



Operator Manual



HSAB MK VI

for use on Claas Jaguar Forage Harvester 800 series

NOTES

1

*Note: the pictures in this Manual
may not show the exact design of
the delivered machine.*



Note!

Operator Manual CONTENTS PAGE

WELCOME	PAGE 3
DECLARATION OF CONFORMITY	PAGE 4
INTRODUCTION	PAGE 5
WARNINGS and DEFINITIONS.....	PAGE 6
SAFETY, WARRANTY	PAGE 7
PRESENTATION Intended Use/Warranty.....	PAGE 10
HSAB MK VI ON A CLAAS JAGUAR 800 SERIES.....	PAGE 11
HSAB MK VI - A FULLY HYDRAULIC HEAD	PAGE 12
CONTENT OF THE FREIGHT PACKAGE.....	PAGE 13
ASSEMBLY OF THE HSAB MK VI.....	PAGE 14
MOUNTING THE HSAB MK VI TO THE FORAGE HARVESTER.....	PAGE 15
FIRST START UP.....	PAGE 16
HARVESTING.....	PAGE 17
SERVICE & MAINTENANCE	PAGE 18
CLEANING 10 HOURS SCHEDULE	PAGE 19
LUBRICATING POINTS 10 HOURS SCHEDULE.....	PAGE 20
CHANGING SAW BLADES.....	PAGE 21
TROUBLESHOOTING.....	PAGE 22
SPARE PARTS.....	PAGE 24

2

HSAB

HENRIKSSON SALIX AB

WELCOME to Henriksson Salix AB

We would like to welcome you to our family business dedicated to the use of Short Rotation Coppice (SRC) crops as a carbon neutral source of biomass.

As well as the knowledge we have accumulated over three decades working in this field, we have designed and developed a range of machines to enable producers to economically establish SRC plantations (HSAB Billet Planter) and efficiently harvest them (HSAB Billet Harvester and HSAB SRC Cutting Heads).

This Operator's Manual deals with our SRC Cutting Head - the HSAB MKVI. Each Head is hand-made by skilled craftsmen in Sweden and is the result of decades of practical experience harvesting SRC's such as willow and poplar. With the challenge of cutting such a tough crop, we decided early on to make the HSAB MKVI a fully hydraulic head in order to deliver a capable & reliable design. Being fully hydraulic, the HSAB MKVI has fewer parts, resulting in lower maintenance schedules and greater durability. More importantly, the design has evolved to ensure that the stress to the base machine is minimized by delivering the stems at the right speed and angle to the feed rollers and chopper drum; turning your Forage Harvester into an efficient producer of biomass chips, whilst protecting your investment. With our farming roots, we appreciate the investment already made in equipment by SRC producers and decided to focus on an attachment that could utilize this investment during the seasonal "down-time". Thus, we are very proud to present the HSAB MKVI!

Our burgeoning growth in knowledge and experience, is also applied to our other machines, and combined with our expertise, has helped establish some of Europe's leading energy plantations, contributed to our understanding of SRC biomass crops through scientific research and made us a leading player in the growing SRC market.

As with any specialist manufacturer, our product knowledge and support service is very personal and efficient, resulting in a fast and friendly customer service.

However, this Manual is intended to help you get the most out of your investment and we recommend that you take the time to study it carefully.

We also invite you to visit our website www.salixab.se.



GUNNAR HENRIKSSON
TECHNICAL MANAGER



ANNIKA HENRIKSSON
GENERAL MANAGER

Each HSAB MK VI head
comes with a CE
Declaration with this
content in principal

CE

DECLARATION OF CONFORMITY

IN ACCORDANCE WITH THE DIRECTIVE 2006/42/EC, ANNEX IIA

HENRIKSSON SALIX AB

Almhög
SE-241 92 Eslöv, SWEDEN

declare under our sole responsibility that the product:

MODEL: HSAB Fully Hydraulic Head MK VI

TYPE: for Claas Forage Harvester

Chassi No: [to be filled in]

MANUFACTURE YEAR: [to be filled in]

a. is manufactured in accordance with:

COUNCIL DIRECTIVE of May 17 2006 on the harmonization of the laws of the Member States Legislative Assembly regarding Machinery Directive 2006/42/EC as applicable with reference in Annex 1.1 on essential health and safety requirements and Annex 1.3 specific hazards arising from the mobility of the machinery.

b) is, besides point a), made under other applicable directives such as:
2006/95/EC (Electrical equipment intended for use within certain voltage limits),

c) has been manufactured in conformity with the following harmonized standards:

SS-EN ISO 12100:2010, SS-EN ISO 13857:2019, SS-EN ISO 13854:2019, SS-EN ISO 4413:2010,
SS-EN 61310-3:2008, SS-EN 13849-1:2016, SS-EN 14120:2015, SS-EN ISO 11161:2007+A1:2010,
SS-EN ISO 14118:2018, S-EN 842:1996+A1:2008, SS-EN 61310-2:2008, SS-EN 17165-1:2007.

.....
(Place and date of execution)

.....
Gunnar Henriksson, Technical Manager

4

INTRODUCTION

This Operator Manual is designed primarily for supervisors, maintenance personnel and Operators. It is essential that all personnel concerned should study this Operator Manual prior to use of or servicing the machine. Responsible supervisors shall satisfy themselves that Operators, maintenance personnel and other interested personnel, are familiar with the HSAB MK VI's operation, function and safety. Particular attention should be paid to the safety section on page 7-9 and to other safety precautions pointed out in the Manual.

The HSAB MK VI is manufactured in compliance with EC-Council directives on mutual approximation of the laws of the Member States relating to machinery 2006/42/EC; with specific references to Annex 1 concerning essential health and safety requirements for the design and manufacture of machinery.

5

MANUFACTURER: HENRIKSSON SALIX AB
Almhög
241 92 Eslöv
SWEDEN

YEAR OF MANUFACTURE: 2019-2021

MACHINE TYPE: HSAB MKVI - is a fully hydraulic cutting head to be mounted on a Claas Jaguar 800 series Forage Harvester to cut and feed Short Rotation Coppice (SRC) stems.

SERIAL NUMBER: 190814, 200815, 200816

AREA OF USE: Designed to be mounted on a Claas Jaguar 800 series Forage Harvester for the task of harvesting Short Rotation Coppice such as willow and poplar. See also page 10.
For all other uses, the manufacturer does not offer any warranty.

WARNINGS AND DEFINITIONS IN THIS MANUAL



Note!

Important information for the correct operation of the equipment



Warning!

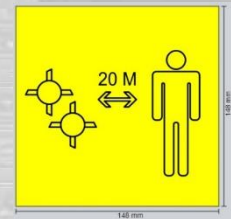
Warning of the risk of damage to the equipment



Danger!

Warning of the risk of personal injuries

WARNING SIGNS ON THE HSAB MK VI



6

DEFINITIONS

SRC

Short Rotation Coppice

FORAGE HARVESTER In this Manual it refers to Claas Jaguar 800 series

HOLDER

The person/organization which owns/runs the HSAB MK VI

Operator

One or more persons who are responsible for installing, using, adjusting maintaining, cleaning, repairing, moving or transporting the HSAB MK VI

SAFETY

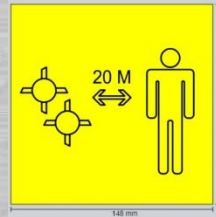
DANGER ZONE

The expression 'danger zone' refers not only to areas behind permanent protection devices etc., but also the area around the machine ($r = 20\text{m}$ from complete machine's outer border). Ensure that nobody is within this area whilst the machine is in operation and/or not secured.



DANGER

Never go closer than 20 meters when the machine is in operation.



Watch out for these warning symbols

PREVENTION OF ACCIDENTS OR INCIDENTS

Government and local regulations for the prevention of accidents must be followed. Recommended personal protective equipment should be used.

The Holder must see to that the Operators receive the relevant information concerning the accident risks and how best to protect themselves.



NOTE!

AVOID ACCIDENTS BY

Before maintenance work on the HSAB MK VI head, the Forage Harvester has to be stopped and the ignition key removed. If working underneath the HSAB MK VI head, ensure that the Forage Harvester's Lift Cylinder has been blocked.



NOTE!

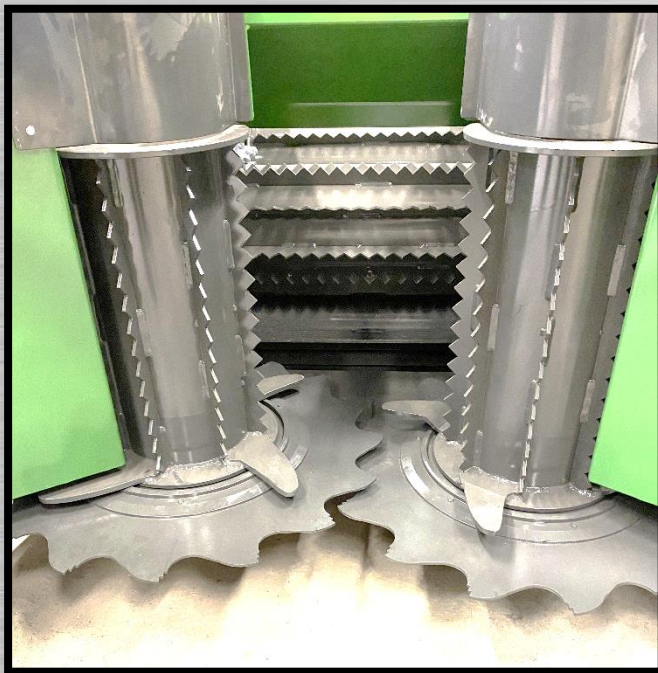
Working equipment that has been stopped shall be secured against accidental movement so that it can only be put into motion by intention.

When performing service work on the equipment, always put a sign with the text "WORK IN PROGRESS - DO NOT START!" to be clearly visible in the Forage Harvester's cabin.

**SAFETY -
be ware
of very
fast
rotating
parts**



Danger!



Cutting discs



Feed Rollers



PTO shaft

8

SAFETY continued, modifications, warranty and scrapping

Noise

The machine may reach the level 89 dB(A).

The measurement has been done with instrument model YF-20 sound level meter, 2.0 m horizontally from the machine's front and 1.5 m vertically from the floor level.

Use hearing protection during long exposures.

Modifications

Modifications, changes, replacing with spare parts which do not meet the manufacturer's specification and which may effect the capacity, function or safety are forbidden without the manufacturer's written consent.

Preventing accidents

The Holder shall see to that the Operator is familiar with the safety risks and preventive actions.

Warranty

The Manufacturer is liable for defects in the machine resulting from faulty design, specification, materials or workmanship provided that such defects are attributable solely and exclusively to the manufacturer.

The manufacturer is liable only for defects that appear under the intended and proper use of the machine as defined in this Manual and is not liable for any defects due to the installation. The liability does not cover defects caused by faulty maintenance, handling, transport or incorrect storing by the Holder, alterations of the machine or normal wear and tear and deterioration. Defective hydraulic parts must be returned.

Scrapping

The basic construction does not contain any heavy metals, chemical or other hazardous components which could prevent dismantling of a scarp machine. For hydraulic oils and electronic equipment, follow the local waste management regulations.



NOTE!



NOTE!

9

PRESENTATION

INTENDED USE

This HSAB MK VI is designed to be mounted on a Claas Jaguar 800 series Forage Harvester for harvesting Short Rotation Coppice crops, with a recommended cutting point diameter of maximum 70mm measured 30 centimeters above ground.

It must not be used alone or together with any other type of machine.

The HSAB head MK VI has its own hydraulic system driven by the PTO of the Forage Harvester. This hydraulic system drives the Feed Rollers and the Cutting Discs.

The HSAB Head MK VI is a snap on unit which allows switching from harvesting other crops to harvesting Short Rotation Coppice with just three simple actions. When the HSAB MK VI head has been hooked on the Forage Harvester the Quick Coupling and the Electric Cable shall be connected. Then it is ready for use.

Specifications

Weight - 2 400kg

Length - 305cm

Width - 235cm

Height - 161cm

Working width - 1.8 m



10

HSAB MK VI ON A CLAAS JAGUAR 800 SERIES

11

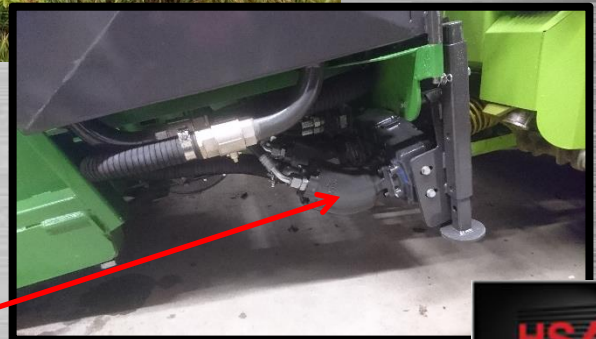
Push Bar



Branch
Deflectors



Quick
Coupling of
the PTO to
the Hydraulic
Pump

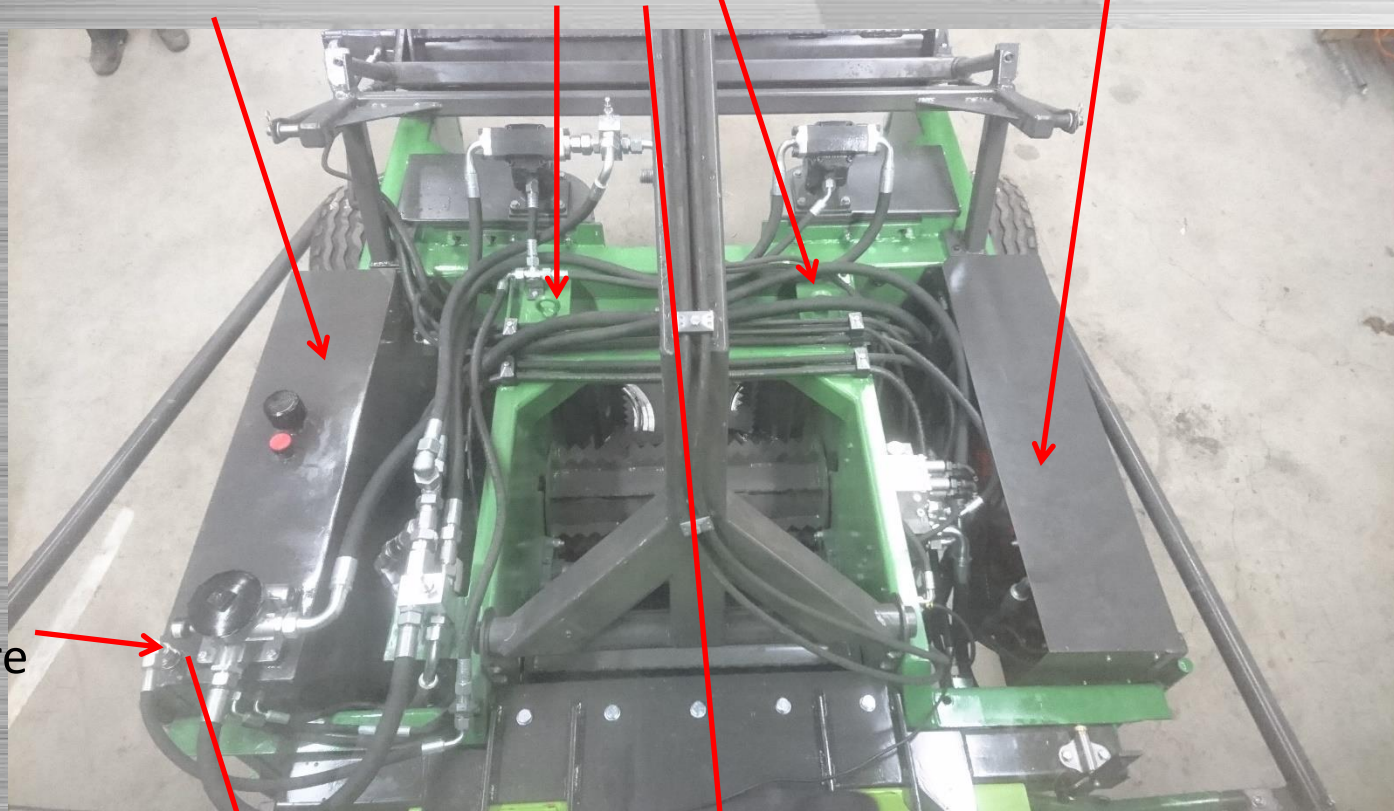


HSAB MK VI — A Fully Hydraulic Head

Oil Tank

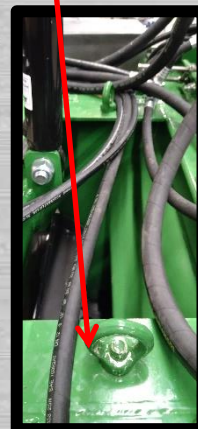
Hinge Points

Oil Cooler



Oil
Pressure
Gauge

12



Danger!

Never touch a leaking
hose under pressure!

HSAB

HENRIKSSON SALIX AB

CONTENT OF THE FREIGHT PACKAGE

(Example, showing 2 HSAB MK VI Heads shipped in a container)

- **HSAB MK VI SRC cutting head**, weight 2400 kg, length 305 cm, width 225 cm, height 161 cm.
- **BRANCH DEFLECTORS**, to be mounted on the head
- **REMOTE CONTROL**, one for each head, individually programmed.
- **SUPPORT WHEELS**, to be mounted on the head

13



The remote control is attached to the specific head it is intended for. Do not mix them!



NOTE!



ASSEMBLY OF THE HSAB MK VI



LIFTING THE MACHINE, the machine can be lifted in the two Hinge Points shown on page 12.
DO NOT LIFT WITH A FORK TRUCK, IT MAY DAMAGE THE SAW BLADES!

WHEELS, check the tyre pressure and adjust if necessary to 2,5 bar.
Mount the Wheels and tighten the Nuts with a torque to 150 Nm.

HYDRAULIC OIL, the Oil Tank of the HSAB MK VI contains mineral hydraulic oil, viscosity 46, to drive the Cutting Discs and the Feed Rollers.

OIL LEVEL, check the oil level in the Oil Tank with the Oil Stick or check the level on the Meter.

- before starting and
- after the Forage Harvester has reached the working temperature.

Make sure that the Oil Tank is horizontal when checking.

OIL PRESSURE, **DO NOT HARVEST WHEN THE PRESSURE GAUGE SHOWS RED**

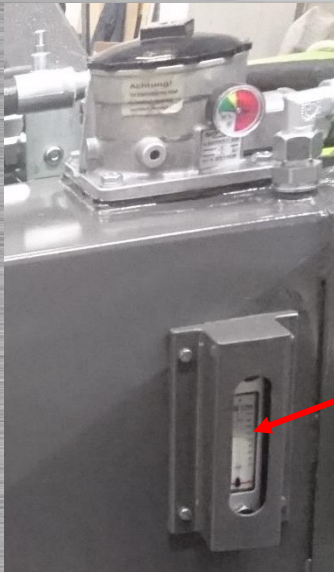


Warning!



NOTE!

REMOTE CONTROL, make sure to use the Remote Control piece intended for the specific machine.
The Remote Controls pieces are individually programmed for each machine.



MOUNTING THE HSAB MK VI TO THE FORAGE HARVESTER

1. Hang the HSAB MK VI onto the Claas Jaguar's Hang Points, lock the HSAB MK VI with the Lock Bars accompanying the HSAB MK VI.



2. Connect the Forage Harvester's PTO shaft via the Quick Coupling to the PTO Coupling of the HSAB MK VI.



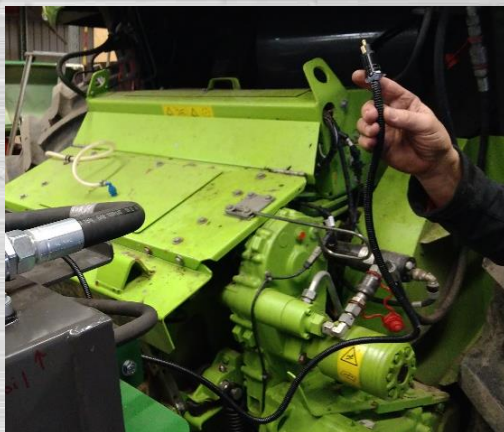
15



Warning!

The first time the HSAB MK VI is connected to the Forage Harvester it must be checked that the PTO Couplings line up properly. If not, you must adjust the alignment, either on the Forage Harvester or on the HSAB MK VI.

3. Connect the Electric Cable from the HSAB MK VI to the Forage Harvester.



FIRST START UP



Warning!

Open the Valve under the Oil Tank on the HSAB MK VI.

The Handle shall be in line with the hose and the metal pipe.

Normally it is set like this when the head is delivered but **it has to be checked.**



This is EXTREMELY IMPORTANT

Start the Forage Harvester and let it idle.

Engage the PTO at the lowest speed, listen for any irregular noise and look for oil leakages.

Stop the PTO.

Engage the Feed Rollers from the Forage Harvester's hydraulic system, listen for any irregular noise and look for oil leakages.

Start the PTO and let the oil reach up to working temperature.



Warning!

VERY IMPORTANT, check the Pressure Gauge (see page 12) on the Oil Filter (on the Oil Tank) of the HSAB MK VI. If it shows **RED**, the oil is too thick and the Oil Filter may explode if further stressed.

The temperature should be at least 20 °C before the HSAB MKVI is working.



16

When the oil has reached working temperature, carefully increase the Forage Harvester's engine to working speed 2000 RPM.

Always check the oil level before starting.



Warning!

ROAD TRANSPORT

Before road transport, fold in the BRANCH DEFLECTORS and the PUSH BAR.

HSAB

HENRIKSSON SALIX AB

HARVESTING

The ideal conditions for the HSAB MK VI is a Short Rotation Crop, willow or poplar planted in single or twin rows with a minimum distance between the rows of 1.8 meters.

Adapt the speed to the ground conditions and to the growing character and thickness of the crop.

Maximum stem diameter for harvesting is 70 mm measured 30 cm above the ground.

Avoid driving the Forage Harvester on the stumps in order to minimize the risk of punctures.

OPTIMUM: forest tyres.



NOTE!

17



SERVICE AND MAINTENANCE

The HSAB MK VI is built to be as service and maintenance free as possible. However, some servicing must be undertaken on a regular basis, as described in the following pages. The most important preventive maintenance consists of keeping the HSAB MK VI clean of foreign objects. Get into the habit of listening for irregular noises and sensing any irregular movements; these can be the early warning signs that service or maintenance is required. By paying attention, a large repair might stop at a minor adjustment!



During maintenance work on the HSAB MK VI, the Forage Harvester must be stopped and the Ignition Key removed.

Before the HSAB MK VI is put back into the field, check that all protection guards and covers have been mounted.

DAILY MAINTENANCE SCHEDULE –VERY IMPORTANT INFORMATION

The Saw Blades should be checked and sharpened daily. VERY IMPORTANT!

Unnecessary problems and maintenance cost will be avoided if this Instruction Film on You Tube is viewed:

https://www.youtube.com/watch?v=3E2m_pgGKa8&t=2s

Verify daily that all mounting bolts are present and properly fastened. Threads must be locked with locking fluid; Loctite or similar.



NOTE!



WEEKLY/MONTHLY MAINTENANCE SCHEDULE

The monthly maintenance should be carried out by regular service personnel. The service consists mainly of the cleaning of the HSAB MK VI's moving parts. Also, make sure that hydraulic hoses are intact and functional. All safety guards must be fitted if the HSAB MK VI is connected to a started Forage Harvester.

Verify that there are no leaks in the hydraulic system.

WARNING - never touch a leaking hydraulic hose under pressure, always ensure the hydraulic system is depressurized first.



DANGER

Correct any faults. If in doubt about the correct function of the HSAB MK VI, contact qualified personnel.

18

MAINTENANCE SCHEDULE - 10 HOURS



Remove the Protection Cover to reach the Gearwheel.
One on each side of the HSAB MK VI



Clean daily (10hrs) with a screwdriver or similar.

Gear Wheel free motion margin shall be adjusted annually. It should have a floating gap of 0.2mm.
Do not lubricate!

Open and clean Oil Cooler Grid by blowing with high pressure air, daily.



Do not forget to replace the Protection Covers.



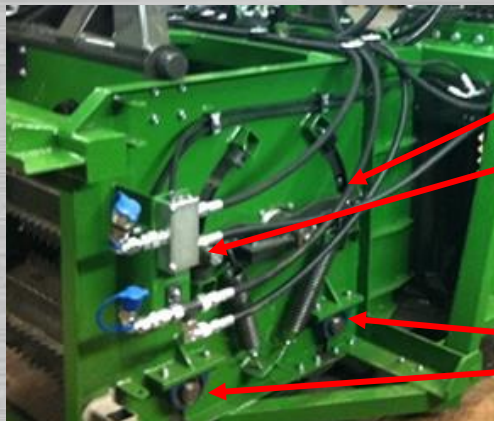
Danger!

19

LUBRICATING POINTS – 10 HOURS SCHEDULE

Lubricating Points 1/2/3/4

Open the righthand side cover to reach the lubricating points on the rollers.



Upper Rollers

Important!
Rotate the Upper Rollers to locate the grease nipple.

Lower Rollers



Lubricating
points 5/6

In addition, lightly
grease the
Feed Roller Slide Rail.



Lubricating Point 7

Only use machine grease of high quality



Warning!

20

HSAB

HENRIKSSON SALIX AB

CHANGING SAW BLADES

Remove the Bearing Support (picture below).

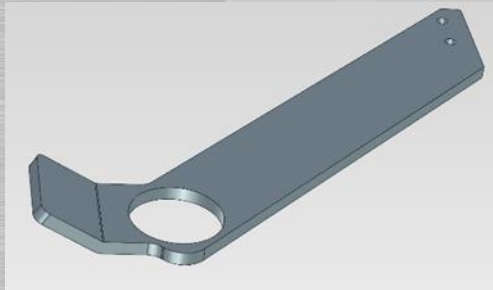
Remove the Bearing.

Remove the old Saw Blade

Mount the new Saw Blade.

OBSERVE: the Bearing Support must be in line,
do NOT force the Bearing Support in place.

If the Bearing Support is damaged or cannot be mounted properly, it has to be replaced.



Warning!

21

If the Bearing Support is mounted wrongly or is forced in place, it will wear out the bearings very rapidly which may cause serious damage to the Blade Shaft and its Housing



Warning!

Before any repair or maintenance make sure that nobody can start the Forage Harvester.



Danger!

Do NOT leave the keys in the ignition!

TROUBLESHOOTING

PROBLEM

The feeding through the HSAB MK VI does not work properly

POSSIBLE CAUSE

Driving too fast
The crop is too coarse
The Saw Blades are blunt
The Saw Blades are incorrectly sharpened
The Saw Blades are worn out
Branches or foreign objects are blocking the feeding channel on the board.
Branches or foreign objects are blocking the feeding channel on the machine.
Branches hits the Shear Bar in the Forage Harvester.
The Feed Rollers do not rotate.
The Feed Rollers rotate in the wrong direction.
Driving too fast.
The Saw Blades are blunt.
The Saw Blades are incorrectly sharpened.
Driving too fast.
The Saw Blades are blunt.
The Saw Blades are incorrectly sharpened.
The Oil Cooler of the Forage Harvester or of the HSAB MKVI is blocked.
Not enough oil in the system.
Overload due to blocked channel.

PROPOSED ACTION

Reduce the speed.
See page 10, 17.
Sharpen the Saw Blades, see page 18.
Change the Saw Blades, see page 21.
Clear the feeding channel.
Check that the Feed Rollers of the Forage Harvester are working properly.
The Feed Rollers on the machine are worn, change Feed Rollers.
Hydraulic Motor or Coupling is broken.
The hydraulic hoses are mounted incorrectly, switch places of the hoses.
Reduce the speed.
Sharpen the Saw Blades, see page 18.
Reduce the speed.
Sharpen the Saw Blades, see page 18.
Clean the Oil Cooler Grid, see page 19.
Fill up with oil.
Stop the Forage Harvester immediately.

22

Stumps are badly cut

The oil gets overheated

TROUBLESHOOTING

PROBLEM

POSSIBLE CAUSE

PROPOSED ACTION

The Saw Blades stop

Driving too fast.
The Saw Blades are blunt.
The Saw Blades are incorrectly sharpened.

One of the hydraulic motors are broken.

Reduce the speed.
Sharpen the Saw Blades, see page 18.

Change the faulty hydraulic motor.

Abnormal vibrations

Uneven sharpening of the Saw Blades.

The Bearing under the Saw Blade is worn out.

One or several bearings are worn out.

Replace the Saw Blades, see page 21.

Replace the Bearing.

Replace the bearings.

Double sawing of stems, dropping stems on the ground

The crop is too coarse.

The Saw Blades are blunt.
The Saw Blades are incorrectly sharpened.

The Knock-down Roller is stuck.

See page 10, 17.

Sharpen the Saw Blades, see page 18.

Clean the Feed Roller Slide Rail and grease, see page 20.

Oil leakage

Overheated oil.

One or several hydraulic motors are leaking.




Stop the Forage Harvester and let the oil cool down.

Make sure that the Oil Return Hose is connected properly, replace the seals.

Make sure that the Oil Return Hose is connected properly and leads to the oil tank on the HSAB MKVI so that there is no backpressure.

Replace the worn hydraulic motor.

23

Part	Description	Art No
	LEG left, right	007 008
	DRIVE FLANGE	011
	UPPER BEARING SKF 6020-2RS1/C4 (1 pc)	012

Part	Description	Art No
	CIRCLIP (upper bearing)	022
	HUB (lower bearing)	025
	HUB BEARING SKF6016-2RS1/C3 (2 pcs)	030

25



Part	Description	Art No
	COMPLETE ASSY. (lower bearings) Nut right or left Lock ring Bearing Spacer Bearing Spacer	042
	NUT Left hand thread Right hand thread	044 045
	FLANGE HUB Upper bearing (1 pc)	043
	UPPER BEARING SKF 6020-2RS1/C4 (1 pc)	030

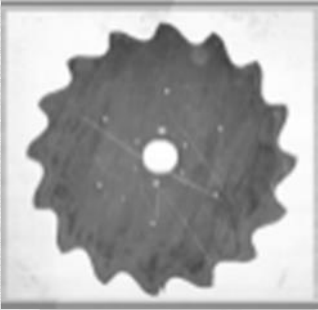
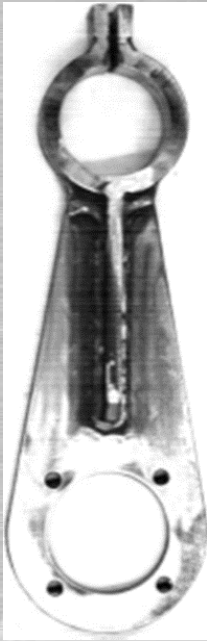
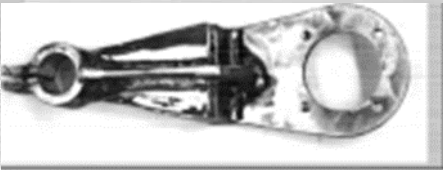
26

HSAB



HENRIKSSON SALIX AB

Part	Description	Art No
	DISC FOR SAW BLADES Right	1400
	DISC FOR SAW BLADES Left	2400
	FLANGE (lower bearing)	053
	BEARING SUPPORT (lower bearing)	1510

Part	Description	Art No
	SUPPORT BEARING CUTTING DISC SKF 22208/e/c3 (1 PC)	065
	CLAMP RING Support bearing	067

Part	Description	Art No
	SAW BLADE	055
	ARM Rear left	075
	ARM Front left	079

30

Part	Description	Art No
	ARM Front right	084
	ARM Rear right	085

HSAB

HENRIKSSON SALIX AB

Part

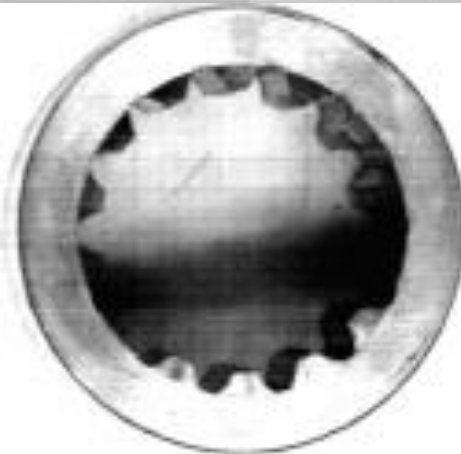
Description

Art No



EXTERNAL
SPLINED
COUPLING
parallelism

087



INTERNAL
SPLINED
COUPLING
parallelism




089



BUSHING
internal

095

31

Part	Description	Art No
	BUSING EXTERNAL	097
	ALE HOUSING	100
	AXLE	101

32

Part

Description

Art No



COMPLETE
PARALLELISM
UPPER
ROLLERS
ASSEMBLY

099

33



NOTE!

MOUNTING
LAYOUT FOR
LEFT
PARALLELISM





NOTE!

MOUNTING
LAYOUT FOR
RIGHT
PARALLELISM



34

Part	Description	Art No
	<p>UPPER ROLLER Complete assy.</p>	<p>131</p>
	<p>BEARING SKF FYC TF Upper rollers</p>	<p>132</p>



NOTE!

Part
MOUNTING
LAYOUT
FOR
UPPER/LOWER
ROLLERS & KNOCK
DOWN ROLLER

Description

Art No



DRIVE FLANGE
upper/lower
rollers & knock
down roller

134



DRIVE
COUPLING
upper/lower
rollers & knock
down roller

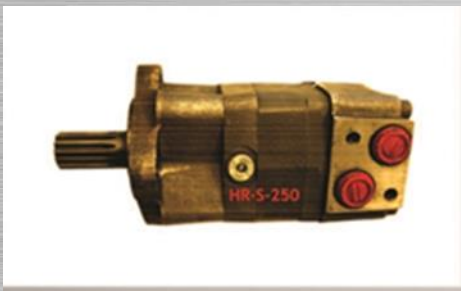


135

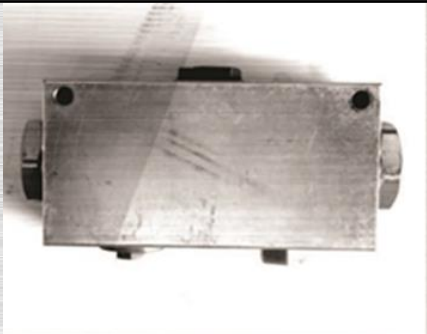





BEARING
SKF SY 35 TR
lower rollers &
knock down
roller


136

35

Part	Description	Art No
	MOTOR 250 CC Roller & Vertical Legs (6 pcs)	137
	MOTOR 400 CC Knock-down Roller (1 pc)	138
	MOTOR 64 CC Saw Blade (2 pcs)	139
	RELIEFE VALVE & FREEWHEEL	6100

Part	Description	Art no
	FLOW DIVIDER	141
	RELIEF VALVE Saw Blades	142
	PUMP Saw Blades	6200
	SAFETY VALVE Push Bar	144

37

Part	Description	Art no
	SHOE	176
	SPRING	181

38

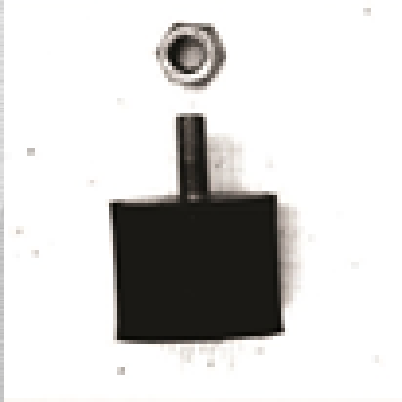
Part	Description	Art No
	GEAR WHEEL on Vertical Drive Motor	183
	GEAR WHEEL VERTICAL LEGS COMPLETE ASSY.  NOTE!	189

Part	Description	Art no
	SUPPORT WHEEL Hub assy.	192
	SUPPORT WHEEL	197

Part

Description

Art No



BOUNDING
CUSHION &
NUT

200

41



VERTICAL
LEG
right &
left

112



*Spare parts inquiries and orders should be made by e-mail
to gunnar.henriksson@salixab.se*

NOTES

NOTES