

MULTI CARRIER

HXF 2302, 2802 & 3302



HANDBOOK

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2. EDITION

 **GREENTEC**

Cutting Edge Technology



MULTI CARRIER

HXF 2302 – 2802 – 3302

INSTRUCTION MANUAL

2. EDITION – JUNI 2021
ORIGINAL EDITION

! IMPORTANT !

- 🌿 This GreenTec HXF multi carrier must be mounted on an approved vehicle with an approved GreenTec attachment tool for proper operation.
- 🌿 It is important that the operator is provided with a document on "technical documentation and registration" of the machine as well as the instruction manual for the attachment tool before the machine is used for the first time.
- 🌿 It is important that the operator fully understands the contents of the technical documentation before using the machine.
- 🌿 The technical documentation must accompany the machine and must always be available to the operator.
- 🌿 In the event of later resale of the machine, the technical documentation must accompany the new owner.
- 🌿 The contents of the instruction manual are based on information, standards and regulations applicable at the time of publication.
- 🌿 As our products are constantly evolving and improving, there may be changes in specifications.
- 🌿 If there is information that differs on the current machine, updated instructions can be found on our [website](#) or by contacting GreenTec - Aftersales department at: service@greentec.eu

MANUFACTURER, NAME AND ADDRESS (a)

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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 maintenance of green areas.

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

We want to make a product available in a way that does not cause damage or misunderstandings 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 GreenTec machine's operational safety, reliability, and value.

Therefore, read this instruction manual carefully as it will familiarize you with installation, use, care, and maintenance. Pay special attention to safety instructions!

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

We hope you enjoy your new GreenTec machine!



Kind regards

Signature: 
John Christensen
Owner, GreenTec A/S

GreenTec's vision is to develop and sell quality machines for the maintenance of green areas, e.g., 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 collaboration with dealers and end users. It is our goal to identify all needs in the market segment with a minimum of 2 different solution proposals.

By in-depth analysis of requirements and serious consultancy, the customer must be offered the best possible solution, where individual needs can also be met through modular construction of the product program.

We also strive to offer the best possible aftersales service and a fast and efficient spare parts supply.

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DECLARATION OF CONFORMITY (c)

ACC. TO MACHINERY DIRECTIVE 2006/42/EC, ANNEX II.A

MANUFACTURER: GreenTec A/S
 COMPANY ADDRESS: Merkurvej 25
 ZIP-CODE AND CITY: DK-6000 Kolding



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

TYPE:	PRODUCT:	CAN BE MOUNTED ON:
Multi Carrier	HXF 2302 (9992302R-25, 9992302L-25 9992302R-25E, 9992302L-25E)	Quadsaw LRS 1402 Rotary Hedge Cutter RC 102 Cutterbar HL 152 Barrier Mower RI 60 & 80 Weed Clearing Brush BR 70
	HXF 2802 (9992802R-25, 9992802L-25 9992802R-40, 9992802L-40 9992802R-25E, 9992802L-25E 9992802R-40E, 9992802L-40E)	Quadsaw LRS 1402 & 1602 Rotary Hedge Cutter RC 102 & 132 Cutterbar HS 172 Cutterbar HL 152, 182 & 212 Barrier Mower RI 60 & 80 Weed Clearing Brush BR 70
	HXF 3302 (9993302R-40, 9993302L-40 9993302R-50, 9993302L-50 9993302R-40E, 9993302L-40E 9993302R-50E, 9993302L-50E)	Quadsaw LRS 1602, 2002 & 2402 Rotary Hedge Cutter RC 132 & 162 Cutterbar HX 170, 230 & 270 Cutterbar HS 172, 212 & 242 Cutterbar HL 182 & 212

Table 1 - Machines covered by declaration of conformity: HXF Multi Carrier

has been manufactured in accordance with the Machinery Directives 2006/42 / EC and 2014/68 / EU of the European Parliament and of the Council with reference to the following standards associated with its design, construction, and production:

NAME:	DECIPTION:
DS/EN ISO 12100:2011	Machine safety - 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: HXF Multi Carrier

The declaration is valid for the above equipment, up to and including the machine's connections, resp. suspension and stabilization, power transmission and electrical connection.

When connecting the above equipment to a vehicle and/or to tools other than those mentioned above, it is the responsibility of each owner and operator to ensure that the vehicle and the overall machine comply with the applicable requirements of relevant directives.

Date: 07.01.2019

Signature: 
 John Christensen
 Owner GreenTec A/S

1. MASCHINE DATA, USEFUL INFORMATION (b)

Before the machine is used for the first time, the importer / dealer is responsible for ensuring that the buyer receives all documents associated with the machine and that the machine is registered correctly 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 make sure that the buyer and operator fully understand the contents before using the machine.

If the machine is resold, all the technical documentation provided must be handed over to the new owner and must always follow the machine.

The following fields are filled in, for use when ordering spare parts or other inquiries:

1.1 REGISTRATION OF GREENTEC MASCHINE DATA

! THESE DATA MUST ALSO BE ENETERED VIA LOGIN IN GREENTEC EXTRANET !

Maskinens betegnelse:	
Serial number:	
Date of delivery:	
Importer / dealership:	
E-mail:	
Telephone:	

Table 3 - Machine data form

 **GREENTEC**

Merkurvej 25
DK 6000 Kolding
Danmark
Tel: +45 75553644
Fax: +45 75554243
E-mail: info@greentec.eu
Webadresse: www.greentec.eu
Åbningstid: mandag-fredag 8-16

DEALER STAMP

1.2 MANUFACTURERS PLATE

All GreenTec machines are equipped with a manufacturer's plate.

The manufacturer's plate contains important information related to the machine, including a unique serial number used for identification.

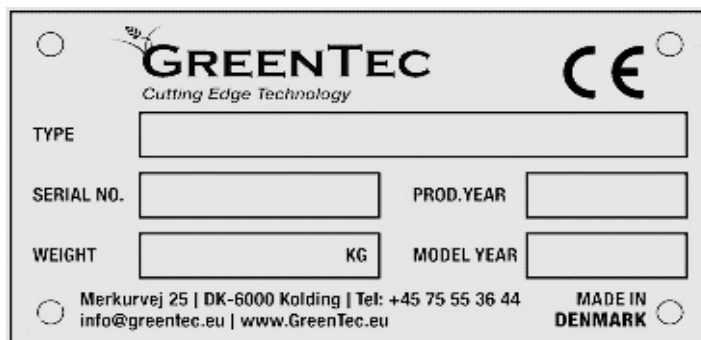


Figure 1 – Manufacturer's plate for GreenTec machines

CONTENT OF MANUFACTURER'S PLATE:	
Type:	Machine model and type number.
Serial No.:	The machines unique serial number.
Prod. year:	Production year of the machine.
Weight:	Weight <i>without</i> optional equipment. (kg)
Model year:	Development year of the machine.
<i>The plate also indicates the address information of the manufacturer.</i>	

Table 4 – Contents of the manufacturer's plate

1.3 WARRANTY

To maintain GreenTec's 2-year warranty and product liability insurance, only genuine GreenTec spare parts may be used on GreenTec machinery 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.

- See GreenTec's warranty conditions in section 5 under the Terms and Conditions of Sale and Delivery here: <https://greentec.eu/en/terms-and-conditions-sale-and-delivery/>

1.4 USE OF OTHER MANUFACTURERS OF MULTI CARRIERS

NOTICE

When mounting on multi carriers other than GreenTec's, a new risk assessment of the machine must be submitted.

If the machine is mounted on an unapproved multi carrier, the risk assessment basis lapses, and thereby the validity and guarantee of the declaration of conformity.

It is the responsibility of each operator to assess the risk of this interconnection before using the machine.

2. GENERAL INFORMATION

2.1 INSTRUCTIONS USING THIS MANUAL

Read this instruction manual carefully before mounting and commissioning the machine.
If in doubt, contact your local dealer or GreenTec - Aftersales department.

NOTICE

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

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

2.2 DEFINITION OF INFORMATION SIGNS

The following definitions apply to this entire instruction manual:

⚠ DANGER

DANGER!

Warns of a potential situation that could result in death or permanent disabling injuries if the regulations are not followed carefully!

⚠ WARNING

WARNING!

Warns of a potential situation that could result in partially disabling injuries or serious bodily injury if the regulations 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 that is deemed important or useful.

2.3 DEFINITIONS, TERMS AND DESCRIPTIONS

Operator:	Daily user and/or starter of the machine.
Owner:	Buyer, owner or those responsible for the operation and maintenance.
Attachment tool:	GreenTec attachment tool, or working tool handled and carried by multi carrier during operation
Multi carrier:	GreenTec HXF Multi Carrier, support arm, or lift that controls, handles and carries the attachment tool during operation.
Vehicle:	Machine that transports multi carrier + attachment tool.
LH + RH:	Left Hand and Right Hand.
	These terms are used when the machine is mounted on the vehicle, seen from behind. These designations are also used when referring to the vehicle.
PTO:	Power Take Off-shaft from the vehicle to machine.

Table 5 – Definitions, terms, and descriptions in the instruction manual.

3. SAFETY




3.1 LOCAL LEGISLATION IN THE COUNTRY OF USE

The use of the machine may be restricted by the laws of the countries in which it is used.

It is important that the responsible owner and operator familiarizes himself with the country's laws and regulations regarding cutting, mowing and maintenance of fences and hedges.

3.2 WARNINGS, PROHIBITIONS, AND INSTRUCTIONS

The instructions derive from the current national accident prevention regulations, which the operator and operator must comply with:

	For all types of work on the machine, this must be disconnected from all hydraulics!
	Only authorized personnel may perform service work on the machine!
	Read the instruction manual carefully before using the machine!

3.3 SAFETY LABELING

The machine is affixed with safety labels, these are located at the identified hazards to which one is exposed, when working with, and staying near, the machine:

3.3.1 PERSONAL SAFETY EQUIPMENT – LABELS

It is recommended that the following safety equipment is used when working on 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 sections, covers the precautions GreenTec has deemed necessary for use.
- 🌿 The varying circumstances that may occur while working with this machine cannot always be foreseen.
- 🌿 No good advice can replace "common sense", "timely care" and "paying attention", but the above recommendations are a good start to the safe use of the GreenTec machine.

3.3.2 WARNING LABELS

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

 	<p>Warning!</p> <p>Read relevant instruction manuals carefully before using this machine.</p> <p>Follow all instructions and safety instructions when using the machine.</p>	 	<p>Warning!</p> <p>Always pay attention to overhead lines! Between the electrical masts there will always be a risk of touching the overhead lines.</p> <p>In case of doubt - contact the local power plant for safety distance instructions.</p>
 	<p>Warning!</p> <p>Check for every 8 hours of use that all bolts / nuts are tightened.</p>	 	<p>Warning!</p> <p>Beware of oil in case of skin contact or inhalation of oil vapors, as well as high pressure in case of leakage or handling.</p> <p>Switch off the engine, remove the key and apply the parking brake before maintenance or repair work.</p>
 	<p>Warning!</p> <p>Take care of the swingarm during use.</p> <p>Keep your distance, and always stay out of its reach.</p>	    	<p>Warning!</p> <p>Closed hydraulic circuit under high pressure. Stated value: 50 bar.</p> <p>The collision protection cylinder is under constant pressure from the accumulator.</p> <p>Any separation without draining the pressure will result in violent splashes, oil vapors and oil mist which can be very dangerous by inhalation and skin contact.</p>
		<p>Only to be disassembled by a skilled mechanic after the pressure has been drained by the system.</p>	

Figure 3 – Safety labeling: warning labels

3.4 OPERATING IN PUBLIC AREAS

When working in publicly accessible places, such as at roadside, the residence of others in the area must be considered.

Stop the machine immediately when e.g. pedestrians, cyclists, riders, etc. are approaching the safety zone. Only resume work when these are at a safe distance again.

When the machine is used on public roads, the applicable traffic laws must be observed at all events.

3.4.1 WARNING SIGNS IN PUBLIC PLACES

- 🌿 The work area should be marked with appropriate signage, this is a legal requirement in public places.
- 🌿 Signage must be clearly and correctly placed so that the danger is made clear.
- 🌿 Contact the Road Directorate / authority for detailed information on current legislation.
- 🌿 Road authorities should be advised before starting work on public roads.

3.4.2 USE OF WARNINGS SIGNS

- 🌿 On two-way roads signposted in both directions.
- 🌿 The work should be within 1 km of signage.
- 🌿 Only perform work when visibility is good and when the risk is least - e.g. outside rush hour.
- 🌿 The vehicle must be equipped with a flashing orange light boom.
- 🌿 Vehicles should be in a conspicuous color and the operator should be wearing visible clothing.
- 🌿 Residues of material should be removed from the road and pavement as soon as practicable, and at appropriate intervals.
- 🌿 Work must be performed before removing warning signs.
- 🌿 Collect all road signs as soon as the work is completed.

3.4.3 PROPOSED SIGNS WHEN WORKING ON PUBLIC ROAD



HOLD LEFT



Mandatory sign:

- "Keep left"
- White and blue arrow signage
- Sign is visible on the back of the machine



VERGE CUTTING



Warning sign:

- "Road work"
- Supplementary text for work performed with appropriate distance
- Example: "Verge cutting 0-1 km"



ONE LANE ONLY



Warning sign:

- "Road chicane"
- Apply following text:
 - "One lane only"

Figure 4 – Proposed signage on public roads

NOTICE

The above signage applies within EU mainland where traffic passes to 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 each country.

3.5 RECOMMENDATIONS FOR OPTIMAL SAFETY AND OPERATION (I)

⚠ DANGER

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

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

- ⚠** You may get stuck when the machine is engaged or disconnected and when the multi carrier is moved out or in, up or down and forward or back!
- ⚠** The machine can tip over when the multi carrier is raised!
- ⚠** You can be caught by the rotating shaft from the PTO!
- ⚠** You may be hit or caught by the moving parts, e.g., flails, knives, drive shaft and wings from mounted attachment tools.
- ⚠** You may be hit by flying materials or machine parts in case of machine damage!
- ⚠** The machine can tip over, even when not in use!
- ⚠** The attachment tools are powered by hydraulic oil from the hydraulic system in the machine or from the power-providing vehicle. The operator of the vehicle should have knowledge of how the hydraulic oil should be handled! (Read in the safety data sheet for the oil)
- ⚠** High pressure oil spray from damaged fittings or hydraulic hoses can penetrate the skin and cause serious injury!
- ⚠** Accident in case of collision with other vehicles or lost objects on the roads.
- ⚠** ***Always pay attention to overhead lines!***

Between the electrical poles there will always be a risk of touching the overhead lines. If in doubt - contact the local power plant for safety distance instructions.



3.6 NECESSARY PROTECTIVE MEASURES (m)

NOTICE

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

- ✓ Make sure that the operator of the machine has read this instruction manual, as well as instruction manuals for the multi carrier and used vehicle.
- ✓ Make sure that the operator of the machine has been instructed in the use of the machine.
- ✓ Wear hearing protection if the machine is operated from a cabin that is not soundproof or if the cabin windows are open.
- ✓ Make sure all warning labels are always visible and that none of them are missing, damaged or illegible.
- ✓ Check that all guards are fitted correctly and that there are no damaged or loose parts.
- ✓ Make sure that all hydraulic pipes and hoses are positioned correctly to avoid rubbing, stretching, squeezing, or breaking them.
- ✓ Check the work area and remove any strings, poles, large stones, and other dangerous objects before operation.
- ✓ Drive at a safe speed adapted to the terrain as well as any other vehicles and obstacles.
- ✓ Make sure that the vehicle is stable and meets the machine manufacturer's recommendations for minimum weight - if necessary, use extra counterweight.
- ✓ Pay attention to electric wires, if in doubt about distance contact local power plant.
- ✓ It is recommended to use impact-resistant guards on the vehicle.
- ✓ Check that the machine's fittings, connections, and couplings are in good condition.
- ✓ Follow the manufacturer's instructions for removing and installing the machine from the vehicle.
- ✓ Disconnect the hydraulics for the machine, stop the engine, apply the parking brake, and remove the key before leaving the cab.
- ✓ If necessary, remove annoying residual material from the area.
- ✓ When inspecting, repairing or other work on the stationary machine, great care must be taken.
- ✓ Always wear gloves, safety shoes, safety glasses and appropriate tools to carry out the work.

3.7 WARNINGS ON HOW NOT TO USE THE MACHINE (h)

⚠ DANGER

Do not use the machine in the following ways!

- ✗ Do not operate the machine until the relevant instruction manuals have been read and understood!
- ✗ The operator must also be familiar with the operating handles according to the instruction manual for the connected multi carrier!
- ✗ Do not operate the machine if there are others within machine safety distances!
- ✗ Do not allow an inexperienced person to operate the machine unattended!
- ✗ Do not walk within the working area / safety zone of the machine. (Risk of injury!)
- ✗ Do not try to locate a leak in the hydraulics by hand, use a piece of cardboard instead!
- ✗ At no time should children be allowed to play on or near the machine!
- ✗ Do not perform any maintenance or adjustment without first removing the hydraulic pressure from the machine, lowering the multi carrier to the ground, stopping the vehicle's engine, applying the parking brake, and removing the key!
- ✗ Do not use and / or mount the machine on a vehicle that does not meet the manufacturer's specifications!
- ✗ Do not use the machine if the hydraulic system shows signs of damage!
- ✗ Do not stop the engine while the hydraulic pressure is activated!
- ✗ Do not attempt to use the machine for any purpose other than that for which it was intended!
- ✗ Do not leave the cab of the vehicle without removing the ignition key!
- ✗ Do not transport the machine while the hydraulic pressure is activated!
- ✗ Do not use a machine that is not maintained or if some of its guards are missing or damaged!
- ✗ Do not operate the vehicle or any of the control levers from a position other than the driver's seat!
- ✗ Do not drive with mounted machines where rotating parts are facing the cab of the vehicle, as this poses a risk of stones and material being thrown at the driver!










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

NOTICE

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

- ✘ The operator must ensure that all maintenance, inspection, and installation work is carried out by authorized and qualified professionals who, after reading the relevant instruction manuals, are in possession of sufficient knowledge.
- ✘ Maintenance, inspection, and installation work may only be carried out with the hydraulics disconnected.
- ✘ When carrying out maintenance work under the multi carrier, secure with suitable support elements.
- ✘ When replacing machines, check the hydraulic system for residual pressure. A possible residual pressure is reduced to zero. (0 bar)
- ✘ Use only suitable tools and wear heavy gloves, safety shoes and glasses.
- ✘ Handle the hydraulic oil and grease properly. Always be familiar with the safety data sheets.
- ✘ Immediately after completion of work, all safety and protection devices must be fitted and reactivated.

3.9 SAFETY INSTRUCTIONS FOR THE OWNER / OPERATOR

-  It is important to familiarize yourself with all controls and equipment as well as their function before starting the work. If the work has only begun, it may be too late.
-  Check the immediate area before starting and during operation of the work the machine must perform. (People, children, animals, or obstacles such as stones, fence posts, steel wire).
-  Ensure adequate visibility and illuminated work area. The safety distance specified in the machine's instruction manual must be strictly observed.
-  The operator's clothing must be tight. Avoid loose clothing.
-  The operator must be fresh and rested before using the machine, as well as taking breaks in case of fatigue, to ensure their own and others' safety.
-  The operator should ensure varying working positions and take frequent breaks to avoid musculoskeletal disorders.
-  The operator must not leave the driver 's seat while driving.
-  It is not permitted to “ride along” on the machine during transport and operation.
-  When working on high-voltage power lines, additional distance and caution are required

4. MACHINE DESCRIPTION, COMPONENTS AND SPECIFICATIONS

4.1 MACHINE DESCRIPTION (d)



GreenTec HXF 2802 Multi Carrier mounted on tractor with front loader.

HXF 2302:



HXF 2802:



HXF 3302:



- GreenTec's HXF Multi Carrier-series can be easily mounted on everything from smaller mini loaders, front loaders, to larger telescopic loaders, backhoes and loaders **with several different types of adapter / implement brackets.**
- For multi carriers in the HXF series, **6 and up to 13 implements can be selected**, depending on the size of the machine, where you can easily attach and remove implements without the use of tools using quick couplings and quick change.
- Grass, hedge, and fence mowing as well as cleaning of sidewalks are easily done with the correct attachment tool, via this versatile and flexible machine.
- The HXF multi carrier has a **45 ° hydraulic impact protection on the swingarm with Auto Reset (AHS).** The collision protection optimizes the work process, protects against overloading of the arm, and at the same time acts as a pre-pressure for the attachment tool used – e.g. GreenTec LRS Chainsaw
- The required amount of oil to be supplied to the HXF multi carrier is either **25, 40 or 50 l / min.** all depending on the tool and setup used. (See machine specifications)
- The HXF multi carrier is made up of invertible identical components, i.e. that the tool is mounted and assembled accordingly, and is therefore optionally available as **both right-handed and left-handed models.**
- The HXF multi carrier has been developed and optimized down to the smallest details, **whereby the transport width of between 1.3 m and 2.2 m has never been lower.**
- The range of the swingarm in the extended position on the HXF multi carrier ranges **from 1.8 m, up to 2.5 m (measured from the center of the vehicle)**, allowing one to easily navigate the vehicle and machine on smaller areas, such as cycle paths, gardens and parks. At the same time, the machine is particularly suitable for contractors and farmers in larger green areas.
- As standard equipment, all HXF multi carriers come with:

STANDARD EQUIPMENT: HXF MULTI CARRIER

Mechanical folding of swingarm from working to transport position.	HXF 2302, 2802 & 3302
Automatic Hydraulic Break-back system with tool pre-pressure (AHS)	HXF 2302, 2802 & 3302
Flow regulator with anti-cavitation and pressure relief valve.	HXF 2302, 2802 & 3302
Mechanical angle adjustment of attachment tool - up to 110 °.	HXF 2302, 2802 & 3302
Support legs for mounting.	HXF 2302, 2802 & 3302
Euro-tool bracket. ¹ (for vehicle)	HXF 2302, 2802 & 3302
1,5 m hydraulic hose set.	HXF 2302, 2802 & 3302
Adjustable foot for vertical mounting. **	HXF 2302 & 2802
Quick couplings on hydraulic hoses for changing attachment tools. *	HXF 2302
Quick-release bracket for changing attachment tools. *	HXF 2302

Table 6 – Overview of standard equipment on GreenTec HXF multi carriers

* Standard equipment: HXF 2302 multi carrier only

** Standard equipment: only HXF 2302 & HXF 2802 v. Purchase of [RI Barrier Mower](#) or [BR Weed Clearing Brush](#)

- The HXF multi carrier is available with several different types of accessories, including both hydraulic and electrically operated adjustment of working angle on the attachment tool, counterweights, longer hose sets and more.
- See the section on the optional equipment in this manual (page 24), and for more information on equipment options, go to the GreenTec [website](#).

¹ Euro-tool bracket should be selected based on the vehicle used, cf. optional equipment.

4.2 USE OF THE MACHINE

4.2.1 INTENDED USE OF THE MACHINE (g)

NOTICE

For any use of the machine other than that described in this section, GreenTec is not liable for any damages resulting therefrom. The responsibility then rests solely with the operator.

- The HXF multi carrier are available in several variations and sizes, but they all have the same basic structure and operation and are therefore similar.
- The machine is primarily used with a dedicated attachment tool for mowing grass, hedges and fences as well as cleaning sidewalks.
 - See specifications on the machine. ([Table 9](#) – page 27)

4.2.2 APPLICATION AND RESTRICTIONS OF THE MACHINE (h)

The capacity of the various HXF multi carriers is limited by the size of the hydraulic motor on the attachment tool, the oil flow it is supplied with, the amount of material to be cut, and of course the speed at which it is driven.

⚠ DANGER

The owner of the machine / operator is responsible for compliance with the following rules::

- The vehicle on which the machine is mounted must live up to the requirements for machines approved for agriculture.
- Under no circumstances should all safety values be exceeded.
 - Safety distances, pressure, flow, rpm, etc.
- Never use the machine without safety guards fitted.
- The machine must never be used for the transport of persons, animals or other equipment than described in this instruction manual.
- That the stability of the load-bearing vehicle is sufficient:
 - See the section on [Stability](#) (page 38), as well as the instruction manual for used attachment tools and vehicles.
- The multi carrier and attachment tool must never be used as a "crane" or other type of lifting equipment.

⚠ DANGER

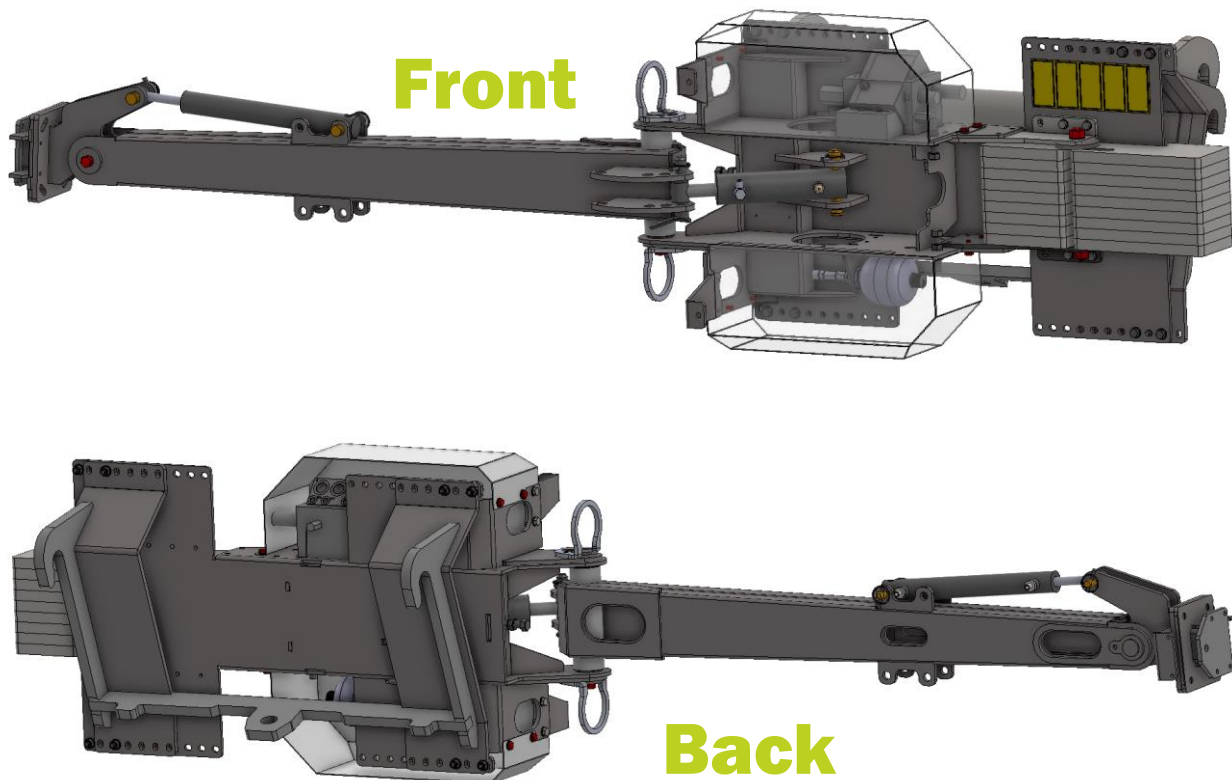
Safety guards on the attachment tool used can never work 100%!

Depending on the conditions being driven on and under, there will be a possibility that serious fragments / material may come flying and damage people or material. Therefore, distance must **always** be kept!

4.3 MACHINE COMPONENTS / MAIN PARTS

4.3.1 MAIN FRAME WITH SWING-ARM

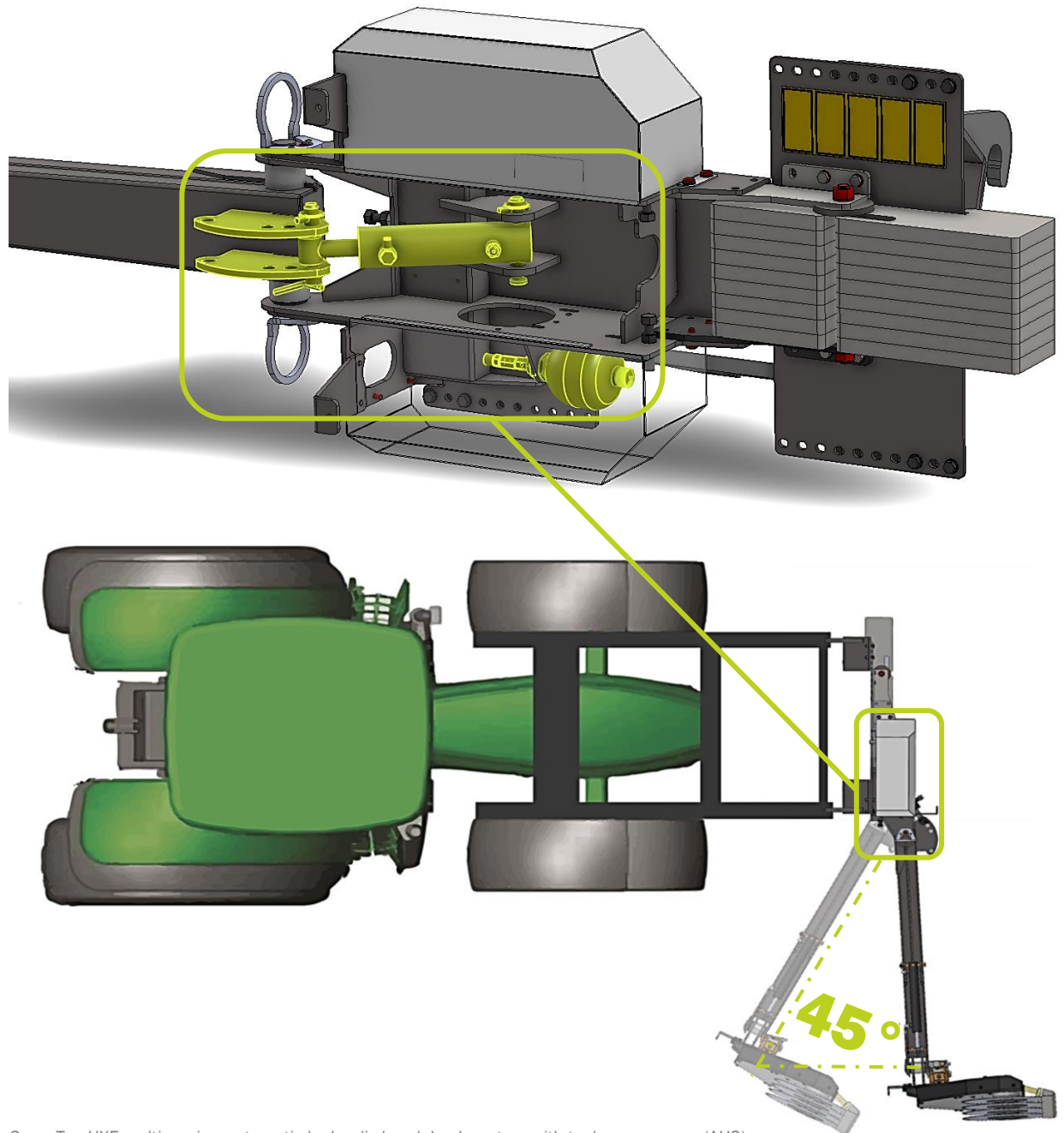
- ✎ The main frame consists of frame, swingarm, fenders, mounting brackets in S235 steel, as well as hydraulic parts and components.
- ✎ All parts on the machine are manufactured according to and / or dimensioned for the influences that occur during use.
- ✎ 180° manually rotatable arm system, with either mechanical, hydraulic or electronic adjustment of working angle, prepared for mounting with various attachment tools.
- ✎ All parts are bolted together and can be disassembled for easier and more efficient service and maintenance of the machine.
- ✎ The HXF multi carrier is designed with hose guides inside the cabinet and swingarm, for greater safety and easier use in terms of assembly, connection and use of attachment tools.
- ✎ The HXF multi carrier provides several options for various accessories and adapters / brackets for different vehicles. These are easily mounted and connected to the machine's H-shaped frame structure.
- ✎ There are fixed protective screens, which are designed to protect the user against unintentional contact with the electric valve, accumulator and hydraulic connection, as well as protection of components from external dirt, impacts etc.



GreenTec HXF Multi Carrier (HXF front: top & HXF back: bottom)

4.3.2 AUTOMATIC HYDRAULIC BREAK-BACK SYSTEM (AHS)

- ✎ The HXF multi carrier has an automatic hydraulic impact protection of 45° with "Auto Reset" function, for protection of the machine, which also acts as a pre-pressure for the attachment tool, e.g. LRS Quadsaw.
- ✎ The break-back system protection consists of a mounted cylinder connected to an accumulator. The accumulator works by ensuring a soft return of the cylinder piston, so that no recoil effect occurs when the oil pressure in the cylinder is affected.
- ✎ The break-back system / collision protection is fastened during preparation for use before operation and can be adjusted in 3 different levels / angles.



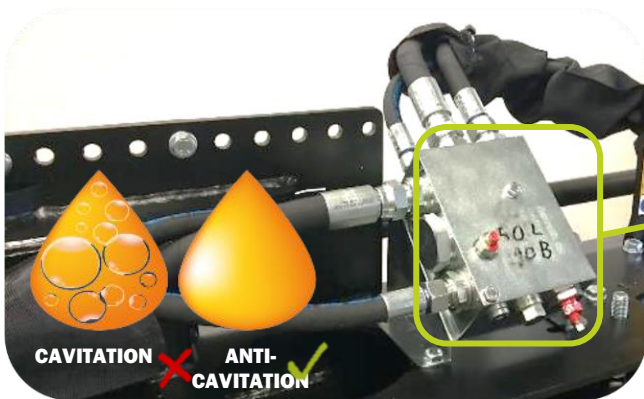
GreenTec HXF multi carrier: automatic hydraulic break-back system with tool pre-pressure (AHS)

4.3.3 FLOW REGULATOR FOR OIL QUANTITY ASSURANCE

- 🌿 The flow regulator on the HXF multi carrier ensures that not too much oil can get to the implement.
- 🌿 There is an overpressure and anti-cavitation valve built into the flow regulator, to ensure that no damage occurs to the machine as well as the attachment tool, by ensuring that cavitation does not occur at start / stop and error / incorrect pressure and return connection
- 🌿 The HXF multi carrier comes as standard with a double-acting oil outlet and a free return:
 - When fitting additional equipment such as a hydraulic working angle, an additional double-acting oil outlet from the vehicle is required. (1 x DW)
 - As an additional option, an electric control valve can be purchased for this.
- 🌿 The vehicle's hydraulic system must be able to deliver between 25, 40 or 50 l / min depending on the model and setup:

OIL QUANTITY: HXF MULTI CARRIER	
HXF 2302	25 l/min. @ 180 bar
HXF 2802	40 l/min. (Alternative: 25 l/min.) @ 180 bar
HXF 3302	50 l/min. (Alternative: 40 l/min.) @ 180 bar

Table 7 – Oil supply overview: HXF multi carrier



Flow regulator with over-pressure and anti-cavitation valve: HXF multi carrier



**25, 40 or 50
l/min.**

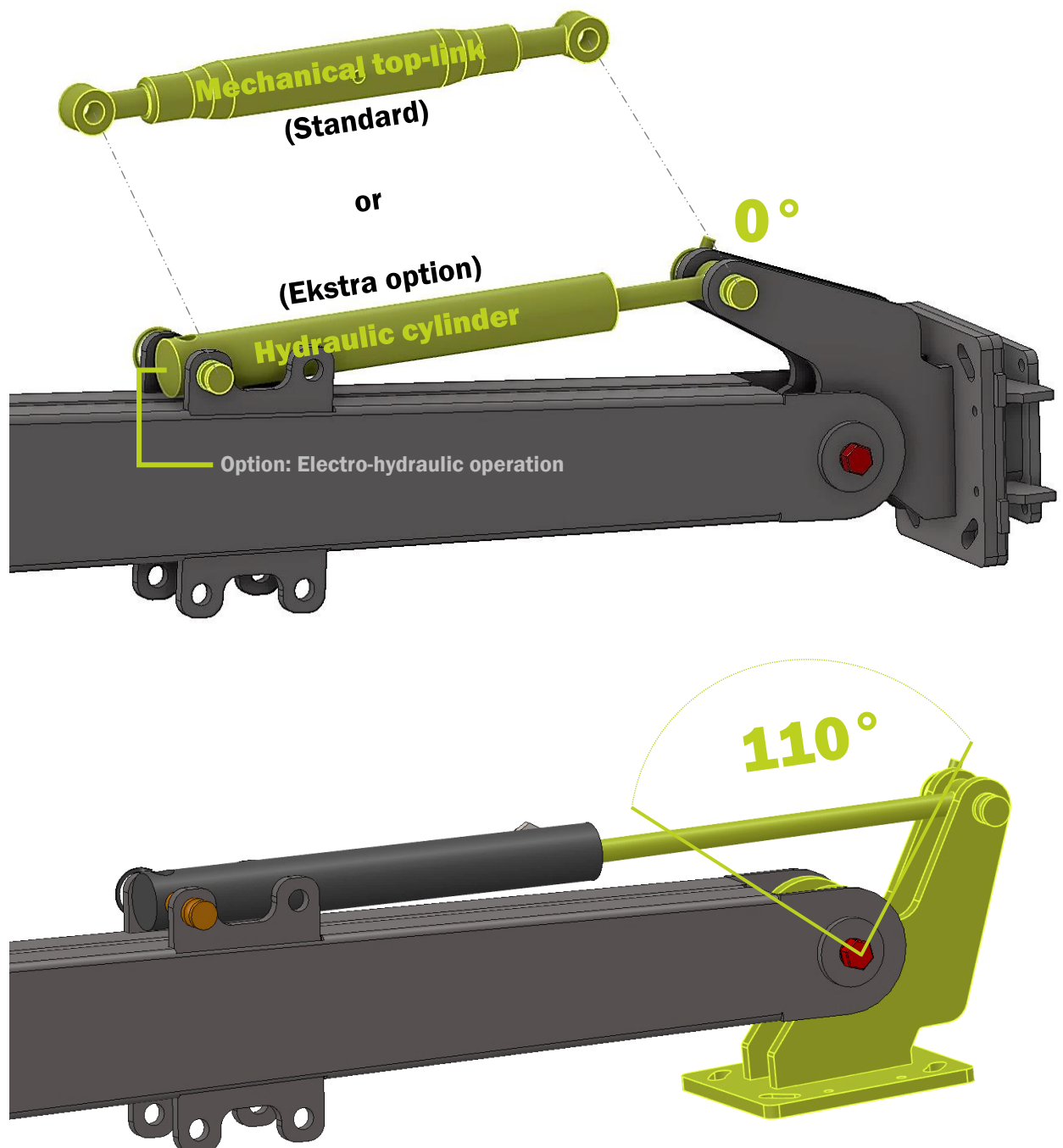
NOTICE

With any kind of adjustment of the flow regulator without instructions from GreenTec, both the guarantee and risk assessment basis for the machine lapses.

GreenTec is not liable for damages as a result, and the risk is then solely the responsibility of the operator.

4.3.4 WORKING ANGLE ADJUSTMENT

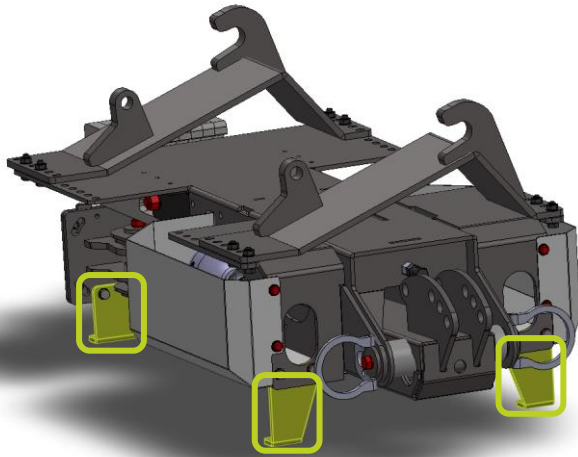
- ✎ The swingarm on the HXF multi carrier comes as standard with an adjustable bracket for setting the working angle.
- ✎ The working angle of the HXF multi carrier can be adjusted from approx. 0 ° (vertical position) to approx. 110 ° (horizontal position).
- ✎ The HXF multi carrier is supplied as standard with an adjustable top link for mechanical working angle adjustment.
- ✎ Hydraulic working angle adjustment can be purchased as an option, which is adjusted via the flow controller's electric control.



Working angle adjustment: HXF multi carrier

4.3.5 SUPPORT LEGS FOR MOUNTING

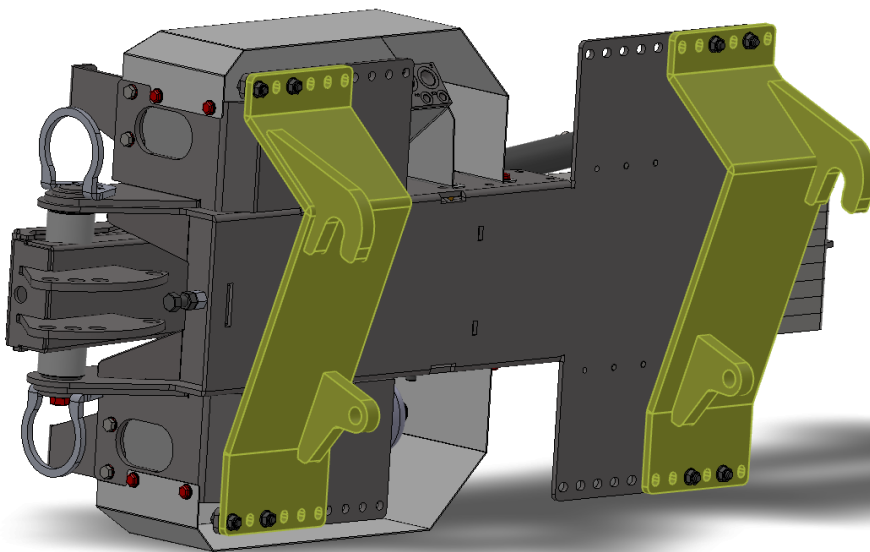
- There are mounted 3 pcs. solid support legs on all HXF models.
- The support legs contribute to an easy, stable and safe removal and installation of the multi carrier on the vehicle.
- The support legs also ensure that the HXF multi carrier is stable, during storage and possibly service and maintenance.
- All approved attachment tools can be mounted on the HXF multi carrier in this position, except for the RI Barrier Mower or BR Weed Clearing Brush (See section 4.3.6 here)



Support legs on HXF multi carrier (shown with Euro-bracket)

4.3.6 EURO-BRACKET / ADAPTER FOR MOUNTING ON VEHICLES

- The HXF multi carrier always comes with a Euro vehicle bracket as standard.
- See accessories (page 24) for other brackets / adapters for the vehicle in use.



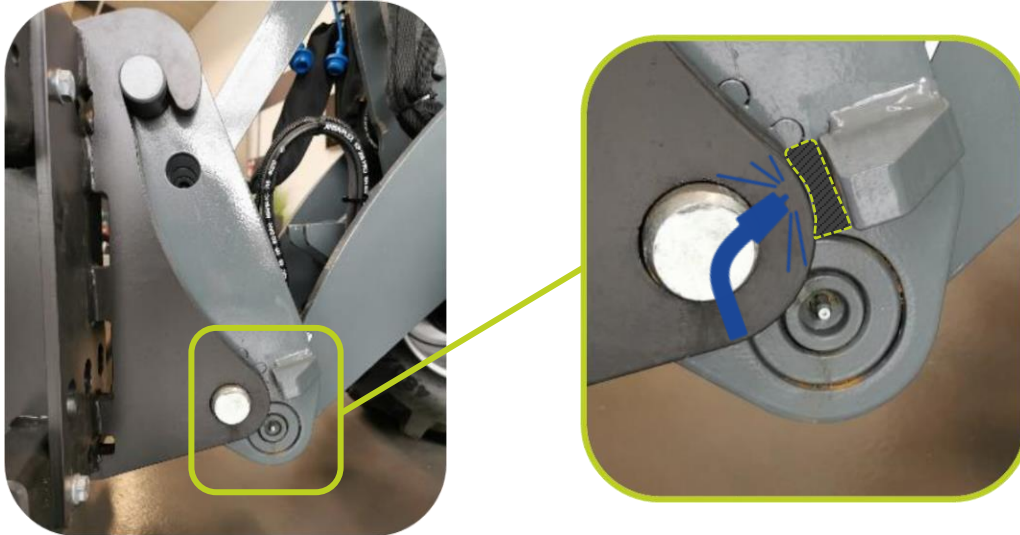
Standard Euro-bracket: HXF multi carrier

NOTICE

When using adapter / tool brackets, there should be an expectation of fitting the adapter.

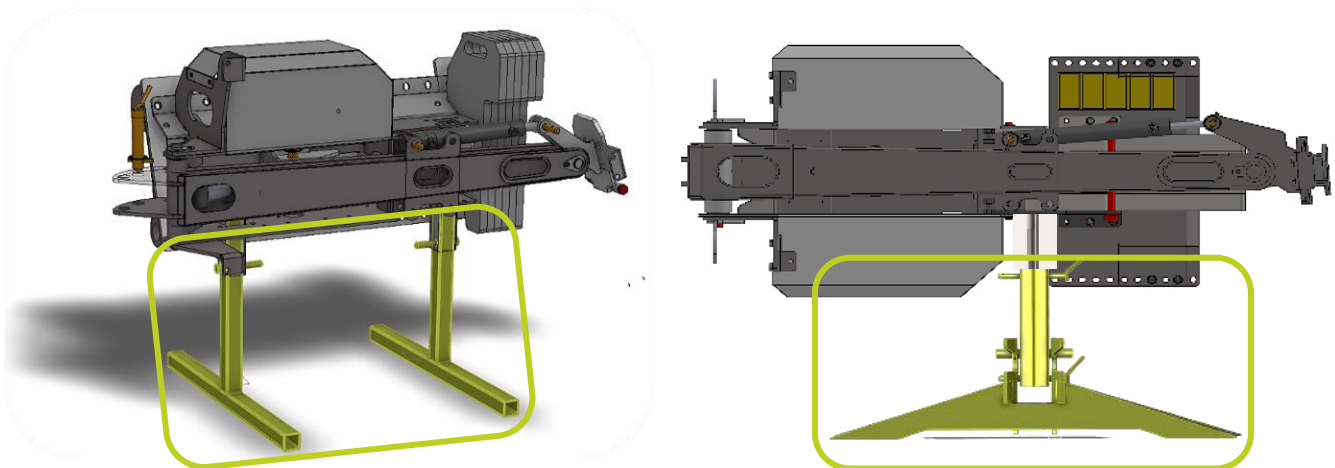
The correct distance for mounting adapter / tool brackets can always be found under the individual device on GreenTec's [website](#).

In many cases, a "stop" will have to be welded to the adapter where the vehicle's stop is located, to ensure that the holes on the adapter are directly next to the locking mechanism of the vehicle used (See illustration below).



4.3.7 ADJUSTABLE FOOT FOR VERTICAL MOUNTING (ONLY HXF 2302 & HXF 2802)

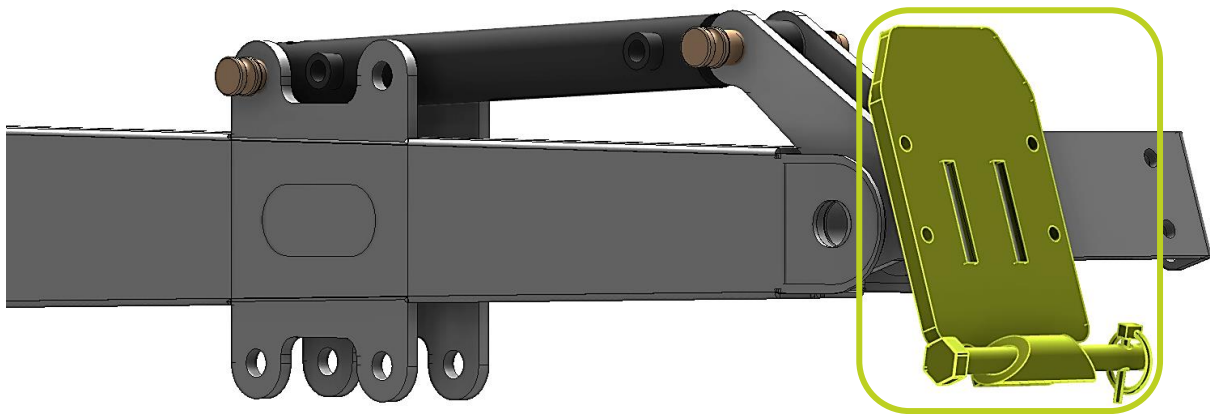
- The multi carriers HXF 2302 and HXF 2802 are designed with support legs as mentioned above, but a foot is included for adjusting and vertical mounting of the multi carrier only when purchasing and using [RI Barrier Mower](#) or [BR Weed Clearing Brush](#).
- The adjusting foot here also contributes to an easy, stable and safe removal and installation of the multi carrier on the vehicle.
- The adjusting foot ensures that the HXF multi carrier is also stable, during storage and possibly service and maintenance.



HXF 2302 (left) and HXF 2802 (right) multi carrier with adjusting feet for mounting RI Barrier Mower and / or BR Weed Clearing Brush

4.3.8 MECHANICAL QUICK RELEASE & QUICK COUPLINGS (ONLY HXF 2302)

- The HXF 2302 multi carrier comes with an optional mechanical quick release bracket, where you can easily remove and install attachment tools without the use of tools, also using hydraulic quick couplings.
- The quick release-bracket is pre-mounted on the multi carrier via the bracket on the swingarm on delivery, and the attachment tool is secured simply via a bolt with an associated ring split.
- Along with the quick release-bracket, hydraulic quick couplings are included for the hydraulic hoses, for easier connection and disconnection.
- The quick couplings are of the type "Flat-face" and are designed for leak-free connection and disconnection with safety lock to prevent accidental disconnection during use and operation.



Mechanical quick release bracket + quick couplings for hydraulic hoses: HXF 2302 multi carrier

4.4 APPROVED ATTACHMENT TOOLS (n)

⚠ WARNING

Remember, that when assembling with attachment tools other than GreenTec produced or approved, it is the sole responsibility of each operator to ensure that the vehicle and the overall machine comply with the applicable requirements and relevant directives!

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

If the multi carrier is fitted with an unapproved attachment tool, the risk assessment basis lapses, and thus the validity and guarantee of the declaration of conformity!

- The HXF multi carrier is intended for assembly with the following approved GreenTec attachment tools and accessories:

Description:	APPROVED ATTACHMENT TOOLS AND ACCESSORIES:		
	HXF 2302	HXF 2802	HXF 3302
Quadsaw LRS 1402	●	●	○
Quadsaw LRS 1602	○	●	●
Quadsaw LRS 2002	○	○	●
Quadsaw LRS 2402	○	○	●
Rotary Hedge Cutter RC 102	●	●	○
Rotary Hedge Cutter RC 132	○	●	●
Rotary Hedge Cutter RC 162	○	○	●
Cutterbar HL 152	●	●	○
Cutterbar HL 182	○	●	●
Cutterbar HL 212	○	●	●
Cutterbar HS 172	○	●	●
Cutterbar HS 212	○	○	●
Cutterbar HS 242	○	○	●
Cutterbar HX 170	○	○	●
Cutterbar HX 230	○	○	●
Cutterbar HX 270	○	○	●
Barrier Mower RI 60	●	●	○
Barrier Mower RI 80	●	●	○
Weed Clearing Brush BR 70	●	●	○
Accessories:			
Hydraulic working angle adjustment	●	●	●
Electric operation of working angle with control box (Can not be retrofitted)	●	●	●
Hydraulic hose set, 8.5m	●	●	●
Counterweights: (9,4kg)	●	○	○
Counterweights: (11,6 kg)	○	●	○
Counterweights: (14,0 kg)	○	○	●
Other brackets (brackets for vehicles)	●	●	●

Table 8 – Approved attachment tools and accessories: HXF multi carrier

4.5 ACCESSORIES

4.5.1 HYDRAULIC WORKING ANGLE ADJUSTMENT

- For hydraulic angle adjustment, a hydraulic cylinder is mounted on the swingarm tilt function.
- The hydraulic working angle adjustment therefore requires an additional 1 x DW outlet from the vehicle.
- The hydraulic working angle adjustment makes it possible to adjust the angle of the attachment tool via the vehicle's hydraulic control. (See instruction manual for the vehicle used)
- The attached tool on the HXF multi carrier can be adjusted between 0° (vertical position) and 110° (horizontal position).



Hydraulic working angle adjustment: HXF multi carrier

CAUTION

Always set the correct angle before starting work / while the machine is stationary.

Correction of the angle is possible while working. Use small movements here. Major corrections are best made while the machine is stationary.

4.5.2 ELECTRICAL OPERATION OF WORKING ANGLE W. CONTROL PANEL

- For hydraulic working angle adjustment with electric control, a hydraulic cylinder is mounted on the swingarm tilt function, as well as a flow regulator with electric control.
- For hydraulic working angle adjustment and electro-hydraulic operation, only 1 x DW outlet is required (and depressurized drain connection where required)
- Working angle adjustment with electric control makes it possible to adjust the angle via the included control panel from the driver's position.
- In the flow regulator with electric control, there is a prioritization valve that will always prioritize the tool's function rather than the adjustment of the working angle, for greater safety in use.



Components for electric operation of working angle: HXF multi carrier

NOTICE

It is not possible to retrofit electrical operation of the working angle on the HXF multi carrier!

4.5.3 HYDRAULIC HOSE SET, 8.5 M

- ✎ The HXF multi carrier is basically intended for mounting on the front of vehicles, where a hose set of 1.5 meters is included as standard.
- ✎ On some vehicles the 1.5 meters is not sufficient if the hydraulic outlet on the vehicle is located around the rear end.
- ✎ Therefore, it is possible to purchase a hose set of 8.5 meters.
- ✎ The hose set consists of 3 pcs. hoses in 8.5 meters (pressure, drain og return), incl. associated fittings, plugs and hose protection.

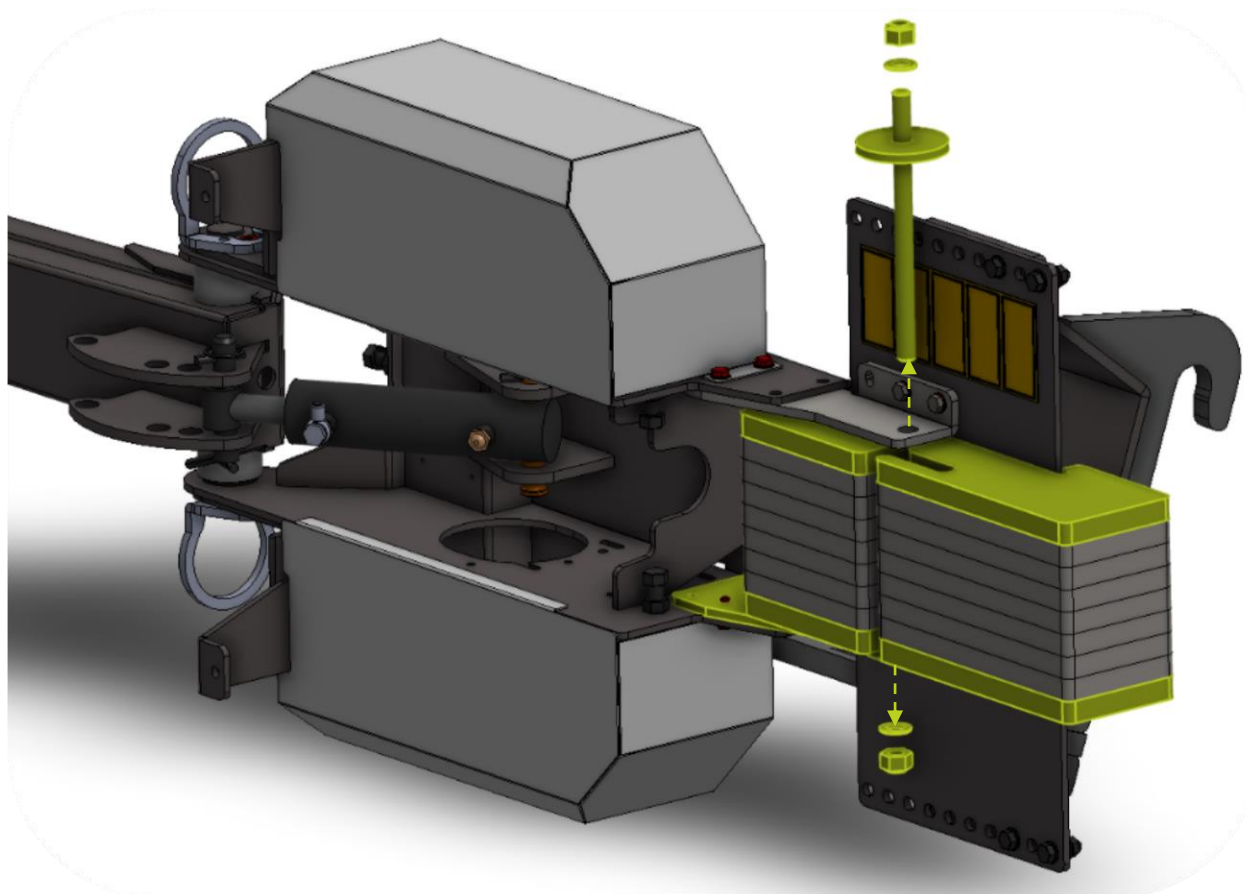


8,5 meters hose set + accessories: HXF multi carrier

4.5.4 COUNTERWEIGHTS

It is possible to purchase counterweights for the HXF multi carrier to increase and ensure stabilization in the extreme positions during operation of the machine and the vehicle used.

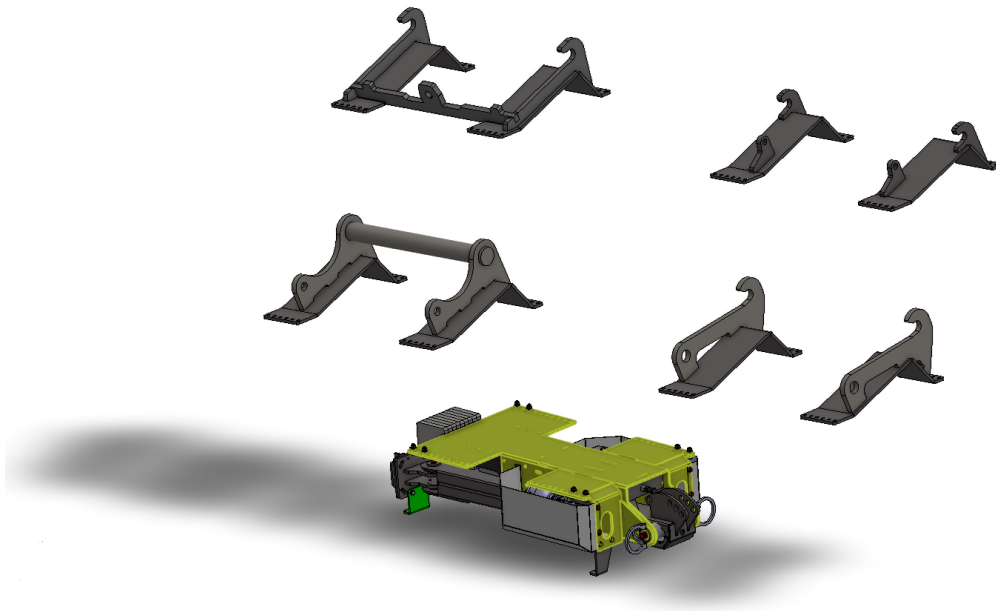
- ✎ Counterweights are available in the following sizes:
 - HXF 2302: 9,4 kg x 6 pcs. = 56,4 kg. total.
 - HXF 2802: 11,6 kg x 9 pcs. = 104,4 kg. total.
 - HXF 3302: 14,0 kg x 9 pcs. = 126 kg. total.



Location of the counterweights, shown here on HXF 3302 multi carrier (9 pcs.)

4.5.5 OTHER BRACKETS / ADAPTERS FOR VEHICLES

- It is possible to mount with other brackets / adapters, and the multi carrier is hereby compatible with up to +25 different makes of vehicles.



Brackets / adapters for vehicles: HXF multi carrier

- Before mounting and delivery, the customer should check which bracket fits the vehicle used, to ensure that the machine is delivered with the correct adapter. An order form should therefore be completed before purchase regarding the choice of adapter / bracket.
- See the full list of possible adapters on our website:
 - [GreenTec HXF 2302](#)
 - [GreenTec HXF 2802](#)
 - [GreenTec HXF 3302](#)

4.6 SPECIFICATIONS

DATA SHEET: HXF MULTI CARRIER				
		HXF 2302	HXF 2802	HXF 3302
Transport width:		1.3 m	2.0 m	2.2 m
Range of swingarm extended: (from mid-vehicle):		1.8 m	2.2 m	2.5 m
Weight (kg):		110 kg	155 kg	200 kg
Min. weight of vehicle (kg):		See: Stability – page 38		
A-weighted sound pressure level (>80dB):		Not over >80 dB		
Minimum oil requirement (l / min) (standard):		25 l/min. @ 180 bar	40 l/min. @ 180 bar	50 l/min. @ 180 bar
Alternative minimum oil requirement (l/min) (extra option):			25 l/min. @ 180 bar	40 l/min. @ 180 bar
Required oil amount (l/min):				
	Quadsaw LRS 1402:	1 x DW 25 l/min. + pressureless return (drain)	1 x DW 25 l/min. + pressureless return (drain)	
	Quadsaw LRS 1602:		1 x DW 40 l/min. + pressureless return (drain)	1 x DW 40 l/min. + pressureless return (drain)
	Quadsaw LRS 2002 & 2402:			1 x DW 50 l/min. + pressureless return (drain)
	Rotary Hedge Cutter RC 102:	1 x DW 25 l/min. + pressureless return (drain)	1 x DW 25 l/min. + pressureless return (drain)	
	Rotary Hedge Cutter RC 132:		1 x DW 40 l/min. + pressureless return (drain)	1 x DW 40 l/min. + pressureless return (drain)
	Rotary Hedge Cutter RC 162:			1 x DW 50 l/min. + pressureless return (drain)
	Cutterbar HL 152:	1 x DW 25 l/min.	1 x DW 25 l/min.	
	Cutterbar HL 182 & 212:		1 x DW 40 l/min.	1 x DW 40 l/min.
	Cutterbar HS 172:		1 x DW 40 l/min.	1 x DW 40 l/min.
	Cutterbar HS 212 & 242:			1 x DW 50 l/min.
	Cutterbar HX 170 - 270:			1 x DW 50 l/min.
	Barrier Mower RI 60:	1 x DW 25 l/min. + pressureless return (drain)	1 x DW 25 l/min. + pressureless return (drain)	
	Barrier Mower RI 80:	1 x DW 25 l/min. + pressureless return (drain)	1 x DW 40 l/min. + pressureless return (drain)	
	Weed Clearing Brush BR 70:	1 x DW 25 l/min.	1 x DW 25 ell. 40 l/min.	
	Recommended hydraulic oil:	Shell Tellus S2 VX 46 or equivalent.		
	Recommended oil filtration:	10 Micron-oil filter		
Olieudtag:	Recommended pressure:	180 - 190 bar		
	Max. return pressure:	5 - 15 bar		
	Max. drain pressure:	(Always check the instruction manual for the attachment tool) 2 bar		
	Break-back system (AHS):	(Put directly into pressureless tank) Accumulator with pre-charged pressure of 32 bar (nitrogen) Hydraulic system: total pressure of 40 - 50 bar (closed system)		
	Working season:	All year. Legislation in some countries can limit seasons.		
Lubrication:	Quantity / interval:	Semi-annually and after washing the machine.		
	Type:	Texaco Multifak EP 2 lithium-fedt or equivalent (Safety Data Sheet)		
	Materials:	Mainly built of S235 steel Hydraulic hoses: Steel-reinforced rubber coated Hydraulic valves: Cast iron and aluminum		

Table 9 – Datasheet of machine specifications: GreenTec HXF multi carrier

4.7 NOISE MEASUREMENT OF AIRBORNE NOISE (u)

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

Measurements were made 1 meter from the machines critical noise emitters at a height of 1.50 meters from the ground, without starting or using the tool.

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

The noise level of the machine is much less than the tools intended for mounting, as well as the vehicle on which the machine is mounted.

The noise level of the multi carrier will always be lower than the noise from the attachment tools that can be mounted, as well as the noise from the vehicle in question.

Therefore, follow the precautions intended for the tool used.

(Se section on [safety](#) - page 5)

5. INSTRUCTIONS FOR USE OF THE MASCHINE

(k)

5.1 INSTRUCTIONS FOR DELIVERY OF THE MACHINE

BEFORE USING THE MACHINE, CHECK THE FOLLOWING:

1. Check the HXF multi carrier and all supplied parts for transport damage.

(All loose parts for the multi carrier and attachment tool are packed down together with, or bolted / tied to the transport pallet)



Transport pallet with HXF multi carrier incl. loose parts and accessories.

NOTICE

GreenTec points out that the 3 shiny support legs are NOT transport brackets, but part of the HXF multi carrier!

The 3 shiny support legs do NOT need to be removed from the machine!

2. Check that the correct components are included with the HXF multi carrier:
(Neck brackets, counterweights, possibly quick-release brackets and quick couplings are pre-mounted)



Various loose parts and accessories: HXF multi carrier

- Instruction manual
- Quick-start
- Optional/accessories:
 - Bracket/adaptor
 - Counterweights
 - Control panel for electric control incl. wires.
 - Hydraulic hose set, 8,5 m
 - Quick-release bracket
 - Quick-couplings for hydraulic hoses.

5.2 INSTRUCTIONS FOR ASSEMBLY, CONNECTION AND DISCONNECTION (j)

Assembly and connection should ALWAYS be performed by the dealer for the first time.

When the HXF multi carrier is fitted for the first time to the vehicle, in some cases it may be necessary to make simple adjustments, especially in relation to stabilization, which should also be performed by the dealer.

WARNING

Remember that when mounting and coupling with attachment tools other than GreenTec produced or approved, it is the sole responsibility of each operator alone, to ensure that the vehicle and the entire machine comply with the applicable requirements and relevant directives!

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



If an unapproved attachment tool is mounted on the HXF multi carrier, the risk assessment basis lapses, and thus the validity and guarantee of the declaration of conformity!

5.2.1 PREPARATION OF VEHICLE



Before using GreenTec machines, it is important that the vehicle is properly prepared. This must be done both to achieve maximum safety and ensure optimal operation and stability of the vehicle.

As extra safety, safety glass / windows (polycarbonate), safety nets and / or other protective devices can be fitted to the vehicle when used with our machines.

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

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

If the vehicle is without a cab, safety goggles / fenders, hearing protection and a helmet MUST be used:

-  Bare skin should be protected with suitable thick clothing against any. plant debris that could hit the driver of the vehicle.
-  Se afsnit omkring [Personal safety equipment](#) – page 5.

5.2.2 MOUNTING AND CONNECTION OF THE MACHINE (i)

⚠ DANGER

Never use the HXF multi carrier with a mounted attachment tool 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!

⚠ WARNING

The mounting and connection of the machine may only be carried out by professionals who have knowledge and understanding of hydraulic systems, to avoid contamination of the environment, leaks and contamination of the closed hydraulic system!

⚠ WARNING

Mounting of any machines on a vehicle must take place on a level and safe surface.

Great care must always be taken when fastening the multi carrier to the vehicle!

The procedure may differ from vehicle to vehicle. Therefore, always use the instructions of the vehicle used and combine them with the instructions of the HXF multi carrier.

In this instruction manual, the HXF multi carrier is mounted and explained on a tractor with a front loader, via a standard Euro adapter/bracket.

Mounting on other types of vehicles takes place in a broad sense by the same procedure, but always examine the procedure for the vehicles on your own.

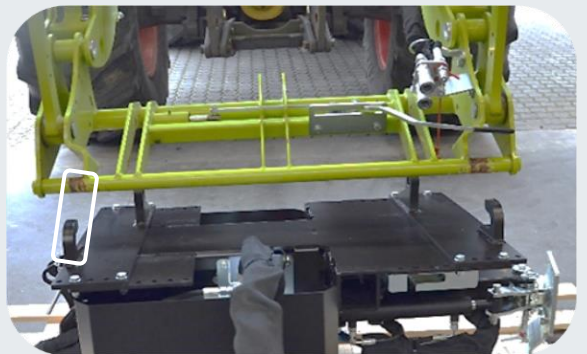
- 👉 Depending on the bracket used, the brackets must be fitted depending on the vehicle and bolts must be tightened according to [Table 15](#) – page 54

5.2.3 MOUNTING OF HXF MULTI CARRIER ON FRONT LOADER

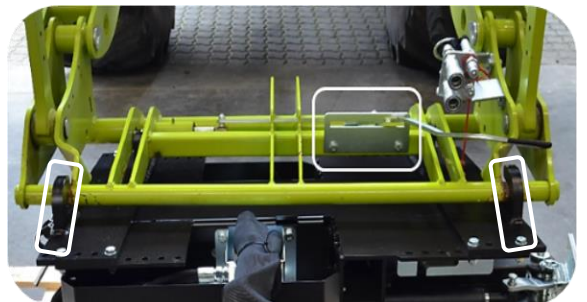
MOUNTING ON FRONT LOADER

1. Adjust and carefully drive the front loader into the adapter / bracket on the HXF multi carrier

The vehicle is carefully steered so that the front loader is driven into the hooks on the bracket.



2. Make sure that the hooks from the adapter / bracket have a firm grip on the front loader frame.



3. Then lock the front loader locking mechanism.



4. The support legs of the HXF multi carrier are bolted to the transport pallet.

These bolts can now be disassembled.

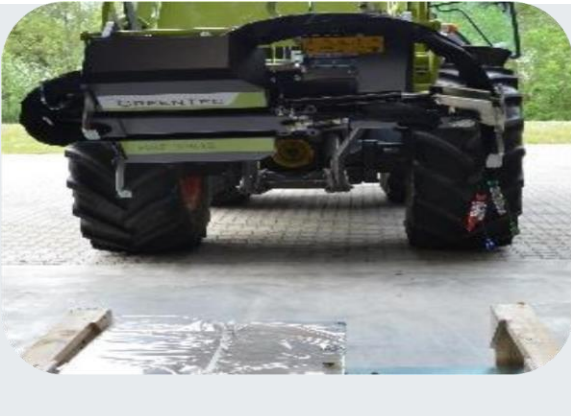


5. Carefully start lifting the multi carrier from the transport pallet.

Control panel for electric control is now installed.

(See section [5.2.4](#) – page 35)

Hydraulic hoses can now be connected to the machine.



CONNECTION OF HYDRAULIC HOSES:

⚠ CAUTION

Always remember to pay attention to impurities when connecting hydraulic hoses.

Dirty hydraulic couplings **MUST** be wiped / washed / cleaned before connecting the hoses.



6. A minimum of 3 hydraulic hoses from the HXF multi carrier to the vehicle are fitted:

- 👉 Drain hose (blue)
- 👉 Pressure hose (red)
- 👉 Return hose (green)

7. Mount with either quick couplings or standard hydraulic fittings.

(For standard hydraulic fittings, tighten them accordingly to [Table 16](#) - page 54)

By selecting accessories on the machine, there may be more than 3 hoses for connection, e.g. hydraulic working angle adjustment.



Table 10 - Guide on mounting and connection of HXF multi carrier on front loader

⚠ CAUTION

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

DATA SHEET FOR HYDRAULIC CONNECTIONS: HXF MULTI CARRIER

DRAIN: connected to drain sockets on multi carrier and vehicle.

DK: DRÆN	DK: DRÆN	DK: DRÆN	DK: DRÆN
UK: DRAIN	UK: DRAIN	UK: DRAIN	UK: DRAIN
D: LECK	D: LECK	D: LECK	D: LECK



- The smallest hose is for the DRAIN: **marked with BLUE.**
- The hose is connected to a pressureless (0 bar) tank connection.

CAUTION

Drain hose **must not** be connected to RETURN!

- Drain pressure **must never** exceed **2.0 bar** at the engine.
- Failure to do so will damage the hydraulic motor and void the warranty.

PRESSURE: connected to pressure sockets on the multi carrier and vehicle.

DK: TRYK	DK: TRYK	DK: TRYK	DK: TRYK
UK: PRESSURE	UK: PRESSURE	UK: PRESSURE	UK: PRESSURE
D: DRUCK	D: DRUCK	D: DRUCK	D: DRUCK



- The mid-size hose is for the PRESSURE: **marked in RED.**

CAUTION

Pressure specifications for the given motor should be observed!
([Table 9](#) – page 27)

RETURN: connected to return sockets on the multi carrier and vehicle.

DK: RETUR	DK: RETUR	DK: RETUR	DK: RETUR
UK: RETURN	UK: RETURN	UK: RETURN	UK: RETURN
D: RÜCKLAUF	D: RÜCKLAUF	D: RÜCKLAUF	D: RÜCKLAUF



- The biggest hose is for RETURN: **marked in GREEN.**
- The hose is connected to the double-acting socket.
- Minimum pressure: **5 bar (recommended)**
- Max. back pressure **15 bar** at the engine.

Table 11 – Data sheet for hydraulic connections: HXF multi carrier

DANGER

There are drain connections on all GreenTec’s motors, and drain connections **MUST** therefore be mounted directly in a pressureless tank (Max. 2.0 bar on the motor drains).

It is a good safety to check the pressure by measuring, after the machine has been mounted.

The machine must be powered by hydraulic oil from the vehicle. The driver of the vehicle should have knowledge of how the oil should be handled

(Always see safety data sheet for the hydraulic oil used)

High pressure oil spray from damaged fittings or hydraulic hoses can penetrate the skin and cause serious injury.

5.2.4 INSTALLATION AND MOUNTING OF ELECTRICAL CONTROL FOR WORKING ANGLE ADJUSTMENT

When electrically operating the working angle of the HXF multi carrier as an option, the control box for this must be mounted in the cab of the vehicle used.

The control box is mounted in the cab where the location is adjusted individually so that it does not interfere with either visibility or the general operation of the vehicle used.



Two wires must be connected:

- **POWER:** (red) 12V-plug → connect to the vehicle's 12V socket in the cab.
- **CONTROL:** (grey) small multi-plug (female) → connect to small multi-plug (male) from the HXF multi carrier



Components for mounting electric control of working angle on HXF multi carrier

⚠ CAUTION

Cables / wires must be routed and mounted so that it can move freely with the movements of the front loader, without getting caught, detached, or otherwise damaging the machine or equipment!

REMEMBER to connect the dust caps when the cables are in use so that dirt and grime does not accumulate around them, and down into the sockets themselves!

5.2.5 DE-MOUNTING OF HXF MULTI CARRIER ON FRONTLOADER



De-mounting of the HXF multi carrier takes place in reverse order, acc. to [Table 10](#) – page 31 - 33

⚠ CAUTION

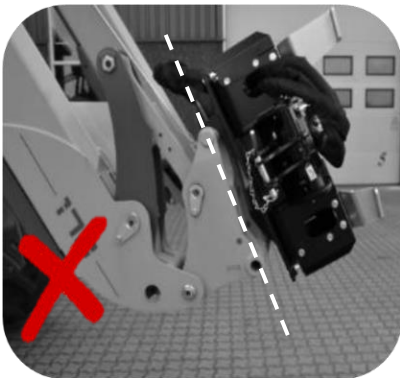
When de-mounting and/or replacing attachment tools, **always** check the hydraulic system for residual pressure!

A possible residual pressure in the system is reduced to zero (0 bar) before disconnecting the hydraulic hoses!

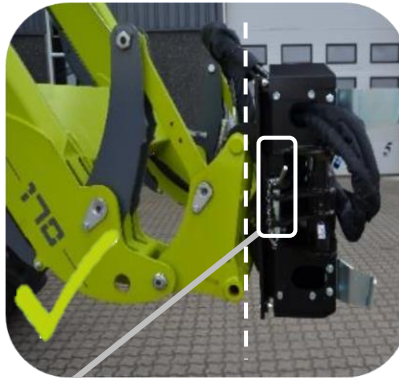
5.2.6 MOUNTING OF ATTACHMENT TOOL ON A HXF MULTI CARRIER

5.2.6.1 SETTING THE HXF MULTI CARRIER IN WORKING POSITION

In the folded condition, the arm of the multi carrier is tucked in and secured with the rivet from the break-back protection system.



The multi carrier leans backwards, and the arm can therefore not be swung out.



The multi carrier is vertical!
The arm is in perfect balance, and can now swing manually in and out.



The multi carrier leans forward, and the arm will fall out by itself. (Dangerous!)



With the multi carrier in the vertical position, dismantle the safety rivet at the break-back protection system.



The safety rivet is removed and the arm of the HXF multi carrier can be swung out and around, **after which the safety rivet is again inserted in one of the 3 holes / positions.**

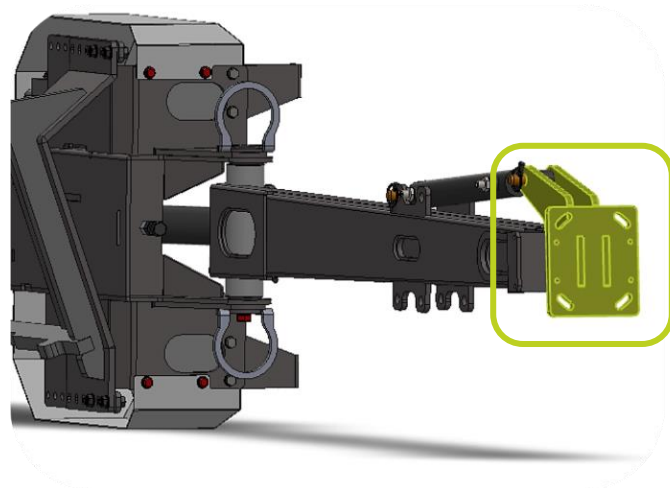
With the swingarm of the multi carrier set in working position, the desired attachment tool can now be mounted.

5.2.6.2 MOUNTING EXAMPLE OF ATTACHMENT TOOL: GREENTEC LRS QUADSAW

Mounting and installation instructions for attachment tools on the HXF multi carrier are individually adapted to each individual work tool.

Common to all approved attachment tools is that they are mounted either by bolting via 4 bolts on the standard bracket, or via mechanical quick-change brackets (only HXF 2302) which are secured with a bolt and ring split.

Bolts for mounting on the standard bracket are always tightened acc. to [Table 15](#) – page 54.

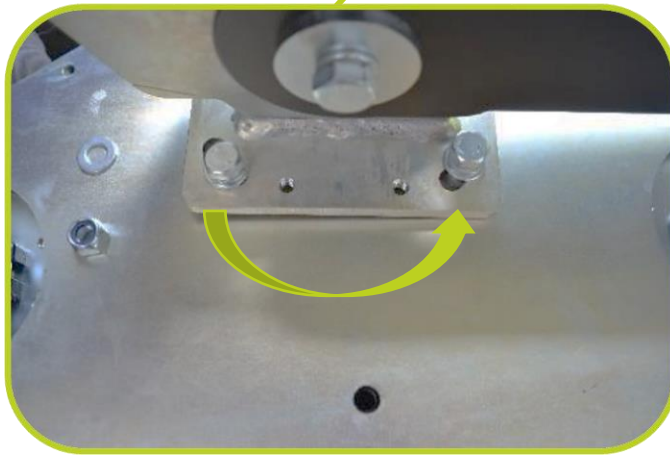


Standard bracket for mounting using 4 bolts: HXF multi carrier.

As an example, this instruction manual shows how to mount a [GreenTec LRS Quadsaw](#) on the HXF multi carrier:



- ✔ Carefully move the arm of the multi carrier to the attachment tool mounting plate.
 - Use if necessary, a pallet truck to fine-tune the position of the attachment tool.
 - Fit the 4 bolts and 2 nuts and tighten them loosely on the saw.
- ✔ Before tightening the bolts, turn the entire quad saw, counterclockwise, so that the upper saw blades first saw the fence.
- ✔ Bolts for mounting on the standard bracket are always tightened according to [Table 15](#) – page 54.



NOTICE

For further instructions on mounting a specific attachment tool on the HXF multi carrier, refer to the individual attachment tool's instruction book and instructions therein. Instruction books and other materials are always available on GreenTec's website: [Technical documentation - GreenTec attachment tools](#)

5.2.7 STABILITY (o)

When driving with the HXF multi carrier, the operator must always be aware that the center of gravity of the machine moves during work.

⚠ DANGER

After installation and connection for the first time, it must always be ensured that the complete vehicle is stable enough to be able to carry the multi carrier with the attachment tool fitted.

Especially that the vehicle is stable enough sideways, even when the machines works at a greater height and hangs on the side of the vehicle and is driven on an uneven surface, and / or in a turn!

NOTICE

Depending on the weight and stability of the vehicle carrying the GreenTec machines, front, side or rear weights may be required to maintain a stable rear axle load on the opposite wheels from which the arm is mounted.

The following suggestions are indicative of stability only and are not intended to enhance the stability of the complete vehicle.

It is recommended that the dealer of the vehicle is contacted for specific advice on increased stability.

At the same time, a tire specialist should be contacted for advice and guidance on tire pressure for the vehicle on which it is desired to mount the GreenTec machines

5.2.7.1 CONTROL OF STABILITY:

⚠ CAUTION

Carefully examine the stability of the vehicle and the multi carrier with the attachment tool mounted!

Slowly lower the multi carrier all the way to low altitude. Let the attachment tool be at max. ½ meters above the ground.

(The attachment tool is **not** to be started under this procedure!)

Perform the following procedures:

1. Make sure the machine is in the working position with the arm fully extended.
Let the mounted attachment tool be at max. ½ meters 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 moving area from horizontal to vertical.
 - a. Is the vehicle stable on all 4 wheels?
 - b. Are the lift arms stable?
3. Is the vehicle stable when turning and driving around - even on uneven terrain?
4. An assessment is made in each individual situation, and it is the full responsibility of the operator and operator to ensure that the vehicle does not flip over or tip over. If the vehicle and GreenTec machines are stable, the HXF multi carrier can be moved higher step-by-step.
5. If the operator considers that the multi carrier and the vehicle are not stable, the vehicle must be stabilized. (See here the instruction manual for the vehicle used)

5.2.7.2 STABILITY CAN BE INCREASED BY:

- 🌿 Mounting of counterweights on the machine. ([Accessories](#) – page 24)
- 🌿 Top up water in the tires of the vehicle
(Always check with the tire manufacturer, and remember anti-freeze protection at temperatures near or below freezing)
- 🌿 Track width of the vehicle; the more the wheels are out, the greater the stability.
(Always check with vehicle dealer)
- 🌿 Stabilizer on the front axle, especially on the working side of the multi carrier and attachment tool.
(Always check with vehicle dealer)

⚠ DANGER

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

Never use the GreenTec machines on an unstable or unsuitable vehicle.

5.2.7.3 FACTORS INFLUENCING THE STABILITY:

- 🌿 The center of gravity of the machine combination and the height being worked on, in combination with the weight hanging out on the side of the vehicle.
- 🌿 Weight, counterweight, track width and vehicle wheelbase.
- 🌿 Acceleration, braking, turning and the relative position of the GreenTec machines during these maneuvers.
- 🌿 Nature of the terrain: driving uphill, downhill or on a slope? What is the type of substrate: soft, hard, or uneven?
- 🌿 Pay special attention to the fact that articulated loaders laterally shift the weight balance the sharper they turn.

5.3 PREPARING THE MACHINE FOR USE

After complete assembly and connection of the HXF multi carrier on the vehicle, the following procedures is performed before commissioning the machine:

5.3.1 INITIAL START UP AND FIRST USE OF THE MACHINE

⚠ CAUTION

Always start up carefully at first use and only drive in a private area until familiarity is achieved with the use of the multi carrier with the attachment tool mounted!

⚠ CAUTION

GreenTec recommends leaving the machine idling before use to heat the hydraulic oil before use.

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

5.3.2 PROCEDURES BEFORE USING THE MACHINE

The operator of the machine must **always** have read and understood the instruction material, both for the multi carrier and for the attachment tool!

Before commissioning, make sure that the operator have completed all points and procedures in the following sections:

- 👉 [Instructions for use of the machine \(k\) – page 29](#)
- 👉 [Instructions for assembly, connection and disconnection \(j\) – page 30](#)
- 👉 [Control of stability \(o\) – page 38](#)
- 👉 [Daily- and routine inspection \(e\) – page 52](#)

5.4 OPERATING THE MACHINE (e)

This describes the proper handling of the HXF multi carrier, the operator's workplace when the machine is used, and the operation and use of the machine.

5.4.1 TRAINING OF MACHINE OPERATOR BEFORE USE

The HXF multi carrier may only be used mounted with approved GreenTec work tools, as well as on an approved vehicle as a single unit.

The operator of the vehicle, multi carrier and attachment tool must therefore both review and understand this instruction manual as well as instruction manuals for the attachment tool and vehicle before using the machine.

The operator must be competent and fully capable of operating the machine in a safe and efficient manner before using it in a publicly accessible place.

⚠ DANGER

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

If in doubt, contact your dealer or GreenTec Service!

5.4.2 OPERATOR'S WORKPLACE (f)

The HXF multi carrier must always be mounted on a vehicle and therefore the machine and attachment tool is handled when operating the vehicle.

NOTICE

Know and understand the operation of the vehicle and the GreenTec machine, to steer the implement safely.

The operator's workplace is always the vehicle's driver's cab, where the control panel etc. of the machines are placed.

WARNING

Coupling and mounting of the GreenTec machine may only be performed by professionals who have knowledge and understanding of hydraulic systems.

This is to avoid contamination of the environment, leaks, and contamination of the closed hydraulic system!

Much depending on how the HXF multi carrier is positioned in relation to the operator, these can be stressful working positions.

It is important that the operator can follow and control the work of the attachment tool, while being aware of the course of the road, traffic conditions, etc. There are many things at once, and often with a twist in the back and / or neck. This can in the long run strain the body's musculoskeletal system, and it is therefore recommended to take breaks.

5.4.3 TRANSPORT POSITION OF MULTI CARRIER AND ATTACHMENT TOOL ON VEHICLE (p)

Common to all transport positions for attachment tools on the HXF multi carrier is that the construction on the swingarm means that the tool will always point towards the vehicle without being a danger or inconvenience to either the driver, pedestrians and fellow road users.

- ALWAYS drive with ALL safety guards on the attachment tool, e.g. saw blades, during transportation of the HXF multi carrier and the work tool.



HXF multi carrier mounted with HL cutterbar in transport position. the attachment tool is facing inwards towards the vehicle, with safety guards on the blades for maximum traffic safety.

NOTICE

If driving on a public road, it is the operator's responsibility to comply with the applicable traffic law.

The GreenTec machine(s) must not cover the lighting of either the vehicle or any lights related to traffic safety by law. Additional lighting should be installed here.

WARNING

Accompanying safety devices must always be fitted when transporting all types of GreenTec machines on the vehicle. (Security guards, locking mechanisms, etc.)

5.4.4 DRIVING INSTRUCTIONS

The multi carrier must always be operated in the most appropriate way, so that the best possible result is obtained during use.

It is important that the operator learns all the functions of both the vehicle, multi carrier and attachment tool as it is a combination of these that must control the overall result for e.g. cutting fences / hedges.

🍃 The HXF multi carrier must be controlled and adjusted as follows:

1. Remove safety rivet from swingarm. The swingarm on the HXF multi carrier is then rotated to full working width with the tool attached:
2. Refit the safety nails between the swingarm and the break-back cylinder in one of the 3 holes/working positions.
 - The HXF multi carrier can be set in 3 different working position
(See section: "[Setting the working position and break-back system on the swingarm](#)" – page 45)



3. The direction of travel with the work tool must be forward-looking and follow the "fence" line:
 - The break-back system (AHS) is only activated in the forward direction, and also acts as a pre-pressure for the attachment tool. (See section: "[Automatic Hydraulic Break-back System \(AHS\)](#)" – page 17)



- The working height of the HXF multi carrier is adjusted via the front loader so that it is a suitable height in relation to the terrain:



- The working angle of the attachment tool is also adjusted here to the best position. The angle that should be used is selected based on the conditions according to what type of cutting is done.

- (See section: "[Adjusting the working angle on attachment tool](#)" – page 46-47)



- The speed must be adjusted so that the cutting result is optimal. It is here that the individual attachment tool and the conditions under which work is carried out determine what speed should be driven at.

- (Always see the instruction manual for your [GreenTec attachment tools](#) at www.greentec.eu)

5.4.5 SETTING AND ADJUSTING THE MACHINE (r)

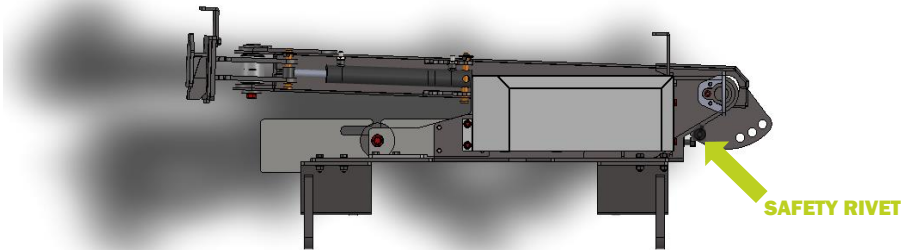
This section describes the setting and adjustment options on the machine.. On a HXF multi carrier, there are a total of 4 options for setting and adjusting:

5.4.5.1 SETTING THE WORKING POSITION AND BREAK-BACK SYSTEM ON THE SWINGARM

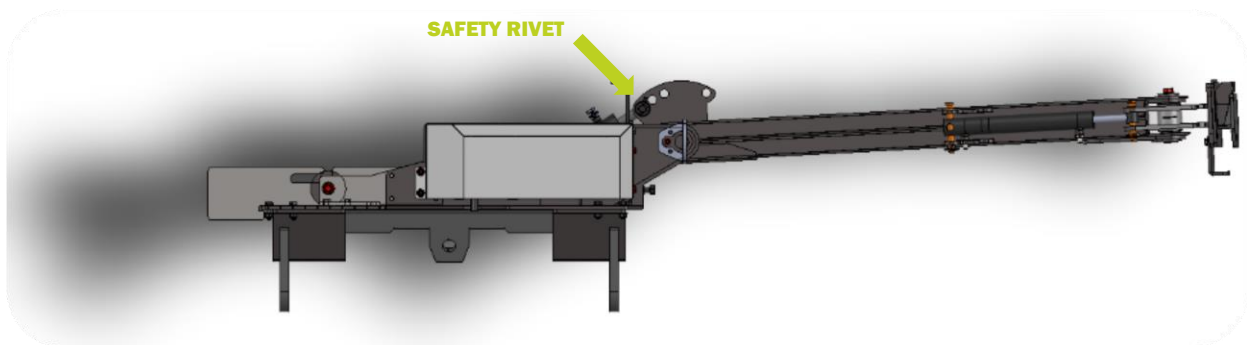
NOTICE

The HXF multi carrier can be adjusted in 4 different positions.

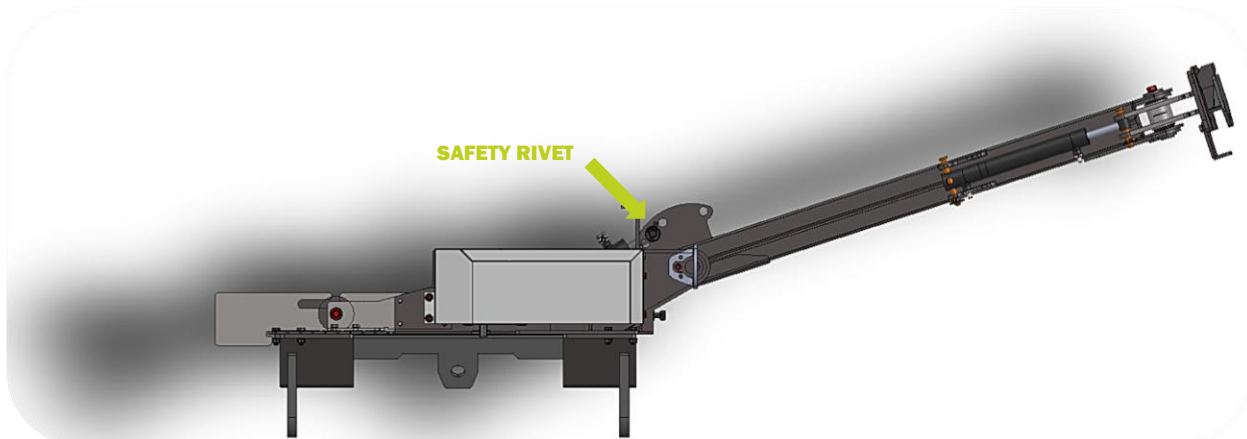
The 45°-degree hydraulic break-back system (AHS) with "Auto Reset" function is active in all extended positions. (Level 1-3)



- HXF multi carrier in transport position with swingarm, locked in and fastened with safety pins for safe transport.

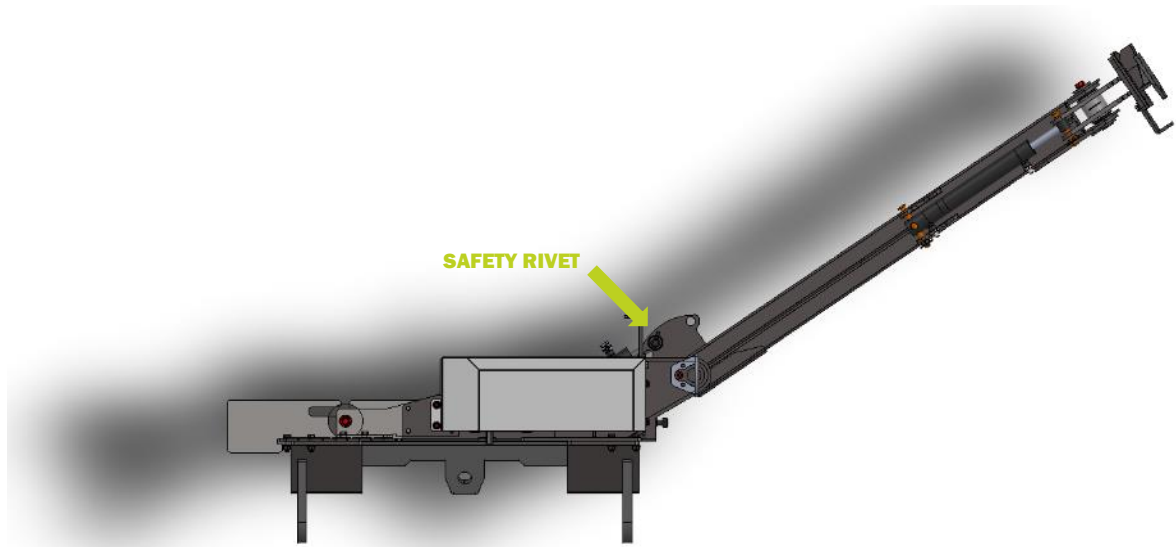


- HXF multi carrier in working position (**Level 1 = 0°-degree working angle / zero position**) with the swingarm out. All approved attachment tools can be used in this working position.



- HXF multi carrier in working position (**Level 2 = approx. 15°-degree working angle**) with the swingarm extended. This working position is used with GreenTec [RI 60 & 80 Barrier Mower](#) and [BR 70 Weed Clearing Brush](#).

- This position can provide a better look and overview of the machines and can also be used with advantage on vehicles with 4-wheel steering on e.g. narrow paths.



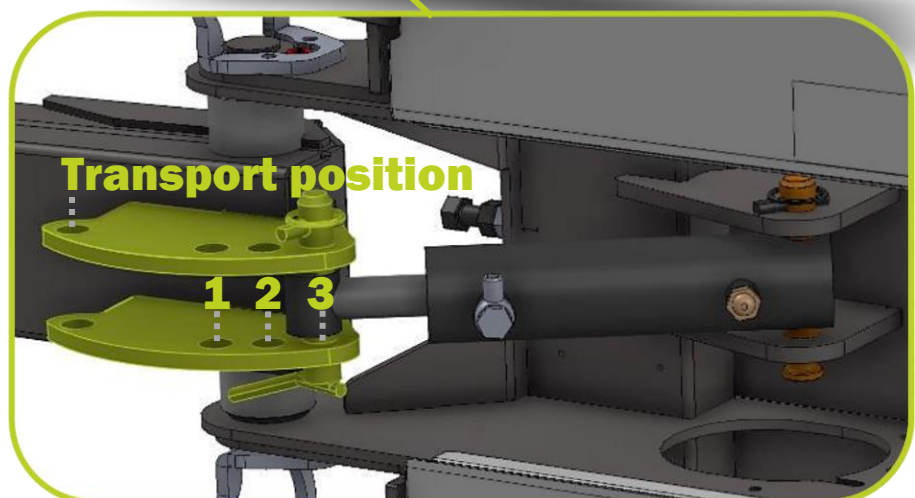
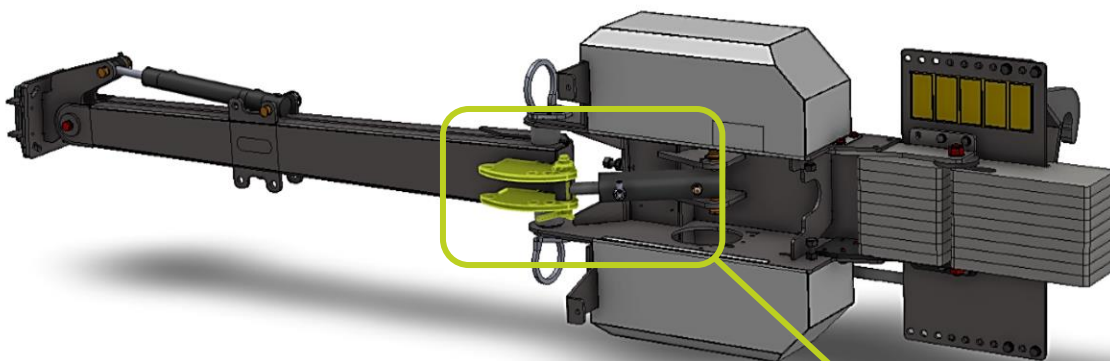
HXF multi carrier in working position (**Level 3 = approx. 30°-degree working angle**) with the swingarm extended. This working position is used with GreenTec [RI 60 & 80 Barrier Mower](#) and [BR 70 Weed Clearing Brush](#).

- This position can provide a better look and overview of the machines and can also be used with advantage on vehicles with 4-wheel steering on e.g. narrow paths.

SETTING WORKING POSITIONS AND HYDRAULIC BREAK-BACK SYSTEM ON HXF TOOL MULTI CARRIER:	
Description:	
Transport position:	Inactive position (Used only when transporting the GreenTec machine by vehicle)
Level 1:	0°-degree / zero position. (Default working position)
Level 2:	Approx. 15°-degree working angle.
Level 3:	Approx 30°-degree working angle

Only used for [RI 60 & 80 Barrier Mower](#) and [BR 70 Weed Clearing Brush](#).

Table 12 – Working positions and settings: HXF multi carrier



Positions / adjustment possibilities of working position / hydraulic break-back system (AHS)

5.4.5.2 ADJUSTMENT OF WORKING ANGLE FOR ATTACHMENT TOOL (MECHANIC)

By default, it is possible to adjust the working angle of the attachment tool used on the HXF multi carrier.

- For **mechanical adjustment**, a top link is used to adjust the working angle of the work tool.
- The top link is adjusted manually by hand until the desired working angle of the attachment tool is achieved.



HXF multi carrier with mechanical adjustment of working angle via top link.

⚠ WARNING

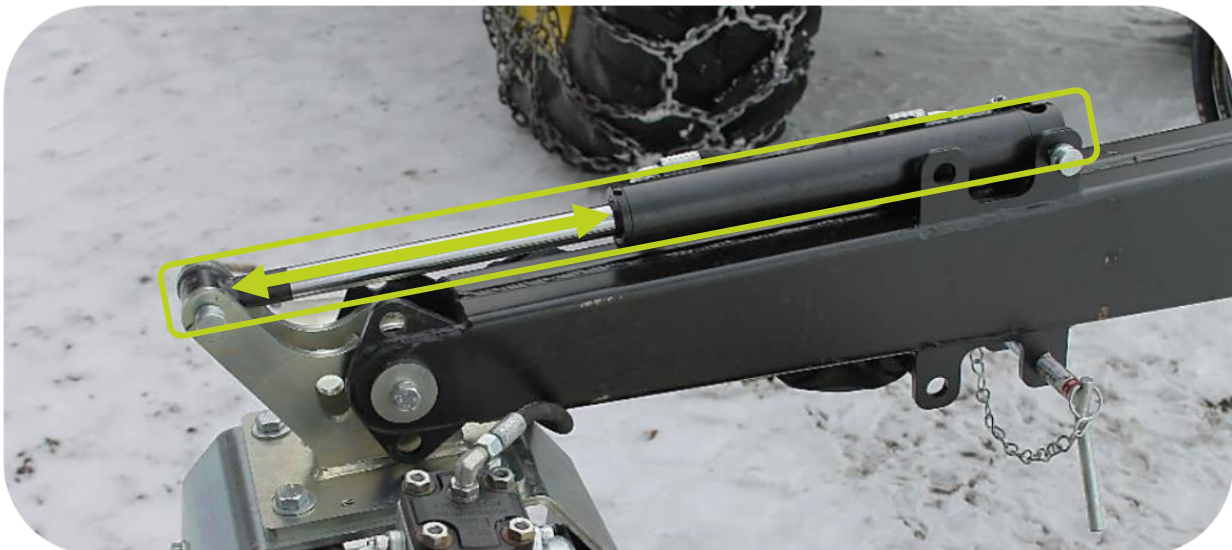
ALWAYS REMEMBER to switch off both vehicle and GreenTec machine before adjusting anything on the machines.

Tighten the lock nut on the top bar to "lock" the working angle. Use hand tools here and avoid over-tightening.

5.4.5.3 ADJUSTMENT OF WORKING ANGLE FOR ATTACHMENT TOOL (HYDRAULIC)

It is also possible as an option to set the working angle of the attachment tool, using **hydraulic adjustment**.

- Here a hydraulic cylinder is used to set the working angle of the attachment tool.
- The cylinder is adjusted via the vehicle's hydraulic system from the driver's seat.



HXF multi carrier with hydraulic adjustment of working angle via cylinder

NOTICE

When hydraulically adjusting the working angle, an additional 1 x DW (double-acting outlet) must be supplied to the cylinder from the vehicle's hydraulic system.

(Examine the options in the instruction manual for the vehicle used)

5.4.5.4 ADJUSTMENT OF WORKING ANGLE FOR ATTACHMENT TOOL (ELECTRO-HYDRAULIC)

It is again possible as an option to set the working angle of the attachment tool used using electro-hydraulic adjustment.

(THIS OPTION CAN NOT BE RETRO-FITTED)

Here, a hydraulic cylinder is used to adjust the working angle of the attachment tool, where another type of flow regulator with electric control is added to the HXF multi carrier.

The working angle of the attachment tool is adjusted via the control box that comes with hydraulic electric control:



Switching the HXF multi carrier on/off:

Activation of hydraulic system on multi carrier and attachment tool.



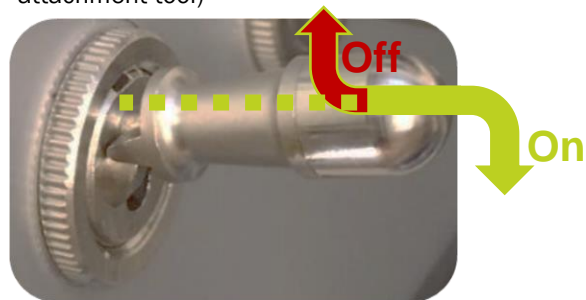
To ensure that the battery does not run dry, always remember to switch off the GreenTec machine on the control box.



Switching the attachment tool on/off:

The button is pulled out first, and then pressed to either the on / off position

(Safety lock: to avoid accidental start / stop of attachment tool)



Adjusting the working angle:

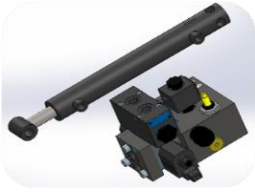
Setting the angle of the work tool (approx. 0 - 110°-degrees)
Button is held here, either right / left for adjustment.

NOTICE

For electro-hydraulic adjustment of the working angle, an additional 1 x DW (double-acting outlet) must be supplied to the cylinder from the vehicle's hydraulic system incl. 1 x drain connection for pressureless tank.

(Examine the options in the instruction manual for the vehicle used)

NOTICE



The flow controller with electric control has a prioritization valve that always prioritizes the attachment tool's function over the adjustment of the working angle, for greater safety in use. The prioritization valve ensures that the machine never receives too high an oil flow and that the attachment tool does not decrease in RPM if the working angle cylinder is used simultaneously.

Therefore, it may be necessary to add extra oil flow to remedy the above, as this prioritization of the work tool may result in reduced function of the cylinder.

Example: at 40 l / min. (supply to engine) is adjusted + 3-5 l / min. (supply to cylinder) = approx. 45 l / min.

5.4.6 STARTING THE ATTACHMENT TOOL ON GREENTEC HXF MULTI CARRIER

The attachment tool can be started as soon as the multi carrier is in the working position and the attachment tool is mounted correctly:

🌿 (See and follow section: "[Setting the HXF multi carrier in working position](#)" og "[Mounting example of attachment tool](#)" - page 36)

The GreenTec machine is started by supplying oil flow from the vehicle's hydraulic system.

🌿 (Always see and follow the instruction manual of the vehicle used)

With the HXF multi carrier **without** electric control, the machine will start as soon as oil flow is applied.

⚠ DANGER

Always check the immediate area around the machine and the vehicle before starting and during operation of the work the machine must perform: People, children, animals, or obstacles e.g. stones, fence posts, steel wire

The size of the area depends on which work tool is used.
(Always follow the instructions in the instruction manual of the tool used)

With the HXF multi carrier **with** electric control, the machine is activated via the control box.

🌿 (See section: "[Electrical operation of working angle w. control panel](#)" - page 24 + "[Adjustment of working angle for attachment tool \(electro-hydraulic\)](#)" - page 47)

Let the multi carrier and attachment tool run without load until the oil is heated. When the machine is hot, and it is ensured that the correct oil flow is achieved in application: then start the work!

NOTICE

A very cold machine should run 10-15 minutes before greater load is required, to get warm and ready to work.

5.4.7 STOPPING THE ATTACHMENT TOOL ON GREENTEC HXF MULTI CARRIER

HXF multi carrier incl. attachment tool can be stopped in the following ways:

🌿 Without electric control: The oil flow to the machine is shut off via the vehicle's hydraulic system.

🌿 **With** electric control: The oil flow to the machine is shut off via the control box from the HXF multi carrier. (See section: "[Adjustment of working angle for attachment tool \(electro-hydraulic\)](#)" - page 47.)

⚠ DANGER

Most GreenTec machines have heavy rotors, knives, or blades, and therefore the attachment tools can rotate for up to **30 seconds** after the disconnection of the hydraulics!

⚠ DANGER

NEVER GO NEAR THE MACHINE AND ATTACHMENT TOOLS BEFORE YOU ARE SURE THAT THE ROTATING PARTS ARE COMPLETELY STOPPED!








5.4.8 START-UP AFTER ACCIDENTAL STOP (q)

NOTICE

In the event of an unintended stoppage of the multi carrier and / or attachment tool, always follow the instructions given in the machines' instruction manuals. (Both multi carrier and attachment tool!)


An unintentional stoppage can occur at any time. There can be various reasons, but often stoppage can be avoided if the operator uses and maintains the machine correctly and eliminates hitting:



-  Larger stones
-  Tree stumps
-  Fence wire
-  Well-covers
-  Litter and other garbage
-  Plastic and other packaging
-  Bicycles/scrap

If the attachment tool hits any of the above objects, strong vibrations will typically occur.

By signs of strong vibration, or in the event of a leak, lost and / or loose parts on the machine, the operator should do the following:

1. Stop the machinery immediately.
 2. Apply the parking brake, switch off the vehicle, remove the key and make sure that the machinery is stopped completely.
 3. Tilt the attachment tool around and lower to a height where the machine can be inspected.
 4. Attachment tool and multi carrier are inspected and checked:
 - When foreign materials are found, these are removed manually. (Fence wire, plastic, etc.) Also, check machine parts for cracks, breaks, missing parts, or damage.
 - Do not drive until all damage has been repaired!
-  Follow the recommendations below for start-up **after** a shutdown:
- Make sure that the entire machine is inspected and in order.
 - Slowly start up the machine. (See the instruction manual for used attachment tool.)
 - Pay special attention to the fact that both the multi carrier and the attachment tool work according to all guidelines stated in each of their instruction manuals.



6. INSPECTION AND MAINTENANCE (e, r)

To ensure a long working life of the machine, good and careful maintenance and inspection is required.

Remember that the machine is designed to withstand the harshest conditions, and with a little care and attention it will be able to give you many years of trouble-free operation.

To avoid problems and to ensure that the warranty covers, always use original [GreenTec parts](#) and make sure that the machine is not used for anything other than described in this instruction manual.

The owner or the operator must ensure that the machine is only used, maintained, inspected and repaired by persons who are familiar with the procedures associated with it and are instructed in the associated hazards.

If doubts arise in connection with any of the mentioned procedures, an authorized specialist workshop or importer should be consulted.

(See: www.greentec.eu)

Repair work not described in the instruction manual may only be carried out by authorized specialist workshops.



INFRINGEMENT OF ONE OR MORE SAFETY INSTRUCTIONS MAY CAUSE:

⚠ DANGER

Great danger to persons due to mechanical and chemical influences!

⚠ WARNING

Danger to the environment due to leakage of hydraulic oil! Damage and defects to the machine, multi carrier or vehicle!

NOTICE

The warranty on the machine lapses if one or more of the safety instructions are violated.

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

6.1 INSTRUCTIONS ON SAFE MAINTENANCE AND ADJUSTMENT (s)

TO AVOID ACCIDENTS DURING MAINTENANCE AND ADJUSTMENT, THE FOLLOWING RULES MUST ALWAYS BE COMPLIED WITH:

⚠ DANGER

ANY work on the machine may only be done with the machine stopped, the vehicle switched off, the parking brake applied, and the key removed from the ignition switch!

When carrying out maintenance work on a raised machine and / or tool carrier, always secure it with suitable support elements!

Use only suitable tools and use the specified personal protective equipment! Great care should be taken when working with the machines, as there is a risk of pinching fingers and hands, e.g. drive belt, pulleys, knives, guards, etc.!

⚠ WARNING

Immediately after completion of work, all safety and protection devices must be fitted and/or reactivated.

During maintenance, you can often encounter hydraulic oil, gearbox oil and grease. Always avoid skin contact, inhalation, etc.

Always use the correct protective equipment and use safety data sheets for these.

⚠ WARNING

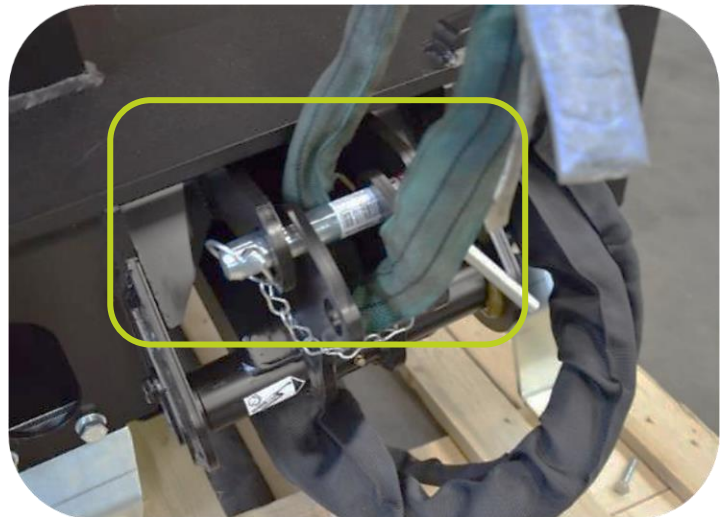
ALWAYS dispose of oil and grease properly!

6.1.1 CORRECTLY MOVING YOUR GREENTEC MACHINE

GreenTec recommends storing and moving machines on a suitable pallet when not in use.

If you need to move these, always use a pallet truck or forklift.

Always check the weight of your GreenTec machine under the machine specifications.



⚠ DANGER

Danger of crushing, as the machine can turn during movement on the pallet.

There must be no people on either side of the machine during movement, in the area where the multi carrier can tilt.

6.2 DAILY AND ROUTINE INSPECTION (e)

NOTICE

Always remember to check all machinery, both the vehicle, the multi carrier and the attachment tool used.

It is important that the operator knows the machines and performs the inspections necessary for the vehicle, multi carrier and the attachment tools used.

Instruction manuals must always be used for the respective machines.

Always be confident in your daily routines!

CAUTION

Before starting up a new machine, a general daily inspection is carried out before start-up, and again already after **every 3-5 operating hours**. Thereafter, a daily inspection after use of the machine is sufficient.

At the beginning of the life of the machine, extra attention should be paid to loose bolts, shielding and possibly belt tension on some attachment tools.

DAILY INSPECTION:

Daily inspection is ALWAYS performed after the first 3-5 operating hours.

All points MUST be reviewed!

Thereafter, daily inspections must be performed daily / after each time the machine is used.









-  General overall impression of the machine. **(Any damage and / or error must be rectified immediately)**
-  Intact safety screens, incl. (if any) rubber flaps on attachment tool + belt housing shield must be intact.
-  Cracks in the sides, corners and around the frame of the machine. (Dents and bent parts included)
-  Loose parts or missing bolts
 - Tighten all bolts! ([Section 6.3](#) – page 54)
-  For belt tension: Check belt tension and retighten belt on mounted attachment tool.
-  Inspect the hydraulic system for leaks by the engine, fittings, and hoses.
-  Check hydraulic hoses and sleeves for proper guidance.
 - Wear marks and misplaced sleeves ([Section 6.4](#) – page 55)
-  Lubrication of all lubrication points.
 - Best done after working. The bearings will then be hot, and water and moisture is hereby forced out of the bearing. ([Section 6.6](#) – page 56)

Table 13 – Checklist for daily inspection: HXF multi carrier

6. MONTHLY INSPECTION

6 monthly inspections are carried out every 6 months / semi-annually.

All points MUST be reviewed!






-  General inspection of machinery: cleaning and maintenance / lubrication so that general maintenance is minimized. ([Section 6.7](#) – page 57)
-  Carefully inspect the condition of all hydraulic hoses
 - Make sure that they do not rub against edges, bolts and alike. The protection sleeves must always 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 the prescribed anti-corrosion oils / grease around the grease nipples.
 - Especially on the polished areas / parts of the machine.
 - Perform a thorough daily inspection ([Table 13](#) – page 52)
-  Inspect all bushings, rivets and / or bearings (if any) ([Section 6.5](#) – page 56)
-  Store the machine well protected and dry. ([Section 6.8](#) – page 57)
 - Especially protect the hydraulic couplings and bearing on the attachment tool (if any) against persistent rain, moisture and temperature fluctuations.

Table 14 – Checklist for 6. monthly inspection: HXF multi carrier

6.3 TIGHTENING OF BOLTS AND HYDRAULIC CONNECTIONS

6.3.1 TIGHTENING OF BOLTS

- 🌿 All bolts and nuts are provided with quality class marking, ordinary machine steel bolts have quality class 8.8.
 - 🌿 Bolts are marked with 8.8, and nuts marked with 8
- 🌿 Hardened steel bolts are marked with 10.9 or 12.9.
 - 🌿 Bolts are marked with 10.9 or 12.9, and nuts marked with 10 or 12.
- 🌿 Some bolts and nuts have no markings.
 - 🌿 These are always ordinary steel bolts and / or nuts in class 8.8.

TIGHTENING TORQUES FOR BOLTS AND NUTS: HXF MULTI CARRIER

ISO metric standard: Bolt qualities

Bolt size (mm)	Pitch (mm)	Hex size (mm)	Tightening torques (Nm)		
			Regular steel bolts (Strength class 8.8)	Hardened steel bolts (Strength class 10.9)	Hardened steel bolts (Strength class 12.9)
M6	1,00	10	11,3 Nm	16,5 Nm	19,3 Nm
M8	1,25	13	27,3 Nm	40,1 Nm	46,9 Nm
M10	1,50	16	54,0 Nm	79,0 Nm	93,0 Nm
M12	1,75	18	93,0 Nm	137,0 Nm	160,0 Nm
M14	2,00	22	148,0 Nm	218,0 Nm	255,0 Nm
M16	2,00	24	230,0 Nm	338,0 Nm	395,0 Nm

Table 15 - Tightening torques for bolts and nuts: HXF multi carrier

6.3.2 TIGHTENING OF HYDRAULIC CONNECTIONS

- 🌿 The threading on hydraulic connections are made and measured in inches.



TIGHTENING TORQUES FOR HYDRAULIC CONNECTIONS: HXF MULTI CARRIER

BSP-standard: Hydraulic connections (± 5%)

BSP-size:	Hose fittings (Nm):	Nipples (Nm):
1/4"	24 Nm	34 Nm
3/8"	33 Nm	75 Nm
1/2"	44 Nm	102 Nm
3/4"	84 Nm	183 Nm
1"	115 Nm	203 Nm

Table 16 - Tightening torques for hydraulic connections: HXF multi carrier

6.4 HYDRAULIC HOSES

⚠ WARNING

When inspecting hydraulic hoses, any damage / defect must be rectified immediately. When searching for leaks, due to danger, suitable aids must be used: goggles, work gloves + a piece of cardboard that quickly makes a leak visible!

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 medical attention immediately:
DANGER OF INFECTION!

- 👉 Check the condition of all hoses on regular inspections. Pay special attention to the fact that they do not rub against edges, bolts, etc., and that the protection sleeves is correctly fitted so that the hoses are always protected as best as possible.
- 👉 Check all hydraulic hoses and fittings daily. Any damage or leak must be repaired immediately. Hoses with damage / defects must be replaced.
- 👉 GreenTec's hydraulic systems operate at a very high pressure. Use only original hoses. A broken hose can be very dangerous.
- 👉 When replacing hydraulic hoses, always avoid twisting hoses and fittings.
 - Use 2 wrenches to loosen and tighten the hydraulic hoses/fittings.
 - Avoid over-tightening (Correct tightening torques is stated in [Table 16](#) – page 54)
 - If the hoses and / or fittings continue to leak, these must be replaced immediately.

⚠ WARNING

A flexible hose must not be twisted during installation, as this significantly reduces the life of the hose and can cause the connections to loosen.

To determine if a hose is twisted or not, the specification line running along the length of the hose must be straight.

If the specification line spirals around the hose, the hose is twisted:

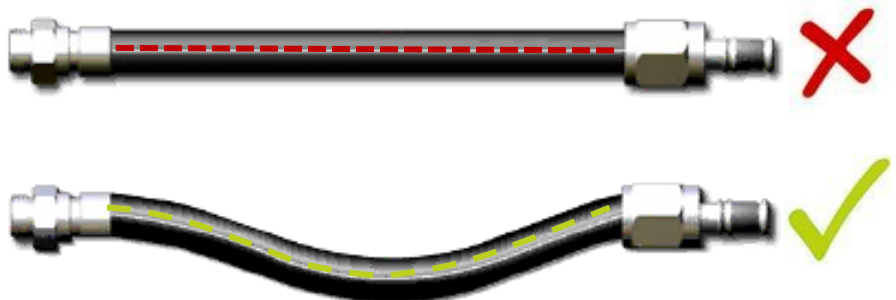


⚠ WARNING

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 pressed lengthwise and expanded in diameter.



NOTICE

The hydraulic hose warranty is limited to hose replacement due to defective material or fabrication. The hose warranty is void if:

- The hoses are damaged, due to wear and tear
- The hoses have been cut or pinched during work.
- Treading is damaged due to overvoltage.

The hydraulic hoses and fittings must be tightened according to [Table 16](#) – page 54.

6.5 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, these must be replaced. All bushings, rivets, and bearings etc. can be delivered from GreenTec's spare parts warehouse.

The correct spare parts for your GreenTec machine can always be found in the machine's [parts book](#) which can always be downloaded and / or printed for personal use on our website: www.greentec.eu.

6.6 LUBRICATION OF HXF MULTI CARRIER

There is a total of 2 lubrication points on the machine. These are located on the swingarm and are provided with the following label:

The number "50" in the dial indicate that lubrication must be done after every 50 hours of work. (Approx. Weekly)



- At each lubrication, a few presses is given from a standard hand sprayer / grease gun.
- Always stop when grease is flowing out from the lubrication point.

CAUTION

GreenTec ALWAYS recommends using a manual hand sprayer / grease gun to lubricate the HXF multi carrier. Filling with compressed air and alike can damage gaskets etc.

NOTICE

GreenTec ALWAYS recommends lubrication after the end of a work cycle for the machine, as the lubrication points that have been most heavily loaded are still hot, and possibly. dirt, acid, moisture, water and grass are therefore pressed out immediately.

The location of the 2 lubrication points on the HXF multi carrier is marked down below:



Grease-nipple on the inside of the swingarm: HXF multi carrier



Grease-nipple on the swingarm, at the bracket for the attachment tool.

6.7 CLEANING / WASHING THE MACHINE

⚠ CAUTION

Be careful and never use a high-pressure cleaner close to the paintwork!

Steam cleaner is also to be used with great care!

Avoid all cleaning agents to avoid discoloration or damage to the paint!

It is important to keep the machine covered so that it is protected from rain and sunlight. It must be placed horizontally on a level surface or pallet!

When storing the machine, make sure that there is no risk of it tipping over or falling down. Make sure of a suitable storage location or support of the machine!

Lubricate the machine with anti-corrosion oil, especially on the worn parts such as knives, rotors (if any) and internal guards. This minimizes rust formation and significantly prolongs durability!

⚠ DANGER

**Anti-corrosion oils are dangerous on the skin and by inhalation!
Know and use all safety instructions when using the oil!**

6.8 STORING THE MACHINE

Never store the machine unprotected from moisture, wind and weather. Before storing the machine, it must be thoroughly washed and wiped. Remove all traces of leaves / branches and dirt.

NOTICE

Do not leave hydraulic hoses lying on the floor. They pose a risk of tripping and / or falling, and there is a chance of contamination of hydraulic couplings!

Always place all hoses over the machine / attachment tool.

NOTICE

Always keep the machine and attachment tools in a clean condition!
Dirt attracts moisture and can result in increased rust formation.

Paint damage must be repaired!

⚠ CAUTION

GreenTec's machines **MUST** be stored dry, due to the risk of water in the sockets, bearings and electrical parts.

6.9 DISPOSAL OF MACHINE / MACHINE PARTS

NOTICE

To ensure the most environmentally friendly disposal method, the machine must be disassembled, 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	Motor, flow regulator, hydraulic hoses, etc.
Metal	Plates, profile pipes, tubes, bearing housings, knives, pulleys, etc.
Fluids (chemical)	Hydraulic oil



Table 17 – Overview of disposal / scrapping of machine parts

7. TROUBLESHOOTING

7.1 TROUBLESHOOTING PROCEDURES

In case the GreenTec machine or vehicle does not work properly, always see the instruction manual for these.

When locating the source of an error, first try to isolate the error condition:

-  Is the fault condition of the machine **mechanic related?**
-  Is the fault condition of the machine **hydraulic related?**

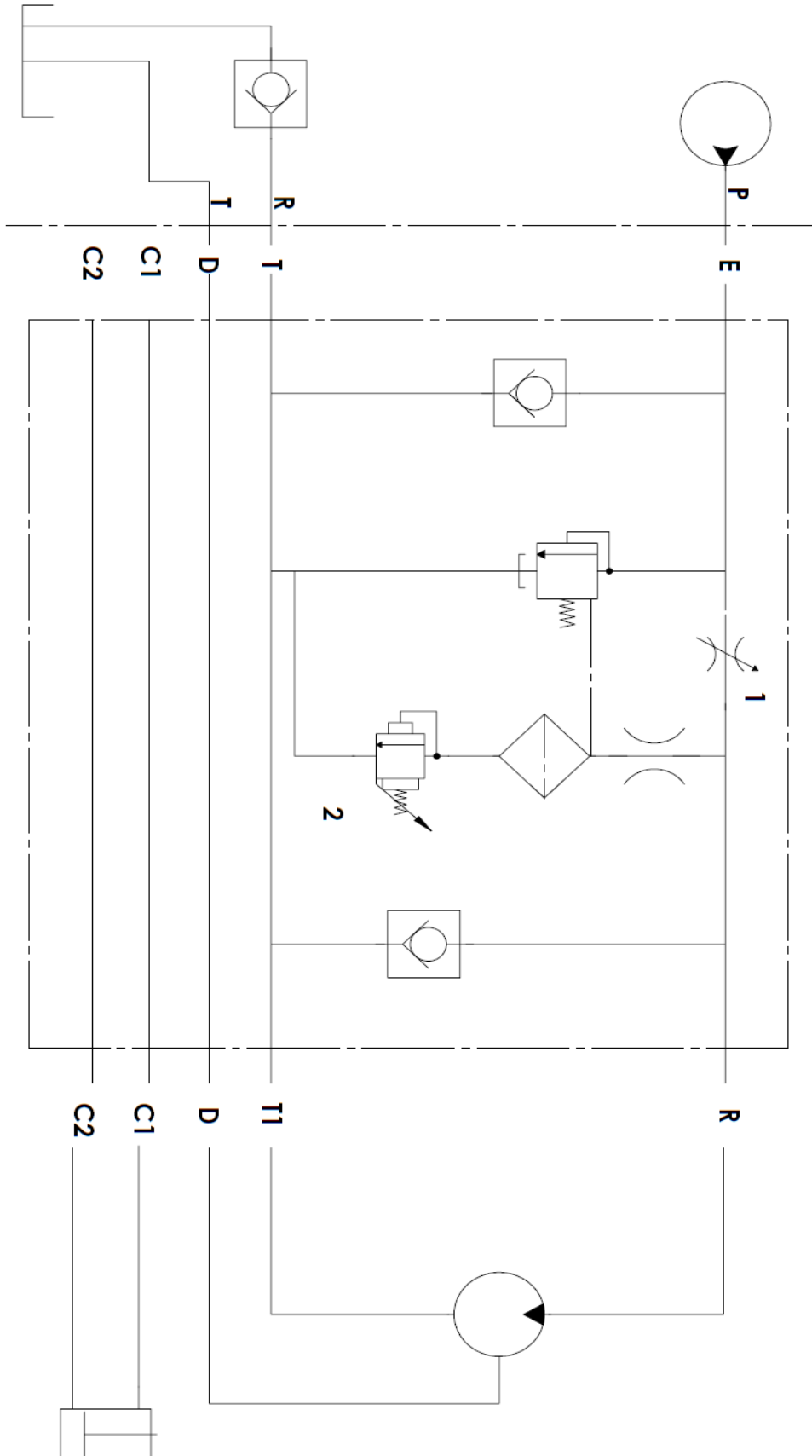
PROBLEM:	CAUSE:	SOLUTION:
Valves or hoses leaking	Hoses and or fittings are loose.	Tighten hoses and fittings.
Automatic Hydraulic Break-back System (AHS-system)	Triggered too easily.	Aut. Dealer or workshop checks AHS system - exhaust pressure (nitrogen) and oil pressure.
	Not triggered.	Aut. Dealer or workshop checks AHS system - exhaust pressure (nitrogen) and oil pressure.
Working angle adjustment moves too slowly when machine is running.	Too low oil flow from vehicle.	Increase oil flow to the HXF implement frame.
Overheating the machinery	Too high oil flow.	Check and adjust oil flow down to specified max. tool flow (l / min.)
	Clogged cooler. (Vehicle)	Cooler is cleaned and checked.
	Hydraulic system overloaded. (Vehicle)	Remove leaves, dirt and grime.
	Oil type incorrect. (vehicle)	Check and change oil type (Section 4.6 - page 24)
Hydraulic system fails	Oil level too low. (Vehicle)	Fill the vehicle with oil to the correct condition. (Vehicle)
	Pressure hose squeezed / bent.	Check all hydraulic hoses for pinches and damage.
	Oil leakage in hydraulic system.	Check hydraulic system for leaks. Possibly retighten or repair hoses and fittings.
	Oil pump suction filter stopped. (Vehicle)	Replace filter insert. (Vehicle)
Electrical contacts fail	Incorrect supply from vehicle.	Check the power supply from the vehicle. (Fuses and connections)
	Contacts exposed to water.	The machine must be stored under a roof or covered.
Electric valve fails	Defective wiring harness.	Check wiring and circuit breakers.
	Dirt in the valve.	Inspected by an authorized workshop.
	Valve is stuck.	Inspected by an authorized workshop.
	Insufficient voltage.	Check for poor battery connection.

Table 18 – Identification of faulty conditions: HXF multi carrier

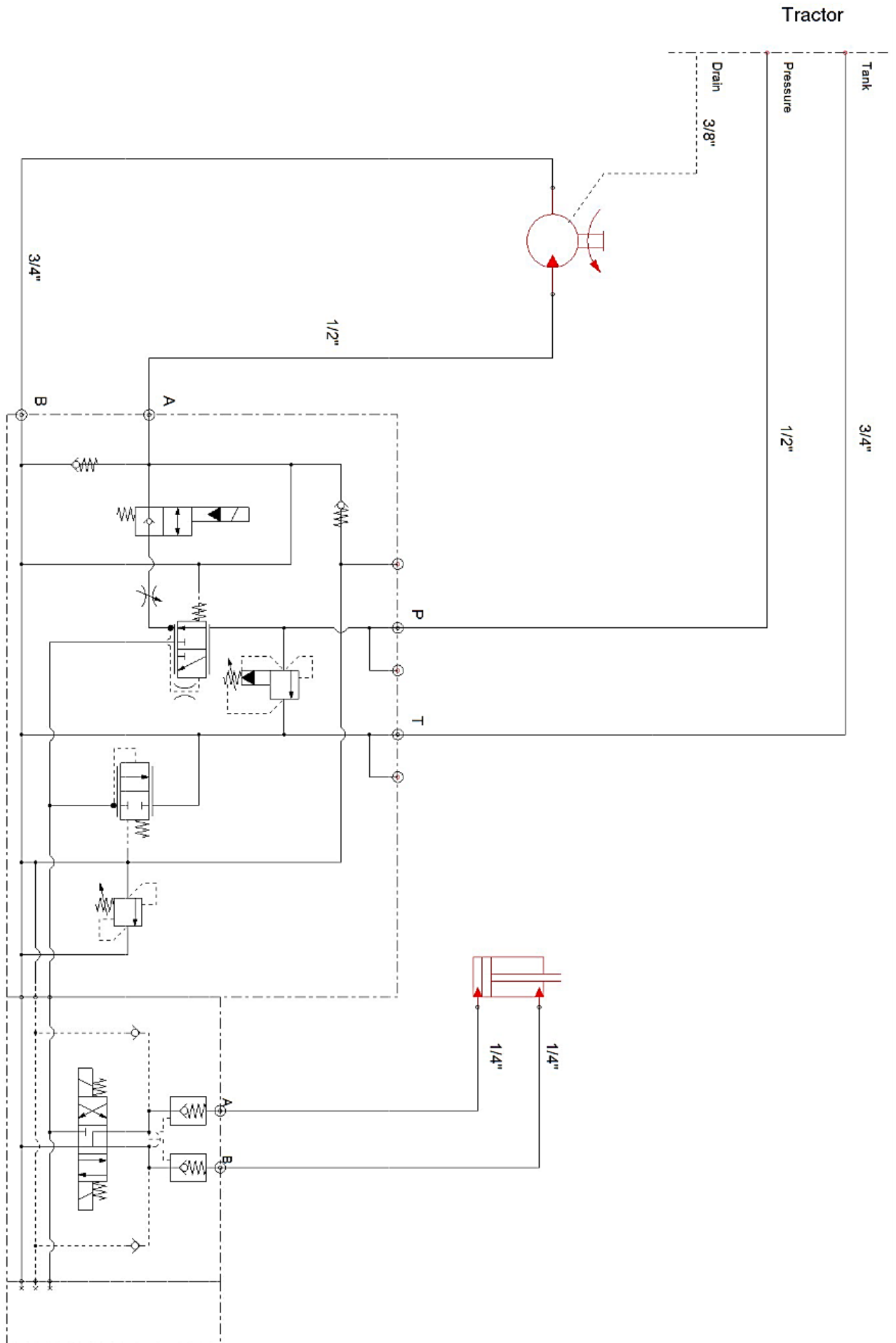
8. APPENDIX

8.1 HYDRAULIC DIAGRAMS

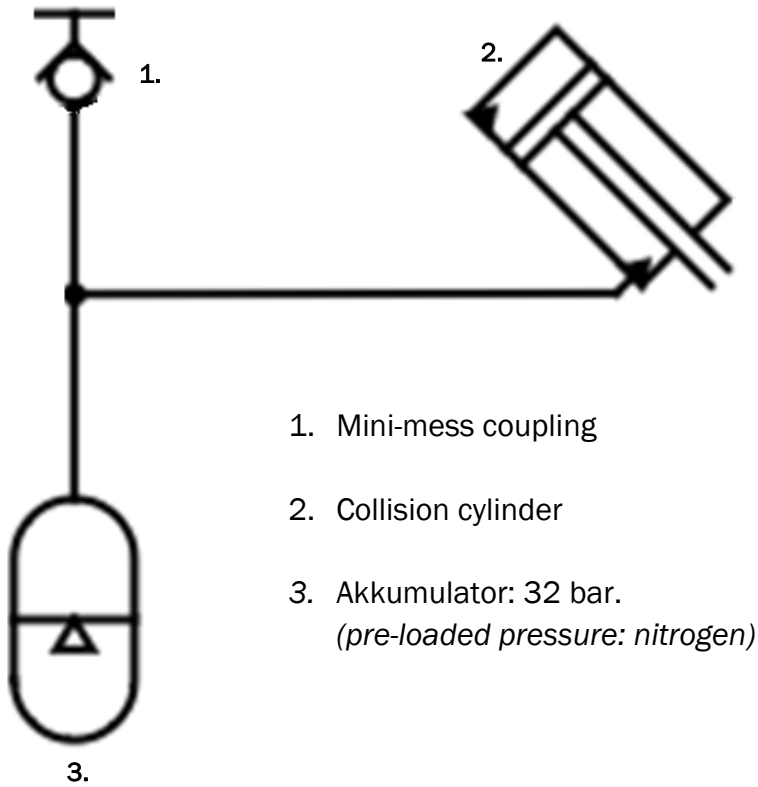
8.1.1 HXF MULTI CARRIER WITH STANDARD HYDRAULIC WORKING ANGLE



8.1.2 HXF MULTI CARRIER WITH ELECTRICALLY CONTROLLED WORKING ANGLE



8.1.3 AUTOMATIC HYDRAULIC BREAK-BACK SYSTEM / AHS-SYSTEM (CLOSED CIRCUIT)



- 1. Mini-mess coupling
- 2. Collision cylinder
- 3. Akkumulator: 32 bar.
(pre-loaded pressure: nitrogen)

⚠ WARNING

Only authorized personnel may perform service work on the machine and the AHS system!

Warning!

Closed hydraulic circuit under high pressure. Stated value: 50 bar.

The collision protection cylinder is under constant pressure from the accumulator.

Any separation without draining the pressure will result in violent splashes, oil vapors and oil mist which can be very dangerous by inhalation and skin contact.

Only to be disassembled by a skilled mechanic after the pressure has been drained by the system.

Bar: 50

Warning!

Closed hydraulic circuit under high pressure. Stated value: 50 bar.

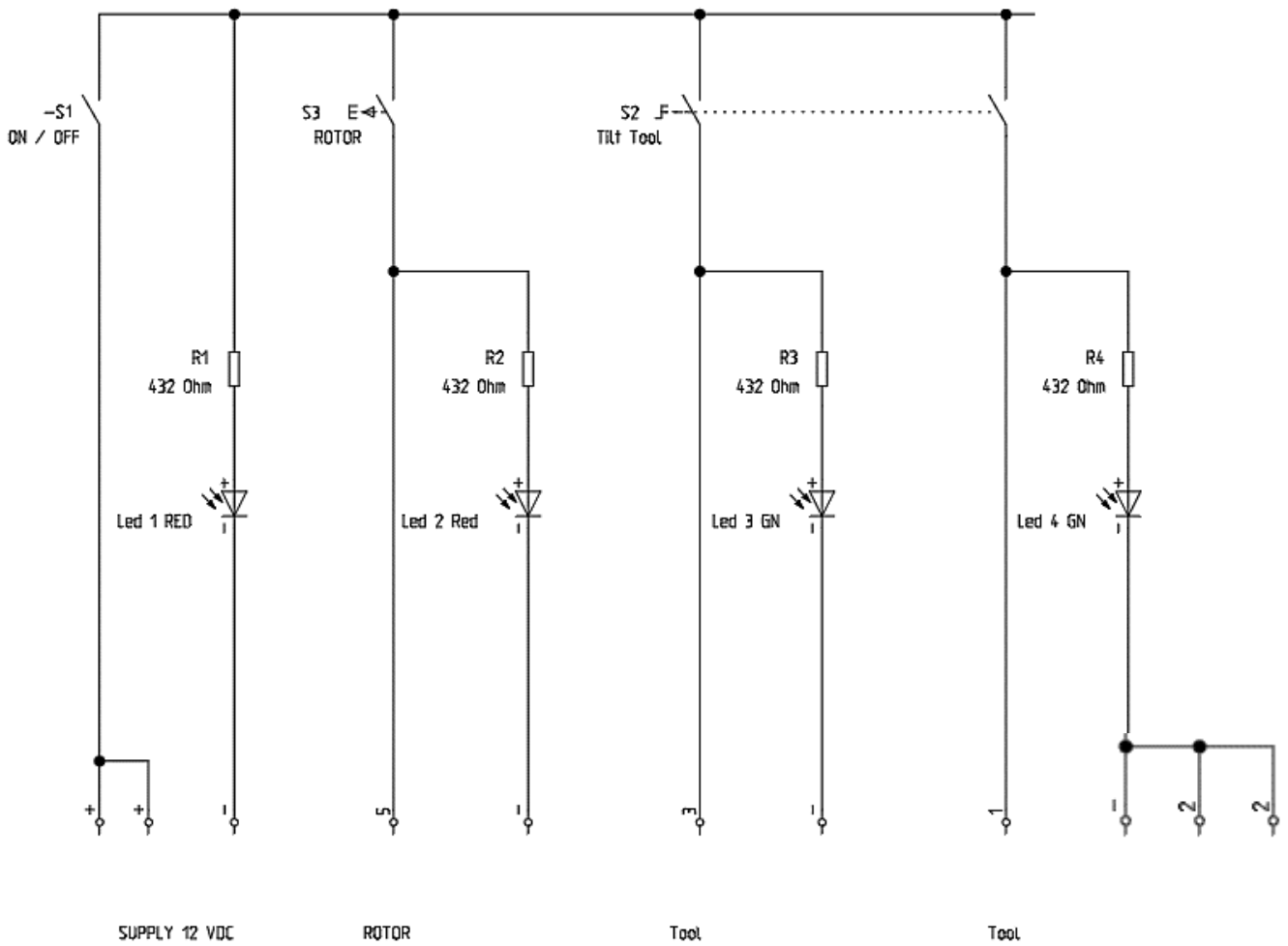
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Any separation without draining the pressure will result in violent splashes, oil vapors and oil mist which can be very dangerous by inhalation and skin contact.

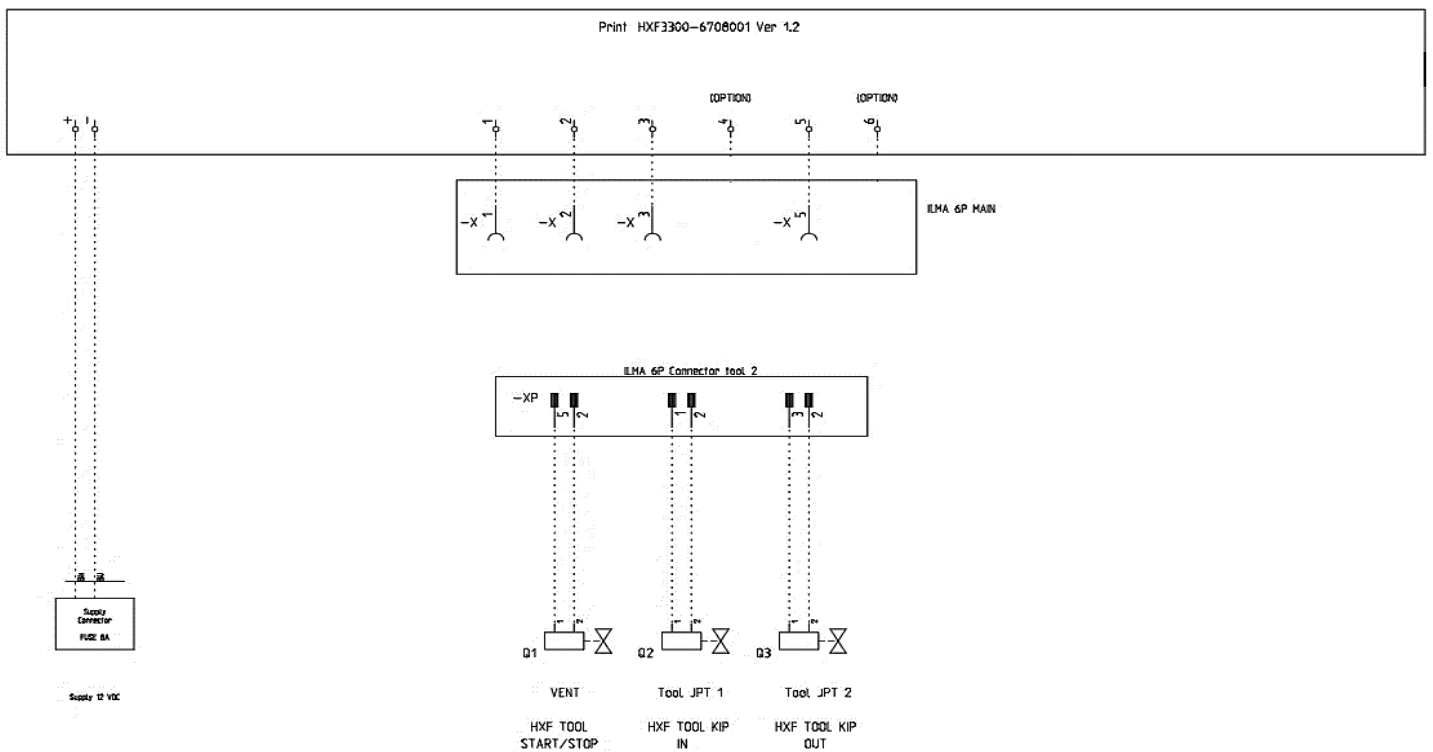
Only to be disassembled by a skilled mechanic after the pressure has been drained by the system.

8.2 ELECTRICAL DIAGRAMS

8.2.1 EASYPILOT v1.2 CONTROL PANEL: HXF 2302 – 2802 – 3302



8.2.2 CABLES AND CONNECTORS: HXF 2302 – 2802 – 3302



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