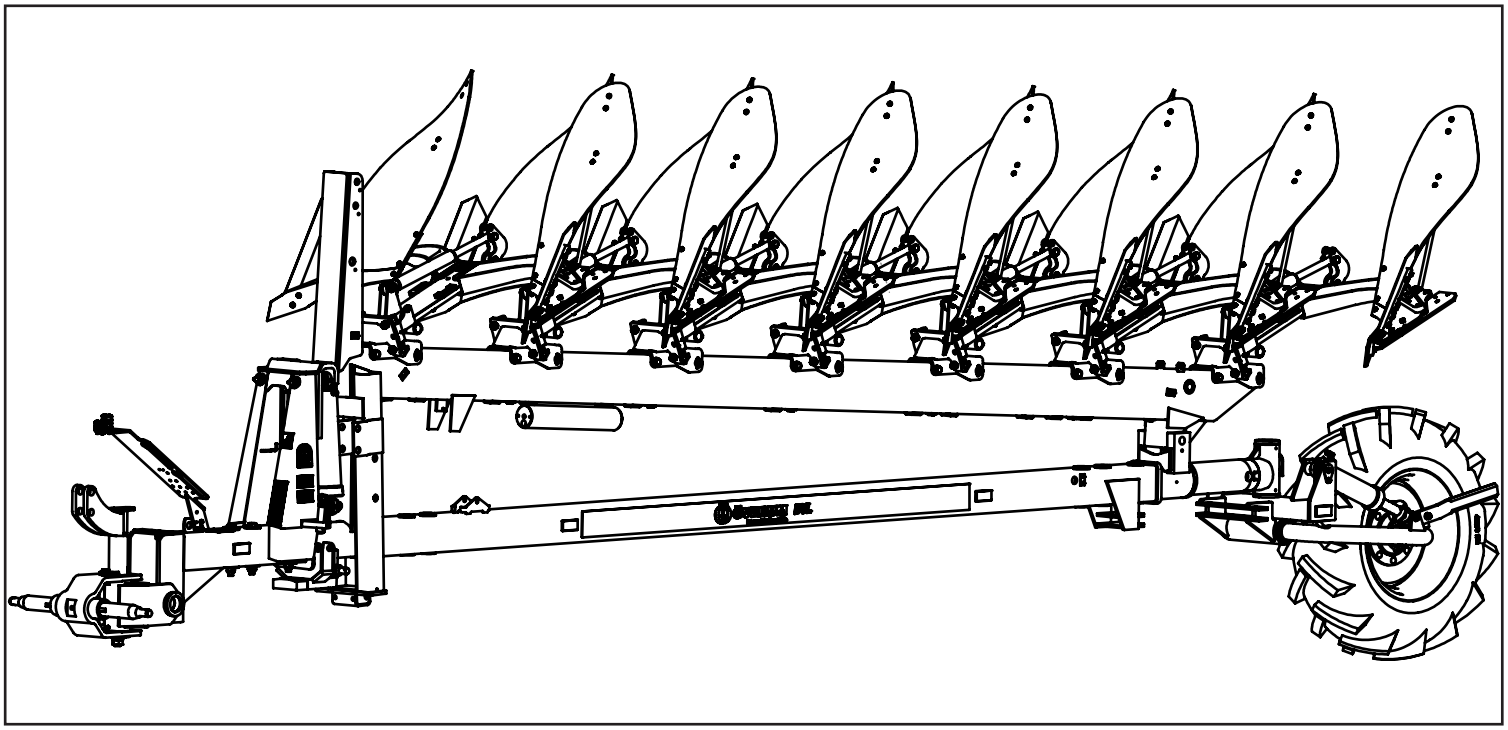
Semi mounted reversible ploughs
CVL DVL Vari Flex EVL



Instruction Manual
"Original Instructions"

EN

Edition:
181218

ÖVERUM

EF-overensstemmelseserklæring/ EG-Konformitätserklärung/ EC Declaration of Conformity/ Déclaration CE de conformité/ Dichiarazione CE di conformita/ EG Verklaring van Overeenstemming/ EG-försäkran om överensstämmelse/ EY-vaatimustenmukaisuusvakuutus/ Declaración de conformidad CE/ Deklaracja Zgodności WE./ Декларация за съответствие ЕО/ EK Megfelelőségi Nyilatkozat /ES Prohlášení o shodě/ EB Atitikties deklaracija/ ES prehlásenie o zhode/ Declaraţia de conformitate CE/ Vastavuse Deklaratsioon EÜ /ES Izjava o skladnosti/ Δήλωση πιστότητας ΕΚ/ Declaração de fidelidade CE/ Dikjarazzjoni ta' Konformità tal-KE/ EK Atbilstības deklarācija/

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Erklærer hermed, at/ Erklären hiermit, daß/ Hereby declare that/ Déclare par la présente que/ Dichiara che/ Verklaren hierbij dat/ Försäkrar härmed, att/ Vakuuttaa täten, että tuote/ Por el presente declara que/ Niniejszym deklaruje, że/ Декларирам, че/ Az alábbiakban kijelentem, hogy/ Tímto prohlašuje, že/ Deklaruoja, kad/ Týmto prehlasujeme, že/ Prin prezenta declar că/ Alljärgnevaga deklareerib, et/ Izjavljamo, da je/ Με το παρόν δηλώνω ότι/ Abaixo declara que / Jiddikjaraw li / Apstiprinu, ka

Maskine:	La máquina:	Masin:
Maschine:	Maszyna:	Stroj:
Machine:	Машината:	Η μηχανή:
Machine:	Gép:	Máquina:
La macchina:	Stroj:	Il-magna:
Machine:	Mašina:	Mašīna:
Maskin:	Stroj:	
Laite:	Maşina:	

ÖVERUM

Type: CVL DVL Vari Flex EVL
Designation: Plough
VIN: 301626-320000

- er i overensstemmelse med Maskindirektivets bestemmelser (Direktiv 2006/42/EF) og hvis relevant også bestemmelserne i EMC-direktivet 2014/30/EU.
- In übereinstimmung mit den Bestimmungen der Maschinen-Richtlinie 2006/42/EG und wenn erforderlich auch mit der EMC-Richtlinie 2014/30/EU hergestellt wurde.
- is in conformity with the provisions of the Machinery Directive 2006/42/EC and if relevant also the provisions of the EMC Directive 2014/30/EU.
- est conforme aux dispositions de la Directive relatives aux machines 2006/42/CE et également aux dispositions de la Directive sur la Directive EMC 2014/30/UE.
- é in conformita' con la Direttiva Macchine 2006/42/CE e, se pertinente, anche alla Direttiva alla Direttiva EMC 2014/30/UE.
- in overeenstemming is met de bepalingen van de Machine richtlijn 2006/42/EG en wanneer relevant ook met de bepalingen van de EMC richtlijn 2014/30/EU.
- är i överensstämmelse med Maskindirektivets bestämmelser (Direktiv 2006/42/EG) och om relevant också bestämmelserna i EMC-direktivet 2014/30/EU.
- täyttää Konedirektiivin (Direktiivi 2006/42/EY) määräykset ja oleellisilta osin myös EMC-direktiivin 2014/30/EU.
- es conforme a la Directiva de Maquinaria 2006/42/CE y, si aplica, es conforme también a la Directiva EMC 2014/30/EU.
- pozostaje w zgodzie z warunkami Dyrektywy Maszynowej 2006/42/WE i jeżeli ma to zastosowanie również z warunkami Dyrektywy dot. kompatybilności elektro magnetycznej EMC 2014/30/UE.
- отговаря на изискванията на Директивата за Машините 2006/42/ЕО и ако има приложение на изискванията на Директивата за електромагнитна съвместимост 2014/30/ЕС.
- Megfelel a 2006/42/EK Gépi Eszközökre vonatkozó előírásoknak és amennyiben felhasználásra kerül, a 2014/30/EU Elektromágneses kompatibilitás Irányelv feltételeinek.
- odpovídá základním požadavkům Strojní směrnice 2006/42/ES a jestliže to její uplatnění vyžaduje i s podmínkami Směrnice 2014/30/EU týkající se elektromagnetické kompatibility.
- atitinka Mašinų direktyvos Nr. 2006/42/EB ir, jeigu taikoma, Elektromagnetinio suderinamumo direktyvos Nr. 2014/30/ES reikalavimus.

- je v súlade s podmienkami Smernice 2006/42/ES o strojných zariadeniach a pokiaľ si to jeho uplatnenie vyžaduje aj s podmienkami Smernice 2014/30/EÚ o elektromagnetickej kompatibilite.
- îndeplineşte prevederilor Directivei de Maşini 2006/42/CE şi dacă este utilizată de asemenea cu prevederile Directivei referitoare la compatibilitatea electro-magnetică EMC 2014/30/UE.
- on vastavuses Masinate Direktiivi tingimustega 2006/42/EÜ ning sammuti juhul, kui on tegemist sammuti on vastavuses Elektromagnetilise kokkusobivuse Direktiivitingimustega EMC 2014/30/EL.
- z določili Direktive o strojih 2006/42/ES ter, če je to relevantno, tudi z določili EMC Direktive 2014/30/EU.
- παραμένει σύμφωνη με τους όρους της Οδηγίας περί Μηχανών 2006/42/ΕΚ και σε περίπτωση που αυτό εφαρμόζεται και με τους όρους της Οδηγίας περί ηλεκτρομαγνητικής συμβατότητας (ΗΜΣ) 2014/30/ΕΕ.
- Está de acordo com exigências das Directivas das Maquínarias 2006/42/CE e no caso em que tiver igualmente aplicação com as exigências das Directivas referentes a compatibilidade electromagnética EMC 2014/30/UE.
- tikkonforma mad-dispożizzjonijiet tad-Direttiva dwar il-Makkinarju 2006/42/KE u jekk rilevanti wkoll mad-dispożizzjonijiet tad d-Direttiva EMC 2014/30/EU.
- atbilst mašīnu direktīvai 2006/42/EK, kā arī nepieciešamības gadījumā elektromagnētiskās saderības direktīvai EMC 2014/30/ES.

Zedelgem
Antoon Vermeulen

FOREWORD

DEAR CUSTOMER!

Please 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 Överum 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.

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Sweden

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CONTENTS

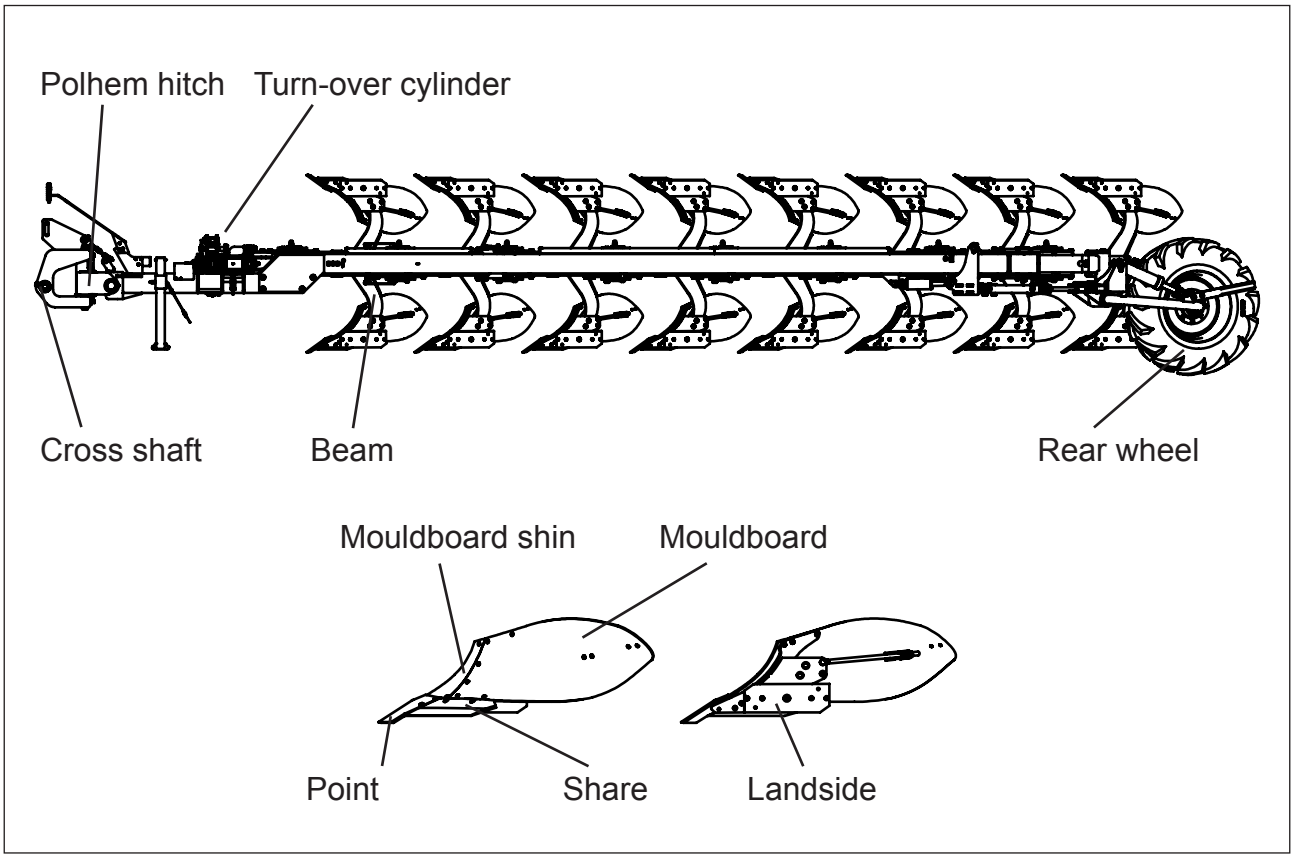
1. INTRODUCTION

DESCRIPTION OF FUNCTION

This plough is designed only for “Reversible Ploughing “ by using right-hand and left-hand plough bodies alternately, and for transportation between the farm and different fields. H-ploughs which are equipped with a hydraulic stone trip system, can be used in all types of soil. F-ploughs which are equipped with a shear bolt protection are to be used only in soils that are free of stones.

The turn-over mechanism is only to alter the right and left hand bodies between their working positions.

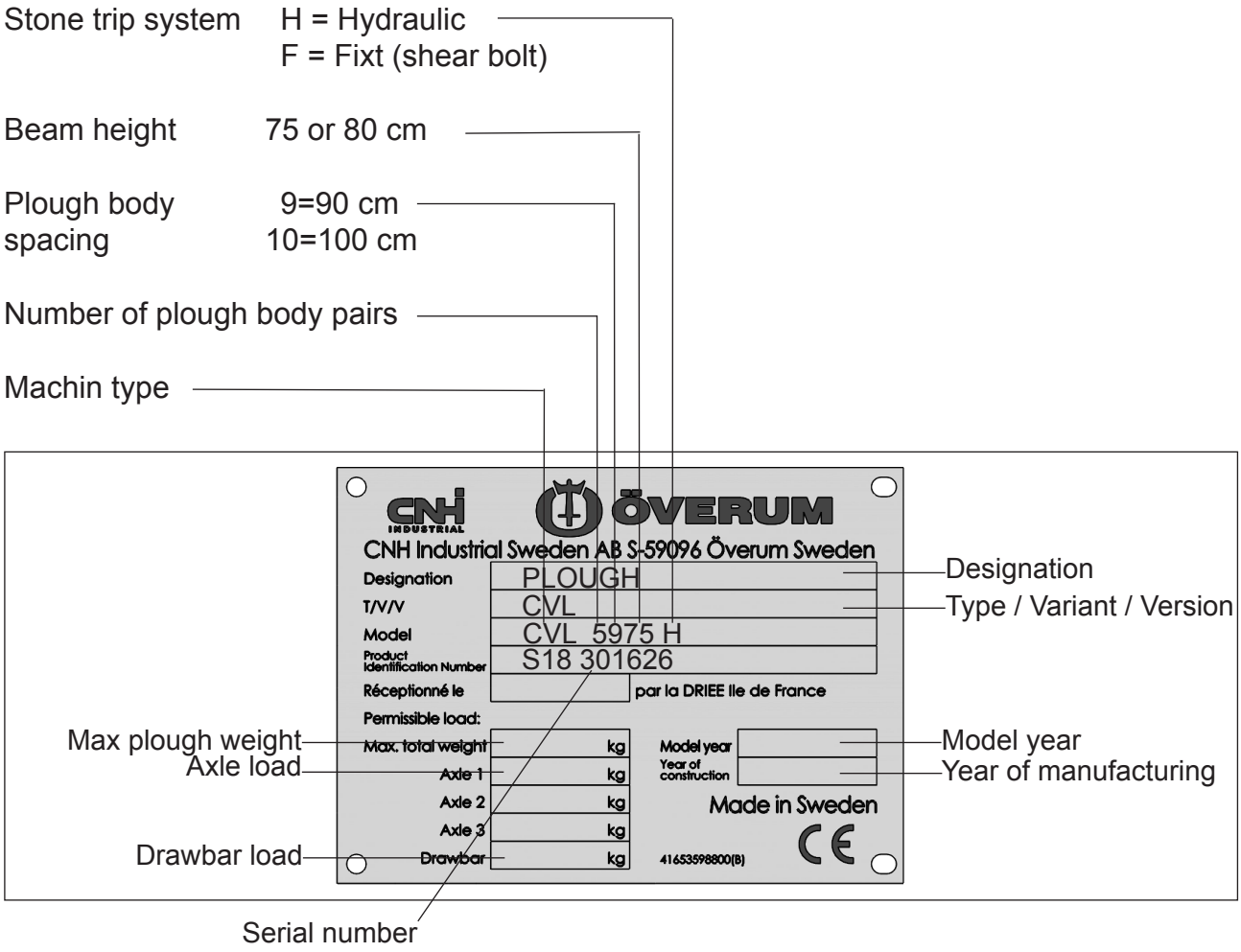
The plough is to be attached to the three-point linkage at the rear of the tractor, with the hydraulic systems connected to the appropriate hydraulic outlets.



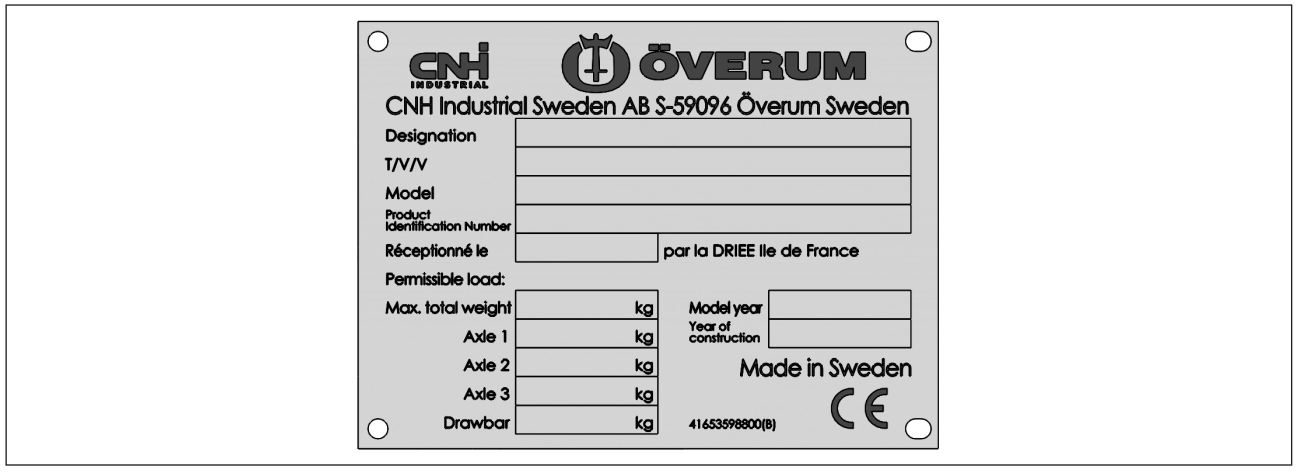
IDENTIFICATION OF PLOUGH

Type designation

CVL	5975-6980
DVL	51080-81080
VF EVL	51080-81080



Complete the sign below with the Machine type and Serial number of Your plough.



SAFETY REGULATIONS

READ THE INSTRUCTION MANUAL. SAFETY IS YOUR RESPONSIBILITY.

You should read the instruction manual before you change any settings or start using the plough. The plough is designed and manufactured with as many safety features as possible, but we cannot foresee all possible circumstances that can involve safety hazards with this machine.

Your responsibilities as owner or operator are to ensure the safety of any personnel in connection with: the operation, transport, maintenance or storage of the machine. If you have questions not answered in this manual, please contact your dealer or distributor.

Be aware of your responsibilities. The most important safety device is a safety conscious operator, whose training and experience must include:

- Operator competence, the operator must be able to carry out a correct and complete adjustment of settings and to ensure safe and reliable operation. Training in safety issues is to be reviewed or repeated annually.
- Being aware of their environment to the extent that unforeseen safety issues that may arise are dealt with to ensure the safety of all personnel (including operators, maintenance personnel and bystanders).

This symbol means: SAFETY ALERT!
The safety decals in the instruction manual are used to highlight given instructions that involve safety of all personnel. Failure to comply with a given instruction could result in severe injury or death.

SAFETY ALERT decals Note! The decals on the machine can differ from the decals in this instruction manual.

GENERAL SAFETY INSTRUCTIONS

Keep a safe distance
Do not stand under, on or close to the plough when it is in operation or when it is connected to the tractor.

Support the Plough
Do not stand under, on or close to the plough if the plough is not properly supported.

Lower the plough
The plough should be lowered to the ground when standing still.

Front ballast weights
The front of the tractor should be fitted with balance weights as required to maintain optimal traction and directional stability. Ensure that at least 20% of the tractor’s weight is carried by the front wheels.

Be alert
Ensure that no person is on, underneath or in the hazardous area of the plough during transport, ploughing or when maneuvering the plough. Never work under a lifted plough!

Use the support leg
Always use the support leg when the plough is parked. Park the plough on level firm surface.

Do not allow passengers
Do not allow anyone to ride on the implement when it is being transported or while in operation.

SAFETY WHEN CONNECTING AND DISCONNECTING THE PLOUGH

Risk for personal damage
An unintentional manoeuvre with the tractor may cause serious injury. Always make sure that nobody is standing between the tractor and the machine during connection and disconnection.

Make sure that the plough is locked with sufficient locking pins. During operation, negative forces can occur that push one side of the cross shaft and the lower link of the quick coupling upwards. There is a risk that the hook can release. Therefore, the quick coupling on the lower links should be secured with a bolt.
Make sure the tractors gear is in neutral before starting the engine.

Make sure that there is no pressure in the hydraulic hoses
Before the tractor engine has stopped, make sure that there is no pressure in the hydraulic hoses by activating the tractor spool valves to floating position.

Check the length of the hydraulic hoses
Check the length of the hydraulic hoses when the plough is lowered to working position. Check that they are not too tense.

Check connection of hydraulic hoses
Make sure that the hydraulic hoses are connected to the correct hydraulic outlets on the tractor. If connected incorrectly, the plough can move in an unforeseen way.

MAINTENANCE SAFETY

Avoid contact with oil and grease
To avoid oil and grease contact with your skin, wear protective gloves.

High oil pressure
The plough must be connected to the tractor!
Be careful when the plough is examined for oil leaks or damaged fittings. Hydraulic oil under pressure can penetrate the skin and cause serious damage. Always release the pressure in the hydraulic system prior to maintenance work on the hydraulic system and make sure that all components are correctly tightened before the system is set under pressure. Always wear gloves and eye protection.
Never tamper with the gas filling valve on the accumulator!

Do the maintenance regularly
Do the maintenance work regularly as it is described in this manual, section 6 MAINTENANCE. Replace wearing parts as described. There is a risk of poor performance if the machine not is maintained properly.

Retighten all nuts and bolts
Always remember to retighten all nuts and bolts after about 3 hours of use. Make sure that bolts and nuts are tight at all times. Tightening torques are shown in section 6 MAINTENANCE.

Use protection gloves
Always use gloves when working with parts on the machine as they can have sharp edges.

TRANSPORT SAFETY

Beware of the length of the plough
The plough is long and does not completely follow the tractor in sharp turns. Avoid that the plough's rear end hits an obstacle. The tractors braking pedals must be locked together during transport driving.

The stabilizers of the lower links
The stabilizers of the lower links should be locked when the plough is in transport position, so that the plough is fixed sideways.

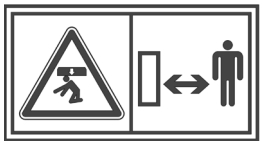
Comply with the relevant traffic regulations
The operators have to observe relevant statutory or other national regulations dealing with road safety and labor safety issues.

Drive safe, max 25km/h
Be a safe and courteous driver, yield to oncoming traffic. In all situations, do not exceed 25 km/h.

WARNING DECALS

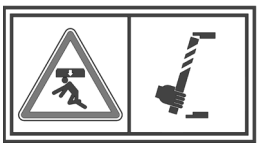
Explanations

4165 99101 00 Read the manual!
Carefully read the instructions and observe all safety instructions before you connect the machine to the tractor.



4165 98301 00 Warning hazardous area!
It is not allowed to be within the hazardous area, on, under or close to the machine during transport driving, operation or when the plough is reversed. Never work under a lifted plough. Always make sure that nobody is standing between the tractor and the machine.

4165 98300 00 High oil pressure!
Be careful when oil leaks or damaged fittings are examined. Hydraulic oil under pressure can be dangerous. Always release the pressure in the hydraulic system prior to maintenance work on the hydraulic system and make sure that all components are correct tightened before the system is set under pressure. Always wear gloves and eye protection.



4165 99102 00 Support leg
Do not stand close to the plough if not properly supported. When parking the plough always use the support leg.

4165 34375 00 Transport lock
The plough can swing down against the vertical stop when the transport lock is released. Be alert!

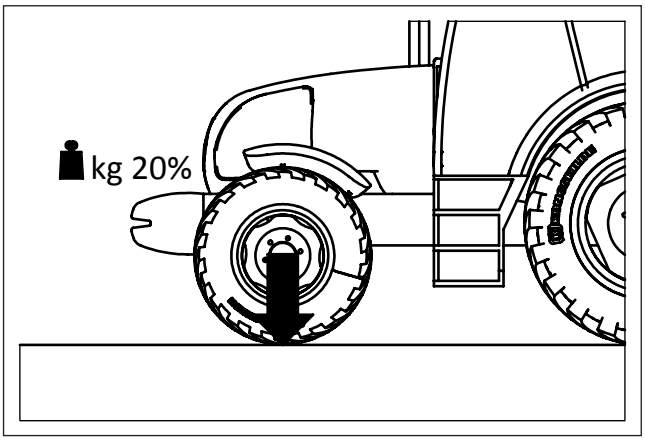
4165 25073 00 Warning! Risk of crushing
Risk of crushing injuries. Be careful!

2. TECHNICAL DESCRIPTION

CHECKING THE TRACTOR PRIOR TO PLOUGHING

TRACTOR SIZE

The tractor must have an appropriate size to operate the plough safely! Make sure that at least 20% of the tractor`s weight is loaded onto the front axle.



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 which enables them to be easily adjusted.

The lower link ball joints must be adjusted to the same height before the plough is mounted onto the tractor. Make sure that the lower links can be lowered approximately 20 cm below the cross shaft of the plough.

HYDRAULICS

Following external hydraulic outlets are required:

	double acting	single acting	free return to tank
CVL	2	1	
DVL	2	1	
Vari Flex EVL	3	1	1

Familiarise yourself with the hydraulic systems of the tractor.

WHEEL ADJUSTMENT - TRACK WIDTH

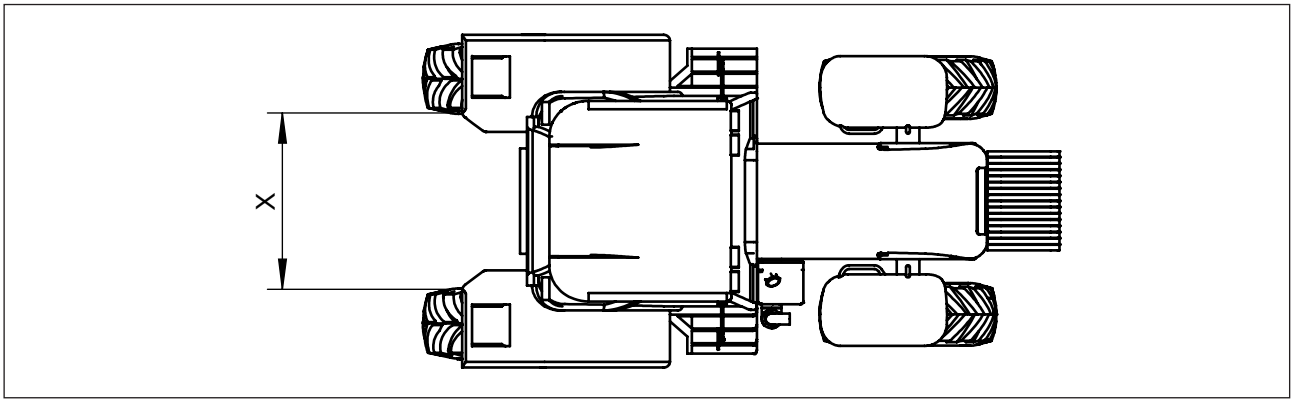
For ploughing purposes, track width is always measured between the inside walls on the tractor tyres.

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 pair of plough bodies.

Note: Large ploughs can affect the stability of the tractor.



TYRE PRESSURE

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.

LIGHTING

The tractor must be equipped with working lights when ploughing in the dark.

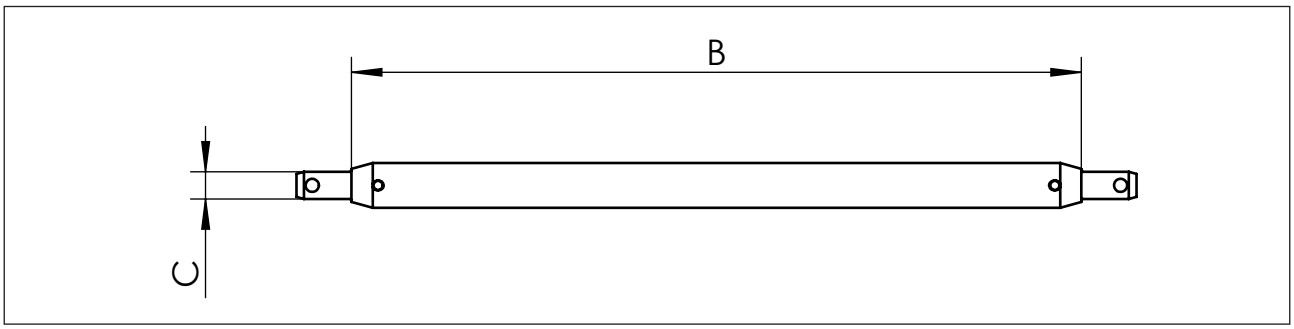
PREPARATION OF THE PLOUGH

Three wrenches, a Spare parts book and this Instruction manual are to be supplied with the plough. Check that this was received.
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.

The plough can be equiped with a cat. 3 or a cat 4 cross-shaft.

Cat.	**B**	**C**
3	965	ø 36
4	965	ø 50,8 mm (2 Inc)

The cross shaft must always be mounted **centrally** in the headstock and locked with the lock collars.

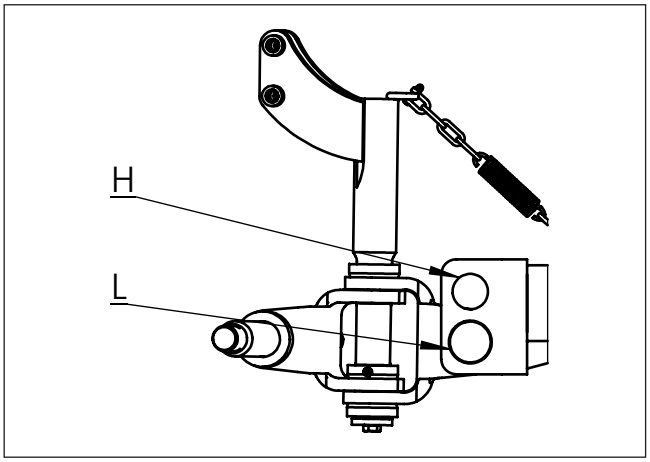


MOUNTING THE PLOUGH ONTO THE TRACTOR

Ensure that:

- The tractor’s lower links (ball joints) are at the same height (measure and if necessary adjust the lifting links) and that the lower links can be lowered approximately 20 cm below the cross shaft.
- The lower link ball joints and the top link ball joint are of the same category as the cross shaft and the top link pin. LOCK THE LOWER LINKS AND THE TOP LINK WITH SUFFICIENT LOCKING PINS. Mount the top link low on the tractor and adjust the length so that the Polhem hitch is vertical both in working and in transport position.
- The stabilizers of the lower links are correctly adjusted. In ploughing position: the plough should be able to move slightly sideways (not being tensioned into place). In transport position: the plough should not be able to swing out and collide with the tractor wheels or fenders.

The Polhem hitch on the CVL plough can be fitted in two height positions.
Position **H** gives more weight transfer to the tractor.
Position **L** gives less weight transfer to the tractor.

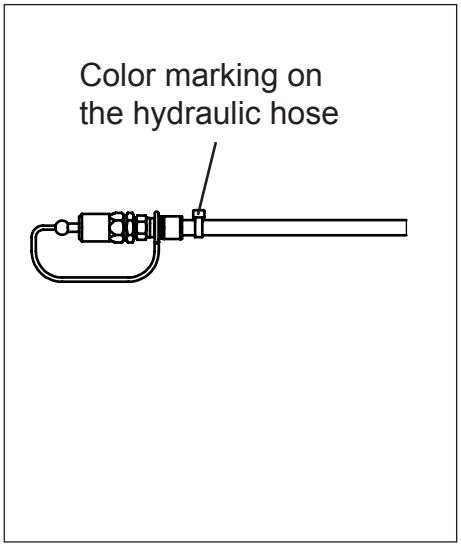


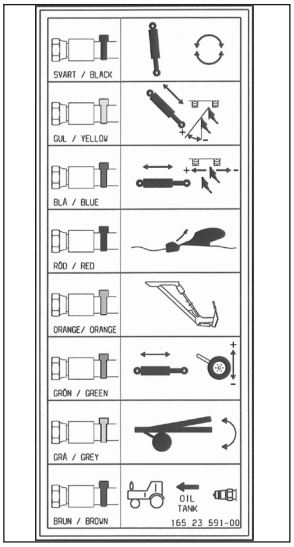
High weight transfer gives better traction, but takes weight off the tractor's front axle. Chose a suitable position considering front axle ballast and the tractor type.

CONNECTION OF HYDRAULICS

Connect the hoses to the cylinder for the rear wheel to the tractor's single-acting hydraulic outlet.

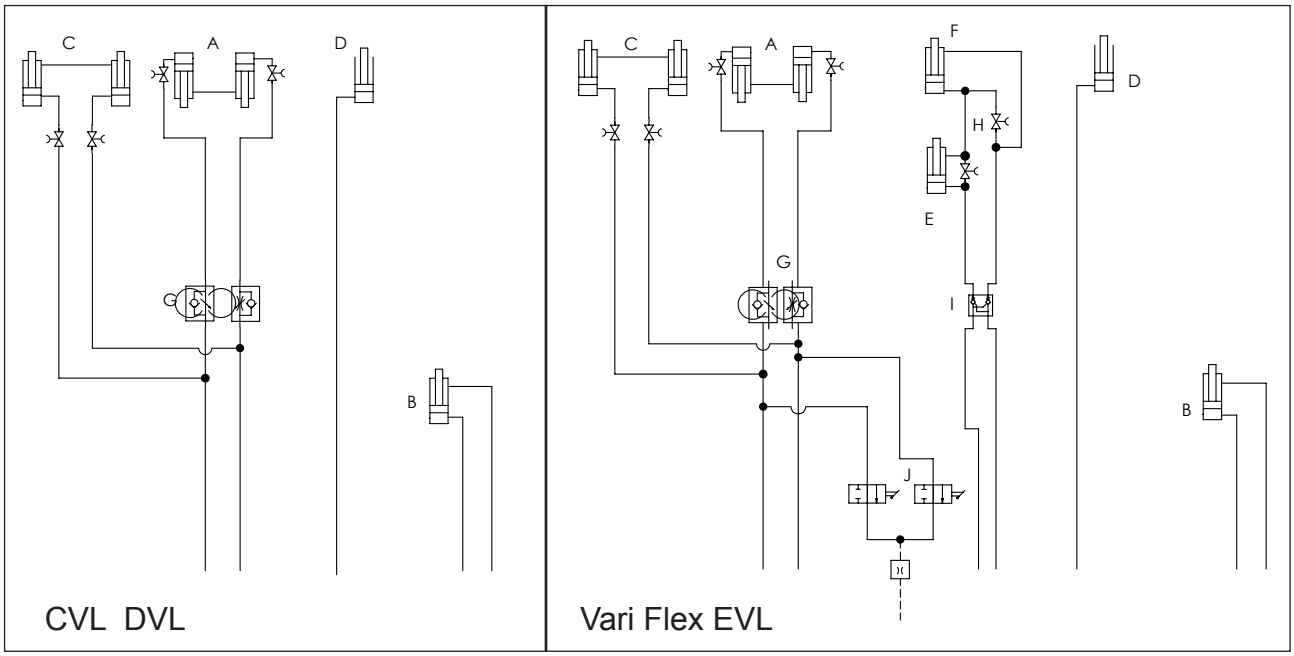
Connect the two hoses from the reversing cylinders to a double-acting outlet on the tractor. The hoses from the front furrow adjustment cylinder and the working with cylinder to two separate double-acting outlets. The ploughs can be equipped with a diverter-valve that connects the functions for reversing and first furrow adjustment to one double-acting outlet on the tractor. The Vari Flex EVL plough have one free return hose to tractor tank.





ID of hydraulic hoses

Black	Turn-over cylinders
Yellow	Adjustment of working width
Blue	Separate adjustment of front furrow
Red	Stone release system
Orange	Furrow press arm
Green	Rear wheel
Brown	Free return



A	Turn-over cylinder	F	Trim cylinder for wheel
B	Hydraulic front furrow adjustment	G	Adjustable restrictor valves
C	Hydraulic steering	H	Mechanical shut off valve
D	Rear wheel cylinder	I	Pilot operated check valve
E	Working width cylinder	J	Mechanical drainage valve

CHECKING THE PLOUGH

- Check the tightness of all bolts and nuts.
- Grease all lubrication points.
- Check the tyre pressure and adjust as necessary, see chapter 6. MAINTENANCE, TYRE PRESSURE.
- Mouldboards: In order to make it easy starting up a new plough, the frontside of the mouldboards, skim coulters and coverboards are protected with wax. The wax do not have to be removed before the plough is used for the first time.
- Check the disc coulter, the skim coulter settings and adjust so that the settings are identical.
- Raise the plough and mount the support leg in ploughing position.
- **Always remember to re-tighten all nuts and bolts after about 3 hours of use, apart from that you should make sure that bolts and nuts are tight at all times.**

STONE TRIP SYSTEM

Check the working pressure by reading the pressure gauge. For suitable working pressure, see chapter: 4. STONE TRIP SYSTEM, ADJUSTMENT OF OPERATING PRESSURE.

TURN-OVER MECHANISM

FUNCTION

The reversing mechanism consists of two single acting cylinders connected to a double acting valve on the tractor.

NOTE ! Always raise the plough fully before reversing is started. Do not reverse the plough before it is made sure that the reversing cylinders are filled with oil. (If the cylinder has not been filled with oil the plough falls without any restriction down against the adjustment screws, which can cause damage to the plough).

Fill the turn-over cylinders with oil

Pressurise the cylinder starting the reversing, stop the reversing before reaching the intermediate position. Pressurise the other cylinder and let the plough frame down to the starting position. Repeat this a few times before a complete reversing is made.

Function

The turn-over action is achieved by the reversing cylinders that press the plough frame over the intermediate position, then the plough falls by its own weight restricted by the second cylinder letting the oil out through a restrictor valve.

KEEP THE LEVER IN POSITION DURING THE COMPLETE REVERSING ACTION.

At next reversing the lever is pushed in opposite direction. The two cylinders are equipped with adjustable restriction valves controlling the speed of the second half of the reversing.

TROUBLESHOOTING

Problem	Possible reasons	Checklist
Plough does not reverse	Tractor oil level too low, or pressure too low	Top up with oil
	Quick couplings	Check that the quick couplings are the same type as on the tractor, correctly connected and not defective
	Restriction valve is closed	Adjust the restrictor valve

INSTRUCTIONS FOR DEPTH WHEEL CYLINDER ON CVL-PLOUGHS

FUNCTION

The cylinder has a free floating piston **A** under the piston that is connected to the piston rod **B**. The cylinder has two connections for the hydraulic hoses, one to the cylinder jacket and one to the piston rod.

During normal ploughing, the raising and lowering of the rear of the plough, the oil from the tractor's single acting outlet goes through the piston rod of the cylinder. The shut off valve **C** must be closed when ploughing and valve **D** open. By changing the oil volume between the free floating piston **A** and the rear end of the cylinder the stroke is adjusted and also the ploughing depth.

Important: The piston **B** and the floating piston **A** must have contact when adjusting the depth.

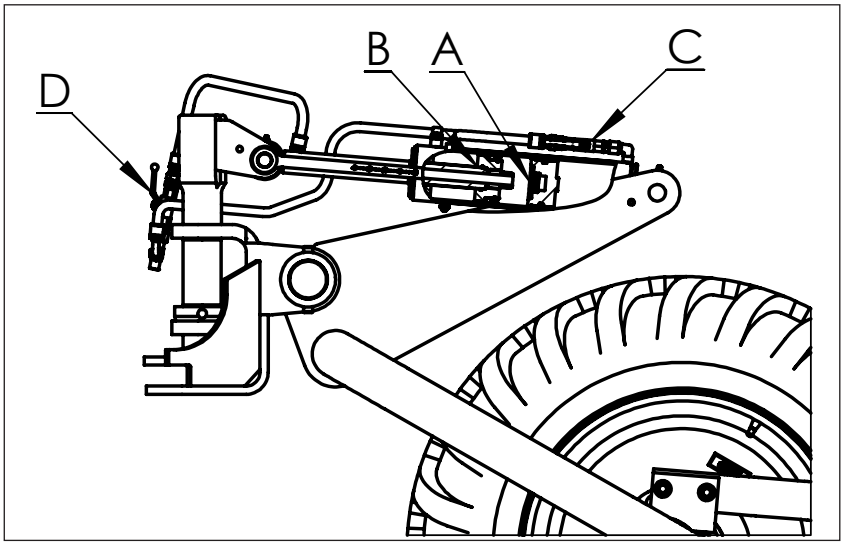
ADJUSTMENT OF PLOUGHING DEPTH

Put the plough into ploughing depth or put the plough into Butterfly/ Transport position, set the tractors valve to float position. Open valve **C** and close valve **D**.

Now you can adjust the depth of the plough rear with the tractor valve.

When the desired depth has been reached, stop and close valve **C** and open valve **D**.

Rule:	**Valve C**	**Valve D**
Adjusting of ploughing depth	Open	Closed
Ploughing	Closed	Open



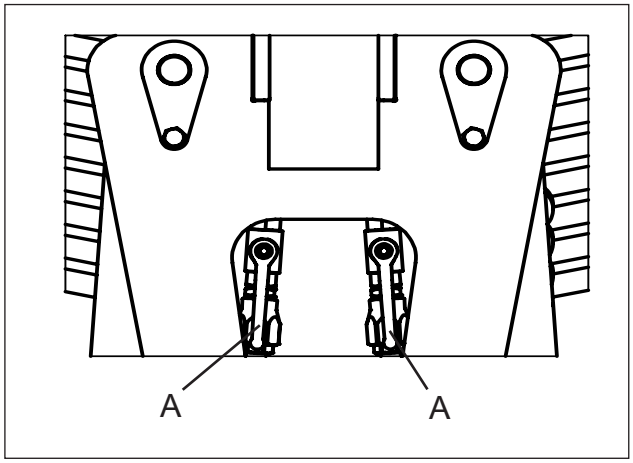
HYDRAULIC STEERING / TRANSPORT DRIVING

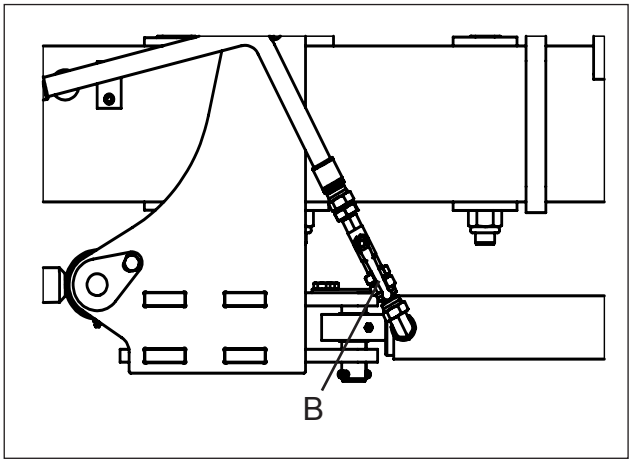
The rear wheel is controlled by two single acting hydraulic cylinders, parallel connected to the reversing mechanism. When reversing takes place the hydraulic flow goes to the rear steering cylinder and then to the reversing mechanism. The wheel can be steered independent of the reversing mechanism when the plough frame is fully reversed. For transportation the plough is reversed half the arch to its top (butterfly) position, then close the shut off valves on the turn-over cylinders **A**.

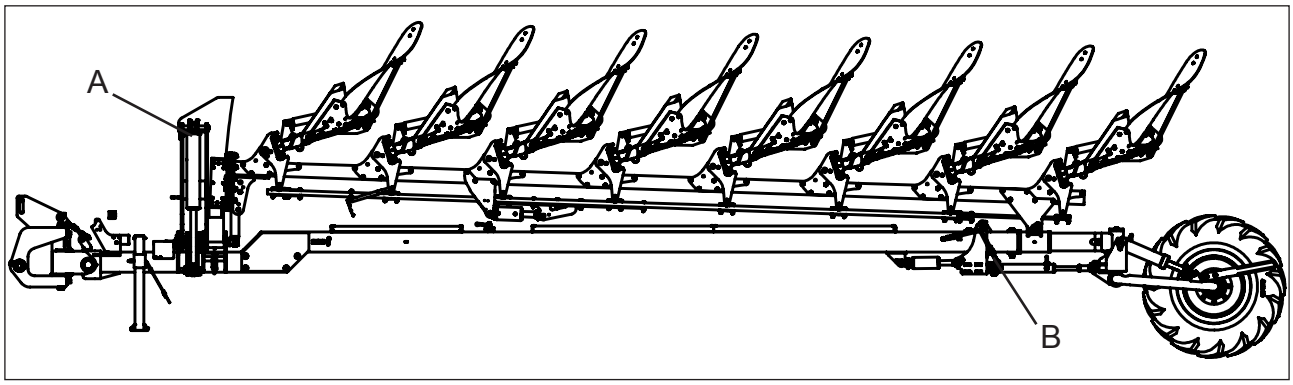
Steer the wheel so that the plough is following right behind the tractor and close the shut off valves on the steering cylinders **B**.

Lower the rear of the plough so that the cylinder rests on the depth adjustment bracket.

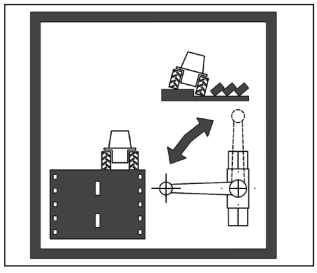
Make sure that the plough is lowered to its rest position on the rear cylinder, during transport driving.







The shut off valves on the reversing cylinders and the rear steering cylinders must be shut off during transport driving.



3. BASIC SETTINGS

BASIC SETTINGS OF THE PLOUGH

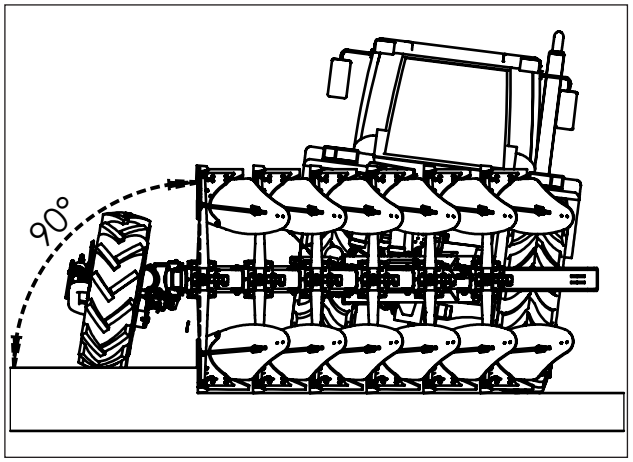
The basic setting can be started when the desired ploughing depth has been reached and when the tractor wheels (right or left hand pair) are running in a furrow with the same depth.

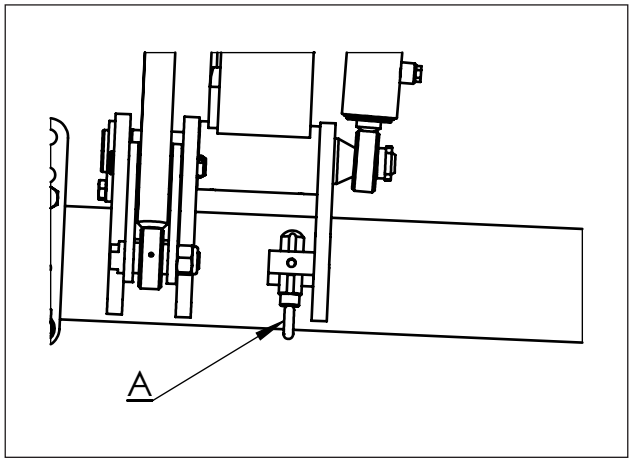
1. VERTICAL ADJUSTMENT

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 **A** on the righ side of the plough, and vice-versa.

ADJUSTING: Lift the plough out of the ground, turn the plough over, adjust the adjustment screw, turn the plough back over, lower the plough and continue ploughing.





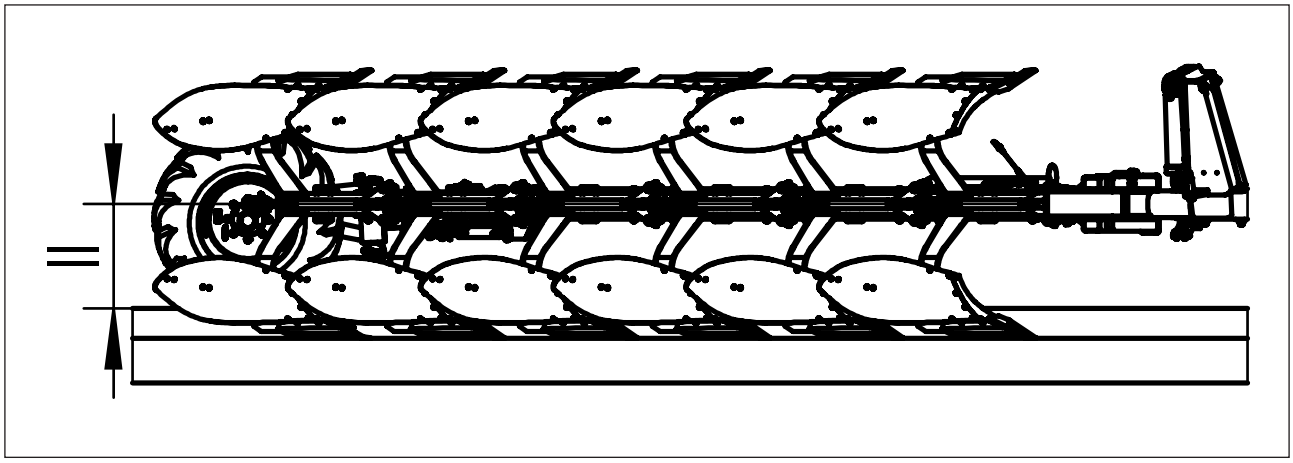
NOTE! The plough wheel will always have the same tilt as the tractor.

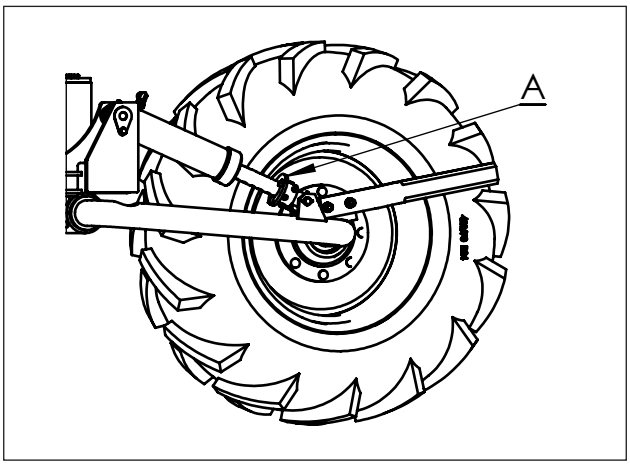
2. HORIZONTAL ADJUSTMENT

Adjust the ploughing depth for the rear of the plough with the bracket **A**, DVL Vari Flex EVL. For CVL, see chapter 2. TECHNICAL DESCRIPTION, INSTRUCTION FOR DEPTH WHEEL CYLINDER ON CVL PLOUGHS. Adjust the front of the plough to the same depth by means of the tree point hitch so that the plough frame is parallel with the ground.

Do not use too much draft control which causes big differences in ploughing depth at the front of the plough.

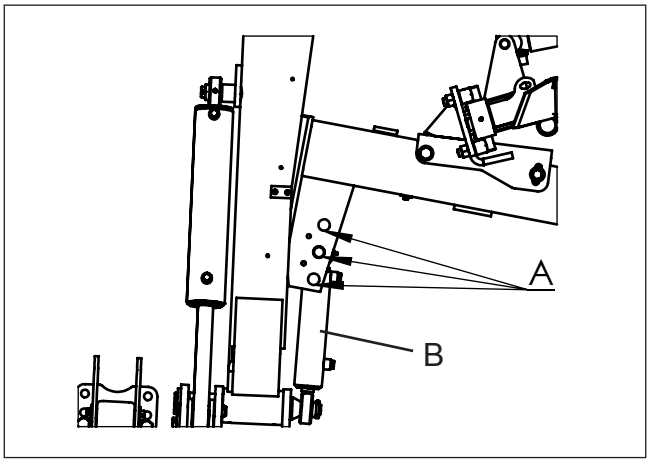
Use mainly position control. The constant weight transfer from the plough is enough to avoid slipping tyres.





3. FIRST FURROW WIDTH

The cross shaft must be centrally mounted in the Polhem hitch. The width of the front furrow are adjusted to correspond with the working width of the other plough bodies. This is done with the double acting hydraulic cylinder **B**, mounted between the plough frame and the stabilizer frame behind the turn-over mechanism. The cylinder can be mounted in different positions in the plough frame. Choose position according to actual track width of the tractor so that the front furrow can be used effectively.

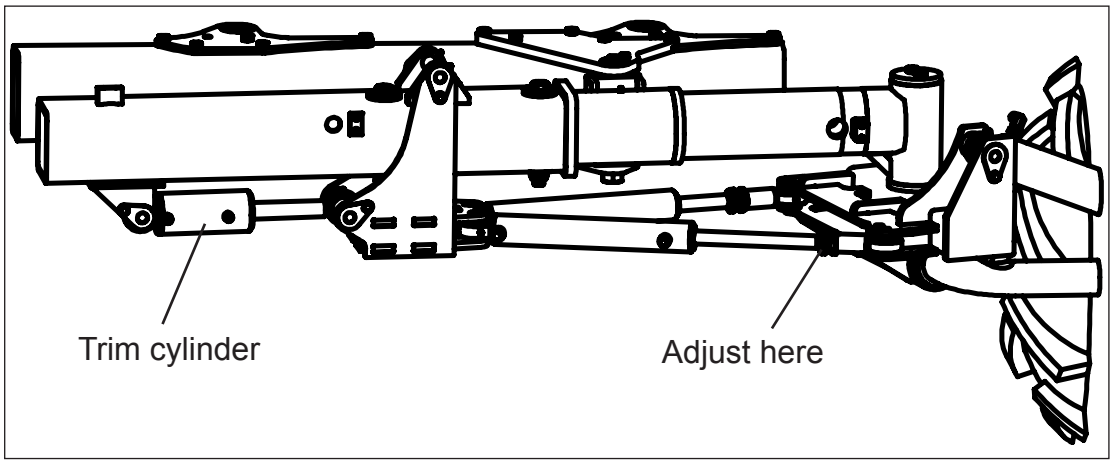


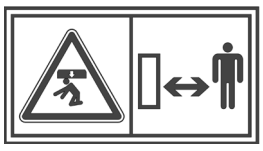
4. VERTICAL ADJUSTMENT, OTHER SIDE

Vertical adjustment for the other side of the plough is checked as per item 1 above.

Adjustment of the wheel

Adjust the outer (longest) steering cylinder rod until the wheel runs parallel with the landsides on the plough bodies. After reversing to the other ploughing position, the second steering cylinder rod is adjusted in the same manner. Release the pressure in the cylinder prior to adjustment, and make sure that the cylinder is fully extended when the position of the wheel is controlled. The trim cylinder on the Vari Flex EVL plough adjusts the wheel when the furrow width is altered.



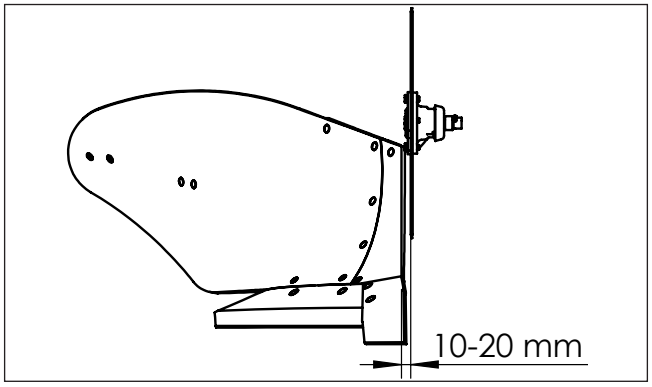


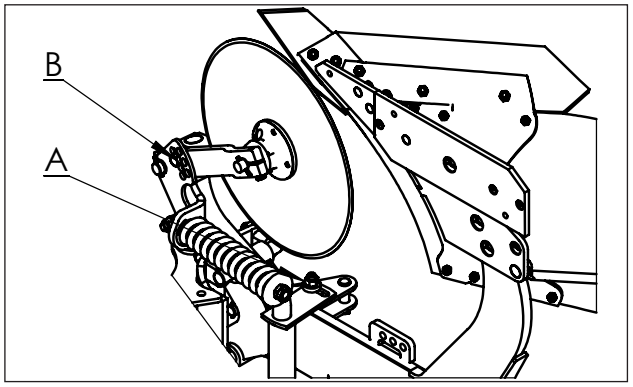
Make sure that no one is in close proximity of the plough when turn-over action is carried out. Never attempt to adjust any of the settings while the plough is in use.

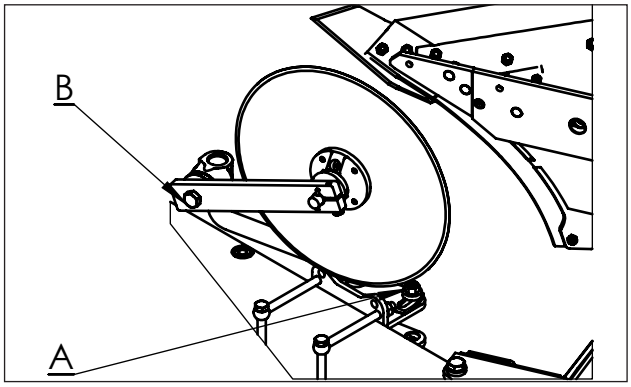
DISC COULTERS

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 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 adjustment of disc coulters
The coulters should be set to produce a clean cut. Under normal conditions, the cut should be made 10 - 20 mm outside the landside, depending on type and condition of soil. The left and right hand coulters are set individually by loosening the nut on bracket **A** and turning the coulter shank sideways.







Depth adjustment of disc coulters
To maintain a favourable cutting angle towards the surface, the disc coulters should never be set deeper in the ground than 1/3 of their diameter.

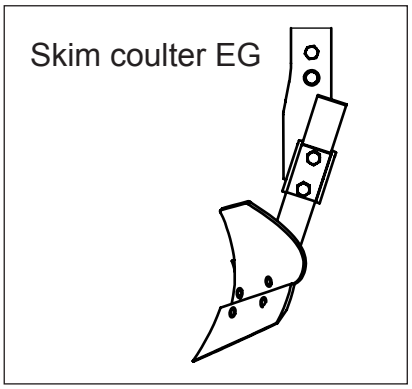
Depth adjustment is carried out by fitting the coulter arm to different positions, **B**. This applies for both fixed and spring loaded disc coulters.

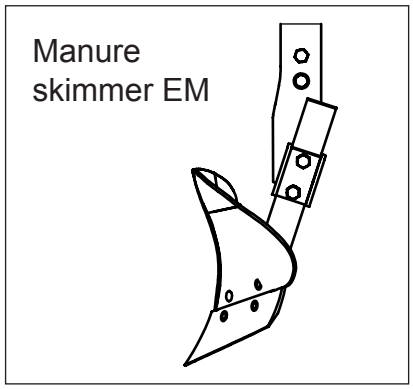
Make sure that all disc coulters on the plough are set to the same depth and are on an equal distance from the landsides on both left and right hand sides.

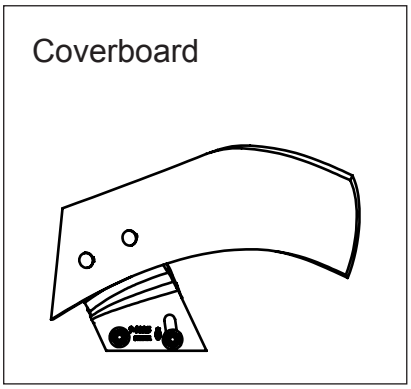
ATTENTION! Be alert, there is always a risk for injuries while adjusting disc coulters and skimmers.

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. Three different types of skimming devices are available for this purpose. All skimmers are equipped with shear bolt protection (Part no. 4165 20376 00).







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 50 mm 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.

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.

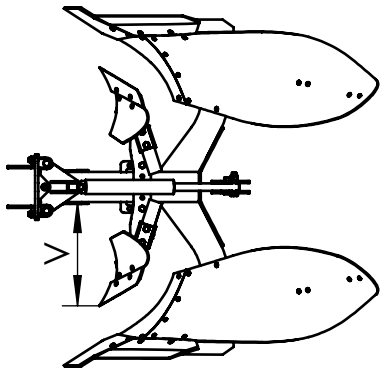
Coverboard
The coverboard does not affect the diagonal clearance of the plough. As a result, it can be used to advantage in loose soils and where considerable quantities of straw are present, but not in sticky soils.

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.

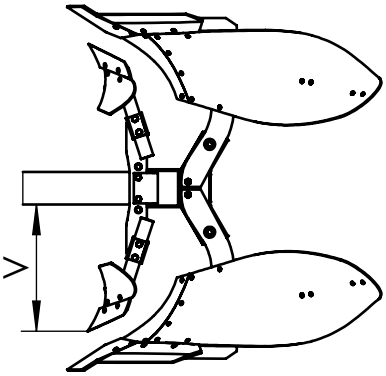
NOTE: The coverboard should only cut off a small corner of the furrow slice.

BASIC SETTING OF SKIMMERS (for 20 cm plough depth)

Hydraulic stone trip



Shear bolt protection



Hydraulic stone trip system
The mounting position of the skimmer bracket on the beam is the same if the plough is equipped with fin coulters or disc coulters.

The skimmer bracket is mounted in the rear hole as standard.

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

Under beam clearance 75 cm V = 540
Under beam clearance 80 cm V = 620
(Valid for all types of skimmers EG and EM)

Shear bolt protection
The skimmer mounting brackets are to be mounted onto the beam housings.

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

CVL DVL
Under beam clearance 75 cm V = 550
Under beam clearance 80 cm V = 600
(Valid for all types of skimmers EG and EM)

Variflex EVL
Under beam clearance 75 cm V = 515
Under beam clearance 80 cm V = 565
(Valid for all types of skimmers EG and EM)

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.

TROUBLESHOOTING - PLOUGHING

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

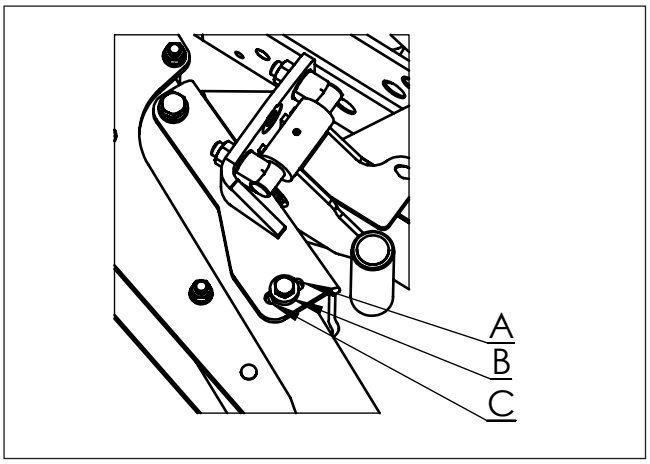
Problem	Reason	Checklist
Tractor pulls to one side and must be steered to counteract this	Plough incorrectly adjusted	Correct the plough adjustments, see basic settings: Check front and rear track widths. Check that the tractor's stabilisers are not tensioned.
Front end of tractor tends to lift	The front is too light. NOTE: The tractor must never be allowed to run on the back wheels (rear up)	Fit front weights or fill front tires with fluid
The first plough body cuts different furrow widths in left and right hand ploughing	The cross-shaft is not mounted centrally	Move the cross-shaft to the centre
	Incorrect vertical adjustment	Adjust the vertical adjustment
The plough frame is leaving the set screw for vertical setting during ploughing	Disc coulter too deep	Reduce depth of disc coulter
	Worn points	Change points
	Stone release pressure too low	Increase working pressure
First furrow slice too high or low	Incorrect basic setting	Adjust as per basic settings: Front furrow width.
The furrows are stepped	Incorrect basic setting	Adjust as per basic settings: Horizontal and vertical settings
Furrow slices remain standing or are not fully turned	Skimming devices set too low	Adjust the skimmers to reduce skimming action.
	Soil resistance causes plough to trip	Increase the working pressure
	Plough leans excessively toward unploughed side	Adjust the vertical setting
	Furrow width too narrow in relation to depth	Increase the furrow width
Furrow height alters within the same run	Lateral setting of disc coulters incorrect	Adjust the coulters
	Skim coulters set to different depths or have incorrect side adjustment	Adjust the skimmers

ADJUSTMENT OF WORKING WIDTH CVL – DVL

All ploughs are equipped with adjustable working widths:
CVL: 14”/350, 16”/400 and 18”/450
DVL: 16”/400, 18”/450 and 20”/500.

1. Alternating the beam housing position

Each plough body pair can swivel around the front bolt in the beam housing. By placing the rear bolt in one of the three different positions **A, B** or **C** you will alter the working (furrow) width. The table below shows you what working (furrow) widths you can achieve for the plough, note interbody clearance. When bolt has been mounted in the desired hole, tighten it up. For tightening torques see chapter 6: MAINTENANCE, REPLACEMENT OF WEARING PARTS.



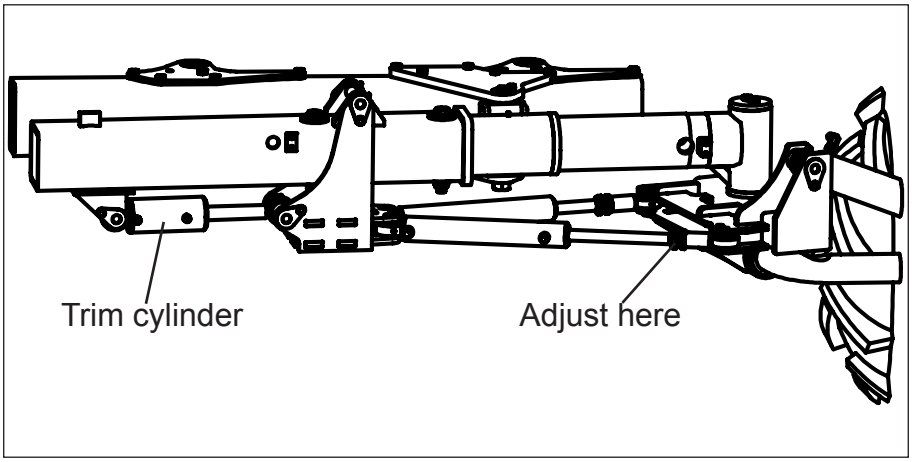
Working (furrow) widths

Interbody clearance	**A**	**B**	**C**
90 cm	14”/350	16”/400	18”/450
100 cm	16”/400	18”/450	20”/500

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

2. Adjustment of the wheel
Adjust the outer (longest) steering cylinder rod until the wheel runs parallel with the landsides on the plough bodies.

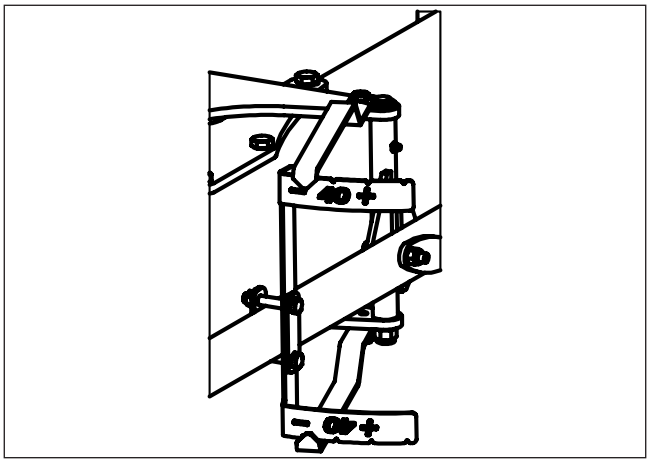
After reversing to the other ploughing position, the second steering cylinder rod is adjusted in the same manner. Release the pressure in the cylinder prior to adjustment, and make sure that the cylinder is fully extended when the position of the wheel is controlled.



3. Disc coulter adjustment
Adjust the disc coulters for the new furrow width (F- ploughs only).

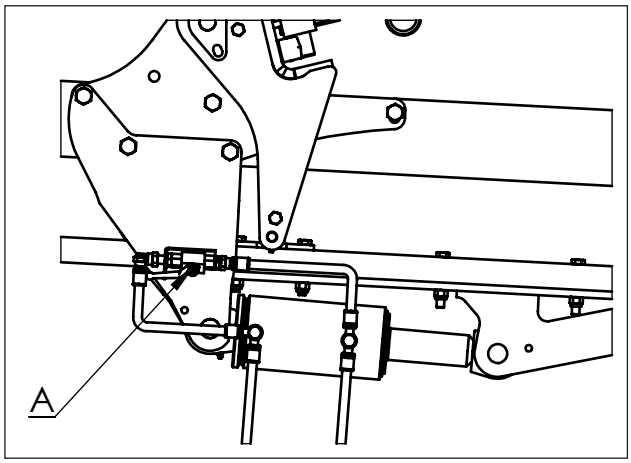
ADJUSTMENT OF WORKING WIDTH VARI FLEX EVL

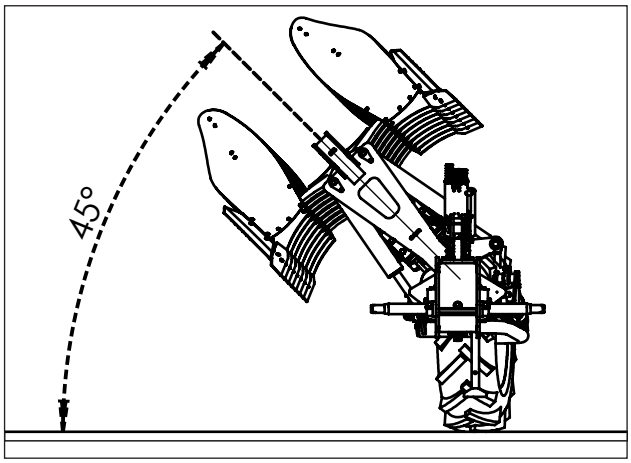
The plough is equipped with stepless adjustable furrow width, a double acting hydraulic cylinder alters the furrow width. The furrow width is adjustable from 12”/ 300mm up to 22”/ 550mm. A separate double acting valve is used for adjusting the working width.



Basic setting of the system for working width adjustment.
(can be necessary to do after service of cylinders etc.)

1. Reverse the plough so that the right hand plough body`s are pointing down, then reverse the plough up to approximately 45° angle.
2. Open valve **A** and set the furrow width to its minimum, using the tractors hydrailic. Both working width and trim cylinder are now set to minimum.
3. Close valve **A.**





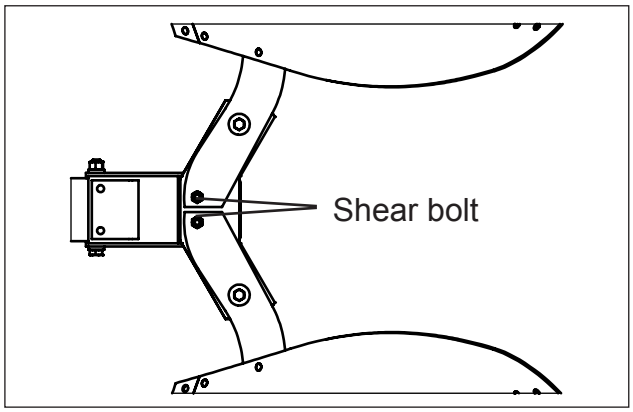
4. STONE TRIP SYSTEM

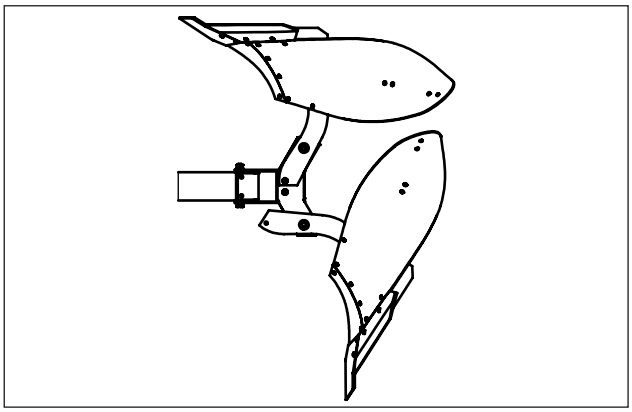
To protect the plow and tractor, all plows are equipped with a stone trip system.

SHEAR BOLT PROTECTION

All (fixed beam) ploughs are protected by a shear bolt in each leg (part no. 4165 91399 00).

NOTE: Always ensures 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.





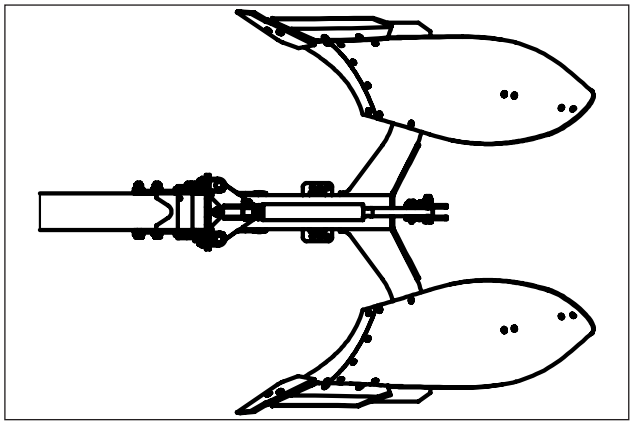
HYDRAULIC STONE TRIP SYSTEM

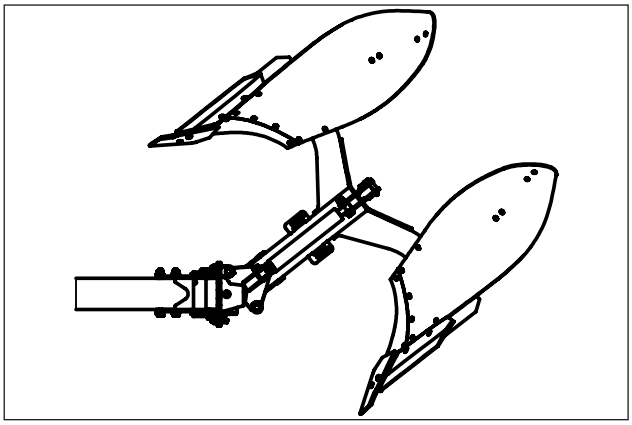
The tripping mechanism consists of a trip cylinder for each pair of plough bodies. The cylinder is connected to a gas/oil accumulator. The accumulator is precharged with nitrogen gas (N_2).

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





The precharge pressure in the accumulator is 9 MPa (90 bar). The **DVL** and **Vari Flex EVL**, 6-8 furrows have one extra accumulator with precharge pressure 12 MPa (120 bar).

The working pressure (oil pressure) is shown by the pressure gauge and should be at least 10% higher than the precharge gas pressure.
Working pressure, for ploughs with one accumulator, should be between 10,5 - 14 MPa (105-140 bar) and for ploughs with two accumulator 12,5-14 MPa (125-140 bar).

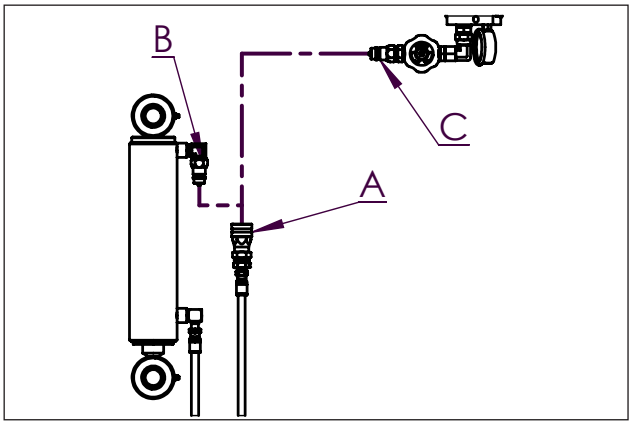
Rule: The working pressure should not be adjusted higher than the bodies to keep their correct positions during ploughing so it will not trip solely because of soil resistance.

ADJUSTMENT OF OPERATING PRESSURE

CVL
The stone release system is connected to the front furrow adjustment cylinder. Adjust the cylinder to maximum length. Open the valve and adjust the pressure to the required value using the tractor hydraulics. The operation pressure can be read on the pressure gauge. Close the valve.

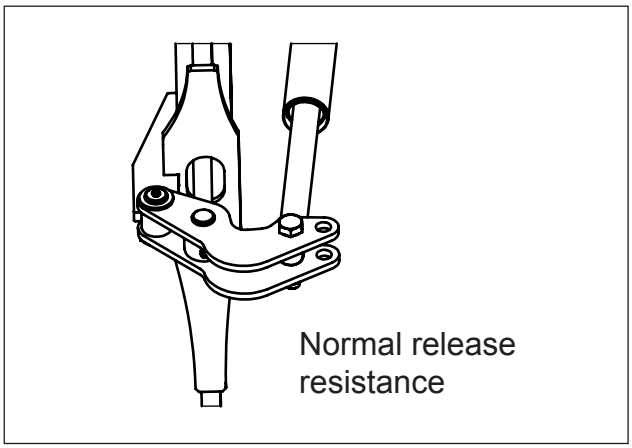
DVL Vari Flex EVL
Connect the filling hose (**A**) to the ploughs stone trip system (**C**). Open the valve and adjust the pressure to the required value using the tractor hydraulics. The operation pressure can be read on the pressure gauge. Close the valve and repositioning the hose in its original position (**B**). The accumulator is connected via the hose to the front furrow cylinder of the plough, consequently the front furrow cylinder will be activated when the accumulator is being filled or emptied.

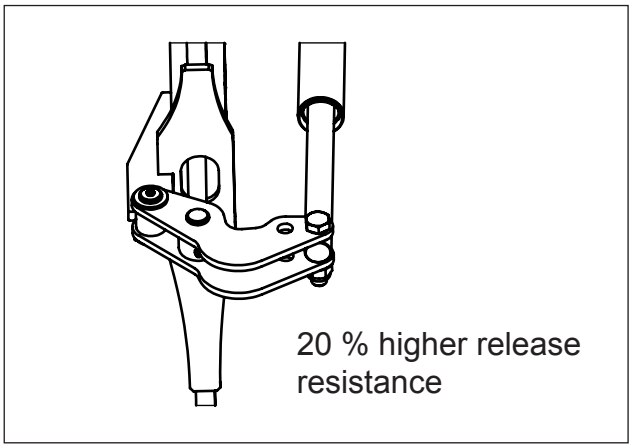
NOTE: The plough must be connected to the tractor when adjusting the pressure and when depressurizing the system. Always ensure maximum cleanliness when working with the hydraulic system.



Never attempt to disconnect any hydraulic connection while the system is pressurized.

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.

CHECKING THE ACCUMULATOR

The plough must be connected to the tractor!

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 WORKING 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 ÖVERUM dealer for advice.

Never tamper with the gas filling valve. Never attempt to disconnect a hydraulic conntection while the system is pressurized.
The plough must be connected to the tractor.

5. DRIVING A REVERSIBLE PLOUGH

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

Driving speeds, transport: Adapt driving speed to the road conditions so that the plough does not bounce behind the tractor. This could alter the plough settings and impose abnormal stresses on it.
Maximum transport speed 25 km/h (16 mph).

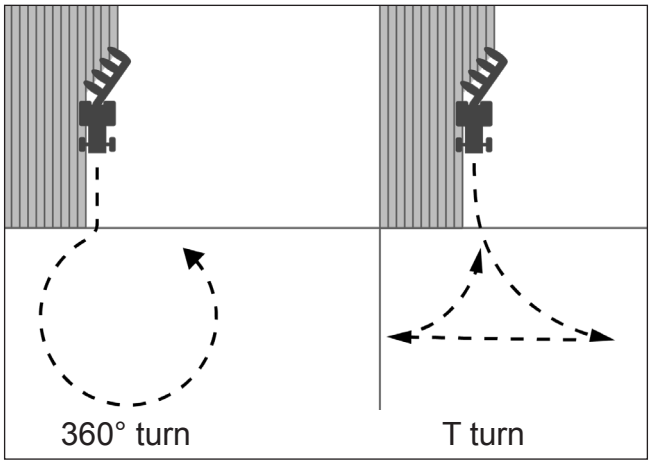
Ploughing: Adapt ploughing speed to the prevailing ground conditions and presence of stones.
NOTE: Excessively high speed costs money in terms of wear and damage to equipment.

Turning on headlands: After 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 headland mark, turning towards the unploughed side, reversing towards the ploughed side, driving forward and then lowering the plough at the headland mark. The plough should preferably be turned-over while driving forward or at standstill.

360° Turn: Start by raising the plough at the headland mark, immediately followed by a 360° turn starting off towards the ploughed side, re-approaching from the unploughed side and lowering the plough at the headland mark. The plough can be turned over any time 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 for the driver, but requires a smaller headland, while the 360° turn, although faster, requires less labour and a somewhat wider headland.



USEFUL OPERATIONAL POINTS

Marking of headlands
Always mark the headlands, working inward, towards the field with the rear body, (i.e. with an extended top-link and the front end of the plough raised).

In good regular fields, headland marking is only necessary at the short sides. In irregular fields or fields surrounded by ditches, hedges or other obstacles, the headlands should be marked out all around the field.

Headland width
Headlands should always be of an adequate width to permit the plough to be fully raised out of the ground before starting to turn the tractor. Depending on the size of the tractor and plough, and the method of turning on the headland (reversing or making a 360° turn), the headland width should be between 15 - 25 meters.

Ploughing
When starting ploughing at the edge of the field or at the side headland (if marked out all around), the first furrow slice should be laid inwards using the same plough setting as when marking the headlands. Ploughing begins with the second run in which the first furrow slice is returned. All the soil will by this be ploughed through completely. On the third run, the tractor will be running in a furrow at the correct depth and the basic settings should be adjusted.

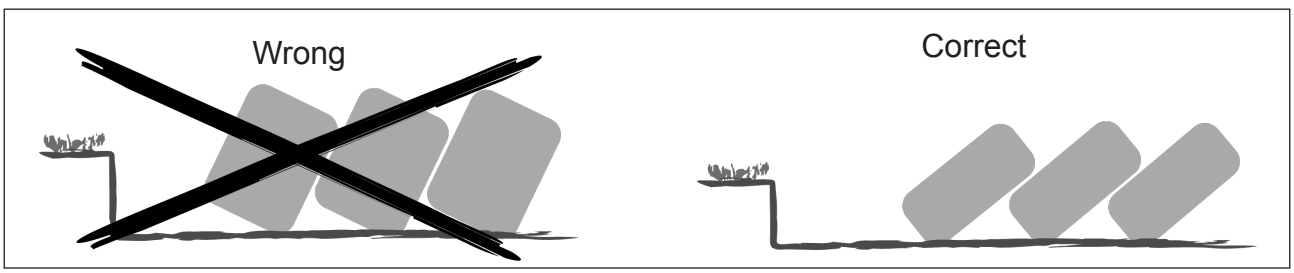
LOWERING AND RAISING OF THE PLOUGH SHOULD BE CARRIED OUT AT THE HEADLAND MARKS.

An even edge at the headland marking will make it easier to plough the headlands and eliminate double ploughing.

Drive Straight! Crooked furrows impose high stress on both tractor and plough, and contribute to an unsatisfactory result due to poor matching. Consequently, the furrows should be straightened as quickly as possible.

Always use the plough bodies alternately to equalise the wear on both right and left hand sides, otherwise, it will be impossible to produce uniform furrow slices on both sides.

Select the correct furrow width
The working width must always be proportional to the ploughing depth, i.e. the maximum depth should not exceed 2/3 of the furrow width. This to ensure that the furrow slices are correctly balanced and turned over.



6. MAINTENANCE

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

The plough comes with three wrenches. The wrenches are used for re-tightening the bolts and for replacing the wear parts.

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 fit the plough. This is also a condition for validity of the warranty.

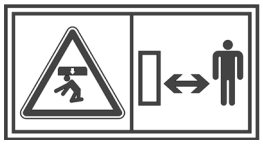
Point and Shares
The points and shares must be replaced before it has been worn down so far that the frog is damaged.

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

Landsides
If the landsides are severely worn, the plough will break out towards the unploughed soil 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.



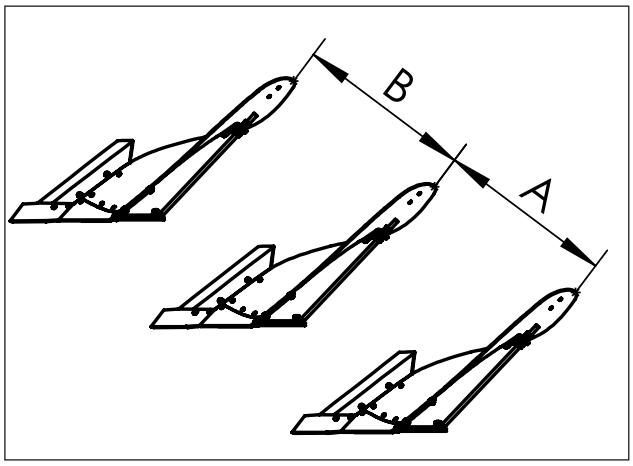
- **The plough must be connected to the tractor!**
- **Never carry out adjustment or replacing wearing parts unless the tractor engine is stopped and the plough is louvered to level ground.**
- **Never work under a raised plough without securing it with a stand or similar, to avoid accidental lowering of the plough.**
- **Never rely solely on the tractor hydraulic system.**
- **Always wear gloves and protective goggles when handling worn implement parts with sharp edges.**

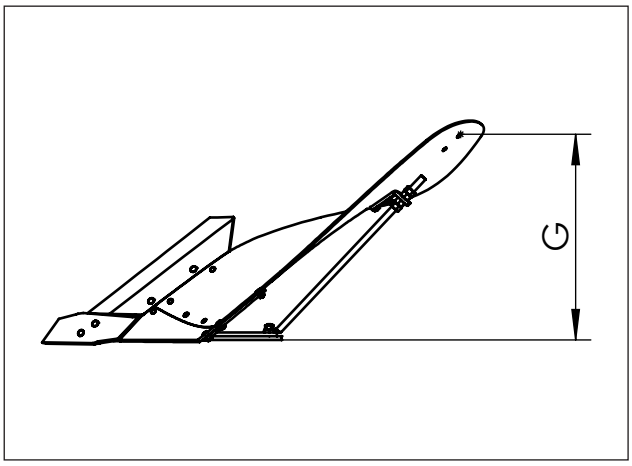
PARALLELISM AND G-MEASUREMENT OF THE MOULDBOARDS

- 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.

XL	Mouldboard normal measurement	G = 580 mm
XLD	Mouldboard normal measurement	G = 670 mm
XU	Mouldboard normal measurement	G = 625 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
XSD	Measurement to the outer end of the bottom slat	= 644 mm
	Measurement to the outer end of the top slat	= 400 mm

- Repeat the same procedure for the rear body on the opposite side.
- Measure from the now adjusted rear, two bodies forward and adjust the mouldboard stays if necessary, to the interbody space 900-1000 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. It is easier to tighten bolts and nuts to correct tightening torque, if they are lubricated with oil.

The following tightening torque should be used for the different bolts:

Tightening torque's

Quality	Size	Torque	
		Dry bolts and nuts	Bolts and nuts lubricated with oil
8,8	M12	81 Nm	70 Nm
8,8	M16	197 Nm	170 Nm
8,8	M18	275 Nm	236 Nm
8,8	M20	385 Nm	330 Nm
8,8	M24	665 Nm	572 Nm
8,8	M30	1310 Nm	1127 Nm
10,9	M12	114 Nm	98 Nm
10,9	M16	277 Nm	238 Nm
10,9	M20	541 Nm	465 Nm
10,9	M24	935 Nm	804 Nm
10,9	M30	1840 Nm	1582 Nm
12,9	M16*	333 Nm	286 Nm
12,9	M20	649 Nm	558 Nm
12,9	M24	1120 Nm	963 Nm

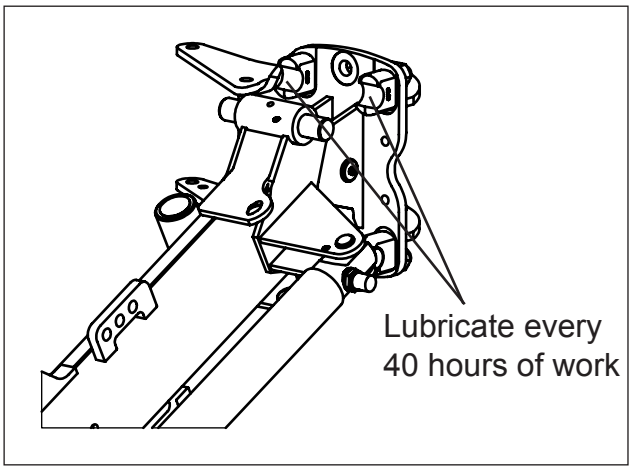
* The M16 screws that are mounted through the link plates but outside the main frame should be tightened to 200 Nm

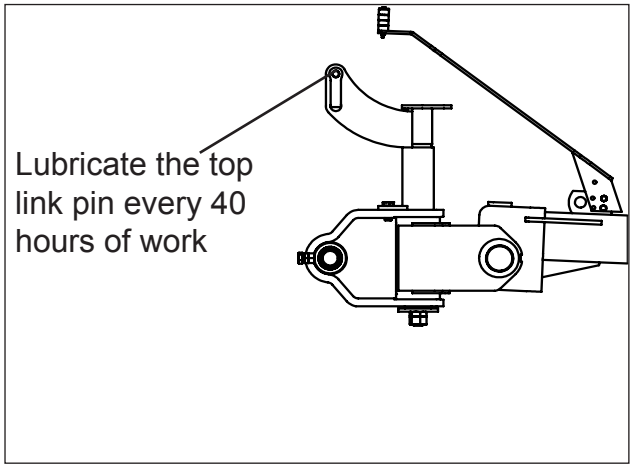
GREASING OF THE BEAM HINGE POINTS

Position the plough with the bodies approx. 15 cm above the ground, depressurise the system as described in, **see section 4. STONE TRIP SYSTEM, CHECKING THE ACCUMULATOR**.

The hinge points will now expose as the beams drop down. Grease all the upper hinge points (MoS2 grease is recommended). Also grease all other lubricating points in the stone trip linkage while depressurised. Now pressurise the system, make sure that the beams return to their correct positions. Turn the plough over to the other side, and repeat the procedure. 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.





TYRE PRESSURE

Model no.	Tyre	Recommended Pressure	
CVL	400/55-22,5	150 kPa	1,5 bar
DVL	15.5/80 R24	300 kPa	3,0 bar
Vari Flex EVL	15.5/80 R24	300 kPa	3,0 bar

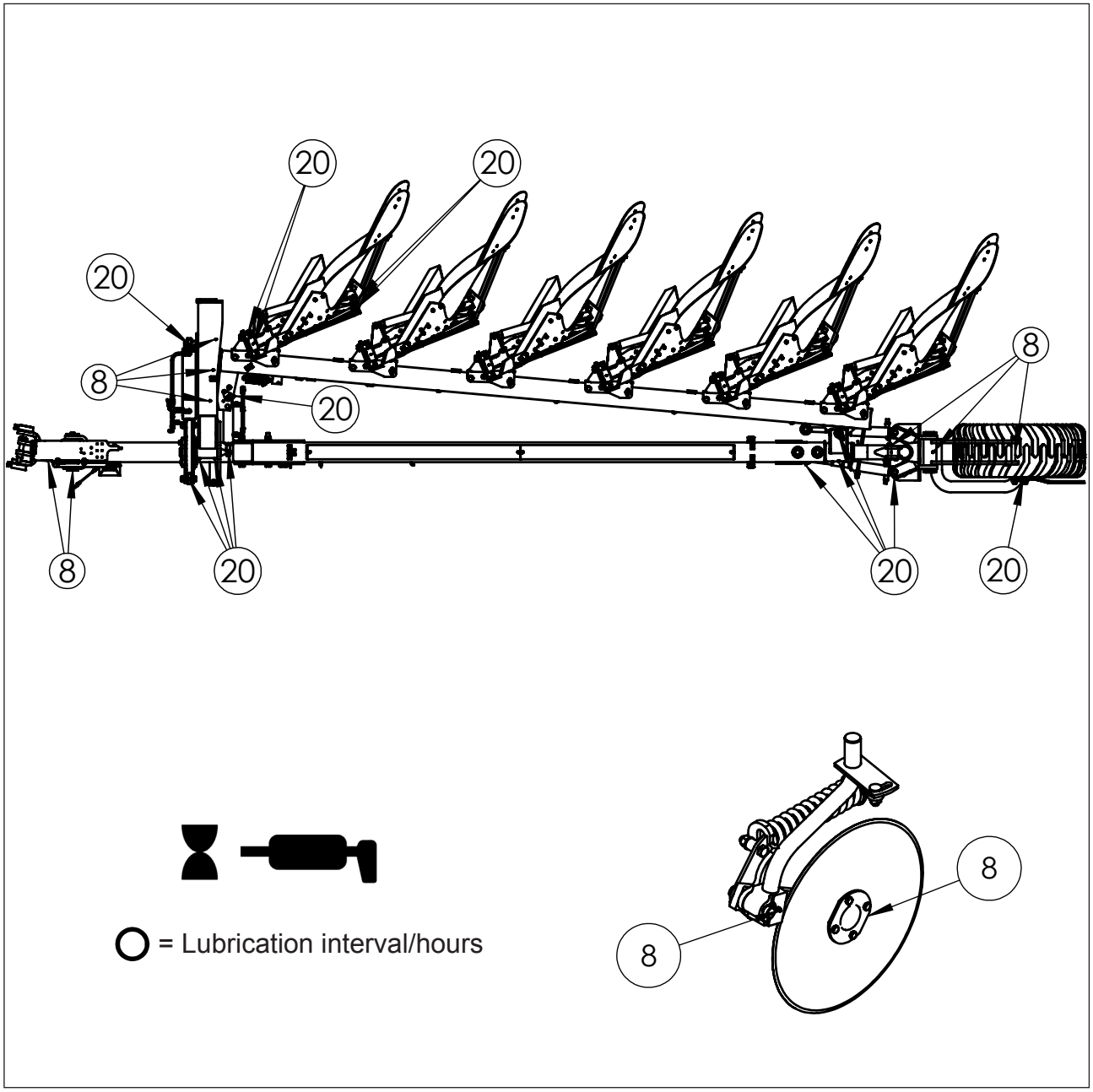
WINTER STORAGE

- 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 pressurised condition so that all trip cylinders are fully extended and filled with oil
- Check the hydraulic hoses on the stone trip system and replace any damaged parts

Always use original spare parts!

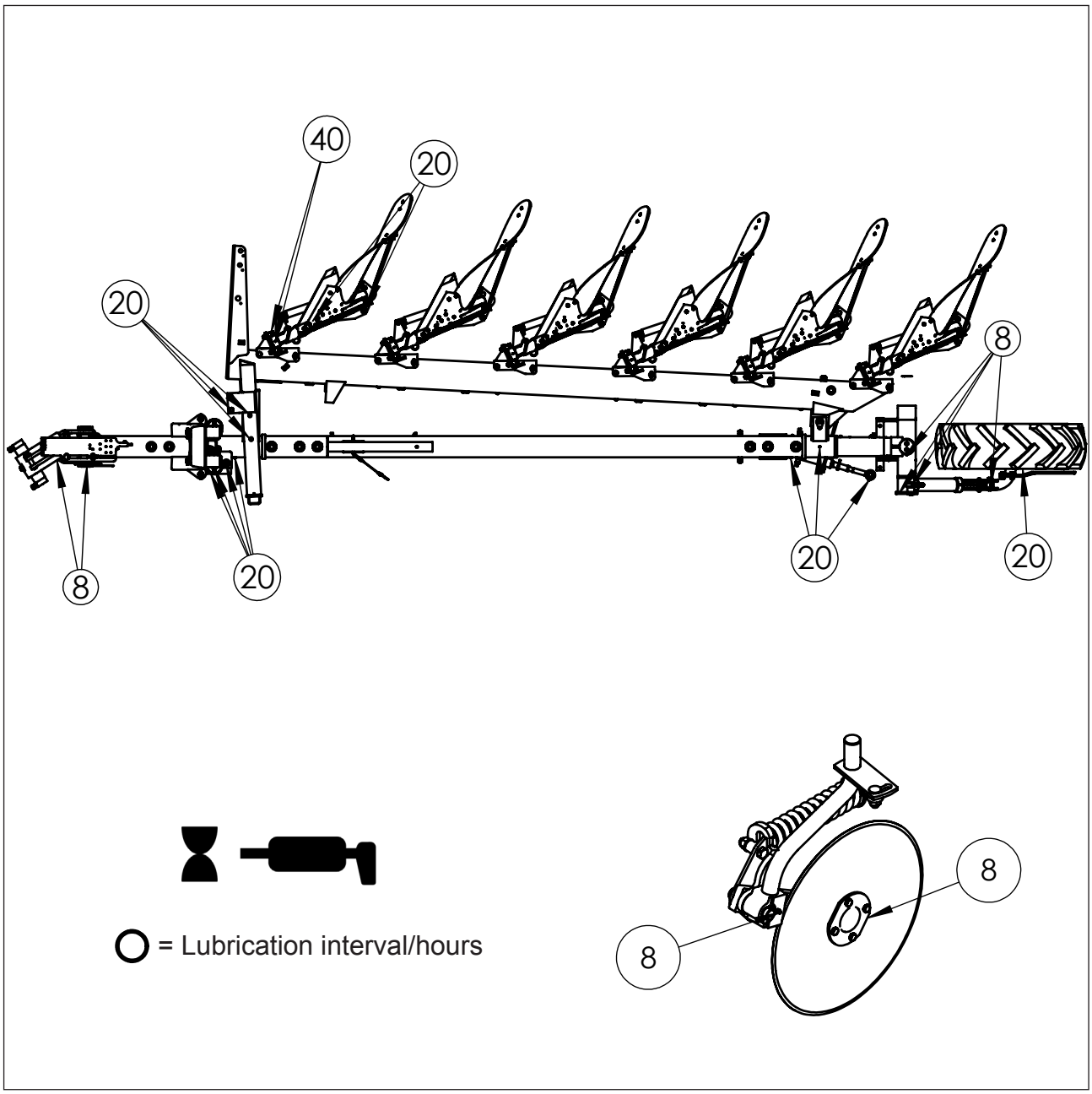
LUBRICATION CHART CVL

Lubricate the places indicated in the chart below at the indicated time interval.



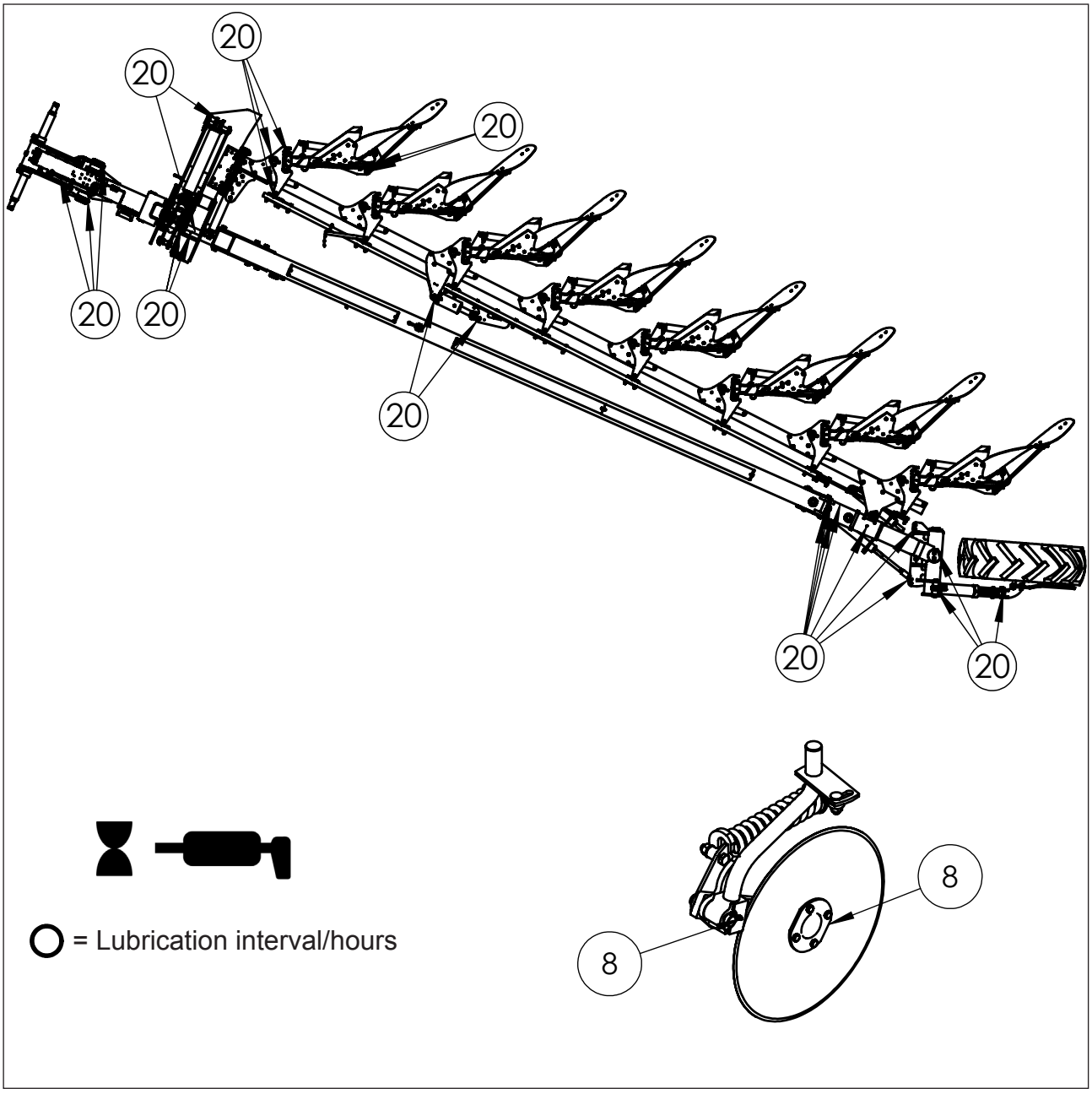
LUBRICATION CHART DVL

Lubricate the places indicated in the chart below at the indicated time interval.



LUBRICATION CHART VARI FLEX EVL

Lubricate the places indicated in the chart below at the indicated time interval.



7. USEFUL ADVICE

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

Length of the lift rods _____

Length of top link _____

Left vertical adjustment screw _____

Right vertical adjustment screw _____

Adjustment stop bracket -wheel _____

These measurements and similar notes will make the adjustments easier next time you start ploughing.

8. LIFTING POINTS

NOTE! It is not allowed to lift the plough!
For transportation the plough most be mounted to a tractor!

9. TECHNICAL DATA

Model CVL H	Distance between plough bodies pairs (cm)	Under beam clearance (cm)	No. of plough body pairs	Work width (cm)	Recom-mended tractor size (hp)	Machine weight* (kg)
5975	90	75	5	175-225	80-150	2550
6975	90	75	6	210-270	100-180	2805

* Equipment: One pair of disc coulters, other knife coulters

Model CVL F	Distance between plough bodies pairs (cm)	Under beam clearance (cm)	No. of plough body pairs	Work width (cm)	Recom-mended tractor size (hp)	Machine weight* (kg)
5975	90	75	5	175-225	80-150	2266
6975	90	75	6	210-270	100-180	2465

* Equipment: One pair of disc coulters, other knife coulters

Model DVL H	Distance between plough bodies pairs (cm)	Under beam clearance (cm)	No. of plough body pairs	Work width (cm)	Recom-mended tractor size (hp)	Machine weight* (kg)
51080	100	80	5	200-250	110-200	3175
61080	100	80	6	240-300	120-220	3375
71080	100	80	7	280-350	140-250	3575
81080	100	80	8	320-400	150-250	3775

* Equipment: One pair of disc coulters, other knife coulters

Model DVL F	Distance between plough bodies pairs (cm)	Under beam clearance (cm)	No. of plough body pairs	Work width (cm)	Recom-mended tractor size (hp)	Machine weight* (kg)
51080	100	80	5	200-250	110-200	2860
61080	100	80	6	240-300	120-220	3000
71080	100	80	7	280-350	140-250	3140
81080	100	80	8	320-400	150-250	3275

* Equipment: One pair of disc coulters, other knife coulters

Model Vari Flex EVL H	Distance between plough bodies pairs (cm)	Under beam clearance (cm)	No. of plough body pairs	Work width (cm)	Recom-mended tractor size (hp)	Machine weight* (kg)
51080	100	80	5	150-275	120-220	3940
61080	100	80	6	180-330	150-250	4205
71080	100	80	7	210-385	175-300	4470
81080	100	80	8	240-440	250-350	4730

* Equipment: One pair of disc coulters, other knife coulters

Model Vari Flex EVL F	Distance between plough bodies pairs (cm)	Under beam clearance (cm)	No. of plough body pairs	Work width (cm)	Recom-mended tractor size (hp)	Machine weight* (kg)
51080	100	80	5	150-275	120-220	3640
61080	100	80	6	180-330	150-250	3890
71080	100	80	7	210-385	175-300	4180
81080	100	80	8	240-440	250-350	4375

* Equipment: One pair of disc coulters, other knife coulters