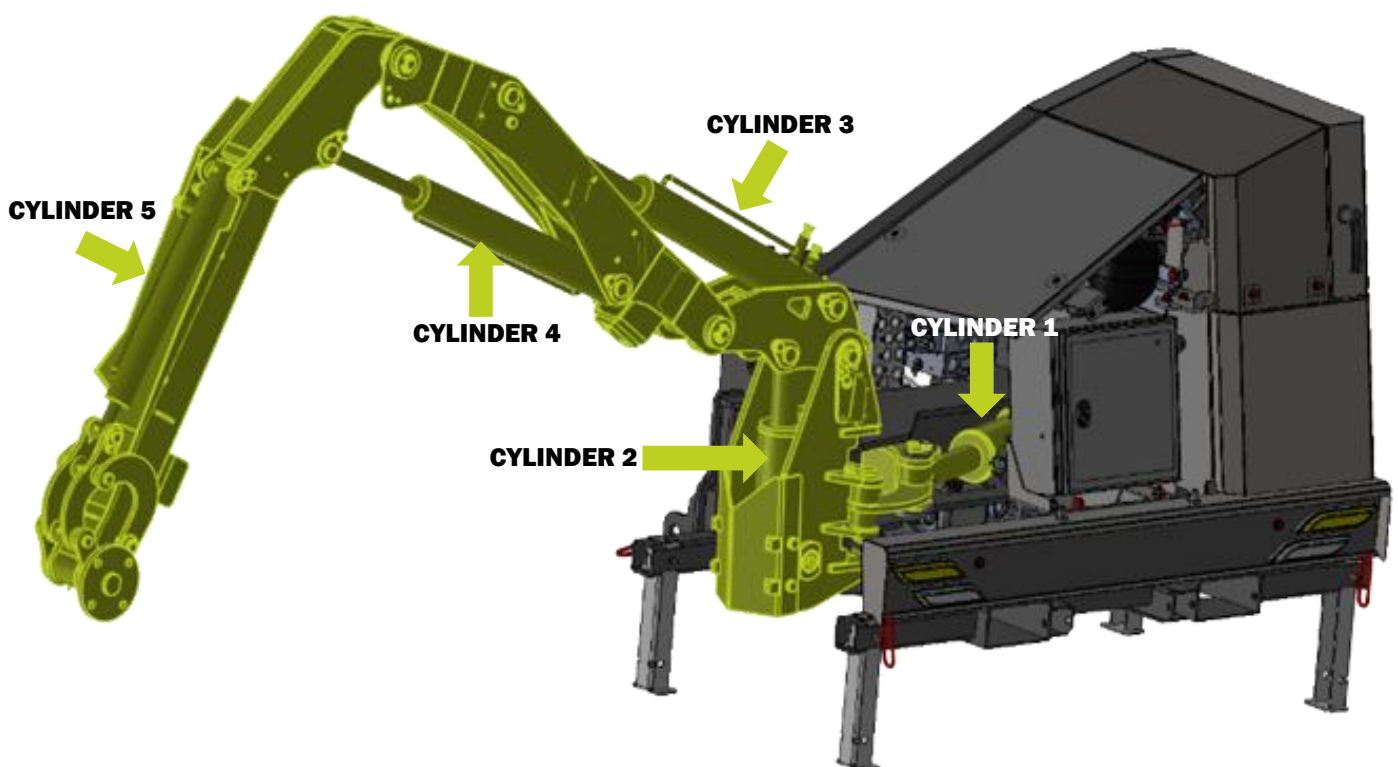
The parallel function is used especially when mowing hedges and fences, where the advantages of the non-parallel function are used in tight conditions (forest roads and the like) - including certain situations when mowing grass and on steep slopes/ditches, road signs, etc.

Another advantage of the hybrid arm's flexibility is that telescopic variants can be avoided, as the two outer 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 significant weight saving on the machine.
- On the control panel, it is selected whether to drive with parallel function or non-parallel function, and the function of the hybrid arm is operated via the joystick.

NOTICE

See section: [Control panel and joystick](#) + [Operating and driving instructions](#) for more information about the functions and use of the arm system.

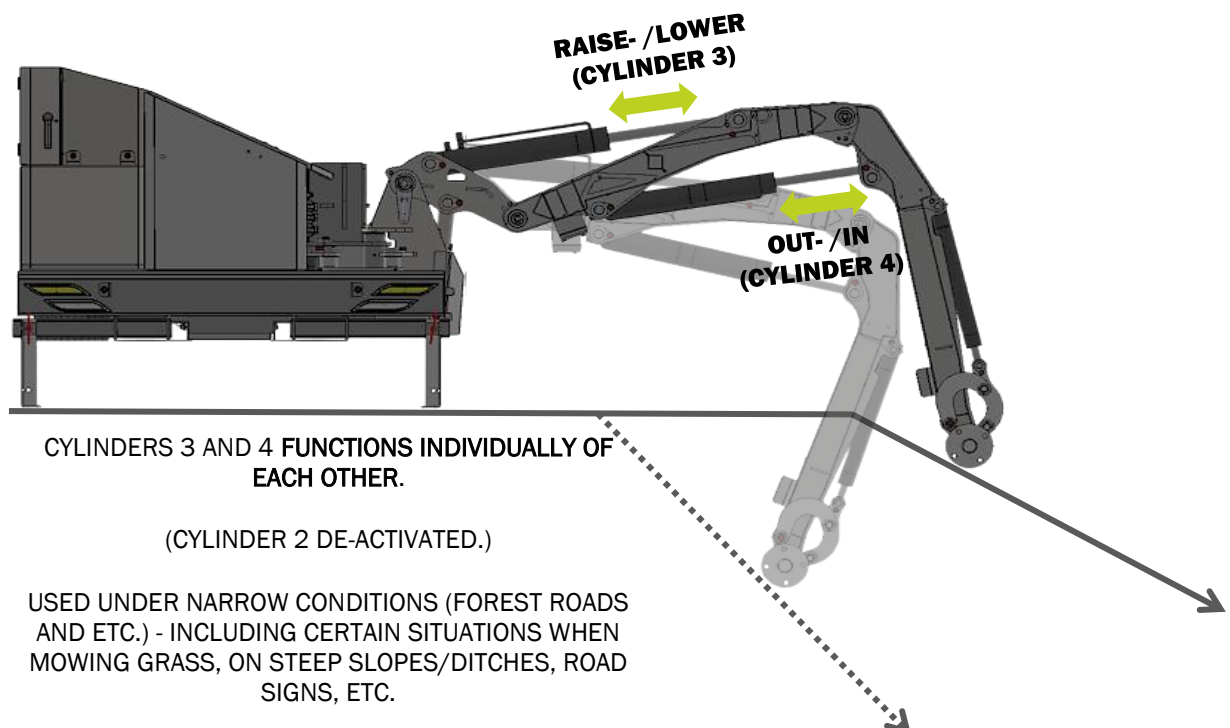
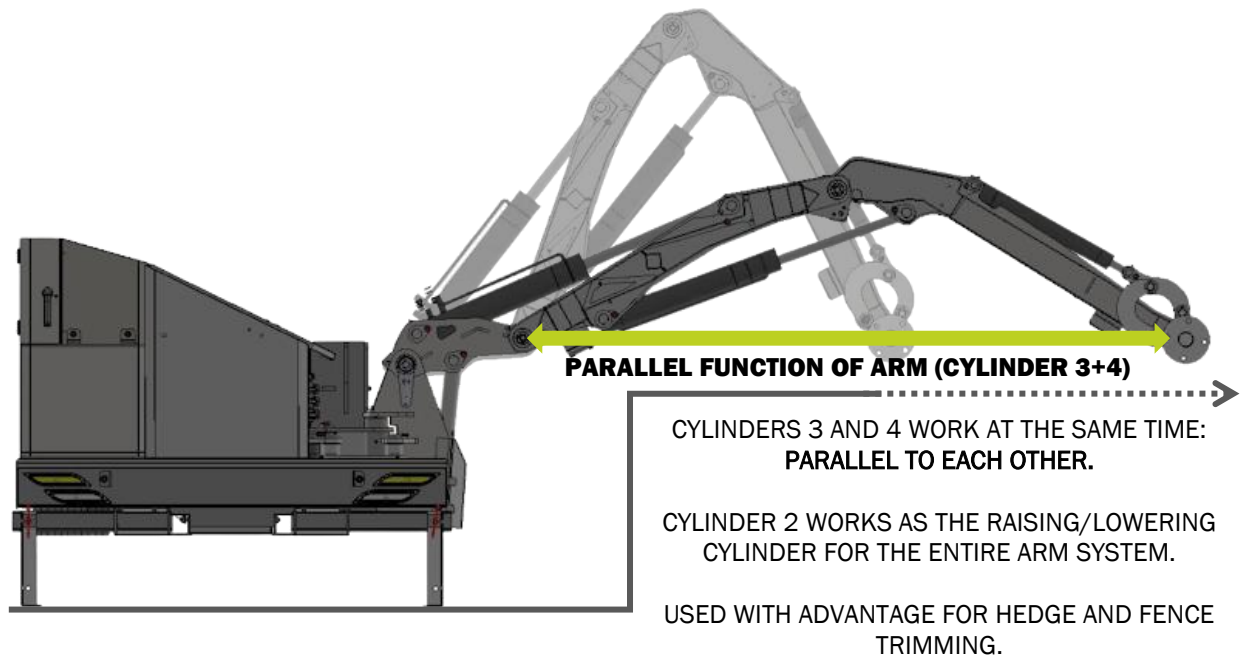


Overview: hydraulic cylinders on the Scorpion 490 boom mower

FUNCTIONS OF HYDRAULIC CYLINDERS

Cylinder 1:	Slewing of boom mower / double-acting collision protection
Cylinder 2:	Raise / lower boom mower.
Cylinder 3 & 4: (Parallel function activated)	Cylinders 3 and 4 operate in parallel and move the attachment tool away from / towards the vehicle in a parallel line.
Cylinder 3:	Cylinder 2 is deactivated and Cylinder 3 now functions as the raise / lower cylinder.
Cylinder 4:	Cylinder 4 alone moves the attachment tool away from / towards the vehicle.
Cylinder 5:	Tilting of attachment tool / vertical positioning

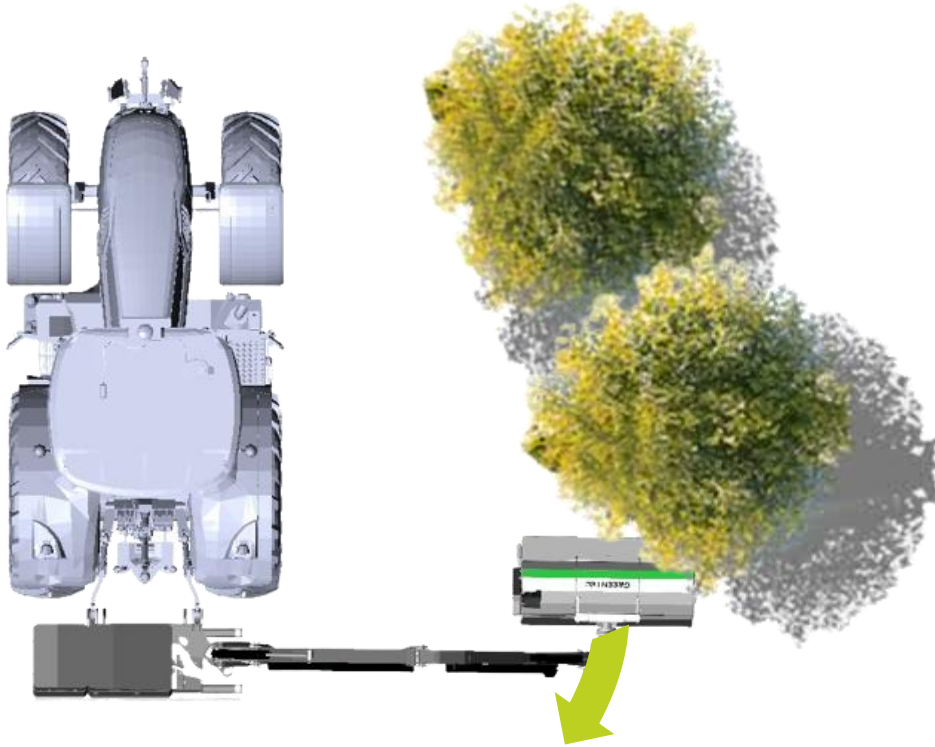
Table 14 – Functions of hydraulic cylinders (cylinders 1–5)



3.1.4.1 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 Scorpion 490 boom mower is therefore active in what corresponds to Cylinder 1's total stroke - in both directions.

See section: [Operating and driving instructions](#)

⚠ CAUTION

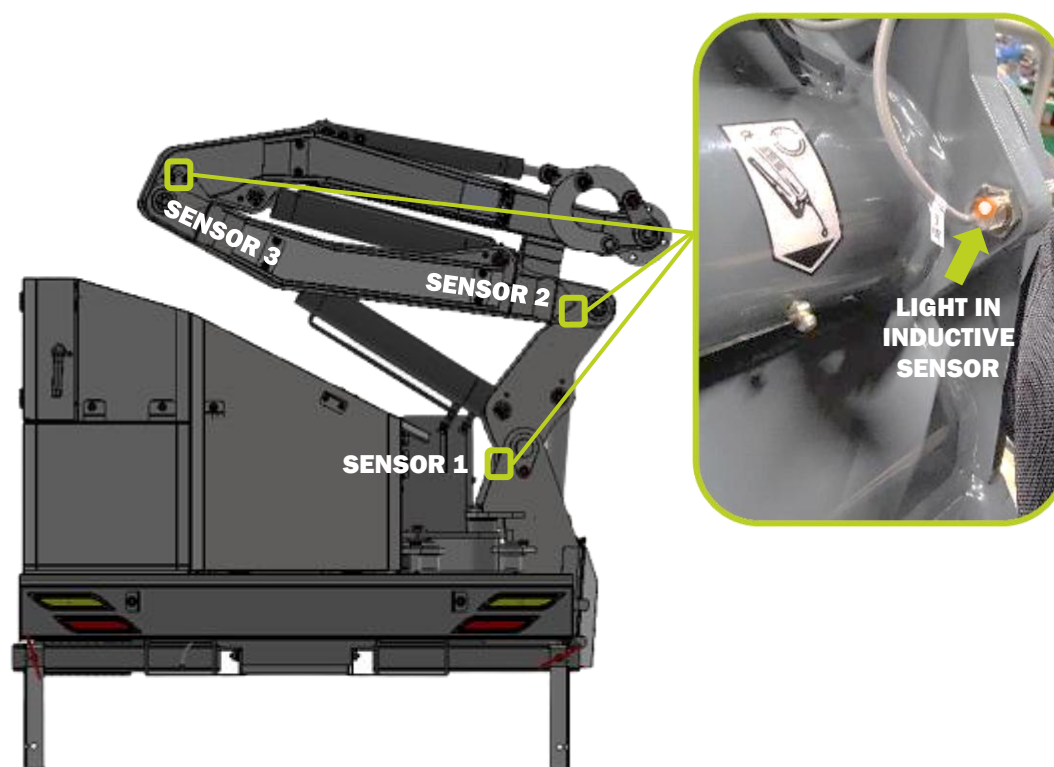
The hydraulic collision protection can be triggered if the attachment tool is overloaded, either because of moving at too high speed in relation to the amount of material being processed, if the attachment tool is pressed too hard against the ground, or when working uphill / on slopes.

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.

3.1.4.2 INDUCTIVE SAFETY SENSORS

On the Scorpion 490 boom mower, 3 inductive safety sensors are installed



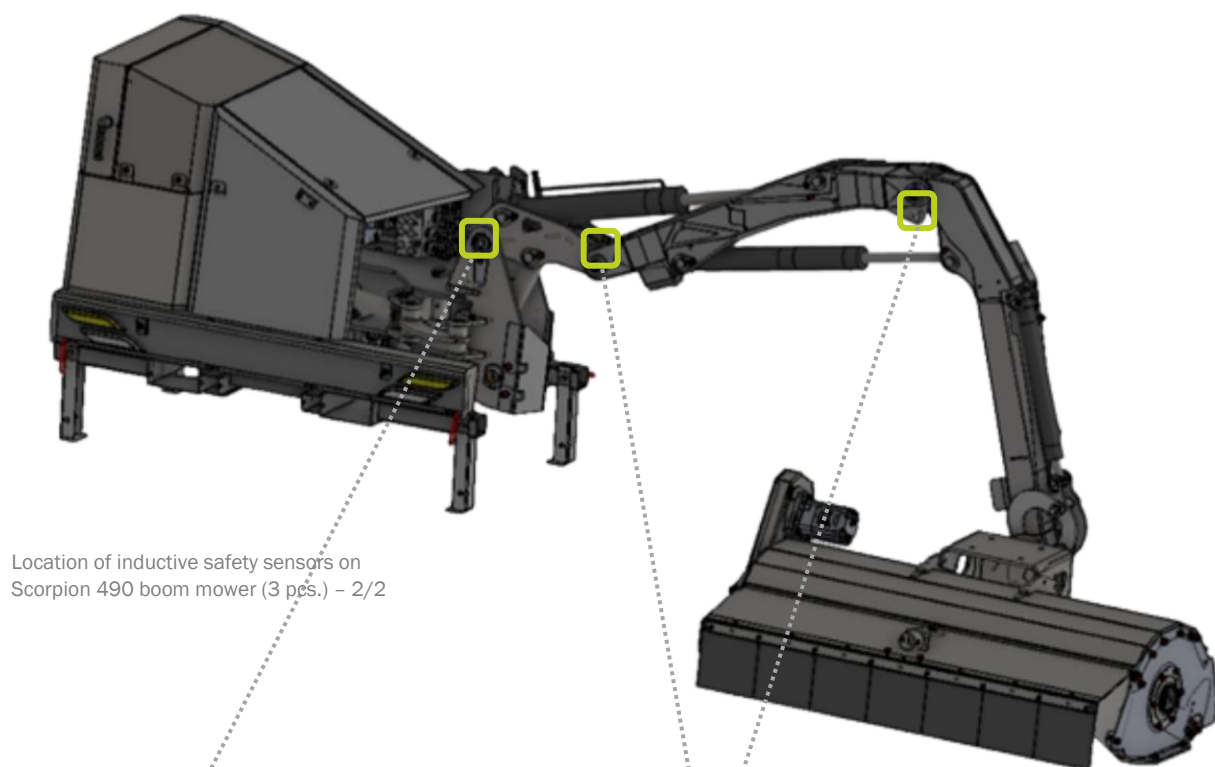
Location of inductive safety sensors on Scorpion 490 boom mower (3 pcs.) – 1/2

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.



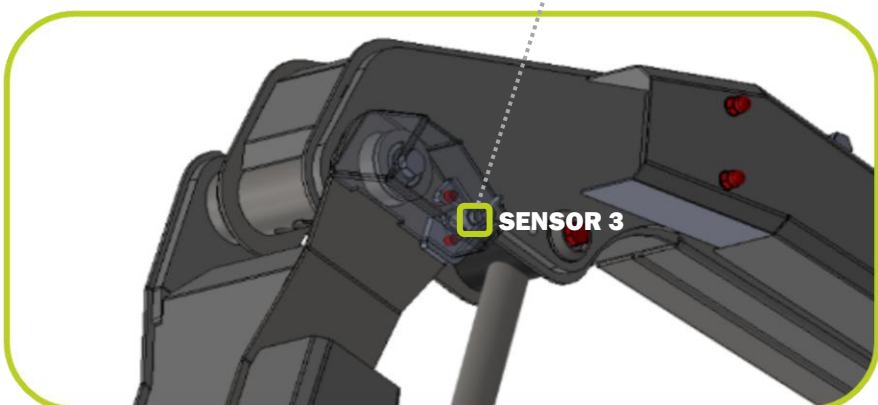
Location of inductive safety sensors on
Scorpion 490 boom mower (3 pcs.) – 2/2



Both sensors 1 and 2 are located on the lifting arm of the Scorpion 490 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 Scorpion 490 boom mower.

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

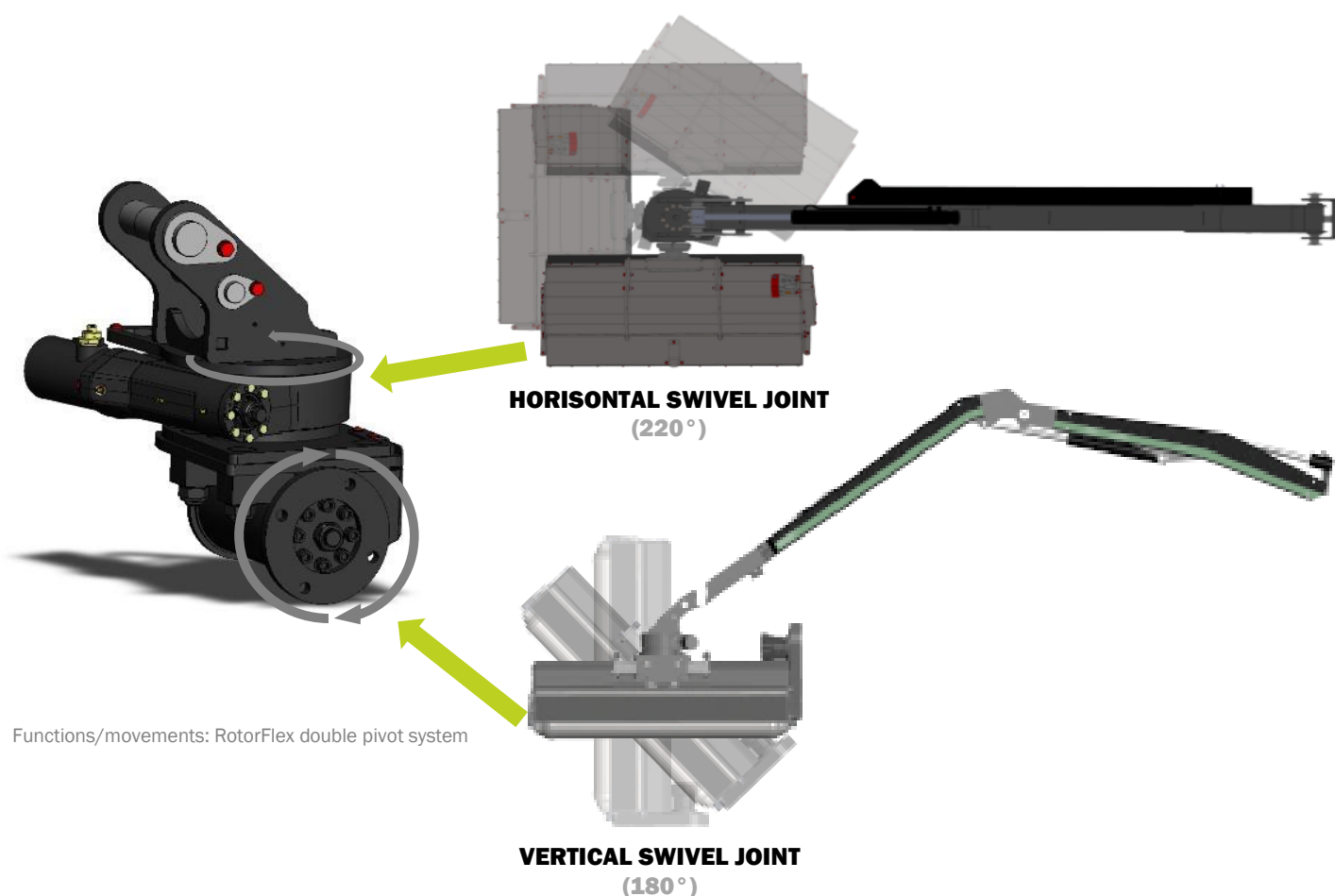
3.1.5 ROTORFLEX DOUBLE PIVOT SYSTEM W/ AUTOFLEX (PLUS-MODELS)

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 \(automatic vertical positioning\)](#)

3.1.6 CONTROL PANEL AND JOYSTICK

The various functions of the Scorpion 490 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 on mounting, connecting and disconnecting](#) + [Operating the machine](#)

NOTICE

Not all buttons on the LogiTec Safe control panel are used for functions on the Scorpion 490 boom mower.

The following 2 buttons are therefore not active:

- AUX 1 + AUX 2:



LogiTec Safe control panel on the Scorpion 490 boom mower



Joystick on the Scorpion 490 boom mower

3.1.6.1 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

Check the emergency stop, if the LED doesn't light up, when pressing on.

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 $+65^{\circ}\text{C}$, 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](#)

PRESSURE WARNING

The "Pres." LED lights up and gives an alarm if there is too much pressure on the machine. (Max. 260 bar)

NOTICE

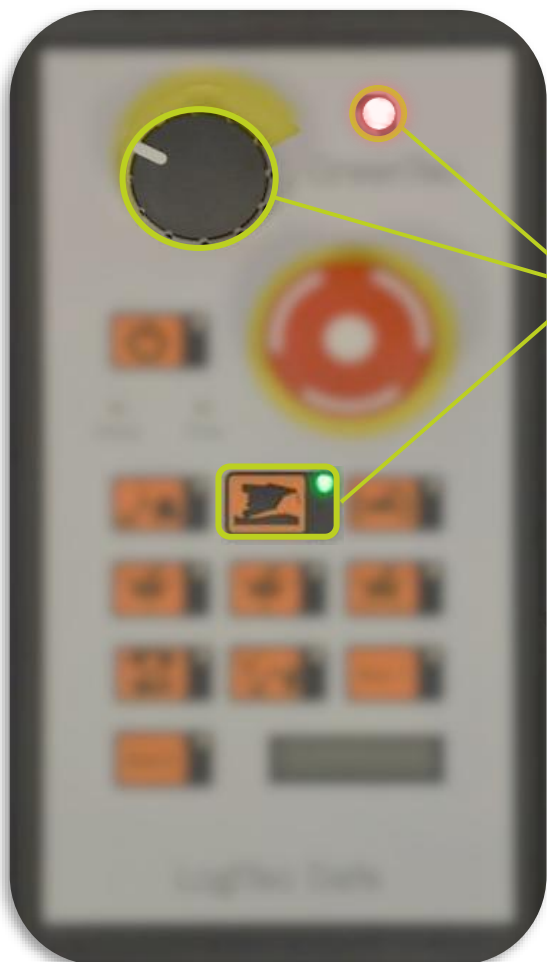
Single short alarms indicate that the machine is running at maximum capacity. Persistent alarms, on the other hand, indicate that the machine is overloaded. Drive slower!

⚠ 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](#)

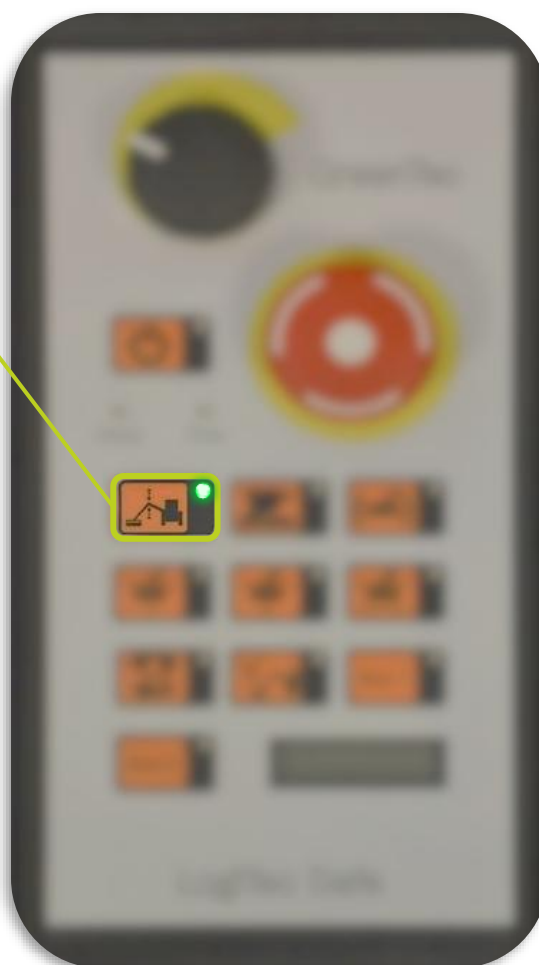
HYDRAULIC FLOAT (ARM)

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](#)





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](#)

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: [Transporting boom mower w/ attachment tool on vehicle](#)





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 50 l/min. oil supply, the hydraulic system is delivering 50 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.

See section:

[Specifications](#) + [Start / stop of attachment tool](#)





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:

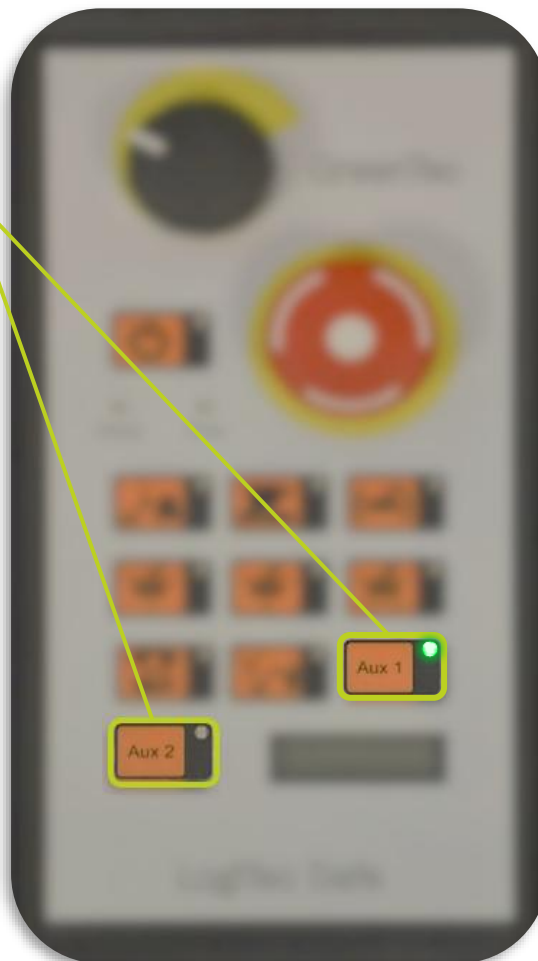
[Operating and driving instructions](#)

AUX 1 + AUX 2:

AUX 1 locks cylinder 2 and attachment tool tilt, ensuring a stable position, for example when hedge trimming. Float function will be deactivated, as long as AUX 1 is on.

NOTICE

The AUX 2 button has no current function on the Scorpion 490 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

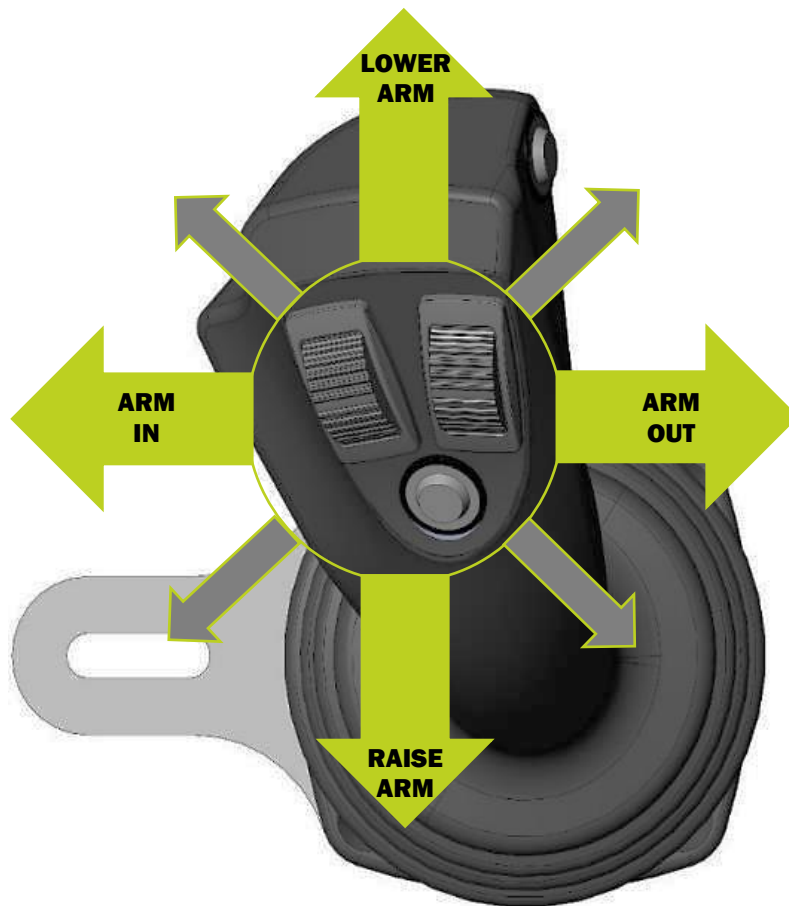
See Section: [Operating the machine](#) for more information about the control panel and the functions.

4.2.10.2 DANFOSS JOYSTICK

The movements and functions of the Scorpion 490 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](#) - 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](#) ("Break-Back"-function) when operating the boom mower. See section: [Operating and driving instructions](#)

TURN ROTORFLEX

These two buttons on the joystick are used to move the horizontal RotorFlex pivot in either direction on Scorpion 490 Plus boom mowers.

(These buttons are inactive on Standard-models)

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.

5.1 APPROVED ATTACHMENT TOOLS AND OPTIONAL EQUIPMENT

⚠ 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 Scorpion 490 boom mower is intended for assembly with the following approved GreenTec attachment tools and possible optional equipment:

Description:	APPROVED ATTACHMENT TOOLS AND EQUIPMENT:	
	Scorpion 490 (All models)	
Flail Mower FR 92		●
Flail Mower FR 112		●
Quadsaw LRS 1602		●
Rotary Hedge Cutter RC 132		●
Cutterbar HL 152		●
Cutterbar HL 182		●
Cutterbar HL 212		●
Cutterbar HL 242		●
Cutterbar HS 172		●
Grass Cutterbar S 165		●
Grass Cutterbar S 190		●
Optional equipment:		
4-point linkage system (category 1, 2)		●
Loader brackets/special adapters		●
Hydraulic quick-release couplings		●
Mechanical quick-coupling		●
Counterweights (120 kg)		●
Bio hydraulic oil		●
Oil filter kit incl. seals		●

Table 11 – Approved attachment tools and optional equipment

5.2 OPTIONAL EQUIPMENT

5.2.1 4-POINT MOUNTING (CATEGORY 1 & 2)

5.2.1.1 4-POINT LINKAGE SYSTEM (ONLY STANDARD & PLUS-MODELS)



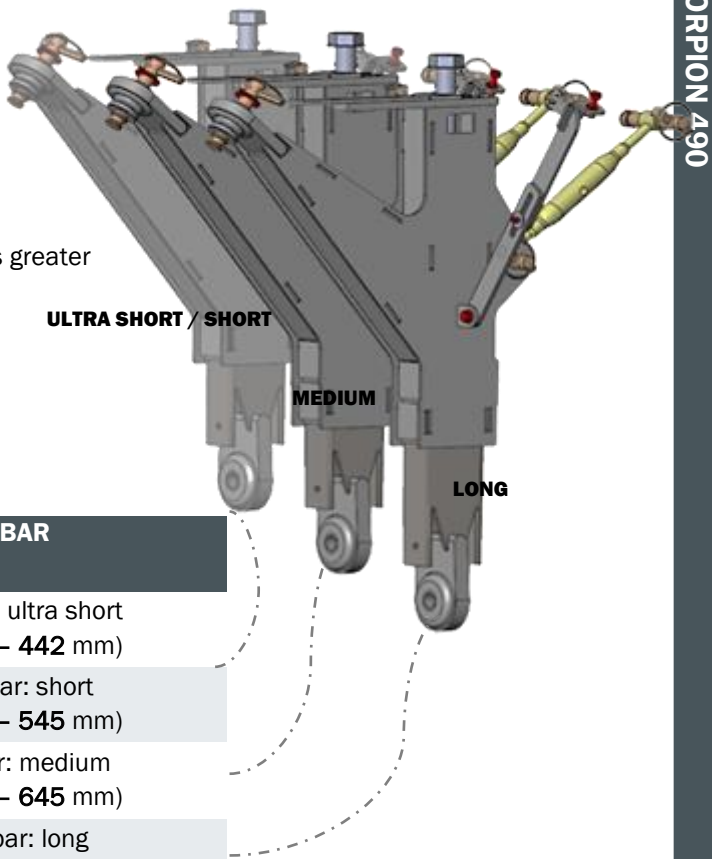
4-point mounting using 4-point linkage system with top bar attachment

All PTO-driven versions of the Scorpion 490 arm mowers come with GreenTec's patented 4-point mounting system.

Instead of the traditional 3-point mounting, all Scorpion 490 models have 4 mounting points on the main frame.

The two lower points are usually mounted in the tractor's lower links, while the two upper points are connected via a specially developed linkage system w/ a top bar in an adapted length to the tractor's top bar attachment point.

The solution is incredibly easy to install and provides greater stability between the machine and tractor.



4-POINT LINKAGE SYSTEM W/ TOP BAR	
Description	
OPTE1133.3	Linkage w/ top bar: ultra short (A-dimension: 350 – 442 mm)
OPTE1133	Linkage w/ top bar: short (A-dimension: 425 – 545 mm)
OPTE1133.1	Linkage w/ top bar: medium (A-dimension: 525 – 645 mm)
OPTE1133.2	Linkage w/ top bar: long (A-dimension: 540 – 740 mm)

Table 12 – Types of 4-point linkages w/ topbar

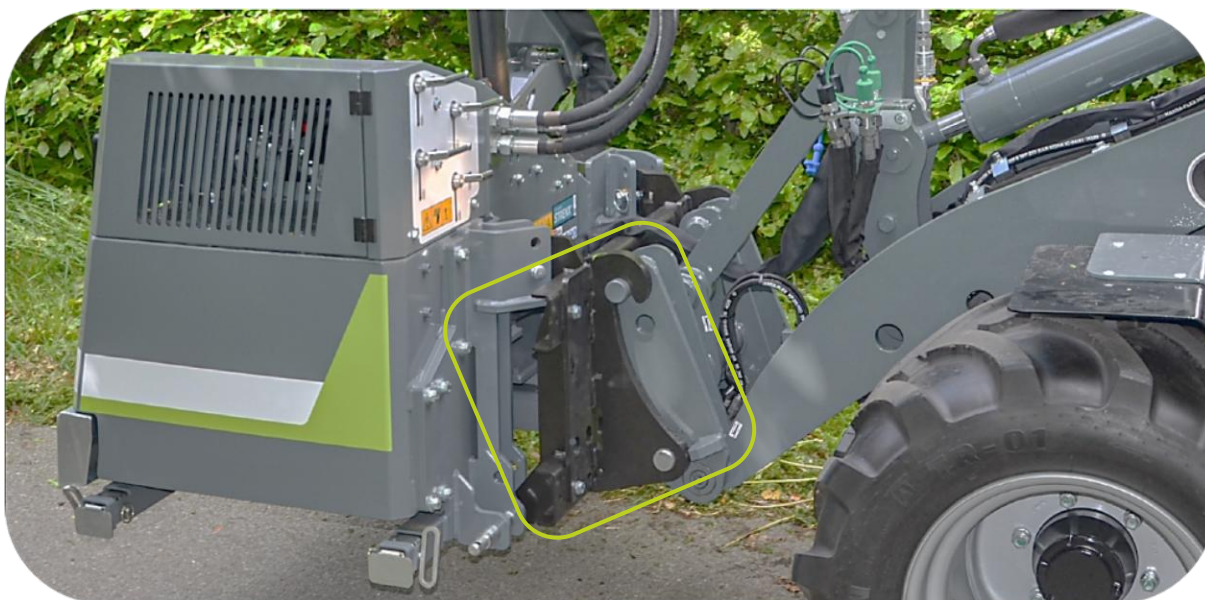
NOTICE

When mounting with a 4-point linkage system, the correct dimensioning ("A-dimension") must be carried out before delivery, due to the 4-point linkage system with which the machine is delivered. An [order form](#) for the 4-point linkage system must be completed before purchase!

When taking delivery of a new Scorpion 490 boom mower, the 4-point linkage system 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](#)

5.2.1.2 4-POINT MOUNTING WITH LOADER BRACKET (ONLY BASIC-MODELS)

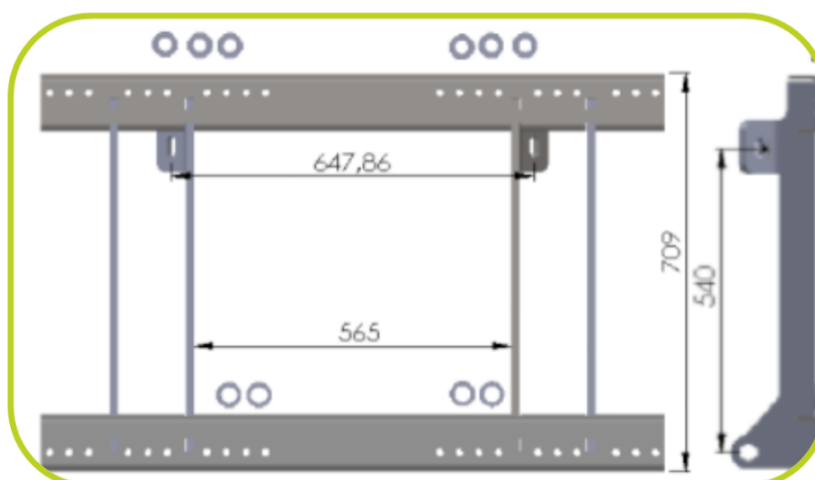


4-point mounting with loader bracket: Scorpion Boom mower

For the Basic versions of Scorpion 490 boom mowers powered by the oil supply from the vehicle, a large selection of loader brackets / special adapters has been developed for mounting with model specific dimensions.

The loader brackets are used for mounting on front loaders/mini loaders, and there are many different brackets adapted to different types of the most popular vehicles / manufacturers:

When installing the loader bracket, a mounting frame is included for the Scorpion 490 boom mower for easy and safe mounting between machine, bracket, and vehicle:



Mountingframe for loader brackets/special adapters

NOTICE

Before assembly and delivery, the correct dimensioning must be carried out, in consideration of the loader bracket with which the machine is delivered.

An [order form](#) for the loader bracket / special adapter must be completed before purchase!

When taking delivery of a new Scorpion 490 boom mower, the loader bracket incl. accessories must first be adapted to the vehicle where the machine is to be installed.

See section: [Montage og tilkobling af maskinen](#)

5.2.2 HYDRAULIC QUICK-RELEASE COUPLINGS

All Scorpion 3-430 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 Scorpion 490 boom mower

HYDRAULIC QUICK-RELEASE COUPLINGS : SCORPION 490	
Quick release (female):	T-outlet (Tank/return): Flatface 1/2" – 22 L
Quick release (female):	D-outlet (Drain): Flatface 1/4" – 10 L
Quick release (male):	P-outlet (Pressure): Flatface 3/8" – 15 L

Table 13 – Types of "Flat-face" quick-release couplings on the machine

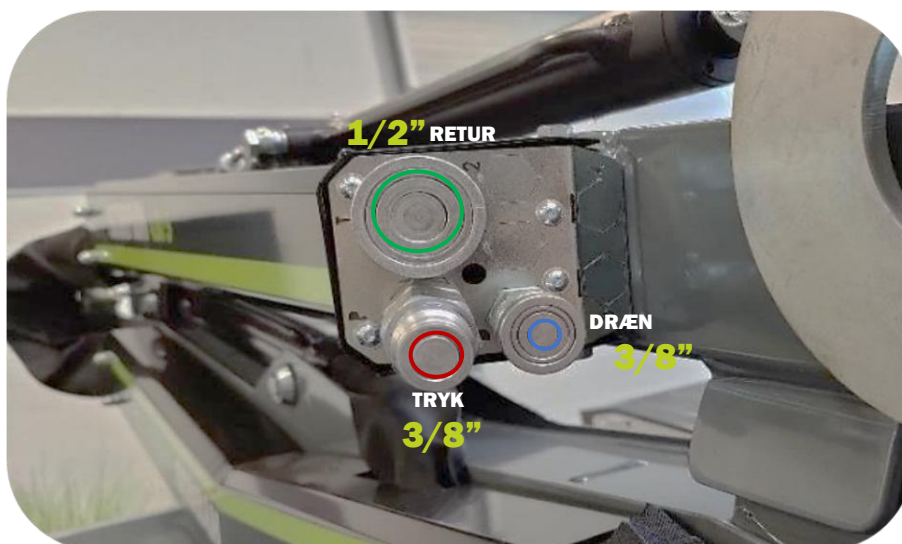
GreenTec always recommends that hydraulic hoses are fitted with "Flat-face" quick-release couplings when mounting/un-mounting attachment tools, as this ensures easy maintenance and cleaning, and that the hoses do not have to be screwed together using traditional hydraulic fittings.

NOTICE

When connecting with hydraulic quick-release couplings on the Scorpion 490 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: [Montage og tilkobling af maskinen \(i\)](#)



Tilslutninger for lynkoblinger yderst på armklipperen

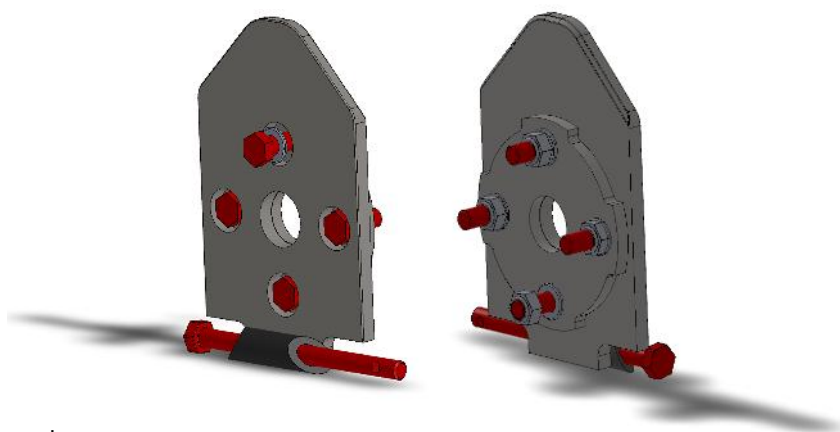
5.2.3 MECHANICAL QUICK COUPLING

All Scorpion 490 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.

In combination with the hydraulic quick-release couplings, the mechanical quick coupling ensures an overall easy removal and attachment of attachment tools on the Scorpion 490 boom mower, without the use of any tools.



Mechanical quick coupling for Scorpion 490 ("male"-part)

NOTICE

When using the mechanical quick coupling on the Scorpion 490 boom mower, an adapter is also required on the attachment tool itself.

Examine the optional equipment for the selected attachment tool!

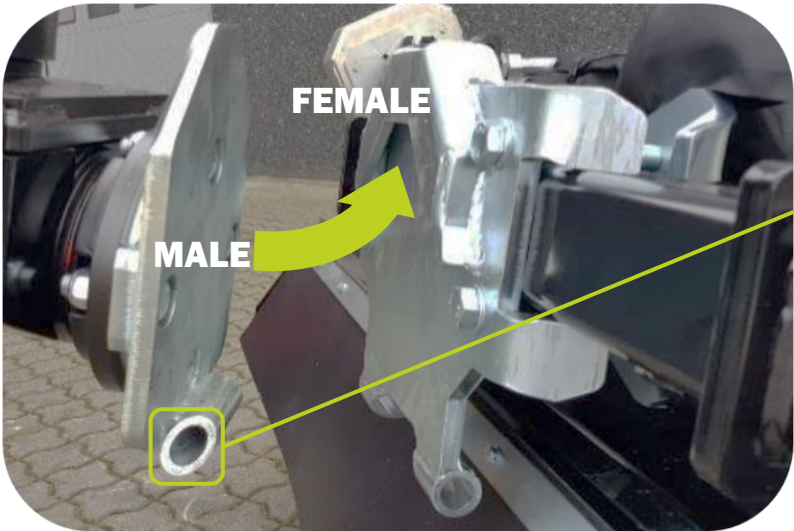
See section: [Mounting and connecting the machine](#)

When choosing mechanical quick coupling as optional equipment, it is always fitted to the Scorpion 3-430 boom mower on delivery

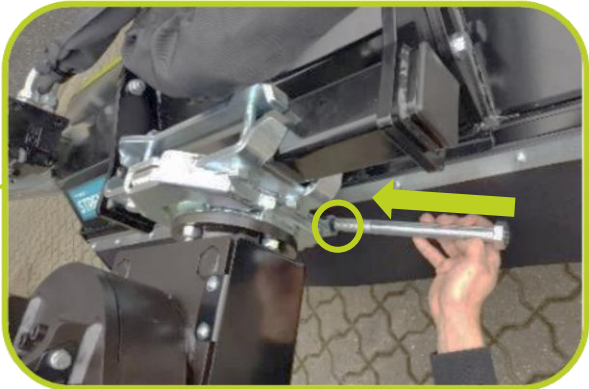


Mechanical quick coupling for attachment tools on a Scorpion Standard

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 Scorpion 490 Plus boom mower with RotorFlex + "female" adapter mounted on the attachment tool



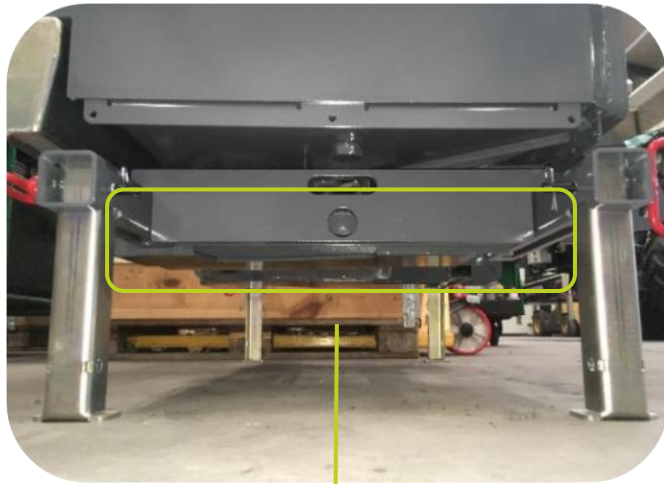
The mechanical quick coupling is always locked with the supplied bolt, locking nut and lynch pin

5.2.4 COUNTERWEIGHTS (120 KG)

All Scorpion 490 boom mowers are available with counterweights for increased stabilization of the machine and vehicle.

A total of 11 painted steel plates provides an additional counterweight of up to approx. 120 kg.

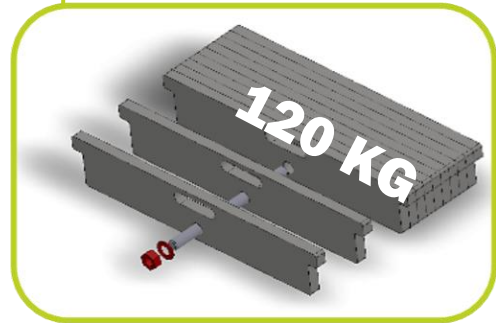
The counterweights are located under the oil tank opposite the lift arm on the boom mower, where these are suspended to the chassis frame with a through bolt for tightening.



⚠ WARNING

The stability must always be in check of the Scorpion 490 boom mower incl. the carrying vehicle!

See section: [Stability](#)



Counterweights and their location on the Scorpion 490 boom mower

5.2.5 BIO HYDRAULIC OIL

Biodegradable hydraulic oil can be selected as an optional extra when purchasing a new Scorpion 3-430 boom mower.

GreenTec uses 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



BIO OIL

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.

5.2.6 FILTER KIT INCL. SEALS

The following filter inserts are available for replacement on the Scorpion 490 boom mower.

HYDRAULIC FILTERS: SCORPION 490	
Scorpion 490 Plus:	Return oil-filter and high-pressure filter + breather cap (oil tank)
Scorpion 490 Basic:	High pressure filter incl. seals

Tabel 14 – Filterindsatser (hydraulik)

GreenTec offers a complete filter set incl. seals for service and maintenance of the Scorpion 490 boom mower.

For more information on inspection, maintenance and replacement of filter elements see section: [Change of filter elements](#)



Filterkits and seals (PKG300 / PKG300B)

5.3 SPECIFICATIONS

SPEC. SHEET: SCORPION 490 SERIES		
	Scorpion 490 (Basic & S & Plus)	
Width:		1.75 m
Depth:		0,85 m
Reach:		4.3 m
	(See section: Positions and reach of boom mower)	
Weight (kg):		Basic: 520 kg Plus: 608 kg
Min. weight of vehicle:		Scorpion 490 Basic Plus: 3.000 kg
		Scorpion 490 Plus: 3500 kg
	See section: Stability	
A-weighted sound power level (>80dB):	Not above >82 dB	
Oil amount for attachment tools (Adjustable):	40 l/min. or 50 l/min. @ 230 - 270 bar (See approved GreenTec attachment tools below)	
	Flail mower FR 112	1 x DW 40 l/min @ 210 bar + trykløs retur (drain)
	Quadsaw LRS 1602	1 x DW 40 l/min @ 190 bar + trykløs retur (drain)
	Rotary Hedge Cutter RC 132	1 x DW 40 l/min @ 190 bar + trykløs retur (drain)
	Cutterbar HL 152	1 x DW 40 l/min @ 190 bar + trykløs retur (drain)
	Cutterbar HL 182	1 x DW 40 l/min @ 190 bar + trykløs retur (drain)
	Cutterbar HL 212	
	Cutterbar HL 242	
	Cutterbar HS 172	1 x DW 40 l/min @ 210 bar + trykløs retur (drain)
	Grass Cutterbar S 165	1 x DW 40 l/min @ 180 bar + trykløs retur (drain)
	Grass Cutterbar S 190	
Recommended hydraulic oil:	Olietank: 100 liter (Only Standard and Plus-models)	
Recommended oil filtering:	10 Micron-oil filter (Bypass)	
Hydraulic valve (main):	Danfoss PVG 16/32 - proportional valve system	
Hydraulic pump: (ONLY STANDARD AND PLUS-MODELS)	30,5 ccm hydraulic gear pump Performance: 73 l/min @ 280 bar	
Gearbox: (ONLY STANDARD AND PLUS-MODELS)	ML-52 1: 2.0 (600 – 1000 RPM, PTO front mounted) ML-52 1: 3.4 (340 - 540 RPM, PTO rear mounted)	
Recommended gear-oil (ONLY STANDARD AND PLUS-MODELS)	Volume: 0.40 liter	

(continued) →

Hydraulic connections (ONLY BASIC-MODELS)	DK : TRYK UK: PRESSURE D: DRÜCK	230 - 270 bar (Applies to Scorpion 490 Basic models with direct hydraulic connection to vehicle)
	Recommended pressure:	
	DK : RETUR UK: RETURN D: RÜCKLAUF	Max. 8 bar (Applies to Scorpion 490 Basic models with direct hydraulic connection to vehicle) (Always check the instruction manual for the attachment tool in use!)
Lubrication:	DK : DRÆN UK: DRAIN D: LECK	Max. 0 – 2 bar (Applies to Scorpion 3-430 Basic models with direct hydraulic connection to vehicle) (Always check the instruction manual for the attachment tool in use!)
	Max. allowed drain pressure:	
	Working season:	All year. Legislation in individual countries may limit the season.
Materials:	Quantity / interval:	See section: Lubrication of boom mower
	Type:	Texaco Multifak EP 2 lithium-grease or equivalent (Safety data sheet)
		Hydraulic hoses: Steel reinforced, rubber coated Hydraulic valves: Cast iron and aluminum
Power supply / battery		Paint (color code): Grey (Gloss 70-80) = RAL 7011 (Iron Grey) 
		Black (Gloss 70-80) = RAL 9005 (Graphite Black) 
		12-volt DC (40A fuse between vehicle battery and machine)
Lights:		LED light beam: 7-pin trailer connector
Data transfer:		Can-bus system

Table 19 – Machine specification data sheet

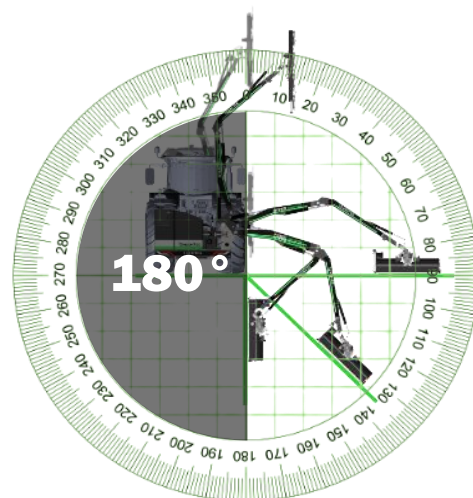
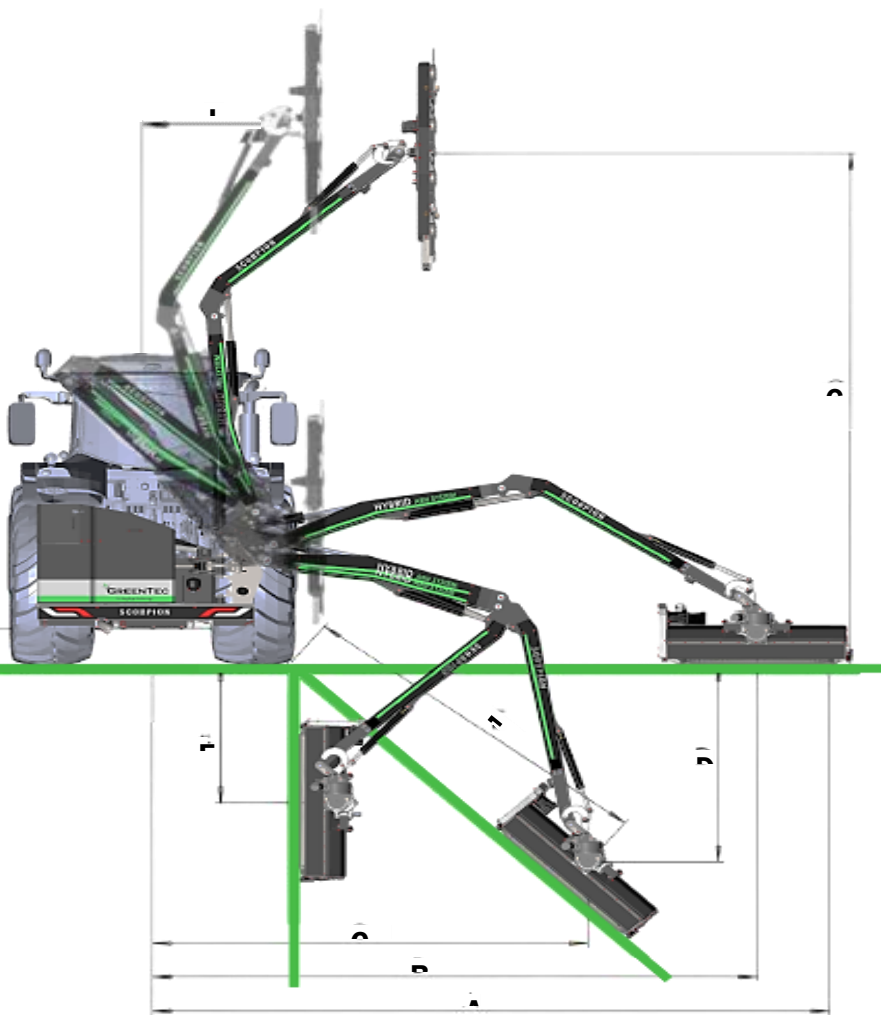
5.3.1 POSITIONS AND REACH OF BOOM BOWER

NOTICE

Please note that some of the positions below on the Scorpion 490 boom mower can only be used on Plus models with [RotorFlex double pivot system w/ AutoFlex](#).

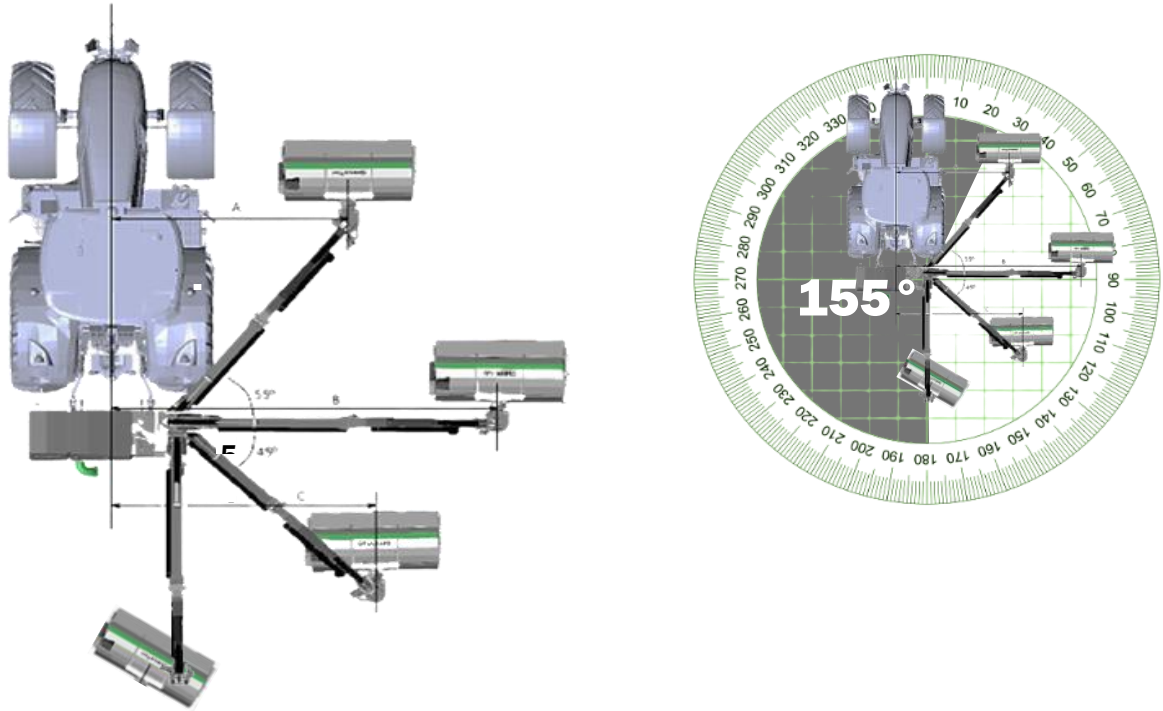
VERTICAL REACH OF BOOM MOWER SCORPION 490	
A:	4,3 m
B:	3,9 m
C:	2,6 m
D:	0,9 m
E:	2,6 m
F:	1,2 m
G:	4,1 m
H:	0,4 m
I:	1,2 m

Table 20 – Vertical reach of boom mower (1/2)



HORIZONTAL REACH OF BOOM MOWER SCORPION 490	
A:	2,1 m
B:	2,9 m
C:	2,2 m

Table 15 – Horizontal reach of boom mower (2/2)



6.4 NOISE MEASUREMENT OF AIRBORNE NOISE

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.

Følg derfor de forholdsregler der er tiltænkt det anvendte arbejdsredskab samt køretøj.

See section: [Safety](#)

PRODUCT:	A-WEIGHTED SOUND POWER LEVEL > 80 dB
Scorpion 490 boom mower (All models)	Approx. 82 dB

Table 16 – Measurement of A-weighted sound power level (>80 dB)

6. INSTRUCTIONS FOR USING THE MACHINE

6.1 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 cannot be held responsible for transport damage that is not registered with the forwarder immediately during the actual delivery of the machine!



Scorpion boom mower as delivered from the factory incl. transport pallet with various loose parts

NOTICE

Please take notice that the Scorpion 490 boom mower is supplied with all support legs folded up at delivery of the machine.

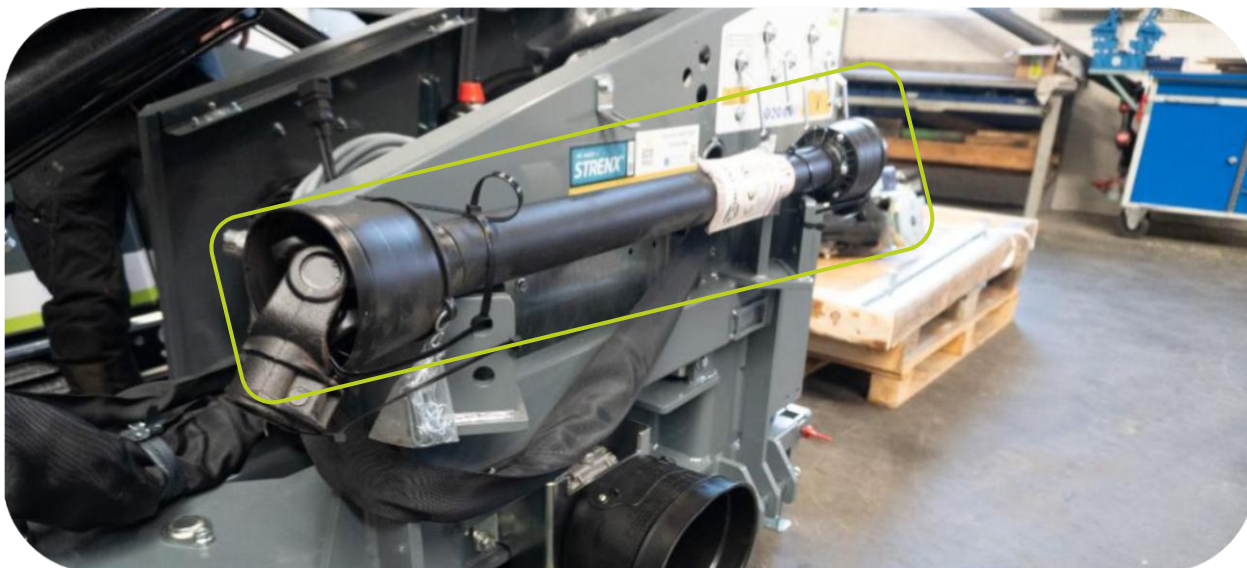
Before and after initial assembly and use, as well as during subsequent storage, the 4 support legs should always be used on the Scorpion 490 boom mower for storage.

2. Check that the correct components are included with the Scorpion 490 boom mower:

(All loose parts for a Scorpion 490 boom mower are supplied in a transport pallet. In some cases, the loose parts may be clamped on the outside, or inside the cabinet of the machine)



The parts etc. supplied with the Scorpion 490 boom mower are packed under the machine's cabinet upon delivery.



For Scorpion 490 Standard and Plus boom mowers, the PTO shaft is clamped to the rear of the machine when delivered.

- [4-point linkage system or loader bracket / special adapter](#) (Model specific)
- [PTO-shaft](#) (Only Standard and Plus-models)
- [Power supply](#)
- [Control panel and joystick](#) (incl. mounting kit)
- Instruction manual
- Parts book
- Manometer kit (See section: [Checking the pressure specifications](#))
- Handle for manual emergency operation (PVG-valve system)
- Key for the electrical cabinet

***If any optional equipment is pre-fitted to the machine from the factory:**

([Hydraulic quick-release couplings](#), [Mechanical quick coupling](#), [Counterweights](#), and [Bio-hydraulic oil](#))

6.2 INSTRUCTIONS ON MOUNTING, CONNECTING AND DISCONNECTING

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

When the Scorpion 490 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](#)

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 After sales & 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!

6.2.1 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](#).

6.2.2 MOUNTING AND CONNECTING THE MACHINE

⚠ DANGER

Never use the Scorpion 490 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 Scorpion 490 boom mower instructions.

In this instruction manual, it is shown and explained how to mount the Scorpion 490 boom mower on a compact tractor using: [4-point linkage system](#) or [loader brackets / special adapters](#).

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.

Alt efter hvilket beslag der anvendes, skal beslagene monteres afhængigt af køretøjet, og bolte skal tilspændes efter [Tightening torques: Bolts](#)

6.2.2.1 MOUNTING ON VEHICLE WITH 4-POINT LINKAGE SYSTEM (STANDARD AND PLUS-MODELS)

The 4-point linkage system consists of the following components to be used when mounting the Scorpion 490 boom mower:



4-point linkage system Scorpion 490 boom mower



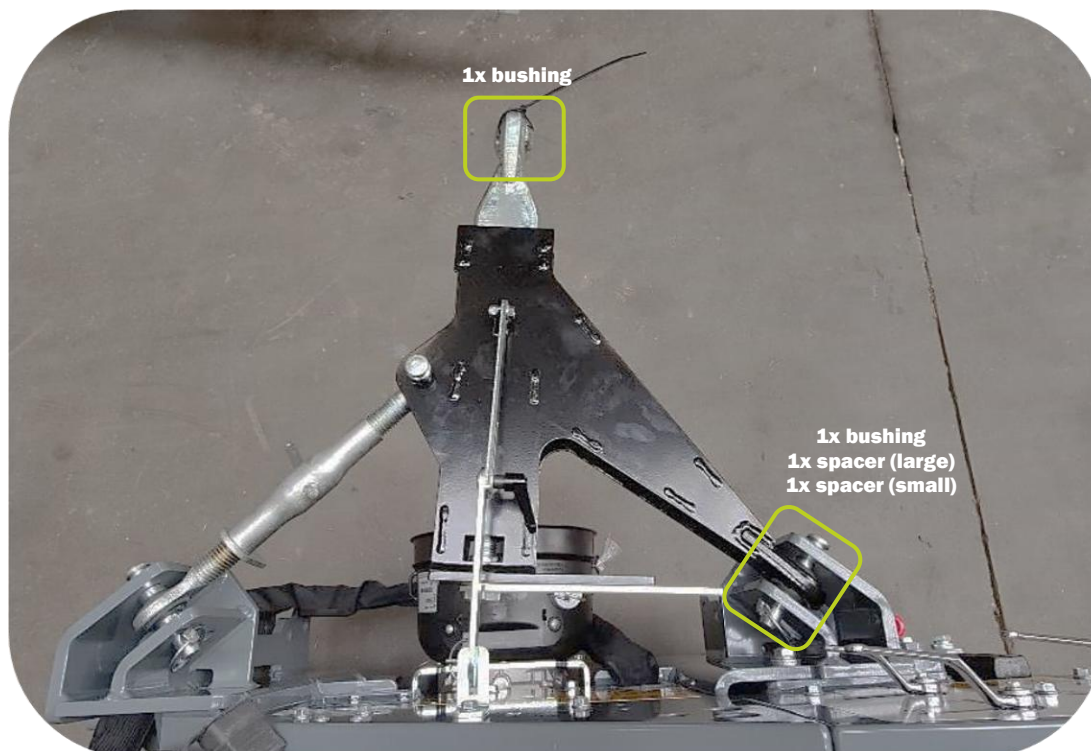
Table 17 – Komponentliste: 4-punkts ophæng m. topstang

NO.	DESCRIPTION:	PCS:
1	Adjustable top draw bar, incl. bolt w/ lynch pin	1
2	Drawbar with spacers/washers, bushing and lynch pin	1
3	Wrench and bolt for adjustment/tightening	1
4	Adjustable suspension/sliding rail for easy installation	1
5	Adjustable top draw bar incl. bushing	1

NOTICE

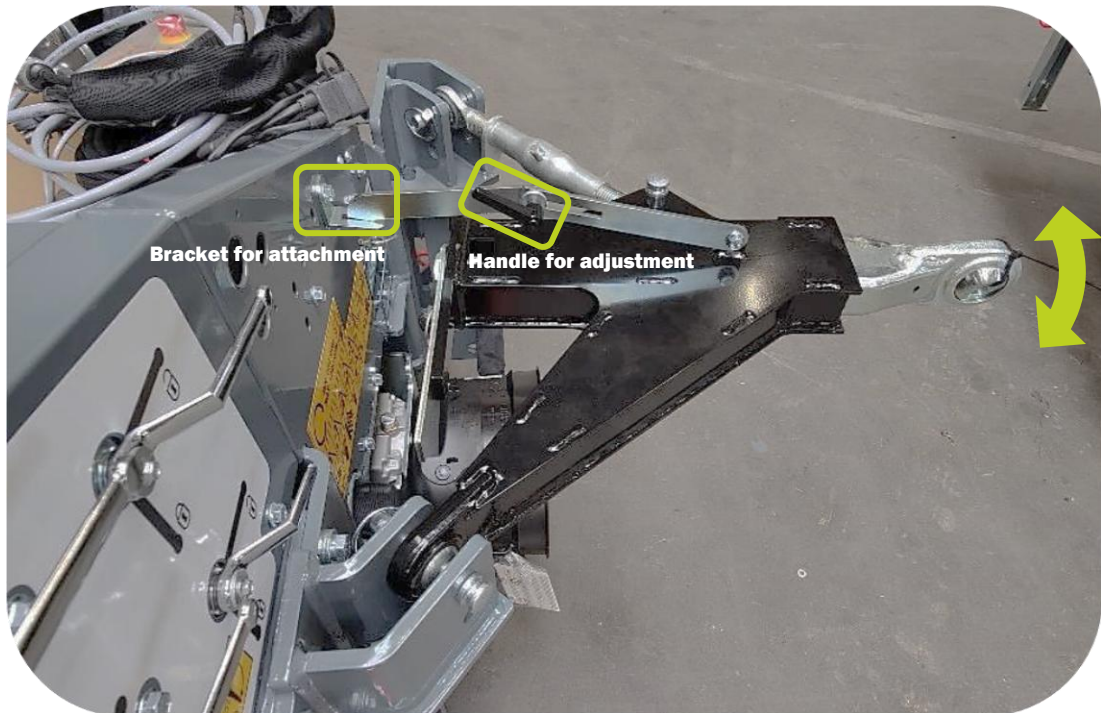
Bushings and spacers for mounting the top draw bar attachment on the boom mower should be used to minimize possible play!

These components are already attached to the 4-point linkage system when delivered:



Top draw bars connected to the mounting brackets of the Scorpion 490 boom mower.

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 Scorpion 490 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, order form](#) for the 4-point linkage system.



Measuring the "A dimension" on the vehicle when mounting with the upper 4-point linkage attachment on the 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](#) – page 86-87, incl. the vehicle's instructional material for recommended tire pressure.

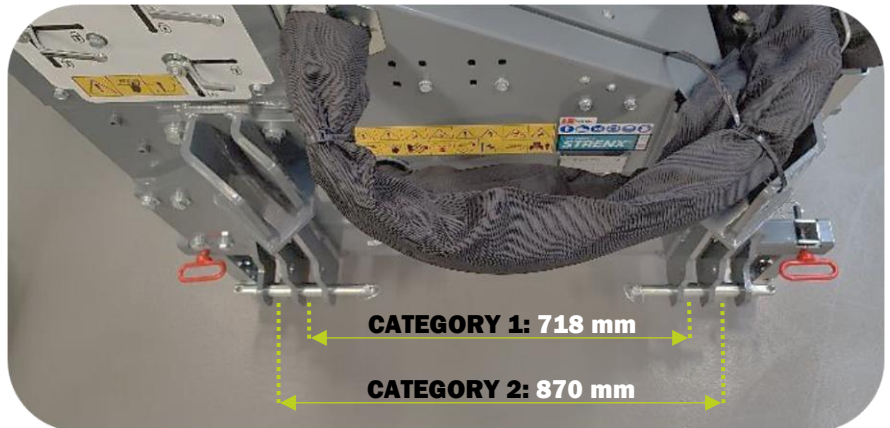


Follow the vehicle manufacturer's instructions for recommended tire pressure when using the boom mower

- b. The vehicle's lift arms must then be adjusted so that the distance matches the lower mounting points (Category 1 or 2 standard) on the Scorpion boom mower:



Standard hydraulic lift arm system on vehicles



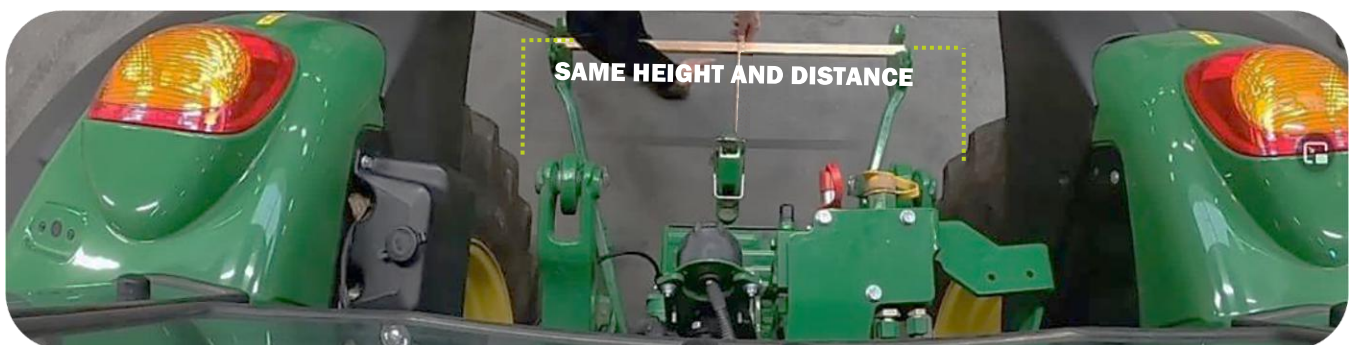
Lower mounting brackets for vehicle lift arms - category 1 (inner) & category 2 (outer)

NOTICE

GreenTec always recommends using the largest possible category between vehicle and boom mower as possible when mounting according to Category 1 & 2!

(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!)



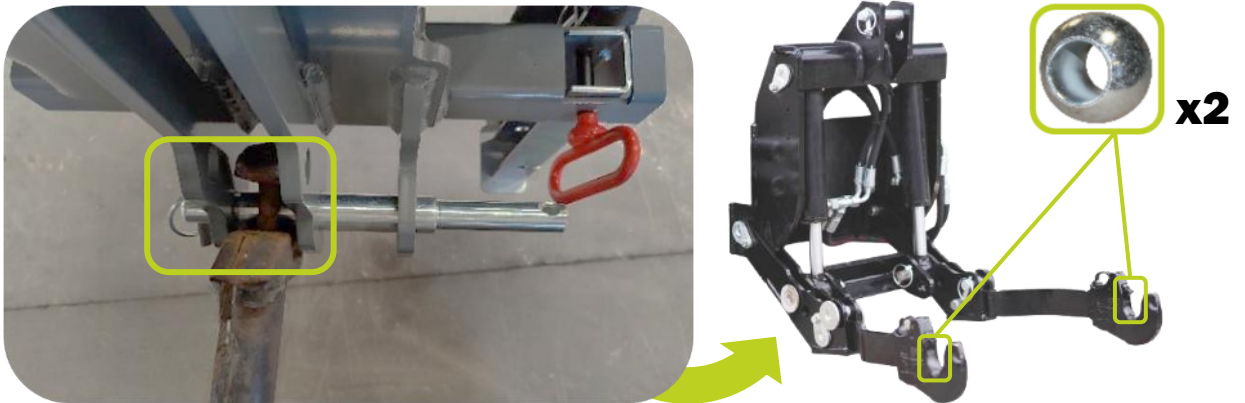
Adjusting the vehicle lift arms at the same height and distance

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 Scorpion 3-430 boom mower:



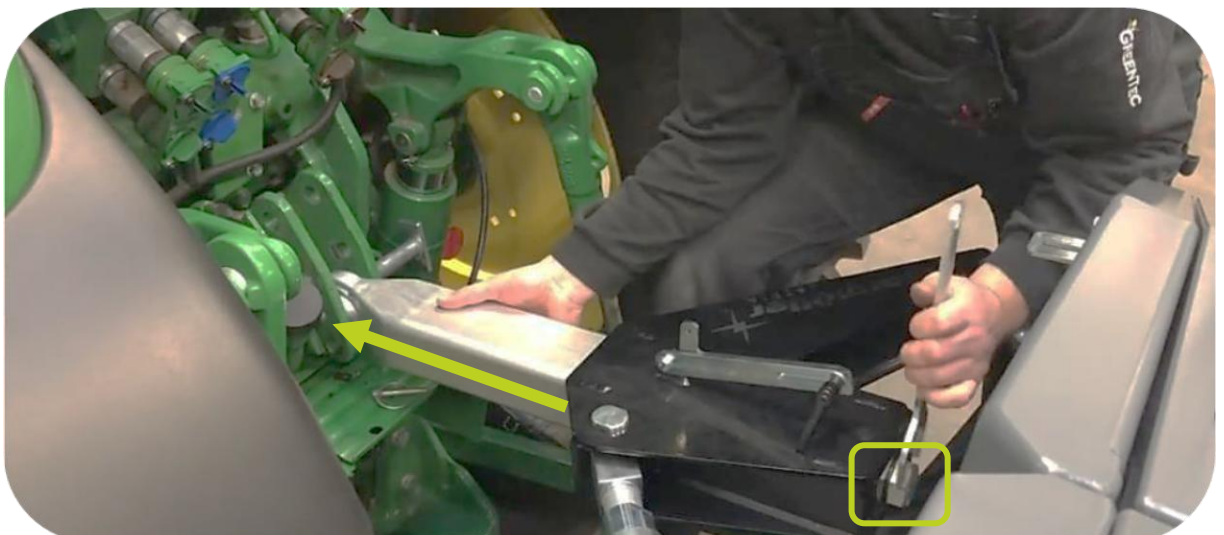
Carefully back the vehicle up to the mounting points on the Scorpion 490 boom mower

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 1 or 2, to minimize any clearance around the lower lift bolts



Lift arm of vehicle locked around a Scorpion 490 boom mower lift bolt

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)*



Adjusting the upper stabilization to the vehicle's towing point using an open-end wrench

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

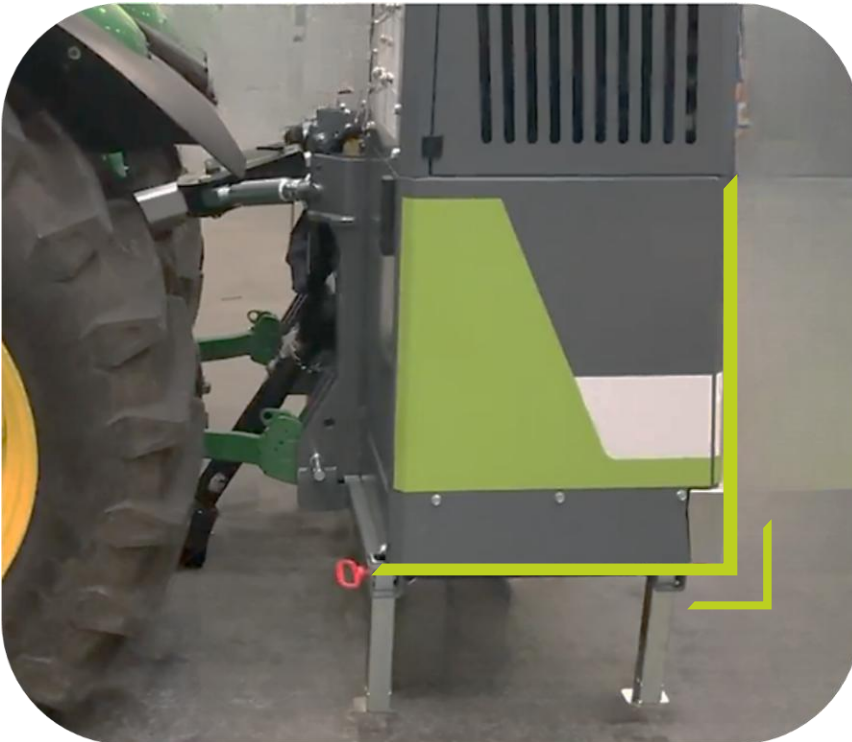
(It is tightened with a wrench until the adjustable top draw bar tightens on the opposite side of the vehicle's upper towing point)



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 Scorpion 490 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!)



Scorpion 490 lifted by the vehicle's lift arms in a vertical position, after proper setting and adjustment

6. With the machine raised in a vertical position on the vehicle, mount the PTO shaft between the Scorpion 490 boom mower and the vehicle:



Installation of PTO shaft between Scorpion 490 boom mower and 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

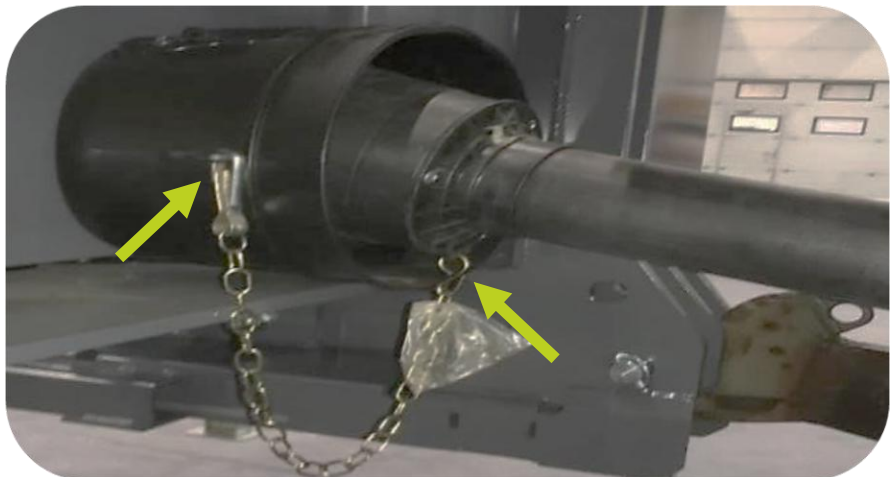
Remember to lubricate all the parts during initial assembly. Especially the telescopic tubes, after any adaptation/shortening.

See section: [Lubrication of the machine](#)

⚠ 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 fitted, use the wrench to ensure that the adjustable top draw bar and the transverse adjustable top draw bar 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 are tightened/made as long as possible

8. 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.



Scorpion boom mower raised on vehicle



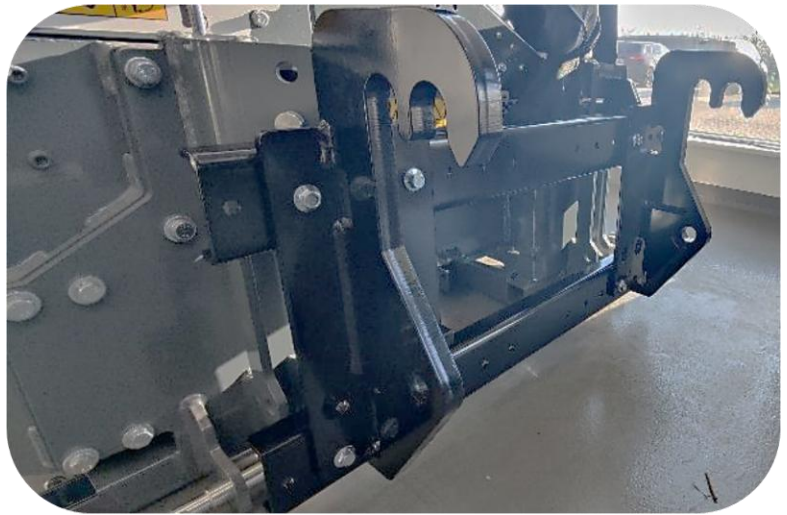
Support legs on Scorpion boom mower

6.2.2.2 MOUNTING ON VEHICLE WITH LOADER BRACKET / SPECIAL ADAPTER (BASIC-MODELS)

The loader bracket / special adapter consists of a mounting frame and a vehicle-specific loader bracket.

The loader brackets are bolted on to the mounting frame and can be replaced in the event of changing between vehicles.

The loader bracket and mounting frame is always fitted when the Scorpion 490 boom mower is delivered.



Mounting frame and loader bracket are mounted on Scorpion boom mower at delivery

NOTICE

Before delivery, the correct choice of neck mount must be made, based on the type/make of vehicle used with the boom mower.

An [order form](#) for the loader bracket / special adapter must therefore be completed before purchase.

See section: [Loader bracket / special adapter \(Only Basic-models\)](#)

1. With the mounting frame and loader bracket already fitted to the Scorpion 490 boom mower from the factory, most vehicles should be able to drive directly into position to grab and lift the machine.

However, always make sure before installation to check whether the vehicle's lift system matches the neck brackets!



Example of vehicle lift system fitment with loader bracket / special adapter

Is there a need to move or possibly replace the loader bracket etc. the bolts for assembly must be tightened according to [Tightening torques: Bolts](#)

NOTICE

Always follow the vehicle's instructions for mounting machinery when using its lift system!

2. With the vehicle lift system in position, slowly drive up to the boom mower until the vehicle lift system is level with and has a secure grip on the upper hooks of the loader brackets.

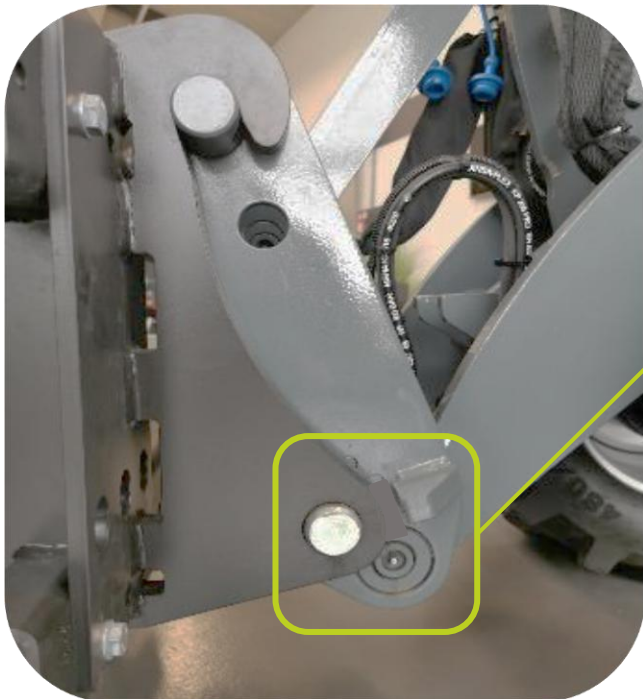
Always make sure that the lower holes for locking the loader bracket are directly opposite the locking rivets on the vehicle's lift system, otherwise there is a risk of damage to both machine and equipment!

CAUTION

When installing a new Scorpion 490 boom mower for the first time, minor adjustment work should be expected, such as welding on a "stop block" on each side, at the bottom of the neck fittings.

If there is a gap between the loader bracket to the stop on the vehicle, a stop block must be welded onto the loader bracket, as shown in the picture below.

The stop block ensures that the holes of the loader bracket are aligned with the locking rivets on the vehicle.



Welding on stop block

Loader bracket mounted on vehicle where adaptation is required
(Both sides)

3. With the loader brackets fitted and possibly adapted, the Scorpion 490 boom mower can be slowly lifted off the ground using the vehicle and its lift system.

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



Scorpion Basic lifted and mounted using neck mount on vehicle lift system in vertical position

4. 3x hydraulic hoses are connected from the Scorpion 490 Basic boom mower to the vehicle:

Hydraulic connections (ONLY BASIC MODELS)	DK : TRYK UK: PRESSURE D: DRÜCK Recommended pressure:	230 - 270 bar NOTICE The Scorpion 490 Basic boom mower must always be supplied with <u>min. 8 l/min</u> above the specified oil consumption of the attachment tool, in order to be able to operate the functions of the boom mower, simultaneously with the attachment tool. Attachment tools specified for either 40 l/min or 50 l/min → vehicle must always be able to supply <u>min. 60 l/min</u>.
	DK : RETUR UK: RETURN D: RÜCKLAUF Max. allowed return pressure:	Max. 8 bar CAUTION A higher back pressure than 8 bar on the return connection can result in serious damage to the machine and/or equipment if the regulations are not strictly followed! Please note that the vehicle in use does not re-use the return connection, as this can create higher pressure than 8 bar in the return connection! (Always check the instruction manual for the attachment tool in use!)
	DK : DRÆN UK: DRAIN D: LECK Max. allowed drain pressure:	Max. 2 bar CAUTION A higher back pressure than 2 bar on the drain connection can result in serious damage to the machine and/or equipment if the regulations are not followed carefully! The drain connection must always be led directly into the depressurized tank and must never be connected with other hydraulic connections such as the return connection!

Table 18 – Connection of hydraulic hoses

The 3 hydraulic hoses from the boom mower which connects to the vehicle are supplied from the factory with standard hydraulic fittings:

Hydraulic fittings are tightened according to table.



Hydraulic hoses from Scorpion 490 Basic boom mower to the vehicle

NOTICE

It is possible to mount hydraulic quick-release couplings on the hoses when connecting from the boom mower to the vehicle. However, this may vary from vehicle to vehicle.

Check the possibility of this in the instruction material for the vehicle used.

⚠ DANGER

Always check the pressure by measuring after the machine has been installed!

See section: [Checking the pressure specifications](#)

The driver of the vehicle must therefore have knowledge of how the oil should be handled (Always check the [Specifications](#) for the hydraulic oil!)

Oil splashes under high pressure from damaged fittings or hydraulic hoses can penetrate the skin and cause serious injuries!

⚠ CAUTION

Hydraulic hoses must always be routed and mounted so that they can move freely with the movements of the front loader, without getting pinched, detached, or otherwise damaging the machine or other equipment!

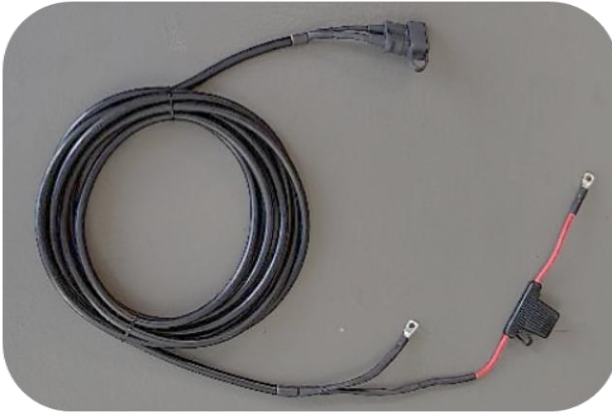
⚠ CAUTION

Always remember to be aware of impurities when connecting hydraulic hoses to the boom mower!

Dirty/smudged hydraulic couplings **MUST** be washed/cleaned and dried before connection - both for the connection between the vehicle and the boom mower, but also the connection between the boom mower and the attachment tool used.

6.2.3 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 Scorpion 3-430 boom mowers

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)



Connections (3 pcs) from Scorpion 3-430 boom mowers to the vehicle

CAUTION

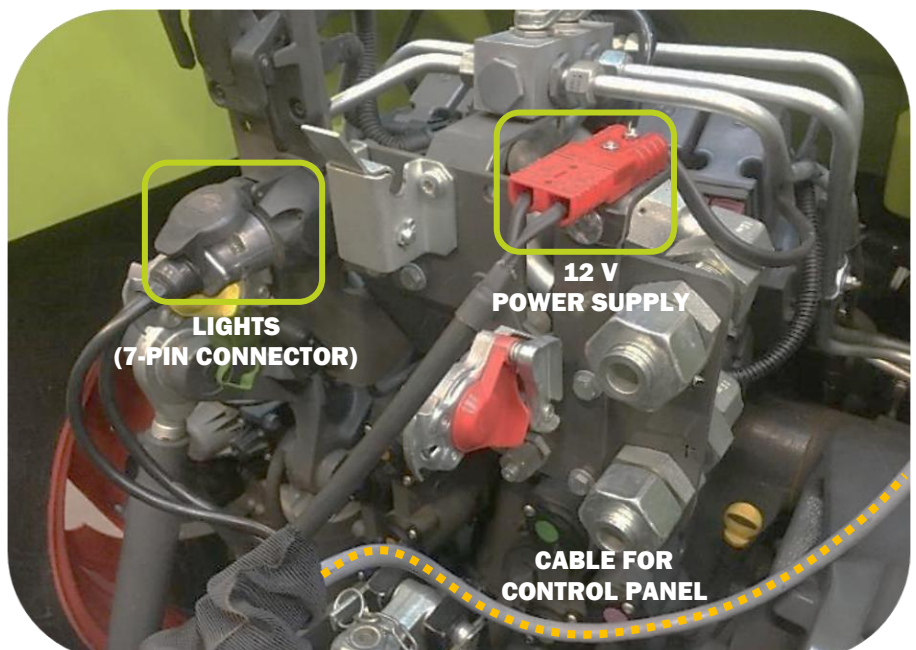
Cables / wires must be routed and mounted so that they can move freely with both the vehicle and the boom mower's movements, without getting pinched, detached, or otherwise damaging the machine or equipment!

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 Scorpion 3-430 boom mower to the vehicle

6.2.4 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](#)

NOTICE

The procedure and principles for mounting the control panel and joystick are the same for both Scorpion 490 Standard and Plus models, as well as Basic models

6.2.4.1 RAL PRINCIPLES FOR INSTALLATION OF CONTROL PANEL AND JOYSTICK

1. The cable for the control panel from the Scorpion 490 boom mower is fed into the vehicle cabin:



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

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. joystick (part 1)	1
2	Seal f. joystick	1
3	Mounting bracket f. joystick (part 2)	1
4	Bolt M8x20	2
5	Steel set screw M4x20	2
6	Bolt kit f. Danfoss-joystick	N/A
7	Washer Ø8	2
8	Lock nut M8	2
9	Washer Ø4.3	2
10	Spring washer Ø4.1	2
11	Lock nut M4	2
12	Wing nut M4	2

Components list: mounting kit for control panel and joystick



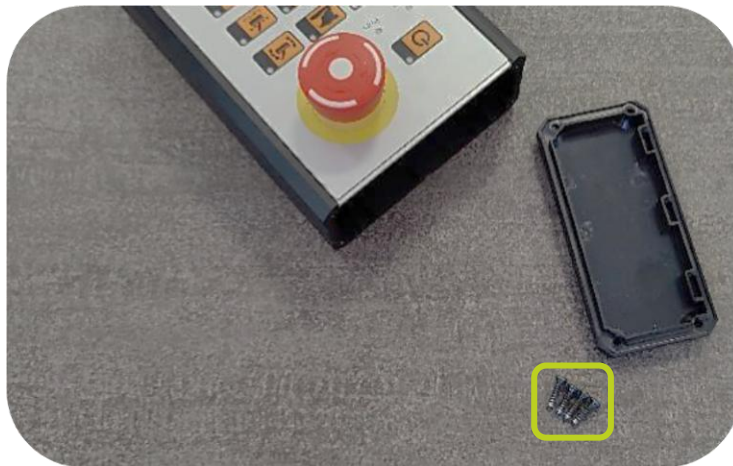
NOTICE

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:

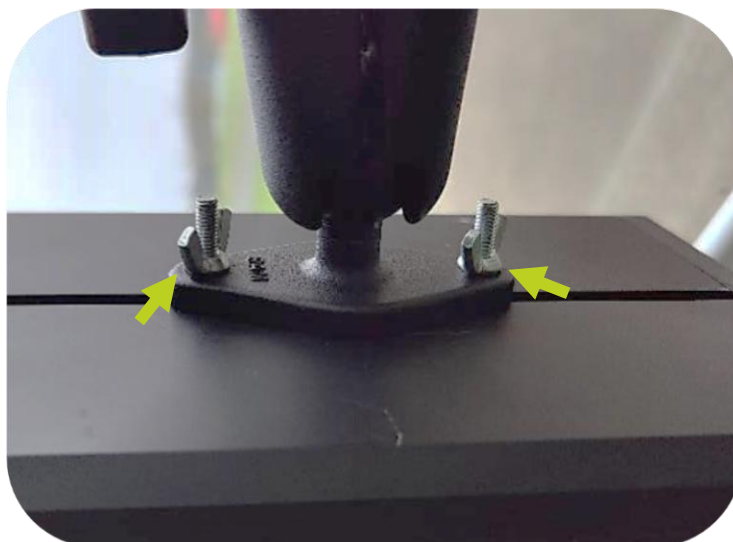
(Then screw the end plate firmly onto the control panel again)



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 using the Ram-Mount and 2x Wing nuts M4.

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

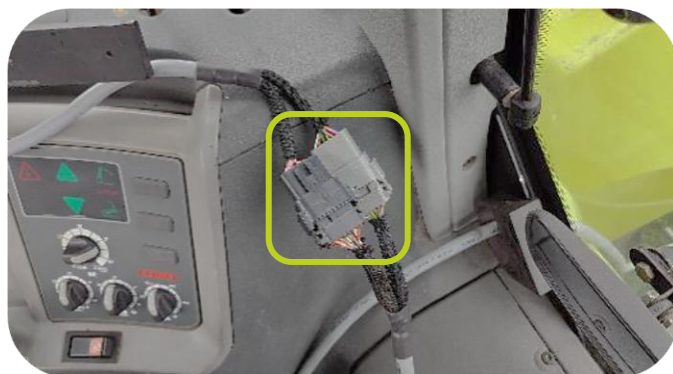


Control panel ready for installation

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:

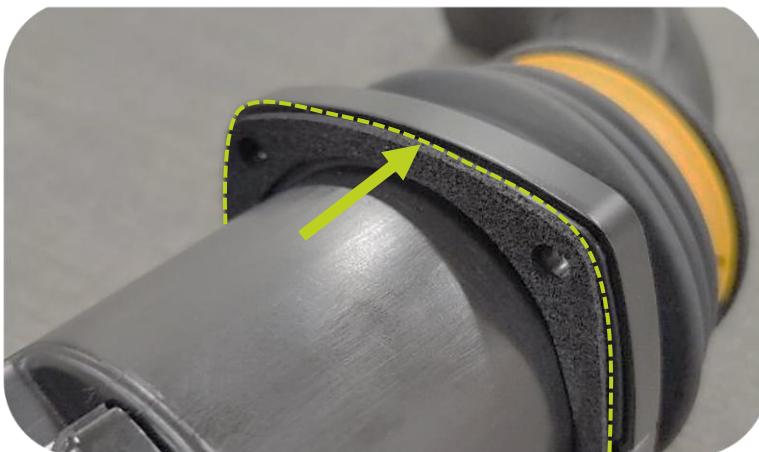
The mounting bracket for the joystick must be attached to the underside of the joystick

Remove the end plate with cable from the joystick using the 2 small screws:



Danfoss-joystick inkl. boltkit

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

6.2.5 MOUNTING OF ATTACHMENT TOOLS ON BOOM MOWER

NOTICE

Installation instructions for attachment tools on the Scorpion 490 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 Scorpion 490 boom mower with  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 Scorpion 490 armklipper

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](#)

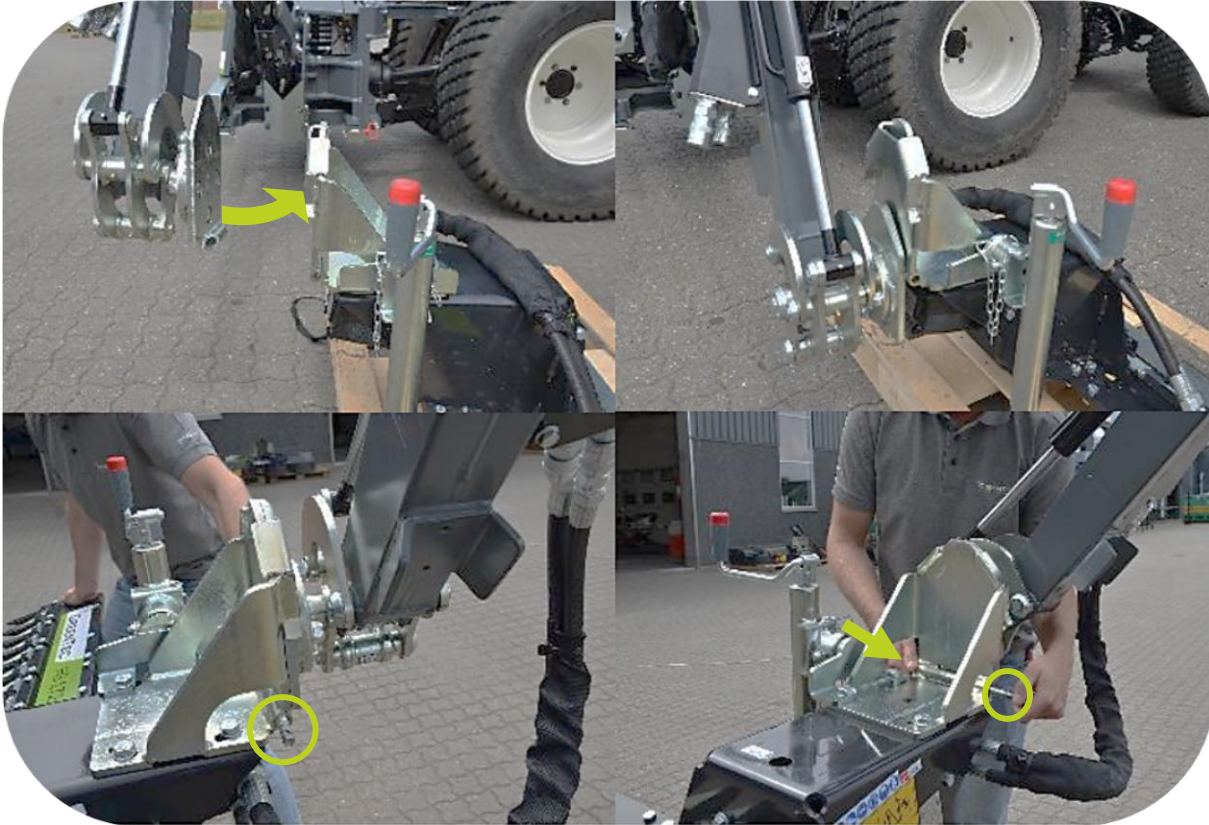
⚠ WARNING

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 Scorpion 490 Standard 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 [Tightening torques: Bolts](#)

Scorpion 5-830 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 Scorpion 490 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.
- 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 [Stop valve for attachment tool change](#), 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.

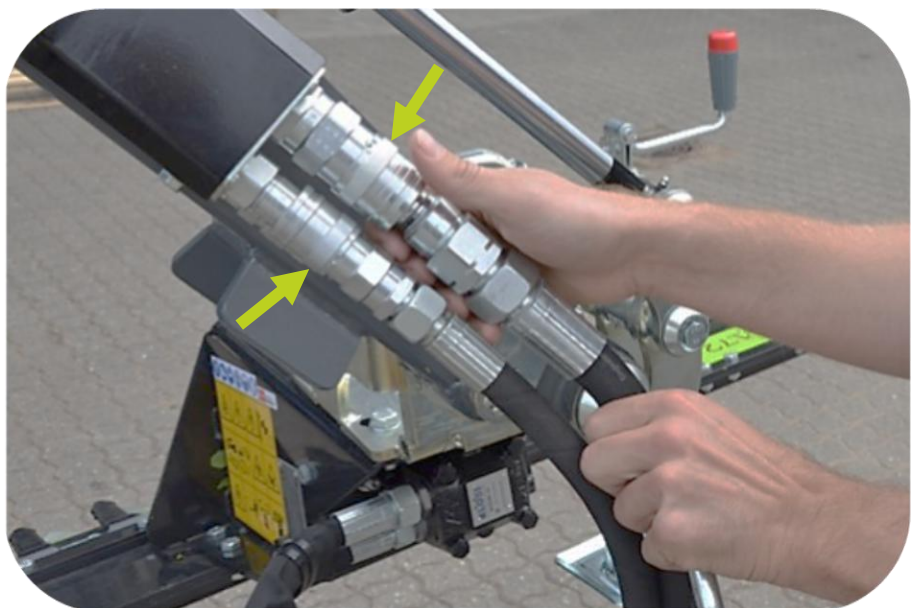


The shut-off valve ensures a free flow-connection to the boom mower's tank by removing residual pressure in the hydraulic system.

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 Scorpion 490 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](#)
9. Drive the Scorpion 490 boom mower out to a large area with firm ground, plenty of space and no people/animals within a 20-meter radius.
 - Start the Scorpion 490 boom mower, without starting the attachment tool, and follow the procedures before use and about stability in section: [Preparing the machine for use](#)
 - The section: [Stability](#), 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](#)

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.

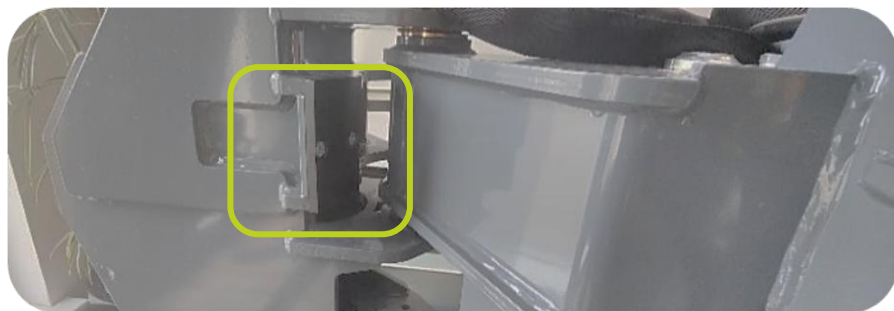
There are different stop blocks to limit the movement of the boom mower, which are easily mounted/replaced using 2 bolts.

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 Scorpion boom mower



Stop block for limiting the rotation of the Scorpion 490 boom mower arm-system

6.2.6 UN-MOUNT AND DISCONNECT BOOM MOWER FROM VEHICLE

Un-mounting and disconnection of the Scorpion 490 boom mower is carried out in the reverse order of the section: [Mounting and connecting the machine](#)

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](#)

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!

6.2.7 UN-MOUNT AND DISCONNECT ATTACHMENT TOOL ON BOOM MOWER

Un-mounting and disconnection of attachment tools on the Scorpion 490 boom mower takes place in reverse order of the section: [Mounting of attachment tools on boom mower](#)

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!

6.3 PREPARING THE MACHINE FOR USE

After complete assembly and connection of the Scorpion 490 boom mower + selected attachment tool to the vehicle, the following procedures in this section are carried out before putting the machine into use:

6.3.1 INITIAL START-UP AND FIRST USE OF THE MACHINE

⚠ CAUTION

Always start up carefully when using it 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!

6.3.2 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](#)
- [Instructions on mounting, connecting and disconnecting](#)
- [Stability](#)
- [Daily- and routine inspections](#)

6.3.3 STABILITY

When driving the Scorpion 490 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.

6.3.3.1 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 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!)

6.3.3.2 STABILITY CAN BE INCREASED BY:

- Installing counterweights on the boom mower: [Counterweights \(120 kg\)](#)
- 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!

6.3.3.3 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 it 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.

6.4 OPERATING THE MACHINE

This section describes the handling of the Scorpion 490 boom mower, the operator's workplace when the machine is used, and the operation and use of the machine.

6.4.1 TRAINING OF THE MACHINE OPERATOR BEFORE USE

The Scorpion 490 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 startup of the machine with the customer when purchasing a machine!

6.4.2 OPERATOR'S WORKPLACE

The Scorpion 490 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 Scorpion 490 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.

6.4.3 TRANSPORTING BOOM MOWER W/ ATTACHMENT TOOL ON VEHICLE

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 Scorpion 490 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: Scorpion 490 boom mower and FR Flail mower (rear mounted): **All lights free on the mower and vehicle**



Example of transport position: Scorpion 490 boom mower and LRS Grensav (front 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 Scorpion 490 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](#)

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 Scorpion 490 Plus models with Rotor-Flex double pivot system, the AutoFlex  function 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](#)

(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 is always 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](#)

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.

6.4.4 OPERATING AND DRIVING INSTRUCTIONS

The Scorpion 490 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](#)

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](#)

The Scorpion 490 must be controlled and adjusted as follows:

1. Switch on the Scorpion 490 boom mower using  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](#)

⚠ 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 driving along the ground. If the ground contours change by more than 10–15 cm, the attachment tool must be manually readjusted (raised/lowered) using the joystick.



Driving with hydraulic float-function (arm) on Scorpion 490 boom mower



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](#)



Driving with hydraulic float-function (att. tool) on Scorpion 490 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 \(arm\)](#)

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 Scorpion 490 boom mowers with AHC (Auto Height Control) this function is used instead of the hydraulic float-function (arm). See section: [AHC \(Auto Height Control\)](#)
- 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.



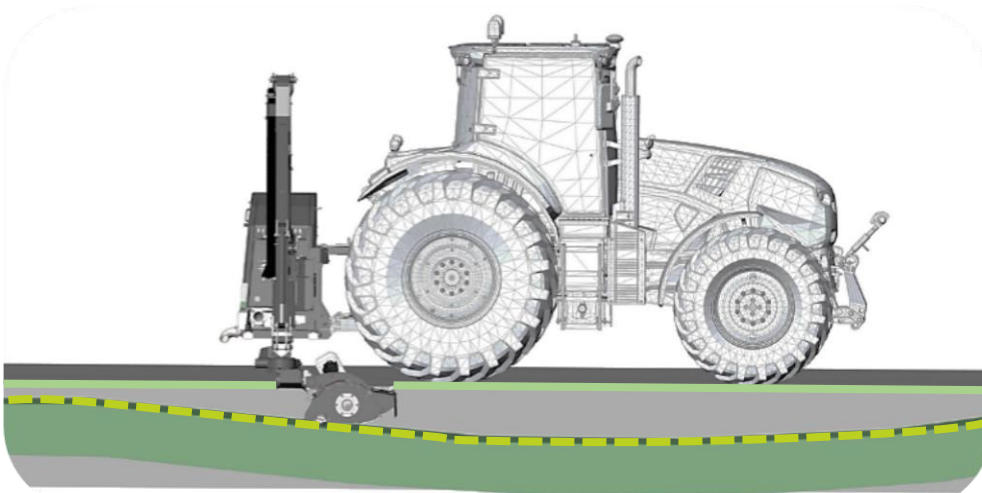
AHC potentiometer on control panel in "0" position

- 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

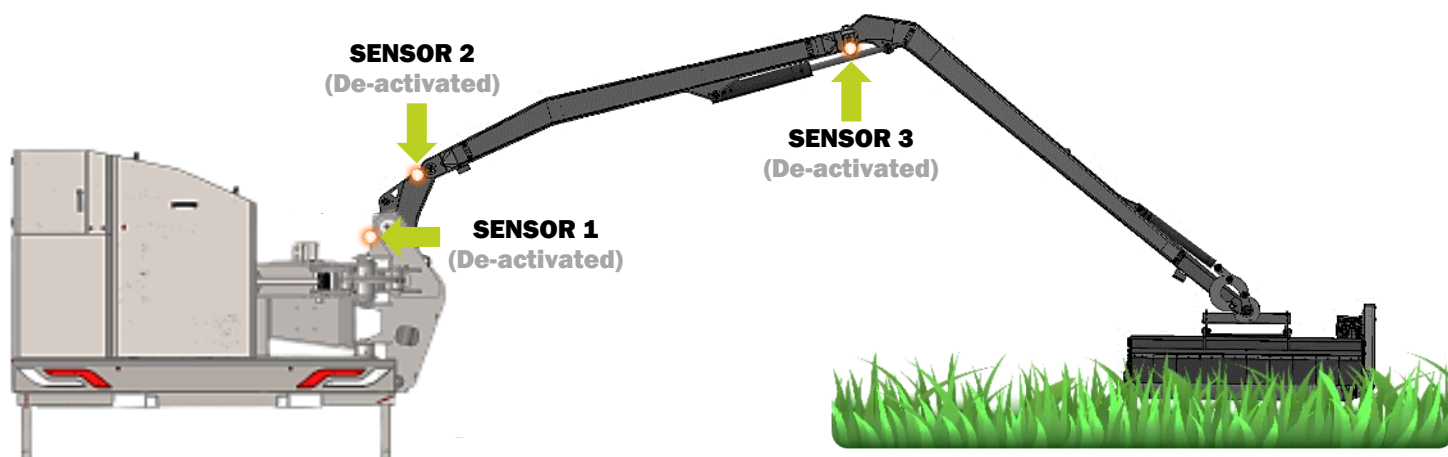
- The AHC function can be easily switched on/off during use using the button on the back of the joystick. See section: [Adjusting and setting the machine](#)
- Be aware that when the arm of the boom mower has been driven completely or partially towards the vehicle that the "AHC function" is deactivated for safety reasons using inductive safety sensors on the arm. See section: [Inductive safety sensors](#)

⚠ WARNING

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

Scorpion 490 boom mower in extended position:

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

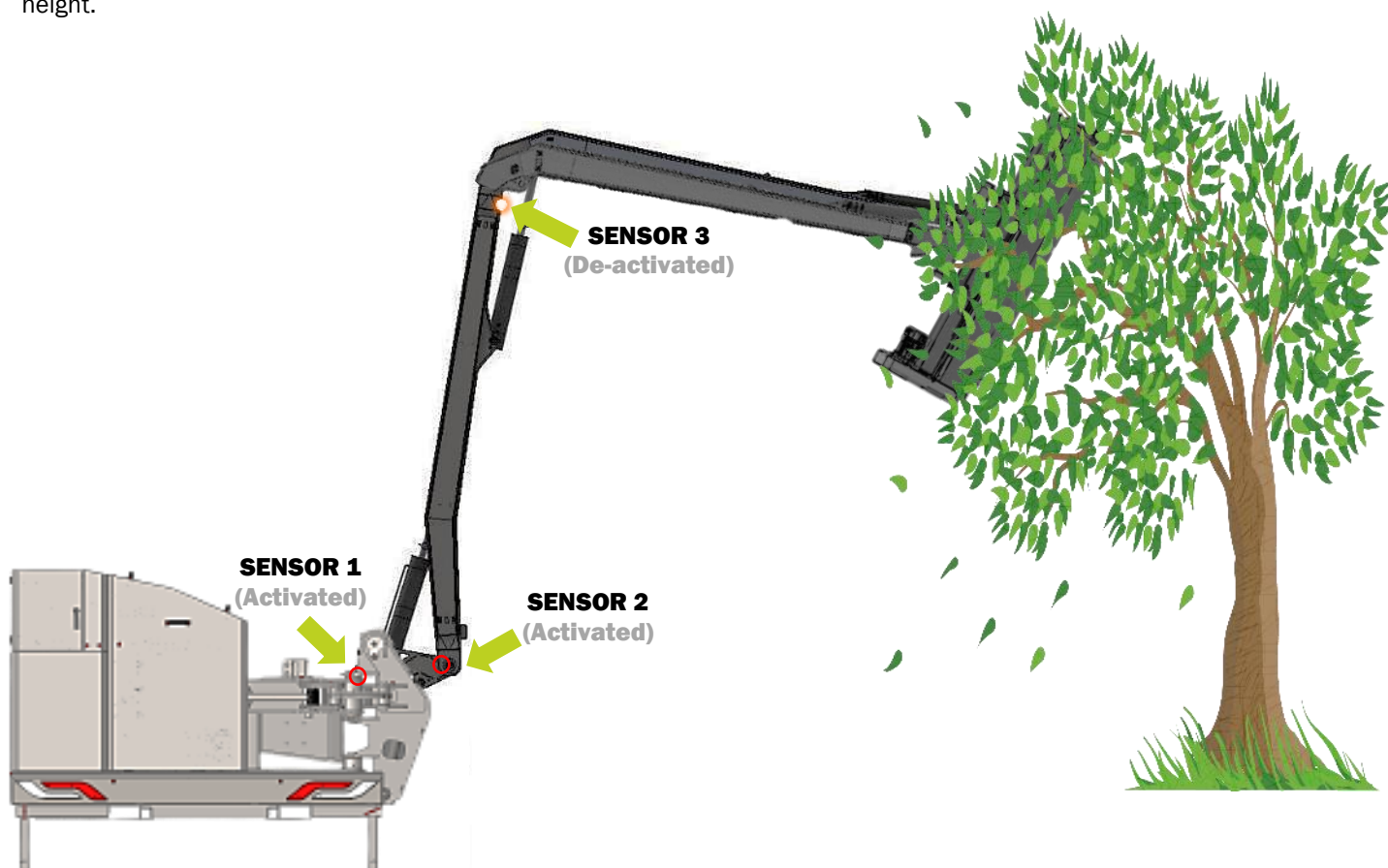


Safety sensors with arm in extended position: Scorpion boom mower

Scorpion 490 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: Scorpion boom mower

6. On Scorpion 490 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 3°. 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: Scorpion boom mower

NOTICE

The AutoFlex function (automatic vertical positioning) should always be activated when used on Scorpion 490 Plus-models with Rotor-Flex double pivot system.

See section: [RotorFlex double pivot system w/ AutoFlex AutoFlex \(Automatic vertical positioning\)](#)

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](#)

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)

Scorpion 490 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.

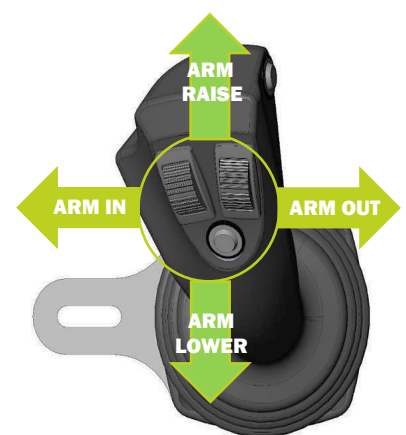


Scorpion 490 boom mower in use with parallel-functioning activated

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

Scorpion 490 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.

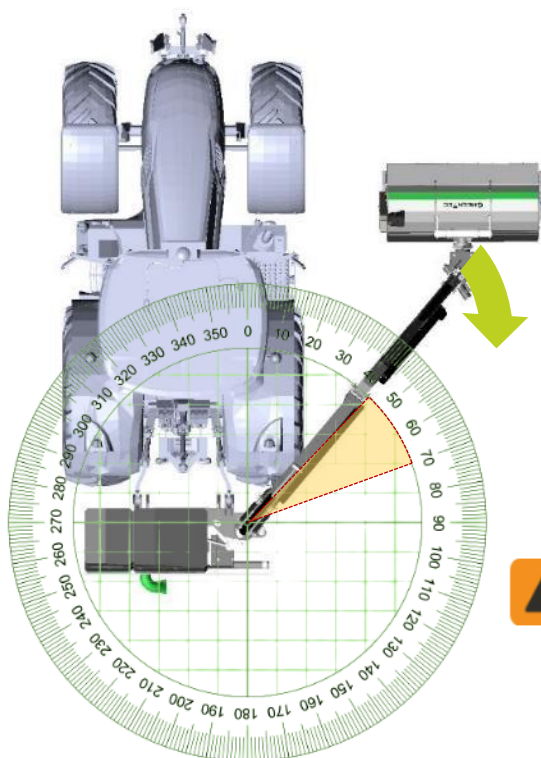


Scorpion 490 boom mower in use with non parallel-functioning activated

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 \(AHS\)](#)

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



WARNING

45° arm on boom mower:

Driving with attachment tool in forward direction

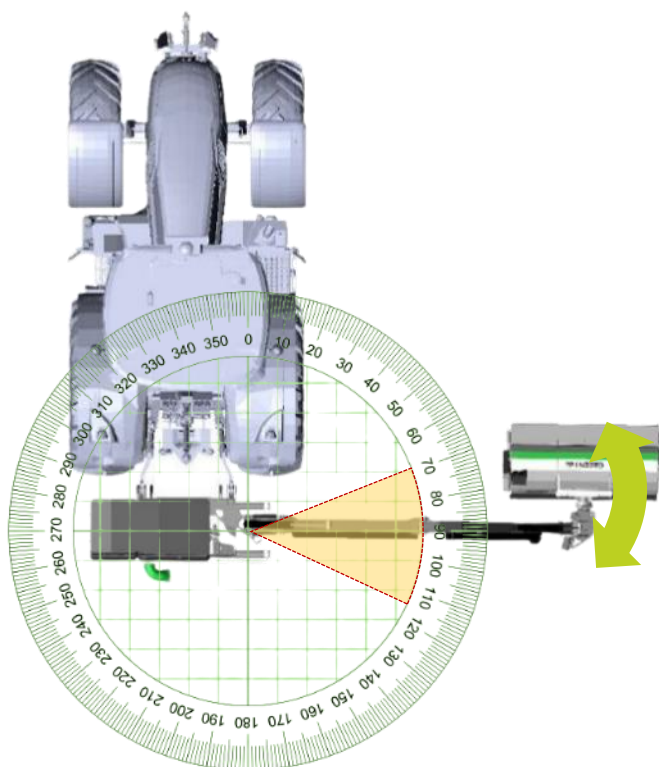
Normal working position for mowing grass. Can also be used for hedge and fence trimming.

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

(Only Scorpion Plus models with RotorFlex double pivot system)

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 45° and therefore only works in one direction.



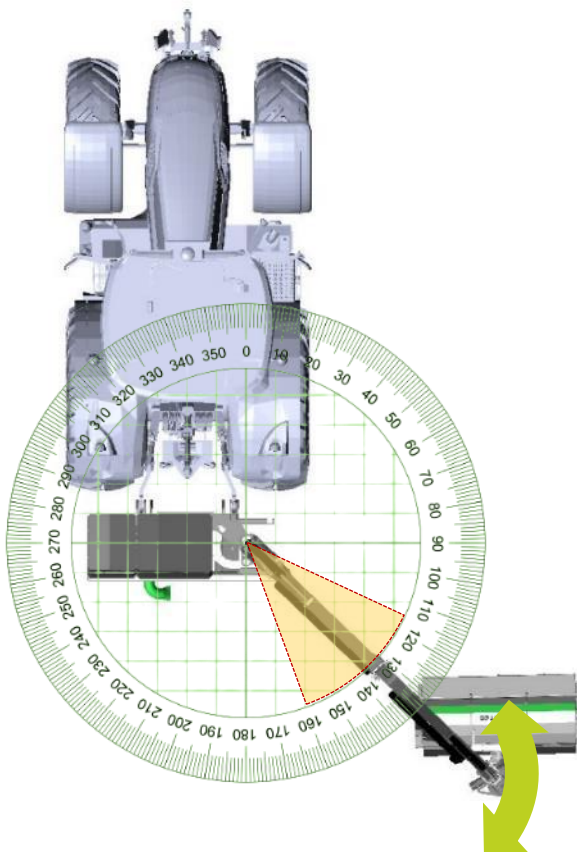
90° arm on boom mower:

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.

(Scorpion Standard and Plus-models)



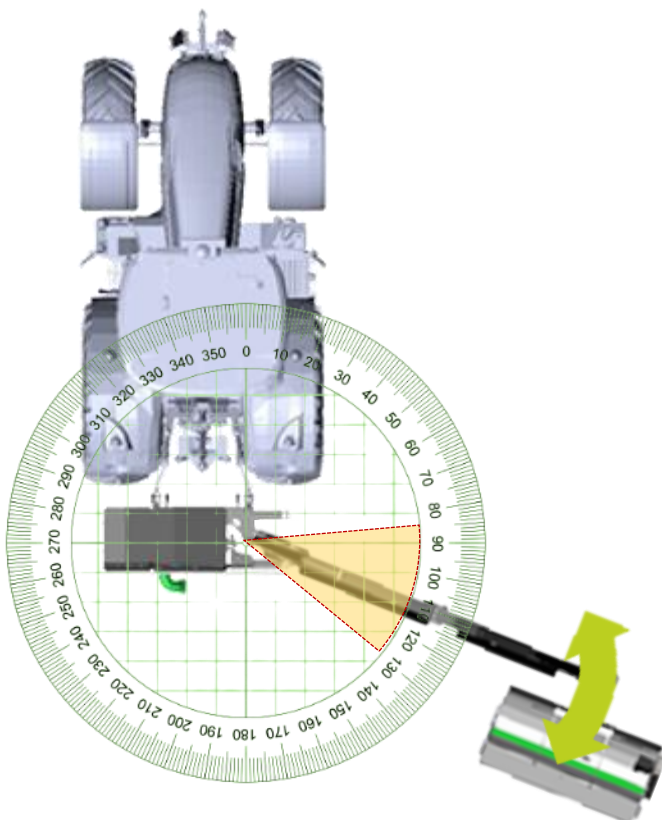
135° arm on boom mower:

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 Scorpion Plus models with RotorFlex double pivot system)



110° 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 Scorpion Plus models with RotorFlex double pivot system)

9. Be aware that when the arm of the boom mower has been driven completely or partially towards the vehicle, 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: Scorpion 490 boom mower

- One or more safety sensors blocked (activated):

With the arm mower fully or partially driven towards the vehicle, at least one or more of the inductive sensors are activated and the light in the diode(s) is turned off.

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



2 out of 3 safety sensors blocked and thus activated: Scorpion 490 boom mower

If a front loader is used together with the Scorpion 490 arm mower, the working height of the arm mower can be advantageously adjusted via the front loader's lift system, so that it is at the appropriate height in relation to the terrain:



Scorpion 490 arm mower elevated using front loader with mounted HS 172 hedge trimmer

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.

NOTICE

The AutoFlex function (automatic vertical positioning) should always be activated when used on Scorpion 490 Plus-models with Rotor-Flex double pivot system.

This feature ensures that the Rotor-Flex double pivot remains in a vertical position, allowing the operator to drive the boom mower more efficiently and achieve better work performance.

See section: [RotorFlex double pivot system w/ AutoFlex](#) + [AutoFlex \(Automatic vertical positioning\)](#)

11. 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

6.4.5 ADJUSTING AND SETTING THE MACHINE

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](#) and [Operating the machine](#). Handling of specific attachment tools is described in their individual instruction manuals:

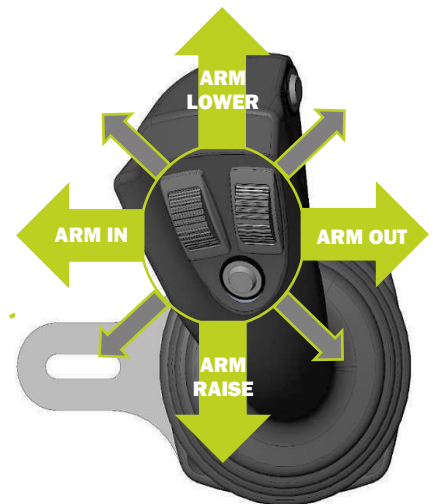


PARALLEL FUNCTION OR NON-PARALLEL FUNCTION

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 [Logitech Safe control panel](#))



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 [Logitech Safe control panel](#))

Even if the hydraulic float is activated, the attachment tool can still be tilted by operating the left scroll button on the joystick.

TILT ATTACHMENT TOOL (UP/DOWN)



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.



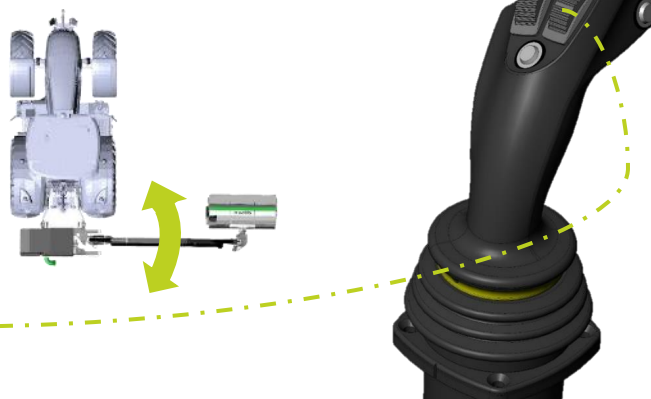
TURN OF ARM

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

The arm of the Scorpion boom mower can be rotated to adapt a working range of up to 155°

From 45° forward, to 135° backward arm position.

TURN OF ARM (FORWARD / BACKWARD)



CAUTION

Pay particular attention to the function of the [hydraulic collision protection \("Break-Back"-function\)](#), when the arm of the boom mower is turned into working position.

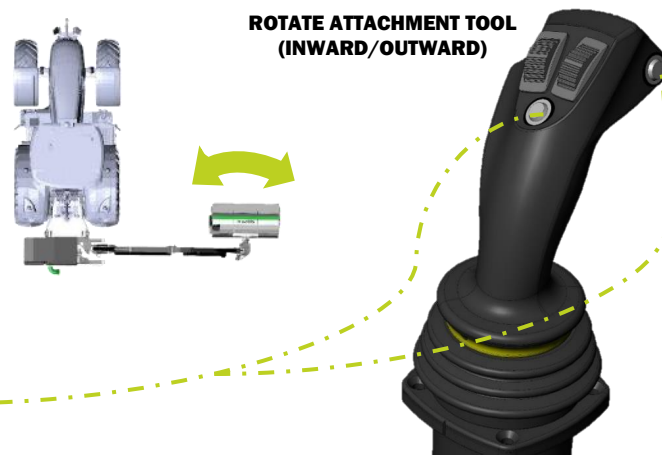
See section: [Operating and driving instructions](#)

ROTATE ATTACHMENT TOOL

These two buttons on the joystick are used to move the horizontal RotorFlex pivot joint in either direction, on Scorpion 490 Plus models.

(For Scorpion Standard 490 models WITHOUT RotorFlex, these two buttons are inactive!)

ROTATE ATTACHMENT TOOL (INWARD/OUTWARD)



6.4.6 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](#), [Preparing the machine for use](#) and [Operating the machine](#)

SCORPION 490 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 Scorpion 490 boom mower, and must never be exceeded:

See sections: [Warning labels](#) + [Specifications](#)

SCORPION 490 BASIC MODELS:

1. The attachment is started by supplying a low oil flow from the vehicle's hydraulic system.
(Always consult and follow the instructions for the vehicle being used, as these vary from vehicle to vehicle.)
2. Then press  on the control panel in the cab. (The green LED illuminates and the attachment starts.)
3. Allow the attachment to run without load until the hydraulic oil in the system has warmed up.

NOTICE

A very cold machine should be run for 10–15 minutes before being subjected to a heavy load, so that it can warm up and be ready for operation.

4. Once the hydraulic oil has reached operating temperature, determine the optimum oil flow (l/min @ bar) for the machine as follows:

⚠ DANGER

Always check the area immediately surrounding the machine and vehicle before starting and while carrying out the work for which the machine is being used.

The size of the area depends on the attachment being used.

Always operate the hedge cutter with care and caution and always follow the instructions in the operator's manual for the specific attachment.

- a. With the attachment running and a low oil flow supplied by the vehicle's hydraulic system, pull the joystick back towards the operator to raise the hedge cutter.
- b. While pulling the joystick back, slowly increase the oil flow from the vehicle's hydraulic system until the hedge cutter rises.
- c. Stop increasing the oil flow when the hedge cutter moves smoothly and continuously.
(Several movements may be made simultaneously here—move the joystick.)

NOTICE

The correct oil flow from the vehicle ensures the smoothest operation of the hedge cutter functions and minimizes the vehicle's fuel consumption and heat build-up in the hydraulic system.

The flow specifications (l/min @ bar) must always remain within the limits specified for the Scorpion 490 hedge cutter and must never be exceeded:

See sections: Specifications + Installing and connecting the machine (i)

6.4.7 STOPPING THE ATTACHMENT

SCORPION 490 PLUS MODELS:

1. To stop the attachment, first reduce the vehicle PTO speed to low RPM!
(Always consult and follow the instructions for the vehicle being used, as these vary from vehicle to vehicle!)
2. Then press  on the control panel in the cab.
(The green LED goes out and the attachment stops)
3. Allow the attachment to run unloaded until it stops, then disengage the vehicle PTO shaft.



Many attachments have heavy rotors and/or blades. These may therefore continue rotating for up to 30 seconds after the hydraulic supply has been shut off!

Never approach an attachment until you have ensured that all rotating parts have come to a complete stop!

SCORPION 490 BASIC MODELS:

1. To stop the attachment, first reduce the hydraulic flow (l/min @ bar) from the vehicle hydraulic system!
(Always consult and follow the instructions for the vehicle being used, as these vary from vehicle to vehicle!)
2. Then press  on the control panel in the cab.
(The green LED goes out and the attachment stops)
4. Allow the attachment to run unloaded until it stops, then shut off the supply from the vehicle hydraulic system.



Many attachments have heavy rotors and/or blades. These may therefore continue rotating for up to 30 seconds after the hydraulic supply has been shut off!

Never approach an attachment until you have ensured that all rotating parts have come to a complete stop!

6.4.8 RESTARTING AFTER AN UNINTENTIONAL SHUTDOWN

NOTICE

In the event of an unintentional shutdown of the arm mower and/or work tool, always follow the instructions provided in the machine instruction manuals.

An unintentional shutdown may occur at any time. There may be various causes, but shutdowns can often be avoided if the operator uses and maintains the machine correctly and avoids striking:



Large stones
Tree stumps
Fence wire
Manhole covers
Discarded waste
Plastic and other packaging
Bicycles/scrap metal

If the work tool strikes any of the objects listed above, severe vibration and/or increased noise will typically occur.

If severe vibration/noise occurs in connection with the above, or if there is, for example, leakage or missing and/or loose machine parts, the operator should do the following:

1. Stop the machinery immediately.
2. Rotate the work tool and lower it to a low height so that the machine components can be inspected.
3. **Apply the parking brake, switch off the vehicle, remove the key, and make sure that the machinery has stopped completely!**
4. Inspect and check the attachment tool and boom mower:
 - If foreign objects are found, remove them manually. (Fence wire, plastic, etc.)
 - Check machine parts for cracks, breakage, missing parts, or damage.
 - Do not resume operation until all damage has been repaired.

Follow the recommendations below when restarting after a shutdown:

- Make sure that the entire machine has been inspected and is in proper working order.
- Restart the work tool slowly. (See the instruction manual for the work tool used and the section: [Starting the attachment tool](#))
- Pay particular attention to ensuring that both the boom mower and the attachment tool operate in accordance with all guidelines specified in their instruction manuals.



7. SERVICE AND MAINTENANCE

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](https://www.greentec.eu) 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!

7.1 INSTRUCTIONS ON SAFE SERVICE AND MAINTENANCE

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 an 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, 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.!

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!

7.1.1 MOVING 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 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 either side 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!

7.2 DAILY- AND ROUTINE INSPECTIONS

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.)
	Lose parts or missing bolts: Retighten all bolts!
	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.
	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.

Table 19 – 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.

Carefully check the condition of hydraulic hoses:

Pay attention 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 thorough daily inspection.

Inspect all bushings, rivets and/or bearings on the machine:

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.

Table 20 – Checklist for 6 month inspection: Preventive maintenance

7.3 REPLACING FILTER ELEMENTS

There are 2 types of filters on the Scorpion 490 boom mower:

[Return oil filter](#) + [High pressure filter](#)

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)

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 21 – Intervals for changing filter elements

7.3.1 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!)*



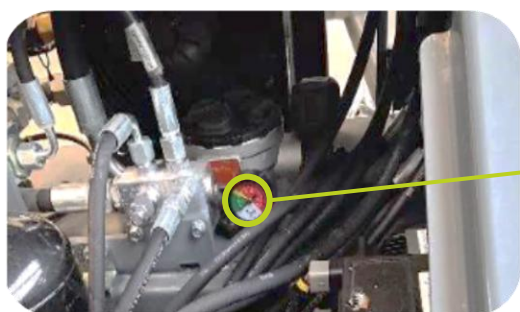
2. The existing filter element is lifted up and replaced with a new one.



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.



Manometer/indicator for changing the return filter



Return oil filter on Scorpion 5-830 boom

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. $2.5 \pm 10\%$ bar reading on manometer)

See section: [Filter kit incl. seals](#) – page 60

7.3.2 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)*

2. The existing filter element is detached and replaced with a new one.

3. The filter housing is screwed on again and then tightened.

4.



Højtryksfilter på Scorpion 490 armklipper

7.4 CHANGING HYDRAULIC- AND GEARBOXOIL

NOTICE

Instructions for changing hydraulic and gearbox oil are only for Scorpion 490 Standard and Plus-models with a gearbox, hydraulic pump, and oil tank.

For Scorpion 490 Basic boom mowers, follow the instructions for the vehicle used instead.

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 22 – Intervals for changing hydraulic and gearbox oil

7.4.1 CHANGING THE GEARBOX OIL

The gearbox on the Scorpion 490 Standard and/or Plus models 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](#) and/or [Specifications](#)

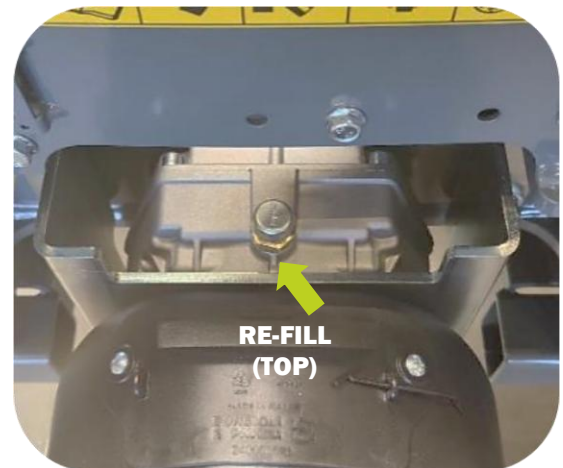
1. Unscrew the drain plug from the gearbox using an M22 wrench and allow the oil to drain into a drain pan. (Approx. 0.40 litres)
2. Screw the drain plug back into the gearbox using an M22 wrench.
3. The top plug for filling is unscrewed using an M22 wrench.
4. New gear oil can now be filled.
Use a funnel down the opening to avoid oil spillage!
It is filled with approx. 0.40 liters
5. 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



Drain plug for gearbox on Scorpion 490 boom mower



Adding gear oil to the Scorpion 490 boom mower

7.4.2 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](#) and/or [Specifications](#)

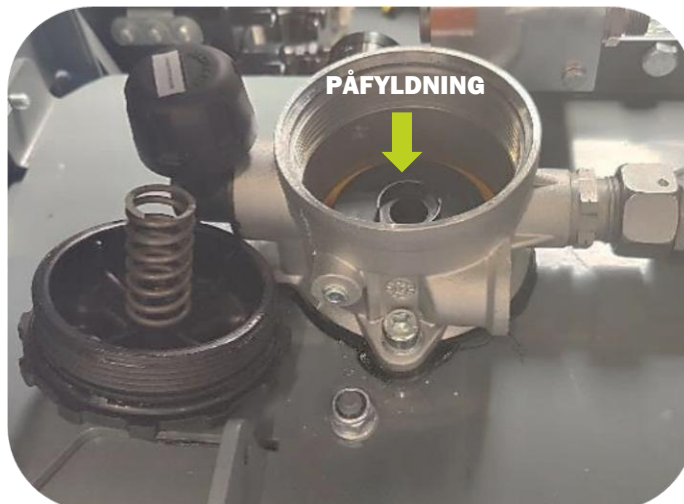
NOTICE

When changing the hydraulic oil on the Scorpion 490 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 80 litres)
2. The drain plug is magnetic; examine it for possible metal shavings
3. Filling hydraulic oil takes place down into the return filter. Screw the lid on/off here when filling.
4. Remove the filter insert and add new oil (Approx. 80 litres)
5. Olieniveauet i tanken kontrolleres vha. skueglas på siden af olietanken. Installér filter og låg igen når den korrekte mængde er påfyldt.



Drain plug for oil tank on Scorpion 5-830 boom mower



Adding hydraulic oil to the Scorpion 490 boom mower



Sight glass for checking hydraulic oil level in tank

7.5 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](#)

1. Connect the manometer to the outlet on the boom mower high pressure filter. The manometer outlet is located on the high-pressure filter, 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

7.6 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

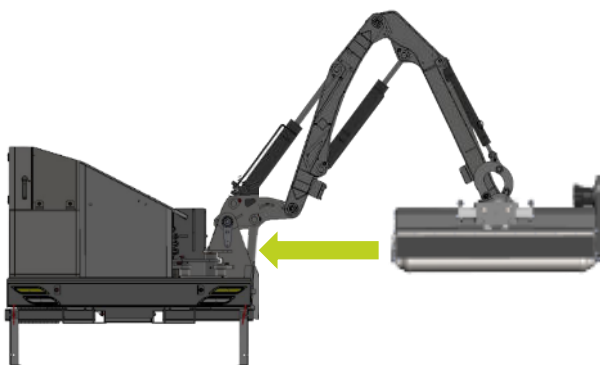
As long as an operator is sitting in the cab of the vehicle, no one may be around the machine. Crushing hazard!

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](#)
 - Carry out a "push"-test with the boom mower in this position as described in the next section:



7.6.1 "PUSH"-TEST

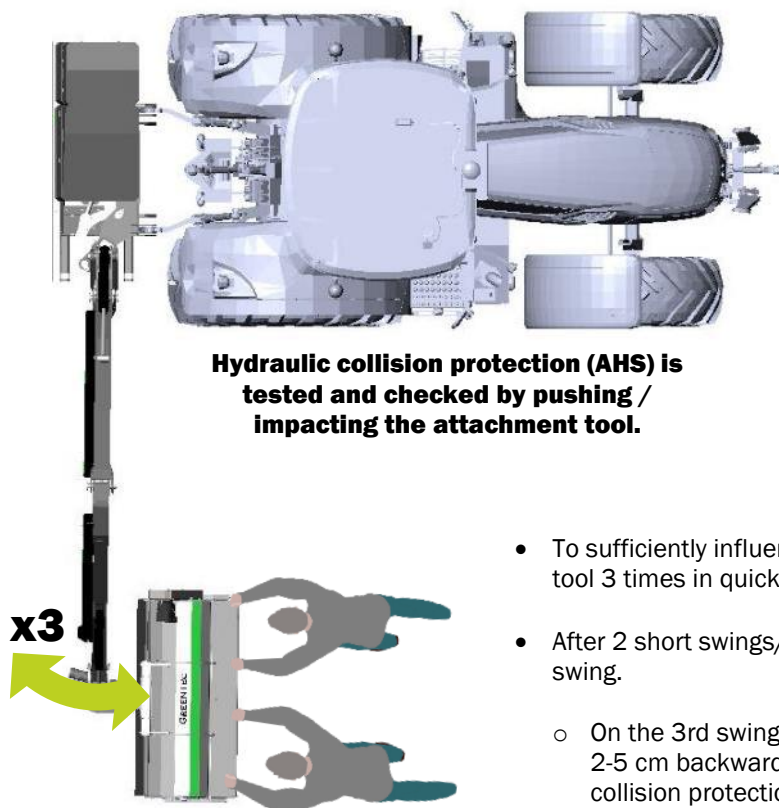
Let the attachment tool hover in a fully extended arm, about 70-90 cm above the ground. 2 adults should be able to push the attachment tool enough by hand, for it to move a few centimeters backward/forward. (The attachment tool must move when pushed but must be pushed very hard!)

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

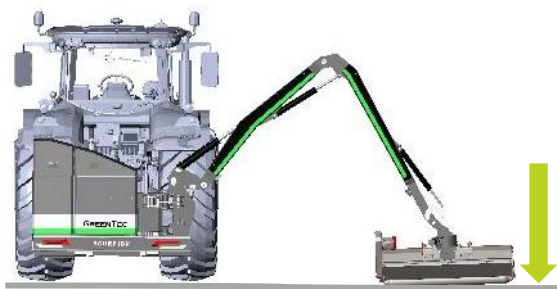
The hydraulic collision protection-function can in some cases be adjusted using the overpressure valves on the [HIC valve block](#) if a softer/firmer response of the "Break-back" function is desired.

Contact a GreenTec dealer for further information.

7.7 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:

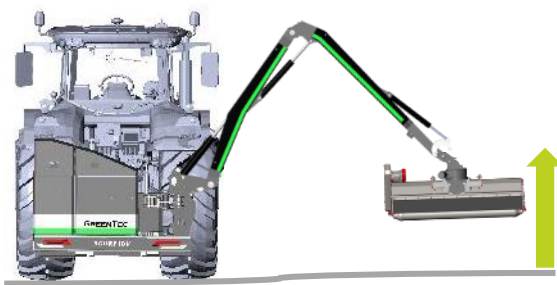
1. Lower the arm of the boom mower and attachment tool to the ground using the joystick in the cabin, so that the boom mower is relieved 100% on the ground surface:



2. Hydraulic float of arm is activated using the button  on the control panel. (Green LED lights up) (Accumulator is now 100% depressurized)

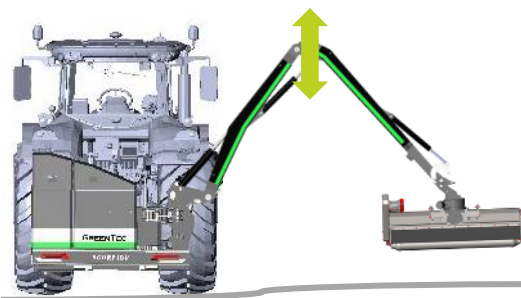
3. Hydraulic float of arm is de-activated again using the button  on the control panel. (Green LED turned off)

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)



7.8 TIGHTENING TORQUES OF BOLTS AND HYDRAULIC CONNECTIONS

7.8.1 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.

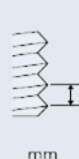
TIGHTENINGS TORQUES: BOLTS / NUTS						
ISO-metrisk standard: Bolt grades						
Nominal tightening torques for steel bolts (Nm)						
						
			Regular (Quality grade 8.8)	Hardened steel (Quality grade 10.9)	Hardened steel (Quality grade 12.9)	
M6	1,00	10	9,8 Nm	14,0 Nm	17,0 Nm	
M8	1,25	13	24,0 Nm	33,0 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 23 – Tightening torques for bolts and nuts

7.8.2 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 24 – Tightening torques for hydraulic connections

7.9 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 [Tightening torques for hydraulic connections](#))
- 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:

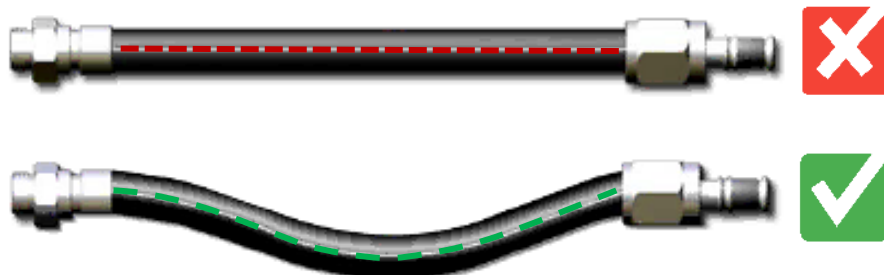


⚠ WARNING

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.

7.10 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.

7.11 LUBRICATION OF THE MACHINE

The moving parts of the Scorpion 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.

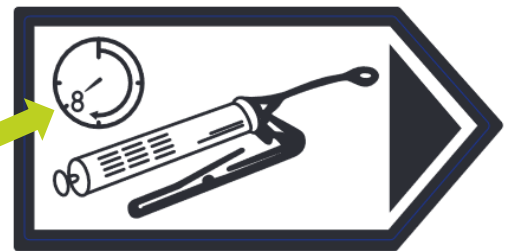
All lubrication points at moving joints and cylinders on the Scorpion boom mower are clearly marked with the following mark:

The number on the dial indicates that lubrication must be done after **every 8 hours of work**.

It is stated in the specifications which type of grease (or equivalent) to be used for the machine.

See section: [Specifications](#)

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!



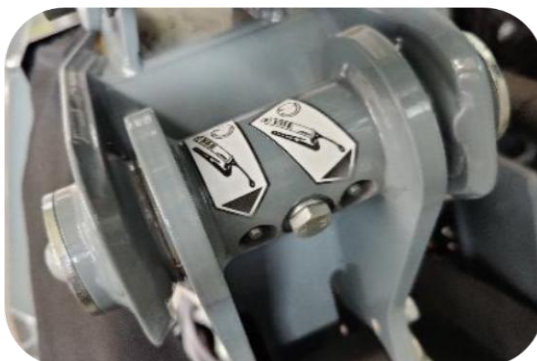
Lubrication interval indicator

CAUTION

GreenTec ALWAYS recommends using a manual hand sprayer/grease press to lubricate the Scorpion 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

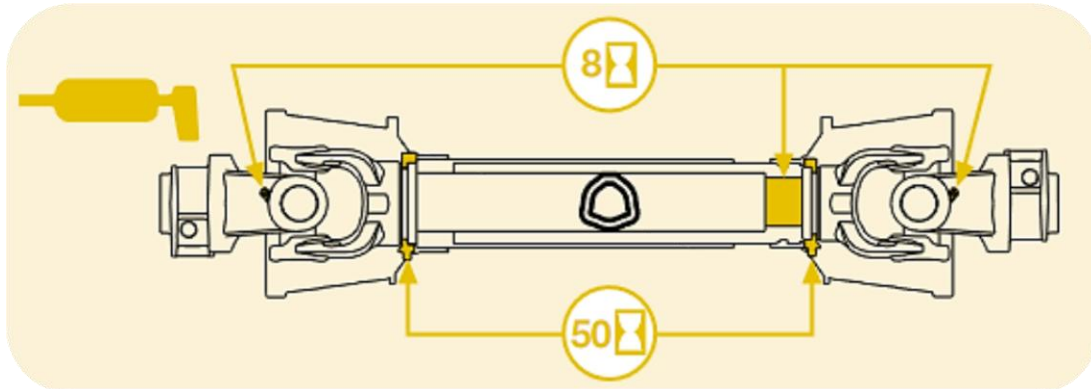
7.11.1 PTO SHAFT LUBRICATION

⚠ 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**.

7.12 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!

7.13 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!

7.14 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 25 – Overview of the disposal/scraping of machine parts

8. TROUBLESHOOTING

8.1 TROUBLESHOOTING PROCEDURES

If the Scorpion 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) (Standard and Plus models)
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) (Standard and Plus models)
	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
	Arm mower not mounted vertically on vehicle.	Adjust the upper part of the 4-point linkage system between the boom mower and the vehicle (Standard and Plus models)

(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 (Standard and Plus models)
	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 26 – Identifying errors / faulty conditions

9. APPENDIX

9.1 HYDRAULIC DIAGRAMS

9.1.1 SCORPION 490 BASIC PLUS

NOTICE

(IN PREPARATION)
Contact GreenTec's Aftersales & Service department.

9.1.2 SCORPION 490 PLUS

NOTICE

(IN PREPARATION)
Contact GreenTec's Aftersales & Service department.

9.2 ELECTRICAL DIAGRAMS

NOTICE

Electrical diagrams / schematics of the machine's power supply can be found any time at the following link: <https://greentec.eu/en/extranet/spareparts/301> or by contacting GreenTec's Aftersales & Service department.

NOTES:

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