



FARMA®

Energy Cutter

BC18

BC25

EN_V1.3-2018W02

Original instruction

INSTRUCTION BOOK

Original instruction

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INTRODUCTION

High demands are placed on manufacturers in respect of conforming to the directives that have been drawn up for the product they produce. This product is covered by the Machinery Directive, and the CE marking indicates that it satisfies the requirements in the Directive. On delivery, it is the incumbent on the dealer to provide operating instructions for the product.

Product presentation

FARMA energy cutters make your work in the forest more efficient and consequently more productive. Felling, gathering, cutting and loading everything from trees and brush to bushes and stumps can be performed easily.

Trees are cut rapidly and the fixed blade is easy to maintain. The location of the centre of gravity makes it easy to position the grapple directly by the root. The FARMA Energy cutter is a combined grapple and felling head that is often used for clearing energy wood. It is simple to install, and replaces the grapple loader's regular grapple tool. The FARMA Energy cutter is recommended for FARMA cranes from size C 4.6 upwards.

Even if you have experience of this type of product, we recommend that you read our instructions carefully in order to familiarise yourself with the product. The instructions contain information that is vital for safety and efficiency, as well as to ensure the validity of the factory guarantee. When the product you have purchased is delivered, check that it has not sustained any delivery or transport damage. If there should be any such damage, or if any parts are missing, contact your dealer immediately.

Fors MW products conforms to EC directive 2006/42/EU.

Manufacturer:

AS FORS MW
TULE 30
765 05 SAUE
Tel: + 372 679 0000
www.forsmw.com

Dealer:

1. SAFETY REGULATIONS



We understand your desire to get started with your FARMA Energy cutter as quickly as possible. In order to avoid unwanted operational stoppages or, in the worst case scenario, hazardous situations, please acquaint yourself first with the machine's functions and its safety instructions.

For your safety, it is extremely important that you follow the instructions presented in this instruction manual.

Follow the safety regulations relating to the correct safety equipment and work clothes.

The energy cutter may only be used when all the safety devices have been checked and protection is in place.

Check that no unauthorised persons are within the safety distance of 45 m when using the cutter.

Only wear clothing that is appropriate for the work. Loose-fitting clothes can entail a considerable risk of becoming caught while working.

There is always a risk of slipping when working with the cutter. Watch out for the blade's cutting edge and always maintain your distance from the cutter head.

When the work is complete, the cutter must always be parked folded up on the ground or the trailer.



Always pay attention when working close to electrical cables. Maintain a safe distance. Bear in mind the risk of unforeseen movements. If the cutter should come into contact with a power line for any reason:

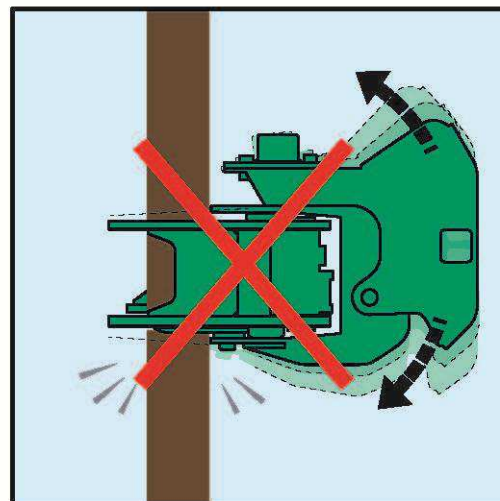
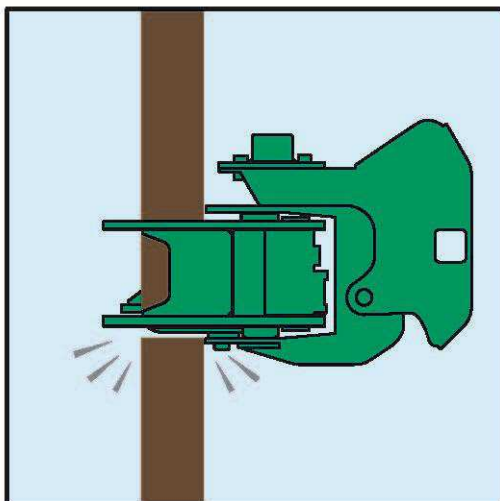
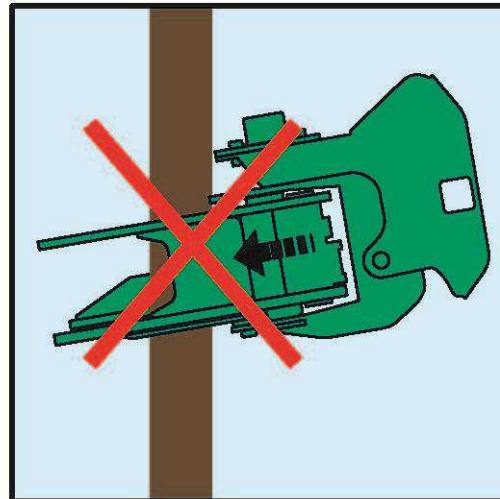
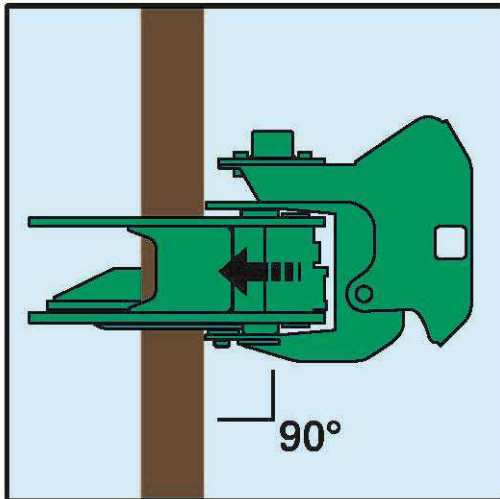
- Warn people in the vicinity of the crane/cutter not to touch the machine;
- Do not touch any metal parts;
- Remove the crane's arm system or cutter from live cables.

Forbidden to raise or lower the cutter before the log is cut off!

BC 25 Max. 25,0 MPa



BC 18 Max. 19,0 MPa

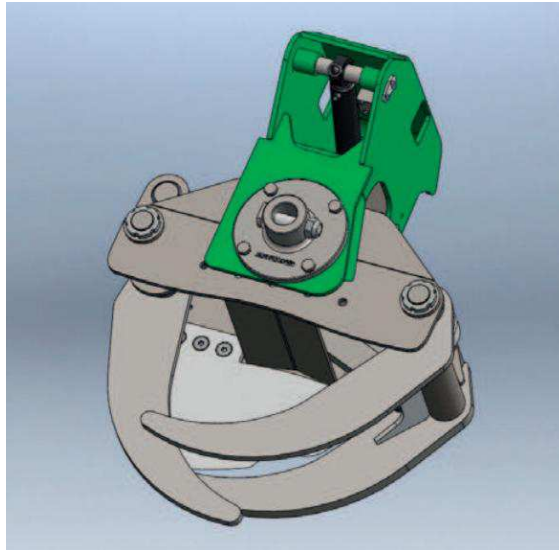


It is important that you adjust the speed as you approach the log and will clamp around the tree. Approach always the material to be cut so that the felling head is at 90 degree angle to the log. Once you started the cutting movement, one must not raise or lower the cutter before the log is completely cut off. To shake the cutter up and down will risk the knife and the jaws to unanticipated stress and risk of breaking.



It is absolutely prohibited to stand under a raised machine!

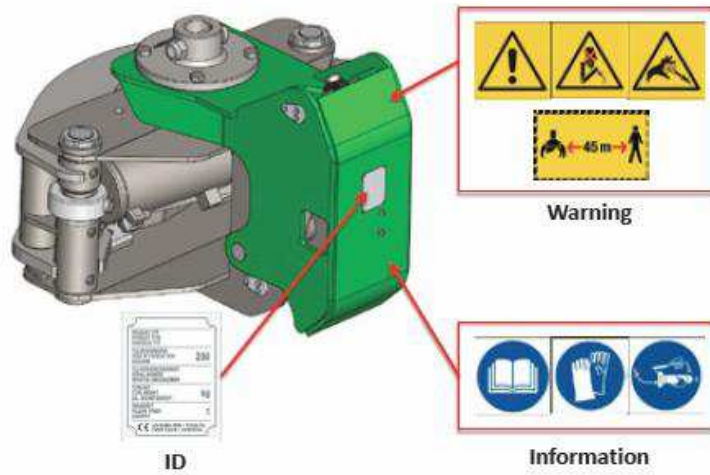
Note: To reduce the risk of injuries, always keep the cutter's grapple arms outside of the blade when the cutter is not in operation. See figure below.



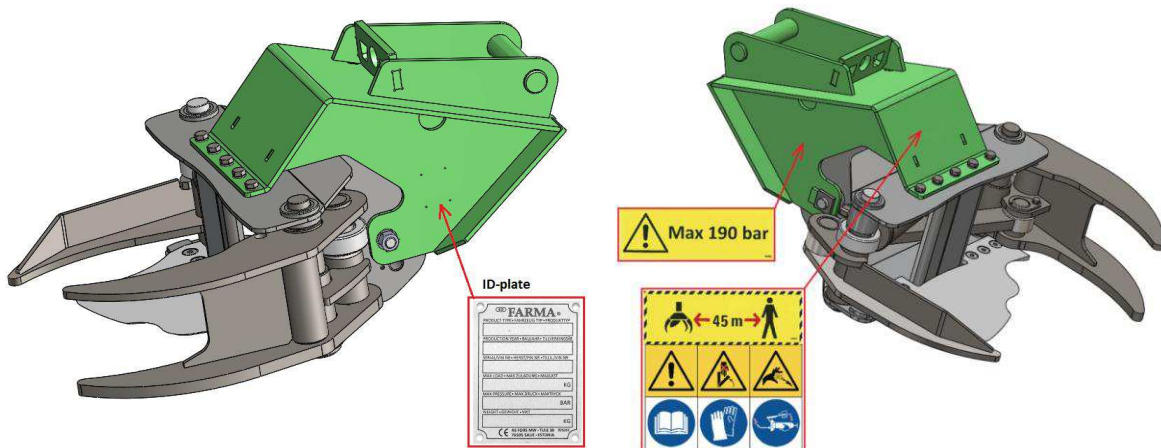
2. SAFETY DEVICES

2.1 Position of labels

BC18 for cranes position of labels:



BC18 for excavators position of labels:



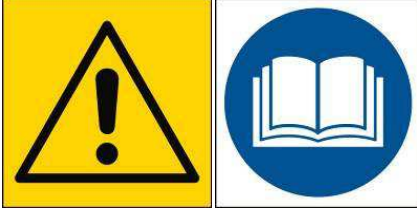
Original instruction

BC25 position of labels:



2.2 Presentation of labels

WARNING!



Warning triangle and instruction manual label.

The cutter is supplied with a warning triangle alongside the instruction manual decal in order to reinforce the requirement for the user to read the entire instruction manual carefully before starting to use the cutter. Ignoring this can be potentially fatal.

INFORMATION



Label for the use of safety equipment.

These labels challenge the user to employ appropriate safety equipment in order to avoid injury when using the cutter.

DANGER!



Safety distance 45 meters

This decal shows the importance of taking great care when working within the energy cutter's safety zone. Always keep a close eye on and monitor the cutter's safety zone. Carelessness can result in direct danger to life.

DANGER!



Risk of crushing injuries

There is a risk of clamping or crushing injuries during work and maintenance.

DANGER!



Hydraulic fluid under pressure

Hot hydraulic fluid at high pressure levels can occur in the hydraulic system. Take care when connecting, and replace poor quality hoses.

WARNING!



Warning of contact with electrical cable

Always pay attention when working close to electrical cables. Maintain a safe distance. Bear in mind the risk of unforeseen movements.

Original instruction

INFORMATION

Lubrication

This decal is used to show the importance of regular lubrication of the cutter.

INFORMATION

Data plate of energy cutter

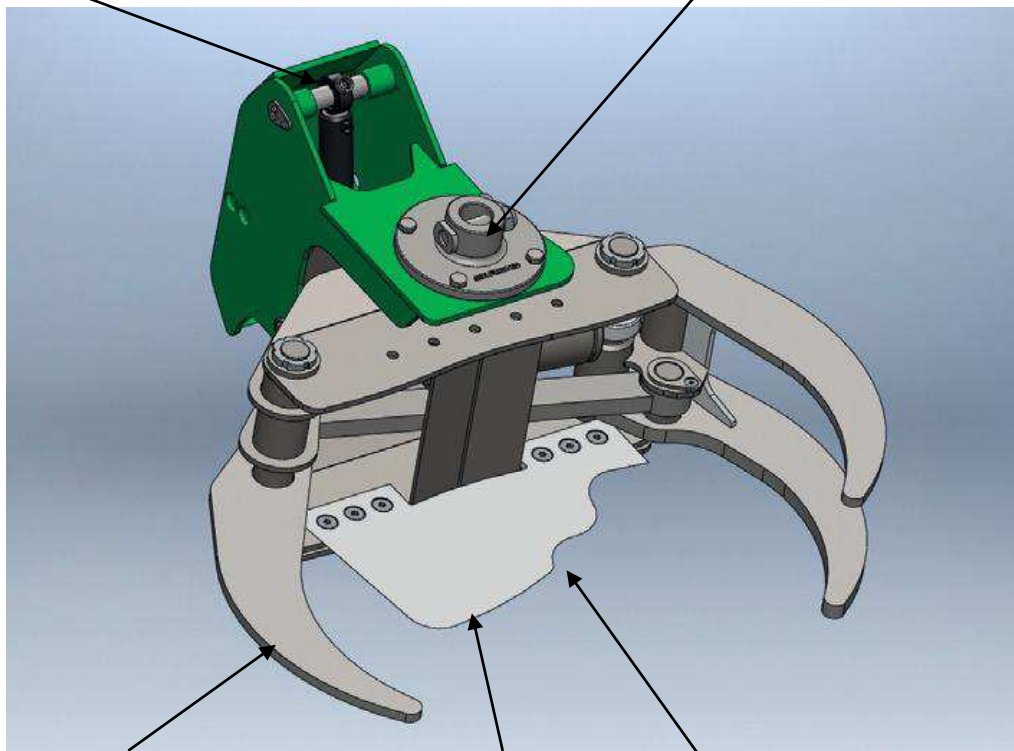
3. GENERAL DESCRIPTION

Principal components and functional devices

The energy cutter comprises the following principal components and functional devices.

The cutter is mounted with the flange plate (diameter 49 or 59 mm) directly on the rotator shaft in the same way as a normal grapple. It is possible to flange the rotator directly onto the BC18, without a flange plate.

Tilt cylinder



Grapple claw

Cutting blade

This is illustrative photo to describe cutter components

The cutter tilts down automatically when the stem or stems have been cut off and the pressure in the grapple cylinder reaches a factory preset value.

Similarly, the cutter tilts back up automatically to the cutting position when the grapple claws are opened fully.

4. TECHNICAL SPECIFICATION

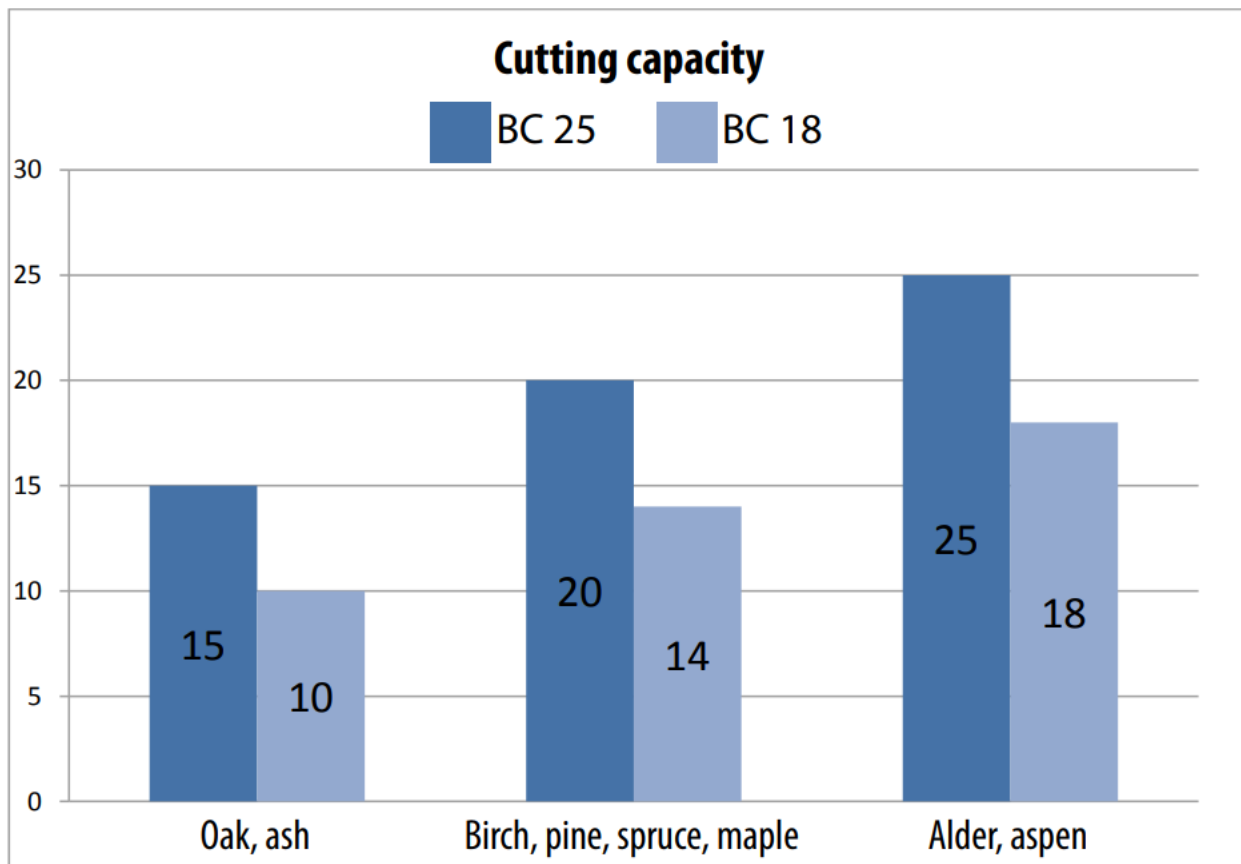
Technical data	BC18	BC25
Max. cutting diameter	180 mm*	250 mm*
Max. grapple opening	660 mm	890 mm
Max. height	437 mm	630 mm
Max. pressure	19.0 MPa	25.0 MPa
Recommended oil flow	40-60 l/min**	40-60 l/min**
Tilt angle	90 degrees***	-
Size, rotator mount	49/59****	-
Weight	190 kg	350 kg

* The maximum cutting diameter ultimately depends on the choice of tree species.

** Can be used at 25 l/min, although operation becomes slow.

*** BC18 for cranes

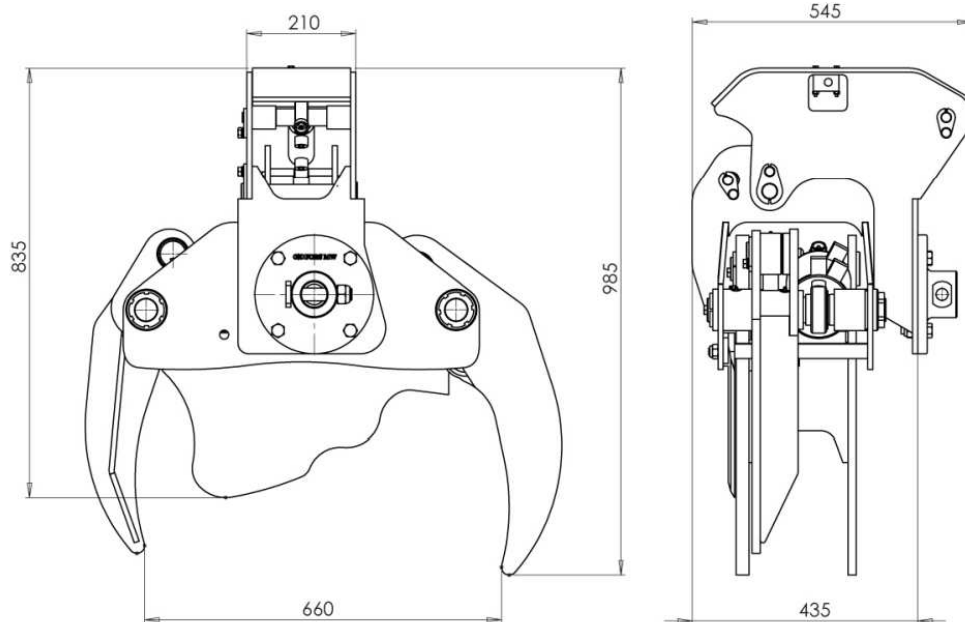
**** This model is supplied with a replaceable rotator mount.



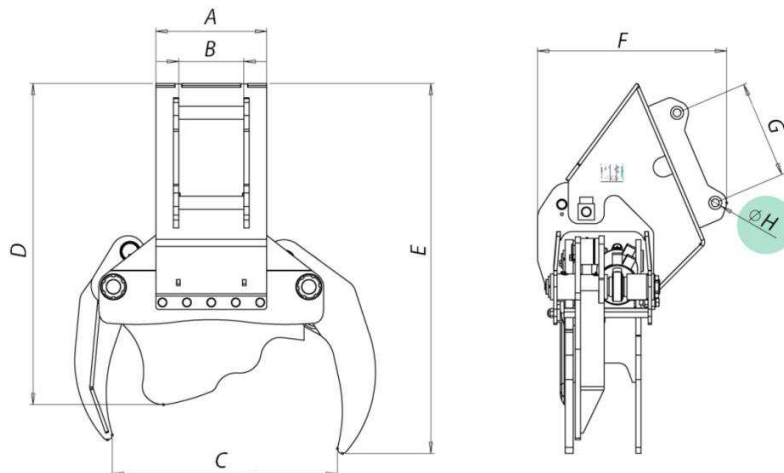
Bear in mind that there are many aspects that can influence the potential to cut a tree of 18/25 cm, these include the tree species, moisture, and ambient temperature and whether the tree is frozen.

5. DIMENSIONAL DIAGRAM

Dimension of BC 18 for cranes:

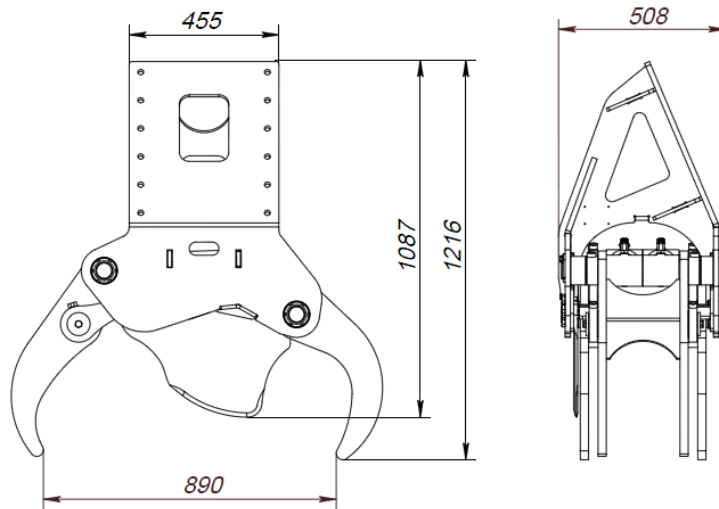
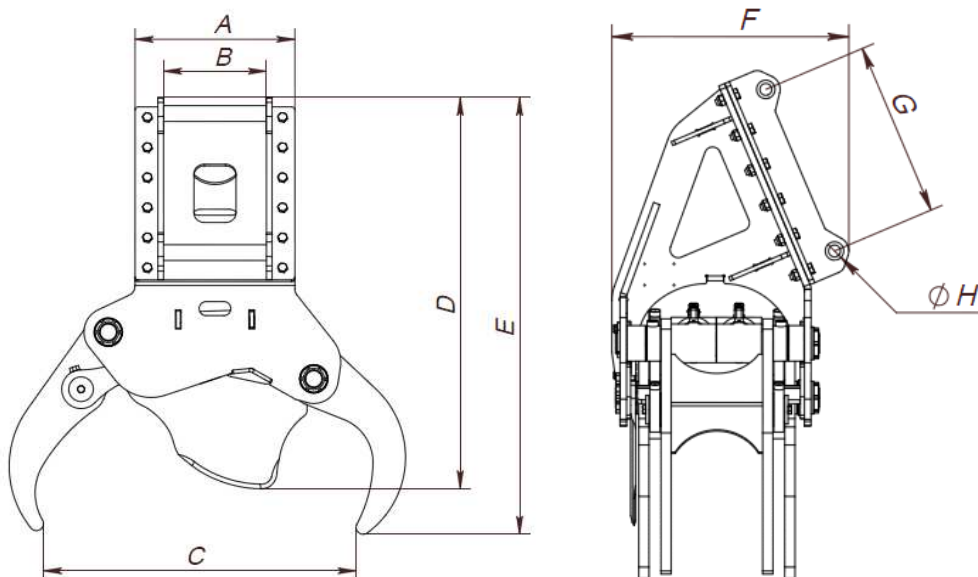


Dimensions of BC18 for excavators:



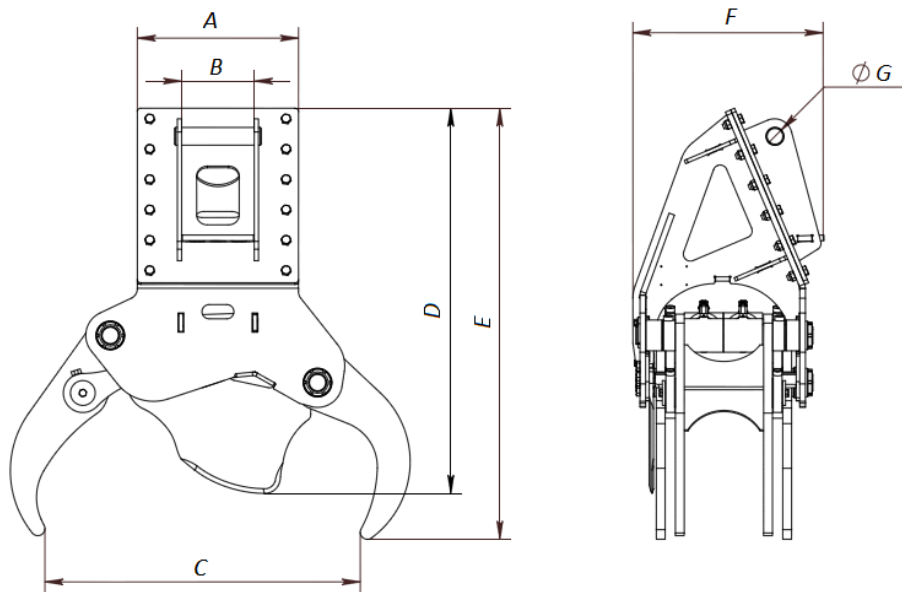
Measure	S30/180	S40	S45
A	340 mm	340 mm	340 mm
B	185 mm	200 mm	295 mm
C	660 mm	660 mm	660 mm
D	985 mm	985 mm	1015 mm
E	1135 mm	1135 mm	1165 mm
F	555 mm	580 mm	600 mm
G	230 mm	300 mm	430 mm
H	Ø 30 mm	Ø 40 mm	Ø 45 mm

Original instruction

Blank BC25:

Dimensions of BC25 for excavators:


Measure	S40	S45	S30/180
A	455 mm	455 mm	455 mm
B	200 mm	293 mm	182 mm
C	890 mm	890 mm	890 mm
D	1087 mm	1114 mm	1087 mm
E	1216 mm	1243 mm	1216 mm
F	572 mm	580 mm	513 mm
G	300 mm	430 mm	230 mm
H	Ø 40 mm	Ø 45 mm	Ø 30 mm

Original instruction

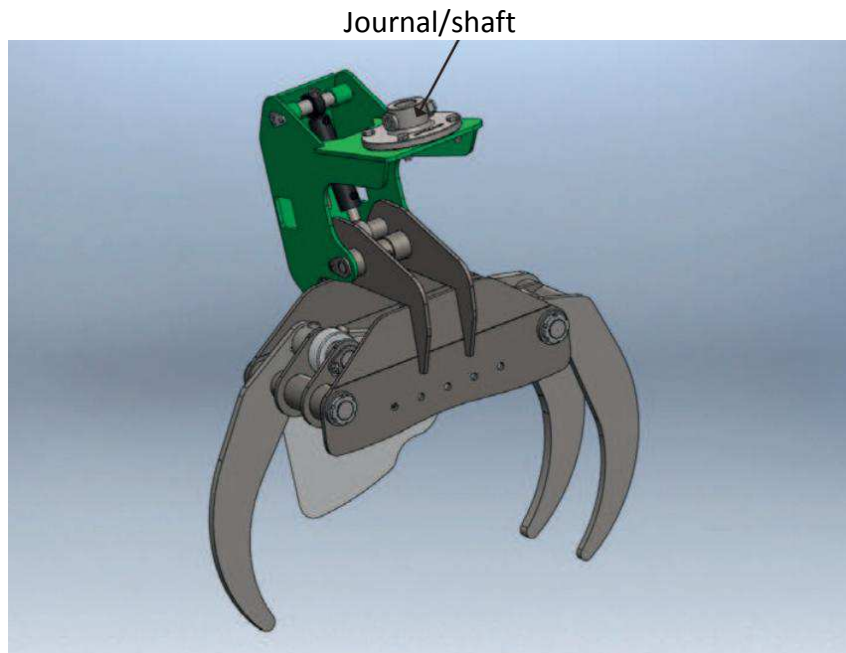


Measure	MS03	MM10/MH10	MS08
A	455 mm	455 mm	455 mm
B	205 mm	205 mm	295 mm
C	890 mm	890 mm	890 mm
D	1087 mm	1087 mm	1110 mm
E	1216 mm	1216 mm	1239 mm
F	537 mm	537 mm	631 mm
G	∅ 50 mm	∅ 50 mm	∅ 60 mm

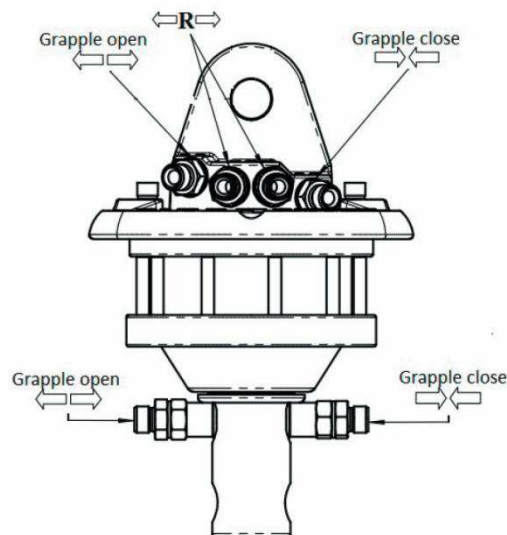
6. INSTALLATION

Installing the cutter unit by the loading arms/boom

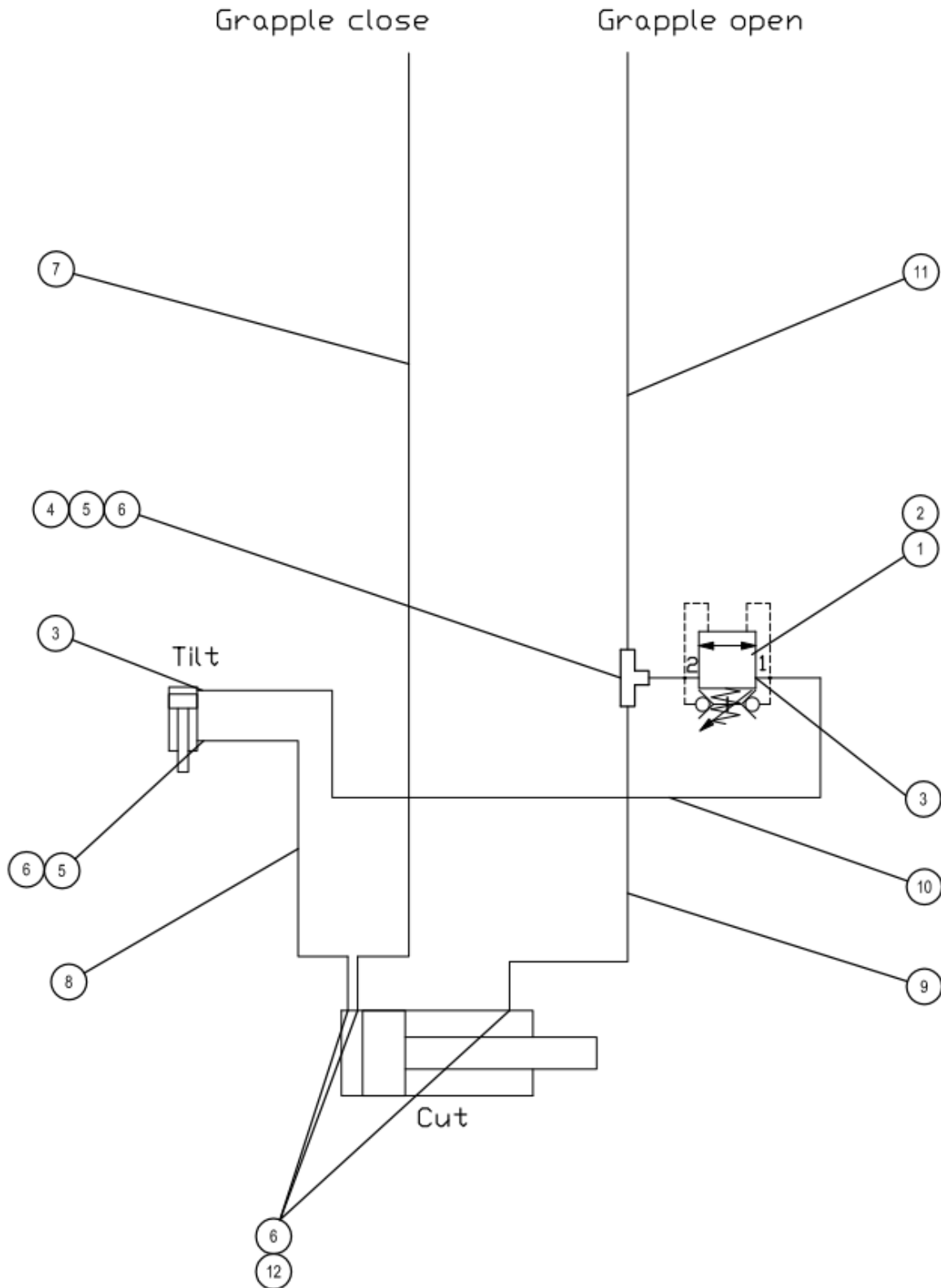
The cutter is installed on the rotator via the journal/shaft. No separate hydraulic hoses or electrical cables are required here for use. The cutter is connected directly in place of the grapple claw. See figure below.



Rotator connection



Hydraulic scheme BC18

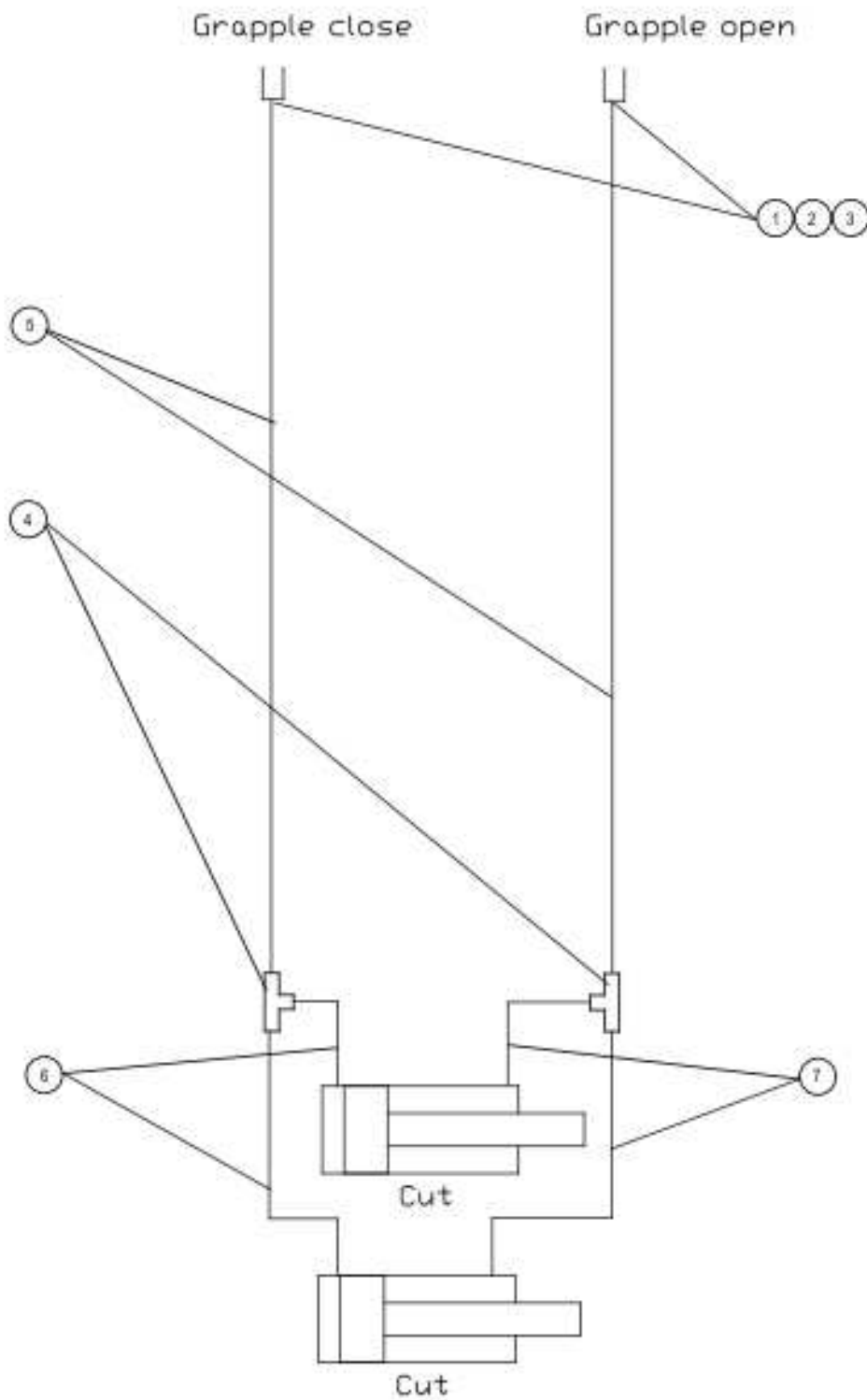


Original instruction

Main parts of hydraulic scheme BC18 (FMWH00005):

Pos. No	Description	QTY.
1	Valveblock	1
2	Relief valve	1
3	Angle nipple 90°	2
4	T-nipple	2
5	Straight nipple	2
6	Rubber seal	5
7	Hose	1
8	Hose	1
9	Hose	1
10	Hose	1
11	Hose	1
12	Cartridge nipple	3

Hydraulic scheme BC25



Original instruction

Main parts of hydraulic scheme BC25 (FMWH00042):

Pos. No	Description	QTY.
1	Bayonet coupling	2
2	Dust cover	2
3	Rubber bonded seal	2
4	T-nipple	2
5	Hose	2
6	Hose	2
7	Hose	2

7. OPERATION

Safety regulations during operation



Read through the instruction manual carefully before using the cutter. The technical data contains important technical information that relates specifically to your cutter. Incorrect usage can result in injuries to you and damage to your cutter.

Operating a cutter requires knowledge about the machine you are using. It is important for you to acquire knowledge and to train with regard to the cutter's behaviour. FARMA energy cutters may only be used by individuals who possess knowledge about the product.

The product may not be used by individuals who are under the influence of alcohol or drugs.

Only use cranes that are correctly dimensioned for working with the energy cutter.

Always maintain a visual check on the work area. Always check that there are no unauthorised persons in the vicinity. Ensure that the safety distance of 45 m is complied with.

Test all the functions on the cutter.

Never stand under the cutter, with or without a load.

Do not work under conditions where there could be a risk of crushing injuries or some other injury.

Try to work on stable, soft ground, and if possible avoid significant sideways slopes. Lock the parking brake when felling and handling the tree.



Always pay attention when working close to electrical cables. Maintain a safe distance. Bear in mind the risk of unforeseen movements. If the cutter should come into contact with a power line for any reason:

- Warn people in the vicinity of the crane/cutter not to touch the machine.
- Do not touch any metal parts.
- Remove the crane's arm system or cutter from live cables.

Working in extreme conditions

The recommended ambient working temperature for this machine is -20°C to +40°C. Note that when working in low or high temperatures, the level of wear and stress on seals and hoses increases. The durability of the steel is also impaired, and cracks can occur.

When working under extreme conditions, work with smaller loads than normal in order to prevent damage. When working in cold conditions, always allow the hydraulic fluid to circulate freely for a number of minutes. Then operate each function a number of times to allow seals and hoses to soften up before applying full pressure. During extremely warm periods, take care with the temperature of the oil. Temperatures of above 80°C destroy the oil's properties and damage seals and hoses.

Working when felling trees

Open the cutter's grapple claws fully, and the cutter will tilt up automatically. Apply the left side of the blade to the tree in the direction of travel for optimum cutting results.

Remember that the cutter tilts down automatically after completing the cut, which is why it must be positioned so that the tree is felled in the right direction.

Take care to plan the felling direction and the incline.

Never fell trees in a headwind.

Note that the cutter tilts down automatically when the grapple claws have cut off the stem and are then in their innermost position. The hydraulic fluid in the grapple cylinder has then achieved the factory preset pressure level.

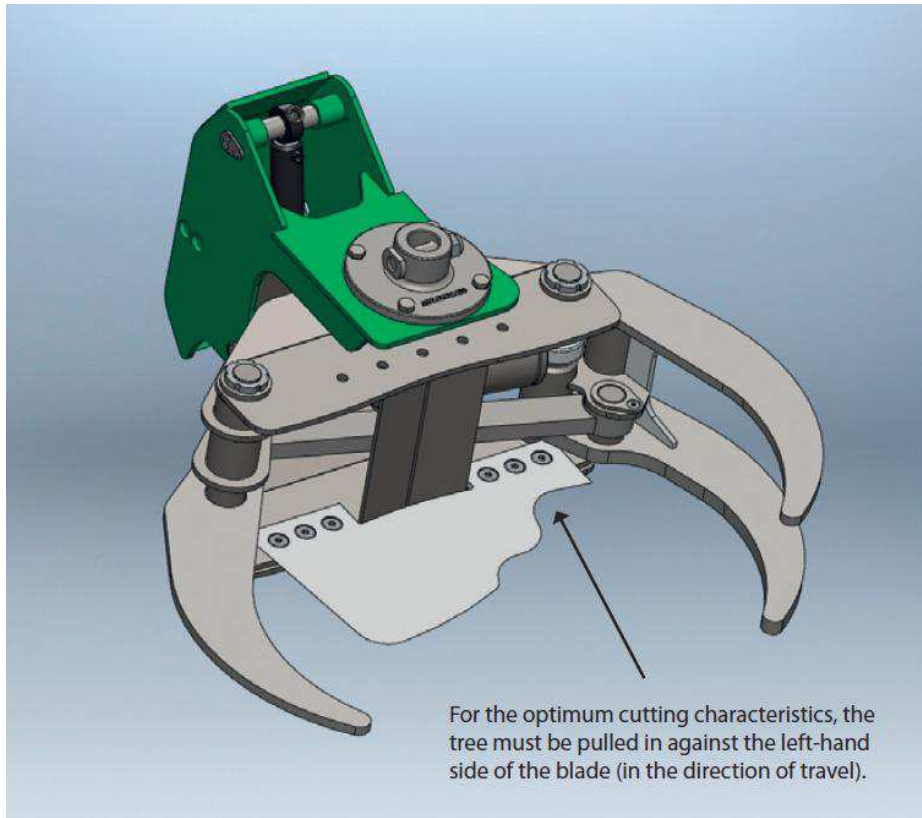
The cutter should then be positioned so that the tree falls in the right direction.

When the grapple claws are then opened fully once more, the cutter tilts up automatically to the cutting position.

Trees that are too large must be avoided. Respect the diameter that the cutter is designed to handle. Bear in mind that there are many aspects that can influence the potential to cut a tree, such as the tree species, moisture, ambient temperature and whether the tree is frozen.

Bear in mind that the tree is often so tall that it is first necessary to cut it a little higher up the stem.

BC18



BC25



8. SERVICE /MAINTENANCE

General information



Service and maintenance must be carried out regularly in order to guarantee problem-free, economical use.

Note: Failure to comply with the Fors WM instruction manual invalidates all the machine's guarantees. Regular, correct maintenance is a precondition for the guarantees applying.

Note: Only genuine spare parts may be used during repair and maintenance work.

Safety instructions



Read the instructions before starting to service the machine. Do not attempt to carry out work on or to service the machine until you are completely familiar with and understand the instructions. Read and follow the instructions before each service. Adhere to the recommended service and lubrication intervals.

Always use tools adapted to the purpose.

Always wear protective clothing and protective goggles.

Switch off the tractor's engine and remove the key from the ignition. Ensure that the pressure on the cutter is relieved by moving the control lever on the valve assembly back and forth a few times.

When servicing, the cutter must be parked in a stable manner on the ground or floor. The crane must be parked so that the pressure on the hydraulic cylinders can be relieved.

The crane, and consequently also the cutter, must be lowered steadily to the ground so that no parts are dependent on the hydraulic cylinder.

Take great care with oil that is under pressure. Oil under high pressure can easily penetrate the skin. Consult a doctor immediately in the event of an accident.

Hot oil can cause burn injuries. Inhalation of hot oil mist can cause breathing difficulties.

Getting oil on your skin in the event of a hose explosion is not dangerous, although you should avoid contact with your eyes and nose. In the event of exposure to oil in your respiratory tract or your eyes, contact a doctor immediately.

Store explosive and flammable liquids at a safe distance from sparks or open flames.

Note: When changing oil, collect the oil in a safe manner. Never release oil onto the ground. This is prohibited by law. Oil and grease must by law also be disposed of at an authorised location.

Daily maintenance:

It is important to inspect the equipment daily.

Check hydraulic hoses, the cutter's structure, bolted joints and axle locks daily.

Check all bolted joints and tighten all loose bolts. If you see any defects, you must rectify them immediately. Worn bolts and screws can entail a risk of breakages when under load.

If cracks are discovered in the cutter, operations must be halted immediately.

Damaged hoses must be replaced immediately.

Check for leaks. Leaking hydraulic fluid entails a risk of accidents and can result in serious environmental damage.

When the machine is used regularly, although under normal working conditions, all grease nipples must be lubricated every 20 hours of operation. In the case of significant loads, the lubrication interval is reduced. See lubrication schedule for more detailed information.

Check the oil volume daily. Inspect the cutter for oil leaks.

Clean the cutter of snow, ice and dirt.

Handling oil/grease



Carefully read through the warning information on the oil and grease products you are using, and follow their instructions accurately.

Avoid skin contact with oil and grease during service work.

Wear the correct protective clothing.

Never clean your hands with lubricating oil or grease. This can damage your skin. If oil or grease causes changes to your skin, seek medical attention immediately.

Original instruction

The law demands that all waste oil be dealt with and disposed of at the correct place during service and maintenance.

For recommended lubricating greases, see Requirements and test methods SS 15 54 70 <http://www.sp.se/km/grease>

Surface cleaning

Remove accumulated dirt and dust. Painted external surfaces should be cleaned regularly with a sponge or soft brush, along with soap. When cleaning, never use warm water in a high-pressure washer. This dissolves the grease at the bearing points.

Tightening torques

The tightening torque (Mv) in Nm for untreated, oiled steel screw joints when using a torque wrench or screwdriver/wrench with torque control. Torque range max. \pm 5%. Metric coarse threads. All bolts must be tightened after 10 hours of operation.

Thread M	Property class according to SS-ISO 898/1		
	8.8	10.9	12.9
5	5.7	8.1	9.7
6	9.8	14	17
8	24	33	40
10	47	65	79
12	81	114	136
14	128	181	217
16	197	277	333
18	275	386	463
20	385	541	649
22	518	728	874
24	665	935	1120

Original instruction

Fluid for the hydraulic system

Mineral-based hydraulic fluid and various environmental oils are recommended when using the cutter.

The fluid must not contain water.

If the temperature of the hydraulic fluid is high, this causes the machine's seals to become worn earlier than normal.

Check the fluid volume daily.

For information about the time interval for changing the fluid, check the basic machine's instruction manual.

Hydraulic function and hydraulic controls

Measuring the pressure and adjusting the hydraulics may only be performed by an authorised workshop. The engine must be turned off when performing this type of maintenance.

Storage

If the cutter is not going to be used for an extended period of time, it is important to clean it carefully. Note that high-pressure washing is not recommended. After washing, all the lubricating points must immediately be lubricated. When lubricating with new grease, it forces the water away from the surfaces and thereby counteracts corrosion and wear.

Store the cutter under a roof. If this is not possible, the cutter must be covered with a tarpaulin.

Note: An energy cutter in storage is not a play area for children.

Repair welding

If repairs or modifications require welding work, you must first contact your dealer, who will provide you with the necessary welding instructions. Incorrect welding or ignorance during welding can result in sudden breaks in the structure.

Scrapping instructions

If the machine or its components are to be scrapped, the materials must be dismantled, sorted and handed in for recycling or destruction at a location designated for this purpose by the municipality.

Regulating the cutter

Pressure regulation

BC18 - check that the pressure from the load valve does not exceed 190 bar.

BC25 - check that the pressure from the load valve does not exceed 250 bar.

If you use the device over the allowable pressure, it reduces the lifetime of the device.

Cutting blade

- The blade is mounted on the BC18 cutter's frame with the aid of six M16x50 (8.8) bolts, DIN 7991.
- The blade is mounted on the BC25 cutter's frame with the aid of six M16x40 (10.9) bolts, DIN 961.

The cutting blade must be kept sharp for optimum results from the cutter. It is extremely important for sharpening to be performed correctly. We recommend the use of a file when sharpening. If there is a considerable amount to be sharpened, you should first use a grinding machine. We do not recommend sharpening with a corner grinder, although if this does take place, take care to ensure that the material does not become too hot. This can affect the use of the product.

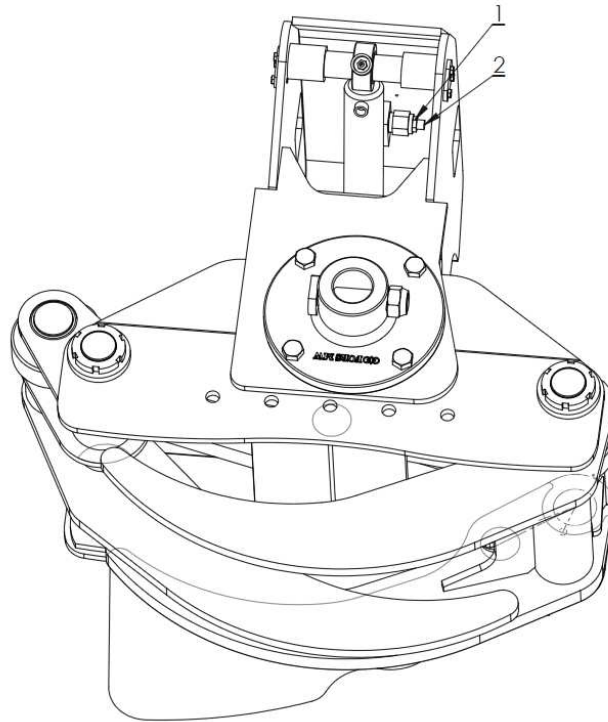
Regulating the tilting speed

The BC18 energy cutter is supplied with a relief valve intended for the tilt function. The tilt function has a default working pressure of 175 bar.

If the machine/system in which the BC18 is installed has a working pressure that is higher or lower than 175 bar, you may need to adjust the adjustment screw in or out. As a result of this, the tilt will commence later or early, depending on your choice. In this way, the tilt can be adapted to the wishes of the user.

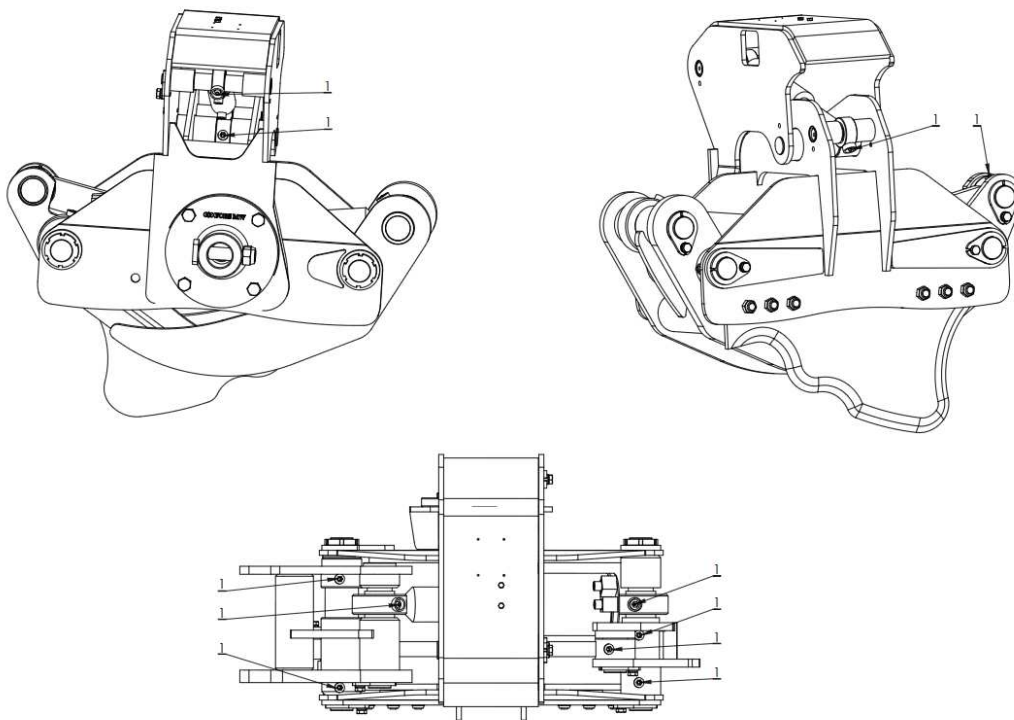
If you want to use BC18 as a grapple, the tilt has to be locked. This is done in the tilted down position. Begin by closing the grapple so that it tilts down, undo the locking nut (1) and then screw in the adjustment screw (2) 3–4 turns. Finish by tightening the locking nut (1). The tilt cylinder is then locked in the tilted down position.

When the tilt function is to be used again, adjust the adjustment screw so that the cutter tilts at the desired pressure.



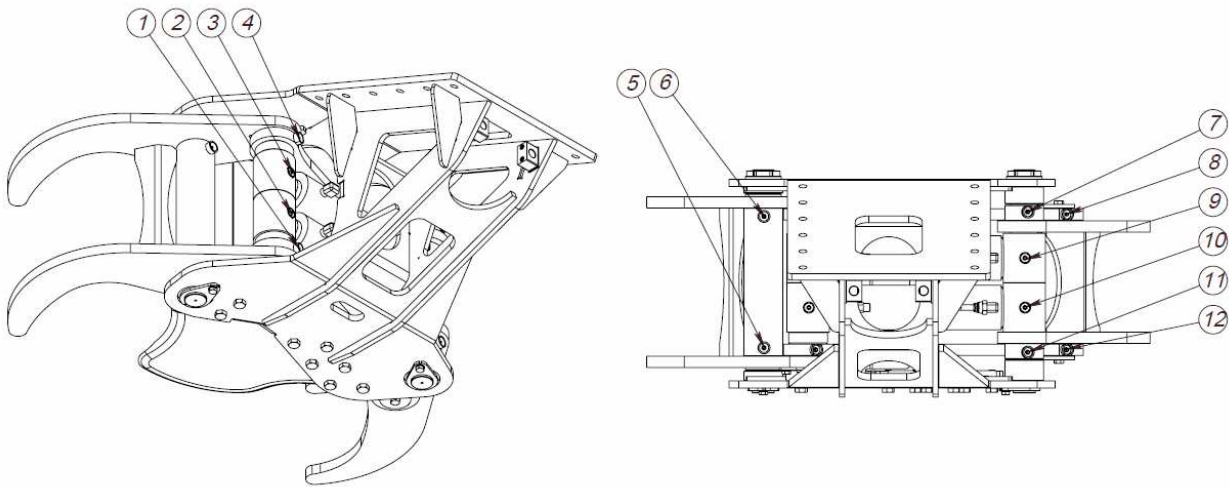
Lubrication schedule BC18

When the machine is used regularly, although under normal working conditions, all grease nipples must be lubricated every 20 hours of operation. In the case of significant loads, the lubrication interval is reduced.



Original instruction

Lubrication schedule BC25



9. EC DECLARATION OF CONFORMITY (SAMPLE)

EC Declaration of Conformity of the Machinery

Manufacturer:

Fors MW AS

Tule 30

76505 Saue

Estonia

The technical file is compiled by **Priit Raud**;

I hereby confirm that this equipment:

Trade mark: **FARMA**

Function: **interchangeable equipment**

Model: **BC18/ BC25**

Type: **FC** variant: **BC18/ BC25**

Serial no.: **FCBC18xx2xxxxx/FCBC25xx1xxxxx**

Trade name: **FARMA BC18/ BC25 Energy cutter**

Manufacture year: **xxxx**


is manufactured accordingly to demands in **directive 2006/42/EC** and therefore can be used mounted together with other equipment to provide a complete machine.

The equipment can't be used before the machine or the formation that it will take place in, is accordingly to the demands of the EC Machinery directive.

For the guarantee and safety, it is of uttermost significance that the instruction book is read before the machine is put into service.

Saue, Estonia

2018-01-25



Priit Raud

CEO