



Operating Manual

Model PL/RL

No KK730912



Chapter	Page
1.0 Introduction	4
2.0 New equipment - be careful!	5
3.0 Think safety	7
3.1 Think safety - always observe the decals displayed	8
4.0 Technical specifications	9
5.0 Wheels	9
5.1 Optional equipment	9
6.0 Description	11
7.0 Tractor	13
7.1 Tractor equipment	13
7.2 Tractor attachment	13
9.0 Beams	15
9.1 Auto reset system	15
9.2 Shear bolt	17
10.0 Disc coulter	19
10.1 Disc coulter for auto-reset beam	19
10.2 Disc coulter for shearbolt beam	19
11.0 Skim equipment	21
11.1 Manure skimmer	21
11.2 Trashboard	21
12.0 Landside, knives & furrow openers	23
13.0 Checking and adjustment of the plough	25
13.1 Checking	25
13.2 Adjustment of the plough	29
14.0 Transport	31
15.0 Headland driving	33
15.1 Headland driving	35
16.0 Lubrication and Maintenance	37
17.0 Using the joystick (Optional)	39
18.0 Hydraulic circuit diagrams	41
20.0 Original spare parts	43
21.0 Tightening torque	44

1.0 Introduction

Congratulations on the purchase of your new **Kverneland** plough. You have chosen a product which will give you trouble free service and performance to the highest standards expected. Should you require after sales, service or the supply of spare parts, please contact your local Kverneland dealer.

All **Kverneland** products are developed and tested in co-operation with farmers and institutions with the purpose to secure the most optimal function and safety in operation.

For your safety, we ask you to read through this operator's manual before you begin to use the equipment.

Good luck!



Kverneland Klepp AS
4355 Kverneland
Tlf.: 51 42 90 00
Fax:51 42 90 01

2.0 New equipment - be careful!

It is very important to be careful when new equipment is going to be used for the first time. Incorrect mounting of equipment and operational errors can lead to expensive repair work and operational losses. The **Kverneland** factory warranty is not valid if the instructions in this operating manual are not followed correctly.

Please ensure that all equipment is mounted correctly and that it is not damaged. Also, check that the hydraulic hoses are mounted such that they are long enough for free hydraulic cylinder movement and that they do not become trapped during implement operation.

When leaving the **Kverneland** factory all new equipment is lubricated with the correct kind of grease. Only use quality grease recommended.

Check that all nuts and bolts are firmly tightened (look at chapter 21.0 Tightening torque), this is very important after the first hours in use.

Important Safety Recommendations

All mounted reversible ploughs:

On large fully mounted reversible ploughs it is recommended to replace the cross shaft after approx. 1000 km of transport operation. This is for safety reasons in the unlikely event a failure should occur.

Hydraulic system:

The hydraulic system is working under high pressure and is therefore potentially dangerous. It is very important that all hoses and connections are checked frequently for leakage and external damage.

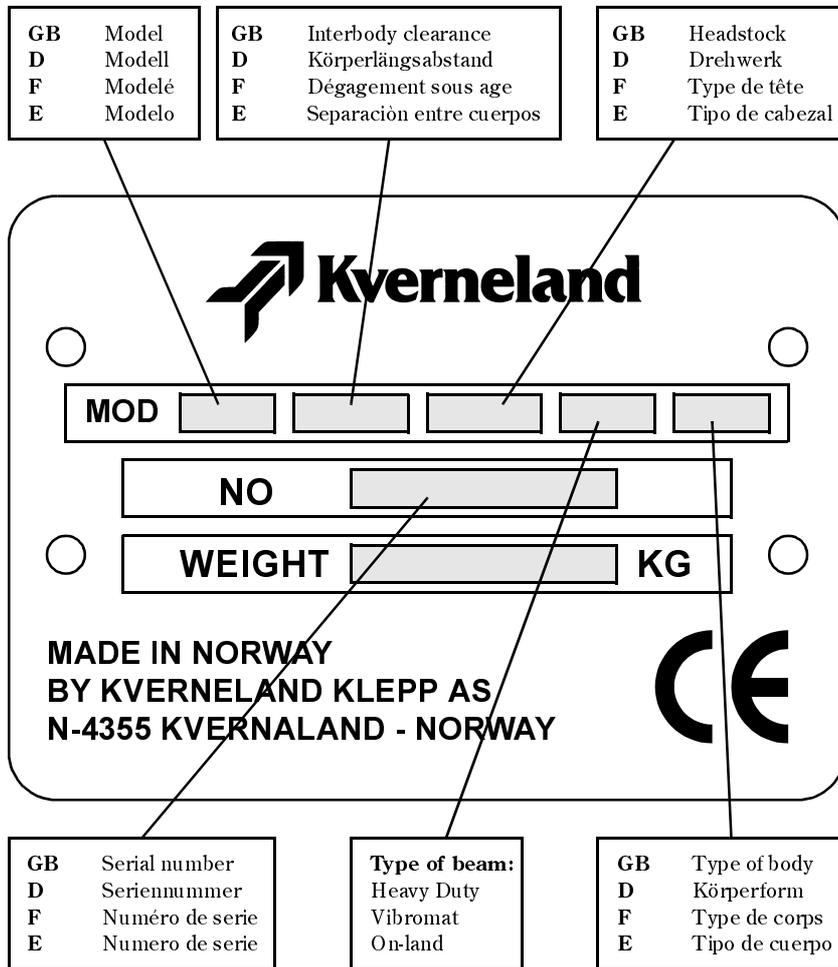
The hydraulic hoses should not be connected to, or removed from the hydraulic system on the tractor unless the oil pressure in both the tractor and implement has been released.

In accordance with the EU-directive, all hydraulic hoses should be exchanged with new genuine Kverneland replacements after 6 years. Porous and defective hoses must always be replaced immediately.

Oil leakage from damaged hoses and connections can cause fatal injury and possible fire risk.

Always seek medical treatment immediately following an injury.

Note: The sound level on all ploughs is less than 70 dB.



- (GB)** Complete model code and serial number must be stated to avoid mistakes when ordering spare parts and misunderstandings regarding service consultations. The identification plate is located on the headstock.
- (F)** Le code complet et le numéro de série doivent être indiqués pour éviter des erreurs lors de la commande de pièces de rechange et des malentendus concernant des demandes de Service-Après-Vente. La plaque d'identité est située sur la tête.
- (D)** Um bei Ersatzteilbestellungen und Serviceleistungen Fehler und Mißverständnisse zu vermeiden ist es erforderlich, daß die genaue Bezeichnung und die Seriennummer angegeben werden. Die Plakette befindet sich am Drehwerk.
- (E)** Debe figura el código completo del modelo y el número de serie para evitar errores al pedir las piezas de recambio y al hacer consultas técnicas. La placa de identificación está situada en el cabezal.

Maschine no.: _____

Delivery year: _____

3.0 Think safety



Read the instruction manual and follow the instructions given.



The tractor should be fitted with enough front-end weights for stability and to maintain secure steering.



Do not stand on, under or close to the implement while it is in work or while coupling it to the tractor.



Use the tractor's position control when coupling the implement to the tractor.



Do not stand under or near the implement unless it is properly supported.



Do not stand between tractor and implement while it is being raised.



When parking the tractor - always lower the implement.



The tractor's lower link arms should be stabilised before driving on a public road so that the plough and tractor lower link arms do not touch the tyres during transport.



The implement must not be used for other purposes than those it is constructed for.



Make sure that all nuts and bolts are always fully tightened.

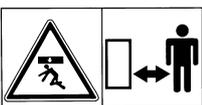
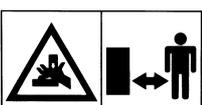
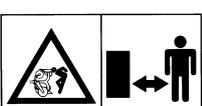
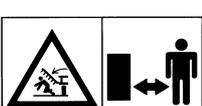


The user should be familiar with the function and safe use of the implement.



The user is responsible for ensuring the implement complies with the law when driving on public roads.

3.1 Think safety - always observe the decals displayed

	<p>1. Warning: Always read the instruction manual.</p>
	<p>2. Danger: Do not stand between tractor and implement.</p>
	<p>3. Use the parking support.</p>
	<p>4. Danger: Reversible plough.</p>
	<p>5. Crush danger: Keep clear.</p>
	<p>6. Crush danger: Keep clear.</p>
	<p>7. Sharp point: Keep clear.</p>
	<p>8. Crush danger: Keep clear.</p>
	<p>9. All nuts should be tightened after some hours of use.</p>

4.0 Technical specifications

Model									
	Inter body clear.	Under-beam clear.	Number of furrows	Beam type	Frame size (mm)	Furrow width (cm)	Packo-mat S	Packo-mat C	Weight kg (1)
PL-100/ PL-100-OL	100	70/75	6(3 + 3) 7(4 + 3) 8(5 + 3)	Auto	150x150x 12,5(6,3)	35 - 50	No	Yes	3400/3820/ 4250
RL RL-100-OL	100	70/80	6(3 + 3) 7(4 + 3) 8(5 + 3)	Fixed	150x150x 12,5(6,3)	35 - 50	No	Yes	2050/3420/ 3800

1. Net. weight without equipm.

5.0 Wheels

Rubber depth wheel, 12,5/80 x 12 layers
 Rubber depth wheel, 12,5/400 x 22,5, 8 layers
 Rubber depth wheel, 12,5/400 x 22,5, 14 layers
 Rear depth wheel, 200 x 14,5
 Rear depth wheel, 26 x 12 - 12

5.1 Optional equipment

Skimmers
 Maize skimmers
 Trashboards

Disc coulters
 Landside knives
 Furrow opener (for tractors with wide tyres)

First furrow hydraulic adjustment

Packomat (integral soil packer) - different widths of rollers, front and rear equipment



Fig. 1

6.0 Description

The plough (fig. 1) consists of a tow frame (A), a first main frame (B), a second main frame (C) and a wheel carriage (D). The two main frame sections are joined together by a special hinge (E) on the wheel carriage.

The wheels automatically align parallel with the landside when the plough is turned from one side to another.

All body and leg assemblies are fastened by means of M24" bolts (F) to the main frame, thereby allowing the furrow width to be varied from 14" to 20" (35 - 50 cm).

The "on-land" version can be used for both "in-furrow" and "on-land" operation. This is achieved by operating the special 3-stage first furrow-adjusting cylinder.

When driving "on-land", maximum overall wheel setting on the tractor is 3200 mm.

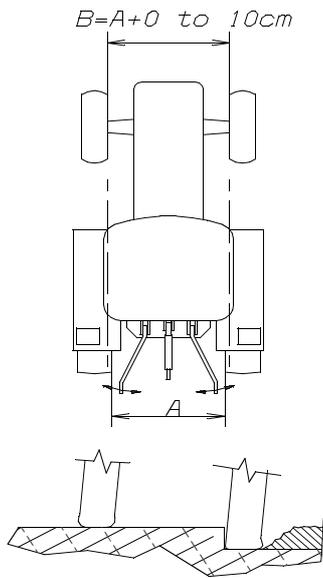


Fig. 2

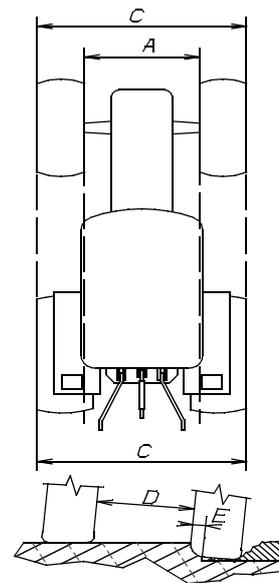


Fig. 3



Fig. 4

7.0 Tractor

7.1 Tractor equipment

The tractor must be equipped with (minimum) :

- One double acting hydraulic outlet for the turnover cylinders
- One double acting hydraulic outlet for the wheel carriage. If the plough is equipped with a joystick or foot pedal the following operations can be made:
 - a) Raise and lower the centre carriage section,
 - b) Raise and lower the rear ploughing section,
 - c) Adjust the Vari-Width furrow width system

Optional equipment can be delivered:

- One double acting hydraulic outlet for the hydraulic furrow width adjustment
- One double acting hydraulic outlet for Vari-Width system if a joystick/foot pedal control is not used
- One double acting hydraulic outlet for the hinge cylinder if a joystick/foot pedal control is not used
- If the plough is equipped with a Packomat, additional outlets may be required.

NB! The tractor lower link arms (A, fig. 4) must be stabilised preventing sideways movement. If this is not possible, the free movement has to be limited and equal on both sides.

Front-end tractor weights are usually required. For "in-furrow" operation, the rear tractor wheel setting (between inside faces of tyres) should be from 110 to 160 cm. When using a 4WD-tractor it is most important that wheel distance in front is not less than that of the rear wheel setting. If the distance in front is less than the rear, there will be a width variation on the first furrow. However, when using a 2WD-drive tractor it can be an advantage to adjust the front wheels 0 to 10 cm. wider for optimum ploughing performance (fig. 2).

When part of the tractor tyre rolls on the land with a distance (E) or when using a furrow opener (fig. 3) the rear wheel distance (D) would be $A + 2E$. **NB!** When using furrow openers, the width of the front furrow (E) will be narrower than the remaining furrows. The front furrow width should always be set from the original furrow wall.

The tractors' lift rods should be equal in length and the angle of the lower draft arms equal on both sides. The air pressure must also be equal on both rear wheels.

7.2 Tractor attachment

The cross shaft is delivered with Cat. III (Ø36 mm) 965 mm.

The parking stands must be raised before ploughing and put down again when parking the plough.

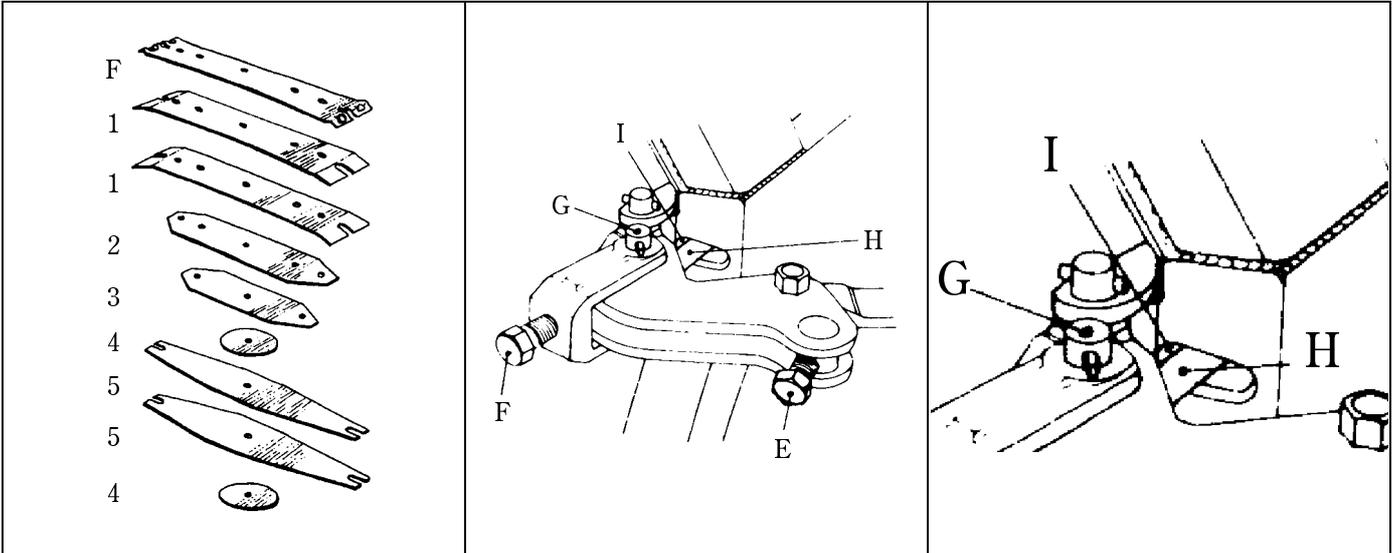


Fig. 5

Fig. 6

Fig. 7

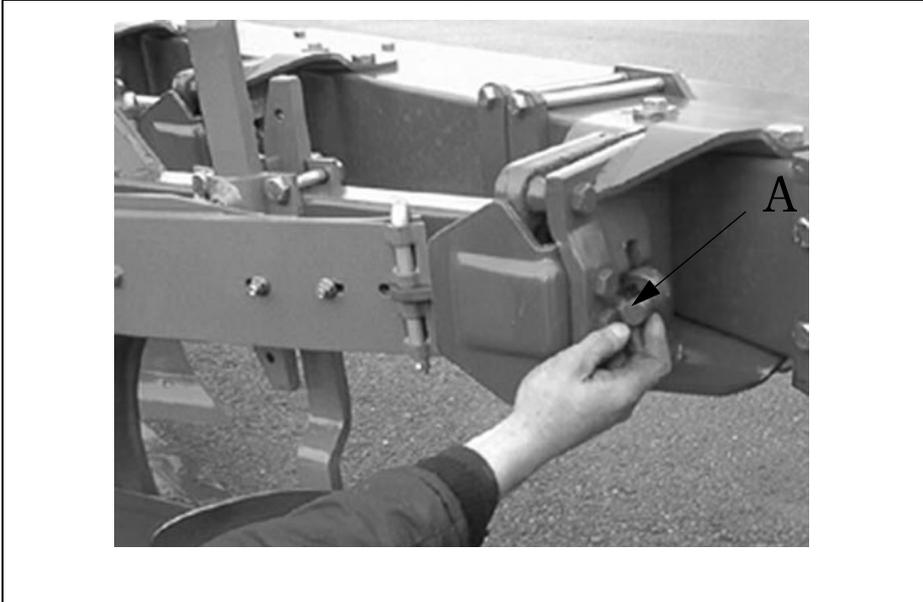


Fig. 8

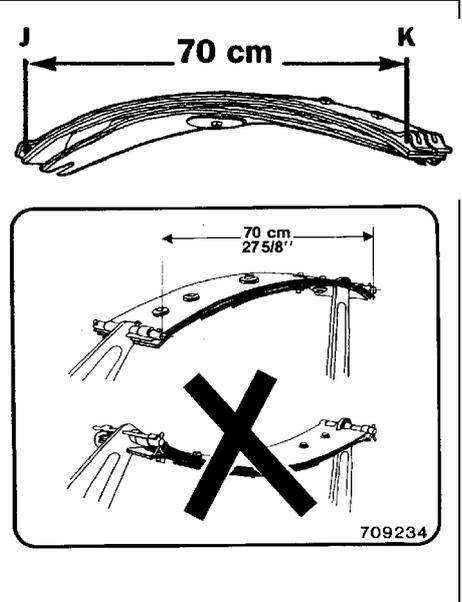


Fig. 9

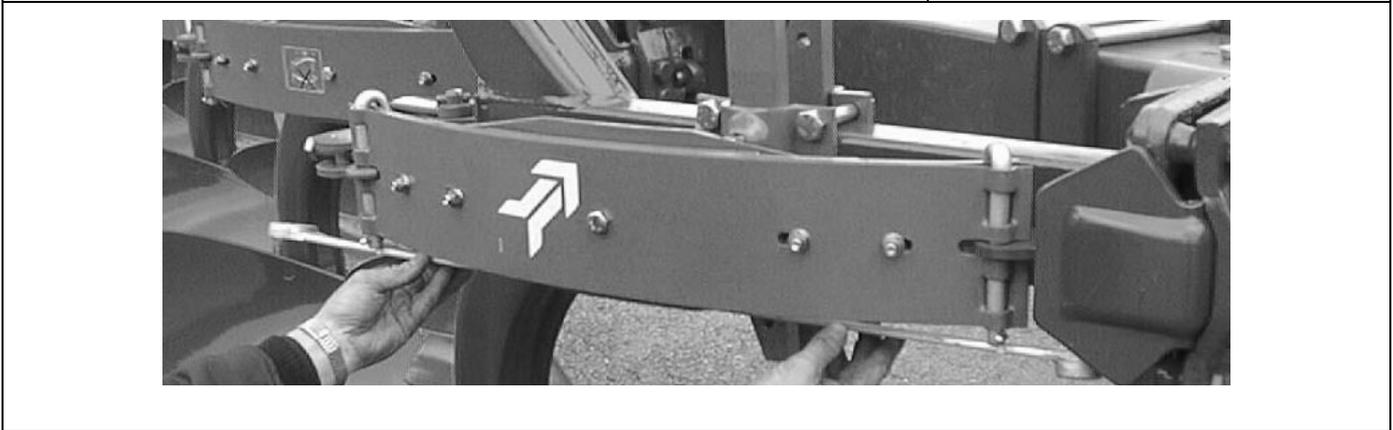


Fig. 10

9.0 Beams

9.1 Auto reset system

Fig. 5 shows the HD-spring. For heavy soils two additional leaves No. 5 can be supplied (fig. 5). The standard spring is with two leaves No. 5. For heavy soils, it is possible to mount two spring units on top of each other.

To disassemble a complete beam with body and skim equipment:

- Ensure that the beam is sitting against the balls and is supported by lifting equipment or by parking the plough on a level floor.
- Release the spring tension by loosen the bolts (E) and (F) (fig. 6).

The spring suspension rod (H) (fig. 7) is pushed forward allowing the bolt (A) (fig. 8) to be pulled out. The beam is now dismounted from the plough and can be removed.

Assemble in reverse order.

The spring is tightened by means of the two bolts (E) and (F). Screw in the bolt (E) halfway. Then turn bolt (F) so that the clearance (I) between the drawbar and the inner side of the leg section is 1 - 2 mm (fig. 7). Finally bolt (E) (fig. 6) is adjusted until the distance between (J) and (K) is 70 cm (fig. 9). This dimension is marked on the side of the long spanner (fig. 10).

With correct adjustment, maximum spring tension is achieved. Always use the correct number of leaves to suit soil type. Too many leaves fitted will prevent the auto-reset system to operate correctly.

Over time, the spring will become out of adjustment and must then be re-set again in accordance to fig. 9.

NB! Always maintain the setting as per the decal (70-cm). If ignored, the spring system may not function correctly and will result in the assembly flexing the wrong way (fig. 9, decal).

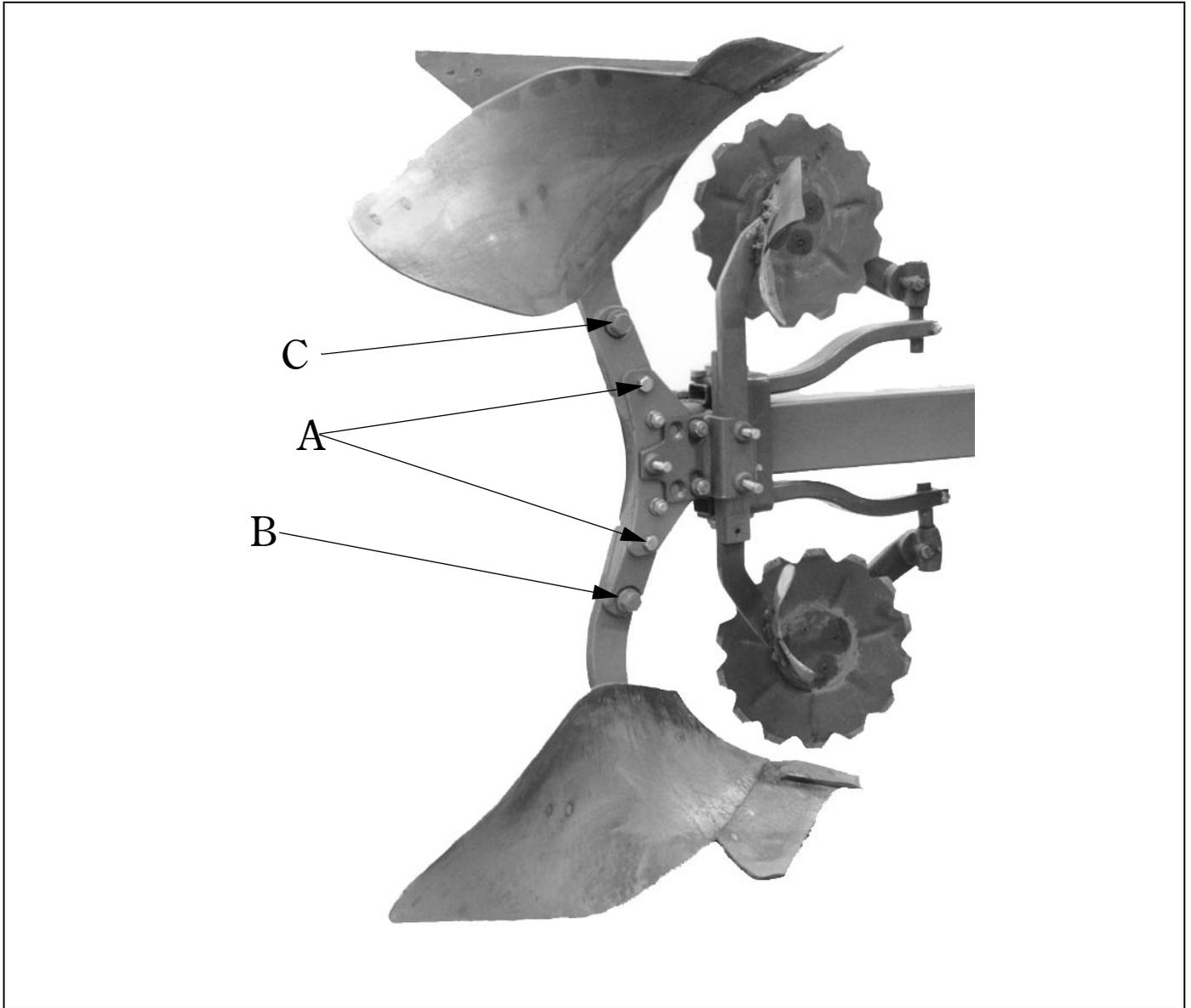


Fig. 11

9.2 Shear bolt

Fig. 11 shows a shear bolt protected beam assembly, (A), M20.

IMPORTANT:

Bolt B has M30 and right hand threads.

Bolt C has M30 and left hand threads.

Tightening torque for shear bolt (A) = 545 - 600 Nm (55,5 - 61 kpm).

Tightening torque for bolt (B) and (C) = 883 - 932 Nm (90 - 95 kpm).

NB! Only use original shear bolts!



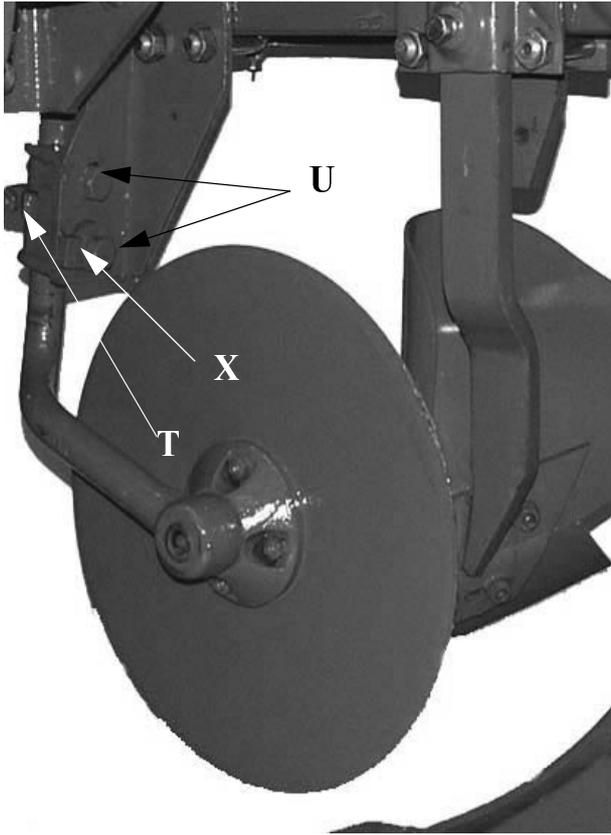


Fig. 13

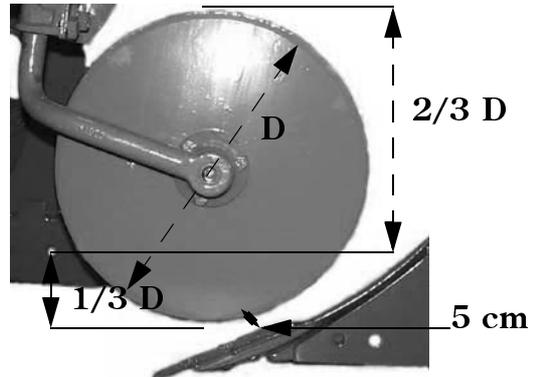


Fig. 12

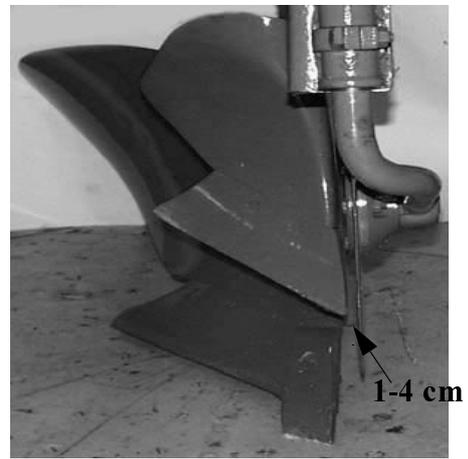


Fig. 14

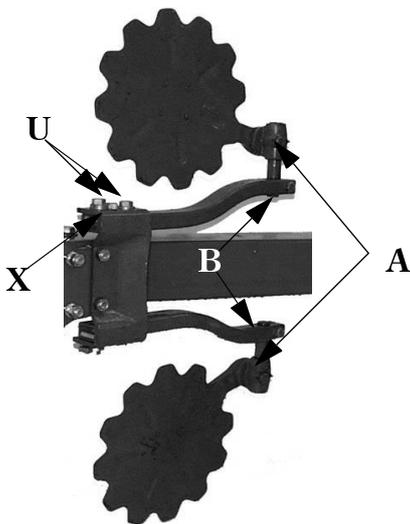


Fig. 15

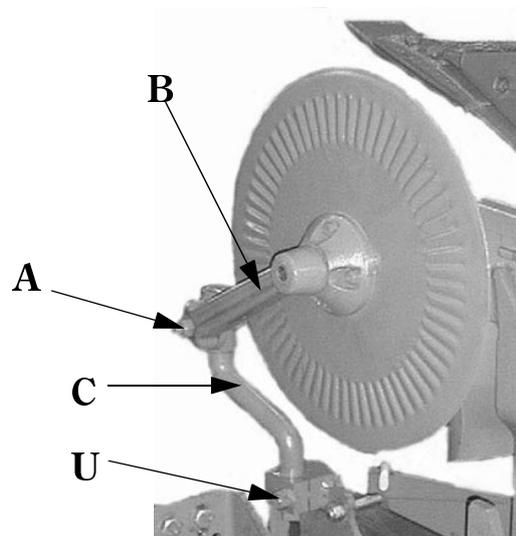


Fig. 16

10.0 Disc coulters

10.1 Disc coulters for auto-reset beam

Disc coulters can be mounted on all furrows on ploughs fitted with the auto-reset beam.

The disc coulters for the auto-reset beam can be delivered in two variants. The most common type is shown in fig. 12 to fig. 14. Adjust the depth by loosening bolt (T) (fig. 13). The limit stop for the turning angle for the disc is also adjusted by loosening the bolt (T). Care must be taken when adjusting the rear disc coulters so that they do not collide with the rear depth wheel.

The disc coulters are adjusted so that 1/3 of the diameter (D) cuts into the ground. This will ensure positive rotation and avoid the disc from stopping. The distance between the coulters and the share should be a minimum of 5cm. When working in stony soil, the distance should be increased.

The distance between the coulters and the landside can be adjusted by loosening both bolts (U) and turning the eccentric (X). The distance should be 1 - 4 cm (fig. 14).

Disc coulters with parallel side adjustment are shown in fig. 16. To adjust the working depth, bolt (A) (fig. 16) is loosened and the arm (B) is raised up or down against the serrated boss mounted to the arm (C). The distance between the coulters and the landside can be adjusted by loosening bolt (U). The cranked arm (C) is then moved to the appropriate working position and bolt (U) tightened. The disc distance should be 1 - 4 cm (fig. 14).

10.2 Disc coulters for shearbolt beam

Disc coulters for fixed beam are shown in fig. 15.

The disc coulters can only be mounted on the rear body assembly.

The disc coulters are adjusted so that 1/3 of the diameter cuts into the ground. The limit stop for the turning angle for the disc is also adjusted by loosening the bolt (T). The distance between the coulters and the share should be a minimum 5cm. When working in stony soil, the distance should be increased.

Adjust the depth by loosening bolt (A) (fig. 15) and adjust the disc to the correct working position. When shallow ploughing, it is possible to adjust the disc's depth by lowering the shaft (B) (fig. 15).

The distance between the disc coulters and the landside can be adjusted by loosening both bolts (U, fig. 15) and turning the eccentric (X). The distance should be 1 - 4 cm (fig. 14).

NB! Remember to tighten all the bolts frequently.



Fig. 17



Fig. 18

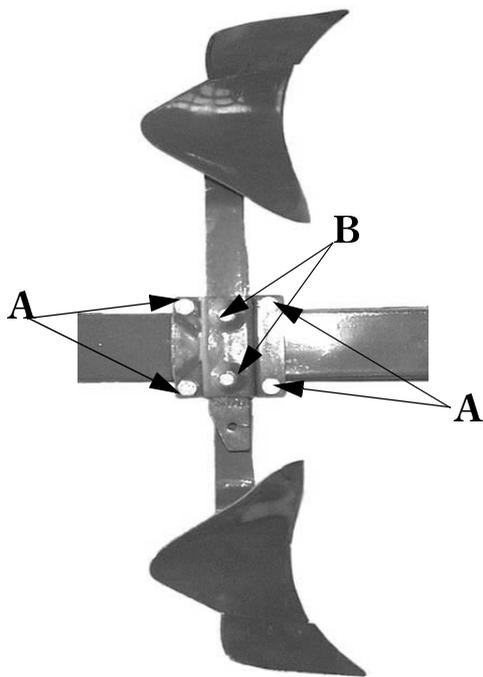


Fig. 19

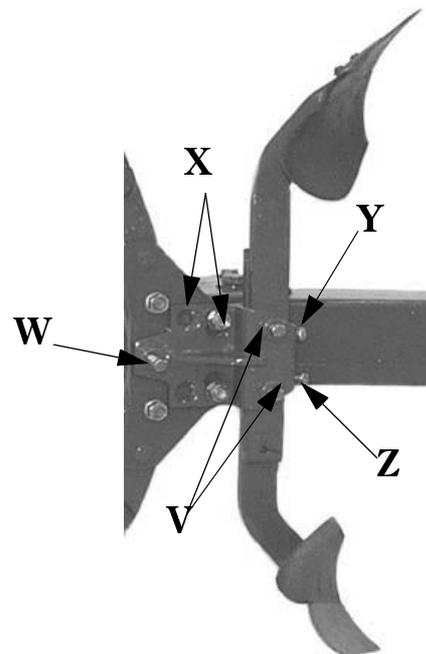


Fig. 20



Fig. 21

11.0 Skim equipment

11.1 Manure skimmer

The manure skimmer (fig. 17) is suitable for both grassland and stubble. A special type for maize is shown in fig. 18, this one has a rounded front edge and is suitable when there is a lot of surface residue.

For ploughs with auto reset:

The skimmer is mounted to the plough as shown in fig. 19. The depth is adjusted by loosening the bolts B. Working depth should be 3 - 5 cm.

The skimmers can be adjusted forwards and backwards by loosening bolts A. For easier adjustment, it is advantageous to turn the plough to a half way position.

For ploughs with shearbolt beam:

The skimmer is mounted to the plough as shown in fig. 20. After loosening the bolt V, the depth of the skimmers can be adjusted by means of the bolt Z and Y (right and left respectively), and sideways by bolt W.

11.2 Trashboard

The trashboard (fig. 21) should be placed with the front edge close to the mouldboard, the rear edge should be adjusted according to the ploughing depth.

There are two adjusting holes in the bracket for the trashboard, one for deep ploughing and one for shallower ploughing. In addition, there are two slotted holes in the trashboard for additional adjustment.

NB!

To avoid uneven furrows, all the equipment must be adjusted equally.

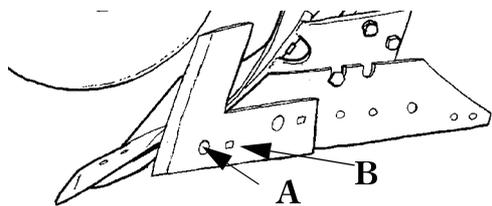


Fig. 22

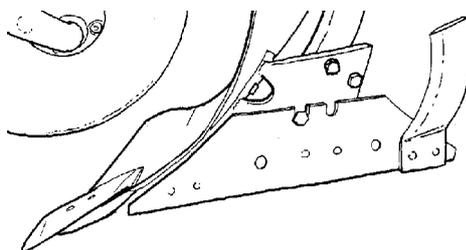


Fig. 23

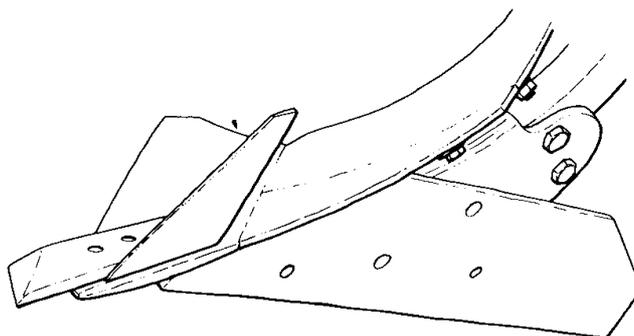


Fig. 24

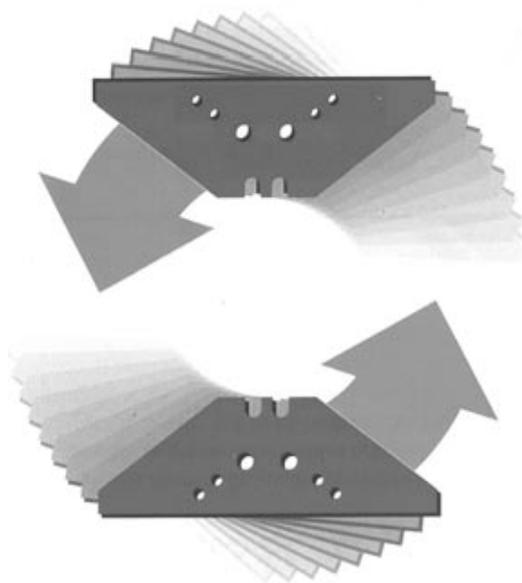


Fig. 25

12.0 Landside, knives & furrow openers

Fig. 22 shows a landside knife mounted on a body. This knife has the same function as the share knife, but has better wearing characteristics. The landside knife can be mounted in two positions (A and B).

A furrow opener fitted on the rear body is for use with tractors having extra wide tyres, (fig. 23). **NB!** If you use a furrow opener, the front furrow width has to be adjusted to that of the original width to ensure correct matching of all furrows (look at chapter 7.0 Tractor).

Fig. 24 shows an optional share knife, which is fitted under the reversible point with two longer bolts. The share knife has almost the same function as the disc coulter

When the rotational landsides are worn down to approx. 5 mm at the rear end, it is possible to reverse them from right hand to left-hand plough body (fig. 25).

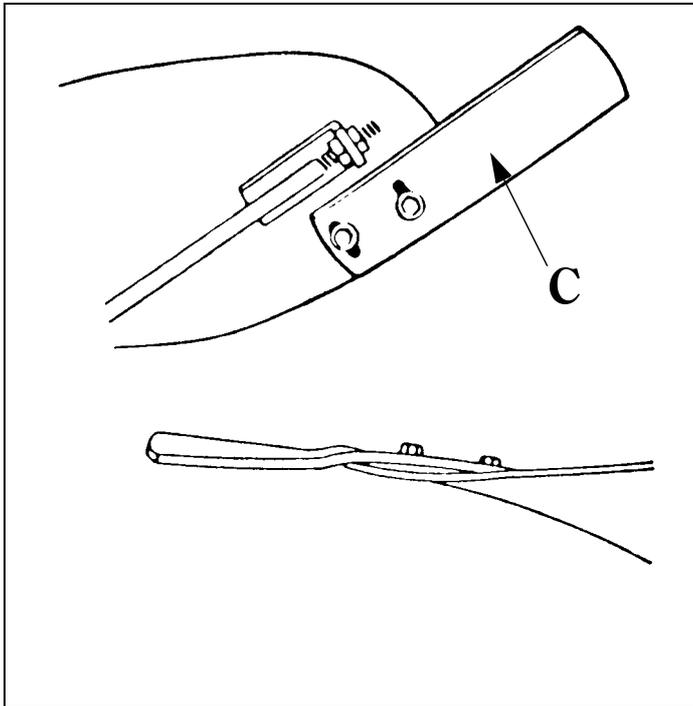


Fig. 26

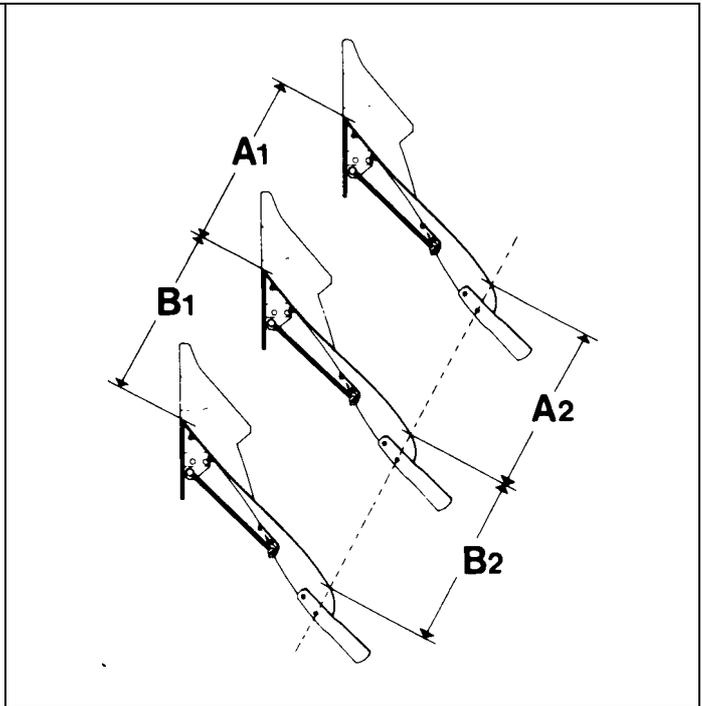


Fig. 27

13.0 Checking and adjustment of the plough

13.1 Checking

The paint on the mouldboards, trashboards and manure skimmers should be removed by using a scraper or paint remover. Mouldboard extensions can be delivered as extras, and should be mounted as shown in fig. 26.

Fig. 27: $A_2 = A_1$, $B_2 = B_1$

Adjustment is made by the stays on the rear of the mouldboards.



Fig. 28

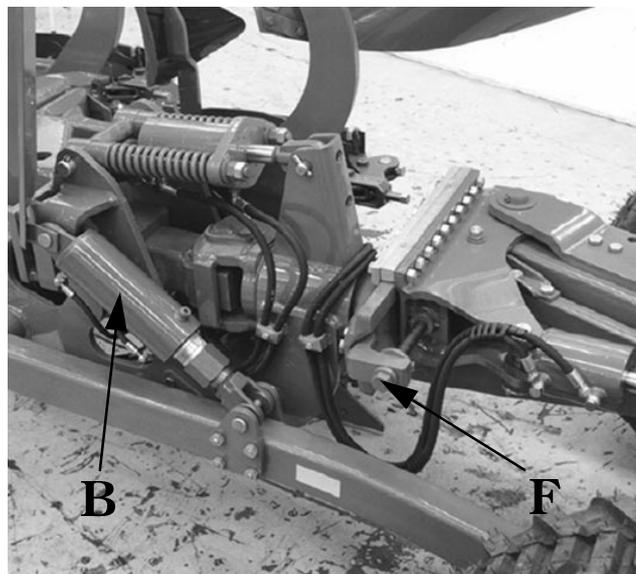


Fig. 29



Fig. 30

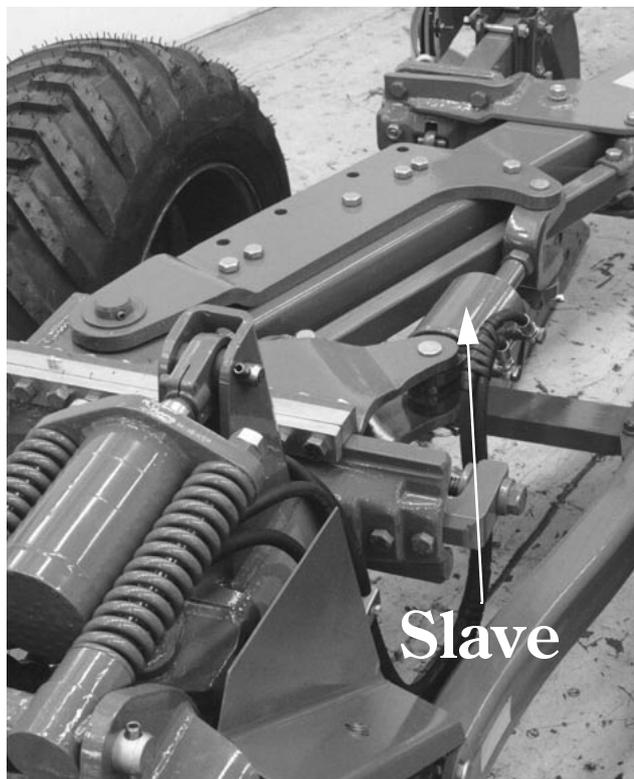


Fig. 31



Fig. 32



Fig. 33

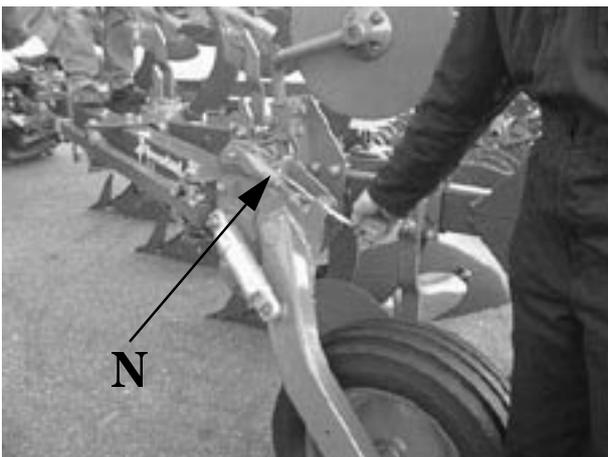


Fig. 34

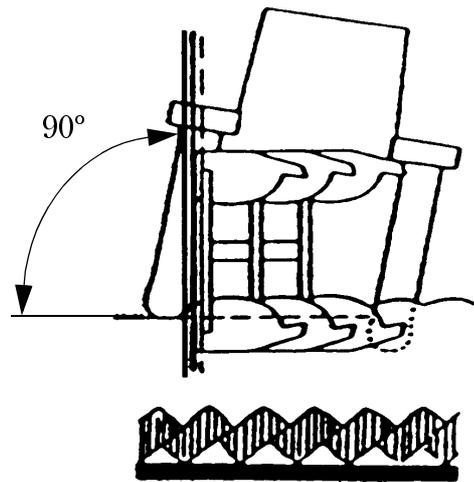


Fig. 35



Fig. 36

13.2 Adjustment of the plough

IMPORTANT!

Before connecting the plough, always make sure that the hydraulic system on the tractor is in position control. Never raise the plough before the top link is connected. The cross shaft should be central to the headstock. The length of the top link should be adjusted until the headstock is vertical, or slightly forward when the plough is in the ploughing position.

For the plough to perform correctly, the beams should always be set 90° to the ground (fig. 35). These adjustments can be made using the adjusting nut on the turnover cylinder (A, fig. 28), on the right and left sides respectively.

The front and the rear part of the plough must be adjusted to the same ploughing depth. Adjustment of the working depth is carried out in three places on the plough. At the front, the working depth is adjusted by means of the hydraulic controls on the tractor. An even ploughing depth can be obtained by using the tractors position or mix control. On the middle section, the depth is adjusted by means of the adjusting nuts (B, fig. 29) on the wheel cylinders. **NB!** Adjust the left and right hand side equally.

At the rear of the plough, the working depth is regulated with the depth wheel. The adjustment is carried out separately for right and left-hand by means of the stop screw (N, fig. 34). **NB!** Adjust the left and right hand side equally.

The furrow width can be adjusted by means of the hydraulic Vari-Width system from 14" to 20".

The Vari-Width system uses two hydraulic cylinders that work as a master and slave operation. When the ploughing width is adjusted, the first cylinder (master) operates the rear (slave) cylinder, changing the rear section width automatically (fig. 30 and fig. 31). This hydraulic system is operated from the tractor with either the joystick or foot control (electro/hydraulic) system or directly from a double acting hydraulic outlet. If the working width is different at the front to that of the rear section, this has to be restored by operating the Vari-Width system from minimum to maximum (14" - 20").

The front furrow width is adjusted to the tractors wheel settings by means of a turnbuckle (D, fig. 36) or a hydraulic cylinder as optional equipment.

NB! The front furrow width is normally carried out once to that tractor you have, because it follows the working width automatically afterwards. If necessary the front furrow width of the rear section can be adjusted using adjustment screw (F, fig. 29) to ensure the front furrow on the rear section is equal in width to all other furrows.

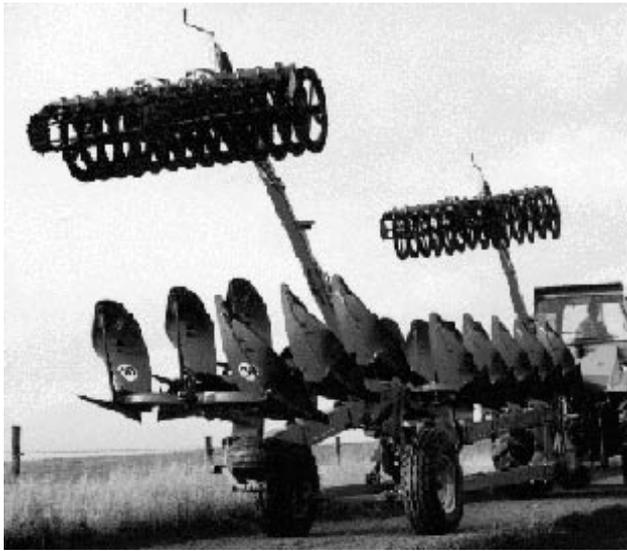


Fig. 37

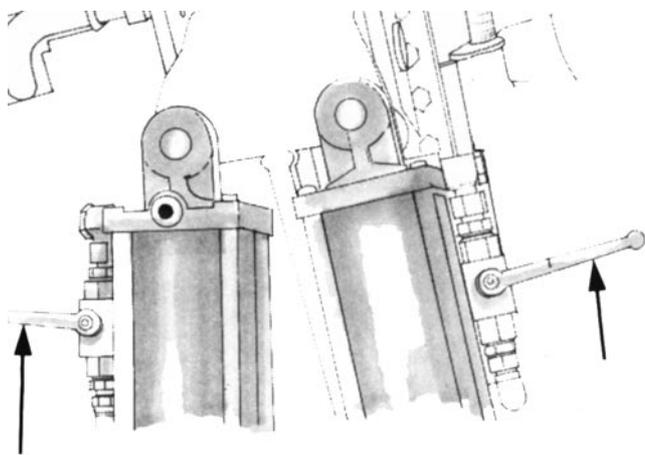


Fig. 38



Fig. 39

14.0 Transport

Fig. 37 shows the plough in its transport position. Locking the two valves on the reversing cylinders (fig. 38) locks the plough in this position. To help manoeuvring around corners etc. it can be helpful to activate the turning cylinders to swing the plough sideways. This will steer the wheels and aid manoeuvrability.

Always park the plough by lowering the stabiliser as shown in fig. 39 and opening the lock valves. The plough should always be parked in its working right or left hand position.

NB! Maximum transport speed is 25 km/t.

NB! Never transport the plough with the parking stands in a lowered position.

When driving on a public road, always obey the highway rules and secure appropriate lighting equipment.



Fig. 40



Fig. 41



Fig. 42

15.0 Headland driving

1. The front of the plough is lifted by means of the link arms on the tractor, fig. 40.
2. The middle and rear section is lifted by means of the wheel cylinders. When the plough is fully raised, the joystick/foot pedal is activated to raise the rear section of the plough.
3. **NB!** When the plough has left the furrow, be sure the rear plough section is raised to its uppermost position before reversing commences.
4. Rotate the plough half way (fig. 41) and drive the tractor as shown in fig. 44. When the tractor is pointing in the direction for driving into the furrow, the plough is rotated to its ploughing position.
5. Lower the first part of the plough by lowering the tractor's link arms. Then lower the middle section by means of the wheel cylinders on the wheel carriage (fig. 43). Activating the joystick/foot pedal will then lower the rear plough section. For a smooth entry with the second part, the wheel cylinders must not be lowered too quickly.
6. When using a mechanical spring-loaded rear section, it is an advantage not to lift the link arms on the tractor to maximum height. This will prevent the rear part of the plough from hitting the ground when reversing the plough on the headland.



Fig. 43

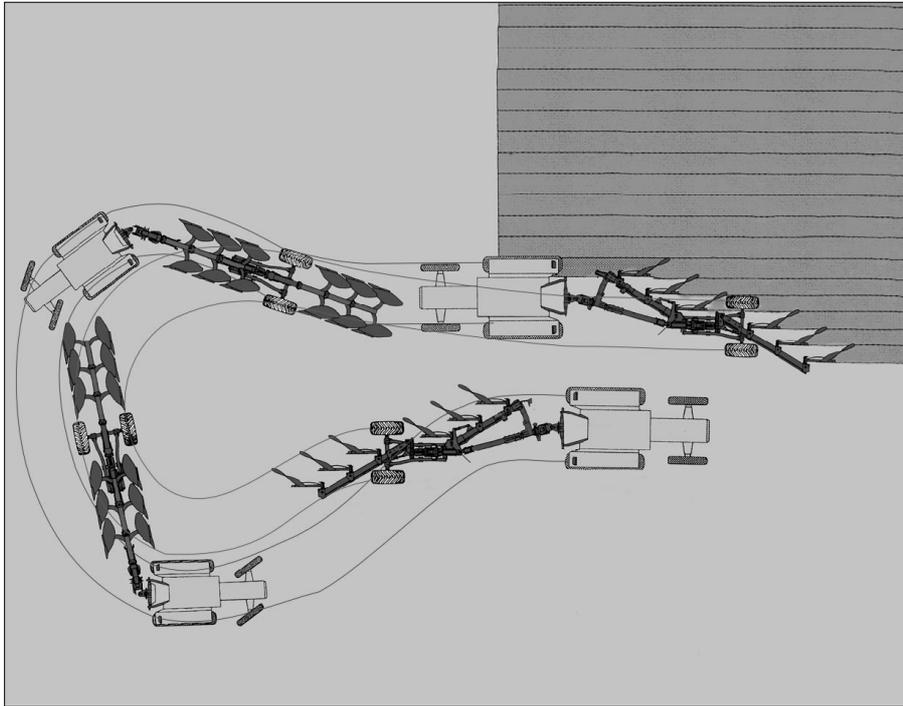


Fig. 44

15.1 Headland driving

Fig. 44 shows the procedure of driving on the headland. The width of the headland depends on the length of the plough and the tractors turning capacity and can therefore vary from approx. 15 - 20m.

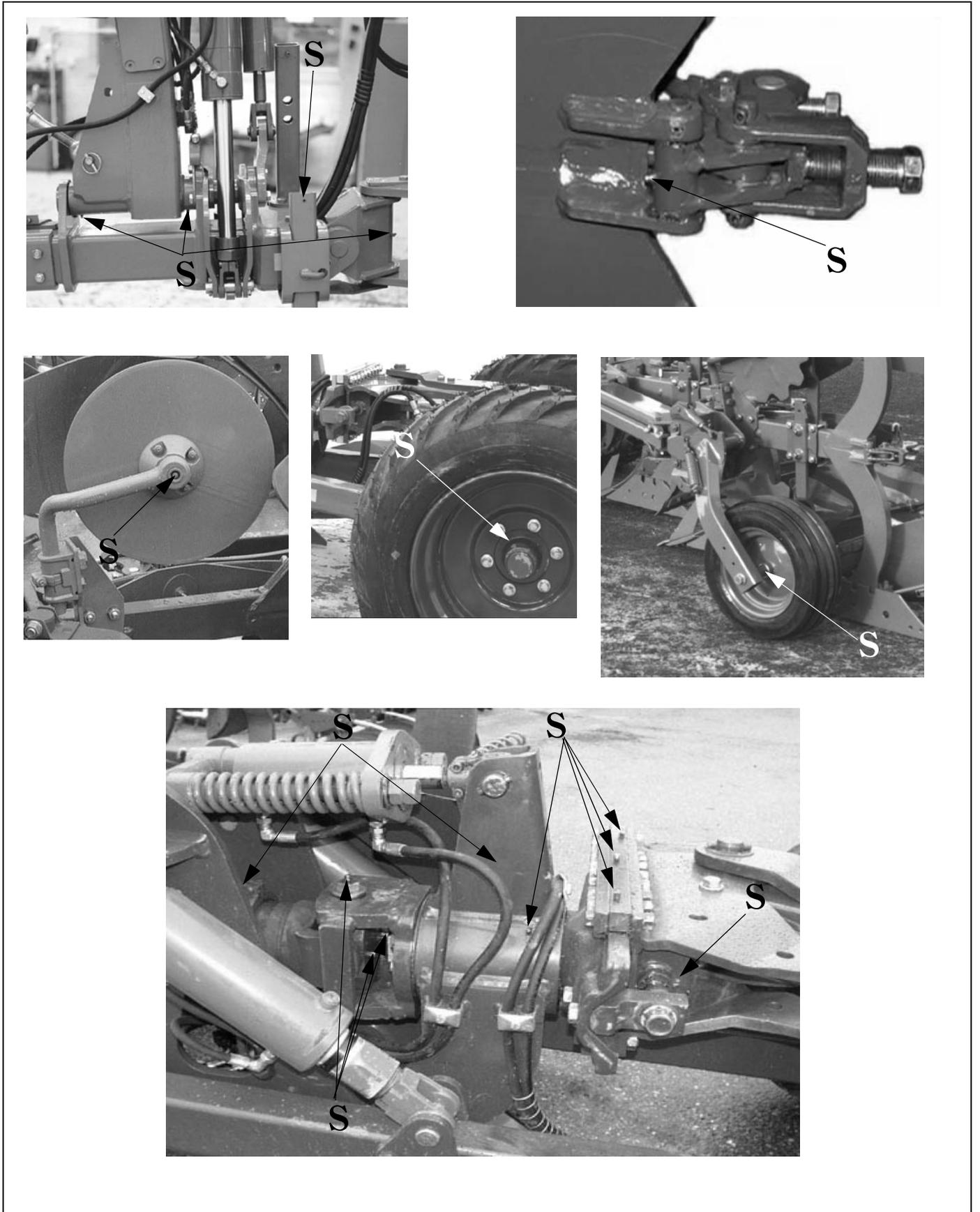


Fig. 45

16.0 Lubrication and Maintenance

Lubrication

The lubrication points (S) is shown in fig. 45 and fig. 46. During the ploughing season the plough should be lubricated daily to prevent the ingress of water and dirt to the bearings and moving parts. **NB!** It is very important to lubricate well after power washing. All nipples should be lubricated after being washed. When ploughing has been completed, the plough must be cleaned and lubricated with Tectyl or acid free grease.

Maintenance

All nuts and bolts must always be firmly tightened. This is very important after the first hours in use. The wearing parts of the plough should be kept in good condition and not too much worn, since this will affect the ploughing quality. The pneumatic pressure of the tyres should be adjusted according to the table below:

Wheels	Recommended pressure
12,5/80 x 18	2,6 kp/cm ²
400/55 x 22,5 (8 layers)	2,7 kp/cm ²
400/55 x 22,5 (14 layers)	4,8 kp/cm ²
200 x 14,5	6,8 kp/cm ²
26 x 12 - 12	3,7 kp/cm ²

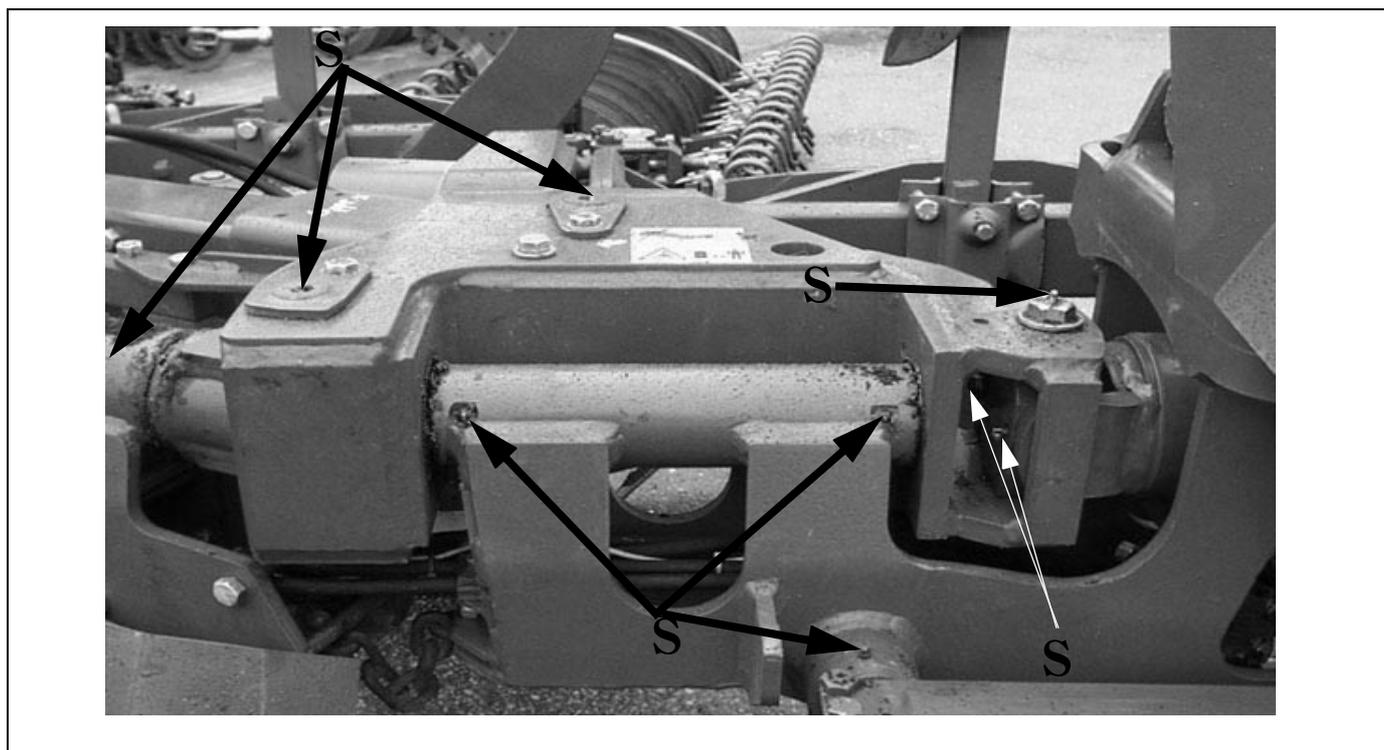


Fig. 46

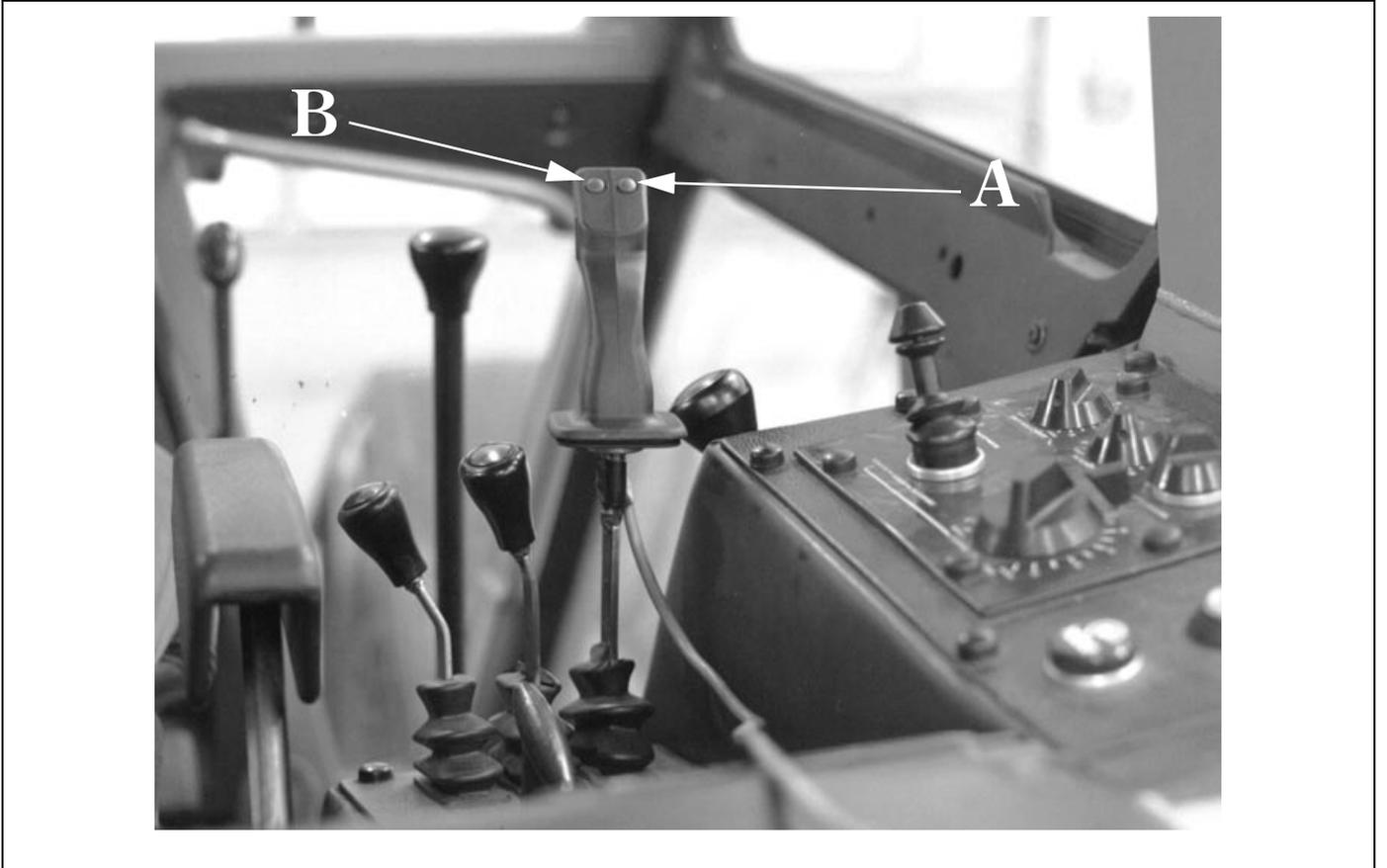


Fig. 47



Fig. 48

17.0 Using the joystick (Optional)

Fig. 47 shows the joystick, mounted on the hydraulic handle in the tractor cab. This handle makes it possible to divide one hydraulic outlet into three functions. **Remember to drive with lights on to activate electrical contact to the valves.**

Possible combinations:

1. When moving the hydraulic lever without operating the green buttons, the centre wheel carriage will be raised or lowered.
2. When moving the hydraulic lever and pressing the right button (A), the rear part of the plough will be hydraulically raised via the special hydraulic top link.
3. When moving the hydraulic lever and pressing the left button (B), the Vari-Width system (master/slave) will change the ploughing width (14" - 20").

This system should be mounted in a logical way, so that it is easy to use:

Raising the rear part:

- Pull the handle and the plough is raised - then push the green button (B) and the rear end is raised.

Lowering the rear part:

- When the handle is pushed forward, the rear plough section is lowered - then push the green button (B) and the rear end of the plough will be lowered down against the hinge spring (A, fig. 48).

NB! When operated via optional foot pedals, the same functions apply.

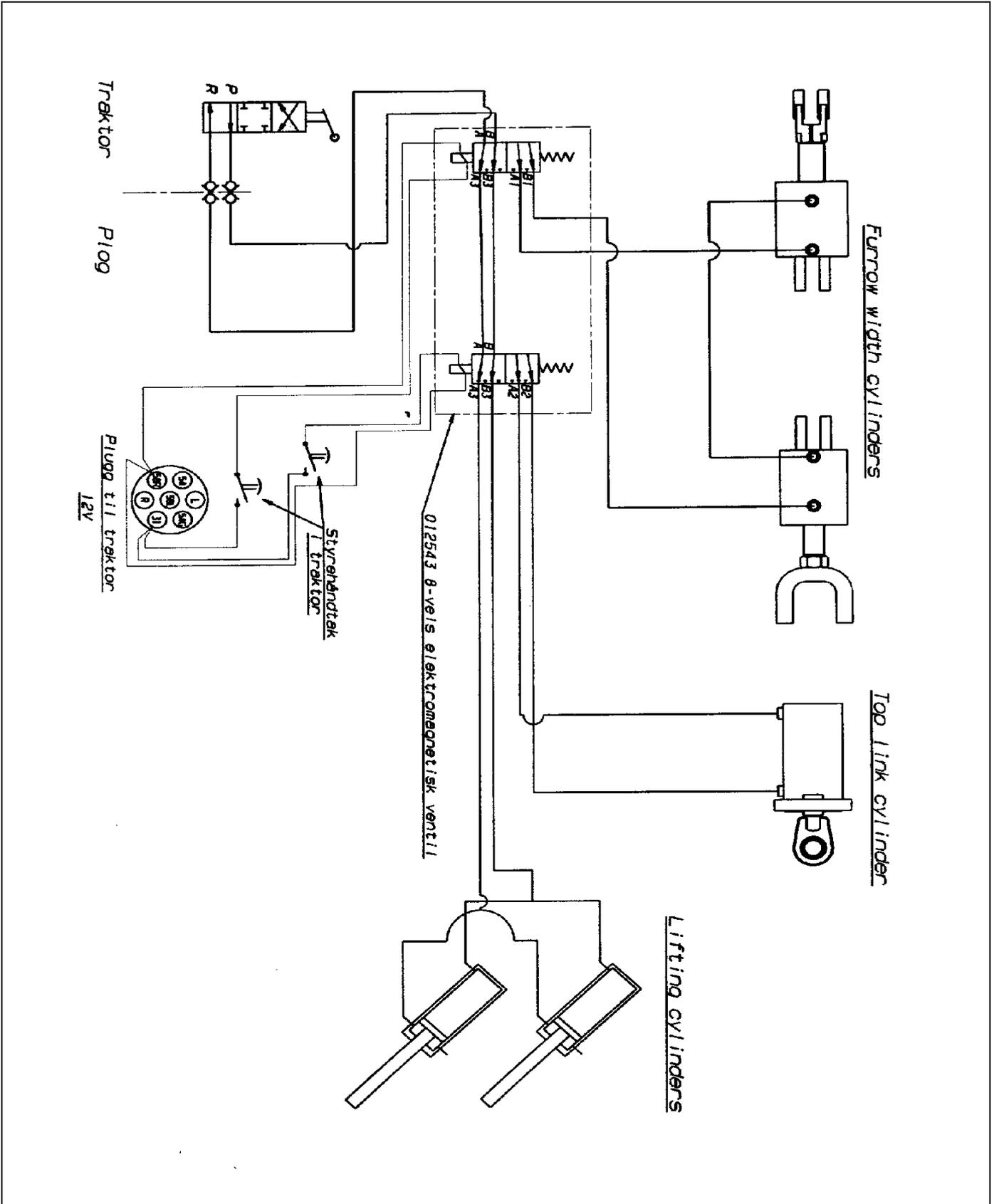


Fig. 49

18.0 Hydraulic circuit diagrams

Fig. 49 shows a hydraulic circuit diagram of the joystick/foot pedal system.

Fig. 50 shows the turnover system in right-hand position with the changeover valve for the supporting cylinder. The changeover valve is shown in four phases for turning the plough from the right to the left side.

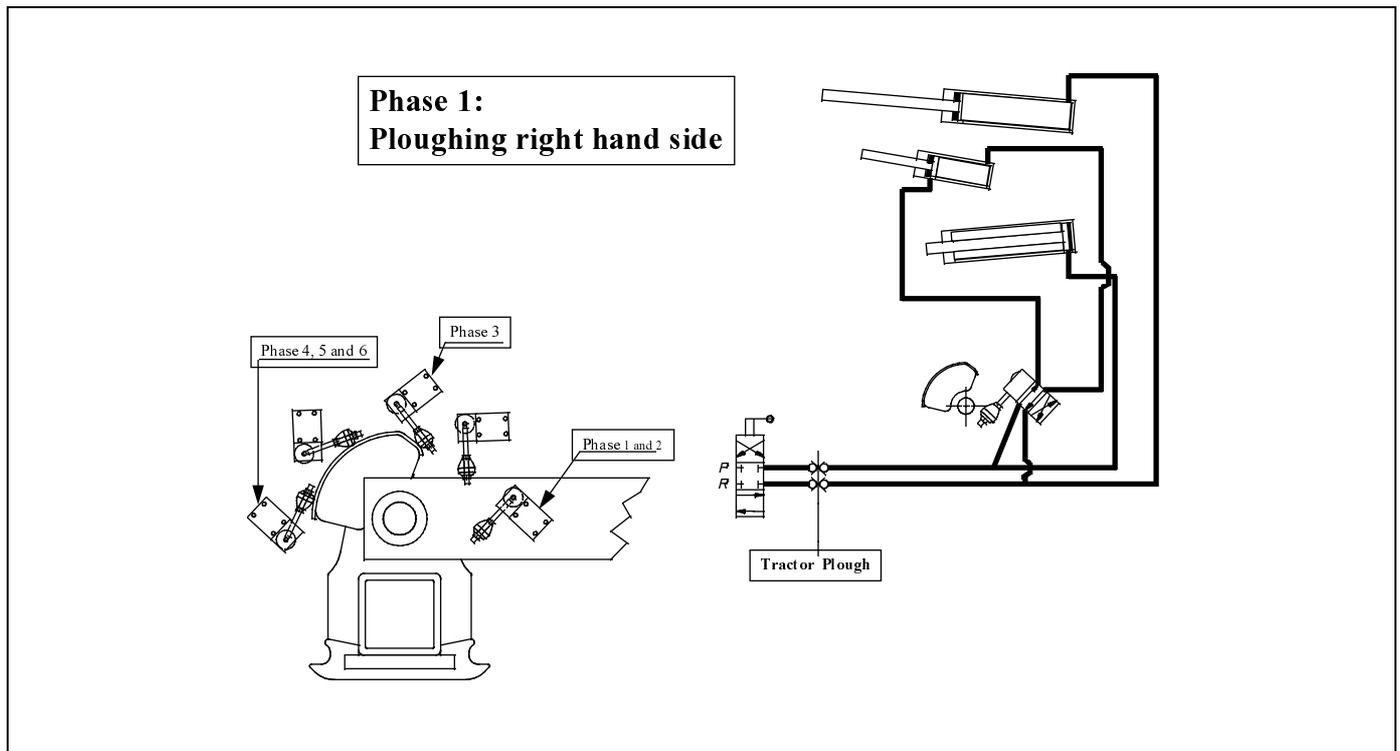


Fig. 50

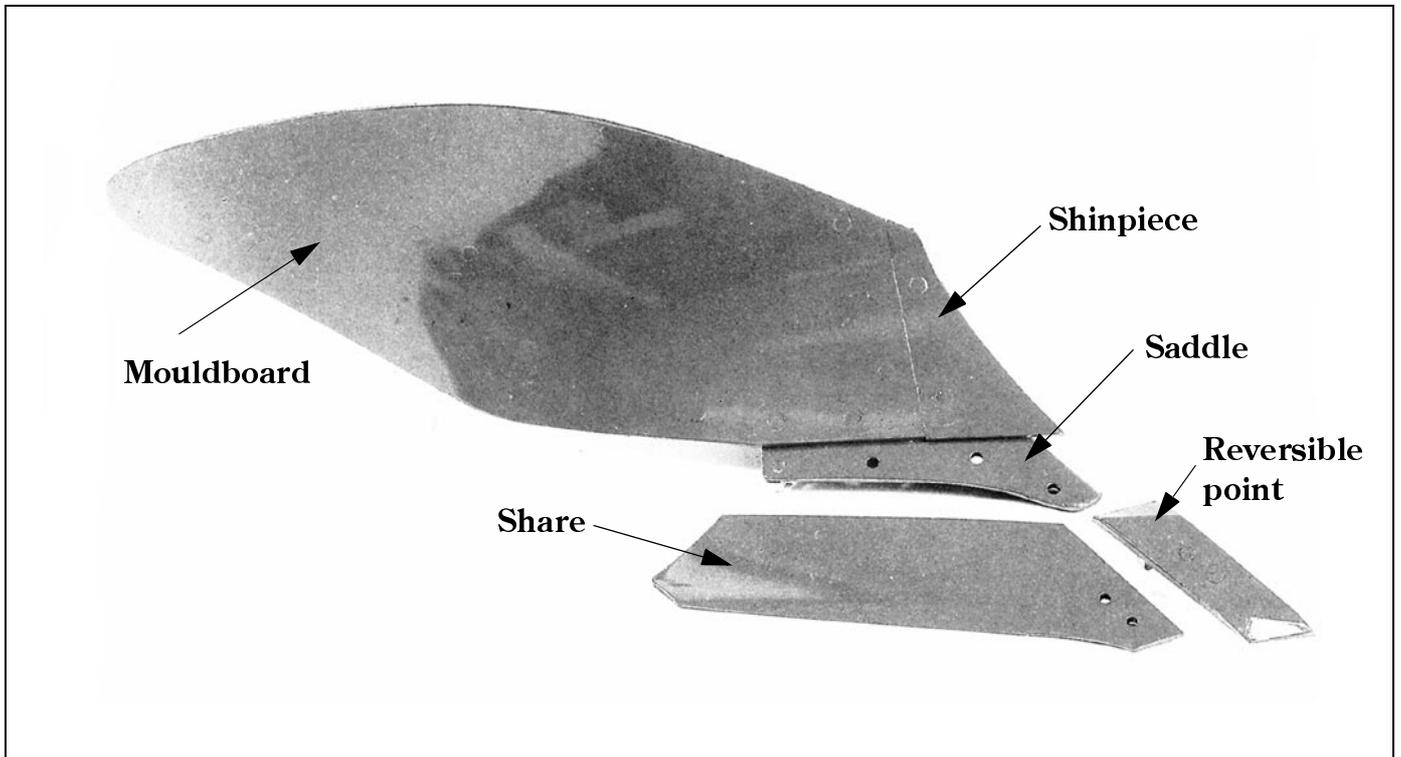


Fig. 51

20.0 Original spare parts

Look for the arrow!



Safeguard your warranty - fit genuine Kverneland parts.

WARNING!

Warranty is not valid:-

- If non genuine spare parts are used
- Parts are heated or welded

Kverneland reserves the right to make changes in design and specification or to add new features without obligation on implements purchased before or after such changes are made.

21.0 Tightening torque

Bolt diam.	Tigthening torque kpm	
	El. galvanized bolts	
	10,9	12,9
M8 - M10	6,5 - 7,0	8,0 - 9,0
M 12	11,5 - 12,5	14,0 - 15,0
M14	18,5 - 20,0	22,0 - 24,0
M16	28,5 - 31,0	34,0 - 37,5
M20	55,5 - 61,0	65,5 - 73,0
M24	95,0 - 105,0	115,5 - 127,0

1 kpm = 9,81 Nm

Bolt diam.	Tigthening torque Nm	
	El. galvanized bolts	
	10,9	12,9
M8 - M10	64,0 - 69,0	78,5 - 88,0
M12	113,0 - 122,5	137,0 - 147,0
M14	181,5 - 196,0	216,0 - 235,5
M16	279,5 - 304,0	333,5 - 368,0
M20	544,5 - 598,5	652,0 - 716,0
M24	932,0 - 1030,0	1133,0 - 1246,0

1 Nm = 0,102 kpm