

DALBO®

TRIMAX 520

USER MANUAL

Original edition



User instructions

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MADE IN  DENMARK

TRIMAX

Type 520 cm

Congratulations on your new TRIMAX. For **safety reasons** and to achieve the best possible use out of your heavy duty stubble cultivator, you should read through the user instructions carefully **before use**. It is important that the operator understands the content of this user manual before operating the heavy duty stubble cultivator.

If, at some point in the future, the heavy duty stubble cultivator is sold **the user manual** must be handed on to the new owner!

The content of this manual is based on the information available at the time of publication. Since our products are being developed and improved continuously, it can not be avoided that the specifications are changed from time to time. Should you find information in this user manual which differs from the mentioned heavy duty stubble cultivator, our aftersales department will be happy to guide you.

Your TRIMAX has:

Type no.:	_____	Serial no.:	_____
Month of manufacture:	_____	Tare weight in kg:	_____

When enquiring about spare parts or servicing, we kindly ask that you always provide the type number, serial number and build year.



EU DECLARATION OF CONFORMITY

DALBO®

**Bindeballevej 69
DK-7183 Randbøl**

hereby declares that the aforementioned machine is manufactured in accordance with the stipulations in Directive 2006/42/EF, which replaces Directive 98/37/EF and the amending Directives 91/368/EØF, 93/44/EØF and 93/68/EØF on a mutual approach for member state legislation on machinery for health and safety requirements in connection with the construction and manufacture of machinery.



This machine complies with the safety requirements of the European safety guidelines.

On behalf of DALBO A/S

Date: _____

Alessio Riulini, CEO

PREFACE

DALBO – innovative soil processing techniques

DALBO A/S specializes in the development and production of quality machines for soil cultivation and the preservation of green areas, for instance in agriculture, on golf courses and within municipalities. Within our core competence area, field rollers, DALBO is among the largest and best known manufacturers in Europe. Packers, stubble implements and seedbed preparation harrows are other groups of products where we at DALBO have shown true, Danish pioneering spirit. Disc rollers complete the assortment. Building on 70 years of experience, it is the intention of DALBO to follow the structural development and seek to meet modern agricultures need for efficient and reliable machines. We wish to be a close-to-the-market alternative to the large suppliers of overall solutions. Thus, a flexible production with short delivery times is a high priority. The products are sold via our own sales organizations, trained dealers and import businesses in over 40 countries. This ensures professional guidance and service close to the customer.

Dalbo **Trimax** is manufactured based on the newest techniques as well as acknowledged provisions, standards and rules regarding technical safety.



This user manual contains information and instructions which are important for the preservation of the operational reliability and value of your DALBO **Trimax**. Therefore, read the user manual carefully, since it will familiarize you with mounting, operation, maintenance and care. Pay special attention to the instructions regarding safety.

Please visit our website www.dalboagro.com – where you can access the latest editions of the user manuals and spare part brochures across the entire assortment.

We hope that you will be satisfied with your new DALBO **Trimax**.

Best Regards

Alessio Riulini, CEO

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Introduction and identification of serial number

Information

- This user manual is intended for the person who uses and maintains the stubble cultivator. It contains all items concerning safety, use and maintenance. It is very important that all users read and understand the user guide before starting to use the stubble cultivator.
- Every time there is a new user of the drum, it is very important that the person in question is instructed on the correct use of the stubble cultivator. This includes a review and a read-through of the user guide and commissioning in the field.
- If there are doubts regarding reading the user guide or concerning the general use and safety of the stubble cultivator, it is very important to stop its use and contact your supplier or DALBO A/S.

Location of user manual

The user manual can be found in a plastic case on the stubble cultivators side frame. Remove the plastic case before starting the stubble cultivator and stow the user manual in a safe and accessible place for all users of the stubble cultivator.

Fig. 1

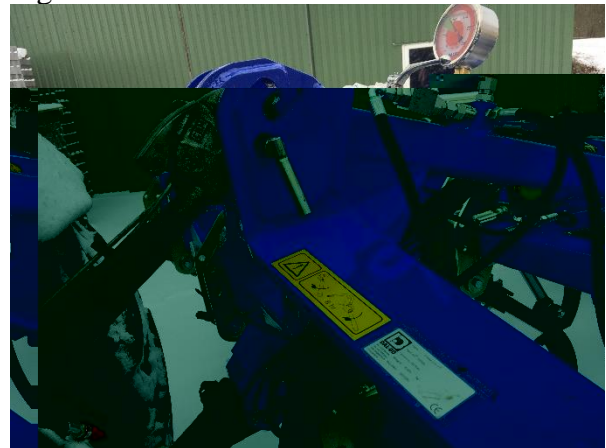


Location of serial number

The type plate on TriMax 520 is located in a centred position within the triangular frame of the stubble cultivator.

The serial number of your stubble cultivator can also be found on page 2 in the user guide.

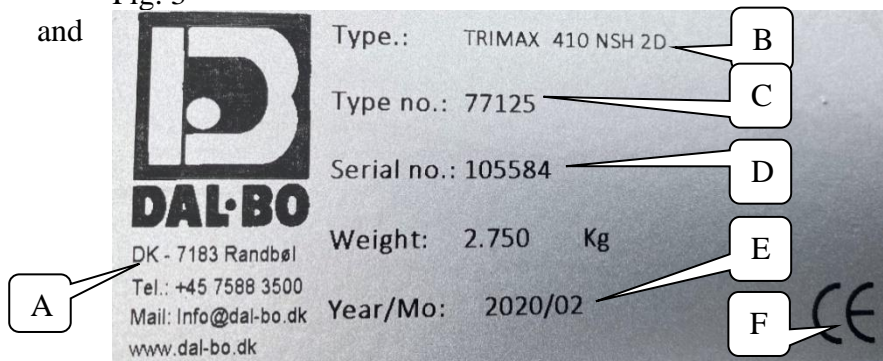
Fig. 2



The heavy duty stubble cultivator comes equipped with a type plate. Below, a typical type plate is shown, containing the following data:

- A: Name, manufacturer and address.
- B: Machine type.
- C: Type no.
- D: Serial number.
- E: Year of production.
- F: CE mark.

Fig. 3



Warranty provision

By default, your TriMax is delivered with a 2-year warranty from the date of delivery. DALBO A/S shall bear no liability for damage caused by the improper use of the stubble cultivator.

Safety



You will see this symbol in the instruction manual each time advice is given about your safety, the safety of other users, or the functional safety of the machine. All safety instructions must be observed and made available to all users of the mulcher.

In addition, the safety instructions provided by the tractor manufacturer must be followed.

If the stubble cultivator is used on a public road, the corresponding traffic regulations apply.

Even though a broad range of risks have been mentioned here, it is impossible to foresee all eventualities, resulting from varying conditions under which the appliance might be operated. No amount of good advice can replace “common sense” and “paying attention” at any given time, but the instructions mentioned above are a great start to a safe and secure operation of your DALBO stubble cultivator.

General

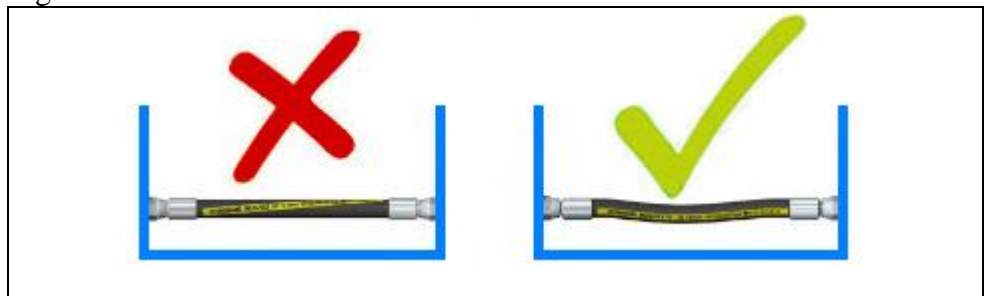
- Before starting its operation, the user must be familiar with all parts of the stubble cultivator.
- Safety labels have been placed on the machine. These contain important instructions about your own safety and that of others, as well as the correct use of the stubble cultivator.
- There may be no passenger on the machine during work or transportation.
- When operating the stubble cultivator, ensure that there are no persons within the machine’s radius of action. The stubble cultivator may only be operated from inside the tractor.
- Before leaving the tractor, or if adjustments, maintenance or repairs need to be made to the stubble cultivator, the stubble cultivator shall be lowered to the ground, the tractor’s brake shall be applied, the engine shall be turned off and the ignition key shall be removed, in order to safeguard the stubble cultivator against unintentional start-up.
- When performing maintenance work on a tool that has been lifted, the lifted state of it must be secured with appropriate support structures.
- Remember to secure the supporting legs as well as the lifting arm with lynch pins or bolts.
- Never leave the driver’s seat while the stubble cultivator is in operation.
- The driving speed must always be adjusted to the conditions.

- Only use the stubble cultivator if all safety devices have been mounted. Defective safety devices must be replaced immediately.

Hydraulics

- No persons may be positioned within the operational radius of the machinery when the hydraulic system has been activated, since there is a risk of being crushed.
- Prior to any repair work on the hydraulics unit, the stubble cultivator must be lowered to the ground, the pressure must be removed from the unit, the engine must be switched off and the ignition key must be removed.
- Hydraulic connections must be cleaned thoroughly before connecting. When connecting the hydraulic hoses to the tractor's hydraulics, ensure that the pressure has been removed from the hydraulic system.
- After repairs on the hydraulic system have been completed, all air must be completely removed from the system.
- Check the hydraulic hoses regularly for defects such as tears, cracks, wear or damage. Defective hoses must be replaced immediately. Never try to localize a leak in the hydraulics using your hand. Utilize a piece of cardboard instead. Avoid twisting the fittings when exchanging hoses. Use 2 wrenches to tighten and to loosen.

Fig. 4



- Avoid spilling oil on the ground. If this should happen, it should be collected and safely disposed of immediately.
- Clean hands thoroughly after skin contact with oil and grease. Change out of oil-soaked clothing immediately, as this can be harmful to the skin.
- Hydraulic oil that flies out under high pressure can penetrate through the skin and cause serious injuries. Seek professional medical assistance immediately in the event of any injury.

- The warranty for hydraulic hoses is limited to the exchange of hoses due to defective materials or manufacturing defects. The warranty does not apply for wear and tear, friction, cuts, or hoses that have been squeezed.

Mounting

- There is a risk of crushing when carrying out mounting. Standing between the stubble cultivator and the tractor or between parts being connected is not allowed.

Maintenance and repair

- The stubble cultivator must be properly supported or unfolded while undertaking all kinds of repair and maintenance work, the tractor and stubble cultivator must have their brakes properly activated, the engine must have been turned off and the ignition key removed.
- Tighten all screw fittings after a few hours of use. All screw fittings must be checked at regular intervals and tightened when necessary. Cotter pins and bolts should be checked to avoid breakdowns.
- Use only your own tools and use sturdy gloves, safety shoes and safety goggles.
- Oil, grease and filters must be disposed of and in accordance with the applicable environmental legislation.

Driving on roads

- When driving on public roads, all safety arrangements and warnings required by law must be installed and tested. The driver is responsible for correct use of lights and traffic signs in accordance with traffic laws.
- Out of a regard for the dimensions of the stubble cultivator, the driver must enquire with the traffic authorities to ensure that it may be transported on public roads.
- When transporting the stubble cultivator, care must be taken not to exceed the total weight and axle load of the tractor and that the load on the front axle is no less than 20 percent of the tractor's overall weight. If that is the case, use front weights on the tractor.

Correct use

- Compliance with the manufacturer's operating, maintenance and repair instructions, as well as the exclusive use of original spare parts is included in the correct use of the stubble cultivator.
- The stubble cultivator may only be used, maintained and repaired by people who are familiar with the machine and who are aware of the dangers that can arise.
- The manufacturer is not liable for damage caused by changes to the stubble cultivator, carried out without the manufacturer's prior permission.

Furthermore, the manufacturer is not liable for any damage that results from incorrect use. Responsibility for this rests solely with the user.

- No extra weight may be installed on the stubble cultivator.

Technical data

Fig. 5.

TRIMAX 520	
Size (cm)	520
HK (recommended)	300
Gross Weight kg:	4000
Number of tines	19
Number of plates	14
Number of T-rings	36
Extra equipment	
	NO

Delivery

The stubble cultivator is delivered fully assembled, on a truck. In connection with export it may happen that the machine is partially disassembled.

If the stubble cultivator is to be lifted, it is our recommendation to hitch with straps in the middle, so that the stubble cultivator gets to hang in a balanced position.

How to read the instruction manual

It is possible that the order in which the topics are listed does not follow a specific logic. Please refer to the table of contents, where the titles for the relevant topics can be found.

The main points in the instruction manual are divided into key sections:

- Safety
- Getting Started and Driving
- Maintenance
- Repairs

The following symbols are used in the instruction manual for



Points that are especially important for the functionality as well as the lifetime of the stubble cultivator.



Points that are relevant to safety.

Use

TRIMAX is a heavy duty stubble cultivator, used for the mulching of stubble and plant residue. Due to the large ground clearance, large amounts of plant material can be mulched.

Fig. 6



TRIMAX is constructed so that a complete cut can be achieved, so that the growth of crop as well as weeds is interrupted. The shape of the tines causes soil and plant residue to be flung into the air and mixed in a uniform mass.

TRIMAX consists of a three bullet harrow, with a row of angled plates mounted behind it, so that the plates even out and finely part the material just behind the tines of the harrow. At the very back, the flat steel crumbler is mounted. It controls the working depth and at the same time it crushes the clods, packs the materials and evens out the layer. Their follower is equipped with 60 cm t-rings.

Benefits from the use of TRIMAX 520

The TRIMAX 520's benefits consist of:

- Precise setting of depth between 4 and 30 cm.
- **No** weight carrying wheels which may cause uneven packing in the field.
- Complete cut, reducing the need for further cross-driving.
- Uniform mixing up of plant residue.
- Preserves the moisture in the soil.

TRIMAX is particularly suited for work on the upper layers of soil, where the biggest turnover of plant materials happens. Therefore, TRIMAX is an efficient tool to include in a strategy for reduced soil treatment, since TRIMAX can provide a full cut of the field with just one drive through, including a uniform mixing up of plant residue and the microorganisms in the soil. In order to preserve the moisture in the soil and to optimize the micro-climate for the organisms in the soil, the soil treatment is finished with a tight packing step.

Limitations in use

The following describes what the machine may/must not be used for:

- The machine may only be used for tilling land containing stubble and grass in agricultural areas that have been cultivated. Those areas to be tilled must have been subject to normal agricultural maintenance, i.e. without significant bumps or holes.
- The machine may only be used after first being attached to an agricultural tractor, by way of connection to the rear 3-point hitch.
- The machine can work at a maximum speed of 12 km/h. The speed shall, however, always be adjusted to the nature of the area.
- When undertaking a turn in the headland, the machine should be lifted from the ground to prevent unnecessary wear and tear.

Any other use of the machine, which does not fulfil the aforementioned conditions, will be considered unauthorised use, and will therefore be in breach of the manufacturer's warranty.

Preparation of the tractor

The ballast of the tractor

When mounting the appliance, it is absolutely necessary that the highest degree of stability between appliance and tractor is achieved – this can be ensured by using ballast, in order to counterbalance some of the weight of the mounted appliance.

Front weights

May be necessary when mounting appliances behind the tractor, in order to place some of the total weight of the machine on the front axle. This ensures stable road transportation and reduces the “jumping” of the tractor during field work.

Factors which influence the stability

- The centre of gravity for the tractor/appliance/machine combination.
- The geometric conditions, such as the exact location of the appliance and the ballast.
- Weight, track width and the axle distance of the tractor.
- Acceleration, braking, turning and the relative location of the appliance during those manoeuvres.
- The nature of the terrain, is it hilly, what type of underlay and the condition of the underlay.
- The flexibility of the mounted appliance.
- Pay special attention to the fact that on articulated tractors the balance is shifted, according to how sharp a turn may be.

Suggestions for improved stability

- Increasing the track width; a tractor with a greater track width has more stability.
- Front weights.

NOTE: The suggestions mentioned above are purely a guidance with regards to stability, they are not meant for guidance when it comes to the power of the tractor. It is recommended that you contact your tractor manufacturer or your local dealer for specific guidance regarding this. At the same time, you should contact a tire specialist for advice regarding tire pressure etc., so that all settings will get to be compatible with the type of appliance that you wish to mount.

Connecting and disconnecting

Connecting

The lifting arms should be mounted first, followed by the top rod. The top rod is adjusted so that the frame is in a horizontal position, aligned with the driving direction.

The lift arms must be adjusted to an identical height and the tire pressure in the back wheels must be the same on either side.

The lift should stand in position control.

- Remember to secure where needed, with a linchpin or bolt.

Fig. 7



Hydraulicsconnection

On the TRIMAX 520, different hydraulic outlets on the tractor are necessary.

Table 1. Hose labels

Model	Outlet	Colour	Function
520	1 Double acting DV	Red	Folding of side sections
520	1 Double acting DV	Green	Depth control
520	1 Single acting EV	Black	3D stone control / tine control

The hoses are marked in colours as sets with red and green, respectively. The 3D stone control is adjusted hydraulically to the green area on the manometer.

Fig. 8



Check that the hydraulic hoses have not been crushed.



Disconnecting



The TRIMAX 520 must be disassembled in a folded-out state.

Remember to release the pressure from the connecting hoses to the hydraulic system, before disconnecting the hoses. (Hose marking, Red)

Fig. 9



Furthermore, the ball plug valve of the hydraulic stone control must be closed.

Remember to release the pressure from the connecting hoses to the hydraulic system, before disconnecting the hoses.

Place TRIMAX 520 on a solid, level surface. Disassemble the top rod and the liftarms.

Fig. 10



Settings

TRIMAX is factory set at delivery, but fine tuning will always be necessary before taking it into operation. Several options for adjustment makes your TRIMAX more versatile and enables an optimized use of the stubble cultivator.

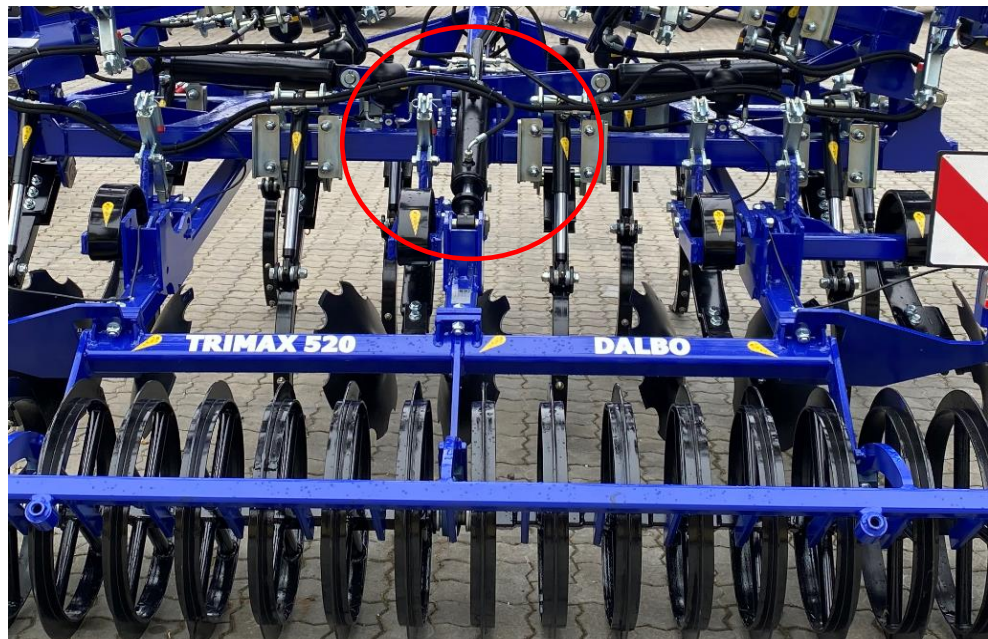
Depth

The working depth is controlled by the T-ring-roller positioned at the very back, as well as the lifting height setting at the front end. The setting of the working depth is made via the doubleworking hydraulic functionality (Hose marking, Green). The working depth can be read in the LCD display of the *Dalbo Depth Control*.

Deeper soil cultivation

To change to a deeper setting, the T-ring-roller is pulled up via the double working hydraulic functionality (Hose marking, Green). The working depth can be read in the *Dalbo Depth Control* LCD display in the cabin. The top rod length is adjusted, if necessary until the frame is horizontal.

Fig. 11



When changing the depth, it may be necessary to adjust the top rod, as the frame should always be in a horizontal position.

More shallow soil cultivation

To change to a more shallow setting, the T-ring-roller is pulled up via the double working hydraulic functionality (Hose marking, Green).The working depth can be read in the *Dalbo Depth Control* LCD display in the cabin.The top rod length is adjusted, if necessary until the frame is horizontal.



When changing the depth, it may be necessary to adjust the top rod, as the frame should always be in a horizontal position.

Dalbo Depth Control

The working depth is controlled by the T-ring-rollerpositioned at the very back, as well as the lifting height setting at the front end.The setting of the working depth "*Dalbo Depth Control*" is made via the doubleworking hydraulic functionality(Hose marking, Green).The working depth can be read in the LCD display in the cabin, or, alternatively, the mechanical depth scale mounted close to the hydraulic cylinder.

Dalbo Depth Control provides a clear overview of the task at hand, regardless of the conditions in terms of light and dust. Strongly improved ergonomics for the driver and increased uniformity in the soil cultivation.

Fig. 12

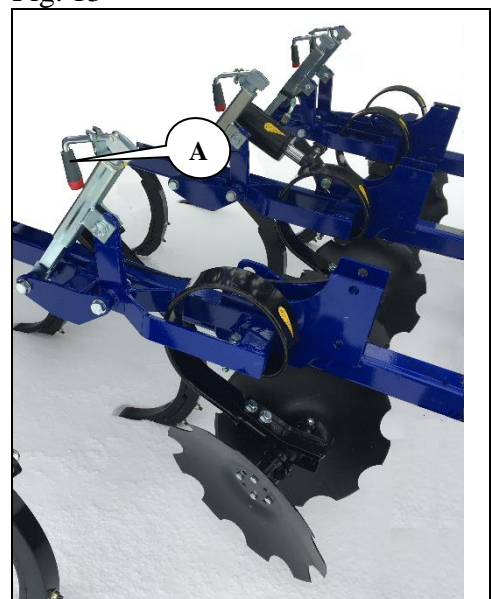


When changing the depth, it may be necessary to adjust the top rod, as the frame should always be in a horizontal position.

Depth adjustment of the discs

The correct adjustment of the discs leaves behind a plain field without visible traces from the harrow tines. The fine-tuning of the discs is made using the spindle (A) and can not be done before TRIMAX is actually in the field. The discs are adjusted for work in the surface, so that an adequate amount of soil is thrown back towards the harrow tine. This can be applied up onto a certain speed, depending on the soil conditions.

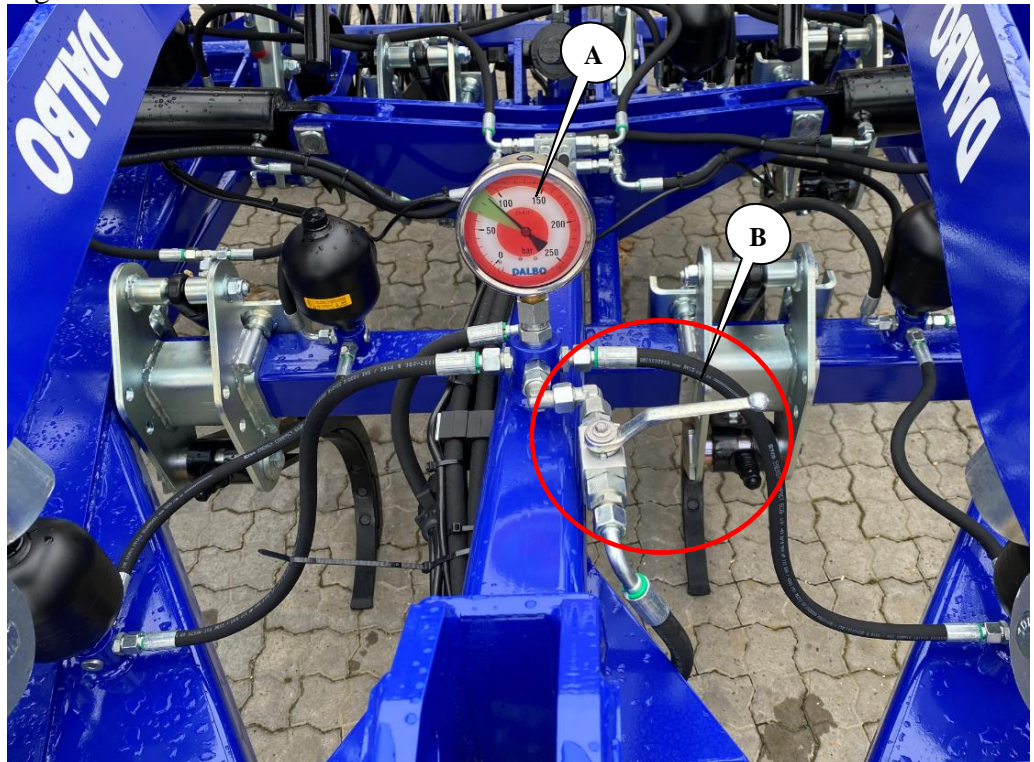
Fig. 13



Hydraulic 3D stone control

The working pressure is adjusted to around 70 bar = green area on the manometer (A). The actual pressure can be controlled continuously on the manometer (A). After the adjustments have been done, shut the ball plug valve (B) and the hydraulic hose can be disconnected from the tractor. If the ball plug valve is not shut, the oil will slowly seep back to the tractor and the pressure on the installation will fall, since the outlet on the tractor is not completely sealed.

Fig. 14



Driving and operation

Proper operation is important in order to get optimal performance from your TRIMAX. This applies to both work in the field and in terms of safety. It is therefore crucial that you have thoroughly read the safety precautions that cover the stubble cultivator.

It is recommended to drive slightly at an angle to the sowing direction, for the best results.

TRIMAX must be set so that it is carried by the flat steel crumbler. The handle of the tractor lift must be lowered when driving in the field, so that the lift will float and can move according to the terrain (position control). Thus, the depth will be controlled by the flat steel crumbler in the back and by the top rod at the front.

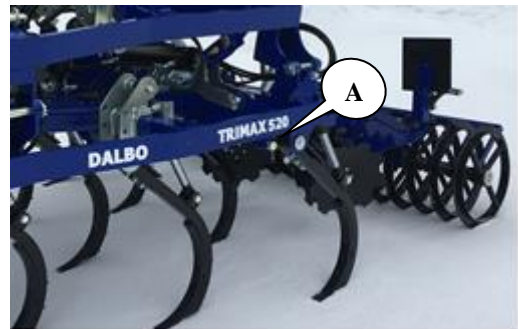
When changing the depth, it may be necessary to adjust the discs. The discs are supposed to work in the surface, but not to do any actual soil conditioning, apart from levelling out the surface after the tines, so that an adequate amount of soil is thrown back towards the harrow tine.

Unfolding and folding

Activate the hoses marked with red markings. The side wings are unfolded on to the point of complete extent.

If, after this, the stubble cultivator is not horizontal, the point of complete extent can be adjusted individually for each wing on adjustment bolt A.

Fig. 15



Folding out and folding in must always be performed with the tractor in a parked position and on a level surface.

It is not allowed to stay within the moving radius of the machine while the side wings are being folded or unfolded.

Driving speed

In order to achieve an optimized cultivation of the soil, a speed between 8 and 12 km/h is required. **However, driving should always be done according to conditions.**

We are obliged to inform you, that wear and tear will increase significantly as the speed is increased. There is also a risk of damaging the rings by driving at excessively high speeds under adverse conditions.



At a high driving speed, especially with dry conditions, the wear and tear on the tines will increase significantly.

Troubleshooting

Problem	Cause	Fixing
The harrow tracks are not covered properly	Discs adjusted wrongly	The discs are adjusted for work in the surface, so that an adequate amount of soil is thrown back towards the harrow tine
	Length of the top rod adjusted wrongly	Adjust top rod so that the middle section is horizontal, lengthwise
One of the outermost side sections are pressing too much/not pressing enough	The point of complete extent of the side section is adjusted wrongly	The point of complete extent can be adjusted individually for each wing on the adjustment bolt. The stubble cultivator must be horizontal, lengthwise as well as in the direction of the width
Excessive wear and tear on the harrow tines	The driving speed has not been adjusted to the conditions	Normally, a working speed between 8 and 12 km/h is appropriate. However, driving should always be done according to conditions. Wear and tear will increase significantly as the speed is increased
	Driving speed too high with dry conditions	At a high driving speed, especially with dry conditions, the wear and tear on the tines will increase significantly
The harrow tines deviate too easily	The accumulator pressure in the 3D stone control is too low	Working pressure around 70 bar = green area on the manometer. After the adjustments have been done, shut the ball plug valve and the hydraulic hose can be disconnected from the tractor. If the ball plug valve is not shut, the oil will slowly seep back to the tractor and the pressure on the installation may start to drop
Harrow tines do NOT deviate, even if they come across large stones	The accumulator pressure in the 3D stone control is too high	The manometer may NOT be in the red area. Working pressure around 70 bar = green area on the manometer. After the adjustments have been done, shut the ball plug valve and the hydraulic hose can be disconnected from the tractor. If the ball plug valve is not shut, the oil will slowly seep back to the tractor and the pressure on the installation may start to drop

TRIMAX 520

Tractor cannot be controlled in the headland	The stubble cultivator may NOT be in the ground during turns	Always make sure to lift the stubble cultivator, when performing turns in the headland.
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Maintenance

Good maintenance ensures a long life for the TRIMAX and therefore optimal yield from the stubble cultivator. Grease fittings have therefore been installed in places where wear is greatest.



All screw connections must be tightened after the first day of work. Cotter pins and bolts should be checked to avoid breakdowns. The hydraulic system should also be checked to ensure it is air-tight.



All maintenance and repair work on TRIMAX must be conducted only when the machine is lowered to the ground or, is set in transport mode, the tractor has the brake on, the engine is switched off and the ignition key is removed, so that the machine is secured and crushing accidents are prevented.

Lubrication

Fig. 16

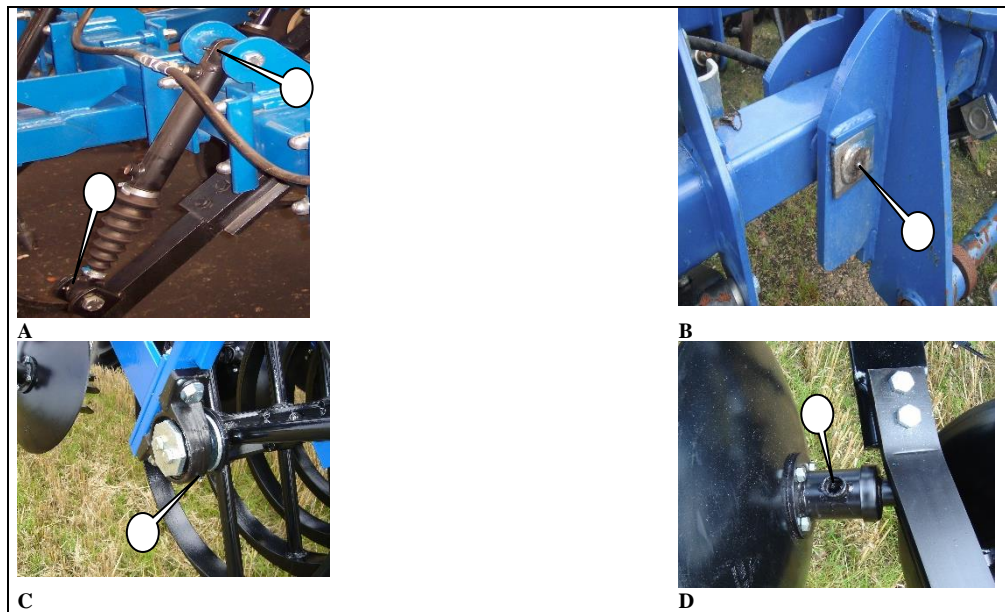


Fig. 17

Lubrication points	Lubrication interval hours	Images
Tine	8	A
Frame	8	B
Flat steel crumbler bearings	50	C
Disc bearings	50	D



All lubrication points should be greased at least once a year and after washing.

Hydraulics



All hydraulic hoses must be checked for wear, tear and breakage. Ensure the hoses are not subjected to any crushing.



If left parked for longer periods of time, protruding plunger rods should be greased with oil or pressure grease, in order to avoid the build-up of rust on the plunger rod. Remember to remove it again before use.

Disc pivot

The disc pivots should be tightened once a year or as needed.

1. The disc is removed.
2. The split in the pivot nut is removed.
3. The pivot nut is tightened a quarter of a turn or until there is no more deviation in the pivot.

Fig. 18



Wear parts. Tines

The tips of the tines on the TRIMAX can be turned around and this must be done before there is any wear and tear on the console onto which the tines are clamped.

The tips of the tines must be replaced once the wear and tear is significant enough to cause the result of the fieldwork to be unsatisfactory or before any wear and tear on the console can be detected.

Always make sure to use original spare parts from Dalbo A/S

Replacements and repairs



Safety is crucial in regard to all repair work on the TRIMAX. The following items must therefore be observed at all times, as well as all items under safety at the beginning of the instruction manual.



All maintenance and repair work on TRIMAX must be conducted only when the machine is lowered to the ground or, is set in transport mode, the tractor has the break on, the engine is switched off and the ignition key is removed, so that the machine cannot move or start accidentally.



For all repair work on the hydraulics, always pay close attention to safety. Before the work is started, release the pressure from the hydraulics system.



When replacing the cylinders, always fill the cylinder with oil before subjecting it to strain. It is therefore recommended that you mount the cylinder in the fixed part of the frame first, after which the cylinder is filled with oil and then mounted in the counterpart.



Once the repair work on the hydraulics system is complete, the system must always be vented before use to prevent mechanical breakdown and/or personal injury.

Hydraulics

Unfolding and folding of side sections. Changing the cylinder

Any repairs must be carried out with the TRIMAX unfolded and resting on the underlay.

1. The pressure is removed from the cylinders. The hoses are removed.
2. Cotter pins and nails are removed, and then the cylinder is free.
3. The new or repaired cylinder is installed. Remember to secure the nail in the nail stop and secure the nails with cotter pins.
4. The hoses are installed. After installation, ensure that there is no risk of tearing or clamping the hoses.

Fig. 19



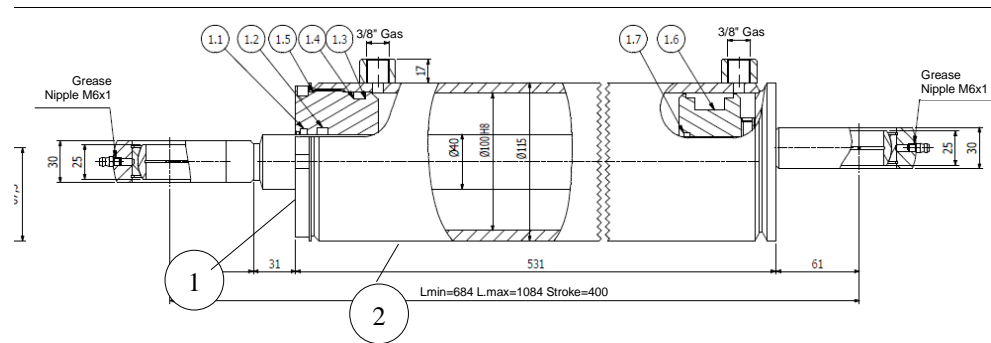
After mounting, the cylinders are activated for unfolding and folding until a small amount of movement can be felt in the cylinders. The cylinders are then activated in the opposite direction until the cylinders are back in the starting position. The cylinders are moved in this way a few times.



No individuals should ever be present within the tool's activity radius.

Unfolding and folding of side sections. Replace gaskets

Fig. 20



1. The cylinder (part no. 33249) is emptied of oil by carefully moving the piston back and forth.
2. Move the piston to the middle position, then unscrew the end cap (pos. 1) from the cylinder tube (pos. 2). A special tool must be used to remove the cap. If the cap is stuck, it may help to warm up the front of the cap. When the cap is unscrewed from the cylinder tube, pull the piston towards the cap. The piston rod can then be removed from the cylinder tube (pos. 2).
3. The seal in the cap (pos. 1) as well as the sleeve are removed.
4. All parts are cleaned and checked for chips, burrs etc. Check for rust around the scraper ring in the cap (pos. 1). If this is the case, remove it.

Mounting

1. New seals are mounted in the cap (pos. 1) and the piston.
2. The thread on the cap (pos. 1) and the cylinder tube (pos. 2) are lubricated with oil or grease.
3. The cap (pos. 1) is mounted on the piston rod.
4. The piston is mounted and the locking nut is screwed on and **secured with Loctite**. Make sure the thread is absolutely clean and free of oil and other impurities before using Loctite. **Do not fill with oil within 12 hours of using Loctite.**
5. Lubricate the outermost seal on the piston that comes in contact with the cylinder tube and the cylinder tube internally with oil and push the piston into the middle position.
6. The cap (pos. 1) is installed on the cylinder tube (pos. 2) and tightened.
7. The cylinder is installed.
8. The hoses are installed. Make sure that the hoses are not being squeezed and that the connections are tight.

Hydraulic 3D stone control.Changing the hose

The system is made **pressure free** by connecting the system to the single working outlet of the tractor. Next, the ball plug valve is opened and the outlet of the tractor is put in floating position. The defect hose can now be removed and you can mount a new one.

Hydraulic 3D stone control. Changing the cylinder

TRIMAX is supported according to the instructions, with the tines just barely lifted from the underlay.

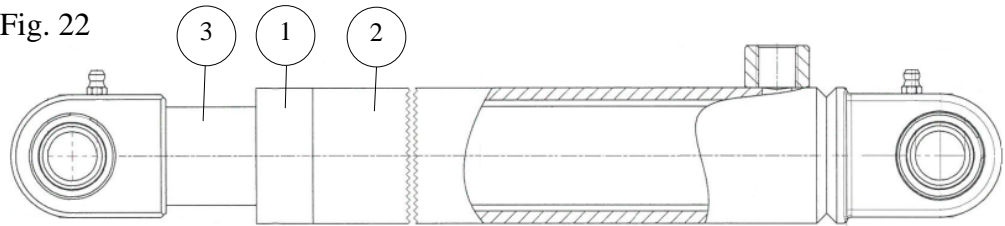
1. The pressure is removed from the stone control system.
2. The hoses are removed.
3. Cotters and splits are removed.
4. A new cylinder, cotters and splits are mounted.
5. The hoses are installed.

Fig. 21



Hydraulic 3D stone control. Replace gaskets

Fig. 22



1. The cylinder (part no. 77963) is emptied of oil by carefully moving the piston (pos. 3) back and forth.
2. Move the piston (pos. 3) to the middle position, then unscrew the end cap (pos. 1) from the cylinder tube (pos. 2). A special tool must be used to remove the cap. If the cap (pos. 1) is stuck, it may help to slightly warm up the front of the valve. When the cap (pos. 1) is unscrewed from the cylinder tube (pos. 2), pull the piston rod (pos. 3) out of the cylinder tube (pos. 2).
3. The piston (pos. 3) is pulled back out of the cap (pos. 1), and next the joint packing set in the cap can be accessed (pos. 1).
4. The gaskets are removed.
5. All parts are cleaned and checked for chips, burrs etc. Check for rust around the scraper ring in the cap (pos. 1). If this is the case, remove it. Also, the piston rod (pos. 3) must be completely clean.

Mounting

1. New seals are mounted in the cap (pos. 1) and the piston rod (pos. 3).
2. The thread on the cap (pos. 1) and the cylinder tube (pos. 3) are lubricated with hydraulic oil to ease the mounting.
3. The cap (pos. 1) is mounted with the piston rod (pos. 3) by pushing the piston rod through the cap.
4. Grease the cylinder tube (pos. 2) with hydraulic oil on the inside and push in the piston rod (pos. 3) unto the middle position.
5. Screw on the cap (pos. 1) and tighten. A special tool must be used to remove the cap.
6. The cylinder is installed. The hoses are installed. Make sure that the hoses are not being squeezed and that the connections are tight.

T-ring flat steel crumbler cylinder. Changing the cylinder

Fig. 23



DISMANTLING:

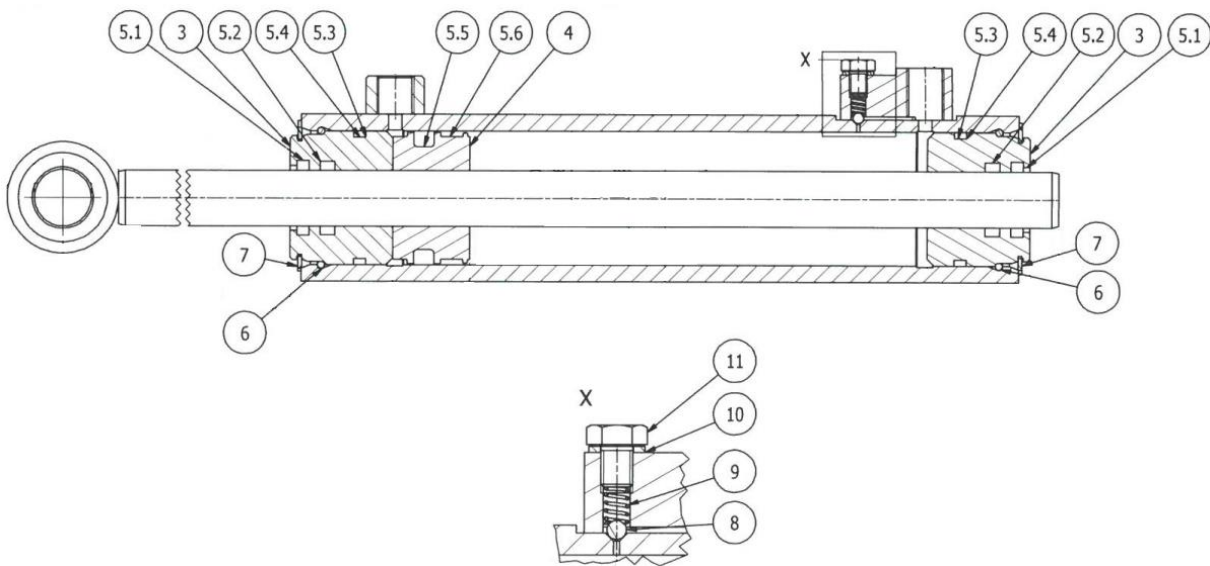
1. The T-ring flat steel crumbler is placed on an even surface.
2. The hydraulic pressure is removed from the cylinders.
3. The hoses are removed.
4. Nails, cotters and splitters are removed.
5. The cylinders removed.

MOUNTING:

1. The new cylinder is installed.
2. Nails cotters and splitters are removed.
3. The hoses are installed.
4. Apply hydraulic pressure carefully, and drive the cylinder to the extreme position in both directions a couple of times to synchronize the three cylinders.

T-ring flat steel crumbler cylinder. Replace gaskets

Fig. 24



DISMANTLING:

1. Empty the cylinder of oil, (if necessary, use compressed air to move the piston back and forth to push the hydraulic oil out).
2. Drive the piston to the centre position. Locking ring (pos. 7) is removed from the head at both ends. Push in the head a little, and the locking ring (pos. 6) can be removed.
3. Now, the head can be pushed out at both ends by pushing the piston rod.
4. The piston rod is pulled out entirely, and all gaskets can be accessed.
5. The gaskets are removed, (if required, use an awl or screwdriver).
6. All parts are cleaned and checked for chips, burrs etc.

MOUNTING:

1. New gaskets are mounted.
2. Piston rod is mounted together with one cap. It is pushed in far enough so that the locking ring (pos. 6) can be mounted.
3. The other head is mounted and is pushed in far enough so that the locking ring (pos. 6) can be mounted.
4. Carefully, start putting some pressure on in one direction, so that the head protrudes enough for the locking ring to lock (pos. 7). Then, do the same in the other direction.
5. All cylinders are driven into stop both ways, in order to synchronize via the valve (pos. 8-9-10-11).

Replacement of shaft, bearings and T-rings

TRIMAX is lowered onto the surface. Support for the flat steel crumbler is established, if required.



Pay attention to unintentional rolling when the bolts in the bearings are removed.

- 1 The bolts in the bearings are removed.
- 2 The shaft with the T-rings can be rolled away from the frame.
- 3 The crown nut at the shaft end as well as the quill screws in the bearings are removed.
- 4 The T-ring can now be pulled of the shaft.
- 5 Mounting is carried out in the reverse order.
- 6 Loctite is applied to the pinol screws.

Fig. 25



Exchanging the tips of tines



TRIMAX must be securely supported so there is no risk of crushing or collapse.

The tine tips (A) can be turned around and they are bolted into place using three bolts. The tips must be turned or exchanged before any kind of wear and tear is detected on the stalk onto which the tip is bolted.

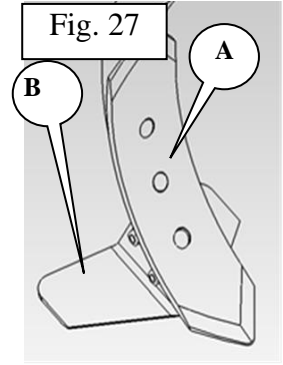
When turning tips, the old bolts can be used, but when tips are exchanged, new bolts must be used. Any residual soil residue squeezed between stalk and the worn part must be removed.

Fig. 26

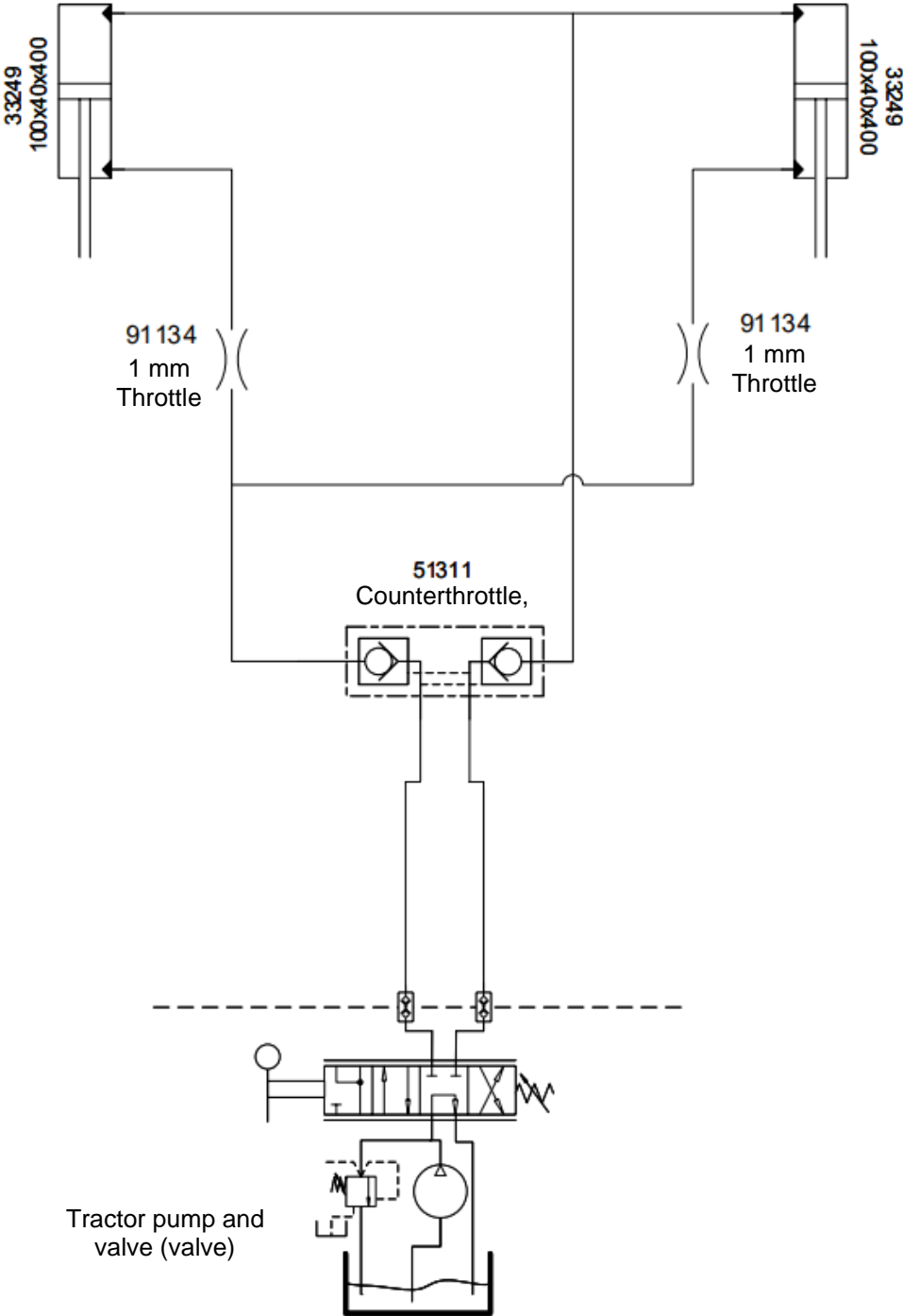


- **12x90 mm plough bolt Size. 10.9 for the fixation of the tip**

It is possible to purchase a “goosefoot” (B). It is mounted under the standard tine tip (A).



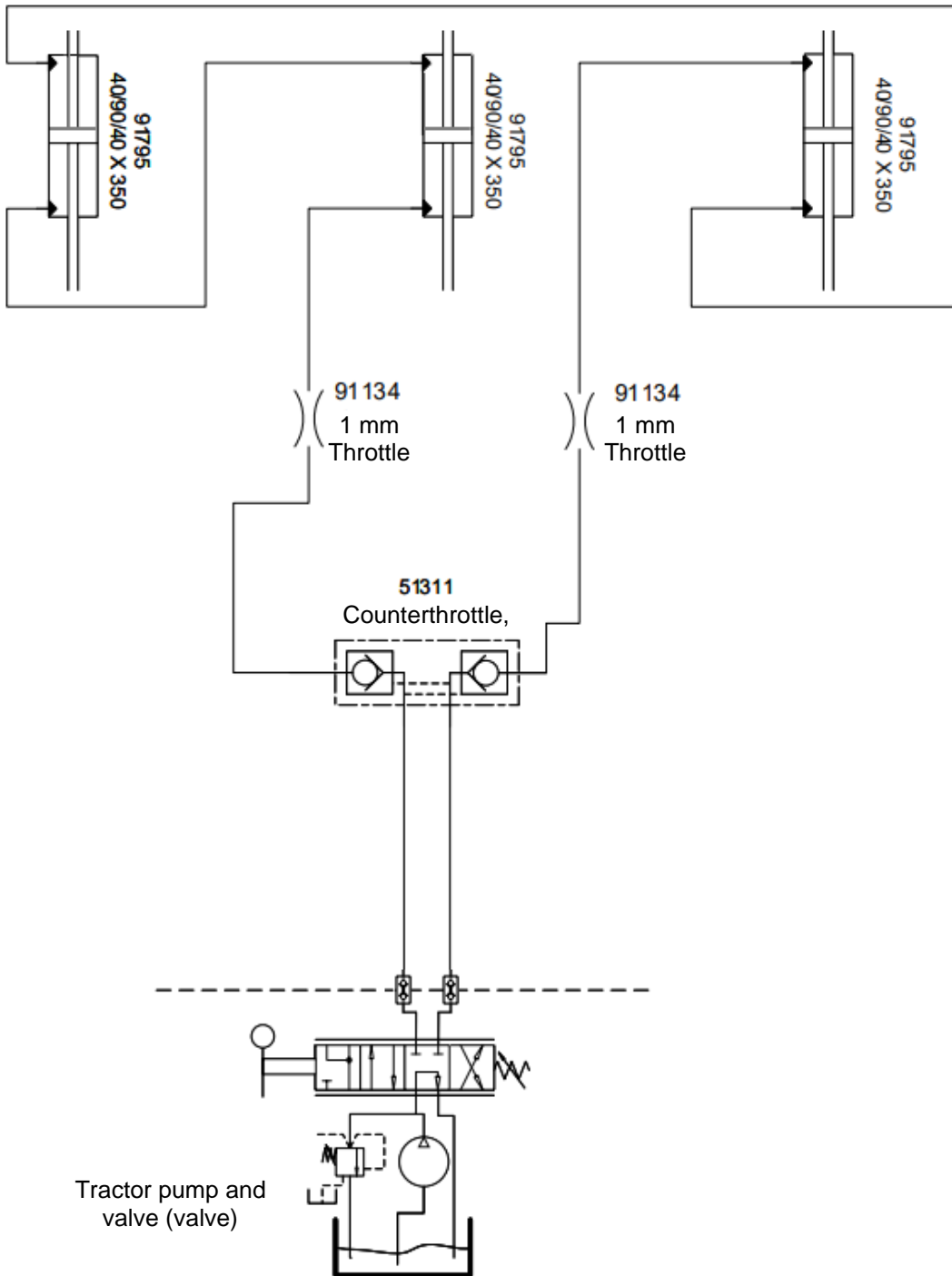
Side Wings



Clap folding

The hydraulic hose marked with RED

T-ring flat steel crumbler



Depth Depth control

The hydraulic hose marked with GREEN

Disposal

The pressure must be taken off the hydraulic system.



With disassembly/dismounting, attention should be directed towards the weight of the part in question. It is therefore important that this part is supported or lifted up, so that there is no risk of collapse.

Hydraulic hoses and cylinders must be disconnected and any residual oil removed. The oil must be collected to avoid pollution. Oil and hoses must be sent for destruction.

All iron parts to the machinery can be sent for recycling.

