



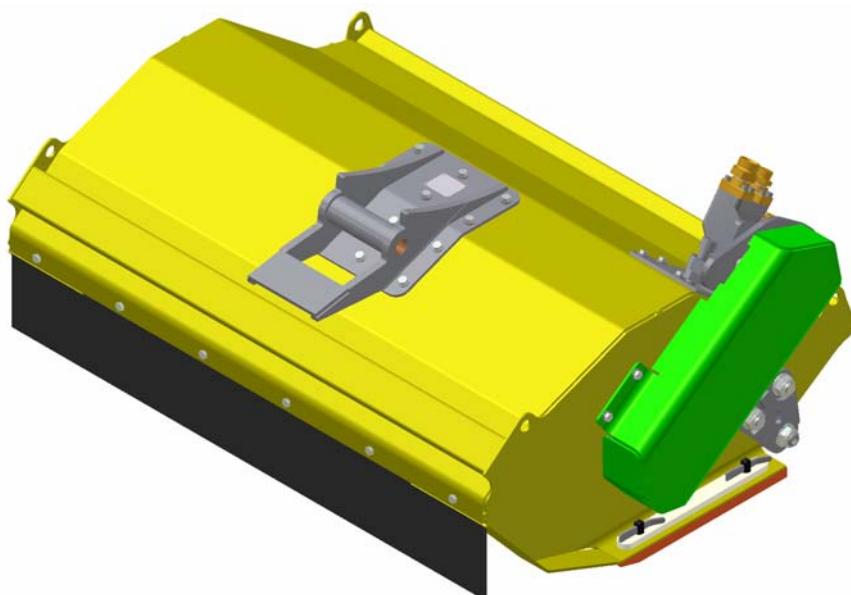
User manual

Vertical flail head

Models:
V130 / V160 / V190



Before using this equipment, read
the entire user manual!





Products sold after 1 January 1995 have to be CE marked and conform to the machinery directives adopted by the EU.

Responsibility for this rests with the manufacturer (importer) in the EU and/or the EEA.



Certificate

The EuroTest mark shows that the product concerned has been checked by a testing institute that is not associated with the product's manufacturer ("third-party certification").

A EuroTest marked product has been examined by independent experts who have checked that it conforms to the European-wide health and safety requirements applying to the product.

To issue third-party certification of conformity, the testing institute has to satisfy established quality requirements. Additionally, its experts must examine the product concerned from the aspect of the relevant safety and quality requirements.

SMP (Svensk maskinprovning) has the necessary accreditation to carry out such third-party certification.

SMP only puts its EuroTest mark on a product when it considers that the product conforms to the relevant EU machinery directive.

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1 INTRODUCTION

This user manual contains the information you need to be able to operate and look after the vertical flail head. Before operating the vertical flail head, read carefully through the manual and follow its instructions closely. This helps to ensure the mower head's long service life and trouble-free operation.

This user manual applies exclusively to Slagkraft's vertical flail heads. There are separate user manuals for Slagkraft's horizontal flails, cranes/booms and brush cutting machines (both the Compact range and the Engine Unit range).

Slagkraft reserves the right to freely change the contents of rules, instructions and specifications.

The spare parts catalogue forms a separate part of this publication and may list several models/variants over and above those covered in the user manual proper.

Besides the spare part number, the vertical flail head's series number (refer to the type plate) should also be quoted when ordering spare parts. This is because the series number is the key to design changes that may be of significance as regards spare parts.

If the vertical flail head is part of a complete brush cutting machine, there will be delivery specifications with details of type, series number and year of manufacture.

Limits of use

Slagkraft's flails can be mounted on carriers other than Slagkraft booms. Consequently, several variants of Slagkraft's tilt mount are available. After mounting, it is extremely important to check the stability of the base machine. To do this, extend the boom and vertical flail head to the position of maximum tilting moment, i.e. arm and head fully extended above the ground at right angles to the machine's direction of travel. If the base machine does not stand firmly, this must be corrected by using, for example, counterweights or stabilizing cylinders. Contact Slagkraft for approval of your combination of base machine and flail mower model.

Areas of use

The vertical flail head is intended solely for mowing grass and light brush. It must be used and cared for as set out in this user manual. It is particularly important that the stated safety regulations are followed.



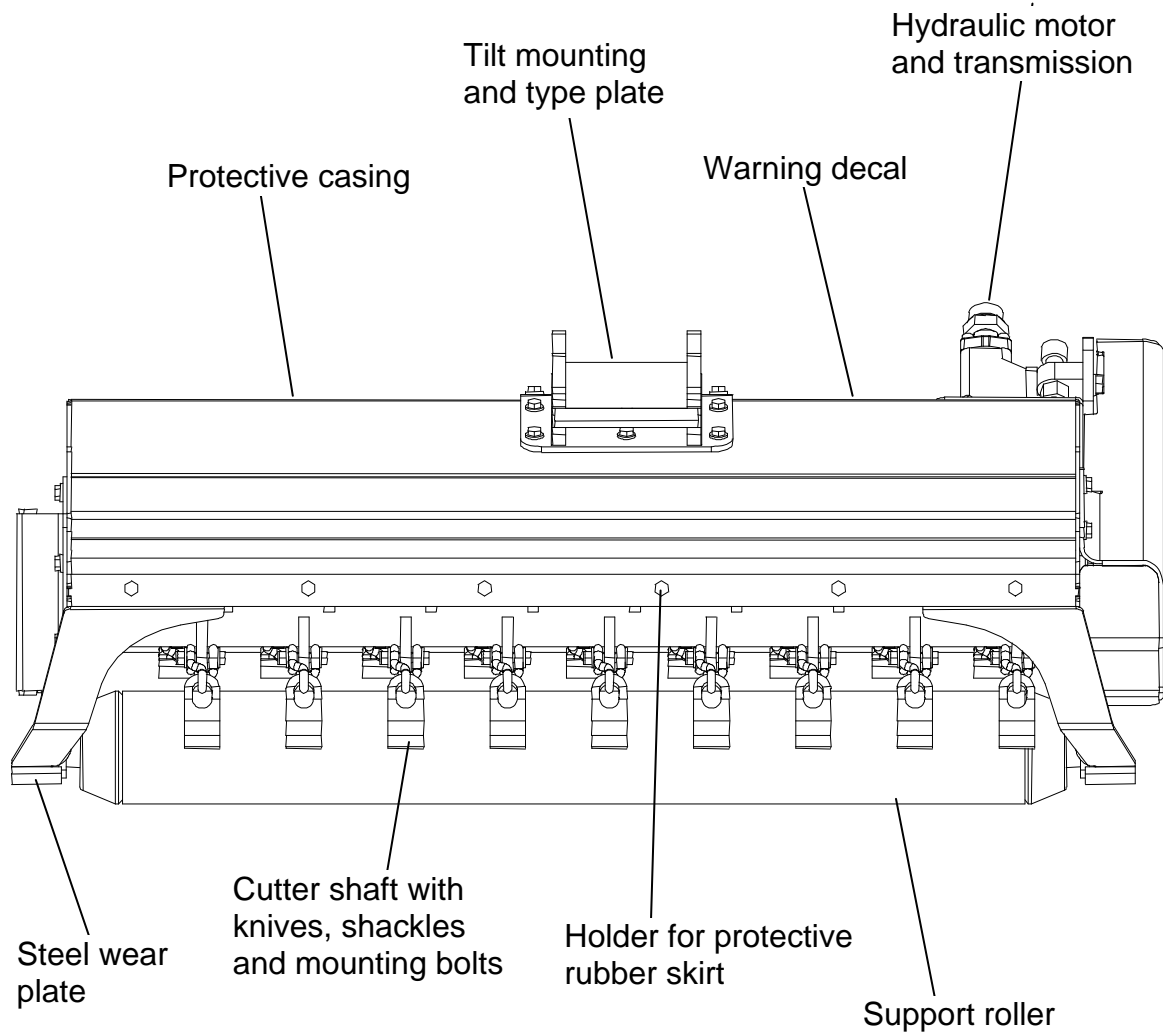
Before using the flail mower, you must read the entire user manual!

Before fitting the flail head, carefully read the “Fitting to the carrier” and “Safety regulations” sections.

If the vertical flail head is part of either a Compact brush cutting machine or of an Engine Unit brush cutting machine, then either the Compact or Engine Unit (and crane) user manual must also be read.

2 GENERAL DESCRIPTION

The principal components in the vertical flail head are: protective casing; protective rubber skirt; tilt mounting; steel wear plates, support roller, cutter shaft with knives, shackle and mounting bolts; and, hydraulic motor and transmission.



3 TECHNICAL DESCRIPTION

The basic principle of the vertical flail head is the use of vertically rotating flails to cut vegetation. Grass and light brush are cut and the vegetation is mulched. To suit different vegetation types, the vertical flail head can be run with various original Slagkraft flails. Also to suit different vegetation types, the rotation direction can be changed (the flails then have to be turned to face in the right direction).

Hydraulic oils

Ensuring that a hydraulic system achieves optimum efficiency and service life places great demands on the hydraulic oil. The oil is the power transferring component in the system. Thus, oil primarily intended for equipment that is to be used outdoors must work across a wide temperature range. The oil must contain additives that counteract foaming, improve film strength and reduce the extent to which viscosity depends on temperature.

For standardized SHS ISO VG 46 hydraulic oils, the temperature ranges corresponding to kinematic viscosity 1,500 – 10 mm²/s (= cSt) apply.

We recommend oils with properties meeting the requirements of the Swedish standard for hydraulic oils (SS 15 54 34). This standard covers conventional, mineral oil based hydraulic oils and bio-degradable hydraulic oils that meet not only the requirements of the standard, but also strict environmental requirements.

NB! Certain pump or component suppliers may impose hydraulic oil requirements that differ from those given above. Hence, before using a hydraulic oil, check that it is approved.

Filter

For maximum service life and performance, oil cleanliness must be at least 17/13 (using the ISO scale – ISO 4406). A 10 µm absolute filter is recommended. The hydraulic system must also otherwise be generally free from dirt.

Hub and transmission

At both its ends, the cutter shaft is mounted in roller bearings that are held in bearing housings. The bearing housings are bolted (flare fitting) to the head's protective casing. One end of the cutter shaft runs free. The other end has the drive mechanism – a V-belt with its associated pulley. A clamp bushing is used to fit the pulley to the cutter shaft and the hydraulic motor shaft. The hydraulic motor is located at the top of the rear face of the protective casing. An adjustable, belt-tensioning mechanism is used to set the correct tension of the V-belt.

Protective casing

The protective casing is made of high-strength sheet metal. The skid shoes and the internal wear plates are replaceable.

Protective rubber skirt

The protective rubber skirt covers the protective casing's front opening. It provides protection against stones and other objects thrown out by the flails. The skirt has several layers of metal belting.

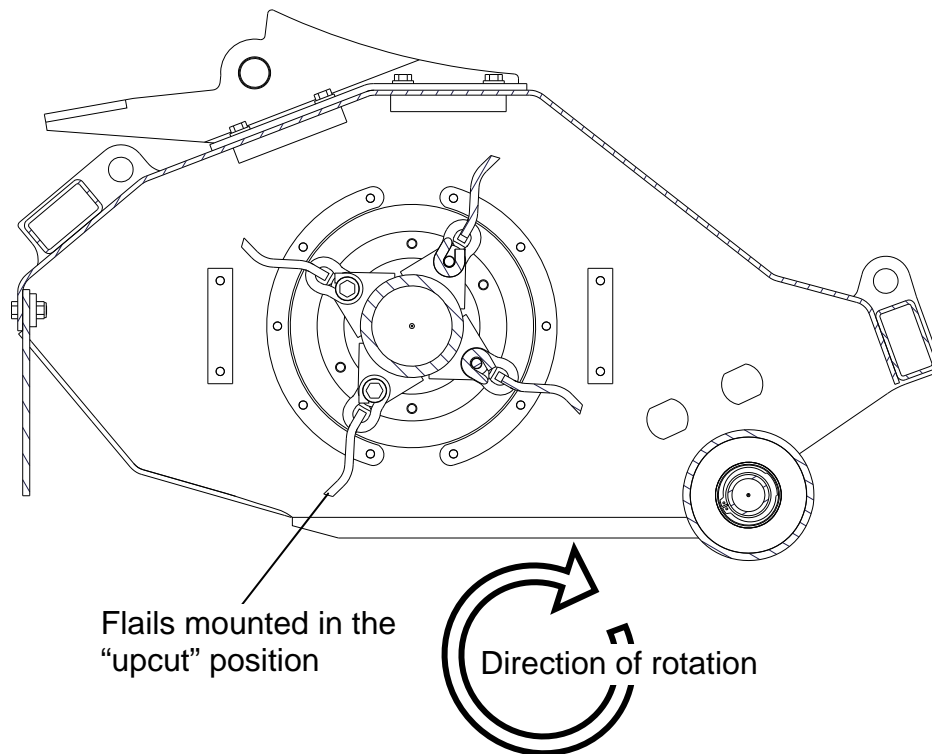
Hydraulic motor

A bent axis hydraulic motor with fixed displacement is used. Its output shaft is mounted in bearings.

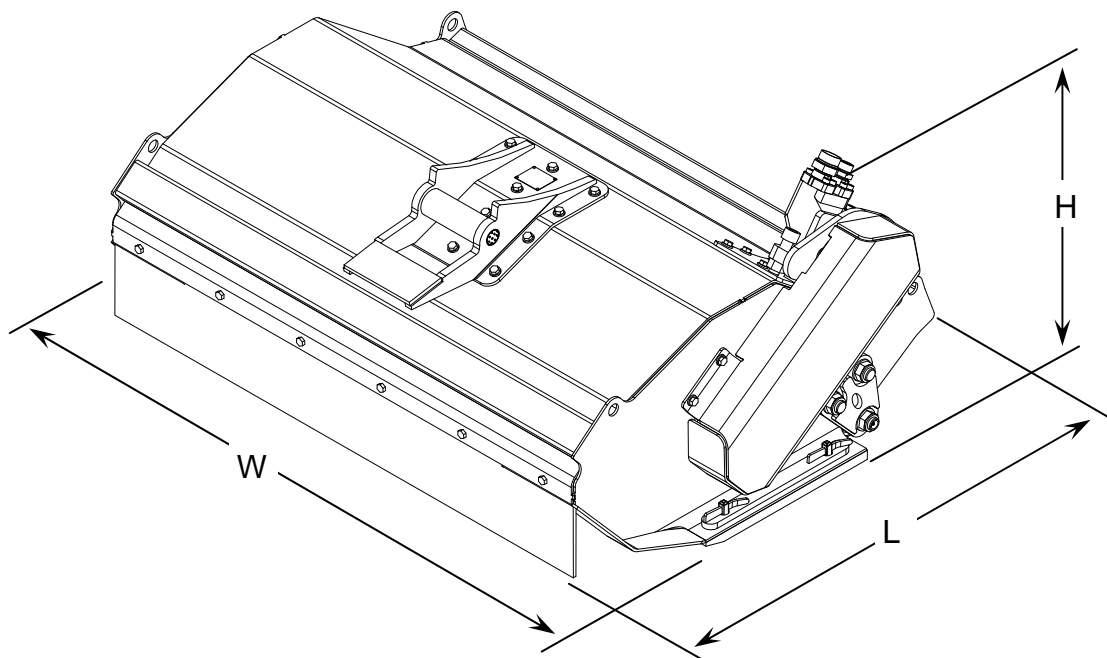
Flails

Each flail is bolted to the cutter shaft via a mounting lug. The cutter shaft's direction of rotation can be reversed if the pressure and return lines are switched at the hydraulic motor and the flails are turned to face the right way for the selected direction of rotation.

On leaving the factory, the flails are mounted in the "upcut" position in the flail mower. The pressure line is connected to the hydraulic motor port marked "B". Markings are located next to the connections on the hydraulic motor.



4 TECHNICAL DATA



Model	V130	V160	V190
Working width (mm)	1,310 (51")	1,598 (63")	1,886 (74")
Hydraulic motor	F12-40		
Casing outer dimensions			
Length (mm) L	1,126 (44")	1,126 (44")	1,126 (44")
Width (mm) W	1644 (65")	1,952 (77")	2,288 (90")
Height (mm) H	670 (26")	670 (26")	670 (26")
Weight without tilt mount (kg)	500 (1100 lbs)	555 (1221 lbs)	620 (1364 lbs)
Hydraulic oil pressure			
Optimum (bars)	210 (3045 psi)		
Max. (bars)	380 (5510 psi)		
Hydraulic oil flow			
Min. (l/min.)	100 (26,4 gpm)		
Optimum (l/min.)	130 (34,3 gpm)		
Max. (l/min.)	150 (39,6 gpm)		
Power requirement (kW)	45 (60 hp)		
Operating principle	Vertically rotating flails. Adjustable direction of rotation.		

The head can be supplied with various tilt mounts.

Slagkraft's products are subject to continuous development and we reserve the right to make changes without warning.

5 SAFETY REGULATIONS

Warning decal

Pay attention to the warning decal that must be present and undamaged on the roof of the casing. If the warning decal cannot be read, a new one must be ordered from Slagkraft and applied to the well cleaned surface of the casing. The decal's article number is 5013 905.

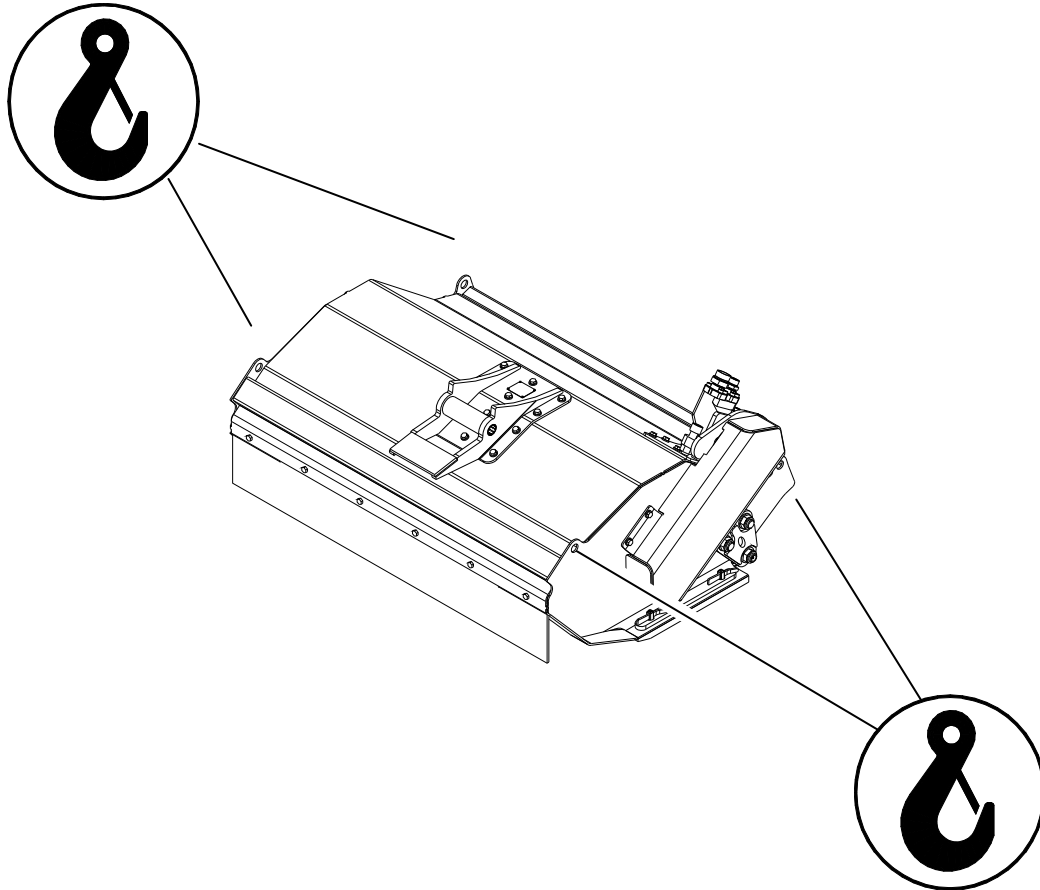
See below for explanations of the warning signs.



- 1 Before using, fitting or removing the flail mower, read the entire user manual.
- 2 Risk of getting caught in the belt drive. Never run the belt if its guard is not in place.
- 3 Never touch a moving component before it has completely stopped.
- 4 Danger of electrical shock – always maintain a sufficient distance from power lines.
- 5 Warning! Do not allow anyone in the vicinity of the machine while it is being used.
- 6 Warning of flying objects. Risk of being hit by flying stones, etc.
- 7 Warning of rotating knives. Risk of personal injury.
- 8 During servicing, the flail mower's diesel engine must not be running.

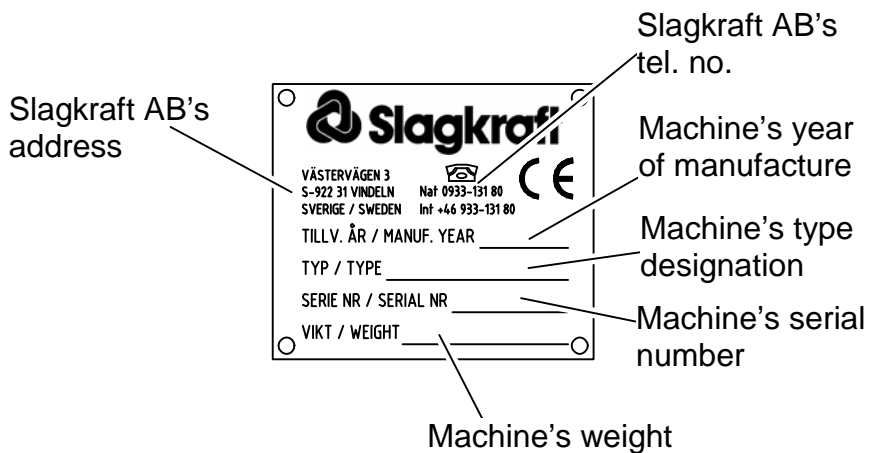
Lifting points

The vertical flail head has 4 lifting points. These must be used whenever the head is lifted. The lifting points are marked by the decals shown below.



Type plate

The type plate on the machine is as shown below.



Safety regulations

Refer also to crane/boom safety regulations and, where appropriate, also those for Slagkraft's Compact and Engine Unit ranges.

The contents of this chapter are a compilation of rules that must always be observed when using the vertical flail head. However, these rules do not relieve the operator of the obligation to observe legislative or other national regulations in the areas of traffic safety and occupational health and safety. Operators must inform themselves of the directives of governmental bodies. In Sweden, for example, these include: **“Safety rules for working with rotary cutters”** and Swedish Road Administration directives such as **“Rules on road markings and traffic”**, **“Traffic arrangement plans for roadworks”**, **“Marking of road maintenance vehicles on roads where the Swedish Road Administration is responsible for maintenance”** and other applicable regulations. Safety regulations applying to different types of workplaces, and regulations under road traffic legislation, must always be observed.



Contact the relevant authorities for information on current directives and regulations.



Observe great care when driving on public roads and in built-up areas. There is the risk of meeting/coming into contact with other motorized road users and unprotected pedestrians, etc.

Using the vertical flail head requires a thorough knowledge of its functions, its maintenance and the relevant safety regulations.

- Guards to catch objects thrown up by the machine must always be in place and undamaged.

- For maximum safety, the vertical flail head must always be started with the steel wear plates against the ground. The mower must then be used with the plates in the same position. However, the vertical flail head must not be pressed against the ground with anything more than normal boom weight – the power of an excavator could easily damage the flail mower.
- Observe great care when using the vertical flail head near to the base machine's wheels. There is a risk that the head will be run over by a wheel.
- When reversing, re-traversing an area or driving past an obstacle, reduce the vertical flail head's speed to the minimum or stop rotation completely.
- The vertical flail head must never be run in the raised position.
- The flail mower must never be maneuvered close to aerial power lines.
- Consider the danger of slipping, the fire risk and the damage that may be caused by any emissions from the hydraulic system. Ensure that a fire extinguisher is available.
- Stop all engines/motors before any inspections or maintenance operations are carried out.
- When carrying out maintenance, wear hearing protection and safety glasses.
- No one is allowed in the area beneath a raised vertical flail head.
- Under absolutely no circumstance whatsoever may the flail mower be used for transporting/lifting people.
- The welding or any other repair of knives, shackles and cutter shafts is forbidden.
- Ensure that the maximum flow (150 l/min.) is never exceeded.
- The balance of the vertical flail head must be such that there is no significant vibration.
- Use only Slagkraft original spare parts and wear parts.
- The vertical flail head must not be used for cutting hedges – the vertical flail head would then not be resting against the ground.
- When operating the head, the operator must remain alert for leaks and abnormal noise. To avoid personal injury and damage to property, faults must be corrected before operation is continued.

It is important to know the risks when using hot work processes (such as grinding, welding, sawing/cutting) on products painted with polyurethane colours. If heated above 200°C, dangerous amounts of isocyanates may be released, and this will require personal protective equipment, and that the place of work has a ventilation system that works well. All work with isocyanates is regulated in national work environment directives.

You may find more information about this at:

International:

www.isopa.org,

ISOPA http://en.wikipedia.org/w/index.php?title=ISOPA&action=edit&redlink=1http://en.wikipedia.org/wiki/Isocyanate_-_cite_note-3 the European Diisocyanate and Polyol Producers Association

For Sweden:

- The Swedish Work Environment Authority regulations on thermosetting polymers, AFS 2005:18, phone: +46.8 730 90 00
- The pamphlet "Isocyanater är farliga" (Isocyanates are Dangerous) from the Swedish Work Environment Authority, phone: +46.8 730 90 00
- The book "Härdplaster" (Thermosetting Polymers) from Prevent, phone: +46.8.402 02 20

We can also supply data sheets on the paint in question on our web site www.cranab.se or from the Cranab Quality & Environmental section, phone; +46.933.135 00.

6 FITTING TO THE CARRIER

Slagkraft's vertical flail head can be mounted on carriers other than Slagkraft booms. Consequently, several variants of the flail mower's tilt mount are available. After mounting, it is extremely important to check the stability of the base machine. To do this, fully extend the boom and flail mower above the ground and at right angles to the base machine's direction of travel. If the machine does not stand firmly, counterweights and/or stabilizing cylinders must be used to correct this before the head is used.

The marked lifting points must always be used when lifting the vertical flail head.

Hoses

Where the vertical flail head is supplied without hoses, the following recommendations are to be followed when selecting hydraulic hoses.

Function	Hose size		Working pressure (bars)	Working pressure (bars)
	inches	mm		
Drainage	½	6.4	288	1,100
Pressure	1	25.4	380	1,520
Return	1½	38	50	200

Connection

- Ensure that the vertical flail head is satisfactorily secured to the boom (inspect the pins and bolted joints).
- Ensure that locking pins/bolted joints on the base machine are correctly installed.
- Ensure that pressure and flow are correct (see technical data).
- Recommended hose sizes: min. ¾" for pressure, min. 1" for return and min. ½" for drainage. So that the pressure cannot be more than 3 bars, the drain hose must be connected directly to the tank. Drainage pressure can be checked at the vacant drainage port on the hydraulic motor.
- Connect ("short-circuit") pressure and return. To flush the hoses clean (particularly important with new hoses) run the flow for a few minutes.
- Via the drain hose connection, fill the hydraulic motor housing.
- Connect pressure and return to achieve the desired direction of rotation. For "upcut" (the factory connection), connect the pressure hose to port B. If the pressure hose is attached to the A port, the flails must be reversed.

- Lubricate all lubrication points as per the lubrication schedule.
- Check all the mounting bolts holding the flails to the cutter shaft.
- Start the flail mower at low pressure. Gradually increase the flow.
- Check that there are no significant abnormal noises or vibrations.
- Check that there are no leaks.



The flail mower's hydraulics must be installed in such a way that flail rotation can be stopped from the operator's seat (e.g. by pressing an emergency stop button).

Disconnection

- Park the vertical flail head so that it cannot cause any injury or damage to people or property.
- Lubricate the vertical flail head as per the lubrication schedule.
- Cut all pressure to the head.
- The carrier's engines etc. must not be running when disconnecting hydraulic and/or electrical circuits.
- Disconnect the hydraulic hoses from the vertical flail head. **IMPORTANT!** Use a suitable container to collect any oil that spills from the hydraulic hoses.

7 OPERATING INSTRUCTIONS



BEFORE operating the head, read the safety and operating instructions.

Before starting

- Angle the head and boom so that neither is subject to loading. Check that the flails and their mounting bolts are undamaged.
- Check that the protective casing and protective rubber skirt are intact.

When starting

- Always start the flail mower with the skid shoes against the ground.
- Always start the head at low speed. Slowly increase this until the operating speed is reached.

During use

The correct way to use Slagkraft flail mowers is to always have the skid shoes resting on the ground. This gives the best cutting results and minimizes the risk of stones being thrown out from beneath the mower.



If the flail mower is to be lifted from the ground, flail speed must be reduced to a minimum or the mower stopped altogether.

The flail mower must not be pressed to the ground with a force exceeding 500 kg. Great attention must be paid to this if the flail mower is fitted to an excavator. The pressure exerted by excavators can easily shatter the flail mower.

The flail mower must be driven forward in the longitudinal direction of the skid shoes.

After use – general instructions

The general instructions given here apply to most machines.

Remedy any operating problems. Park the machine in such a way that it cannot injure or damage persons or property. Remove all loading from the boom and rest the vertical flail head on the ground.

Long-term parking/storage

- Wash the machine and, to prevent rusting, recoat damaged surfaces.
- Apply rust protection to vulnerable parts, thoroughly lubricate the machine and grease uncoated surfaces (e.g. hydraulic cylinders). In this connection, refer to the “Maintenance” section.
- Fill fuel and hydraulic tanks to the maximum marks.
- For outdoor parking, cover the exhaust outlet.

Checks after long-term parking/storage

- Check all oil and fluid levels.
- Check that hydraulic hoses have not cracked. Cracks in the outer rubber layer can easily lead to rusting of a hose’s steel reinforcement.
- Check the tension of all belts.
- Check air cleaners (filters).

8 MAINTENANCE

At delivery, the function and performance of the vertical flail head have been tested. For the vertical flail head to work satisfactorily, it must be regularly serviced and maintained. Consequently, it is important to follow the instructions given in this chapter and in the flail mower's maintenance schedules.

Make a habit of checking vertical flail head safety and operation every day.

Daily maintenance, lubrication and simple repairs can be carried out by the operator.

To check for any leaks, use paper or a stiff disc – not hands.



To avoid personal injury and damage to property, faults must be corrected before operation is continued.

If, after daily maintenance, there are any doubts about what corrective actions to take, Slagkraft must be contacted for an assessment.

Lubricate regularly as per the lubrication schedule.



During maintenance and servicing, the diesel engine must not be running.



Use personal safety equipment (e.g. safety glasses, hearing protection, safety shoes and other necessary items) when servicing the machine.

Electric welding

Slagkraft's instructions must be followed when making welded repairs to the flail mower.

If, while being repaired, the flail mower is connected to a vehicle, the vehicle manufacturer's regulations must also be followed.




The following precautions must be taken when welding:


- Ensure that fire extinguishing equipment is readily to hand.
- Always remove the earth cables to the vehicle's and the head's batteries.
- To eliminate the fire risk, thoroughly clean the area to be welded. Coatings are to be removed up to at least 10 cm around the point that is being welded. Hot coatings give off gases that are injurious to health.
- Connect the earth cable so that the welding current does not pass through any bearing.
- Attach the earth cable as close as possible to the point of welding.
- Flails and their mounting bolts must not be welded or repaired in any other way.
- OK 48.00 is an example of a suitable welding electrode.

Maintenance/lubrication schedule

The table below is a compilation of inspection, servicing and maintenance measures. To ensure the flail mower's operational reliability and long service life, it is very important that maintenance is carried out. Any defects that are discovered must be remedied before further operation. Servicing and any subsequent adjustments must be carried out by qualified personnel.

 It is very important to clean lubrication nipples <u>before</u> lubrication.	At every stop	Daily	25 hours	250 hours	500 hours	1,000 hours
Check that mounting bolts and flails are secure.	X					
Check the wear of steel wear plates and the support roller.		X				
Check the protective rubber skirt.		X				
Check flail mounting bolts for wear.		X				
Check flails for wear.	X					
Check shafts and bearings for cracks and wear.		X				
Check and retighten bolted joints.			X			
Check bearings for abnormal noise and play. Replace after 1,000 hours.			X			X

Retightening of bolted joints

 Check all bolted joints after the first 10 hours of operation.
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Check all bolted joints regularly. Tighten bolts to the torques given in the table below. For tightening torques, refer also to the spare parts catalogue.

Size	Strength class	Torque (Nm)
M6	12.9	17
M8	8.8	22
M8	12.9	36
M10	12.9	75
M12	8.8	90
M12	10.9	80
M16	8.8	200

Pulley removal and fitting

Hydraulic motor pulley

The hydraulic motor pulley is fitted via a clamp bushing. The bushing is secured by 6 bolts.

Pulley removal

There are three holes in the front of the clamp bushing. These are used when removing the bushing.

Remove all the bolts from the bushing. Take three of the bolts, put them in the puller holes and tighten them stepwise and alternately. This pulls the bushing apart. The pulley can now be removed.

Pulley alignment

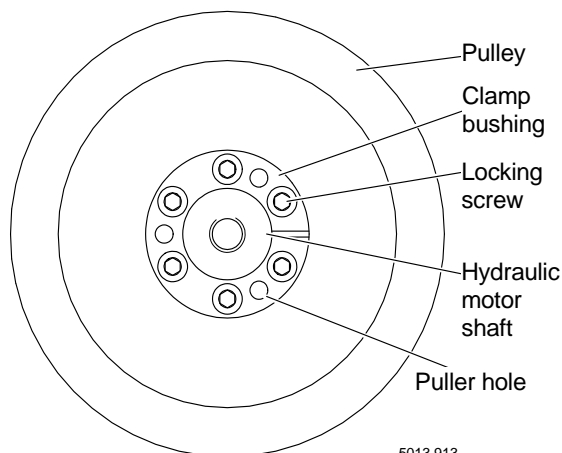
The hydraulic motor pulley is used to align the pulleys with each other. The pulley on the hydraulic motor shaft can be adjusted to various positions on the shaft, which is smooth.

To achieve alignment, a ruler (or similar) is placed on the outside faces of the pulleys. The hydraulic motor pulley is then pushed to the position that brings the faces into the same plane.

Pulley fitting

For the clamp bushing to work well, its surfaces, the hydraulic motor shaft and the seat in the pulley all have to be clean. Before assembling these parts, wash them in ethanol or similar.

Place the pulley on the hydraulic motor shaft and put the inner part of the clamp bushing into its seat in the pulley. Manually push in the outer part of the clamp bushing. Put in the bolts and tighten them stepwise and alternately to 17 Nm. It is vital that the bolts are tightened until they begin to give an even pressure around the clamp bushing – the clamp bushing “seats in” when the bolts are removed.



Cutter shaft pulley

The cutter shaft pulley is fitted via a clamp bushing.

Pulley removal

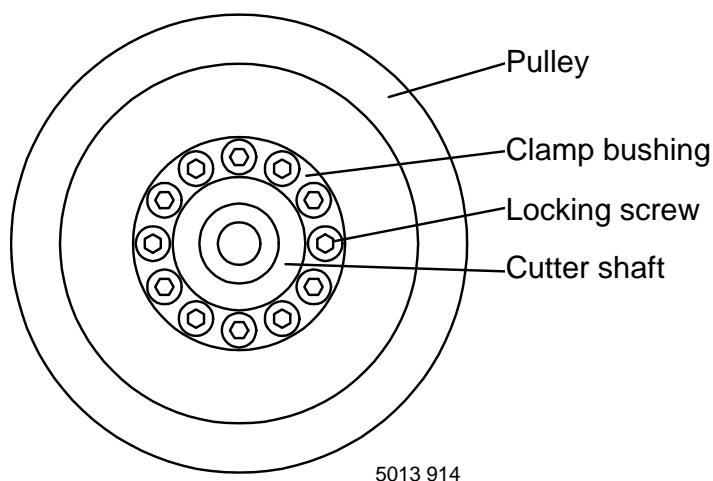
Find three M10 bolts that are at least 25 mm long.

Remove the bolts that are in the clamp bushing. The puller bolts go in the same holes as the yellow bolts. Put the M10 bolts in these puller holes and tighten them stepwise and alternately. This pulls the bushing apart. The pulley can now be removed.

Pulley fitting

For the clamp bushing to work well, its surfaces, the flail motor shaft and the seat in the pulley all have to be clean. Before assembling these parts, wash them in ethanol or similar.

Push the pulley onto the cutter shaft until it bottoms on the latter's locating edge. Place the pulley on the flail motor shaft and put the inner part of the clamp bushing into its seat in the pulley. Manually push in the outer part of the clamp bushing. Put in the bolts and tighten them stepwise and alternately to 36 Nm. It is vital that the bolts are tightened until they begin to give an even pressure around the clamp bushing – the clamp bushing “seats in” when the bolts are removed.



Bearing checks

When the bearings have become worn, it can be difficult to balance the cutter shaft. If inspecting the shaft and replacing defective flails does not remedy imbalance, it may be necessary to replace the bearings. Another possible cause of imbalance is that the shaft has been bent by a collision with a stone or other object.

Note that if bearing wear has been gentle, there may be considerable play but the machine may still be balanced.

Check the bearings by first removing the drive belt. Next, move the shaft around and assess the play.

Radial play must be less than 0.5 mm, i.e. barely noticeable. Greater axial play is permissible. However, if it exceeds 1 mm, the bearings must be changed.

Replace bearings after 1,000 operating hours.

Disassembling and assembling bearings on the drive side

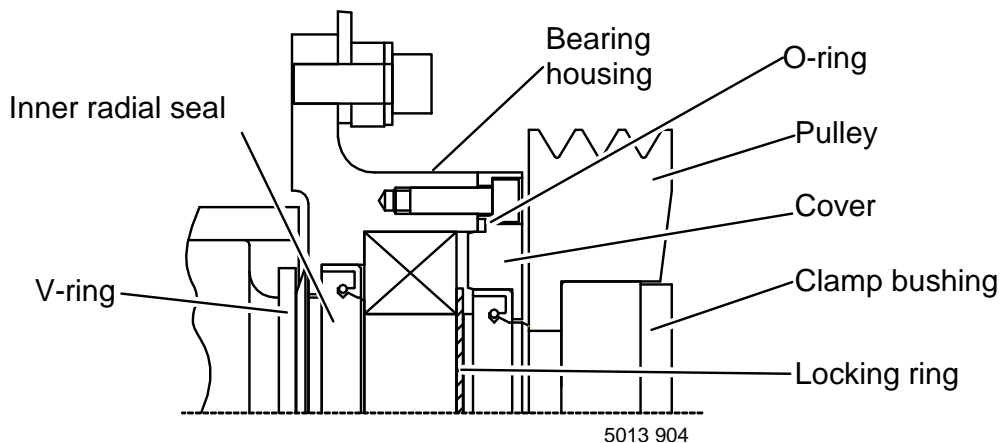
Bearings can be replaced with the shaft in position. However, replacement is easier if the shaft is removed from the protective casing.



Start by securing the shaft so that it cannot fall out in an uncontrolled manner and cause damage.

To remove the shaft, first remove the transmission casing and the drive belt. Remove the bolts that hold the bearing housing to the casing (on the belt side). Remove the bolts that hold the washer on the shaft's free side. The shaft can now be pulled out through the hole on the free side. The flails need not be removed, but flail removal does make the job easier.

When replacing seals and bearings, it is important that the inner radial seal faces the correct direction for surplus grease to be drained from the bearing housing. If the seal faces in the wrong direction, the service life of all the seals is reduced.



Check that the shaft journal and bearing housing are undamaged.

Place the inner radial seal in the bearing housing. Heat the bearing housing to no more than 70°C. The bearing can now be pushed into the bearing housing.

Put the radial seal and the cover's O-ring in position. Bolt the cover in place (tighten to 22 Nm).

When fitting the bearing housing to the shaft, the V-ring must first be placed on the shaft journal. Next, heat the bearing housing (with bearings and seals) to no more than 70°C and then fit it to the shaft. Put the locking ring in position.

Put the shaft in the protective casing. Bolt the bearing housing in place (tighten to 80 Nm).

Disassembling and assembling bearings on the free side

On the free side, bearings can be replaced without removing the shaft.

Start by securing the shaft so that it cannot fall out in an uncontrolled manner and cause damage.

Remove: the bolts that hold the bearing housing; the protective casing; and, the washer.

Assembling the bearing housing is the same as it is for the bearing housing on the drive side.

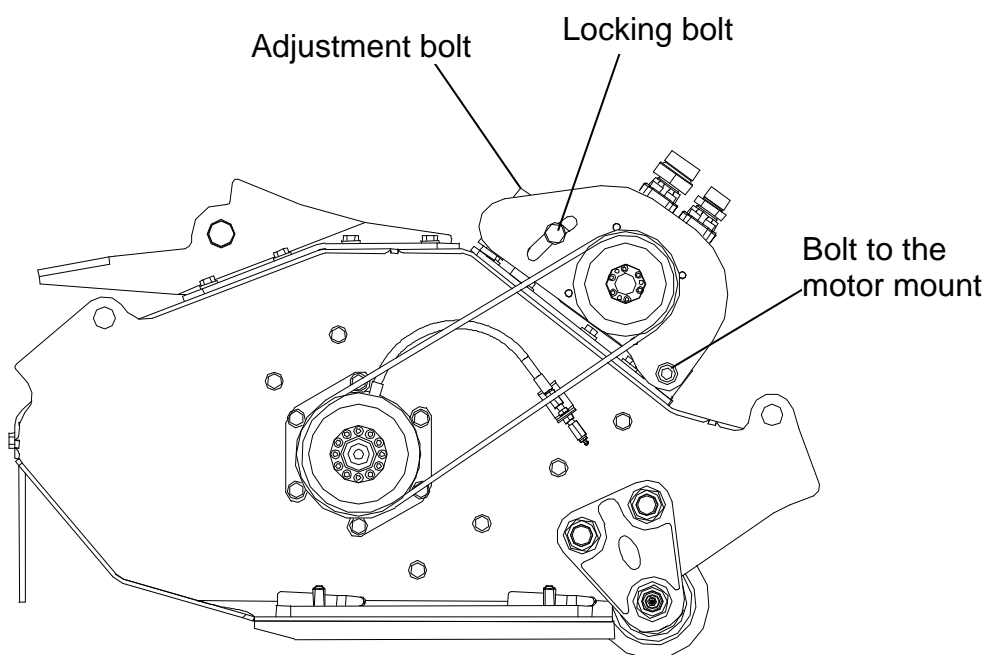
Bolt the bearing housing, protective casing and washer in place (tighten all bolts to 80 Nm).

Adjusting belt tension

There is a special belt tensioning mechanism for adjusting belt tension. The belt tightening procedure is as follows. Undo the locking bolt and the bolt to the motor mount. Undo the adjustment bolt's lock nut. Tighten the adjustment bolt until the correct belt tension is reached.

At the right tension, the belt can be pushed in approximately 8 mm (if fairly hard pressure is exerted) between the pulleys.

Use the lock nut to secure the adjustment bolt and then tighten the other bolts.



Replacing steel wear plates

To avoid wear to the protective casing, steel wear plates must be replaced before they are worn through.

The plates are secured to the casing by cotter bolts. When replacing the plates, use a hammer to knock the cotters out of the cotter bolts. Remove the worn plates and replace them with new ones. Hammer home the cotters until they “seat in” in the cotter bolts. After a short period of operation, check that the cotters are secure.

Support roller

The support roller is made of a special material. The support roller's bearing must be lubricated at regular intervals. The bearings are to be replaced when there is considerable play or when the roller can no longer rotate.

To replace the bearings, remove the locking ring at the shaft end and pull all the shaft journal out of the support roller. The bearings can now be replaced.

To facilitate assembly of the support roller, the end of the shaft tube can be heated to around 70°C. This makes it easier to push the shaft journal into the tube.

The tightening torque for the support roller's bolts is 200 Nm.

Flail (knife) replacement

Each flail is held in place by a bolt and lock nut. Replace flails when it is felt that the cutting height is too high or when length L is less than 60 mm.

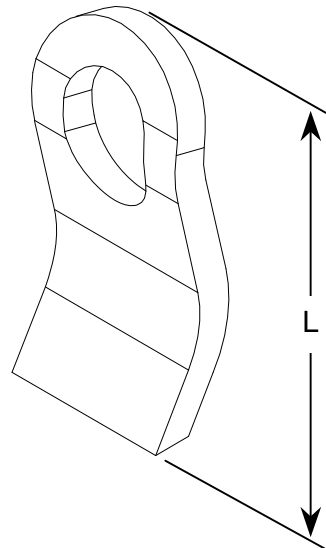
Replace nuts and bolts if the bolt is so worn that its diameter (at the most worn point) is less than 8 mm.

A defective or severely worn flail can lead to vibration.

Flails must always be replaced in pairs. A pair is formed by a flail and the flail that sits a half turn (180 degrees) behind it. Pair replacement is important for maintaining a balanced head.

When replacing flails, the bolted joints must be tightened to 30 Nm.

To fit flails correctly in relation to the direction of rotation, the flails, shackles and bolts must be fitted as shown in the pictures below.



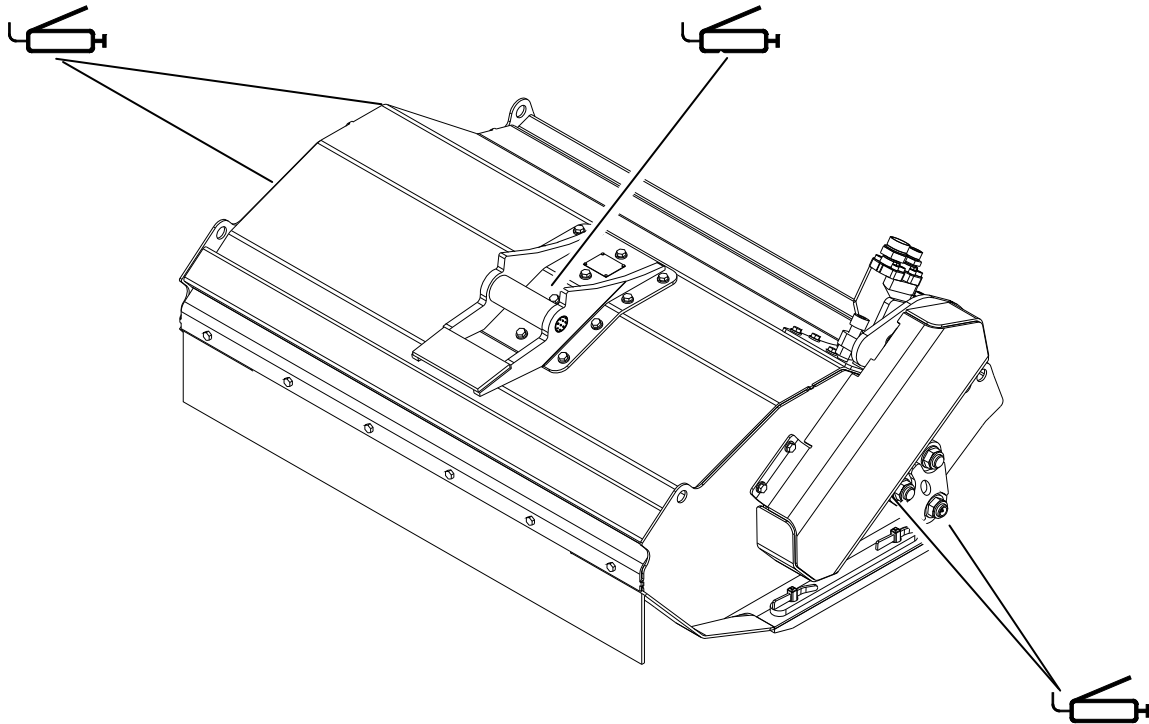
Replacing the protective rubber skirt

The protective rubber skirt must be replaced when it is shorter than 150 mm. This is done by undoing the bolted joint between the skirt and the protective casing.

9 LUBRICATION SCHEDULE

The three points shown below have to be lubricated daily (every 8 hours). Use a grease gun with a universal grease. The grease must, as a minimum requirement, comply with SIS 155130. At each point, pump the grease gun once or twice.

The lubrication points are at the tilt mounting and the bearings on both sides of the cutter shaft and the support roller.



10 EC DECLARATION



Cranab AB
SE-922 82 VINDELN
SWEDEN



+46-(0)933-135 00



+46-(0)933-617 35

www.slagkraft.com
www.cranab.com