ÖVERUM

Conventional ploughs CT

Instruction manual

This instruction manual deals with Överum conventional ploughs type CT

Contents **Page**

Read these instructions carefully. If you follow the instructions given, YOU can expect good results along with a good economic return from YOUR choice of plough.

If carefully operated, adjusted and maintained, the plough will meet all reasonable demands made on it and will give YOU reliable service in years to come. Should YOU need further instructions, which are not included in this manual, or require the help of experienced service personnel, we advise YOU to contact one of our local representatives, which also will have spare parts in stock.

It has always been the ambition of **Överums Bruk** to constantly improve its products. Consequently, in the interest of product improvement, no specification is final or binding and we reserve the right to alter the design of new machine series and equipment without previous notice.

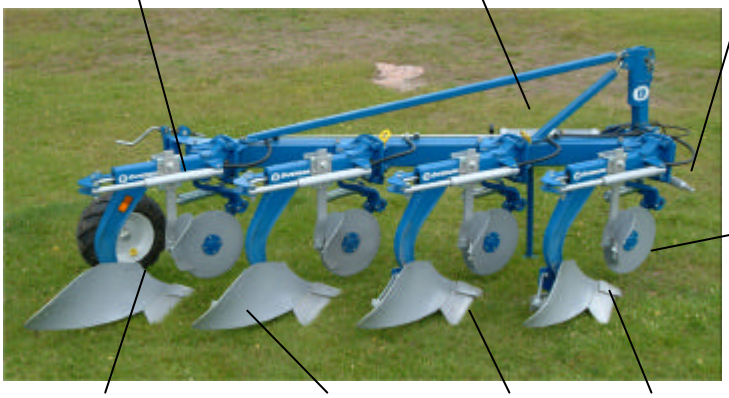
ÖVERUM

Överums Bruk AB
SE-590 96 Överum
Telephone: Int+46 493 361 00

1. DESCRIPTION OF FUNCTION

The plough is designed only for ploughing of all types of soil, and for transport between the farm and the different fields.
The plough is to be attached to the three-point linkage at the rear of the tractor, with the hydraulic systems connected to the appropriate hydraulic outlets.

Description of the plough



CT 4980

1.1 Plough identification

Type designations

Mounted conventional plough CT 2975 – 51080

Stone trip device **H** = hydraulic
F = fixed (shear bolt)

Beam height 75 = 75 cm
80 = 80 cm

Plough body spacing 9 = 90cm

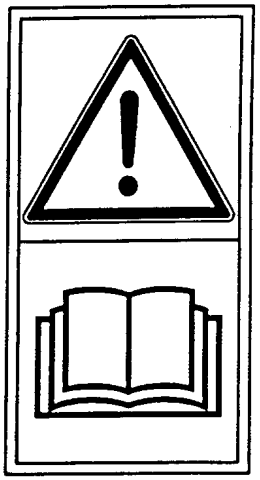
Number of plough body pairs

Type

Serial number

Complete the sign below with the TYPE DESIGNATION and the SERIAL NUMBER of Your plough.

2. GENERAL SAFETY PRECAUTIONS WITH SAFETY SIGNS



Safety signs

Carefully follow the Operating Instructions and Safety Signs, which warns for risks when personal injuries can occur. Avoid accidents by always following the safety precautions.

Read "Operator's Manual". Safety signs with no text are used on these ploughs. Replace any missing safety decals or any that have become illegible.

§ Ensure that no person is on, underneath or in the hazardous area of the plough during transport, or ploughing.

§ Never work with components in the hydraulic stone release system unless the pressure is omitted.

§ Be alert, there is always a risk for injuries when adjusting disc coulters and skimmers.

§ Operator competence. The operator must be well acquainted with the different functions of the plough and be knowledgeable of how to operate it with safety. Consult the tractor manufacturers manual on mounting implements and safe working methods.

§ Ensure that the plough is locked with the correct locking pins onto the three-point linkage on the tractor.

§ Secure the lower link stabilizers on the tractor when the plough is transported on the road.

§ The brake pedals on the tractor must be locked together when driving on the road.

§ All hydraulic connections between tractor and plough must be made in accordance with the instructions given.

§ Never park the tractor with the plough in an uplifted position.

§ Always use the support leg when parking the plough.

§ Never attempt to clean or adjust the plough during operation.

§ Never touch the gas valve on the accumulator.

§ Wear suitable gloves when replacing wearing parts which can have sharp edges.

§ The plough must always be attached to the three-point linkage on the tractor when altering the working pressure in the hydraulic stone release system.

§ Adapt the ploughing speed to suit the ground conditions. **DRIVE CAREFULLY.**

§ **Maximum transport speed 25 km/h.**

§ These rules however do not exempt the operator from the responsibility to observe relevant statutory or other national regulations dealing with road safety or labour safety issues.

3. TECHNICAL DESCRIPTION

3.1 Checking the tractor prior to ploughing

Function of the three-point hitch

The design of the three-point linkage is based on the principle that the tractor and the plough should operate as one unit. This function is depending of the settings for the lower links and the top link. These components must therefore be maintained in a condition that enables them to be easily adjusted.

Hydraulics
Following external hydraulic outlets are required:
CT 1 double-acting

If the plough is equipped with hydraulic front furrow adjustment cylinder one extra double acting hydraulic outlet is required.

Familarize yourself with the hydraulic systems of the tractor.

Wheel adjustment - Track width
For ploughing purposes, track width is always measured between the inside walls on the tractor tyres.

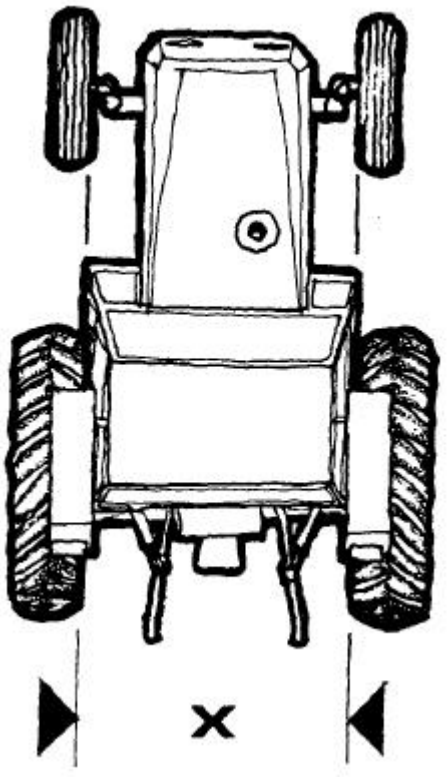
The measurement between the inner walls of the front wheels must be at least equal to the inner measurement between the rear wheels, but may be up to 10 cm wider.

The distance between wheels must be symmetrical, relative to the centre line of the tractor.

The following track widths are recommended: 1200 - 1500 mm
Ideal track width = 3 x the furrow width + 100-150 mm
(Example: 16" furrow width 3 x 400 + 125 = 1325 mm)

When ploughing with "wide tyres" the outside walls of the front and the rear tyres should be parallel.

The furrow widener knives should be mounted on the last plough body.



Tire pressures
Both tyre life and optimum traction are achieved by using the correct tyre pressure. Over-inflation will increase wheel slip. Make sure that both rear tyres are inflated to the same pressure.

Front ballast weights
The front of the tractor should be fitted with balance weights as required to maintain optimal traction and directional stability.

3.2 Preparation of the plough

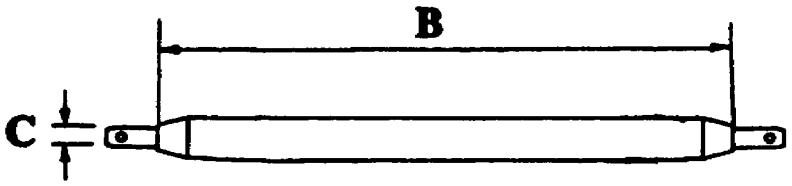
Check that the quick-couplings on the hydraulic hoses are the same type as the quick-couplings on the tractor. If required, fit the correct quick-couplings, to suit your tractor.

Check that the cross-shaft on the plough has the correct category to suit **your** tractor.

Cross shafts are available in different categories:
Cat. 2 means ø 28 mm cross-shaft pins
Cat. 3 means ø 36 mm cross-shaft pins

The length of the cross shaft is determined by the track widths of the tractor and the spacing of the lower links on the tractor's rear axle. When the spacing is > 550 mm on the tractor's rear axle, use the 965 mm long cross shaft.

Cat	**B**	**C**
2	825	ø 28
2L	965	ø 28
3	965	ø 36



3.3 Mounting the plough on to the tractor

Make sure that the lower links can be lowered approximately 20 cm below the cross shaft of the plough before the plough is mounted onto the tractor.

Check that the link ball joints are of the same category as the cross shaft pins. Lock the cross-shaft into the tractor’s lower links with sufficient locking pins.

The stabilizers for the lower links should be adjusted so that the plough can move freely in working position but when raised the side movements should be limited.

The top link should be mounted slightly higher on the plough than on the tractor.

Consult the tractor manufacturers manual on mounting implements and safe working methods.

3.4 Checking the plough

- Check the tightness of all bolts and nuts
- Grease all lubrication points
- Check the tyre pressure 23 x 8,5-12 240 kPa (2,4 bar)
- Check that the desired furrow width is correctly, set see page 14.
- MOULDBOARDS
  For best results, the protective paint on new mouldboards should be removed before using the plough for the first time. Use of a paint stripper is the easiest way of removing the paint. The paint can also be removed by using a scraper or a similar tool. Under no circumstances should the paint be burned off, since the necessary heat would ruin the temper of the steel. This also applies to any disc coulters and skim coulters used.
- Check the disc coulter and skim coulter settings and adjust them so that the settings are identical.
- Raise the plough and fold up the support leg.
- **Always remember to re-tighten all nuts and bolts after about 3 hours of use, after that check the tightening of the bolts regulary.**

Stone trip device (H-system)

Check the working pressure by reading the pressure gauge. For suitable working pressure, see page 13.

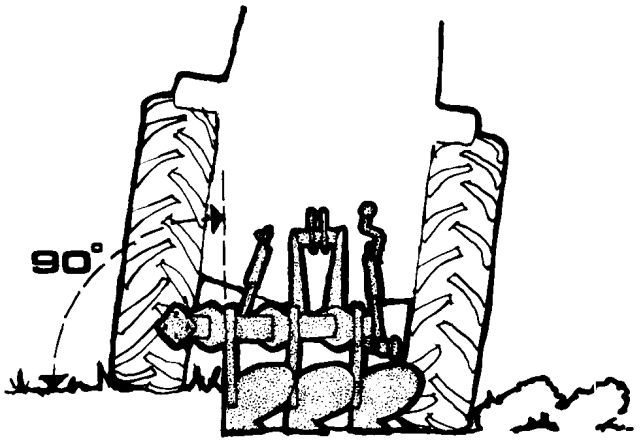
4. BASIC SETTINGS

4.1 Basic settings, mounted ploughs

The basic setting can be started when the desired ploughing depth has been reached and when the tractor wheels are running in a furrow with the same depth.

1. Vertical adjustment

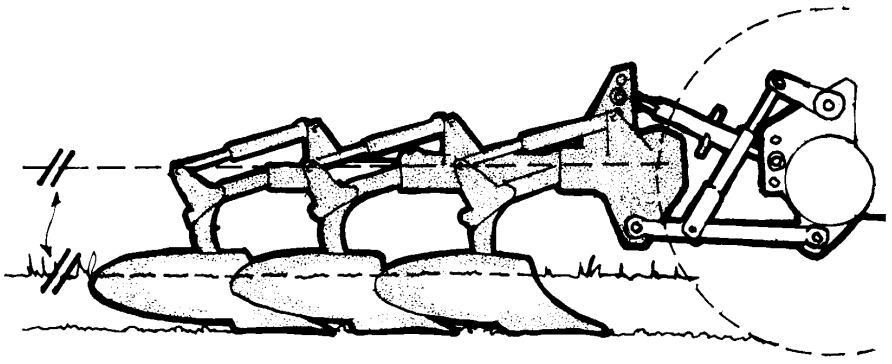
Ensure that the plough beams are at right-angle 90º to the ground. If necessary, make adjustments by using the right-hand lower link of the tractor. The angle is best seen when standing behind the plough.



2. Horizontal and depth adjustments

Mount the top link so that it is 5-10 cm higher on the plough than on the tractor when in working position. The top link bracket of the plough is adjustable laterally in two positions.

Ensure that the front and rear plough bodies are ploughing at the same depth, the plough frame should be parallel with the ground. Adjust by altering the length of the top link.



The ploughing depth should be controlled by means of the tractors draught control in combination with the depth wheel of the plough. This provides a good weight transfer in hard parts of the fields and a good control of the working depth in lighter soils.

3. First furrow width

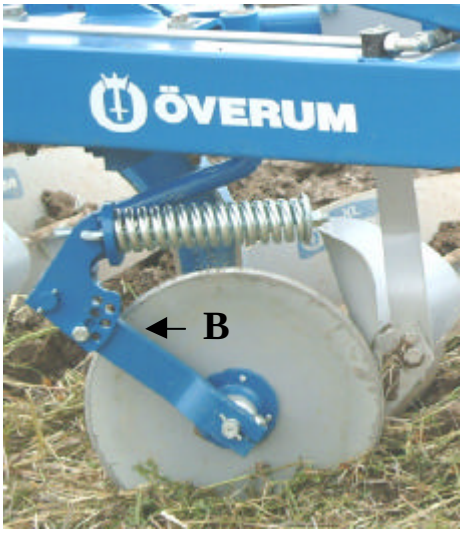
Ensure that the lower links are loose so the plough can move freely.
For ploughs equipped with a hydraulic control of the first furrow width, the following applies: Place the hydraulic cylinder in a central position so that it can be adjusted in both directions. Check that the cross-shaft has the correct angle adjustment, see page 14 (Furrow with adjustment). The adjustment is made with the turnbuckle.
If the width of the first furrow is not correct, loosening the four nuts **A** and move the cross-shaft sideways to achieve the correct width of the first furrow.
Drive forwards a few meters and checks the result.
When the right width of the front furrow is reached, tighten the four nuts. The first furrow can now be made wider or narrower by means of the hydraulic cylinder, which moves the plough laterally on the cross-shaft. On ploughs with mechanical control of cross-shaft, the basic adjustment of the cross-shaft is done in the same way. Subsequently, the width of the first furrow can be temporarily adjusted using the turnbuckle.
Lengthened turnbuckle gives wider first furrow
Shortened turnbuckle gives narrower first furrow

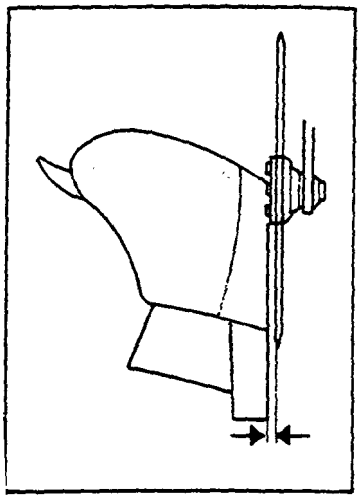
4. Disc coulters

The purpose of the disc coulters is to make a vertical cut, separating the furrow slices. There are two types of disc coulters, fixed and spring loaded. When ploughing in stony or very heavy soils, the spring-loaded type of disc coulter should be used. This is to protect the coulters and to ensure that they do not act like a support wheel, carrying the plough, which would prevent it from maintaining a correct ploughing depth.

Side and depth adjustment of disc coulters

The coulters should be set to produce a clean, continuous cut. Under normal conditions, the cut should be made 10 - 20 mm outside the landside, depending on type and condition of soil. The coulters are set individually by loosening the nut on the beam and turning the coulter shank sideways. The disc coulters should never be set deeper in the ground than 1/3 of their diameter. Depth adjustment is carried out by fitting the coulter arm to different positions, **B**.





Make sure that all disc coulters on the plough are set to the same depth and are on an equal distance from the landsides.

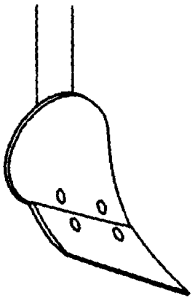
Be alert, there is always a risk for injuries when adjusting disc coulters and skimmers.

4.2 Adjustment / Setting of skimming devices

The basic purpose of the skimming devices is to cut off and turn down a corner of the surface layer with crop residues and weeds so that these are well buried. Properly used skimming devices give the best mechanical weed control. Four different types of skimming devices are available for this purpose.
All skimmers are equipped with shear bolt protection (Part no. 1652 03 76 00)

1. Skim coulter EG

Skim coulter **EG** is used to advantage when good weed control is important and when ploughing grasslands.
It works well in firmer soils, which produces a continuous furrow slice. The depth should not be set deeper than that a corner of the furrow slice is cut off and turned down. (Maximum 5 cm at the point).



When disc coulters are not mounted, the point of the skim coulter should be set to run about 10 - 20 mm outside the landside. When disc coulters are mounted, the skim coulters should run beside the disc coulters, with the points about 10 mm away from the disc.

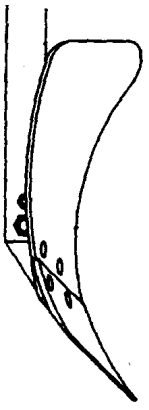
2. Skim coulter F

Recommended for skimming in cultivated soil. Works well together with fin coulter. The point of the **F**- skimmer should be set to cut approximately 10 - 20 mm outside the landside. The depth should be set so that the coulter share works in the uncultivated soil.

3. Manure skimmer EM

Recommended for deeper skimming and heavy trash. The convex mouldboard allows the trash to go on both sides of the skim shank. Works well without disc coulter.

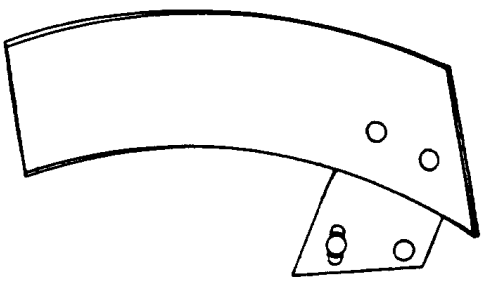
The point of the manure skimmer should be set to cut approximately 10 - 20 mm outside the landside.



4. Coverboard

The coverboard does not affect the diagonal clearance of the plough. As a result, it can be used to advantage in loose soils and where considerable quantities of straw are present, but not in sticky soils.

The operation of the coverboard is dependent on the depth and speed of ploughing. The front of the coverboard should always be in contact with the mouldboard shin, whereas the outer section can be adjusted vertically to suit the ploughing depth.
NOTE: The coverboard should only cut off a small corner of the furrow slice.



Basic setting of skimmers

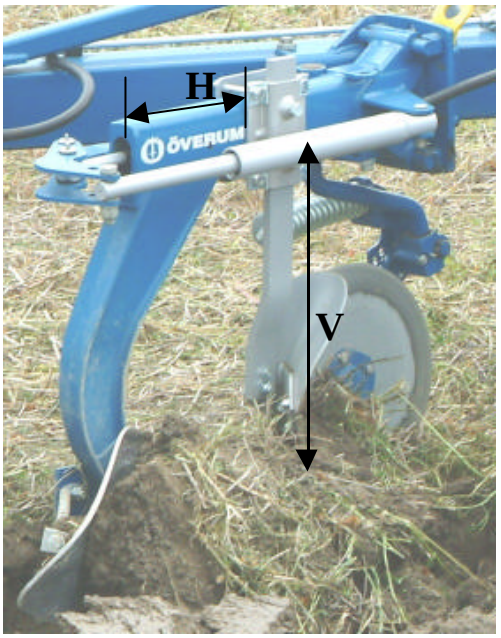
H-ploughs
The mounting position of the skimmer bracket on the beam is the same if the plough is equipped with fin coulters or disc coulters.

Horizontal measurement (H) = 300 mm

Adjust (**H**) to the correct measurement and make sure that the skimmer stalks are at right angle (90°) towards the beam when the bolts are tightened.

Depth adjustment (**V**) for 20 cm ploughing depth.

The distance **V** is measured between the beam and the skimmer share point and should be adjusted as follows:
Underbeam clearance 75 cm V = **540 mm**
Underbeam clearance 80 cm V = **620 mm**



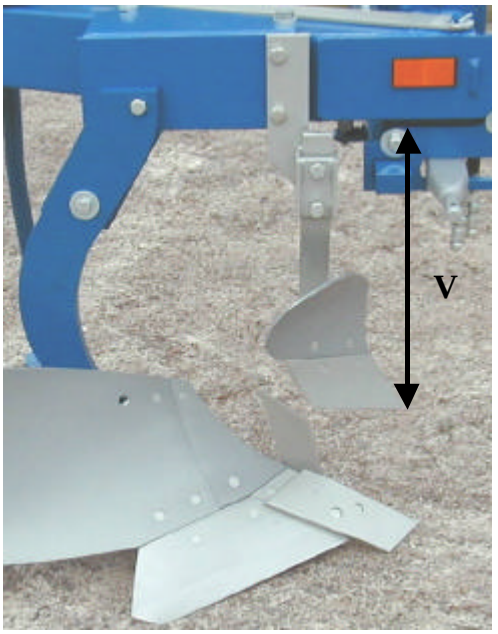
F-ploughs (with shear bolt)
The skimmer mounting brackets are to be mounted onto the beam housings. There are two different mounting brackets available in order to suit the two different under beam clearances
75 cm and 80 cm.

Depth adjustment (**V**) for 20 cm ploughing depth

The distance **V** is measured between the main frame and the skimmer share point and should be adjusted as follows:

Under beam clearance 75 cm V = **540 mm**
Under beam clearance 80 cm V = **610 mm**

The skimmer share points should be set to cut approximately 10-20 mm outside the landsides.



When the skimmers are adjusted, all the skimmer share points should be in a straight line.

ATTENTION!
Be alert, there is always a risk for injuries when adjusting disc coulters and skimmers

5. STONE TRIP SYSTEMS

5.1 Shear bolt protection type (F)

All **F** type ploughs are protected form damage by means of a shear bolt in each plough leg (part no. 1659 13 99 00).

Always ensure that the correct bolt is used for replacement.

Share bolt

5.2 Hydraulic, fully automatic type (H)

The tripping mechanism consists of a trip cylinder for each plough body. The cylinders are connected in series with a gas/oil accumulator. The accumulator is of piston type, precharged with nitrogen gas (N^2-gas). The trip cylinders, pressure hoses and the accumulator are pressurized with oil = working pressure as shown by the pressure gauge. When ploughing, the pressure of the nitrogen gas acts as a spring inside the accumulator giving the plough bodies fully automatic and individual tripping and resetting actions.

The accumulator is pre-charged to 9 Mpa N^2-gas pressure. The working pressure (oil pressure) on the pressure gauge is set according to the different soil conditions, so that the plough bodies not is released only for soil resistance. Use working pressure between: 10 - 14 MPa (min –max).

Never attempt to detach any of the hydraulic connections when the system is pressurised!

Changing of the working pressure (mechanically)

In extremely heavy and resistant soils, where consistently high working pressures (above 13 MPa) are required to prevent the plough bodies from tripping due to soil resistance, the trip resistance can be increased mechanically.

Adjustment: Connect the filling hose for the stone trip system as described in the preceding ADJUSTMENT OF OPERATING PRESSURE, and depressurize the system.
Remove the piston rod from inner hole and relocate it in to the outer hole, this increases the leverage, which results in a 20% increase of the resistance.

5.3 Adjustment of operating pressure

Connect the filling hose to a single-acting hydraulic outlet on the tractor.
Open the valve and adjust the pressure to the required value using the tractor hydraulics, close the valve and repositioning the hose in its original position.

NOTE: The plough must be connected to the tractor when adjusting the pressure and when depressurizing the system. Always ensure maximum cleanliness when working with the hydraulic system.

The plough must be mounted to the tractor when adjusting the operating pressure.

Never attempt to detach any of the hydraulic connections when the system is pressurised!

5.4 Checking the accumulator

The accumulator precharge pressure should be checked at regular intervals with the help of the pressure gauge.

Connect the filling hose as described in "ADJUSTMENT OF OPERATING PRESSURE", set the control lever on the tractor to the open return position and open the shut-off valve slightly. The working pressure will now drop slowly to a specific value and then fall rapidly to zero.
The pressure shown by the gauge at which the rapid drop occurs is the accumulator precharge pressure.

In a similar manner, the precharge pressure can be checked when filling. In this case, the reading will rise rapidly from 0 to a specific value, after which it will increase slowly. The pressure gauge reading at the end of the rapid rise in pressure is the accumulator precharge pressure.

SUMMARY: The pressure at which the gauge reading drops quickly when emptying the system and at which the reading stops rising quickly when filling the system, is the accumulator precharge pressure.

Should the pressure fall by more than 2 MPa (20 bar) below the precharge pressure specified on the accumulator, contact your local Overum dealer for advice.

NEVER TAMPER WITH THE GAS FILLING VALVE!

6. ADJUSTMENT OF WORKING WIDTH

6.1 Adjustment of working width mounted CT ploughs

The ploughs are assembled as standard on 16” working width.

1. Alternating the beam housing position

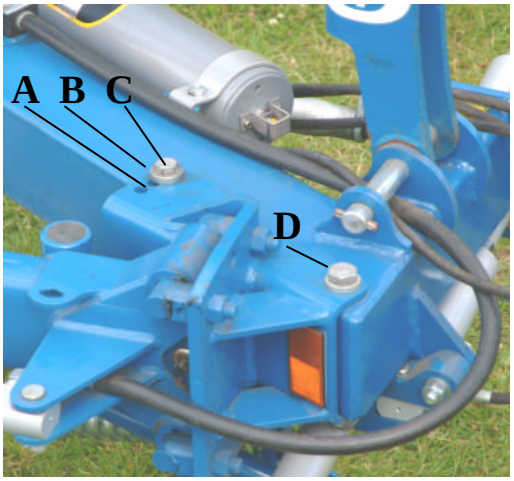
Each plough body component can swivel around the front bolt in the beam housing **D**. By placing rear bolt in one of the tree different positions **A**, **B or C** you will alter the working (furrow) width. The table below shows what working (furrow) widths you can achieve for the plough. When bolts have been mounted in the desired hole, tighten it up.

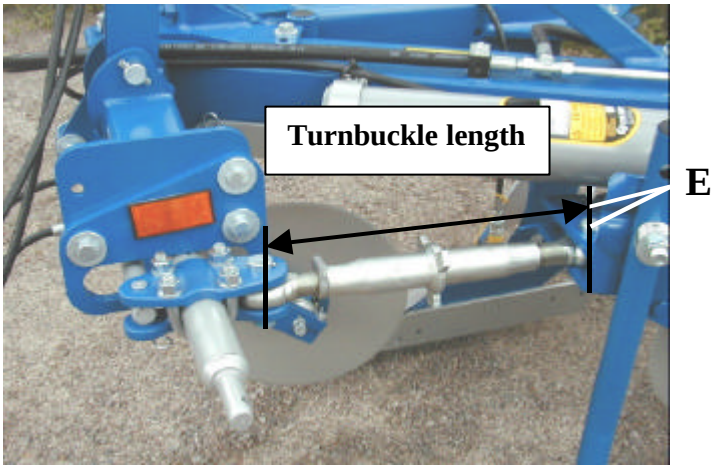
For tightening torques, see page 18.

NOTE! Remember to retighten the bolts after approx. 3 hours.

2. Adjust the cross shaft

The angle of the cross-shaft must be adjusted to correspond with the working width. This is done by using the turnbuckle on the left-hand side. Adjust the turnbuckle position before adjustment of the turnbuckle length, so that it is pointing straight backwards. The turn buckle can be mounted in two positions **E** in the rear frame bracket.



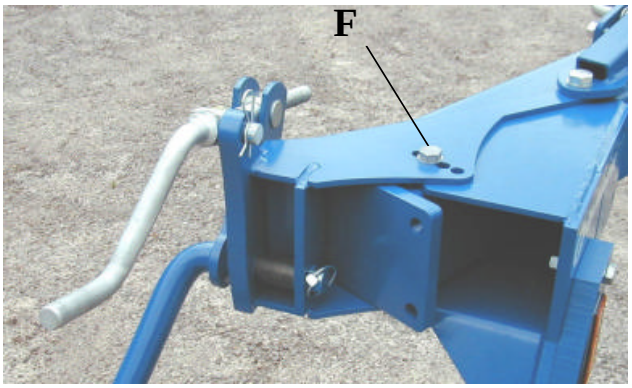


Furrow width

Point to point clearance H ploughs	**A**	**B**	**C**
900 mm	14” 350mm	16” 400mm	18” 450mm
Turnbuckle length	480mm	450mm	420mm
Point to point clearance F ploughs	**A**	**B**	**C**
900 mm	12” 300mm	14” 350mm	16” 400mm
Turnbuckle length F plough	795mm	765mm	735mm

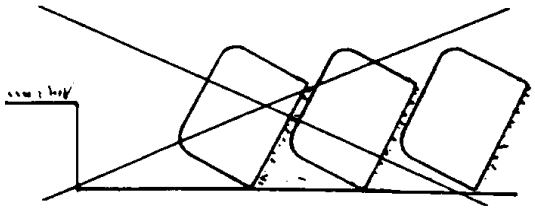
3. Land wheel

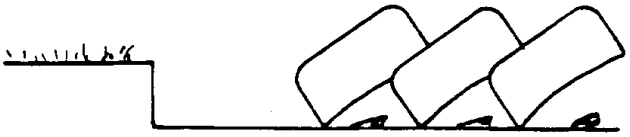
The angle of the land wheel must be adjusted so that it runs parallel with the landside of the last plough body. This is adjusted by altering the position of the wheel bracket, by placing rear bolt **F** in one of the three different positions, see adjusting furrow with of the beam housing above.



SELECT THE CORRECT FURROW WIDTH

The working width should be in relation to the ploughing depth, i.e. max depth = 2/3 of the working width.
This gives a sufficient weight to the furrow slices and ploughing will have a good finish.





Note! The plough is equipped as standard with shares for 16” ploughing. If ploughing is usually done with less than a 16” furrow width, the shares should be modified or replaced with narrower shares.
If the shares are too wide, the furrow slices is cut entirely off and can be pushed sideways and remain standing on edge.

7 CARE, MAINTENANCE and REPLACEMENT OF WEARING PARTS

To ensure the plough a long life and to avoid unnecessary wear, observe the following instructions.

7.1 Greasing of the beam hinge points

Position the plough with the bodies approx. 15 cm above the ground. Depressurize the system as described in **Adjustment of operating pressure**.

The hinge points will now expose as the beams drop down. Grease all the hinge points. Also grease all other lubricating points in the stone trip linkage while depressurized. Now pressurize the system, make sure that the beams return to their correct positions. Charge the system up to the correct operating pressure, close the valve and return the supply hose to its original position.

NOTE! Make sure that all beams return to their correct positions.
Lubricate the beam hinge points every 20 hours of work.

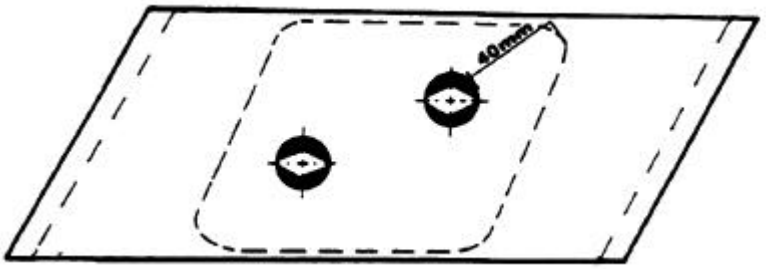
7.2 Winter storage

- Clean the plough properly
- Ensure that all wearing parts are in good condition, replace if necessary (so that the plough is ready for the next season)
- Tighten all bolts and nuts
- Check the pre-charge pressure in the accumulator
- Lubricate all lubrication points with grease and oil
- Protect the mouldboards and all the shiny details by lubricating them with either oil, under coat protection or acid-free grease
- The stone trip system should be stored in a pressurized condition so that all trip cylinders are fully extended and filled with oil.
- Check the hoses on the stone trip system (H)

7.3 Replacement of wearing parts

All wearing parts should be replaced in good time in order to protect more vital parts, which will save you money. Always use original spare parts, which will ensure that you get wearing parts with good quality and which fits the plough. This is also a condition for validity of the warranty.

Share points
The share points are reversible and can be worn from two sides. In order to avoid excessive wear on the point support, the point must not be worn further down than the measurement given below and it must be turned when the material thickness is worn down to 6 mm. This in order to give the point support and a longer life.



Shares
The share must be replaced before it has been worn down so far that the frog is damaged.

Mouldboards
When replacing mouldboards, ensure that the bolts are CROSS-TIGHTENED in order to avoid tension being built into the mouldboard, which may cause it to crack.

Mouldboard shin
When replacing the mouldboard shin follow the above-mentioned instruction for mouldboards.

Landsides
If the landsides are severely worn, the plough will break out towards the unploughed land, which gives a poorer turning of the furrow slice and the plough will pull heavier.

Disc coulter blades
If a good cutting function should be maintained, the coulter blade should be replaced when 1/3 of the original diameter is worn off.

Wear suitable gloves when replacing wearing parts, which can have sharp edges.

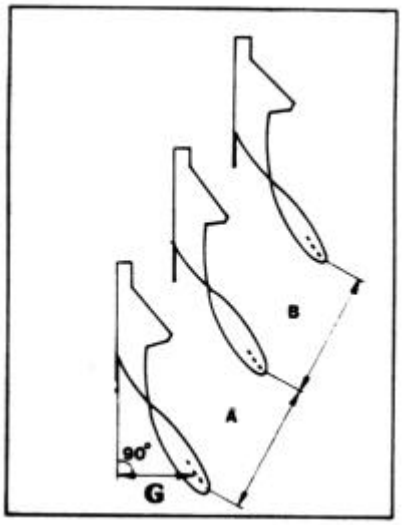
Never work under a raised plough without securing it with a stand or similar, to avoid accidental lowering of the plough.
Never rely solely on the tractor hydraulic system.

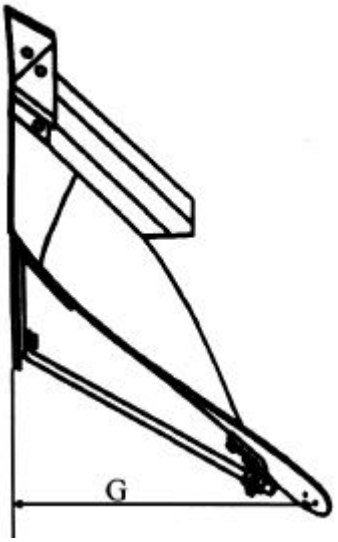
7.4 Parallelism and G-measurement of the mouldboards

- Check the working angle of the mouldboard. The normal position is measured on the rear plough body between the extended inside line of the landside, horizontally out against the outermost hole in the mouldboard, see measurement **G**. Adjust the mouldboard stay if necessary.

XU	Mouldboard normal measurement G	= 625 mm
XL	Mouldboard normal measurement G	= 580 mm
UC	Mouldboard normal measurement G	= 550 mm
XS	Measurement to the outer end of the bottom slat	= 635 mm
	Measurement to the outer end of the top slat	= 505 mm

- Measure from the now adjusted rear, mouldboard forward and adjust the mouldboard stays if necessary, to the point to point clearance 900 or 1000 mm **A**= **B.**





Tightening the bolts

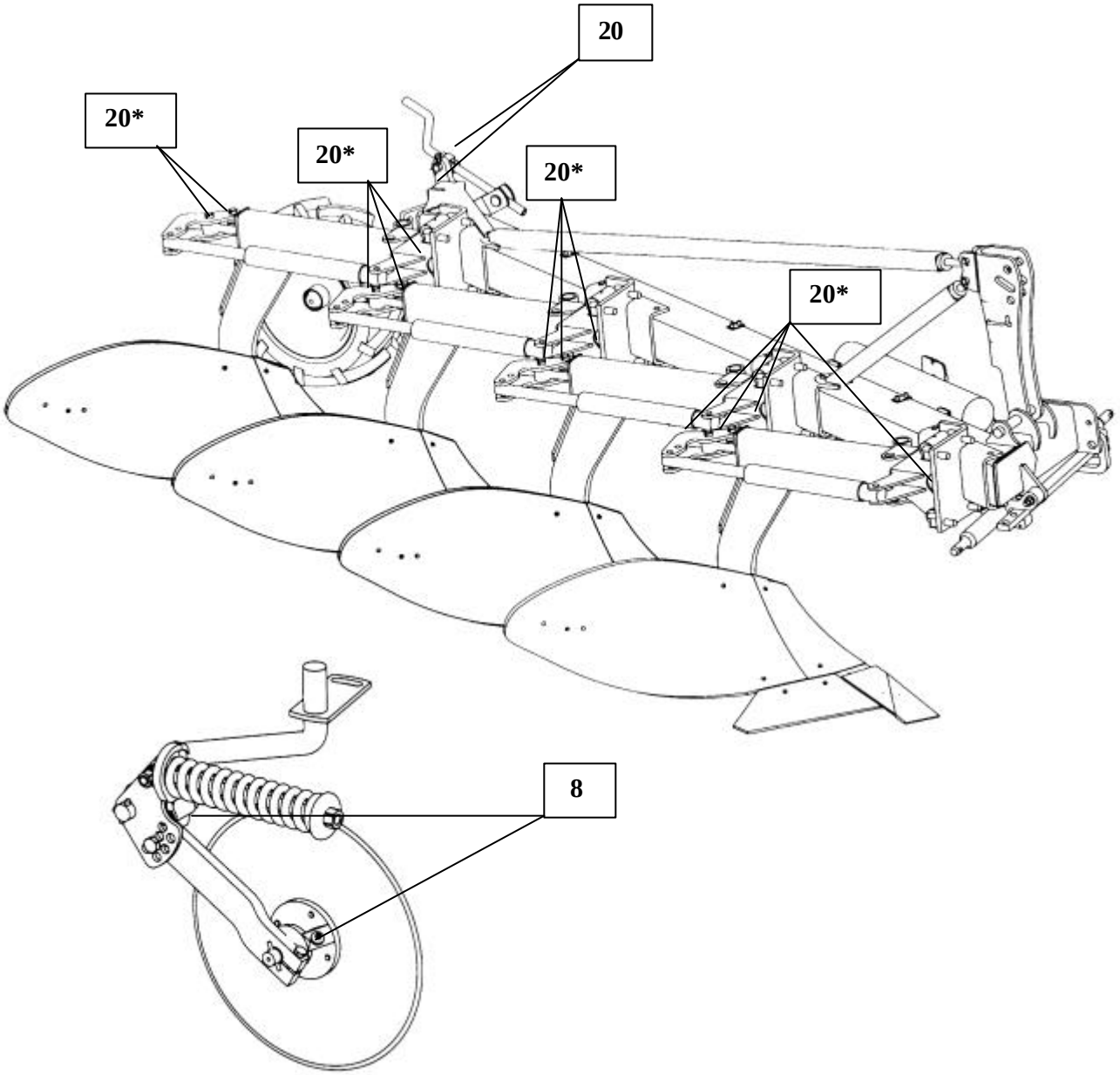
Bolts of quality 8.8, 10.9 and 12.9 are used on the ploughs. When replacing these bolts, ensure that the same quality bolts and nuts are used. The following tightening torque should be used for the different bolts:

Tightening torques lubricated screws

Quality	**Size**	**Torque** Nm	kpm
8.8	M12	70 Nm	7,0 kpm
8.8	M16	169 Nm	16,9 kpm
8.8	M18	237 Nm	23,7 kpm
8.8	M20	331 Nm	33,1 kpm
8.8	M24	572 Nm	57,2 kpm
8.8	M30	1127 Nm	112,7 kpm
8.8	M30*	1195 Nm	119,5 kpm
10.9	M12	98 Nm	9,8 kpm
10.9	M16	238 Nm	23,8 kpm
10.9	M20	465 Nm	46,5 kpm
10.9	M24	804 Nm	80,4 kpm
10.9	M30	1582 Nm	158,2 kpm
12.9	M12*	124 Nm	12,4 kpm
12.9	M16	286 Nm	28,6 kpm
12.9	M20	558 Nm	55,8 kpm
12.9	M24	963 Nm	96,3 kpm

* fine threaded screws

7.5 Lubrication chart



8, 20 = Lubrication interval hours

*** = Use grease that contains Molybdendisulfid**

8 EXTRA EQUIPMENT

Hydraulic cylinder for adjusting the width of the first furrow

Hydraulic adjustment of the first furrow is useful when different soil types and lateral slopes occur in the field, which must be compensated for.

Spanish type of cross shaft

The plough can also be equipped with a pivoting Spanish cross shaft.

9. USEFUL ADVICE

When you have completed a careful and accurate adjustment of your plough so that it works well and gives a good ploughing result, make a note of the following important measurements.

Length of top link _____

Length of right-hand lift rod _____

Överums Bruk AB , SE-590 96 Överum
Telephone: Int+46 493 36100
Telefax: Int+46 493 30800
Web adress http://www.overums-bruk.se
E-mail: sales@overums-bruk.se

1656 80 10 41 **01.2004**