



REVERSIBLE PLOUGHS TYPE **BV** **CV**

INSTRUCTION MANUAL



2 – 5 Furrow

ÖVERUM

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Please read this instruction carefully. If you follow the instructions given, you can expect good results and a fair repayment from the plough of your choice.

Correctly adjusted, operated and maintained, your plough will meet all reasonable demands made on it, and give you reliable service for years to come. Should you need further instructions, not included in the manual, or require the help of experienced service personnel, we advise you to get in touch with any of our dealers, who also stock spare parts.

It has always been the ambition of AB ÖVERUMS BRUK to constantly improve its products. Consequently, no specification is final and binding and we reserve the right to make alterations to new machines without previous notice.



AB Överums Bruk
S-590 96 Överum, Sweden
Telephone +46(0)493 304 00

Identification of plough

Type designation

- CV 298, 398, 498, 598 H = fully mounted reversible ploughs with hydraulic safety trip mechanism, type H
- BV 297, 397, 497, 597 F = fully mounted reversible ploughs fixed beam, type F
- BV 3108, 4108,
- CV 598 F, 5108 F

Safety trip mechanism **H** = Hydraulic
F = Fixed

Frame height **7** = 70 cm
8 = 75 cm

Body spacing **9** = 90 cm
10 = 100 cm

No. of plough bodies

Reversible plough = **V**

Frame type = **B** or **C**

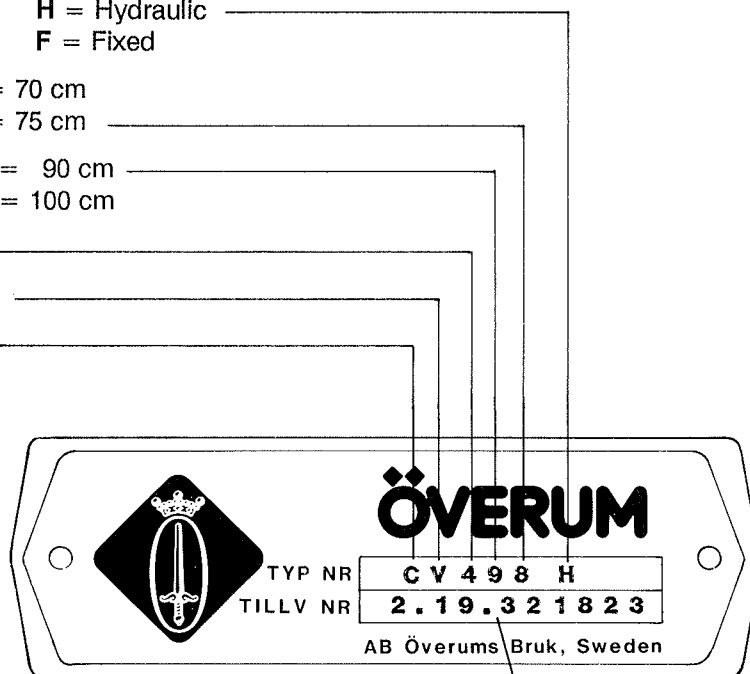


Fig. 1

Serial No.

Complete the sign below with the identification number / serial number of your plough:

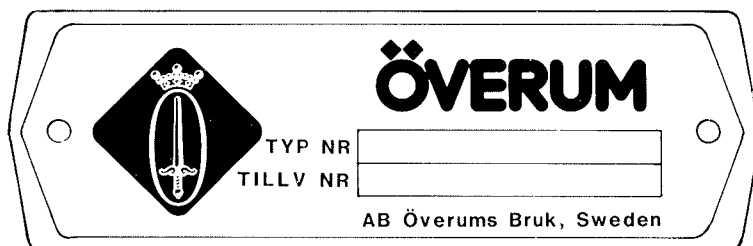


Fig. 2

Description of function

The plough is designed only for alternate ploughing with right-hand and left-hand bodies, and for transportation between the farmyard and fields. Type H- type ploughs are equipped with a safety trip mechanism and can be used in all types of soil. The F- type ploughs, which are equipped with shearbolt protection are designed for use only in ground free of stones.

The function of the reversing mechanism are only to alternate the right-hand and left-hand bodies into the working position.

Reversing is carried out by means of a double-acting hydraulic cylinder.

The plough is attached to the rear, three-point linkage of the tractor with the hydraulic system connected to the appropriate hydraulic outlets.

Main components:

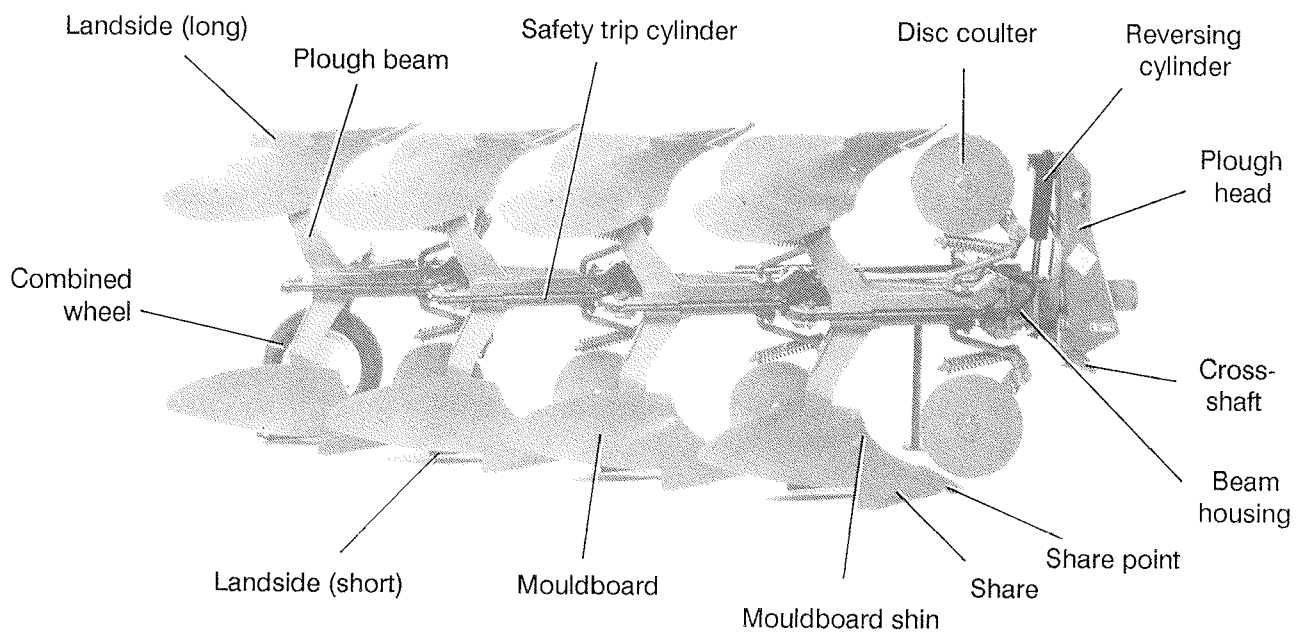


Fig. 3 CV 398 H

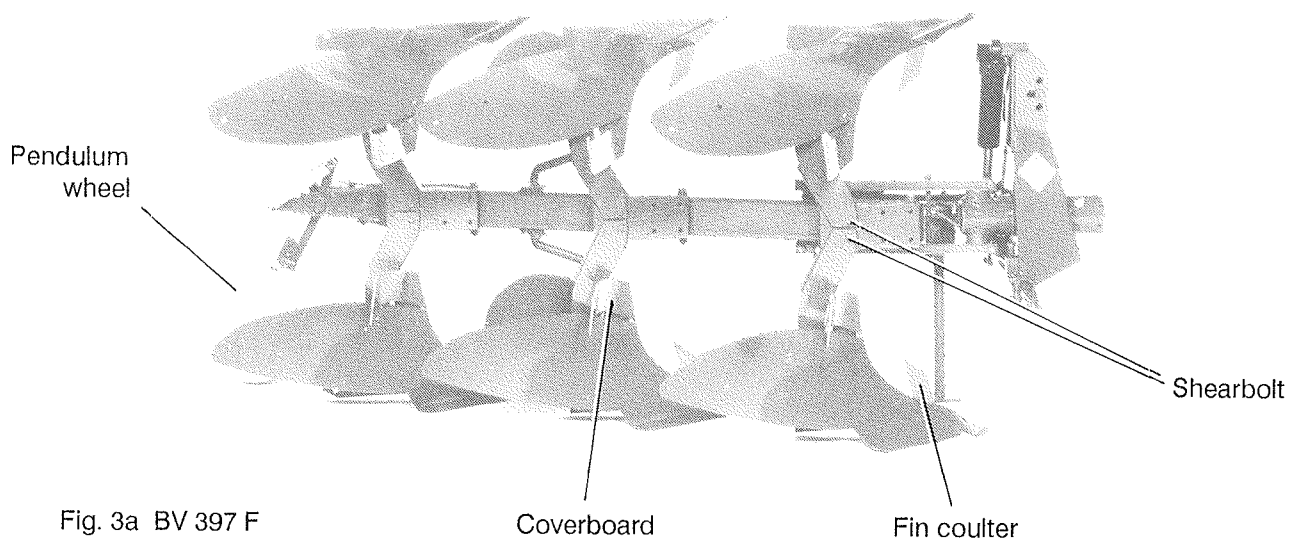
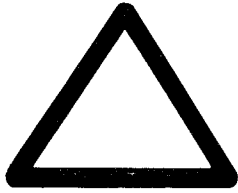


Fig. 3a BV 397 F

GENERAL SAFETY PRECAUTIONS



This chapter is a summary of the rules which must always be followed when working with the plough. 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.

- § Driver competency: The operator must be well familiar with the principles of operation of the machine and be capable of using it in a safe manner.
- § Make sure that the plough is securely locked to the three-point hitch by means of proper locking pins.
- § Lock the stabilizing links on the tractor when transporting the plough on public roads.
- § The tractor brake pedals must always be linked when transporting the plough on public roads.
- § All hydraulic connections between the tractor and plough must be made in accordance with the instructions given.
- § Additional weights or other attachments must not be fitted to the plough.
- § Ensure that no person is on, underneath or in close proximity to the plough during transport or ploughing, or when reversing the plough.
- § Always raise the plough before reversing is carried out.
- § Never leave the tractor with the plough in its raised position.
- § Always use the support leg of the plough when the plough is parked.
- § Never attempt to clean or adjust the plough when it is in use.
- § Never work under raised plough unless securely locked, with mechanical support, against sudden lowering. Never rely on the tractor's hydraulic only.
- § Follow the operating instructions carefully.
- § Adapt ploughing speed to suit the prevailing ground conditions and size of tractor.
DRIVE WITH CARE.
- § Never attempt to loosen any hydraulic connection when the hydraulic stone trip system is under pressure.

Checking the tractor prior to ploughing

Function of three-point hitch

The design of the three-point linkage is based on the principle that the tractor and plough should operate as a unit. This is a function of the relative between the lower links and the top link settings.

These components must therefore be maintained in a condition which enables them to be easily adjusted.

The lower link ball joints must be adjusted to the same height before mounting the plough onto the tractor. Make sure that the tractors lower links can be lowered about 35 cm below the cross-shaft of the plough.

Hydraulics

The following external hydraulic outlets are required: 1 double-acting or 1 single-acting plus a return input.

Familiarize yourself with the hydraulic system of the tractor and study its function.

Check the level of the hydraulic fluid, in the hydraulic system of the tractor.

Wheel adjustment - Track width

For ploughing purposes, track width is always measured between the inside walls of the tractor tyres, see fig 4.

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 5 cm wider.

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

The recommended track width:

Type of plough	Track width in mm
CV 98 H	1300 – 1500
BV 97 F	1200 – 1400
BV/CV 108 F	1200 – 1500

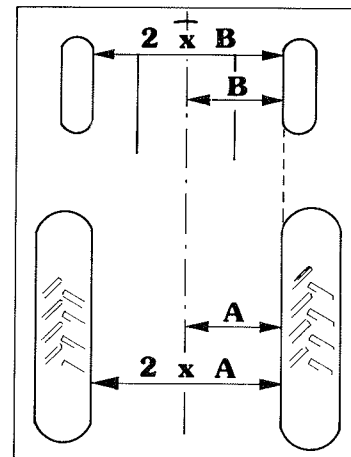


Fig. 4

Tyre 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 traction and directional stability.

Preparation of the plough

Three wrenches, a spare parts book and this instruction manual are supplied with the plough. Check that all this was received.

Make sure that the hydraulic couplings on the plough are of same type as those on the tractor. If not, replace with the correct type, to suit your tractor.

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

Cross-shafts

Cross-shafts are divided into different categories:

Cat. 2 – 28 mm cross-shaft pins

Cat. 2L – 28 mm cross-shaft pins

Cat. 3 – 36 mm cross-shaft pins

The length (category) of the cross-shaft is determined by the spacing of the lower links on the rear axle of the tractor. To achieve an even stable width of the front furrow the lower links should point somewhat towards the tractor centre line, see fig 5.

Cat.	No.	B	C
2	1658 60 85 00	825 mm	28Ø
2L	1658 96 81 00	965 mm	28Ø
3	1658 60 86 00	965 mm	36Ø

The cross-shaft must be fitted centrally to the plough head and secured by the locking screws D, see fig 5.

Measure the inside wall track width A and adjust the set screws A and B according to fig 12, page 12 - 13.

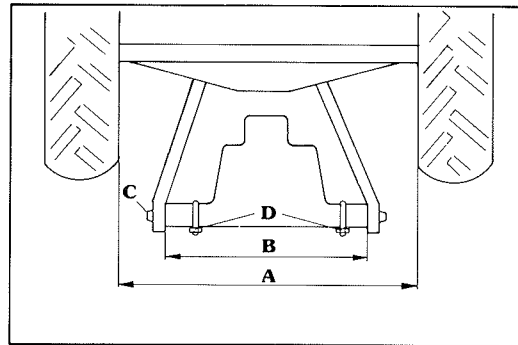


Fig. 5

Mounting the plough onto the tractor

Check that the lower links are at same height and can be lowered about 35 cm below the line of the plough cross-shaft, before the plough is mounted onto the tractor. Secure the lower links to the cross-shaft with sufficient locking pins.

Connect the top link securely to the tractor and plough.

Advice: Connect the top link in the tractor's upper position, that reduces the load on the hydraulic system.

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.

Connection of hydraulics

On tractor equipped with double-acting hydraulic outlets, it is not important which way the hose connections are made. However, it is advisable to arrange the connections so that the hydraulic outlet control lever can be moved in the most convenient direction. The lever is operated in the same direction for each reversal operation and is held in that position until the operation has been completed.

If the tractor is only equipped with a single-acting outlet, the reversing cylinder's pressure hose (rear hose marked P on the valve block) must be connected to the outlet. The return hose should be connected, to a hydraulic oil input. Always keep the hydraulic fluid and hydraulic connections clean.

Checking the plough

- check the tightness of all nuts and bolts (for torques see page 28)
- grease all lubricating points
- check tyre pressure, 200 kpa = 2,0 kp/cm²
- check that the working width is correctly set, (see page 26).

● 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 which, however, can also be removed by using a scraper or 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 coulters and skim coulters settings and adjust them so that the settings are identical.
- raise the plough, fold up the support leg and check the function of the reversing mechanism, see page 8.
- **Always remember to retighten all nuts and bolts after about 3 hours of use.**

Safety and adjust trip device:, (type H)

Check the tripping pressure of the stone trip system. Start out with a low setting and increase slowly until required pressure has been achieved. Recommended operating pressures, see page 22.

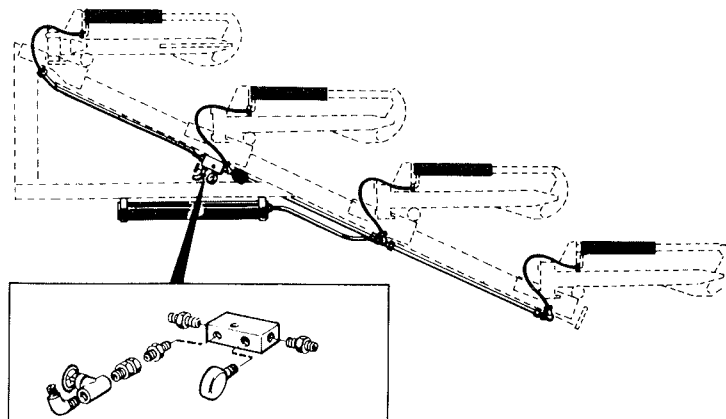


Fig. 6

Reversing mechanism

Function

To provide reversing action, the double-acting cylinder carries out two strokes, the oil flow being reversed automatically when top-dead-centre is reached. During the first half of the operation, the piston exerts a pulling action which is automatically converted into a pushing action during the second half of the stroke.

NOTE. *Hold the lever in the operating position throughout the entire reversing operation until the plough has come to rest against the vertical adjustment screw.*

The plough is locked hydraulically in this position.

This locking action is not interrupted until the lever is again shifted to the operating position. Increase and maintain tractor idling speed throughout the reversing operation to get the correct reversing speed.

The illustration shows the plough connected to a double-acting hydraulic spool valve, the other hose connections are for optional equipment.

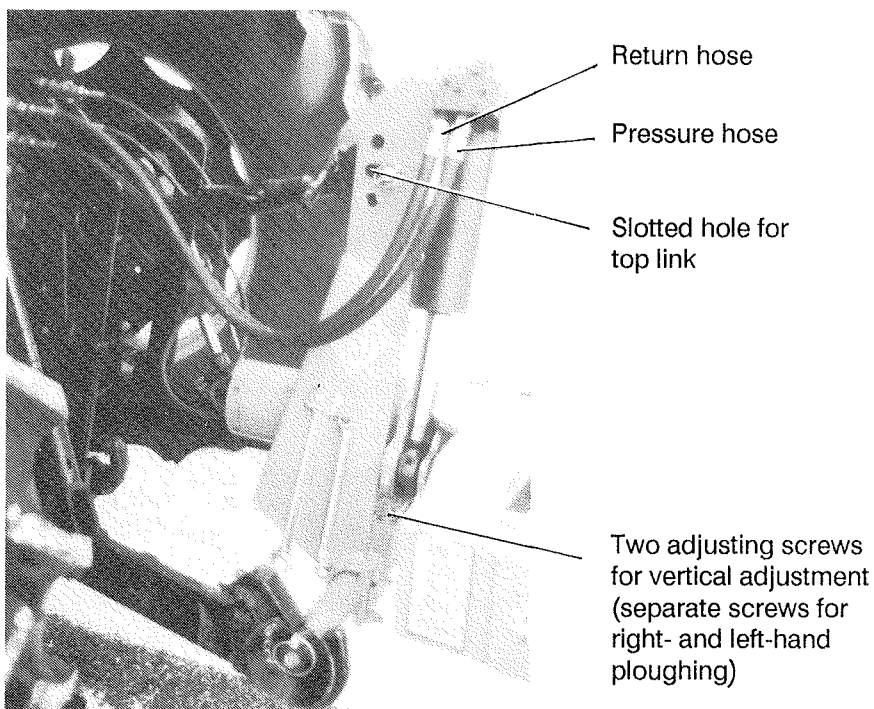


Fig. 7

Functions: (ploughs equipped with alignment cylinder)

The reversing mechanism consists of two double-acting cylinders which via a separate valve block are connected to the tractor's double-acting outlet.

Function valve block

The reversing action is controlled via a valve block **A** (Fig 8) which is steered by the pressure and flow of the hydraulic fluid. First, the plough is centered by the alignment cylinder **B**, and this is followed by the starting up of reversing cylinder **C**. The flow of fluid changes direction when the reversing process has reached top dead centre. The plough is then lowered against the vertical adjustment bolt, from where it is swung out to its set working position by cylinder **B**. The valve block incorporates a check valve which locks the cylinders on completion of the reversing cycle. The control lever in the tractor is always moved in the same direction to reverse the plough.

NOTE. *The lever must be held in the operating position during the entire reversing process until the plough has come to rest against the vertical adjustment screw and then been swung into its working position.*

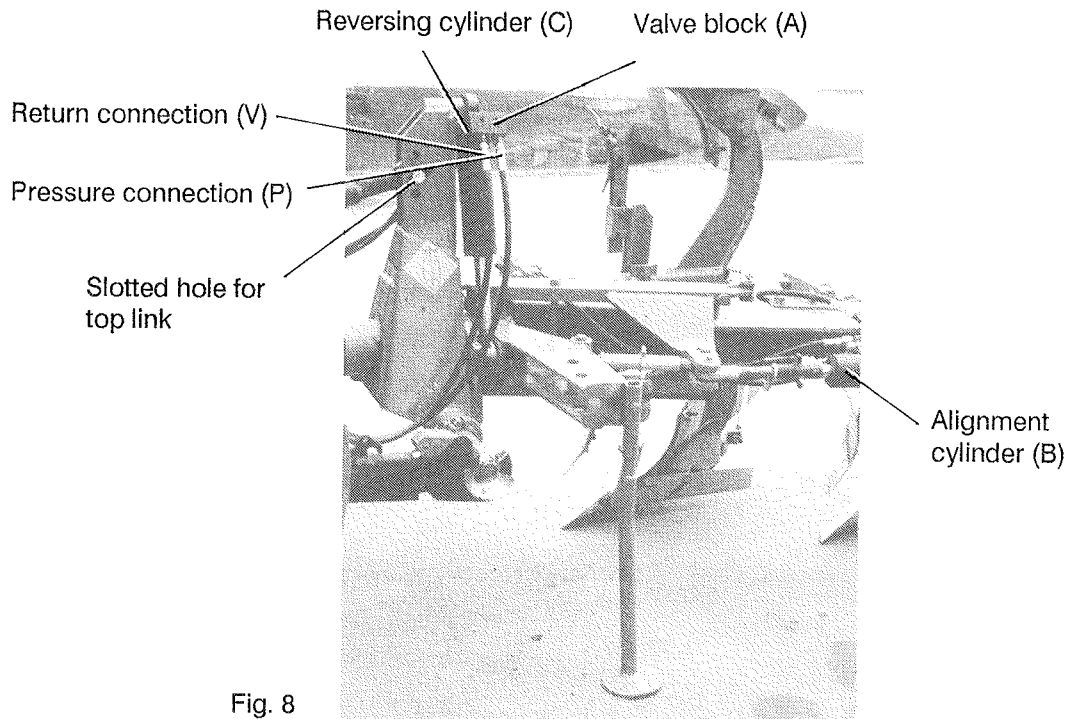


Fig. 8

Troubleshooting reversing mechanism

Fault	Cause	Correcte measure
1. Ploughs do not reverse.	A. Insufficient fluid in hydraulic system of tractor.	A. Top up with fluid. Check hydraulic pressure.
	B. Hydraulic hose connections.	B. Check that the quick-couplings are of correct type to suit the tractor.
2. Plough reverses once but not when a further immediate attempt is made.	C. Hydraulic fluid too cold, too sluggish for automatic change-over valve to operate.	C. Wait approx. 15 seconds between reversals.
3. Plough does half reversal and stops.	D. Filter (V) blocked.	D. Disconnect hoses from cylinder connections. Disconnect nipples and clean filter.
	E. Seizure in turning shaft.	E. Disconnect reversing cylinder, lubricate the turning shaft and check that there are no mechanical faults.
	F. Insufficient fluid.	F. Run the tractor at a higher idling speed. Check flow of fluid.
	G. Acute lean angle.	G. Check that lifting links are of same length. Do not operate reversing when uphill.
4. Plough has operated satisfactorily, but suddenly fails to function.	H. Insufficient hydraulic fluid in tractor.	H. As per item 1 above.
	I. Hydraulic hose connections. Dirt in pilot valve.	I. As per item 1 above. Dismantled for cleaning. Make sure that the valve is reassebled in the correct order.
5. Oil leakage.	J. Gaskets or hose connections leaking.	J. Tighten. Or replace seals/gaskets.

Basic settings

The basic settings can be started when the desired ploughing depth has been reached and the tractor wheels (right or left-hand pair) are running in a furrow at the same depth.

1. Vertical adjustment

The tractor lower links must be at the same height to give the correct vertical angle. The vertical setting can be checked by observing the plough from the rear. The beams should be at right angles (90°) to the ground.

The vertical adjustment of the right-hand bodies is altered with the adjustment screw on the left side of the plough, and vice-versa.

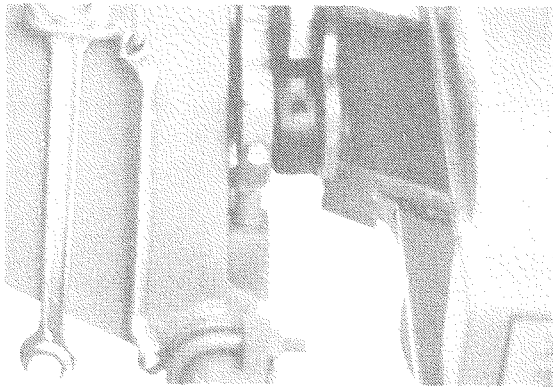


Fig. 9

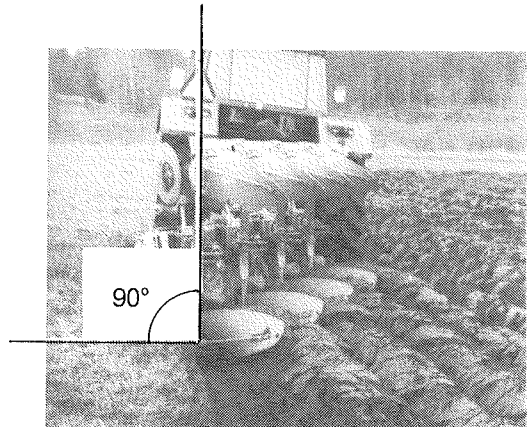


Fig. 10

2. Horizontal adjustment

Fit the top link so that it is somewhat lower on the tractor than on the plough in working position. The top link can be mounted in three positions on the plough. The slotted centre hole can be used with tractors equipped with lower link sensing hydraulic system, and for use with large ploughs. For two and three furrow ploughs in hard conditions the top link should be attached in a fixed position to prevent the rear plough body work too shallow.

Adjust the length of the top link so that the depth of ploughing is the same for the first and last bodies. The frame will now run parallel to the ground.

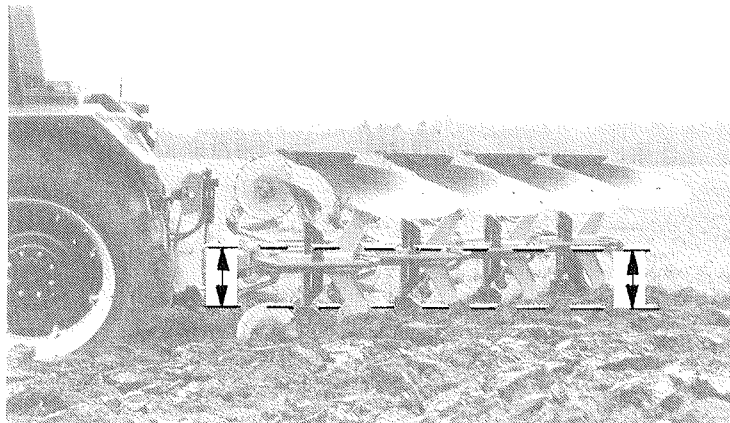


Fig. 11

3. First furrow width

The cross shaft must be mounted centrally to the plough head. Measure the inside of the tractor wheels, tyre wall. Also check what furrow width setting the plough has. Adjustment is done with the two side adjusting screws **A** and **B**, (see Fig 12 for resp. plough type).

CV- plough 2 - 4 furrow

Rule: The plough head should be central behind the tractor. If not, adjust the length of turnbuckle **b**.
Shorten **B** = narrower first furrow. Lengthen **B** = wider first furrow.

Drive forward and check the result. Make sure that the stabilizers are free. If the plough head is central behind the tractor but the first furrow width is not correct, adjust with setscrew **A**.

CV- ploughs with alignment cylinder 5 furrow

Set the turnbuckle screw **A** as per dimension **A** in the table. Measure from centre to centre of the pins. The distance **B** is always measured to the center of the outermost hole in the bracket for the alignment cylinder, see fig 12b - 12d.

When adjusting the turnbuckle screw on the alignment cylinder, the cylinder must not be under pressure, this to allow the plunger to rotate inside the cylinder. When check-measuring **B** in the table, cylinder must be fully retracted. The alignment cylinder is mounted in the inner hole as standard, if the turnbuckle can't be shortened to the right length, mount the cylinder in the outer hole.

Lengthen **A** and shorten **B** = narrower first furrow. Shorten **A** and lengthen **B** = wider first furrow

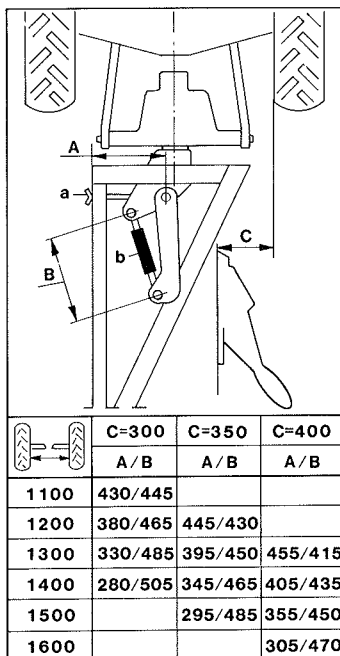


Fig. 12 CV 298, 398, 498 H

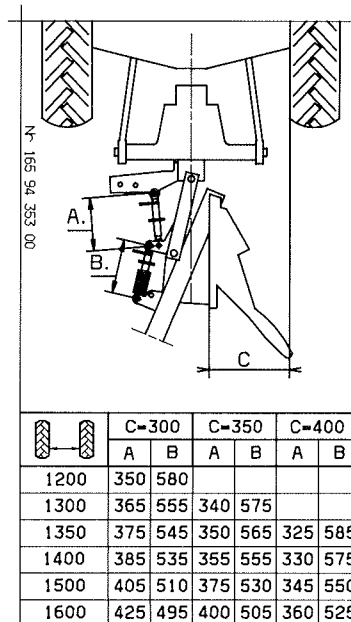


Fig. 12a CV 598 H

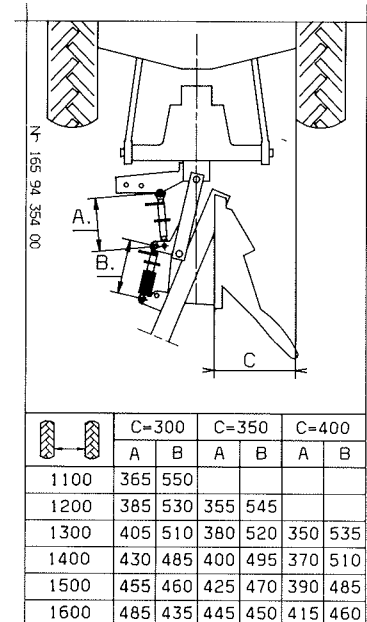


Fig. 12b CV 598 F

BV- plough

Prerequisite: The cross-shaft must be positioned centrally in the plough head.

Shorten **B** = narrower first furrow.

Lengthen **B** = wider first furrow.

Drive forward and check the result. Make sure that the stabilizers are free. If the plough head is central behind the tractor but the first furrow width is not corrected, adjust with setscrew A and B.

Lengthen **A** and shorten **B** = narrower first furrow

Shorten **A** and lengthen **B** = wider first furrow

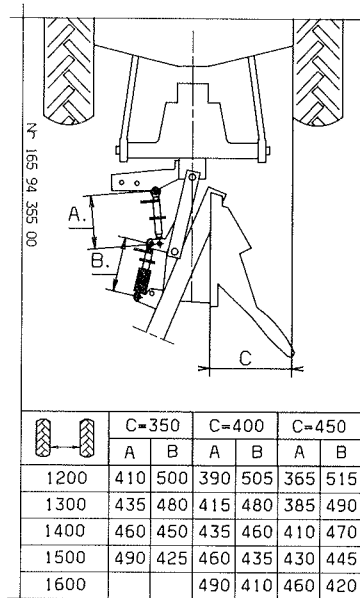


Fig. 12c CV 5108 F

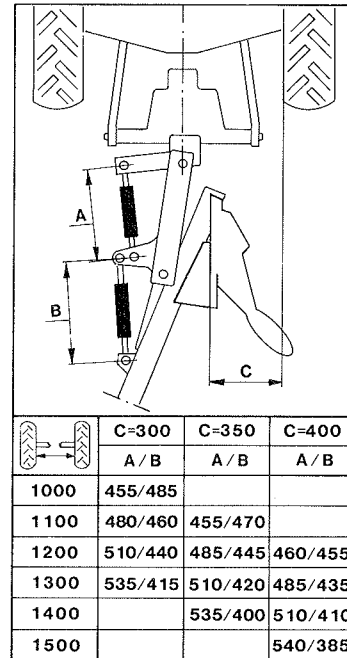


Fig.12d BV 297, 397 (2 + 1) F

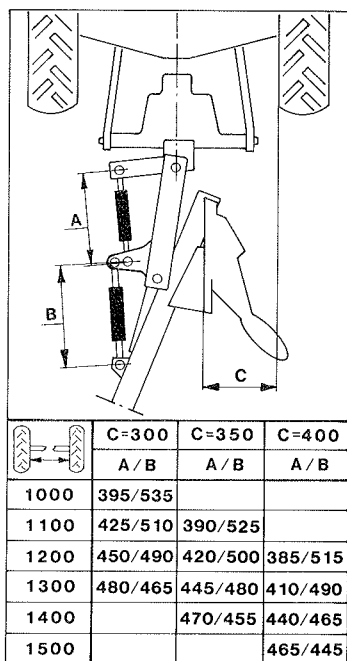


Fig. 12e BV 397, 497, 597, (4 + 1) F.

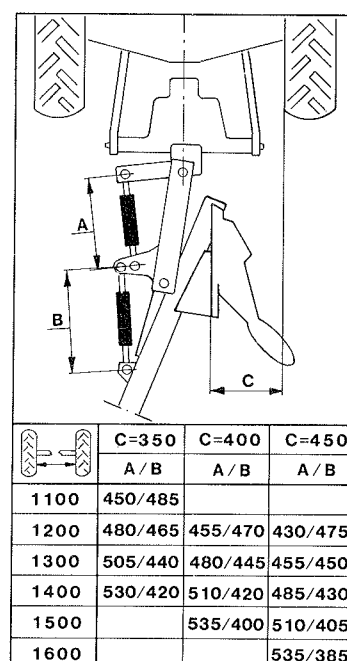


Fig. 12f BV 3108, 4108 (3 + 1) F.

4. Ploughing depth

The drawbar pull of the tractor is improved by using the hydraulic draught control to determine the ploughing depth. Where soil conditions vary, the operator will be required to use the control lever to ensure that the plough maintains a uniform depth.

Use of a depth wheel on the plough will give a more uniform ploughing depth. Consequently, depth wheels are recommended, particularly for 3- to 5-furrow ploughs. The best method is to use a combination of depth wheel and draught control, which gives good weight transfer in the hard parts and allows the depth wheel to limit the depth of the plough, in the light parts.

To provide good impulses for the draught control system of the tractor, the depth wheel is mounted at the extreme rear of the plough.

Screws **C** and **D** are used to set the individual depth for each side.

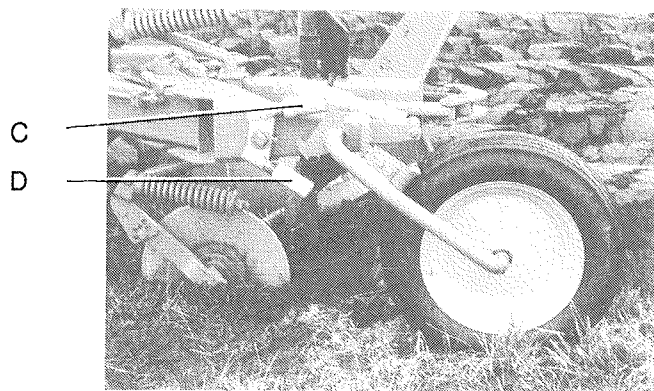


Fig. 13

5. Vertical adjustment, second side

Vertical adjustment for the other side of the plough is checked as per item 1 above, during the 2nd pass.



Make sure that no one is in the immediate vicinity of the plough when reversing is carried out. Never attempt to adjust any of the settings while the plough is in use.

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 coulters should be used. This is to protect the coulters and to ensure that they do not act like a support wheel, bearing up the plough which would make it difficult to maintain a correct ploughing depth.

Side 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 mouldboard shin, depending on type and condition of soil. The left-hand and right-hand coulters are set individually by undoing the nut on bracket **B** and turning the coulters shank sideways, Fig 15.

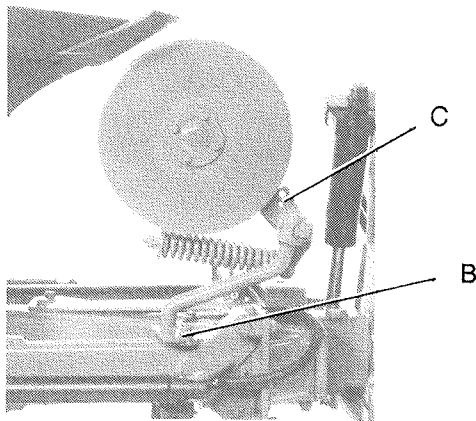


Fig. 15 Spring loaded type

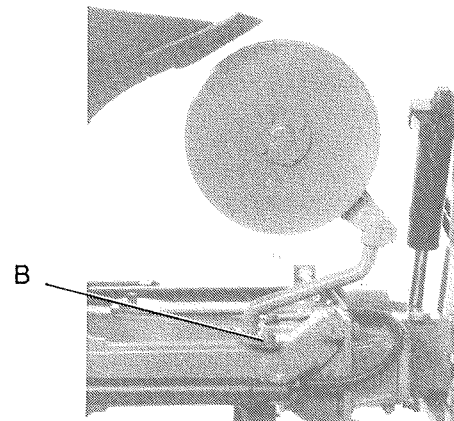


Fig. 15a Fixed

Depth adjustment of disc coulters

To maintain a favourable angle of cut, The disc coulters should never be set in the ground to a depth of more than one third of their diameter.

Depth adjustment is carried out by fitting the coulters arm to different positions, using the series of holes marked **C** in Fig 15 - 16 which applies for both fixed and spring loaded disc coulters.

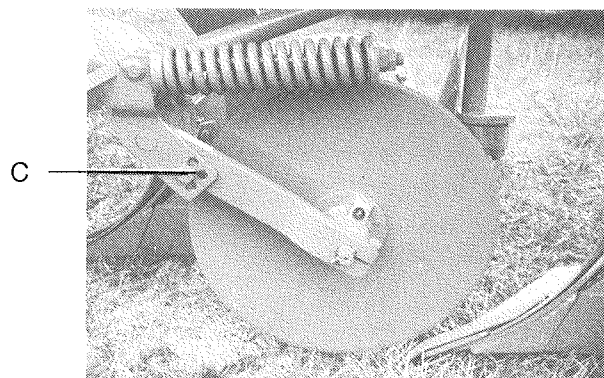


Fig. 16

Make sure that all disc coulters on the plough are set at the same depth and are equidistant from the mouldboard shin on both left and right-hand sides.

Adjustment of skimming devices

The basic purpose of the skimming devices is to cut off and turn down a corner of the surface layer of crop residues and weeds so that these are well buried. Properly used skimming devices gives good mechanical weed control. Four different types of skimming device are used for this purpose.

1. Skim coultter E

Skim coulters are used to advantage when good weed coultter is important and when ploughing grasslands. It works well in firmer soils which produce a continuous furrow slice.

The depth should not be set deeper than a corner of the furrow slice is cut off and turned down. (Maximum 5 cm at the point).

When disc coulters are not fitted, the point of the skim coultter should be set to run about 10 - 20 mm outside the mouldboard shin. When disc coulters are mounted, the skim coultters should run beside the disc coultters, with the points about 10–20 mm from the disc.

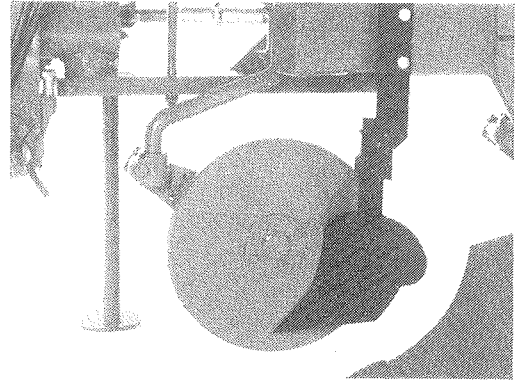


Fig. 17

2. Skim coultter F

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

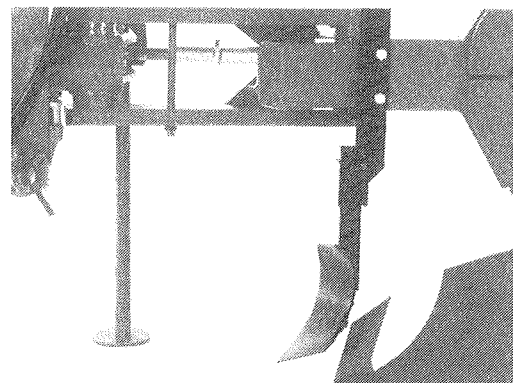


Fig. 18

3. Manure skimmer M

Recommended for deeper skimming. The convex mouldboard allows the trash go to both sides of the skimmer shank. Works well without disc coultters.

The point of the manure skim coultter should be set to cut approx. 10–20 mm outside the mouldboard shin.

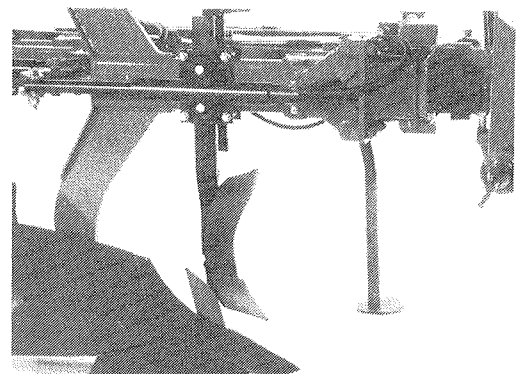


Fig. 19

4. Trash board

The trash board 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 trashboard is dependent on the depth and speed of ploughing. The front of the trashboard should always be in contact with the mouldboard shin, whereas the outer section can be adjusted vertically to suit the depth of ploughing.

NOTE. The trashboard should cut only a small corner of the furrow slice.

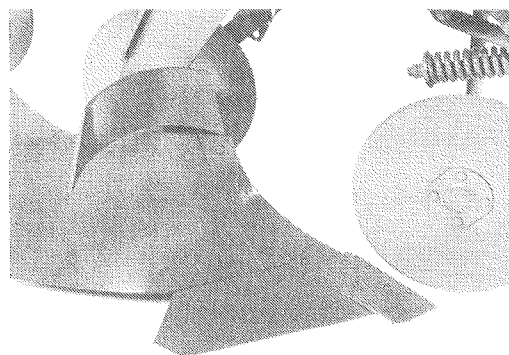


Fig. 20

MAKE SURE THAT ALL SKIMMING DEVICES ARE ADJUSTED TO SAME SETTINGS.

Good ploughing results are greatly dependent on the disc-coulter and skimmer settings. Due to differences in soil and other ploughing conditions, it is possible to adjust the disc coulters and skimmer settings ex-works.

Use of reversible ploughs in brief

Plan ploughing work prior to commencement, taking into account the special properties of a reversible plough:

- no opening or finish furrows
- less headland traffic
- possibility of always turning the furrow slices upward on sloping ground
- drying problems: lay the furrows to permit drainage
- drying-out problems: lay the furrows to ensure moisture retention
- ploughing immediately after harvesting, even if this carried out in separate stages

Marking of headlands

Always mark the headlands, working inwards towards the field with the rearmost body, i.e. with an extended top link and the front end of the plough raised.

In good **regular** fields, headland marking need only be carried out at the short sides.

In **irregular** fields or fields surrounded by ditches, hedges or other obstacles, the headlands are marked out all around.

Headland width

Headlands should always be of an adequate width to permit the plough to be raised completely out of the ground before starting to turn the tractor. Depending on the size of tractor and plough, and the method of turning on the headland (reversing or making a 180° turn), the headland width should be between 10 - 20 metres.

Ploughing

Having commenced ploughing at the edge of the field or at the side headland (if marked out all round), the first furrow slice should be laid inwards using the same plough setting as when marking out the headlands. Ploughing proper begins with the second run in which the first furrow slice is reversed, this ploughing the soil completely. On the third run, the tractor will be running in a proper furrow and the correct basic settings should be adjusted as described on page 11.

INSERTATION AND RAISING OF THE PLOUGH SHOULD BE CARRIED OUT AT THE MARKING FURROW.

An even edge will at the marking furrow facilitate subsequent ploughing of the headlands and eliminate double ploughing.

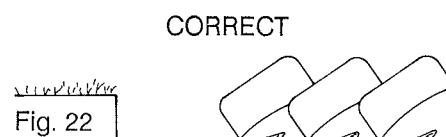
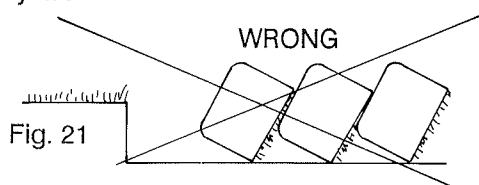
DRIVE STRAIGHT!

Crooked furrows impose high stresses on both tractor and plough, while simultaneously giving less satisfactory results due too poor matching. Consequently, the furrows should be straightened as quickly as possible (breaking off if necessary) so that the ridges are straight and long as possible.

ALWAYS USE THE PLOUGH BODIES ALTERNATELY so as to equalize wear on the right-hand and left-hand sides; otherwise, it will be impossible to produce uniform furrow slices on both sides.

SELECT THE CORRECT FURROW WIDTH: 12", 14" or 16"

The forrow or working width must always be propotional to the ploughing depth, i.e. the maximum depth should be about 2/3 rds of the furrow width to ensure that the slice are correctly weighted and correctly laid.



Using a reversible plough

Road transport:

Always remember that a relatively considerable weights is resting on the rear axle of the tractor. To ensure that the tractor retains its steering properties, fit front ballast weights as required.

Driving speeds, transport: Adapt driving speed to the road conditions so that the plough does not bounce behind the tractor. Bouncing will alter the plough settings and impose abnormal stresses on it. **The top link should be attached to a fixed position on the head stock for transportation.**

Ploughing: Adapt ploughing speed to the prevailing ground conditions and precense of stones. NOTE. Excessively high speed costs money in terms of wear and damage to equipment.

Transport (5 furrow) The plough is centered by activating the reversing mechanism until the alignment cylinder is in its longest position. Close the shut-off valve on the cylinder.

To lock the reversing mechanism hydraulically, the return line V can be pressurized by moving the control lever in the tractor to the opposite position as when pushing for reversal of the plough.

Turning on headlands: When turning on headlands, always ensure that entry is made from the unploughed side. Turning on headland can be done in two different ways:

Three-point turn: This consists of raising the plough at the marking furrow, turning towards the ploughed side, reversing towards the unploughed side, driving forward and then reinserting the plough at the marking furrow.

Switching over of a reversible plough should preferably be done while driving forward or at standstill.

180° Turn: Start by raising the plough at the marking furrow, immediately followed by a 180° turn starting off towards the ploughed side, reapproaching from the unploughed side and reinserting the plough at the marking furrow.

Switching over of a reversible plough can be done as convenient during the turn.

The method chosen will differ from driver to driver and to some extent, also on the type of tractor. The three-point turn requires more work on the part of the driver, but requires a smaller headland, while the 180° turn, although faster and less laborious, requires a somewhat broader headland.

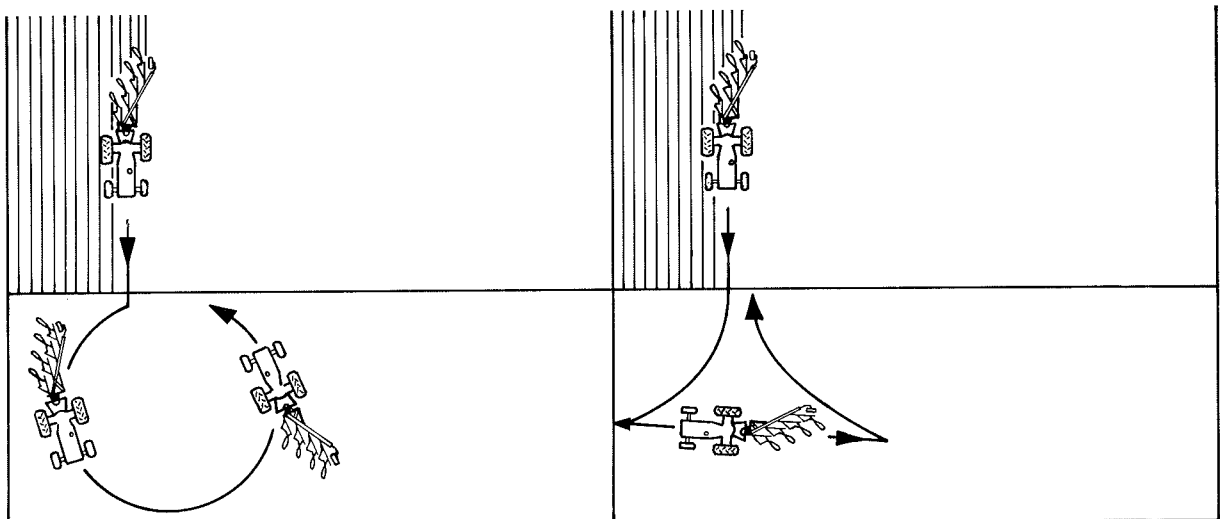


Fig. 20 180° turn

Three-point turn

Troubleshooting - Ploughing

The following common faults produce poor ploughing results, giving higher running costs and causing unnecessary wear on both the tractor and plough.

Fault	Cause	Corrective measure
Front wheels out of line.	Driver is leaning on steering wheel and imposing unnecessary strain on the system.	Do not lean on the steering wheel. Keep the wheels straight.
Tractor pulls to one side and steering must be corrected to counteract this.	Plough incorrectly adjusted relative to tractor.	Correct the plough adjustments, see basic settings: Front furrow width. Check front and rear track widths. Check that the tractor's stabilizers are not fully fixed.
Front end of tractor tends to lift.	The front is too light. NOTE. The tractor must never be allowed to run on the back wheels (reer up).	Fit front ballast or fill front tyres with fluid.
Furrow slices laid by the plough to left or right are not identical.	The cross-shaft is not mounted centrally. Incorrect vertical adjustment.	Move the cross-shaft to the centre. Equalize the vertical adjustment.
The first plough body cuts different furrow widths in left-hand and right-hand ploughing.	Tractor lower links are unequal in length.	Loosen the cross-shaft and adjust the plough until right-hand and left-hand sides are equally wide.
First furrow slice too large or ridges are stepped.	Incorrect basic setting.	Adjust as per basic settings: Front furrow width. Adjust horizontal and vertical settings.
First furrow slice too thin ridges are stepped.	Incorrect basic setting.	Adjust as per basic settings: Front furrow width. Adjust horizontal and vertical settings.
Furrow slices remain standing or are not fully turned.	Skimming devices set too low. Soil resistance causes plough to trip. Plough leans excessively toward unploughed side.	Adjust to reduce skimming action. Increase the working pressure. Adjust the vertical setting.
Ridge height alters within the same run.	Furrow width too narrow in relation to depth. Lateral setting of disc coulters incorrect. Skim coulters set to different depths or have incorrect side adjustment.	Increase the furrow width. Adjust the coulters. Adjust the coulters.
Plough operates unequally left and right.	Parallelism of mouldboards incorrect. Vertical adjustment faulty. Different operating angles on right and left-hand mouldboards.	Adjust parallelism of mouldboards. Adjust vertical adjustment, both sides. Adjust the mouldboard operating angles so that dimension G is equal on both sides, then adjust parallelism.

Parallelism of mouldboards

1. Check the working angle of the mouldboard. The normal position is measured on the rear plough body between the extended outside line of the landside. Horizontally out against the outer screw in the mouldboard stay, see measurement **G** Fig 21. Adjust the mouldboard stay if necessary.
2. Repeat the same procedure for the opposite rear body.
3. Measure from these two bodies forward and adjust the mouldboard stays if necessary so that measurement $A_1 = A_2$, measurement $B_1 = B_2$ etc, see Fig 22.

V	Mouldboard normal measurement	G = 485 mm	
UC	" " "	G = 540 mm	
VUC	" " "	G = 470 mm	
XL	" " "	G = 425 mm	(590 mm to the outermost hole in the mouldboard)

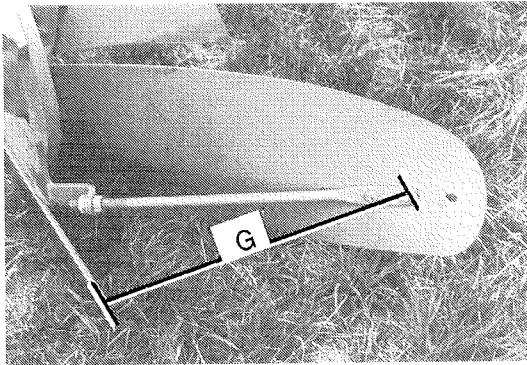


Fig. 21

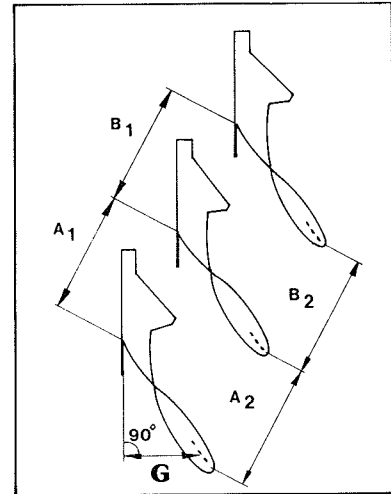


Fig. 22

Safety trip system

To protect the plough and tractor, all ÖVERUM ploughs are equipped with a safety trip system.

Shear bolt protection

All F ploughs are protected from damage by means of a shearbolt in each leg (part No. 1659 13 99 00).
Note. Always ensure that the correct grade of bolt is used for replacement. Bolts of an inferior grade may distort without shearing, causing the plough body to get out of line.

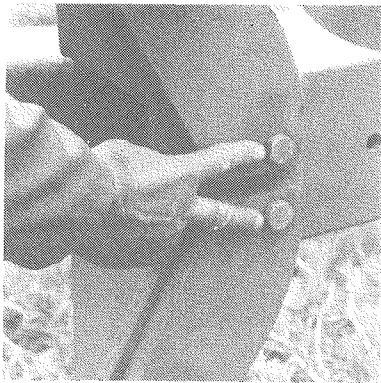


Fig. 23



Fig. 24

Hydraulic stone trip

The tripping mechanism consists of a trip cylinder operating each pair of plough bodies. The cylinders are series connected to a gas/fluid accumulator. The accumulator is of piston type, precharged with nitrogen gas (N₂).

The tripping cylinders, pressure hoses and the accumulator are pressurized with fluid = 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 action.

The design of the tripping system allows the plough bodies to move in all directions.

Maximum tripping height = 37 cm, maximum lateral tripping = 10°

The gas pressure in the accumulator is 9 MPa.

The operating pressure (fluid pressure) is shown by a pressure gauge and should be consistently 1.5 MPa above the gas charge pressure.

Working pressure is between 10.5 - 14 MPa.

Rule: The operating pressure should be adjusted so that the bodies assume their correct positions during ploughing and do not trip solely because of soil resistance.

Checking the accumulator

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

Connect the supply 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 B slightly. The indicated 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 charge pressure.

In similar manner, the charge 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 only slowly. The pressure gauge reading at the end of the rapid rise in pressure is the accumulator charge 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 charge pressure.*

Should the pressure fall by more than 2 MPa below the charge pressure specified on the unit, contact your local Överum dealer for advice.



NEVER TAMPER WITH THE GAS FILLING VALVE !

Adjustment of operating pressure

Connect the supply hose **A** to the single-acting outlet on the tractor. The filler hose is kept inside the turn-over axle, see Fig 25.

Open the valve **B** and adjust the pressure to the required value using the tractor hydraulics, close the valve **B** and repositioning the hose **A** in its original position.

NOTE. The plough should be resting on the ground when adjusting the pressure and when depressurizing the system. Always ensure maximum cleanliness when working on the hydraulic system.

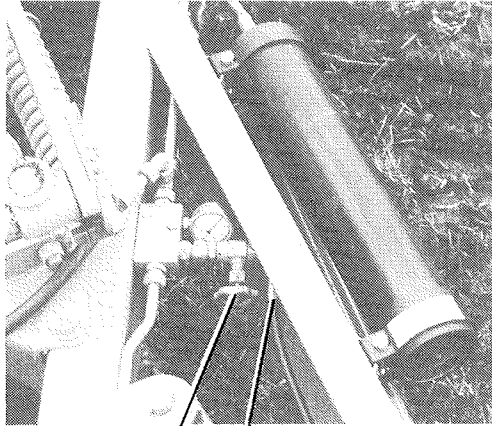


Fig. 25 B A



Never attempt to undo any hydraulic connection while the system is pressurized

Changing working pressure (CV 598 H)

Lowering working pressure:

- the tractor engine must be switched off. Move control lever for tractor double-acting valve to reversing position.
- open shut-off valve on pressure accumulator and lower pressure as required and shown by pressure gauge.
- close shut-off valve.

Increasing working pressure:

- start the engine
- open the shut-off valve on the pressure accumulator
- move the control lever for the tractor's double-acting valve to the opposite position as when pushing for reversal of the plough. Hold the lever in this position until the gauge shows the required pressure.
- close the shut-off valve.

NOTE! When altering working pressure, the plough must be lowered to the ground. Always observe the strictest cleanliness when working on the hydraulic system.

Adjustment of operating pressure; mechanical

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

Adjustment: Connect the supply hose to the safety trip system as described in the preceding ADJUSTMENT OF OPERATING PRESSURE, and depressurize the system.

Remove the piston rod mounting from the hole A and relocate it in hole B, thus increasing the effective length of the lever and also increasing the tripping resistance by 20%.

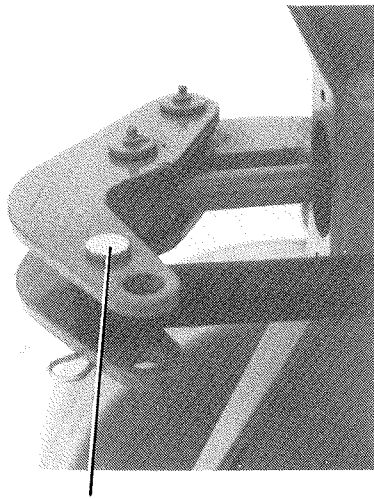


Fig. 26

A

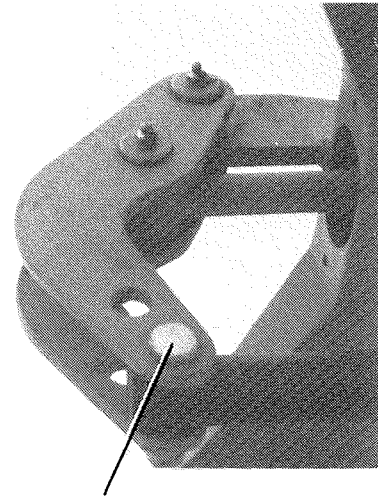


Fig. 27

B

Adjustment of working width

All ÖVERUM reversible ploughs have adjustable working widths which can be set in 3 positions.

1. Alter position of beam housing

Each plough body can swivel around the front bolt in the beam housing by loosening bolt A, Fig 28 and moving the beam housing to hole B for 12", to hole C for 14", and to hole D for 16" working widths, for BV 97/98 and CV 98 ploughs. (B = 14", C = 16" and D = 18" for BV/CV 108 ploughs.

When the required hole coincides with the hole in the frame, replace the bolt and retighten it. Tightening torque: 375 Nm.

NOTE. Recheck the tightness of the bolts after about 3 hours of use.

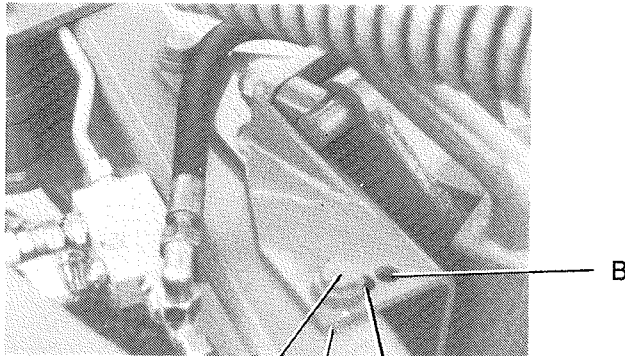


Fig. 28 CV

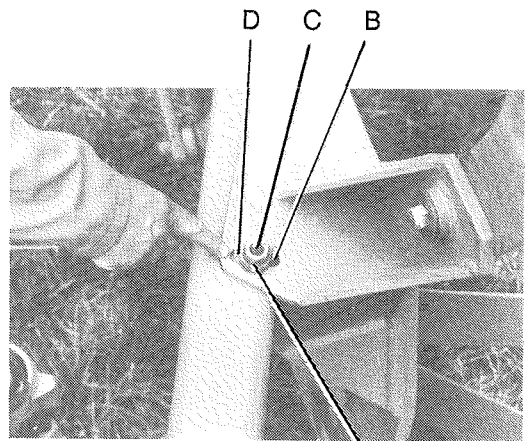


Fig. 28a BV

2. Plough adjustment

Align the plough with the centreline of the tractor and set the front furrow width as specified in the table on page 12 - 13.

3. Depth wheel adjustment

Move the depth wheel mounting to hole B for 12", to hole C for 14", and to hole D for 16" working width, see Fig. 29 to run the depth wheel parallel with the plough bodies.

4. Disc coulters adjustment

Adjust the disc coulters for the new furrow width as described on page 15, (for F- ploughs only).

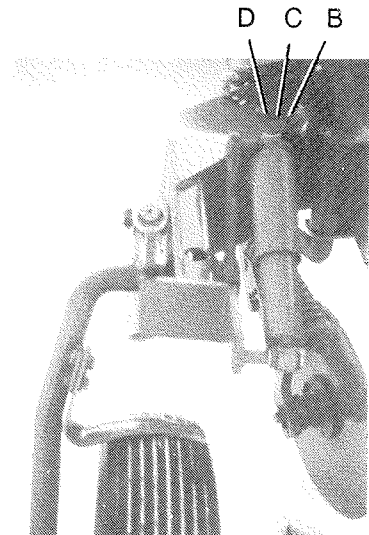


Fig. 29 CV

Care, maintenance and replacement of wearing parts

- To ensure the plough a long life and to avoid unnecessary wear, observe the following instructions:
- clean the plough daily and coat all bright surfaces with oil or grease
- grease the disc coulters hubs at least once a week
- grease all other lubricating points daily
- smear adjusting screws and other linkage points daily with oil
- **grease the beam bearings in the beam housing at least once per week, and more frequently if the soils is stony or requires high pressure.**

Position the plough with the bodies approx. 5 cm above the ground. Depressurize the system as described in ADJUSTMENT OF OPERATING PRESSURE, see page 24.

The bearing points will now be exposed as the beams drop down. Grease all the upper bearing points. Also grease all other lubricating points in the stone release linkage while depressurized. Now pressurize the system making sure that the beams return to their correct positions. Reverse the plough to the other side, and repeat the procedure. Run the system up to the correct operating pressure, close the valve and return the supply hose to its original position.

NOTE. Make sure that the beams return to their correct positions.

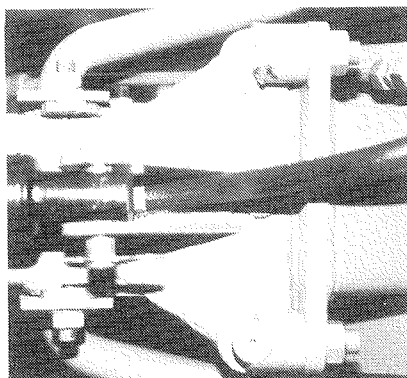


Fig. 30

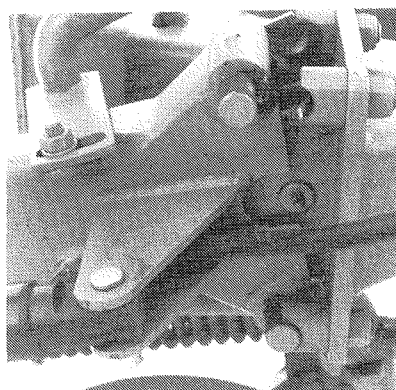


Fig. 31

Replacement of wearing parts

Replace wearing parts in time due to prolong the life of more vital parts and thereby save money. Always use and insist on genuine spare parts and you can be sure of getting parts of good quality and fit which are supplied under warranty.

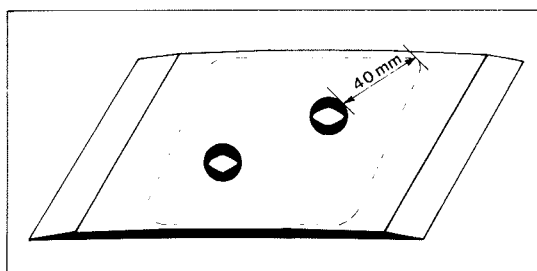


Fig. 32

Share points

Since the share points are reversible, they can be turned around to double their life. To avoid wear on the bracket plate, do not allow share points to wear down further than the dimensions specified in the drawing above.

Shares

Shares must be replaced before the frog becomes damaged or worn.

Mouldboards

When replacing mouldboards, make sure that you tighten the bolts in CROSSWISE order to avoid tension in the mouldboard which could result in cracking.

Mouldboard shins

When replacing mouldboard shins, proceed as described above.

Landsides

Excessive worn landside will cause the plough to go towards the unploughed land adversely affecting furrow ridge formation, causing the plough to run heavy.

Disc coultter blades

To maintain the cutting properties of disc coultter blades, they should be replaced when worn to no more than 2/3 rds of their original diameter.



Never work under raised plough unless securely locked, with mechanical support, against sudden lowering. Never rely on the tractor's hydraulics only.

USING THE WRENCHES SUPPLIED, ALWAYS MAKE SURE THAT ALL BOLTS AND NUTS ON THE PLOUGH ARE PROPERLY TIGHTENED.

Tighten torques

Grade	Size	Torque		take special care in these places
8.8	M12	91 Nm	8.8 kpm	
8.8	M16	222 Nm	22 kpm	
8.8	M18	310 Nm	32 kpm	
8.8	M20	434 Nm	39 kpm	
8.8	M24	750 Nm	67 kpm	
8.8	M30	1480 Nm	114 kpm	
10.9	M12	128 Nm	16 kpm	
12.9	M16	375 Nm	38 kpm	Beam housing attachment to frame
12.9	M20	732 Nm	74 kpm	Beam housing attachment to frame

Winter storage

- Clean the plough thoroughly.
- Ensure that all wearing parts are in good condition and replace as needed.
- Tighten all bolted joints.
- Check the accumulator charge pressure.
- Lubricate all points with grease or oil as appropriate.
- Protect the mouldboards and all bright components by coating them with oil (not used oil), a rustproofing fluid or acid-free grease.

Extra equipment

Hydraulic side adjustment

BV and CV ploughs (except 5- furrow) can be equipped with hydraulic side adjustment which allows the working width of the front furrow to be altered with the ploughs on the move.

Ref. No. CV = 1658 62 1550, BV = 1659 30 72 50

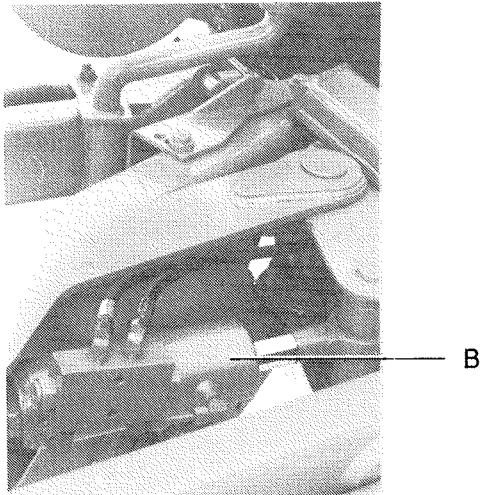


Fig. 33 CV- hydraulic side adjustment

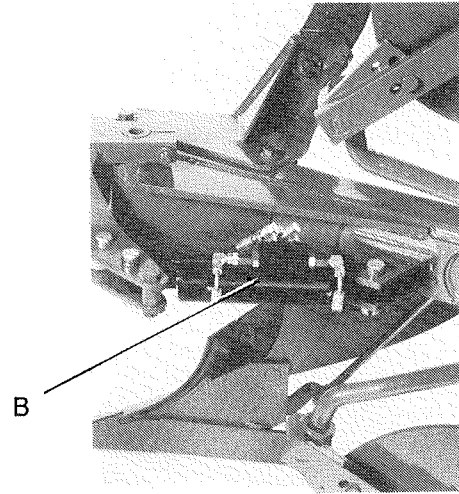


Fig. 34 BV- hydraulic side adjustment

Installation:

The turnbuckle screw B is replaced by a double-acting hydraulic cylinder. The hydraulic hoses are run through the reversing shaft to the tractor, see Fig 33 - 34.

Mounting arm for furrow press CV (H) 1659 21 15 90 and BV/CVF 1659 27 71 50

The arm is mounted on the front beam housing.

The hydraulic hoses, which are run through the reversing shaft from the back to the front, are connected to a double-acting outlet on the tractor.

If the tractor has two double-acting outlets, connect the plough reversing cylinder to one of these. On tractors with one double-acting and one single-acting outlet, connect the pressure side (marked P on the valve block of reversing cylinder) to the single-acting outlet. The return hose should be connected to the tractor reservoir.

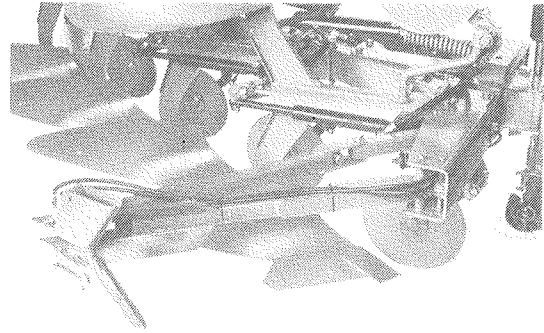


Fig. 35 CV (H)

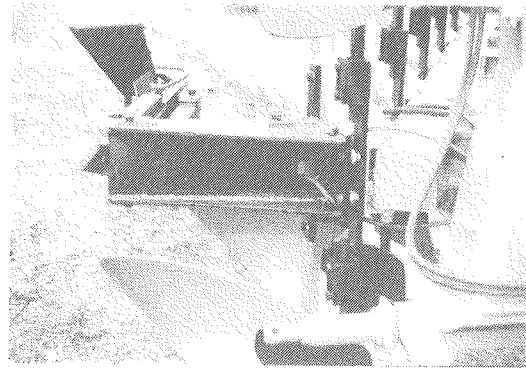


Fig. 36 BV (F)

Mounting arm for furrow press BV 1658 95 89 50

The arm is mounted on the third beamhousing. A bracket is mounted on the front beamhousing.

The furrow press is disconnected when the plough is lifted out of the ground.

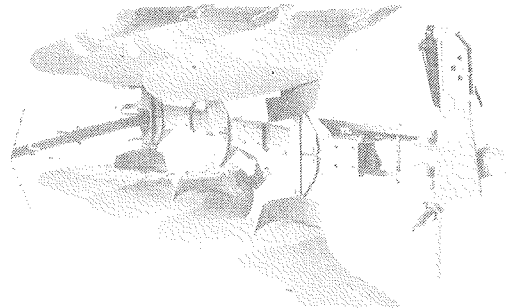


Fig. 37 BV-plough



Keep out of the operating range of the arm. The arm moves very quickly and at high force. The arm must be fully retracted against the plough before reversing can be started. Otherwise, there is a risk that the arm will foul the ground and cause damage to the mechanism. (Hydraulic operated arms).

Combined depth and transport wheel

Order No. for complete depth and transport wheels is 1659 31 78 91.

The wheels is supplied with a special transport bracket A. Fit this bracket to the rearmost left-hand plough body.

Setting to transport position:

Remove the wheel with axle from the depth wheel bracket and from underneath, fit it into the bracket on the plough body. Fit the wheel axle locking pin B. Lower the plough until it rests on the transport wheel. After removal of the top link, the plough is ready for transportation, see Fig 39.

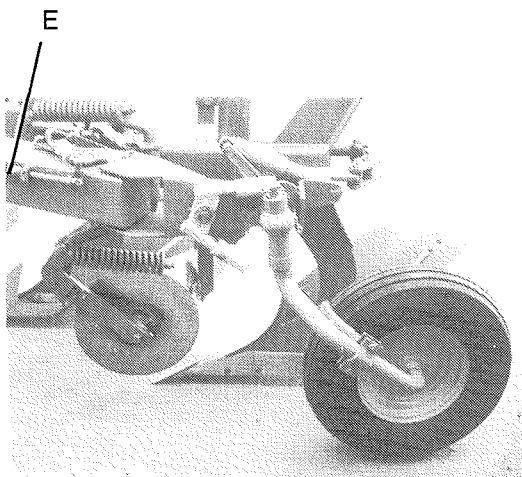


Fig. 38 Working position

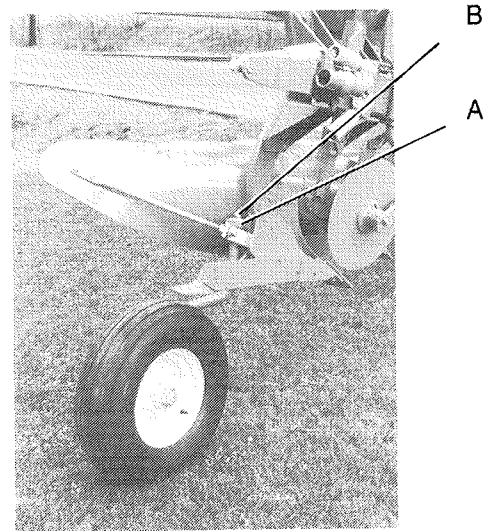


Fig. 39 Transport position

Note the following:

- on the road, the transport wheel will have a castor action
- during transport, the plough bodies should be on the left, but must be turn to the right when the plough is parked or put away.

NOTE! When road transporting the CV 598 H, shut-off valve E Fig.38 must be closed to lock the stone trip mechanism. **Remember to reopen valve E on returning to the ploughing position.**

Some good advice

When you have found the best settings for your plough, so that it is operating well and producing good work, measure the settings and make a note of them below for future reference.

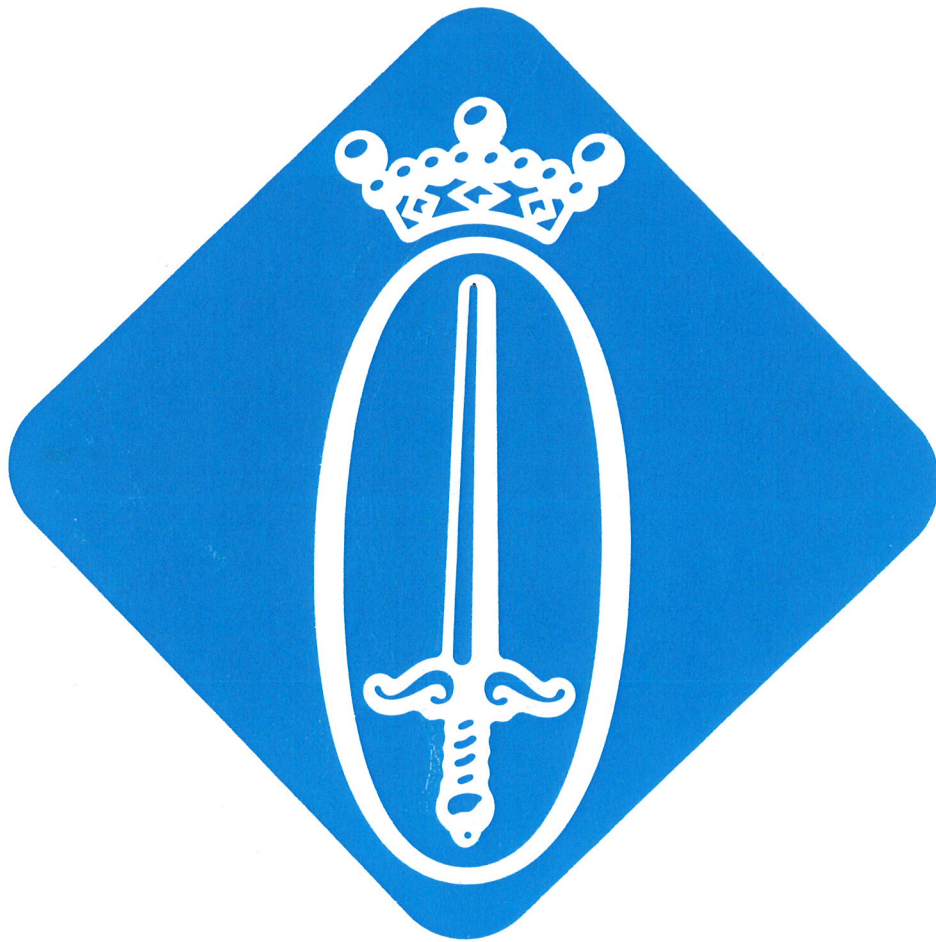
Lifting rods, length.....

Top link, length.....

Adjusting screw, left.....

Adjusting screw, right.....

Adjusting screw, depth wheel.....



AB Överums Bruk,
590 96 Överum, Sweden
Telephone +46 493 30400
Telex: 3957 OVERUM S