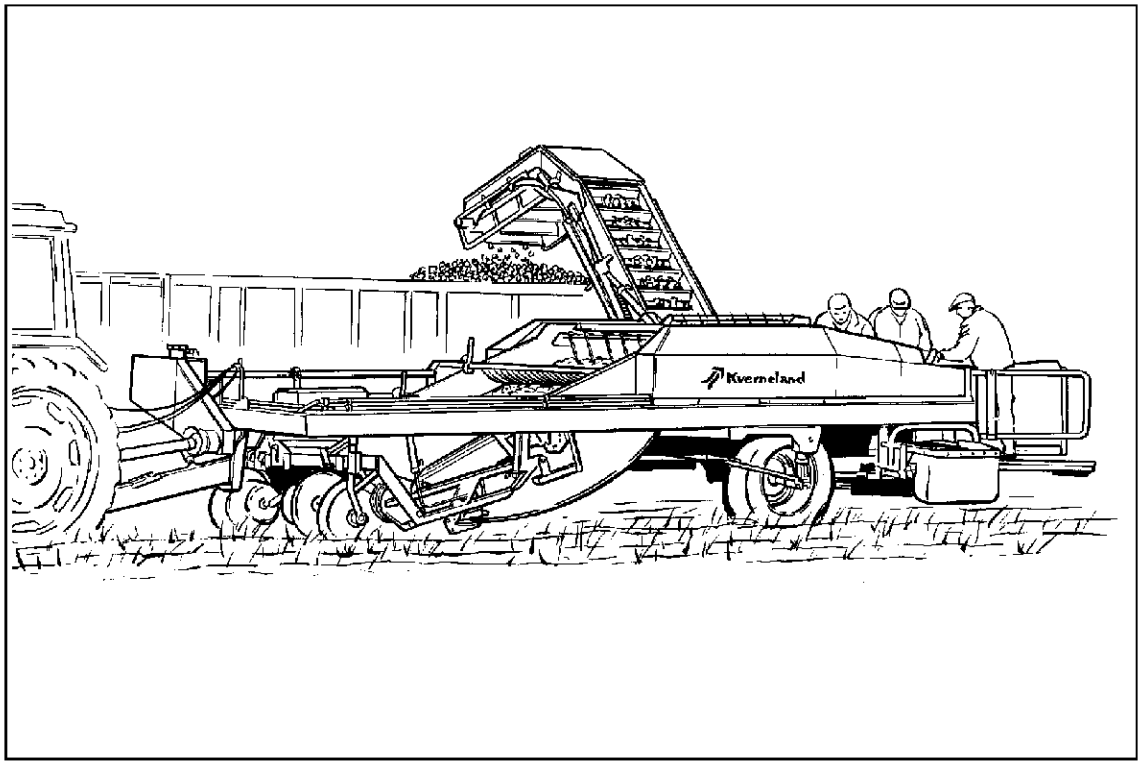
Operator's manual
Two row potato harvester
Kverneland Underhaug 2607 - 2632
inclusive options

UH124057



Instruksjonsbok Kverneland Underhaug 2600 engelsk, utgave 98-09

Guarantee

Kverneland product's are guaranteed for a period of one year from the date of delivery, against defects in material and workmanship.

Component's not manufactured by Kverneland, i.e. electrics and hydraulics, p.t.o. shafts and tyres are guaranteed according to the original manufacturer's recommendation.

The components listed below have limited guarantee due to their function.
Tyres - Shares - Webs - Web rollers - Axial rollers - Fuses - Safety clutches - PTO shafts
Hydraulic seals for pumps, motors, valves and cylinders - Oil filter

Weakening due to wear and tear is concidered to be normal for these parts. The product guarantee for these components is limited to manufacturing defects, breakage, poor workmanship, transport damage etc on new machines.

If a failure is expected to be covered under the guarantee, the owner or its representative should inform the dealer when parts and/or repair work is required. Any guaranty claim should be applied for within the period of guarantee.

The dealer should fill in one guarantee claim form for each matter and forward it to the Kverneland sales company or importer before the 10th of the following month after the claim was raised.

The damaged parts should be marked with the number of the corresponding warranty claim and should be stored for 6 months by the dealer, available for inspection by the Kverneland sales company or importer if required.

Due to the operation of the Kverneland products being out of the manufacturer's control, the guarantee covers the product quality only. Performance or any consequential losses are not covered.

The guarantee may be invalid if:-
a) spurious spare parts are used or the product is repaired or modified without the Kverneland authorization.
b) operators and service instructions given by the manufacturer are not complied with.
c) The machine is used for other purposes than those designed for.

The guarantee does not cover damage caused by normal wear.

Public safety regulations require from the manufacturer of this machine that all safety aspects regarding the use of the machine is thoroughly evaluated. As a result of these obligations Kverneland and its importer or sales company are not responsible for the function of components not shown in the spare parts catalogue covering this product.

Kverneland reserve the right to change the product with no obligation to previously supplied machines.

Kverneland
Kverneland Nærbø AS

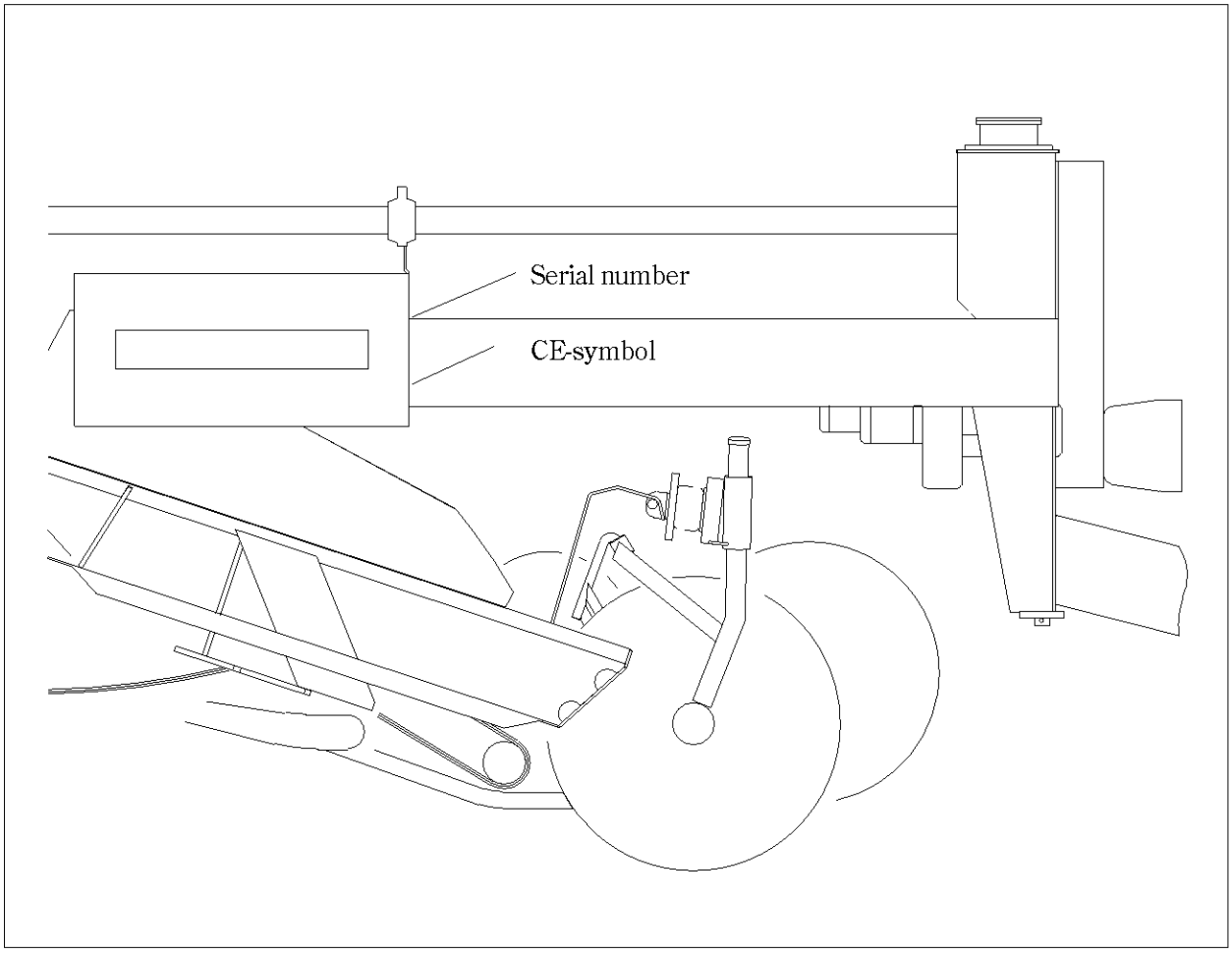
Machine identification

The machine's serial number and the manufacturer's address is found on the number plate of the machine. See illustration below.

The serial number and year of manufacture for this machine is given below. This number is important with regard to service and the correct supply of spare parts.

The machine is marked CE. This marking with appurtenant EU statement of agreement means that the machine complies with substantial health and security demands, and that it is accordance with the directives 89/392/ECC as amended by directive 91/368/ECC , 93/44/EEC and 89/336/EEC.

Serial number :



Year of manufacture :_____

_____

Introduction

We congratulate you on the purchase of your new Kverneland product. You have chosen a product which will give you satisfaction through a network of efficient dealers where gunction, finish, after sales service and spare parts are always at hand.

All Kverneland products are designed and tested in close co-operation with farmers and contractors to ensure optimal function and reliability.

Please read this manual before using your new machine.

We wish you all the best with your Kverneland product.

Yours faithfully

Kverneland AS

Kverneland Underhaug AS

Kverneland
Torlandsvegen 3
N-4350 Nærbø
NORWAY

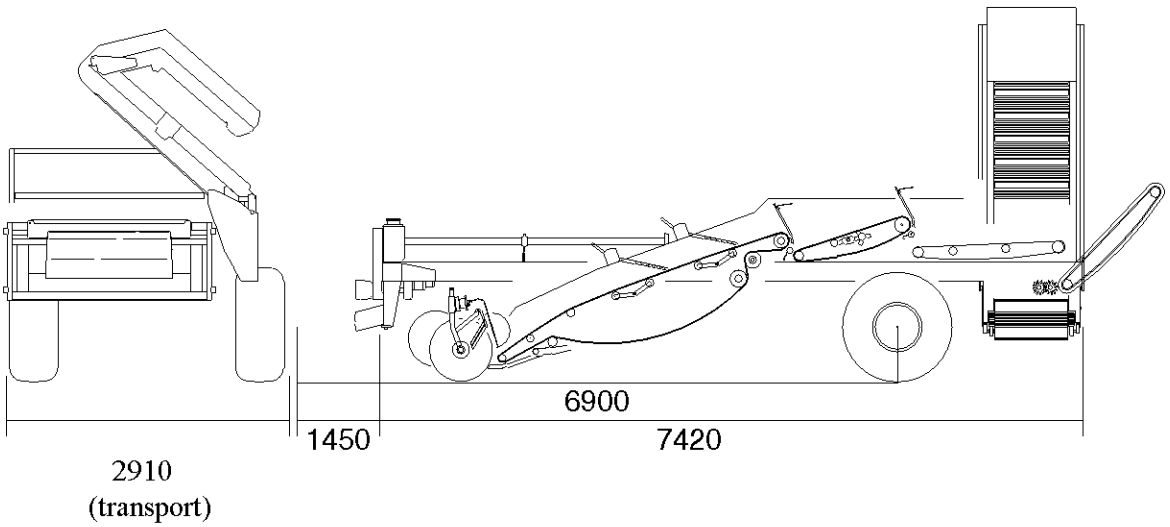
«Where farming means business»

Content

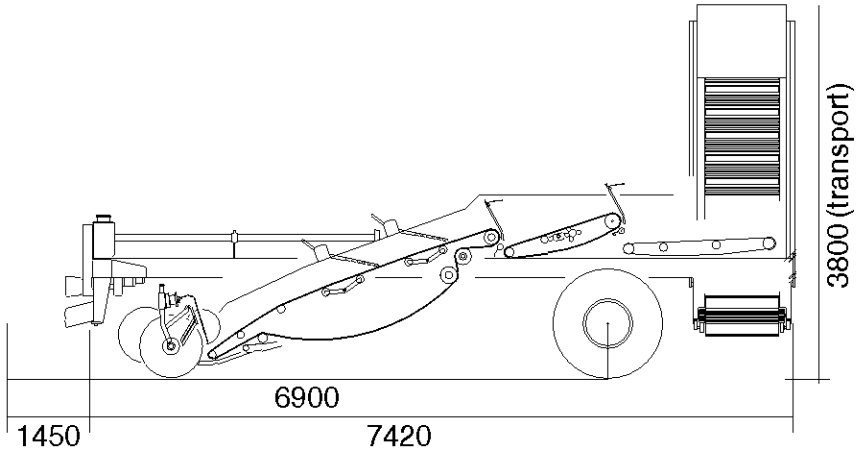
*=option

Dimensions

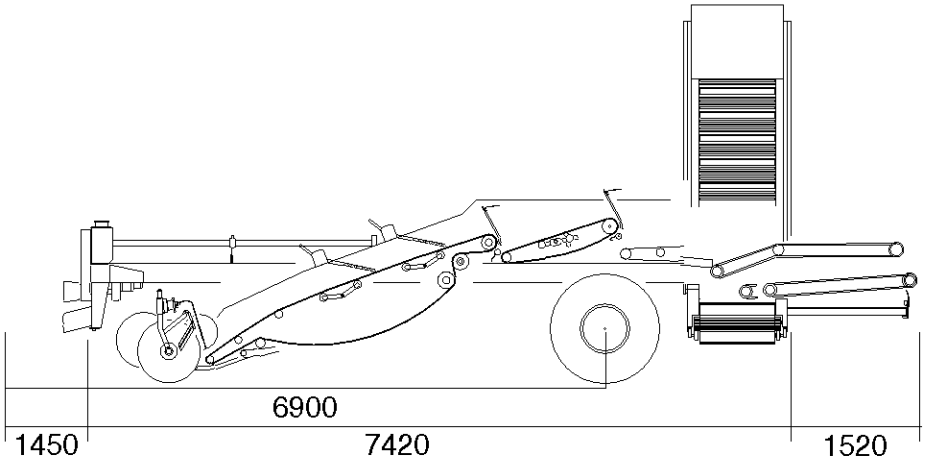
2607



2621/2631



2622/2632



All measures are in mm (1" = 25.4mm)

Technical specifications

Covers machine with horizontal main frame and standard wheel dimension (500/60-22.5")

Harvester model:	2607	2621/22	2631/32
Tractor connections	Hitch/tractor drawbar, 1 hydraulic outlet w/free return to tank		
Dimensions			
Track width (adjustable)	2,100-2,500mm c/c		
Total length inc. drawbar	9.90m	8.87/10.40m	8.87/10.40m
Transport width	2.91m		
Transport height	2.80m		
Total weight	5000kg	5300/5650kg	5300/5650kg
Wheel axle load	4500kg	4500/4950kg	4500/4950kg
Drawbar load	500kg	800/700kg	800/700kg
Row width (infinite)	75-10cm (30-40in)		
Shares			
standard	3 blades		
extras	2 blades 1 blade full width		
Main web			
width	1650mm		
effective length	3225mm		
web gap (standard)	28mm		
web gap (option)	17*, 25*, 33, 38mm		
rod diameter	11*/12mm		
separation area	5.3m²		
Second web			
width	1650mm		
effective length	1140mm		
web gap (standard)	29mm		
web gap (option)	17, 25, 25rubber coated, 34, 39mm		
rod diameter	11mm		
separation area	1.9m²		
Third web			
width	1650mm	-	-
effective length	1700mm	-	-
web gap	24mm rubber coated		-
rod diameter	11mm	-	-
Picking table			
width	-	1650mm	1650mm
web gap	-	20mm	20mm
Haulm elevator			
width	1650mm	-	-
area	2,25m²	-	-
Discharge elevator			
loading height	3500mm		
width (gross)	900mm		
width (net)	750mm		

*=option

Harvester model:	2607	2621/22	2631/32
Axial rollers			
no. of rollers	-	18	-
length	-	950mm	-
diameter spiral rollers-		82mm	-
diameter smooth rollers	-	82 (standard)	-
	-	or 92mm	-
Star rollers			
no. of star roller	-	-	6
no. of contra rotating rollers	-	-	3
Wheel dimensions			
standard	500/60-22.5"		
option	500/60-26.5"		
	600/55-26.5"**'		
left/right hand side**:	500/60-22.5" / 13.6/12-28"		
	600/55-26.5" / 16.9/14-30"		

**Limitations when using wheel dimension 600/55-26.5"

Ref. «Technical data» page 5. The harvester may be fitted with wheels 600/60-26.5" on the left hand side. However, please note the following constraints.

The clearance between the axial roller unit and wheel is diminsihed due to the large wheel dimension (diameter). In order to compensate for this the roller unit must be repositionned, that is, lifted and attached in a higher position. Consequence; the haulm roller after the second sieving web may only be used in the uppermost position in order to provide sufficient clearance between haulm roller, roller scrapers and axial roller unit.

Furthermore, the large wheel diameter cause a steeper angle on both sieving webs.

Model description

The 2600 potato harvester from Kverneland is a two-row elevator machine. The following models are available:

2607
Unmanned potato harvester equipped with three sieving webs and haulm elevator.

2621
Unmanned potato harvester equipped with two sieving webs and integrated axial cleaning rollers.

2622
Manned potato harvester equipped with two sieving webs, integrated axial cleaning rollers and a picking table.

2631
Unmanned potato harvester equipped with two sieving webs and three stage star roller unit.

2632
Manned potato harvester equipped with two sieving webs, three stage star roller unit and a picking table.

The machine is supplied with two three-blade shares as standard c/w diabolo rollers and two pairs of discs. The lifting unit is self-levelling and provides an even working depth on uneven land. The machine has two sieving webs. The main sieving web has two mechanically driven agitators with infinite hydraulic adjustment of intensity. Rocking agitators provide agitation on the second web. A mechanical link (rod) between main web/second web provide adjustment of the intensity. By shifting this rod to a parked position the second web agitation is zeroed. The integrated 82mm diameter axial rollers provide primary cleaning. The angle of the roller unit is adjusted hydraulically as is speed of rotation. The picking table is hydraulically driven with speed adjustment from tractor or picking table. An integrated hydraulic pump drives both the axial rollers and the picking table. The discharge elevator is hydraulically driven and controlled from the drivers seat. The discharge elevator has a priority flow valve with speed control. Discharge height is 3.5m maximum. The harvester has a solenoid operated hydraulic valve system with the possibility of manual (emergency) operation. Standard wheel size is 500/60-22.5". The machine has a divided axle, hydraulically operated wheel steering (manual or automatic) and adjustable track width. Machine levelling is done by means of an hydraulic cylinder at the right hand side. The drawbar is fitted with an hydraulic lane adjustment.

The machine may be supplied with one or more options:

Automatic machine levelling
Automatic depth control of lifting unit
Automatic adjustment of axial roller unit angle
Centre haulm pull-in wheel (prevent haulm building up between the centre roller discs)

Optional shares are listed in Technical spccifications page 5. Full width share is included with combi-windrowing kit, share for bed and Non-stop harvesting kit.
Low friction, plastic covered shares with steel edge
Half diabolos (used on beds together with bed lifting share, Non-stop and combi windrowing kits)
Non-stop harvesting equipment enables lifting of potatoes without the trailer on the field
Windrowing equipment (windrow and lift the potatoes with the same machine)

Wheel brakes
Hydraulic wheel drive
Optional web types are listed in Technical specification on page 5

Optional axial rollers 92mm diameter
Optional roller types are listed in Technical specification on page 5

Optional wheel sizes are listed in Technical specification on page 5

Elevator hopper chute (reduces free dropping height, forms a flexible end to the elevator)

Canopy over operator table

Road lights

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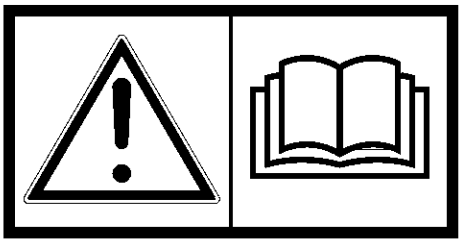

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Fig. 1

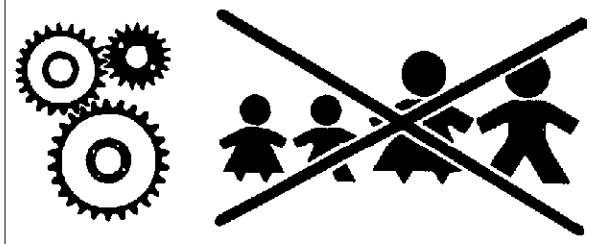

Fig. 2

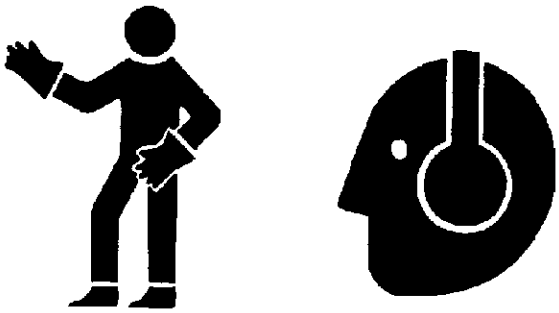

Fig. 3

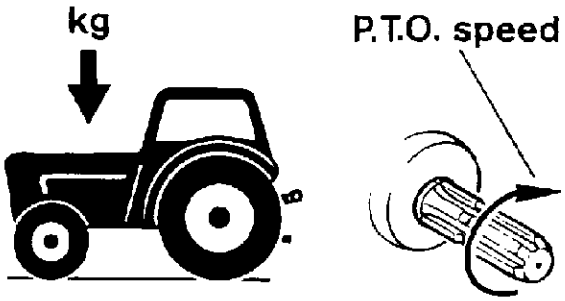

Fig. 4

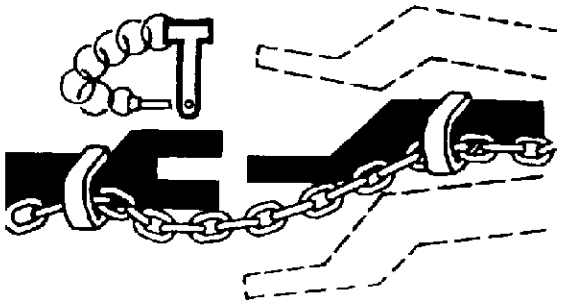

Fig. 5

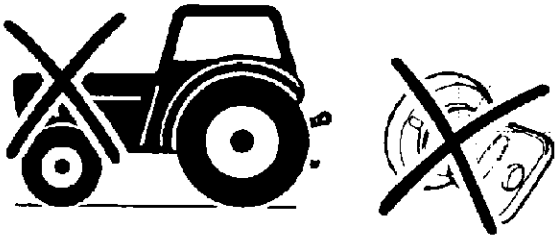

Fig. 6

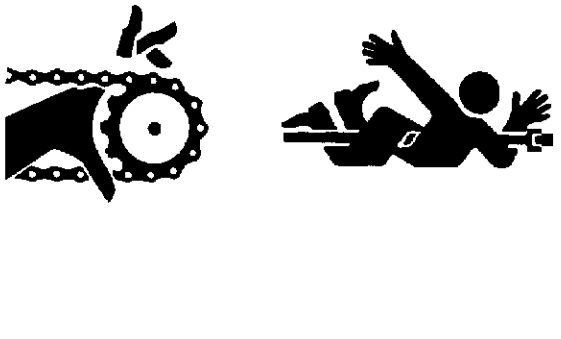

Fig. 7

Fig. 8

Safety

Before operating, adjusting or servicing the machine it is important that the safety instructions in this manual are carefully read and understood by those directly concerned (Fig. 1).

Whilst all care and attention has been taken in the design and production of this machine, as with all machinery there remains a certain amount of risk to personnel whilst the machine is in use. It is strongly recommended that users and operators take all possible precautions to ensure both their own safety and that of the others that may be in the vicinity.

Read and observe the safety instructions in this manual. Safety is your responsibility!

⚠ Pay particular attention to this symbol. It means that there could be a serious hazard. It emphasises precautions which have to be complied with in order to prevent accidents.

This symbol can be found throughout this manual and on the warning signs of the machine. They are for your safety and should be observed at al time.

General safety precautions

Be careful when other people or animals are close by!

Never start the machine when people or animals are close by tractor or machine. Never stand between the tractor wheels and the machine. (Fig. 2)

Bear in mind regulations regarding the lower age limit of operators of this kind of machines.

Use of the machine

The machine should be used only for the purpose it has been designed for.

Use personal proctection devices

Do not wear loose clothing which might catch in any of the moving parts. In dusty conditions an approved mask must be used. (Fig. 3)

Take care of excessive noise level. Some tracor/ implement combinations, depending on conditions, may cause noise level beyond 85dB at the operator's ears, even in a "Q" cab. In these conditions ear defenders must be worn. Keep cab windows and doors closed to reduce noise level.

The machine must be connected to a correctly sized tractor

The weight of the tractor must correspond to the maximum weight of the machine when operated. Follow domestic law and regulations. (Fig. 4)

Make sure that the tractor has the correct P.T.O. gear engaged. A machine designed for an input speed of 540 r.p.m. should never be connected to a tractor with 1000 r.p.m. output speed engaged. The normal P.T.O. speed is given on a label close to the P.T.O. input shaft.

Connecting machine to tractor

must always be carried out as described in this manual. If connection should be carried out with the drawbar, one of the parts (tractor's or machine's drawbar) must have a clevis. The drawbar pin must be secured with a lock pin. (Fig. 5)

Observe national regulations regarding road transport. Some countries require the use of safety chain when a trailed machine is towed along public roads.

Think of safety while operating the machine

Stop the tractor engine and remove the ignition key prior to carrying out repairs, cleaning, lubrication or maintaining the machine. (Fig. 6)

Safety guards

Make sure all guards are in good order and fitted correctly. Do not attempt to start the machine before ensuring this. (Fig. 7)

Pay particular attention to the plastic guards of the P.T.O. shaft. If damaged they must be replaced. The chain locks of the guards must always be fitted on a suitable place on the tractor and the machine to prevent the outer plastic guards turning.

Hydraulics

Be very careful when dealing with hydraulics. Use eye protection and gloves. Escaping hydraulic oil under pressure might penetrate into the skin and cause serious infection. See a doctor if you have been exposed to injury. (Fig. 8)

Take care that nobody is close to the machine when the hydraulic functions are being operated.

*=option

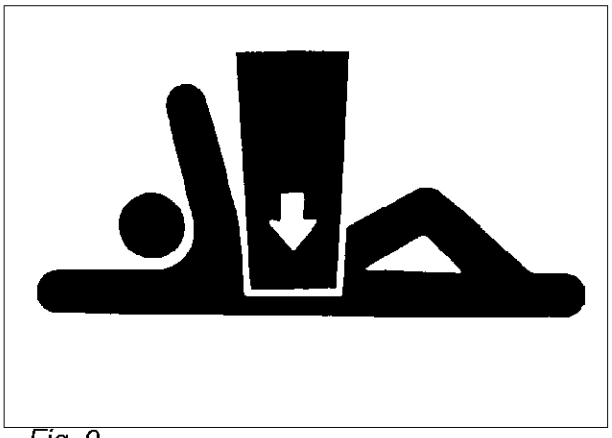

Fig. 9

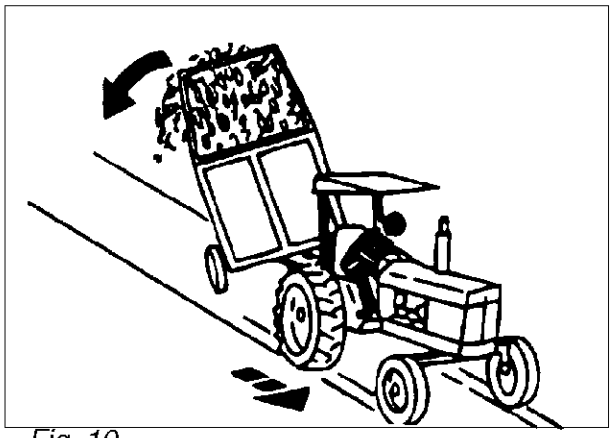

Fig. 10

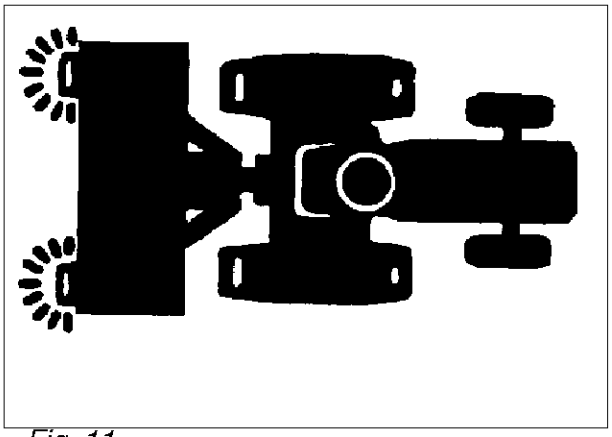

Fig. 11

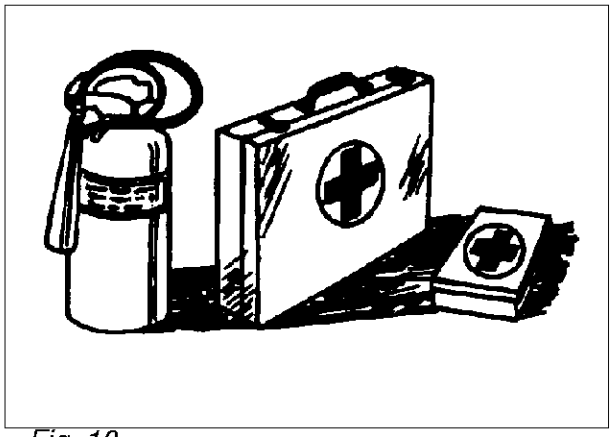

Fig. 12

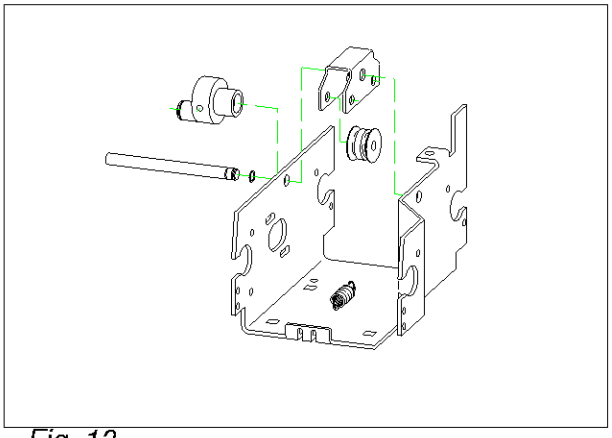

Fig. 13

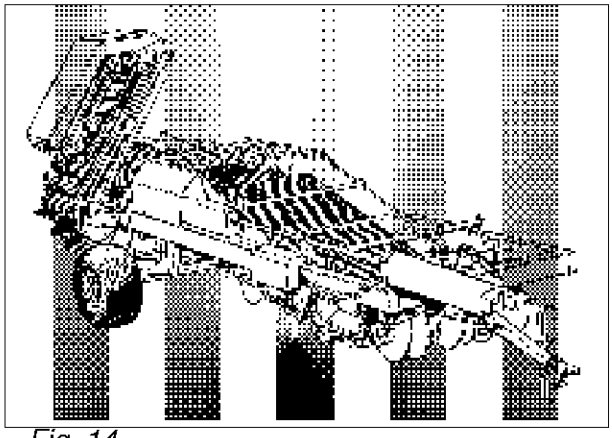

Fig. 14

When uncoupling machine and when leaving tractor/machine

When uncoupling, all hydraulic functions must be in neutral position. The machine must be lowered to the ground and be safely secured. If the machine has parking chocks they should be used at the wheels. Never allow children to play or stay near agricultural machinery. (Fig. 9)

Drive safely

Beware of your responsibility, - carelessness or negligence may cause serious injury or even death. (Fig. 10)

Prior to transporting the machine along public roads, check wheel bolts and couplings. Disconnect or lock the hydraulic system.

Drive carefully. Reduce speed when turning and driving on uneven ground. Take care that trailed machines do not start swinging or become unstable.

Please be aware of the danger of overturning when working on slopes and in soft ground. Reduce load.

Lights

The owner and operator is responsible of providing correct lamps and reflectors on the machine when transported on public roads. Comply with public regulations. (Fig. 11)

Safety equipment

Always carry first aid equipment on the tractor. Also observe the regulations concerning fire extinguisher. When working with burning materials like hay and straw a fire extingiusher must be available at all times. (Fig. 12)

Spare parts

For safety reasons use only original spare parts. The use of spurious spare parts will cause the Kverneland product guarantee to be invalid. (Fig. 13)

Maintenance

Take care that the machine is properly maintained and kept in good safe working condition. Never change the basic technical contruction of the machine. (Fig. 14)

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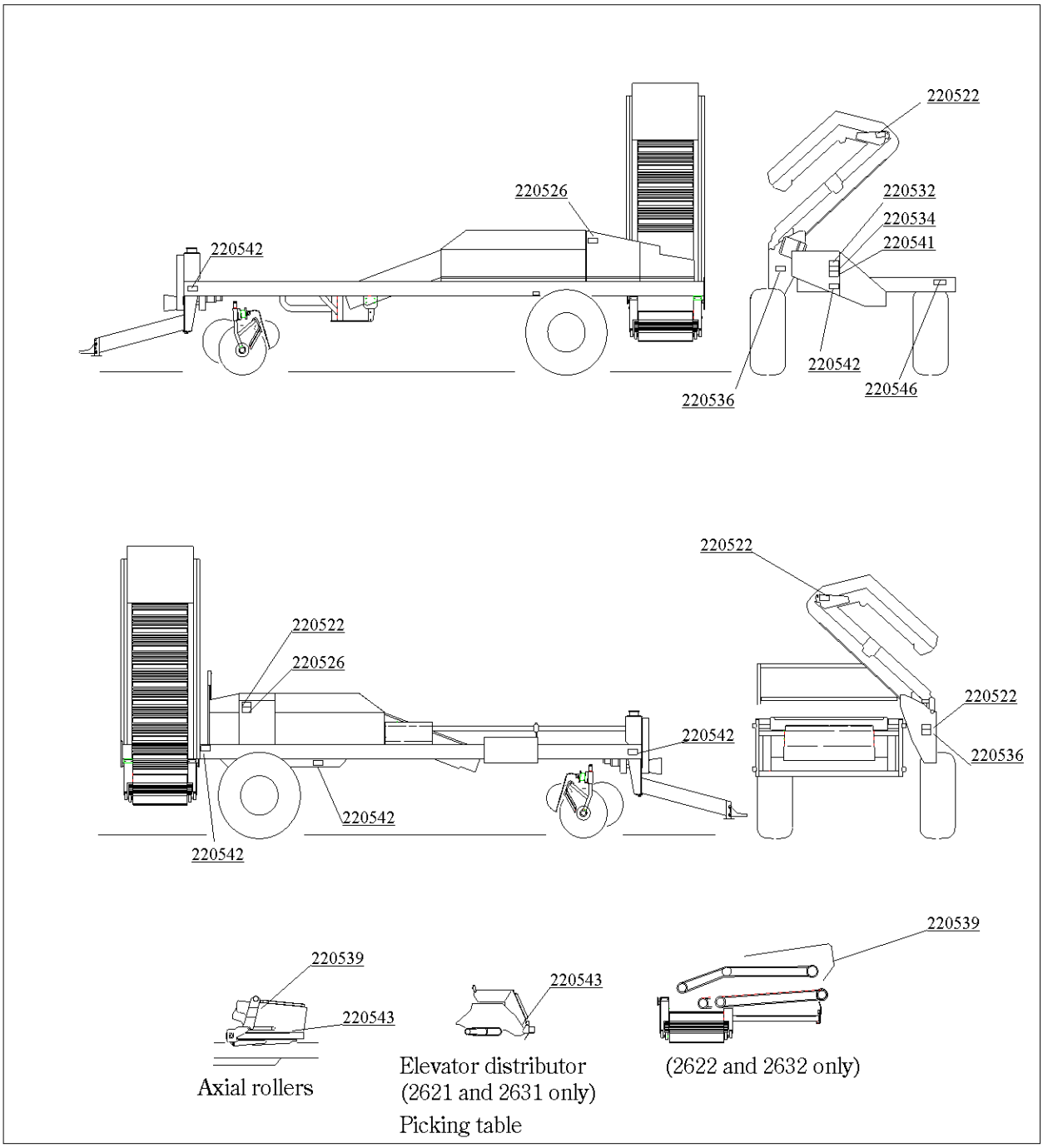

Fig. 15

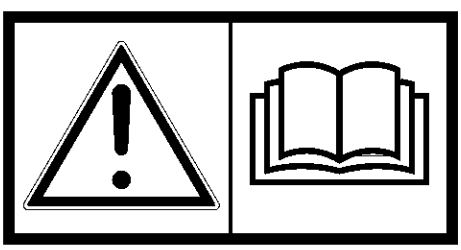

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Fig. 16

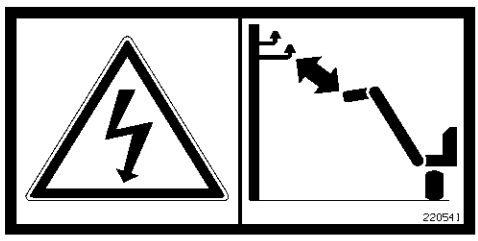

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Fig. 17

Supplementary safety instructions

This machine is designed for the purpose of harvesting potatoes and similar tubers. It has been designed to be operated unmanned if not equipped with a specially built picking table with platforms for the operator(s).

The machine is equipped with ⚠ warning signs. If any of the decals are damaged, they must be replaced. Ordering numbers are shown on the illustrations in this paragraph. Fig. 15

Warning sign 220532 (fig. 16). Be careful! Read and understand the instructions in this manual before the machine is put into service and before attempting adjustment/maintenance.

Warning 220541 (fig. 17). Be careful when passing close to overhead powerlines. The height of the machine may exceed 5 meters when the elevator is fully raised to vertical position.

Warning sign 220536 (Fig. 18). Danger of trapping. Keep away from moving parts.

Warning sign 220522 (Fig. 19). Danger of trapping. Keep away from elevator. It can move without notice.

Warning sign 220542 (Fig. 20). Be careful when machine is lowered! Keep feet away from shares and wheels.

Warning sign 220526 (Fig. 21). Fingers could be cut off if caught by the roller chain.

Warning sign 220546 (Fig. 22). Traffic hazard. The wheel steering cylinder may move/be activated during transport. Disconnect all hydraulics and electronics prior to transport.

Warning sign 220543 (Fig. 23). Danger of trapping. Keep away from rotating axial rollers.

Warning sign 220534 (Fig. 24). Disconnect all electronics before welding commences.

Warning sign 220539 (Fig. 25). Danger of trapping. Keep away from cleaning webs .

Lifting machine with crane

Only use approved lifting device. An approved lifting strap made specially for this machine is supplied with the machine. The weight of the machine is given in «Technical specifications» on page 5.

Be careful! Make sure that nobody stands under or near the machine when it is being lifted.

Attach lifting strap in brackets on lefthand and righthand side of main frame close to the lifting unit and at the forward side of the elevator on the righthand side of the machine. Look for the lifting hook signs. Make sure that straps are securely fastened before lifting.

Use a guide wire to keep machine in position.

Hazard with the use of chemicals

⚠ Always follow the manufacturer's safety precautions regarding the handling of chemicals and fertilizers.

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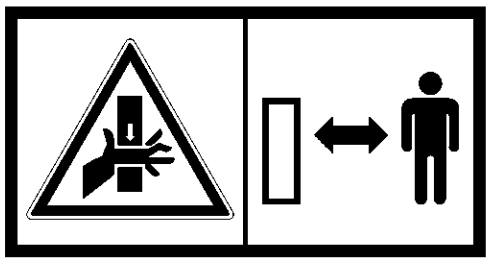

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Fig. 18

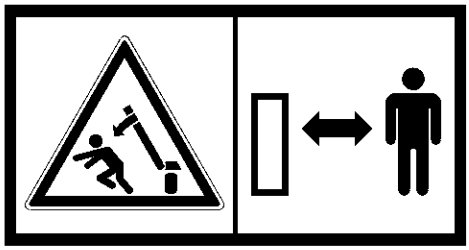

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Fig. 19

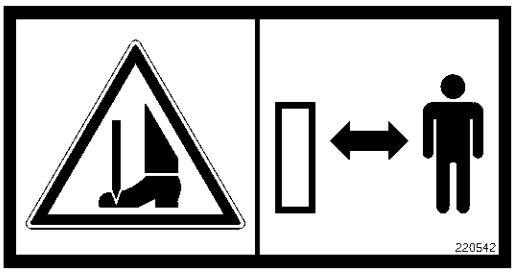

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Fig. 20

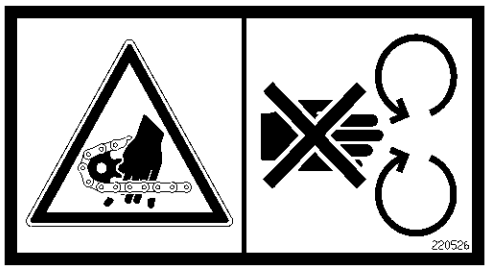

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Fig. 21

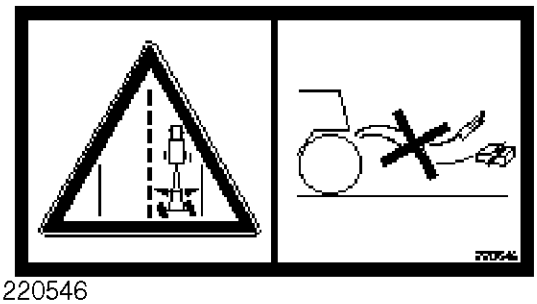

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Fig. 22

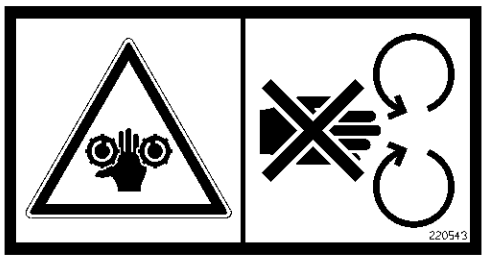

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Fig. 23

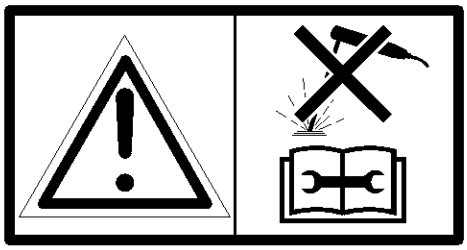

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Fig. 24

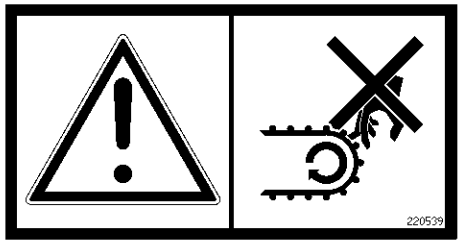

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Fig. 25

New machine - be careful!

Read the operator's manual. Great care must be taken when starting a brand new machine for the first time. Incorrect assembly, faulty operations etc. may cause expensive repairs and loss of profit. The Kverneland product guarantee does not cover damage occurring when the instructions given in this book are not followed.

 Pay particular attention to this symbol, - it emphasises operations where great care must be taken in order to avoid incorrect assembly, faulty operations etc.

Make following checks when starting a new machine:

Check that the machine is not damaged. Assure that electric cables and hydraulic hoses have length and position that allow machine to move without causing any damage to the them.

Check the connections between tractor and machine.

Check that drive chains are in position on sprockets and properly tensionned.

Lubricate the machine according to lubrication charts - figs. 83 & 84.

Check wheel and drawbar bolts, the connections between main frame and picking table between elevator and main frame.

*=option

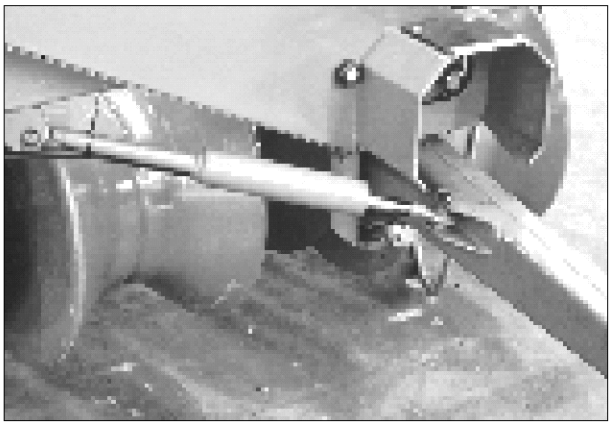

Fig. 27

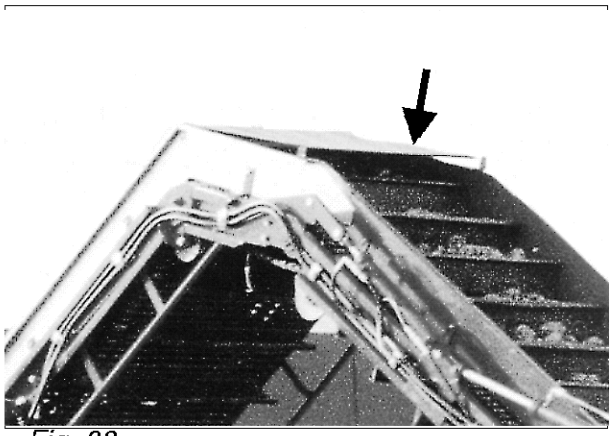

Fig. 28

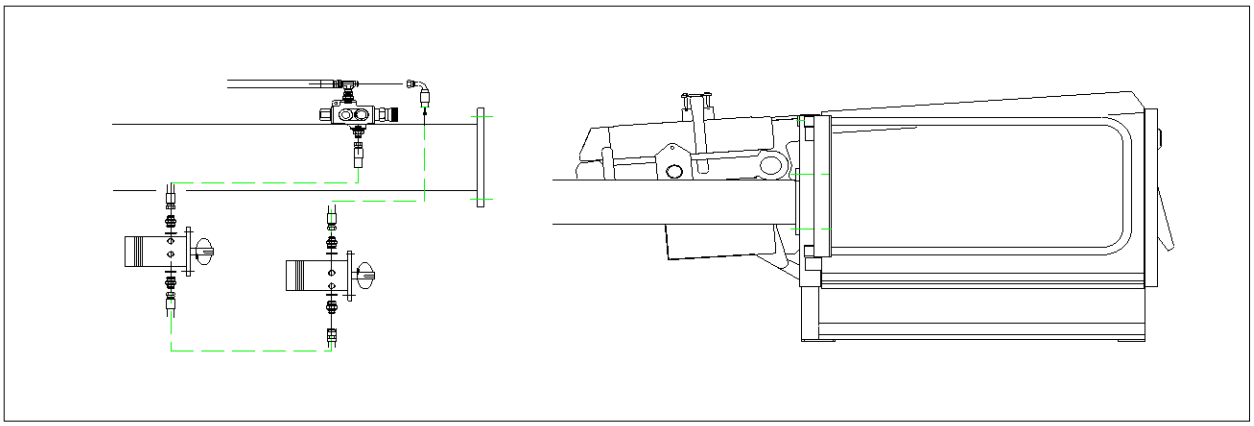

Fig. 29

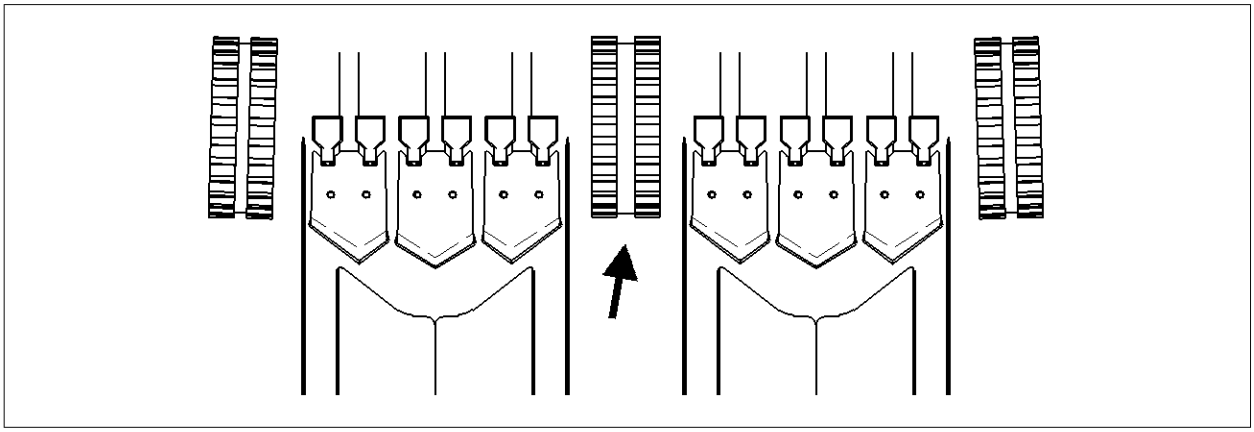

Fig. 30

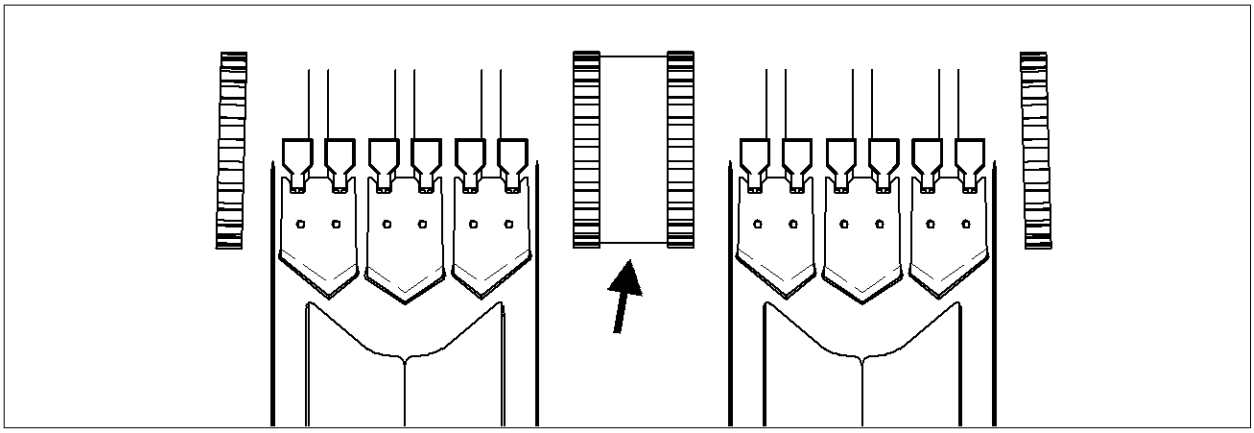

Fig. 31

1. Preparing a new machine

1.1 Wheels

Fit any wheels (removed for transportation) when machine is lifted off the lorry. Any wheel rims must be fitted opposite to the tractor's wheel rims.


Fasten the wheel nuts properly (conic surface on nut to face the rim).

1.2 Drawbar


Fit the drawbar and the turnbuckle (or drawbar cylinder) (Fig. 25a/b). Grease drawbar pin whilst still unconnected.

1.3 Elevator

If discharge elevator for transport reasons is folded, centre section should be raised to allow cylinders to be connected. Fit side panels on centre section and top section.

If discharge elevator for transport reasons is not fitted, it should be connected to the main frame (four points). Connect the hydraulic hoses (join hoses marked green, and join hose marked blue with hose marked red.

Fit the canvas across the end of the elevator (Fig. 26). If combi windrowing kit is fitted the canvas should cover the centre section.


Observe! If machine should be transported over long distance at high speed prior to delivery to customer, the canvas should be fitted at arrival on the farm.

1.4 Picking table

Model 2622 & 2632 only:

Fit the picking table if this has been dismantled due to transportation requirements (Fig. 29). Tension the frame bolts thoroughly. Connect the hydraulic hoses of the picking table drive to the flow control valve on the machine's left hand side (pressure hose 3/8" to port A, return hose 1/2" to port B).

1.5 Centre haulm pull-in wheel*

This is to prevent haulm building up between the centre roller discs.

On a standard machine with two individual shares the centre area between the two discs is blocked by means of roll-back plates. This is to prevent potatoes from rolling forward and away from the harvester. These may be replaced by a spring loaded centre haulm pull-in wheel. This comes in two widths; 135mm for row width 75-80cm (fig. 30) and 235mm for row width 85-90cm (fig 31).

A centre haulm pull-in wheel provide more consistent pulling action of haulm from the centre furrow. On a standard machine dry haulm may build up between the centre roller discs, with a subsequent inconsistent pulling-in of haulm lumps. This may lead to reduced capacity and a greater loss of potatoes through the haulm rollers.

1.6 Haulm elevator

Model 2607 only

If haulm elevator for any reason is not fitted, attach elevator unit at the rear end of the main web connecting flexible tubes to the flow control valve at the lefthand side of the machine (pressure hose 3/8" to port A, return hose 1/2" to port B).

1.7 Command panel


The system requires 12V power supply. The solenoids should work properly even if there is 10% drop in voltage.

Connect the control panel to the battery cable and the main cable from the machine.

Attach the control panel in a proper position on the righthand side of the tractor driver's seat. Use the bracket provided.

See the symbols for choice of functions.

Note! Normal operation requires power for simultaneous operation of 4 solenoids.

*=option

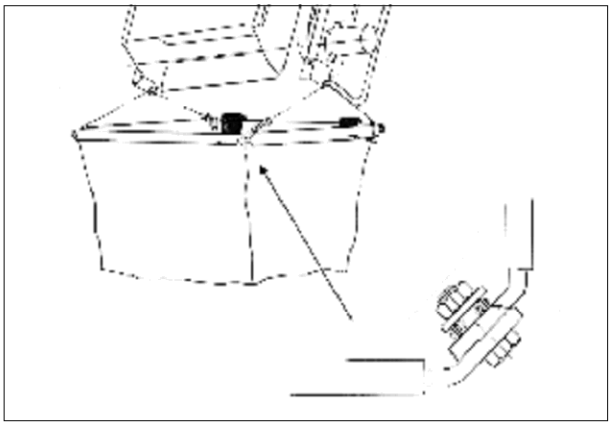

Fig. 32

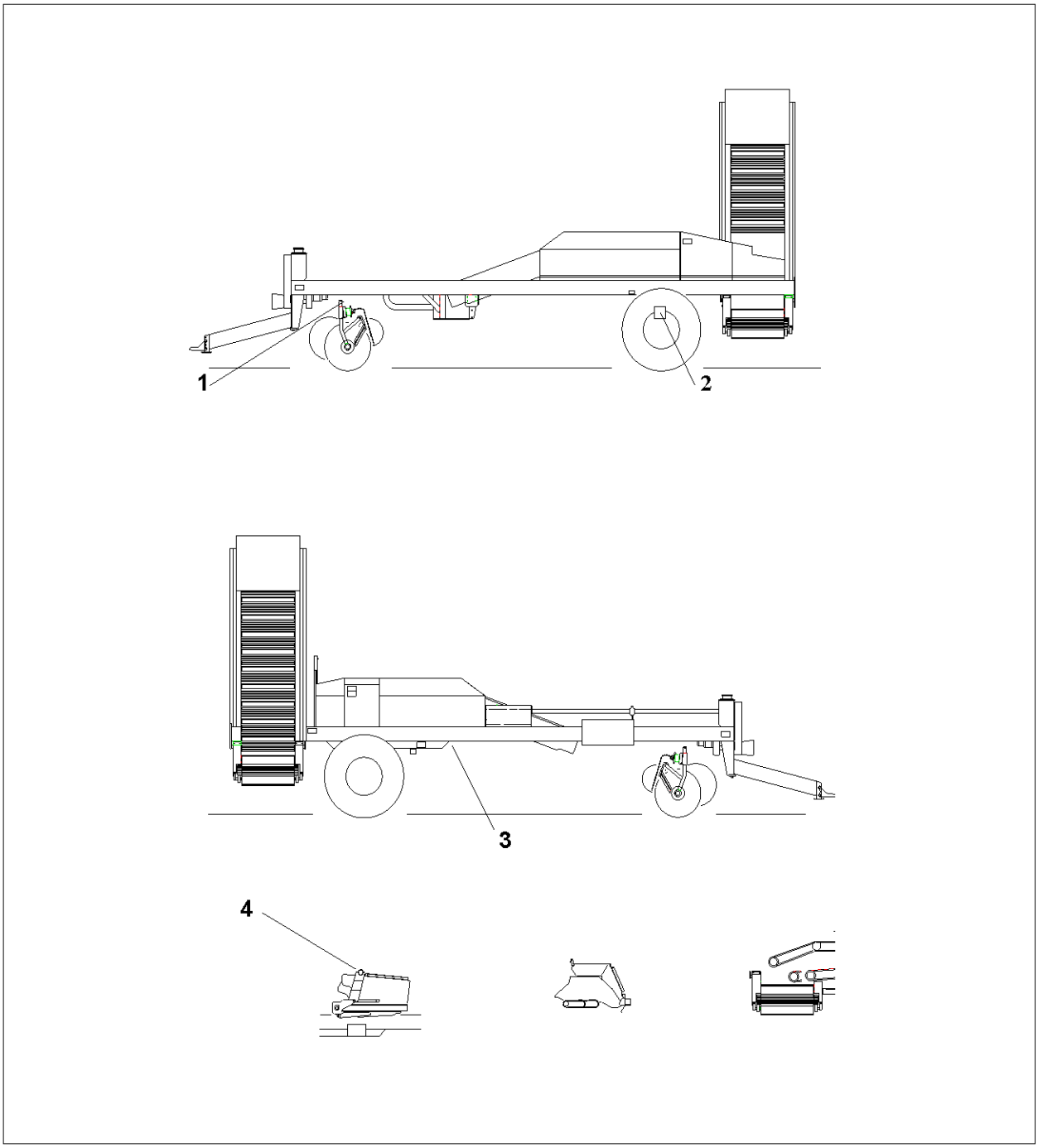

Fig. 33

1.8 P.T.O shaft

Check that length of P.T.O. shaft suits the tractor. Follow the instructions given on the shaft. There is a saftey clutch fitted in the main drive line of the machine. Therefore the P.T.O. shaft should not have safety clutch included.

1.9 Falldamper chute for elevator end*

See fig. 32. When assembled the two rubber flaps should be attached over one of the long sides of the falldamper framework. When fitting the chute on the elevator end these rubber plates should be towards the elevator and work as shock absorbers for the chute frame.

1.10 Canopy for picking table*

See separate fitting instructions.

Before the elevator is raised, the horizontal support bar at the front of the canopy must be laid down.

1.11 Miscellaneous options*

See separate fitting instructions.

1.12 Sensors

Fig.33

1. Sensors (microswitch) for automatic depth control of lifting unit (optional extra)

2. Sensor (analogue) for wheel steering

3. Sensor (analogue) for aut. machine levelling (optional extra)

4. Sensor (analogue) for automatic adjustment of the axial roller unit angle (optional extra)

The machine is fitted with inductive (= «feels steel») analogue sensors, that is, sensors that records position (as oppose to digital on/off sensors). Check that all sensors are properly fastened after transport. Check function simply by approaching the sensor with a screw driver. Check clearance sensor/steel prior to use. This should be between 2-6mm.

1.13 Final control

Remove lifting straps and any other safety measures fitted for transportation. Check that no machine part can block belts etc. when the machine is started.

Check wheel bolts and drawbar connections.

Check the oil level of the tank (level glass on the tank). Correct level at horizontal machine is upper half of level glass. Hydraulic oil (Shell Tellus T46 *) is filled at the factory. Let the pump run for some minutes at PTO speed of approx 500 revs/min.

The auto reversing system should be tested. Control the function by pressing the button at the pressostat or by pressing the key on the picking table command panel. The rollers will reverse for a very short period.

Check all mechanic and hydraulic functions.

** Shell Tellus T46=Texaco Rando HD46 = Castrol Hyspin AWH46 etc.*

*=option

2. Tractor requirements

Engine power:

Model	Easy conditions	Heavy conditions
2607	80hp (60kW)	100hp (75kW)
2621	80hp (60kW)	100hp (75kW)
2622	90hp (65kW)	110hp (80kW)
2631	80hp (60kW)	100hp (75kW)
2632	90hp (65kW)	110hp (80kW)

Hydraulic capacity:

Minimum 25 litres/min at 175 bar (tractor running at required engine speed).

Connections:

Hydraulic hitch or drawbar

1 single acting hydraulic outlet with free return to oil tank or 1 double acting outlet. The back pressure should not exceed 10 bar.

Electric power supply:

The electric/electronic controls require a steady 12V power supply. Use the power supply cable included with the machine connected to the battery. The solenoids can be operated at 10.5V power (measured at the solenoid), while the electronics require min. 11V input power (measured at the «black box»).

P.T.O shaft requirements:

13/8" 6 splines
540 revs/min

*=option

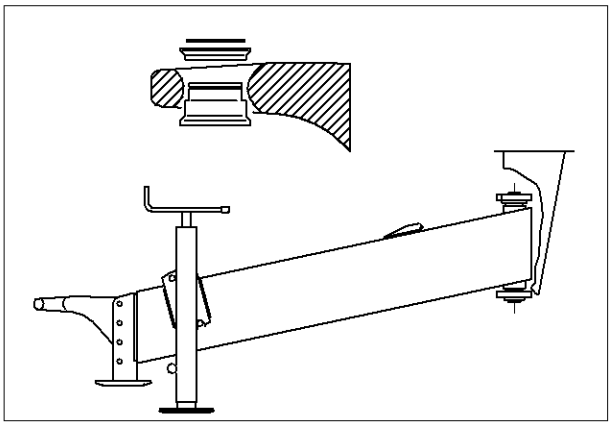

Fig. 34

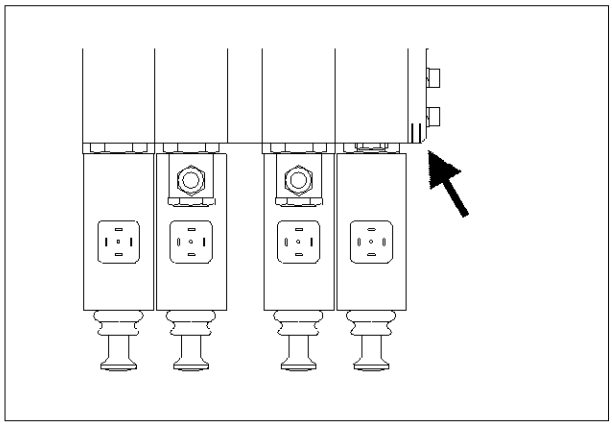

Fig. 35

3. Connecting the machine to tractor

3.1 Drawbar height

Adjust drawbar height for main frame to be parallel with the ground.

The machine is connected to the tractor drawbar (fit drawbar in ring) (Fig. 34) or to the pickup hitch.

3.2 P.T.O. shaft

When starting a new machine the lenght of the P.T.O. shaft must be adjusted to allow it to slide freely yet have adequeate overlap. This must also be checked when connecting to another tractor. Fasten the safety chains and check that the axel can move freely in both directions. See the shaft manufacturer's own information which is attached to all new shafts. Study the shaft manufacturer's instructions.

3.3 Electrics

Switch on the command panel by connecting all electric plugs from battery to panel.

A display image is now appearing. This image indicates the present position (angle) of the wheel steering, levelling and the axial roller unit. This is the normal (operating) display image.

3.4 Hydraulics

The harvesters hydraulic hoses are identified as follows

Flow: Yellow dust cap
Return: Blue dust cap, (a non return valve is fitted in the return line).

Avoid return connection which gives a high back pressure (above 5-10 bar).

The flow hose can be connected to a single acting spool valve and a return hose with non resistance oiltank connection. Missing return will damage the machine's hydraulic valves and oil motor. If the levelling cylinder moves up with no use of the controls, there is no return connection to the tractor.

When the machine is connected to a John Deere tractor (or other tractors with closed centre hydraulics), the harvester's spool valve centre must be closed. (The pin screwed into its stop, accessable from underneath the block, Fig. 35.)


When using other types of tractors this screw must be screwed fully out with the head level with the central block edge.


When working in dusty conditions, the top of the valve bank should be covered by some kind of filter material (rubber sponge) in order to prevent dust from intruding the valves through the caps on top of the spool guides.

*=option

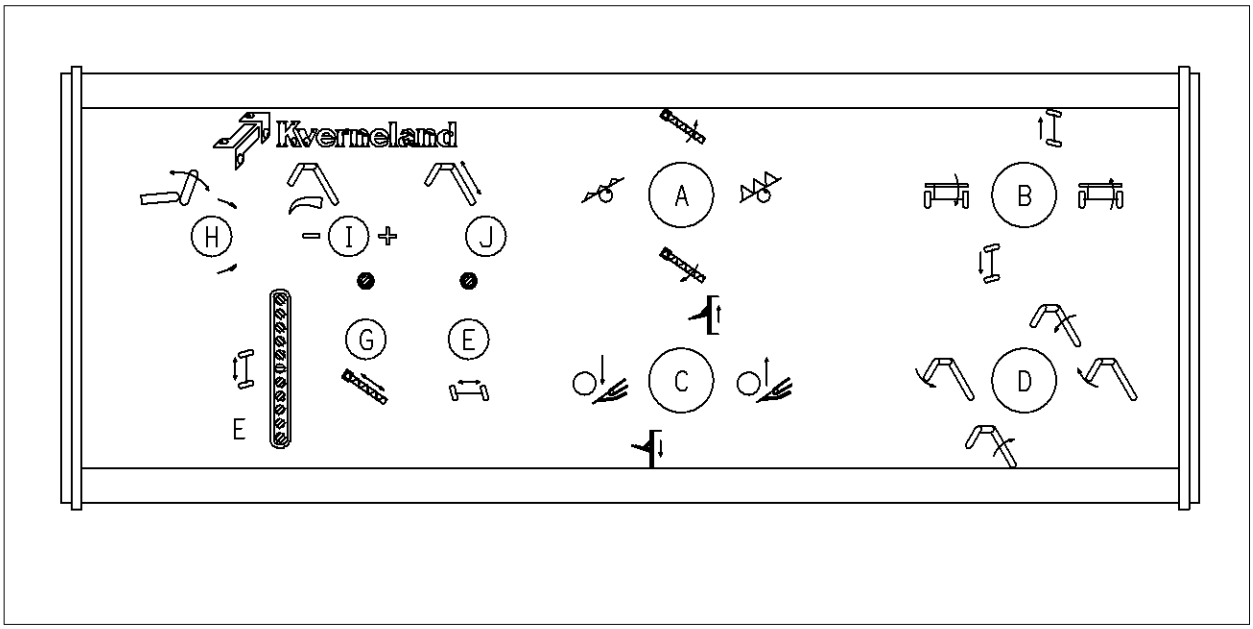

Fig. 36

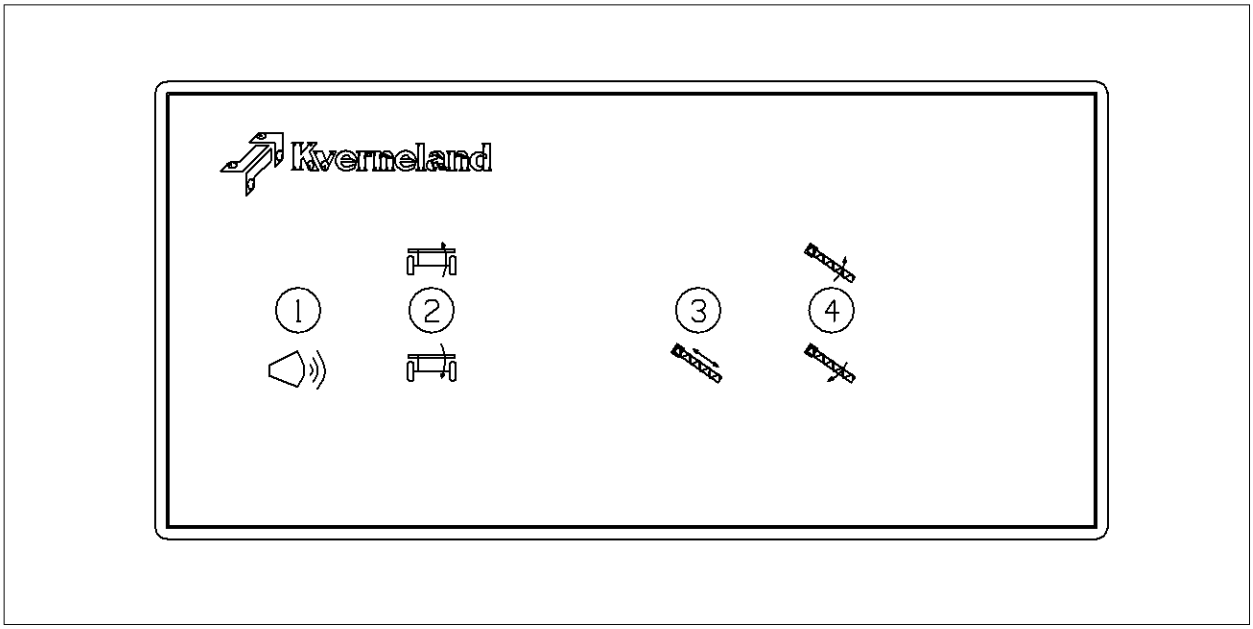

Fig. 37

4. Operating the electric control system

4.1 Description

The electric control system consists of:

-Control panel tractor (Fig. 36)
-Control panel picking table (Fig. 37) (2622/2632)
-Relay unit on the machine

The valve block is fitted with electromagnetic spool valves, which are operated from the control panels.

The electric control system may include automatic wheel centre positioning. Beyond that, no possibilty for further auto function.

4.2 Connection

Connect the electric plugs directly to the battery to ensure satisfactory power supply.

Connect the datacable from the relay / black-box to the control panels.

4.3 Control panel tractor

(Fig. 36). Light in the diodes indicates power supply. The panel is prepeared for operating extra functions, even if the machine is not equipped with this functions.

Toggleswitch H: Haulm elevator angle control

Toggleswithc I: Elevator speed control

Toggleswithc J: Elevator drive forward/stop/ reverse

Toggleswitch E: Automatic wheel centring

Toggleswitch G: Axial roller reverse check (2621/2622 only)

Diodes F:

Indicates the wheel position.

Green:	The machine turns left
Red:	Wheels in center position
Yellow:	The machine turns right

Joystick A:
Axial roller/star roller unit angle adjustment.
Controlling cleaning efficiency

Joystick B:
1. Wheel steering right/left
2. Machine levelling up/down

Joystick C:
1. Drawbar right/left
2. Shares up/down

Joystick D:
1. Elevator in/out
2. Elevator end up/down

4.4 Control panel picking table

All functions of the picking table control panel can even be operated from tractor cab (Fig. 37)

1. Audible alarm
2. Machine levelling up/down
3. Axial roller reverse check
4. Axial rollers/star roller unit up/down

4.5 Relay unit

The relay unit is fitted over the valve block at the left hand side of the machine. The power supply and data cables are connected to this unit.

4.6 Automatic wheel centring

The function is activated with toggle switch E. The function is disactivated by activating the wheel steering joystick.

The wheel steering sensor is fitted on the lefthand king-bolt. The distance to the magnet must be 2 to 6 mm.

The sensor cable must be adjusted if the track width is changed.

*=option

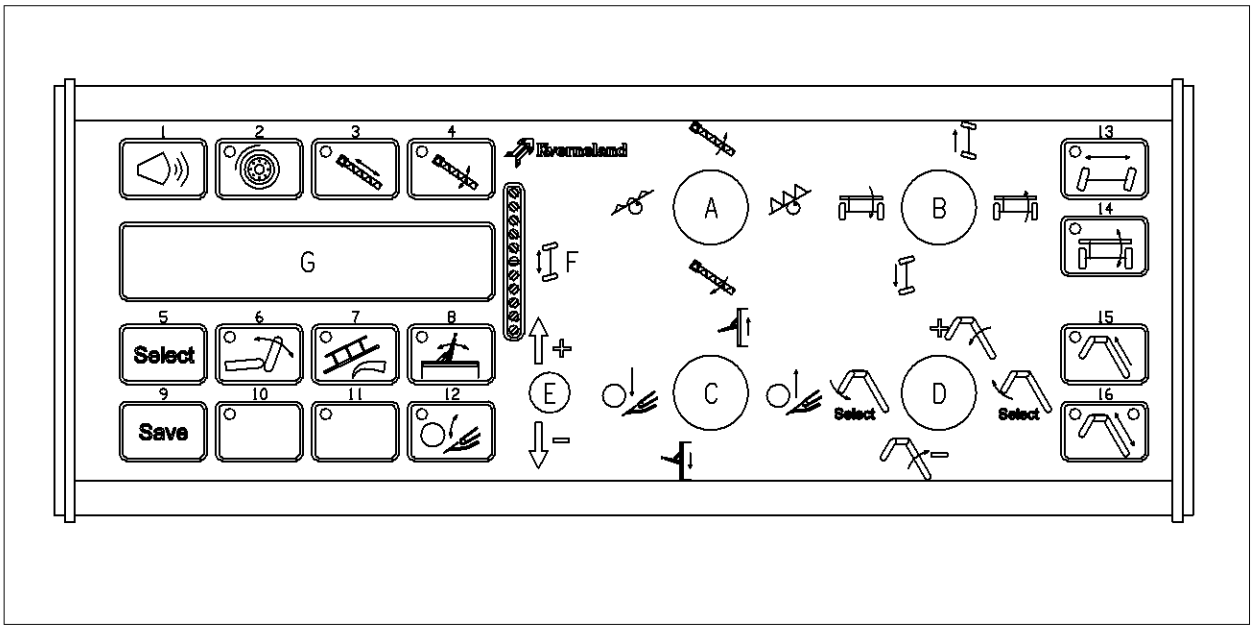
1
2
3
4
Kverneland
A
B
13
14
G
F
5
6
7
8
Select
E
C
D
Select
Select
15
9
10
11
12
Save
16

Fig. 38

5. Operation the electronic control system*

5.1 Function and structure

The electric control system consists of:

-Control panel tractor (A)
-Control panel picking table (B)
-Driver units fitted on the machine (C & D)

The valve block is fitted with electromagnetic spool valves, which are operated from the control panels' joysticks, toggle switches and buttons.

The computer operates continuously, reading information from inputs (sensors) and panel, comparing information and thereafter activating outputs (spool valves).

The electronic control system can be fitted with following auto functions:

Automatic wheel centring
Automatic axial roller angle control
Automatic angle adjustment haulm elevator
Automatic frame levelling control
Automatic depth control

5.2 Connection

Connect the electric plugs directly to the battery to ensure satisfactory power supply.

Connect the data cable from the driver module / black-box to the control panels.

5.3 Control panel tractor

(Fig. 38) Appearing of text in the display shows that the power supply is connected. The panel is prepared for operating extra functions, even if the machine is not equipped with this functions

G. Display: Shows alphanumeric information (numbers and letters). Standard display mode shows the wheel position in degrees, and in addition position of other auto-levelling functions if mounted. Standard display mode can be changed using «Select» and «Save». When activating/deactivating auto functions this is displayed.

E. Toggle-switch: The toggle-switch is used in combination with the keys. The switch are used to change working positions and operate hydraulic functions which do not have their own joystick (bunker end/stone hatch). Activate the current function, and then press the toggle-switch to activate the function.

Example on activating the haulm elevator (2607):

1. Press shortly key no. 14, bunker end/stone hatch. The display indicates now «Hopper».

2. Activate the toggle switch within 6 seconds. The display returns to standard view after 6 seconds.

Diode lights F:
Indicates the wheel position.

Green:	The machine turns left
Red:	Wheels in centre position
Yellow:	The machine turns right

Joystick A:
Adjust cleaning efficiency axial rollers/star rollers (up/down)

Joystick B:
1. Wheels turn right/left
2. Frame levelling up/down

Joystick C:
1. Shares up/down
2. Drawbar right/left

Joystick D:
1. Elevator in/out
2. elevator end up/down

Keys 1-16:
1. Audio alarm (separate bugle on the machine)
2. Wheel drive
3. Axial roller reverse
4. Automatic angle adjustment of axial rollers
5. Select: Chooses standard display view (long touch). Forward in menu (short touch)
6. Haulm elevator
7. Not used
8. Not used
9. Save: Saves data/positions (long touch). Backwards in menu (short touch)
10. Not used
11. Not used
12. Automatic depth control
13. Automatic wheel centre positioning
14. Automatic frame levelling. Operate by toggle switch
15. Elevator start/stop
16. Elevator reverse

*=option

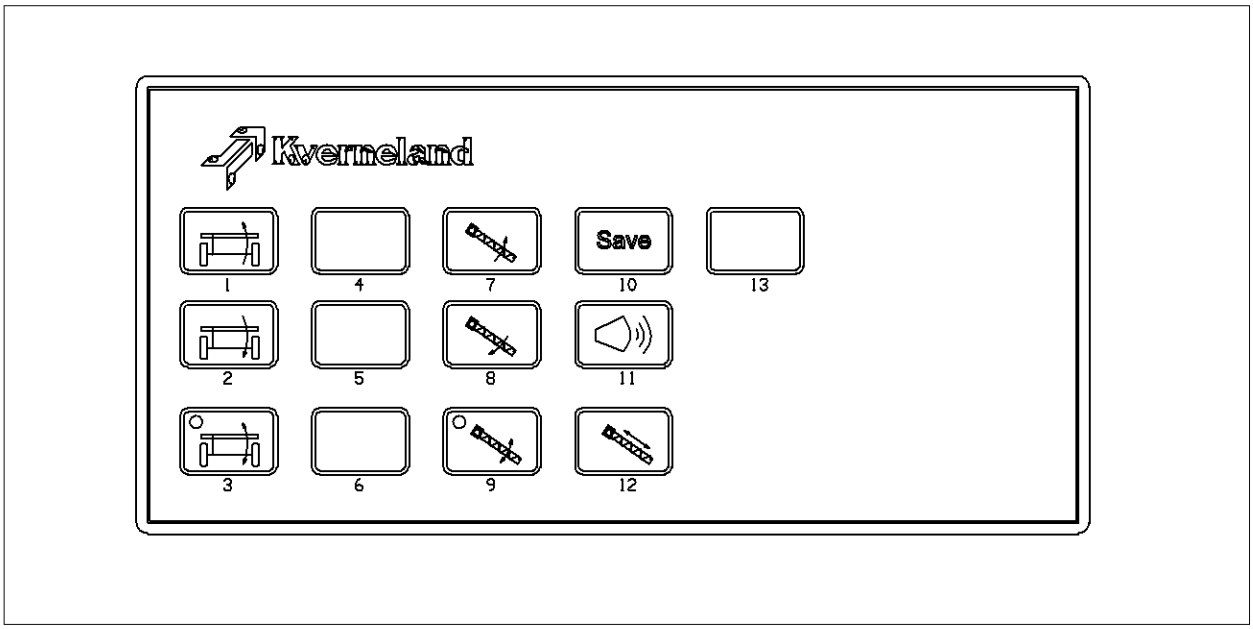

Fig. 39

5.5 Control panel on picking table

(Fig. 39) All functions of the picking table control panel, except function 4 & 5, can even be operated from tractor cab.

1. Frame levelling up
2. Frame levelling down
3. Automatic frame levelling
7. Axial rollers/star roller unit up
8. Axial rollers/star roller unit down
9. Automatic axial roller angle control
10. Save present position
11. Audible alarm
12. Axial roller reverse check

5.6 Automatic mode operation

The auto functions are activated by a long touch on the relevant key, until the red diode light up. There is also a display message telling which function that is in auto mode. The auto function is deactivated with a short touch on the relevant key, or by activating the relevant joysticks.

When entering auto mode, the machine will go to the last known auto-position. This position is shown on the display.

When setting a new work position, use the joystick/ toggle switch to find desired position. Then press the SAVE key with a long touch, and at last press the relevant function key with a short touch.

The system can in addition to the neutral position, store one working position. The wheel steering, however, is capable to store two offset working positions in addition to the neutral (zero) position, one to the left and one to the right.

To alternate between the different working positions, first activate the relevant auto function and then use the toggle switch <+> or <->. The toggle switch must be activated within 6 seconds after the auto key is activated. The selected working position is shown in the display.

Example of saving and using the auto function:

Saving 5° offset wheel position:

1. Adjust the wheels to desired position (5°)
2. Press SAVE until «STORE POSITION» is shown in the display.
3. Activate the auto wheel position key with a short touch.
4. 5° offset work position is now saved.

Alternate between neutral position and offset:

1. Activate auto wheel position
2. Activate the toggle switch within 6 seconds. Use the toggle switch <+> or <-> to the desired position is displayed, 0° or 5°.

*=option

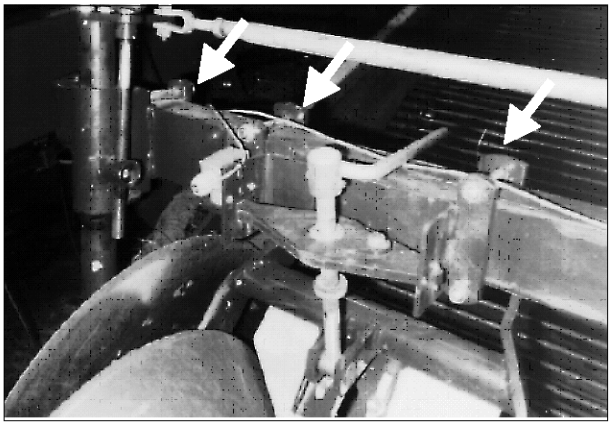

Fig. 41

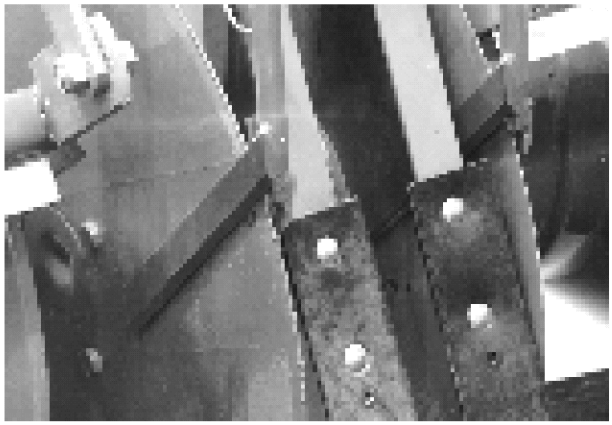

Fig. 42

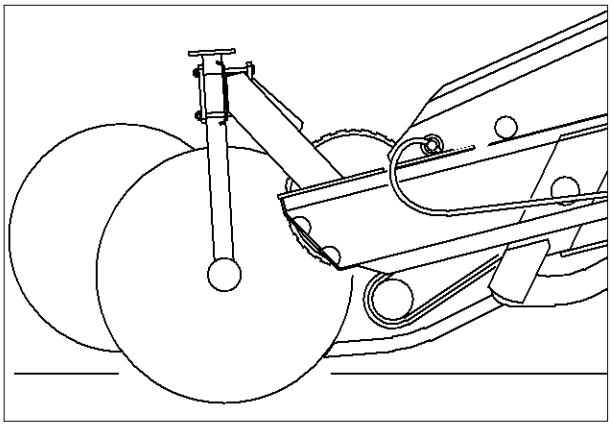

Fig. 43

6. Row width adjustment

6.1 Lifting unit

Adjust the distance between the lifting units according to the row width in the field. Standard row width when delivered from the factory is 75 cm. Share, roller discs and diabolo rollers must be moved when altering the row width (Fig. 41).

When there is a wide distance between the inner discs wide roll-back plates must be fitted (Fig. 42). At wide row width the outer roll-back plates (next to the haulm pull in rollers) can be removed.

The lifting unit discs are mounted with a distance of 52 cm. The distance can be adjusted steplessly.

With wide row width it might be necessary to remove or to move the haulm pull in rollers to the back position so as not to get in contact with the roller discs (Fig. 43). The first web support roller should be moved in order to support the web at the haulm pull-in roller. Note that this is a less effective position as regards pulling in haulm.

At narrow row widths and small distance between the roller discs there is a risk of loss of potatoes between the disc and the pull-in roller. This may be stopped by fitting extra roll-back plates at the outer discs (option), see fig. 30.

*=option

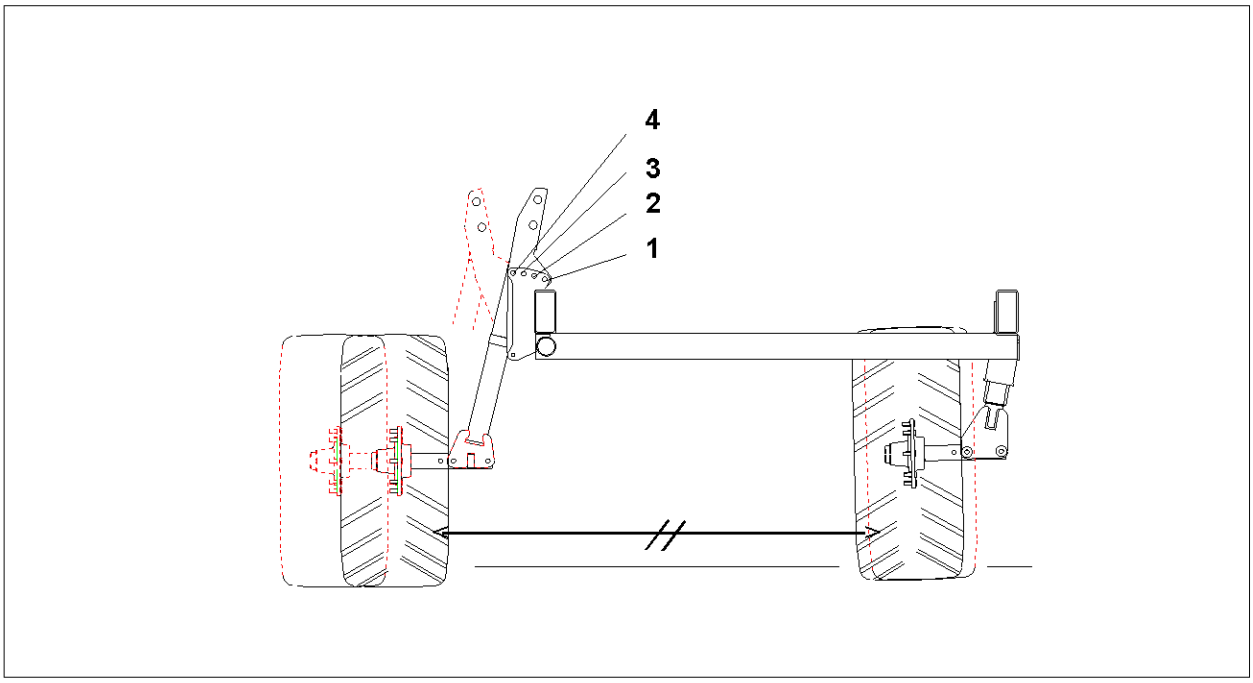

Fig. 44

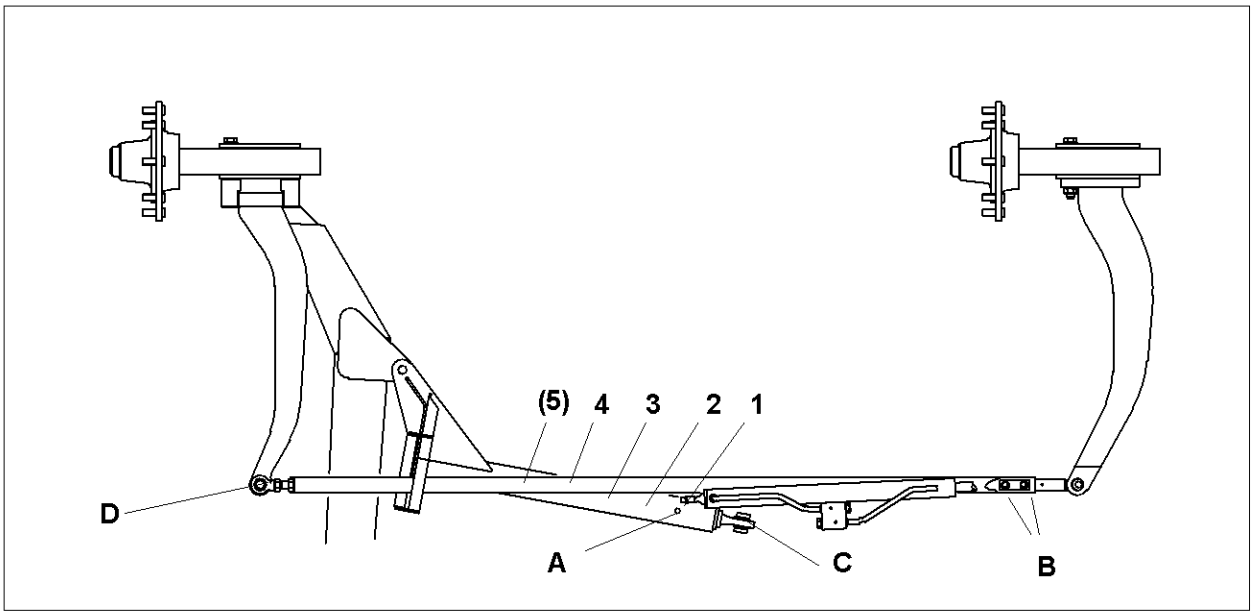

Fig. 45

6.2 Track width adjustment

The track width is easily adjusted mechanically to suit a desired row width and wheel dimension or to avoid potato damages in the ridge. It is possible to adjust the track width from 2.1 to 2.5 metres c/c.

The machine is factory fitted with a very narrow track width due to transportation. This is thus NOT necessarily the recommended track width.

The track width suits 75-, 80-, 85-, and 90 cm row widths. The numbers 1,2,3,4 on fig. 44 and 45 corresponds to the various row widths (e.g. 1= 75cm , 2 = 80cm etc.)

Three bolt connections must be altered (see fig. 44 and fig. 45).

1. Raise the main frame by using the right hand side double acting hydraulic cylinder. Place a ramp underneath the main frame behind the right hand wheel. Lower the frame (using the cylinder) in order to free the wheel. Remove the bolt as shown in fig. 44. Now use the hydraulic cylinder to select desired hole (1-4). Insert the bolt in this new position. Re-tighten.

2. Remove bolt figure 45/A.

3. Remove the two bolts as indicated in fig.45/B. Now the telescopic stay (C) can be adjusted.

The telescopic stay has 4 holes (1-4). The bolt positions figs. 44 and 45/A must match, that is; pos.1 fig. 44 corresponds to pos.1 fig. 45.

4. Re-tighten bolts fig. 45/A and B.

Note! The bolts head at the parallel stay, fig. 45/B, must point downwards. This is to provide clearance to the hydraulic cylinder.

The two wheels must run in parallel. If not, this may cause excessive wear. Adjust by using screw fig. 45/D. Check distance between tyres (front and back) using a measurement device (rod or similar).

*=option

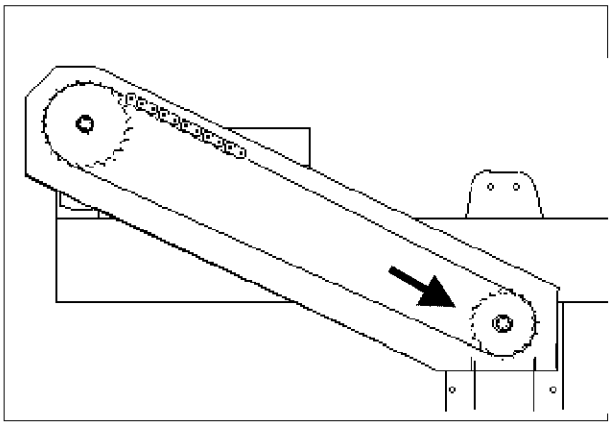

Fig. 46

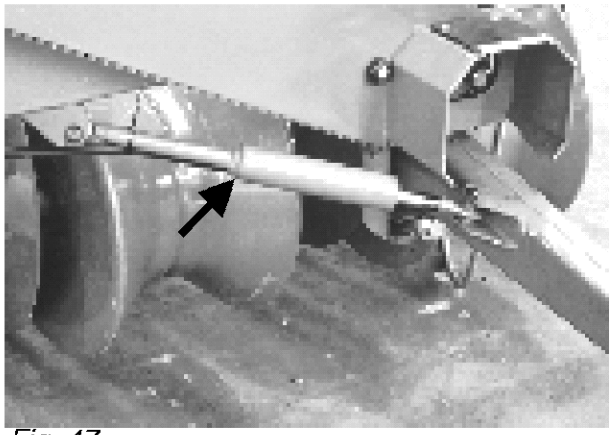

Fig. 47

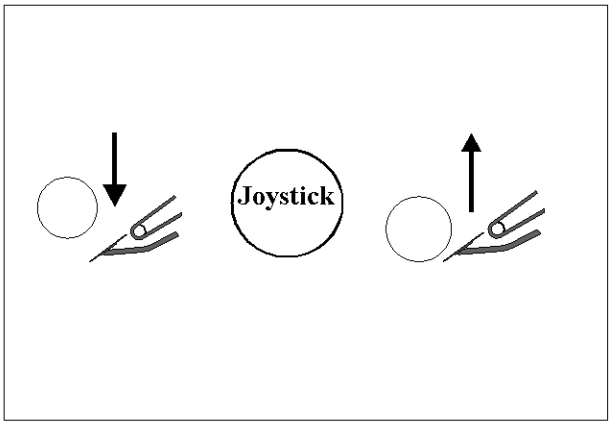

Fig. 48

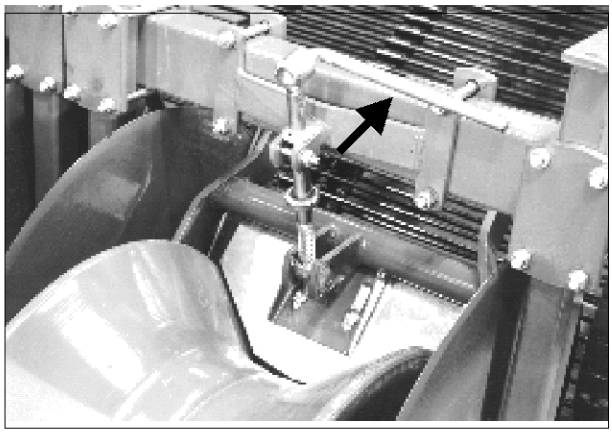

Fig. 49

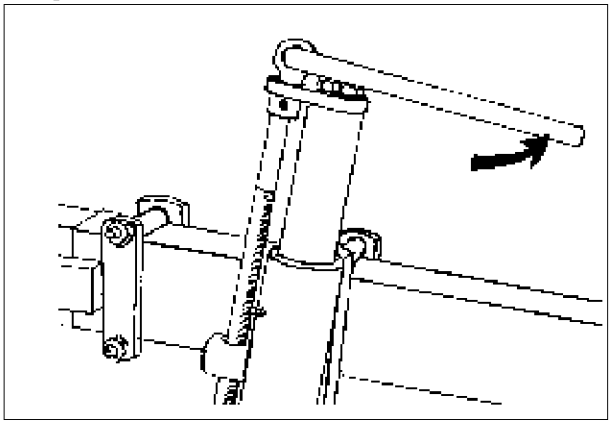

Fig. 50

7. Operating the harvester

7.1 P.T.O speed

The recommended P.T.O. is 300-500 rev./min. An optional 16 or 14 tooth sprocket on the main drive shaft (Fig. 46) can be supplied instead of the 19 tooth standard one. This reduces the harvester's revolutions by 16 or 26 %. It may be necessary if the pump capacity of the tractor is low (increasing tractor engine speed).

Revolutions must be adjusted to forward speed. When the main digging web has the same speed as the tractor, the most gentle handling of the potatoes is achieved. The proportion between the P.T.O. and web speed is:

	Main web speed (km/h) at given PTO speed				
Sprocket size	300 rpm	350 rpm	400 rpm	450 rpm	500 rpm
19t	3.1	3.6	4.1	4.7	5.1
16t	2.6	3.0	3.5	3.9	4.4
14t	2.3	2.7	3.0	3.4	3.8

7.2 Row adjustment

The tractor's and the harvester track width must match the row width, see section 6.2.

Adjust lifting unit's position in the rows using the hydraulic lane adjustment (fig. 47). The diabolo rollers must run in the middle of the ridges.

When opening the field use the wheel steering to get the machine's right hand side wheel to run in the furrow. Otherwise the machine must run straight.

7.3 Adjusting the lifting unit

The lifting unit is raised and lowered hydraulically by means of the command panel joy-stick (Fig. 48).

Share depth is adjusted using the diabolo rollers (Fig. 49). One revolution of the adjustment screw coreesponds to approx. 6mm share depth change. The lifting unit is attached to the frame which means that it can twist itself and automatically adjust to an uneven surface. Depth must therefore be adjusted on both diabolo rollers. When the soil contains a lot of clod and stones accurate depth adjustments is extremely important.

The large side discs will cut the haulm etc., and should normally be adjusted to penetrate at least 5 cm (2") into the soil. Adjustment is carried out by means of the screw on either side (Fig. 50).

Note! Excessive cutting depth can cause the share to be lifted (particularily in heavy and stony soil) resulting in potential damage.

7.3.1 Automatic depth control

(Optional extra)

The automatic, hydraulic depth control (fig. 51) reduces pressure on the diobolos. Two micro switches fitted in front of the machine monitor the lifting unit (share) position. Signals from the switches are fed into the computer (black box).

The computer is programmed so that the switches try to maintain mid-position (neutral). It is possible to prolong the reaction delay in order to avoid a too «busy» depth control, that is; to avoid depth compensation for every small disturbance (small dumps,when hitting rocks etc.).

The pressure on the diabolos is altered by moving the micro switches, see screw shown at fig. 51/A. To increase pressure tighten the screw.

*=option

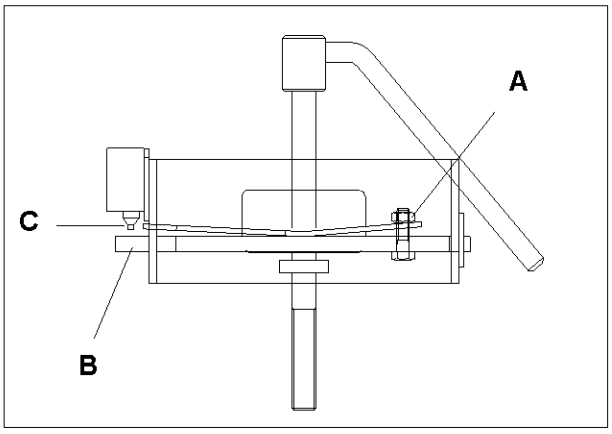

Fig. 51

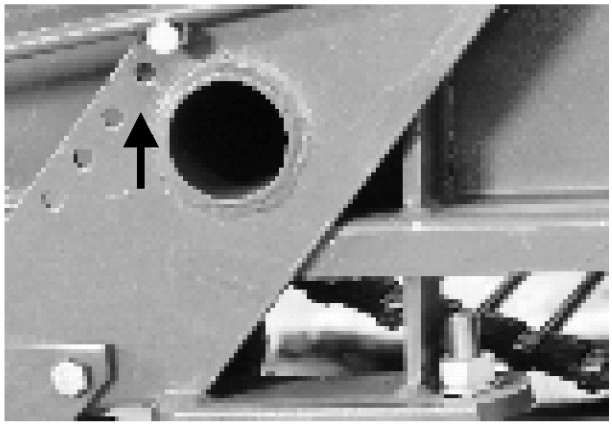

Fig. 52

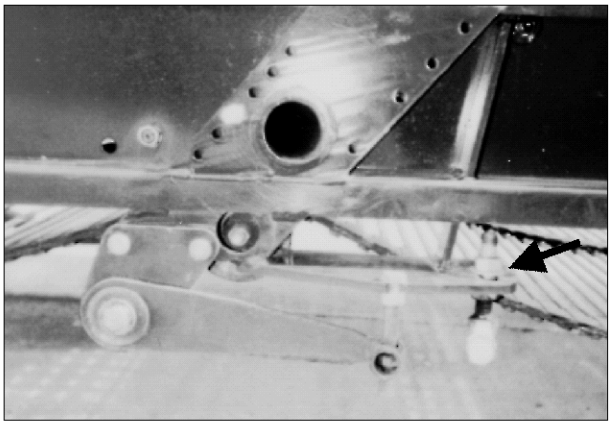

Fig. 53

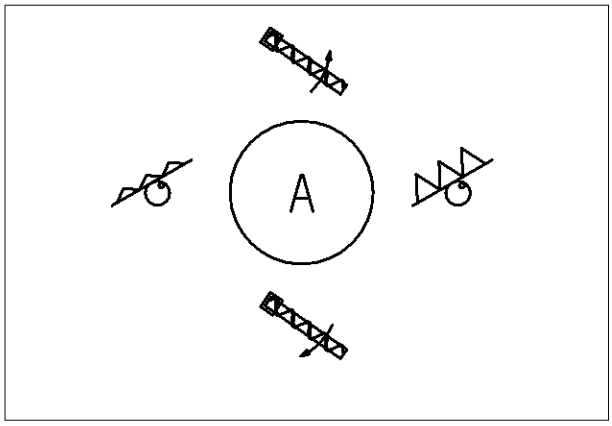

Fig. 54

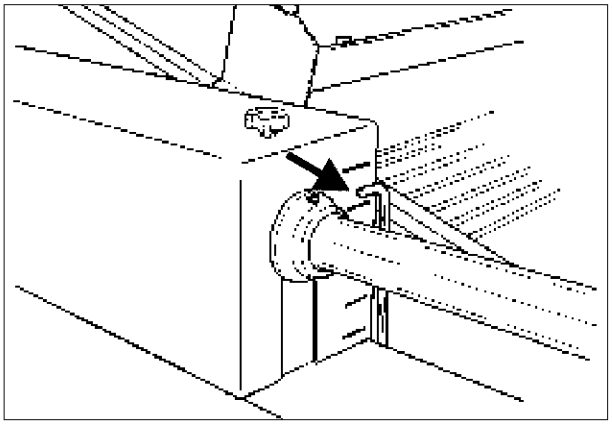

Fig. 55

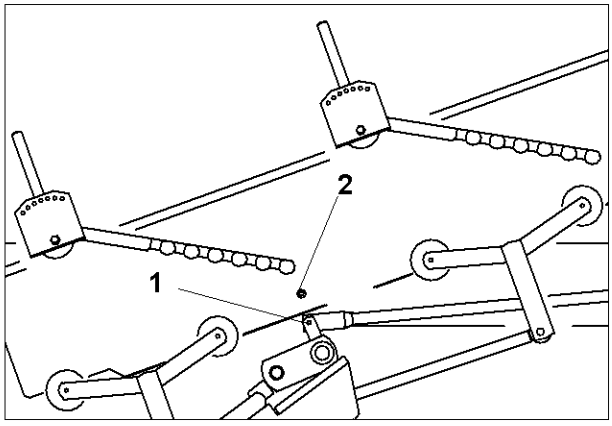

Fig. 56

7.3.2 Fitting automatic depth control

When fitting automatic depth control (fig. 51) avoid damaging the micro switches. The procedure is as follows; loosen screw (A), raise the end plate (B), press the micro switch pin (C) all the way in. In this position let the pin rest against the end plate. Now adjust with screw (A) to find desired position (diabolo pressure).

7.4 Adjusting the haulm pulling rollers

The haulm pulling rollers rotate on the belt. If they do not grip the haulm, spring tension must be increased (Fig. 52). Check that the rollers do not touch the side plate or side disks. Note that the rollers must be angled, with the minimum clearance towards the side plate of lower edge.

7.5 Share angle

Can be adjusted using the adjustable screws on the share holder (Fig. 53). This also adjust share height in relation to the main digging belt.

The most gentle position of the share is achieved when a straight edge laid on the share in a backwards pointing direction only just touches the belt.

A steep share penetrates well.

When there is a problem with the haulm attaching itself to the share frame sides, this can either be avoided or reduced by lowering the share (the entire lifting unit is raised onto the diabolo roller). In this way the frame sides will clear haulm left in the furrows.

7.6 Soil separation

7.6.1 Main sieving web agitation

The agitation on the main sieving web is adjusted hydraulically from the command panel (fig. 54). Agitator intensity is indicated on a scale at the right hand side of the machine, fig. 55. Always run with the minimum required agitation.

Agitation is provided via an eccentric wheel fitted onto the main drive shaft which transfer motion onto the agitator shafts. The intensity is adjusted by means of an hydraulic cylinder. Use command panel (press key, fig. 54) and adjust by tilting the toggle switch towards <+> or <-> .

7.6.2 Second sieving web agitation

Three rocker agitators fitted onto a tilting frame provide the second sieving web agitation, see fig. 61/F. Adjustment of agitation intensity of the main sieving web is transferred to the second sieving web by means of a mechanical link (rod).

Adjustment of intensity is thus the same as for the main web. The secong web agitation is zeroed when parking this rod (shifting from pos. 1 to pos. 2, see fig. 56). Three smooth rollers now touch the second web, see fig. 61/F.

7.7 Clod crushing

The two rows of clod crushers on the main web are adjusted using the levers on the right hand side of the machine (fig. 56 and 57) and should only be used when necessary.

*=option

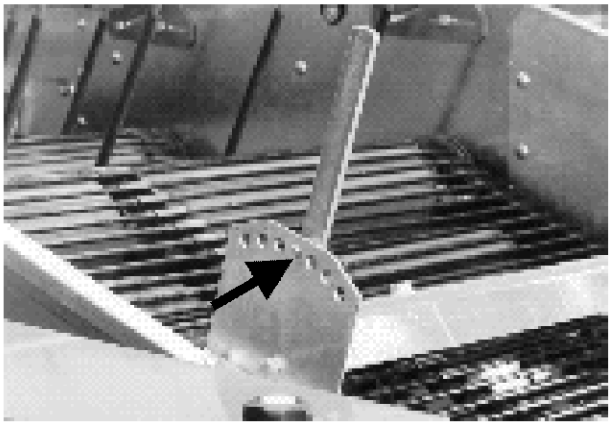

Fig. 57

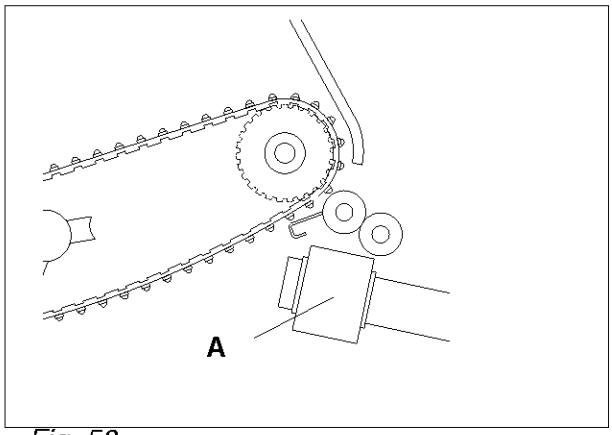

Fig. 58

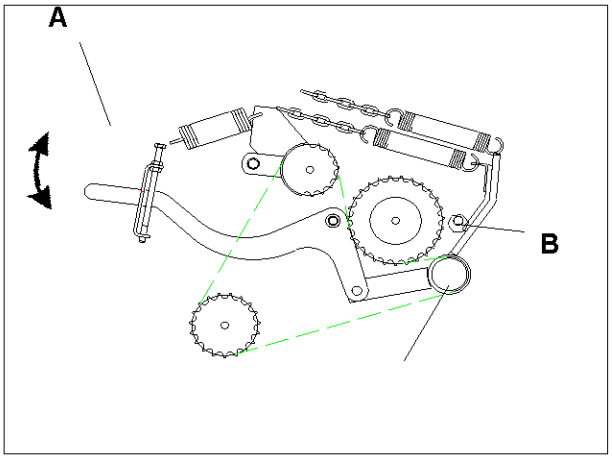

Fig. 59

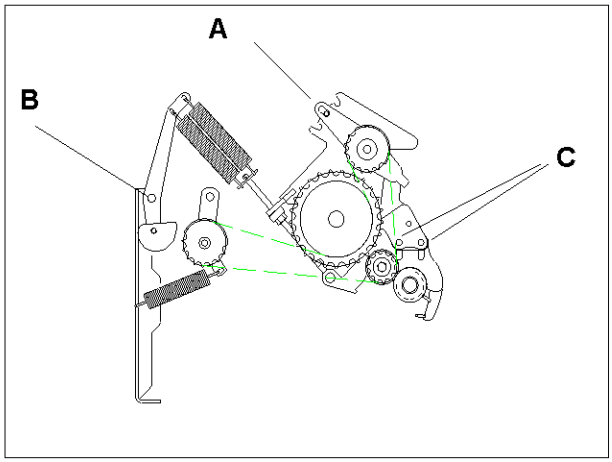

Fig. 60

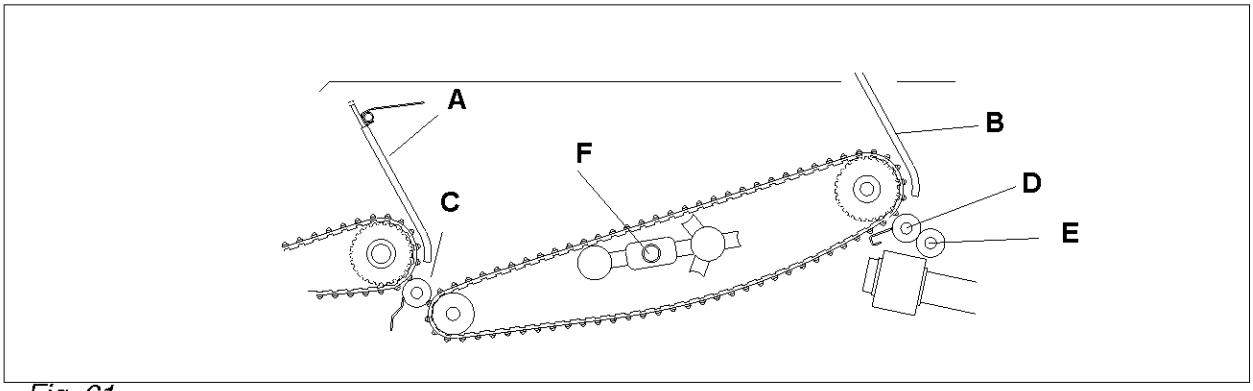

Fig. 61

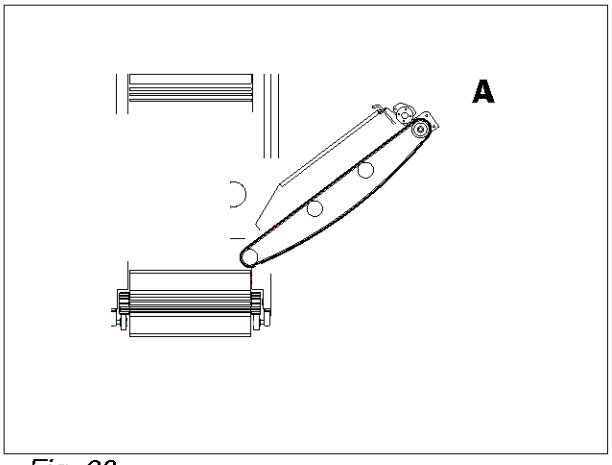

Fig. 62

7.8 Haulm removal

7.8.1 Haulm rollers

The two haulm rollers, positionned in the transition between the main web and the intermediate web (front haulm roller, fig. 59 and 61/C) and between the intermediate web and the axial roller unit (rear haulm roller, fig. 60 and 61/D), can be moved forwards in order to reduce the effectiveness or backwards to increase it.

The front haulm roller is adjusted as follows: Loosen the screw (fig. 55/A) and move the handle up or down. at either end (fig. 56). The rear haulm roller is adjusted by means of a lever shown in fig. 60/A - three positions available.


In the rear position the haulm rollers will be able to grab the potatoes and damage them. The mid position should be used during normal operating conditions.

Front haulm roller:
The clearance between the haulm roller and the web can be adjusted by turning the eccentric haulm roller pins at either end (fig. 54/B). Normal distance is approximately 2-3 mm.

Rear haulm roller:
The clearance between the haulm roller and the web can be adjusted by means of lever/tension springs (fig.55/B). Normal distance is approximately 2-3 mm.

When the rear haulm roller is adjusted to its max. rear position make sure that there is sufficient clearance between haulm roller and the axial roller unit. If insufficient clearance, lower the axial roller unit by means of screws (indicated in fig.58/A) at either side.

7.8.2 Transfer roller

The rubber coated transfer roller (Fig. 60 and 61/E) provide gentle transportation of the potatoes backwards to the axial rollers. The position of the roller may be adjusted by means of two screws (fig. 60/C).

7.8.3 Haulm guides

The haulm guides (fig 61 /A and /B) across the haulm rollers adjusts the amount of haulm taken on to the rollers. The front haulm roller (fig. 61/C) should therefore have fewer haulm guides than the one to the rear (fig. 61/D), for the haulm to be distributed evenly between the two haulm rollers.

The clearance between the haulm guides and the web can be adjusted by bending the top plate of each guide. Minimum clearance 10mm, maximum 100mm. Observe the clearance between the end of haulm guides and the haulm roller. Adjust by moving the haulm guide frame forwards or backwards.

7.8.4 Haulm elevator

The haulm elevator (fig. 62) may separate small stones, clods and haulm/weed. Separation depends on elevator speed and angle.

Maximum separation is achieved when speed and angle is set to let some tubers move all the way to the top of the elevator.

Observe! In stony conditions some damage may occur due to collisions between stones and potatoes.

The height of the stripping roller should be set in order to avoid loss of tubers. Adjust on both sides (fig. 62).

Set speed by flow control valve at lefthand side. Angle is controlled from tractor cab.

Automatic angle adjustment
The function is activated by the function key of the control panel offering constant working angle, independant from field surface. When desired angle is set, save by a long push of the key.

*=option

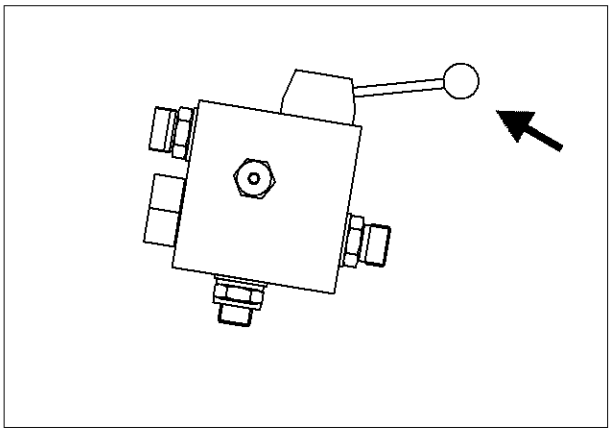

Fig. 63

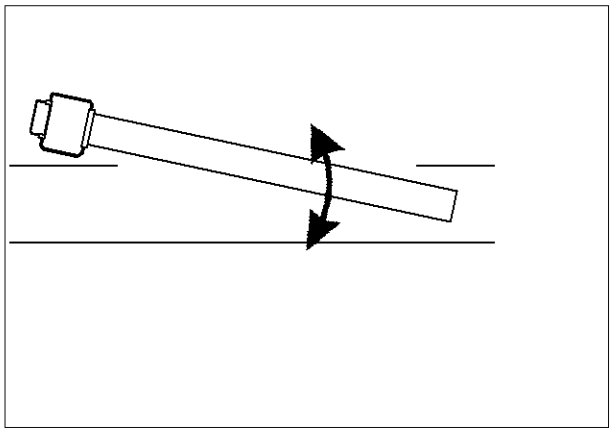

Fig. 64

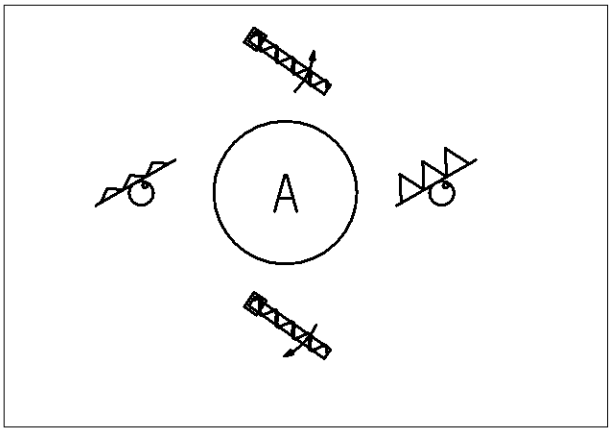

Fig. 65

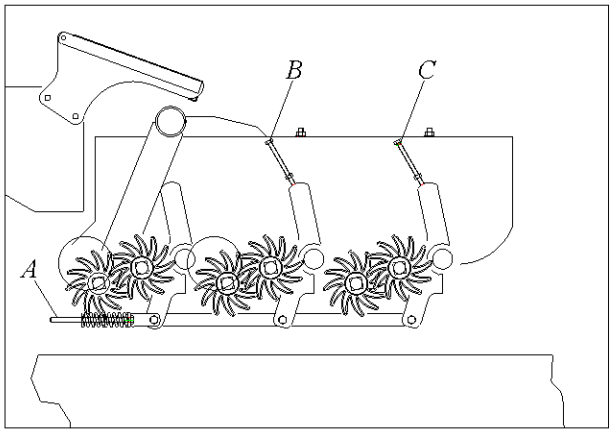

Fig. 65b

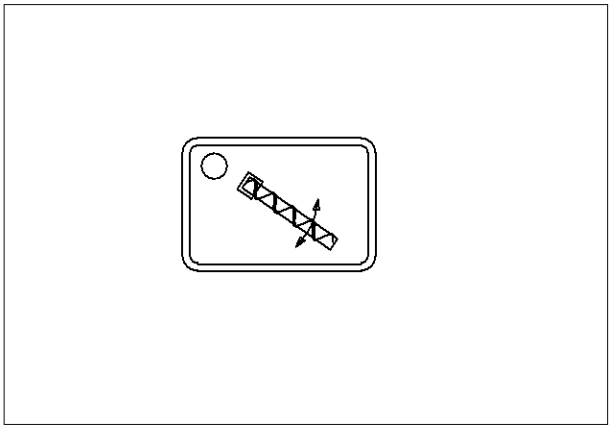

Fig. 66

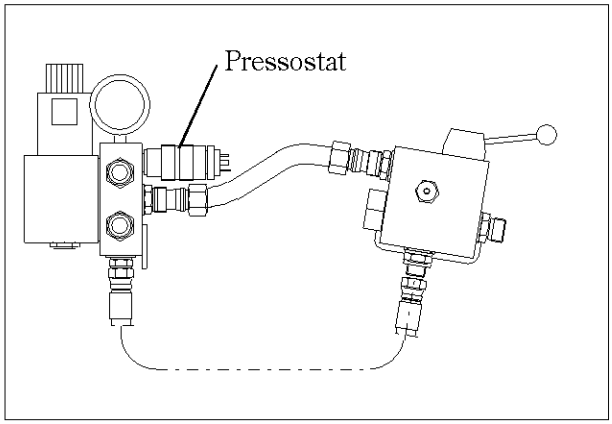

Fig. 67

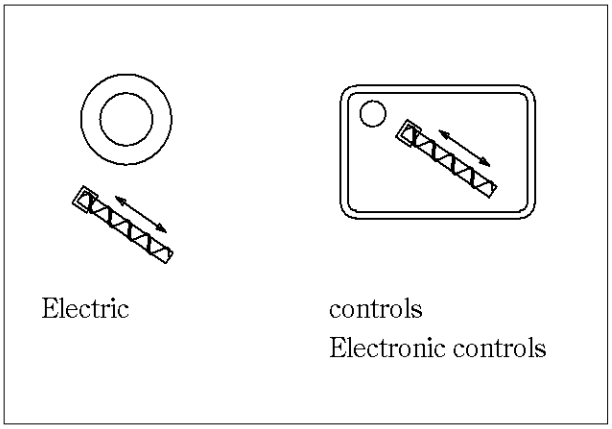

Fig. 68

7.9 Cleaning system

7.9.1 Axial cleaning rollers

a. Roller speed

The speed is controlled by operating the flow control valve (fig. 63) at the left hand side of the machine. A high speed is recommended. Speed and angle should be set according to the working conditions.

Max speed is approx. 35% above the PTO speed.

b. The angle of the roller unit

The working angle (fig. 64) is adjusted hydraulically from the command panel (fig. 65). It can be controlled either manually (std) or automatically (option). High capacity is achieved by a fairly flat unit, while a steep unit offers a more gentle handling of the crop. Speed and angle should be set according to the working conditions.

The angle is controlled from the driver command panel by pressing the key shown left and therafter tilting the toggle switch towards <+> or <-> in order to raise or lower the unit.

From the picking table command panel use the keys shown left in order to raise or lower the unit.

For automatic operation (optional extra) press the key shown left - hold for approx. 2 seconds.

c. Hydraulic working pressure

When running empty the hydraulic pressure should be approx. 50 bar. Working hard the pressure may reach approx. 80 bar. The auto reverseing system is activated at approx. 110 bar.

d. Auto reversing system

The auto reversing system is preset at the manufacturer and should normally not be reset by the operator. The function can be controlled either by pressing the button loacted at the pressostat (fig. 67) or by the key (fig. 68) at the picking table command panel. The roller will then reverse.

e. Roller scrapers

The scrapers of the smooth rollers will improve the cleaning efficiency in sticky conditions.

The building up of soil on the rollers even depends on the roller speed. It is recommended to run without scrapers due to the risk of severe roller wear. Try to speed up the rollers a bit to reduce the building up of soil.

7.9.2 Star roller unit

(Model 2631/2632 only)

Use joystick A (fig. 65) to adjust the working angle of the unit.

Set unit to upper position in order to achieve maximum separation. The position of the contra-rotating roller(s) influence on separation, too. Lower rollers individually to reduce separation.

Individual adjustment is done by adjusting bolt A, B & C (fig. 65b).

This adjustment should be done according to tuber size (large tubers = high position/small tubers = low position).

7.9.3 Picking table

(Model 2622/2632 only)

The speed is controlled by operating the flow control valve at the left hand side of the machine.

Alarm, levelling and roller unit angle are controllled from the picking table command panel.

Note! When the picking table command panel is used to lower the machine right hand side (levelling) the discharge elevator is raised automatically in order to avoid collision with the trailer.

The operator platform height can be adjusted in steps.

7.9.4 Picking table canopy*

The front part of the canopy must be lowered before the elevator is put in a transportation position.

The rear canopy side can be rolled up to improve ventilation in hot weather. In strong wind conditions the sides must be fastened correctly.

*=option

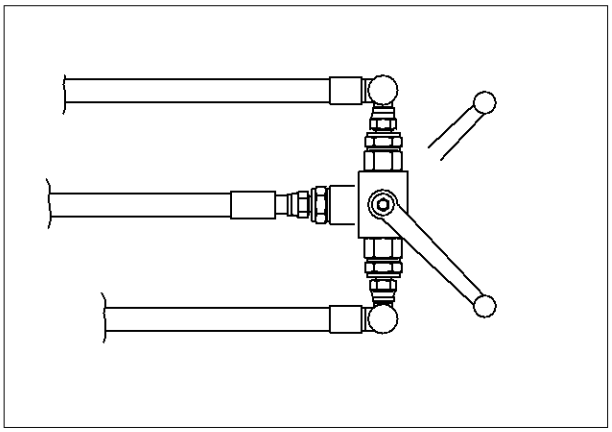

Fig. 69

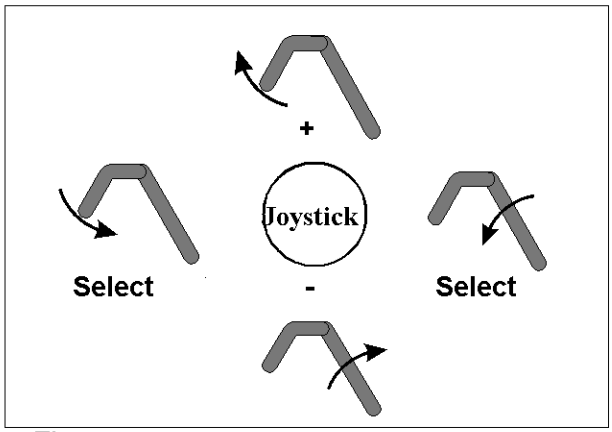

Fig. 70

Fig. 71

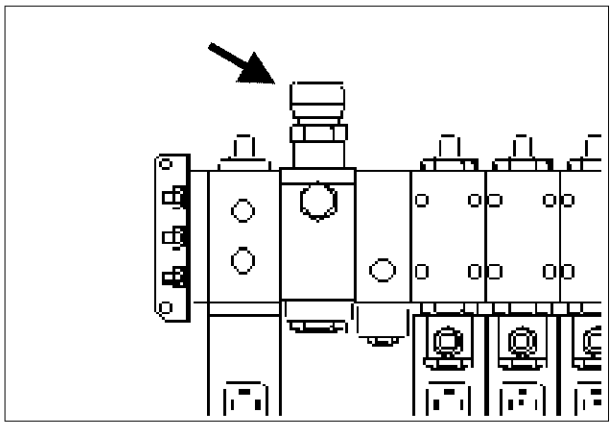

Fig. 72

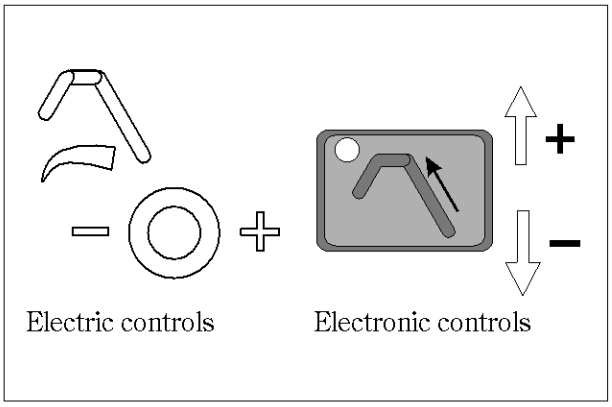

Fig. 73

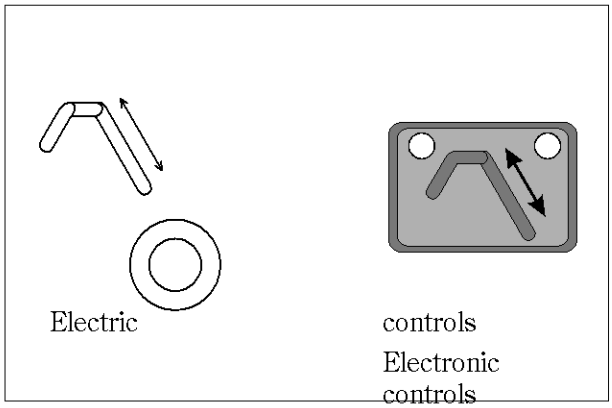

Fig. 74

7.10 Discharge elevator

The lower section of the elevator should be moved into its correct position prior to loading (out) or transport/parking. To operate the lower section, the valve (fig. 69) at the elevator should be set to the correct position (handle at the rear end of the cover above the right-hand land wheel). When set to operate position the lower elevator section is controlled by the ELEVATOR IN/OUT control. Prior to loading, the valve is repositioned to allow the centre elevator section to be operated (IN/OUT). The elevator is then fully controlled from the tractor cab command panel (Fig. 70) (IN/OUT & UP/DOWN & DRIVE).

The elevator must be lowered prior to starting. The range is dependent on loading height, and can be adjusted mainly by using the elevator's centre cylinders. Loading height must be adjusted using the outer part of the elevator.

A fairly flat working angle at the centre elevator section prevents the potatoes from rolling back. In addtion, this provides higher discharge capacity and more distance between harvester/trailer (fig. 71).

If the elevator has a discharge chute be aware of the danger of haulm residue etc. building up and blocking the opening.

If the harvester has a picking table canopy, the front part of this must be collapsed before the elevator is put in a transportation position.

In order to start the elevator press the key (fig. 73) until high frequence sound, a diode is lit and a message appears on the screen.

In order to stop the elevator, press the same key (short touch).

In order to run the elevator in reverse (used f.ex. at non-stop harvesting), MUST the elevator be started from standstill. Press the key (fig. 74) until high frequence sound, the right hand diode will be lit and a message appears on the screen.

In order to run forward again; stop the elevator (press key fig. 73), press key (fig. 74) until high frequence sound, the left hand diode will be lit and a message appears on the screen.

7.10.1 Elevator speed

Elevator speed can be adjusted using the flow adjustment valve at the back of the hydraulic valve bank (fig. 72) (put your hand into the hole at the back of the central guard and turn the wheel). Maintain the minimum speed for the elevator's pockets to fill properly. This provides gentle transportation.

Optional extra:

Remote elevator speed control (step motor). This allows for tractor cab command panel operation. Press the key, fig. 73, alter the speed by tilting the toggle switch towards <+> or <–> in order to increase or decrease the speed.

This equipement is included in the Non-Stop harvesting kit.

7.10.2 Elevator distributor

2621 and 2631 have a separate elevator distributor fitted.

2622 and 2632 have an integrated elevator distributor on the picking table.

*=option

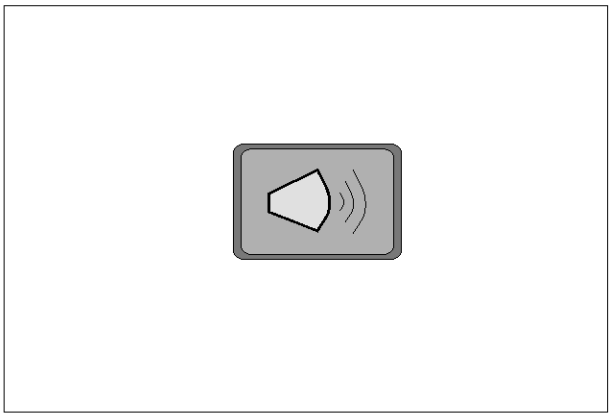

Fig. 75

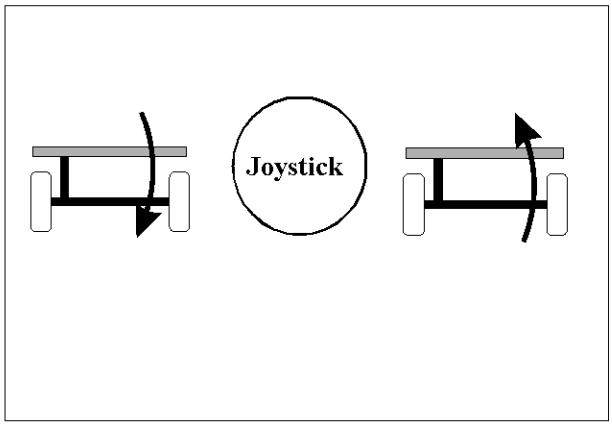

Fig. 76

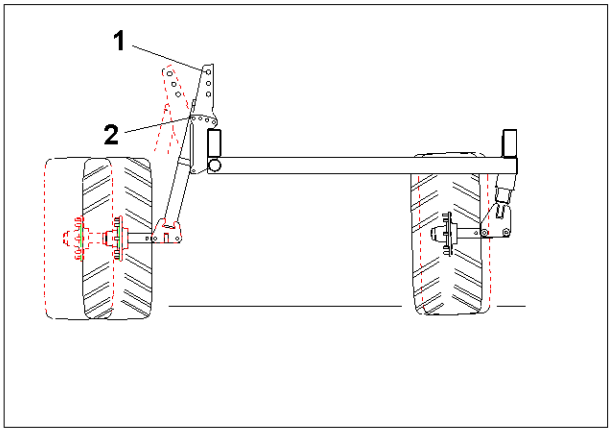

Fig. 77

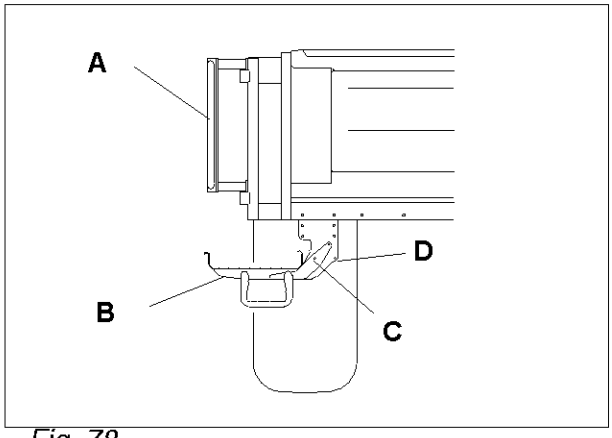

Fig. 78

7.11 Audible alarm

The alarm is operated by pressing the key on the command panel of the picking table. Agree upon an alarm code with the tractor driver for the various operations; for example Start, Stop, Reduce speed, Increase speed.

The tractor driver can operate the same alarm by pressing the key on his command panel.

7.12 Levelling

The machine can be lowered or raised hydraulically on the right hand side (Fig. 76). This function is used on hillsides in order to get an even distribution of the potatoes across the entire width of the machine.

Observe! When the machine is lowered on the levelling cylinder, the elevator is automatically raised in order to avoid any contact with the trailer.

This function may be controlled either from tractor cab (front) or picking table (back).

7.13 Adjusting machine's height on wheel axle

The cylinder attachments to the frame at the right hand side has two positions (fig. 77). This makes it possible to adjust the height relative to wheel axle according to wheel dimension used.

7.14 Transportation

The lower elevator section must be raised prior to transportation.

Valid for model 2622 and 2632 only

The rails (fig. 78/A) at the left hand side must be removed. The operators platform and in-step (B) should be folded up about pivot point (C) in order to reduce transport width (reduction 250mm). Fasten the transport lock at (D).

*=option

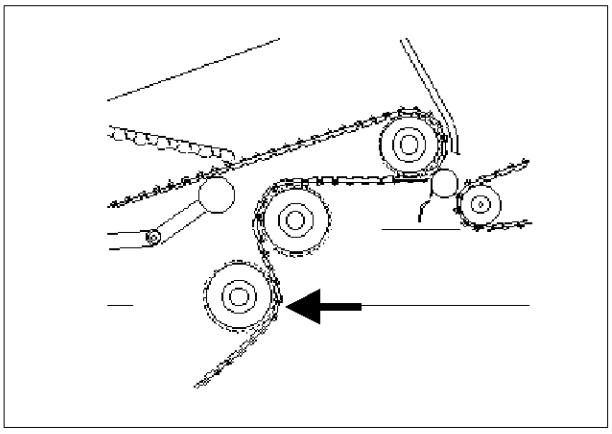

Fig. 79

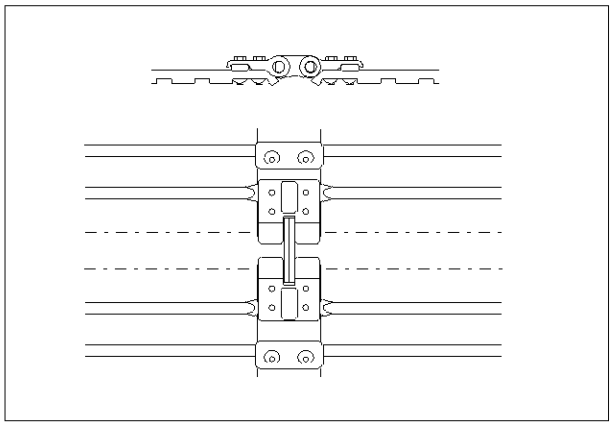

Fig. 80

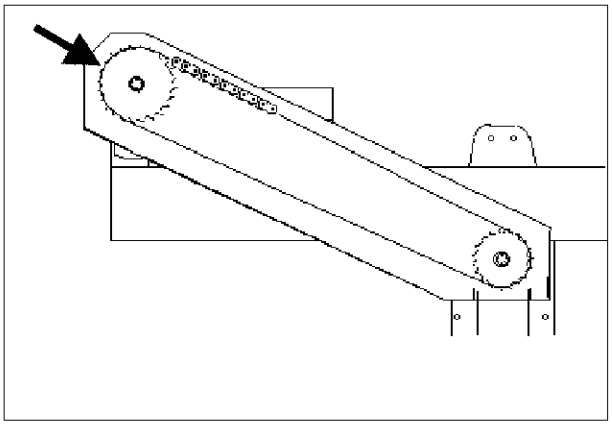

Fig.81

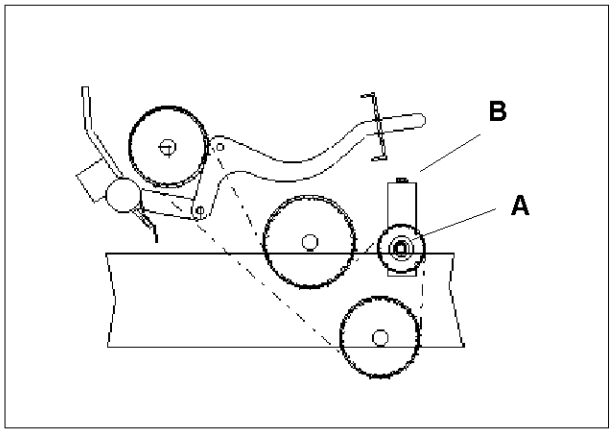

Fig. 82

8. Maintenance

8.1 Tyre pressure

Tyre dimension	Normal pressure	Max. pressure
500/60-22.5", 8 ply	1,3 kp/cm² (18 psi)	1,8 kp/cm² (26 psi)
500/60-26.5", 8 ply	1,1 kp/cm² (16 psi)	1,6 kp/cm² (23 psi)
600/55-26.5", 8 ply	0,9 kp/cm² (13 psi)	1,4 kp/cm² (20 psi)
13.6"/12-28", 10 ply	2,5 kp/cm² (36 psi)	2,5 kp/cm² (36 psi)
16.9"/14-30", 8 ply	1,7 kp/cm² (24 psi)	1,7 kp/cm² (24 psi)

8.2 Main web drive

The main web drive includes three driven rollers (fig.79) offering a sustainable move of the web in all type of soils. When the main web start slipping any possible reason for this should be eliminated, if possible. The reason for web slippage is an obvious overload on web and drive system. This may come from soil being built up on the share arms, roll of soil and trash being built up in the web at the share, scrapers catching the web (especially the joiners), much soil on the web (heavy soil or web with small gaps) or greasy soil causing redused friction on drive rollers.

If reason(s) for slippage is reduced to a minimum and web slippage still occurs, there is a possibility of improvement by mechanical modification of drive system; adjustment of the lower driven roller. This has got three postions available (see fig.79).

8.2.1 Web hinge system

The heavy duty web hinge system (fig. 80) for the main digging web comprise; cast centre clips, double linked joiners, and rods 11 or 12 mm diameter.

When replacing web segments, remember to re-tensionning the hinge bolts.

8.3 Belt tensioning

Second web
Automatic spring tensioning. Springs must be tensioned as belt is slipping.

Third web
Automatic spring tensioning. Springs must be tensioned as belt is slipping.

Discharge elevator
Lower bottom screw tensioning, left hand side.

Picking web
Rear screw tensioning.

Haulm elevator
Screw tensioning on each side of the web.

Note! Make sure that the webs are adjusted equally on both sides, for these to run straight.

8.4 Drive chain tensioning

Main drive chain
Move the sprocket/long drive shaft by means of adjustment screw (fig. 81)

Drive chain main digging web
Loosen sprocket (fig. 82/A) and tighten by means of screw (B).

Drive chain second digging web
Spring tensioning

Drive chain haulm roller(s)
Spring tensioning

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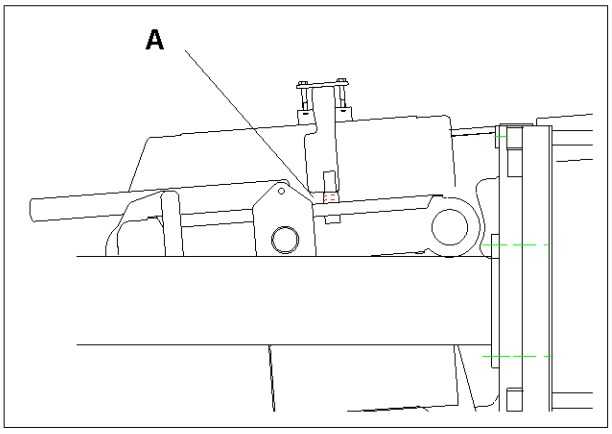

Fig. 83

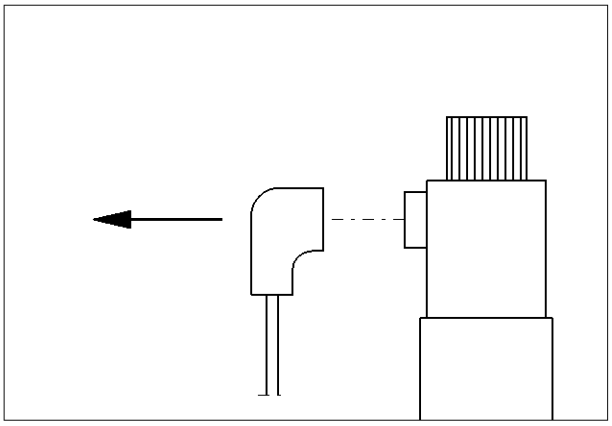

Fig. 84

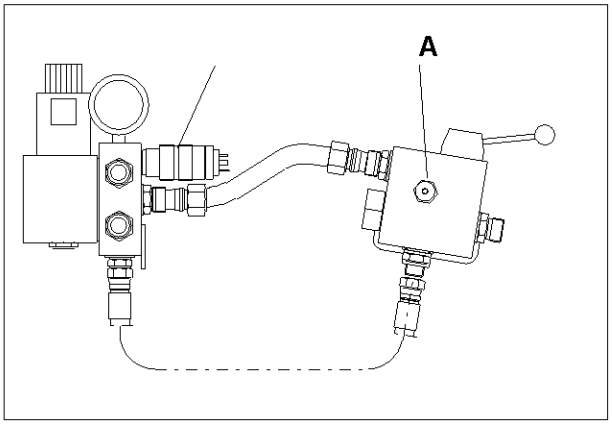

Fig. 85

8.5 Lubrication

See fig. 86 and 87 on page 50 and 51.

Follow the manufacturer's instructions for lubricating P.T.O. shaft/universal joint/safety clutches/wheel bearings.

8.6 Oil filters

The pressure oil filter for the system operated by the tractor should be changed annually. It is positioned at the rear side of the front beam right-hand side. The filter housing is fitted with an indicator. When indicator is red change filter immediately. Use a 25micron filter element.

The separate hydraulic system on the harvester has a return filter fitted on top of the oil tank in the frame front beam. Should be changed annually. Use a 25micron filter element.

Filter type	**Ordering no.**
Pressure filter element:	
Parker	306685
Return (tank) filter element:	
FBO CR180/1	306577

8.7 Oil change

Hydraulic oil:
Change oil after 200 hours and thereafter every 500 hours using oil type ISO VG46*. Quantity approx. 90 litres.

** = Texaco Rando HD46 = Shell Tellus T46 = Castrol Hyspin AWH46 etc.*

Pump gear oil:
Change oil every 200 hours. Oil type gear oil SAE80/90. Quantity 0.45 litres.

Axial roller unit gear oil:
Change oil after 100 hours and thereafter every year. Use oil type ISO VG680/DIN CLP-3. Quantity 1.5 litres. Drainage plug underneath the gear box. Fill through plugged opening at the end.

8.8 Hydraulic valve bank

When working in dusty conditions, the top of the valve bank should be covered by some kind of filter material (rubber sponge) in order to prevent dust from intruding the valves through the caps on top of the spool guides. Clean the filter every season.

8.9 Axial rollers

8.9.1 Change of rollers

The auger roller should be fitted at the lefthand side of the co-operating smooth roller. The rollers are connected to the drive shafts using centrally positioned splines. When worn (appears normally on the front end of the rollers) they can be reversed. In order to gain proper access to the rollers loosen two lock pins and remove the shield, fig.83/A.

8.9.2 Resetting of the auto reversing system

a. Stop machine and block the rollers with the plug on the end of the gear box. Turn the gear wheel with a screw driver, to let the plug get between two teeth.

b. Disconnect the power cable on the solenoid valve (fig. 84).

c. Loosen locknut for the relief valve screw (fig. 85/A), and unscrew one turn.

d. Start the tractor and let the harvester run at idle speed.

e. Adjust relief valve screw (fig. 85/A) until pressure gauge shows 110 bar.

f. If the red diode on the pressostat plug is lit, turn the pressostat (fig. 85) in until lights turn off. Then turn it out again until the diode is lit. Now the pressostat is set to reverse the rollers at 110 bar.

g. Now adjust relief valve screw (Fig. 85/A) further in, untill pressure gauge shows 130 bar. Lock the relief valve screw with lock nut. This operation is required to set the relief valve at a higher pressure than the pressostat (pressure controller) (130bar as oppose to 110bar).

h. Stop the harvester. Fit the lock plug in end of gear box in normal position.

8.10 Cleaning

By removing soil from side guards etc. regularily this will prevent unnecessary blocking of and damage to potatoes. Take care to remove soil and haulm which build up inside the belts.

When cleaning the machine after each season care must be taken when using the high pressure hose as this can damage the bearings.

Smooth surfaces should be protected against rust. This is particularely important for shares and large side discs. Remove any building up of soil and trash regularly in order to avoid severe wear of the rollers. By removing the nylock nut attaching the galvanized bar in the centre of the rear end of the picking table, the rear guard can be tilted backwards.

Stop the tractor and remove the ignition key while this type of maintenance is performed.

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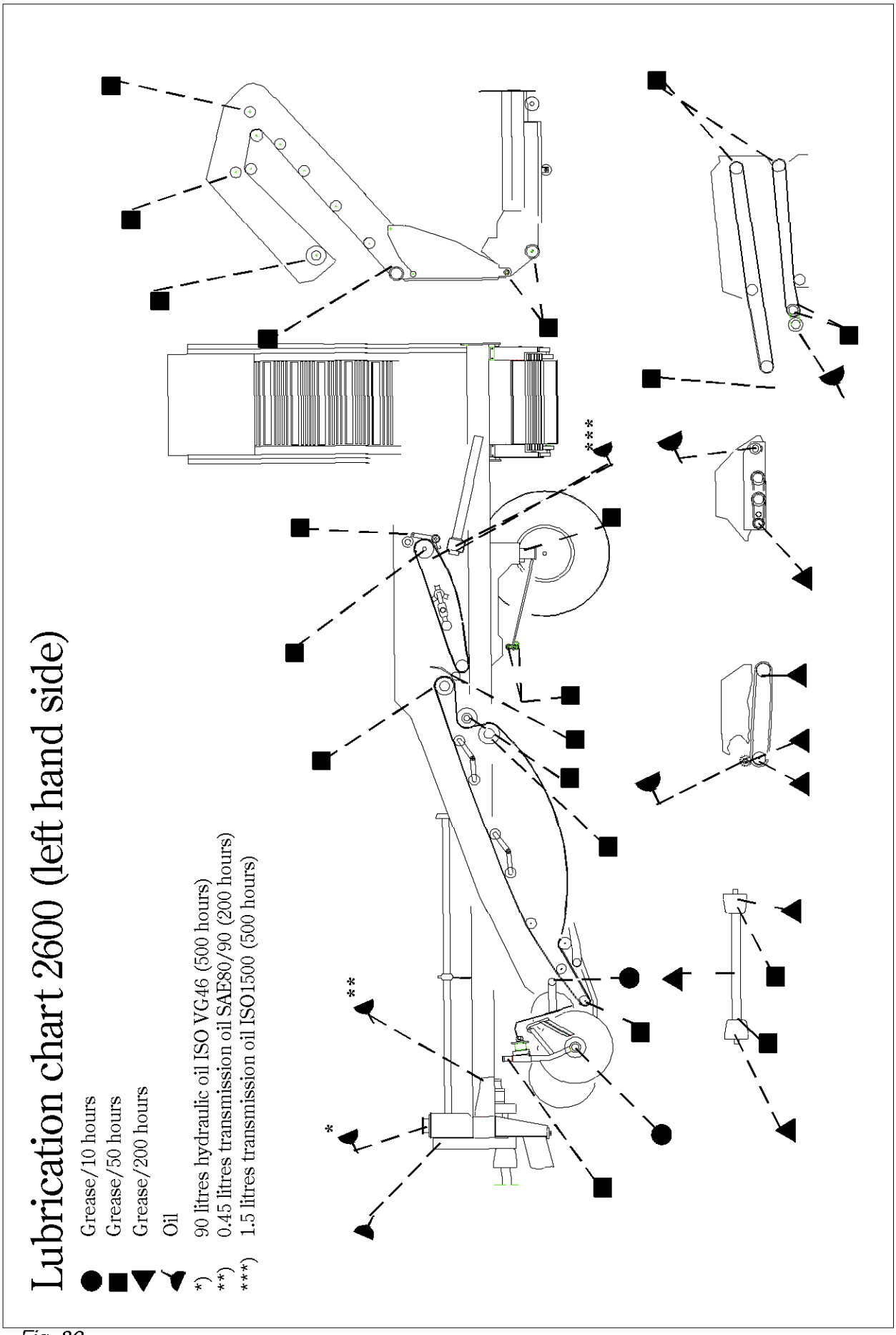
Lubrication chart 2600 (left hand side)
Grease/10 hours
Grease/50 hours
Grease/200 hours
Oil
*) 90 litres hydraulic oil ISO VG46 (500 hours)
**) 0.45 litres transmission oil SAE80/90 (200 hours)
***) 1.5 litres transmission oil ISO1500 (500 hours)
*
**
***

Fig. 86

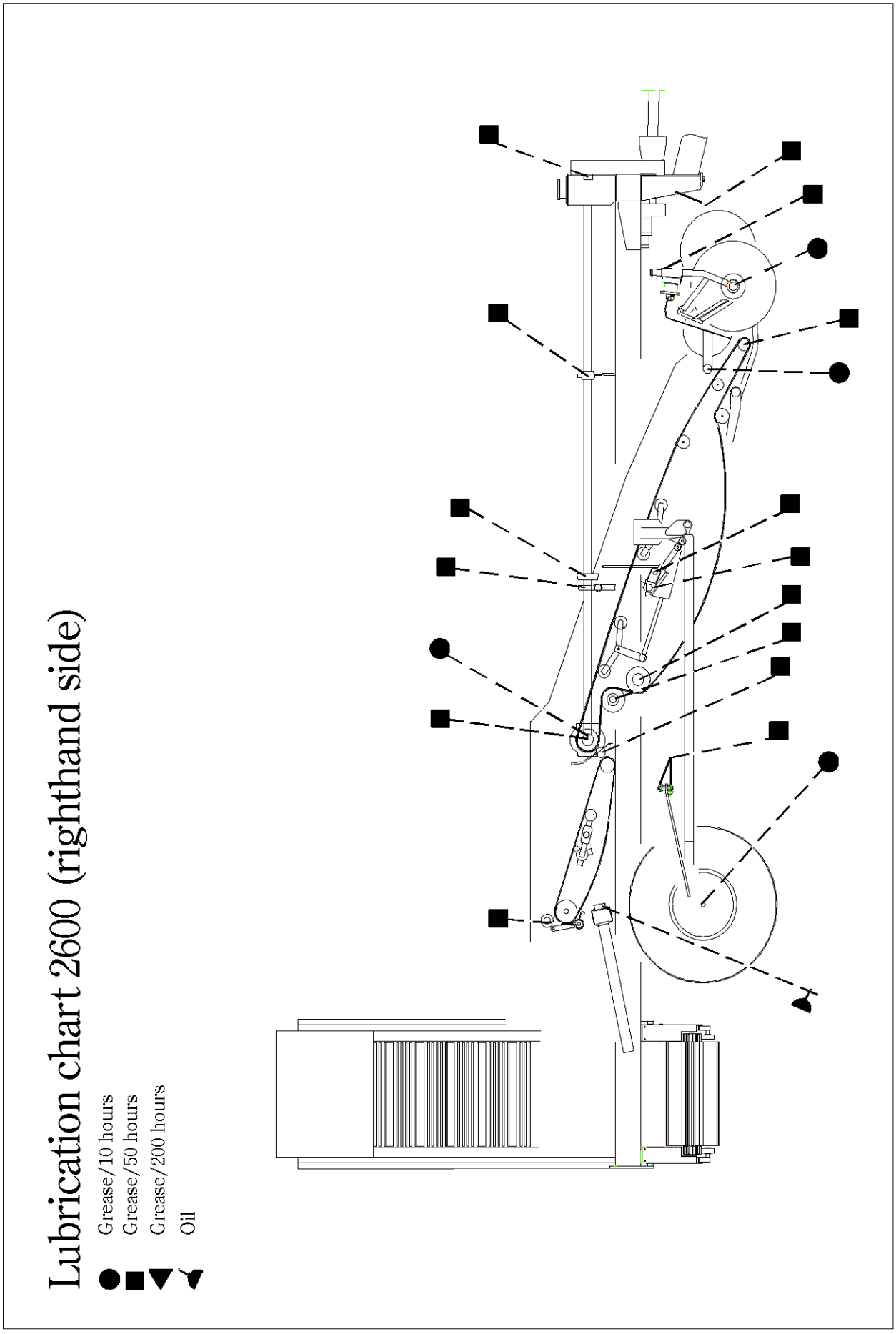

Fig. 87

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9. Trouble shooting

9.1 Mechanical faults

Symptom	Action
Safety couplings trip during operation	Check that conveyors and rollers are not blocked by stones etc. Tighten couplings
Main web runs out of line (wears lifting unit side guards)	Adjust the lifting unit
Main web drive rollers slipping the belt.	Remove packed soil in the share unit and objects stuck in the web
Blocking of belt drive	Remove objects/stones in the web

9.2 Hydraulic faults:

Symptom	Action
Hydraulic services failure	Check that solenoids are activated (look out for diode light)
	Change main hoses round or re-direct oil flow
	Check couplings
	Check that the end plate screw is in the correct position (see chapter 3.4)
The levelling cylinder moves up when tractor's hydraulic valve is operated	No return to tank, check coupling
Hydraulic functions work only when valves are being manually operated	Large drop in voltage. Check the solenoid voltage, minimum 10.8 V.
	Check polarity by interchanging + and -
	Connect command panel with a larger cross-section cable.
	A cable has been cut, or command panel key/ switchfails.
Tractor's safety valve opens	Unscrew centre screw in the spool valve's front end plate
Tractor's steering is jerky (John Deere)	Screw in centre screw in the spool valve's front end plate
The hydraulic lane adjustment works slowly	Large drawbar pivot bolt friction. Grease bolt.

9.3 Electric faults:

Symptom	Action
«Initializing» don't disappear after connection	If message don't disappear after a few seconds, check transmission cable from control panel to driver units at the machine (C and D card)
«Fatal error»	Chip containing parameters or printcard defect
«Memory corrupted»	Contact your Kverneland dealer
«No data found»	The system is not able to find values from the memory. Contact your Kverneland dealer
«Invalid data version»	Wrong combination of program versions in operators panel and C and D card. Problem with saving or not saving of parameters. Contact your Kverneland dealer.
«Warning !! Power fail»	Problems with power supply. Check cable
«Warning!! CAN error» (+C, D, CD or nothing)	Communication problem between detected units, If C, D, CD displayed, check data-cable and connections. If no letter indication, reset failure message with toggleswitch <->
«Warning!! Emergency stop»	Relay prepared for emergency stop on D-card activated. Contact your Kverneland dealer
«System mode entered»	The system is in system mode, only for service staff instead of normal. Toggleswitch to <+>. Disconnect and connect power.
«No sensors connected»	Broken cable between sensor and driver box. Check cords for connected sensors. The machine is possible to operate without sensors. Automatic functions will not work

9.4 Soil separation:

Symptom	Action
Soil disappears before crop is leaving the main web (Soil should follow to be gentle to the potatoes)	Reduce the agitation
	Fit belt with smaller rod distance
Soil and clods on the picking table	Increase agitation
	Reduce share-depth in order to not digging hard layers
	Lower the clod crushers
	Reduce working angle of axial rollers/star roller unit

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9.5 Haulm separation:

Symptom	Action
Haulm attaches itself to share frame	Increase share angle and raise the lifting unit using diabolo roller
	Sharpen the discs
Haulm gathers around the haulm fingers	Remove haulm guides (distribute the rest evenly across machine width)
Haulm rollers does not separate haulm	Move haulm rollers out

9.6 Loss of potatoes:

Symptom	Action
Potatoes left in the ground	Adjust share depth using diabolo roller
Loss of potatoes by front discs	The distance between the discs and the web or between the discs and share is too great
	Roll-back plates between the centre discs do not function
Potatoes drop through web	Use web with smaller spacings or check web for damage
Loss of potatoes through haulm roller	Tension haulm roller springs
	Move haulm roller forwards
	Remove haulm guides from forward haulm roller in order to get more of the haulm to the second haulm roller
	Increase harvester revolutions
	Use haulm pulverizer
	Reduce forward speed
Loss of potatoes on cleaning rollers	Reduce gap between rollers
	Increase working angle
	Fit larger diameter rollers.

9.7 Damage to potatoes:

Symptom	Action
Potatoes damaged in ridge	Tyre crushing damage. Use narrower tyres, adjust tractor track width
Damage caused by harvester	Digging web agitation too strong
	Web spacing too wide
	Web speed too high
	Forward speed too low
	Share adjustment too shallow
	Lifting unit roller discs too narrow
	Haulm rollers crushing the potatoes. Move rollers forward, bend haulm guides backwards
	Poor climate (cold, wet)
	Stony soil
Damage caused by discharge	Elevator drop too great. Lower elevator
	Fit elevator chute
	Reduce elevator speed to fill up pockets
	Careless handling of the potatoes

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10. Circuit diagrams

10.1 Hydraulic wheel drive system

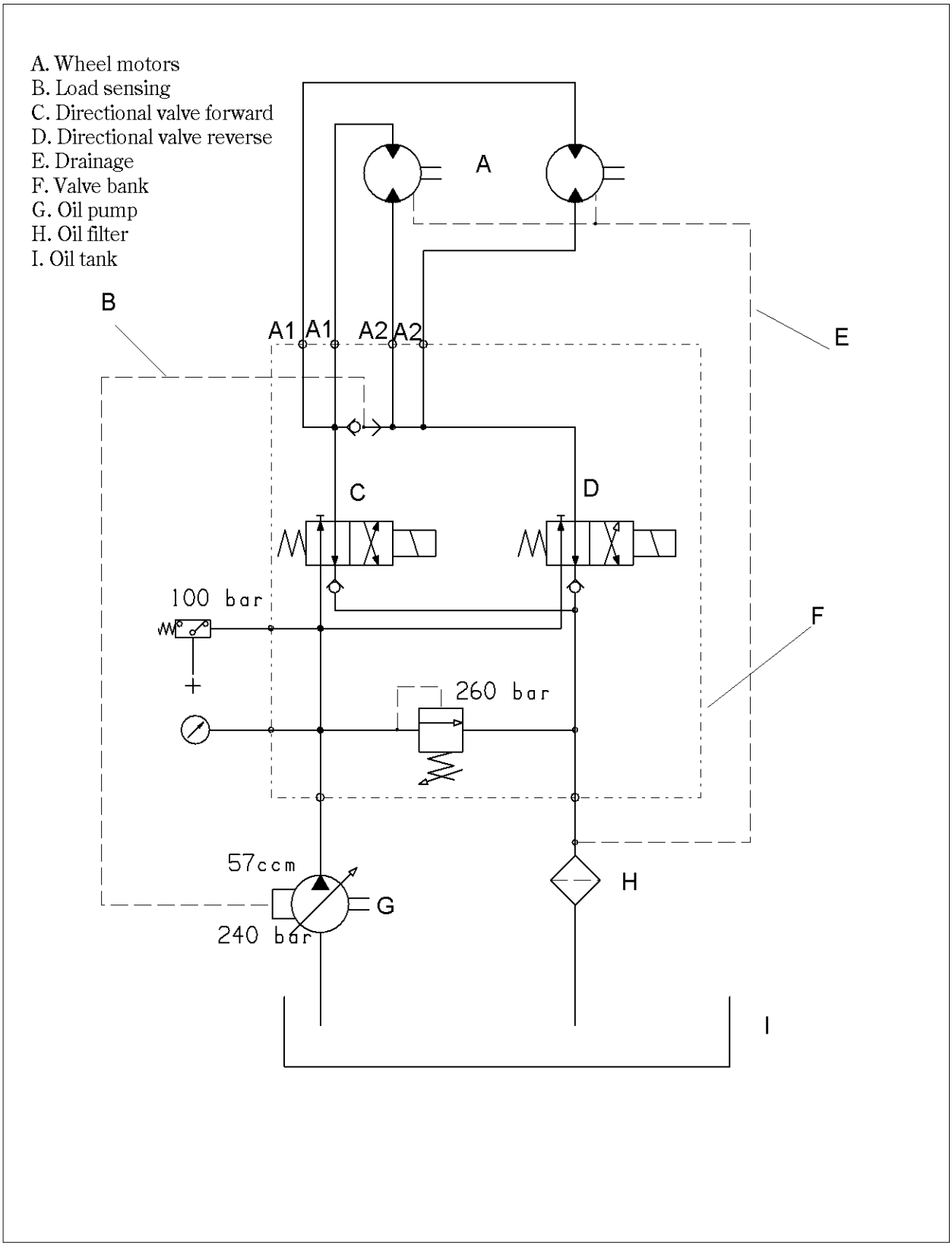

Fig. I

10.2 Pump powered hydraulic system

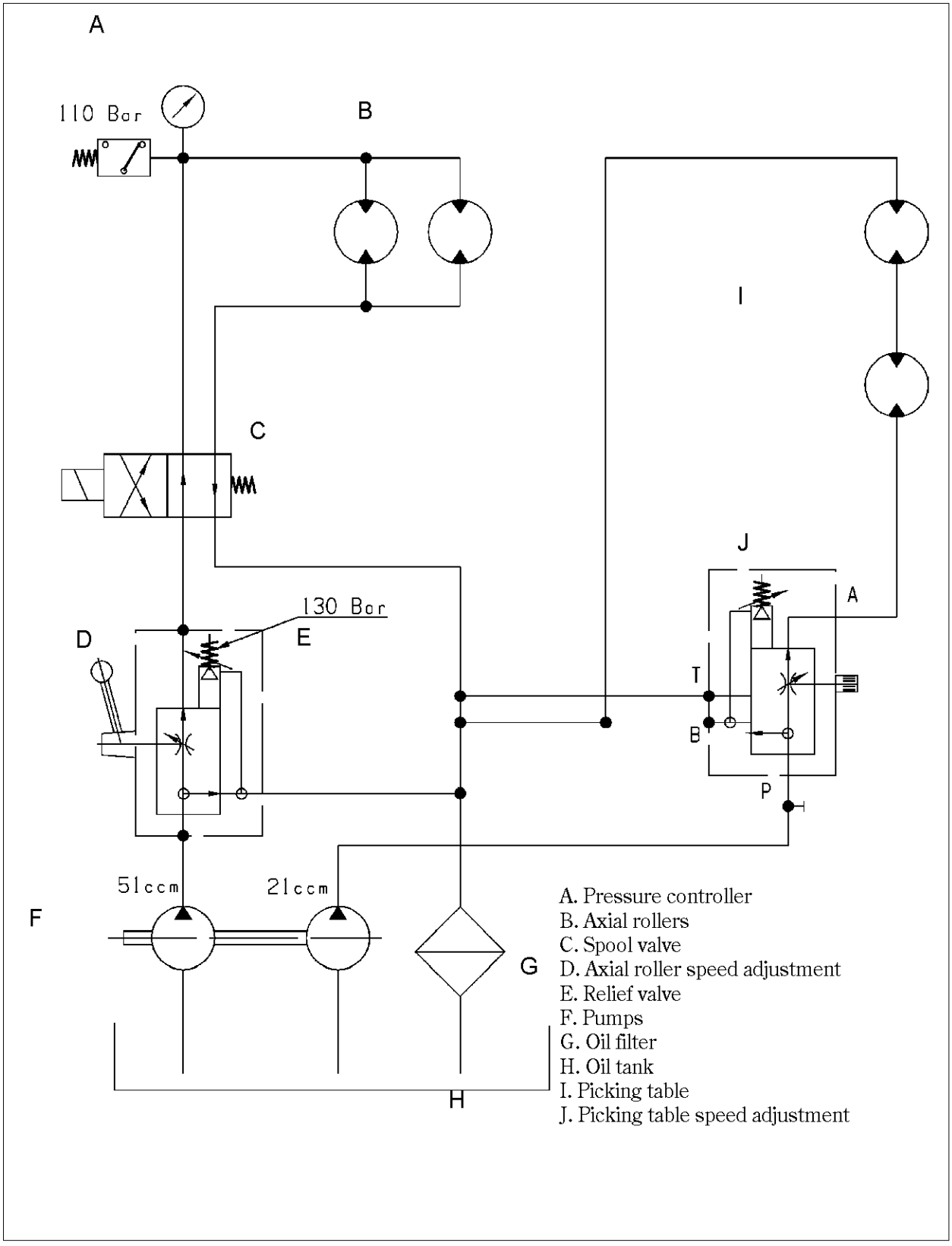

Fig. II

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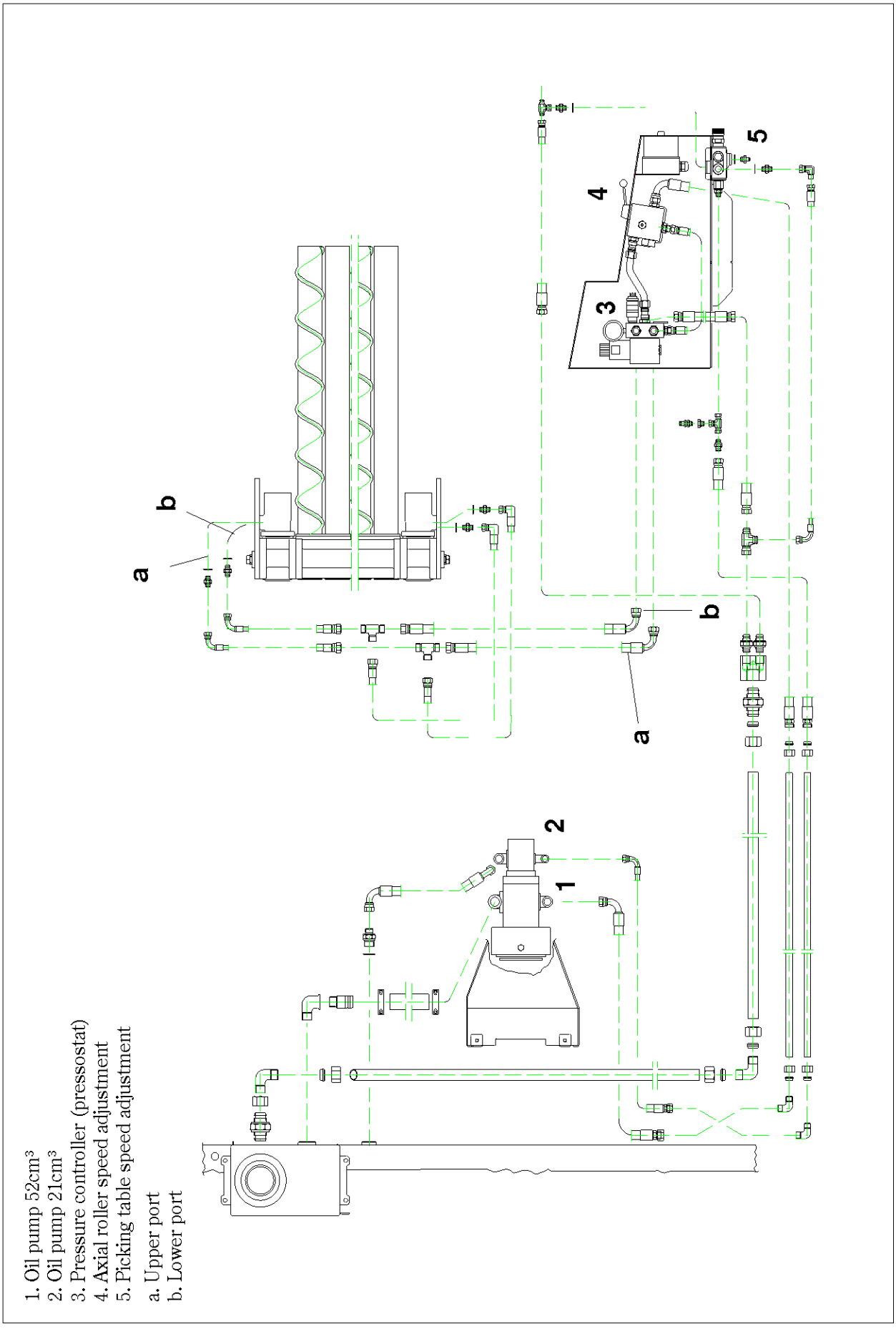
1. Oil pump 52cm³
2. Oil pump 21cm³
3. Pressure controller (pressostat)
4. Axial roller speed adjustment
5. Picking table speed adjustment
a. Upper port
b. Lower port
1
2
3
4
5
a
b
a
b

Fig. III

10.3 Tractor powered hydraulic system

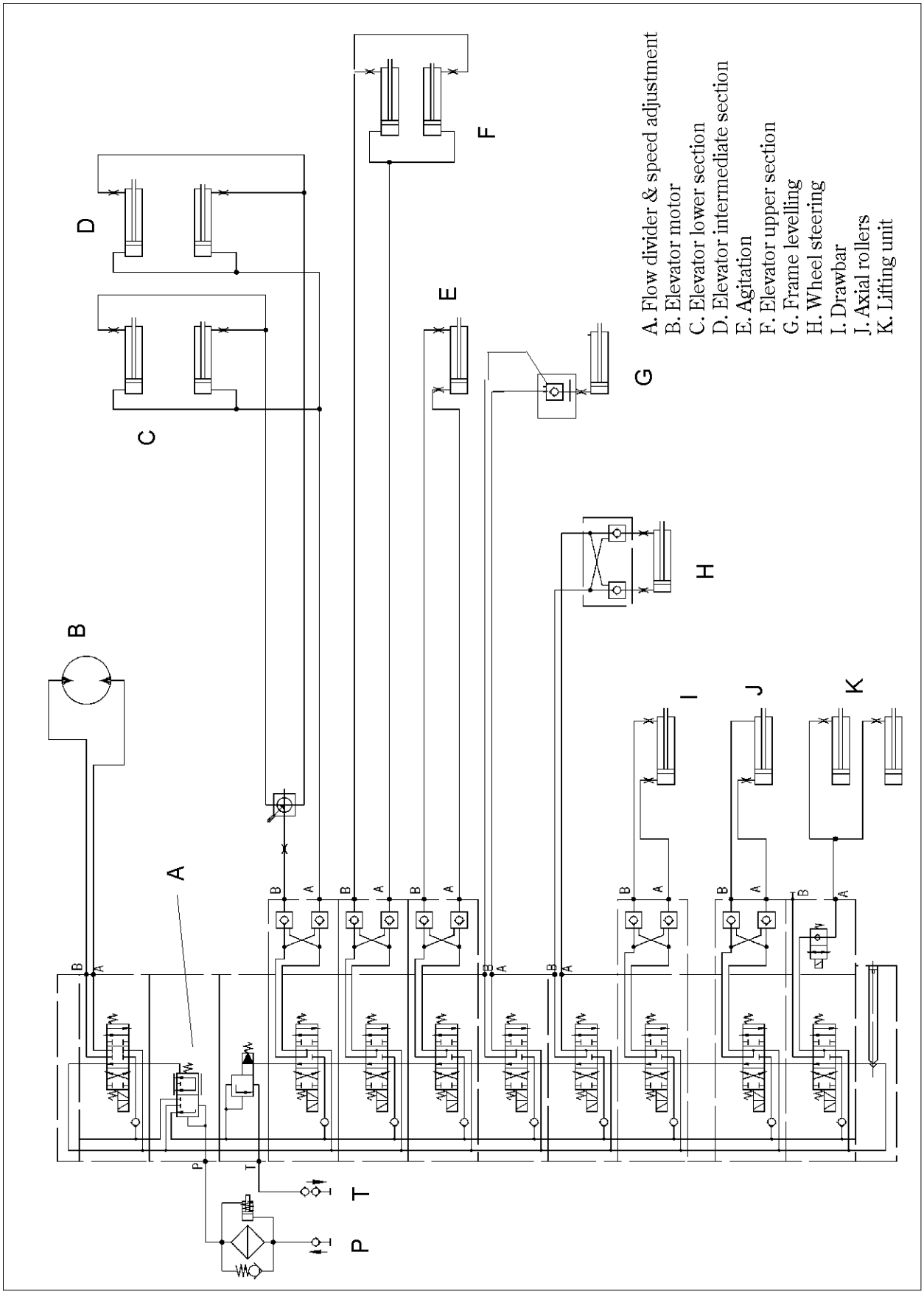

Fig. IV

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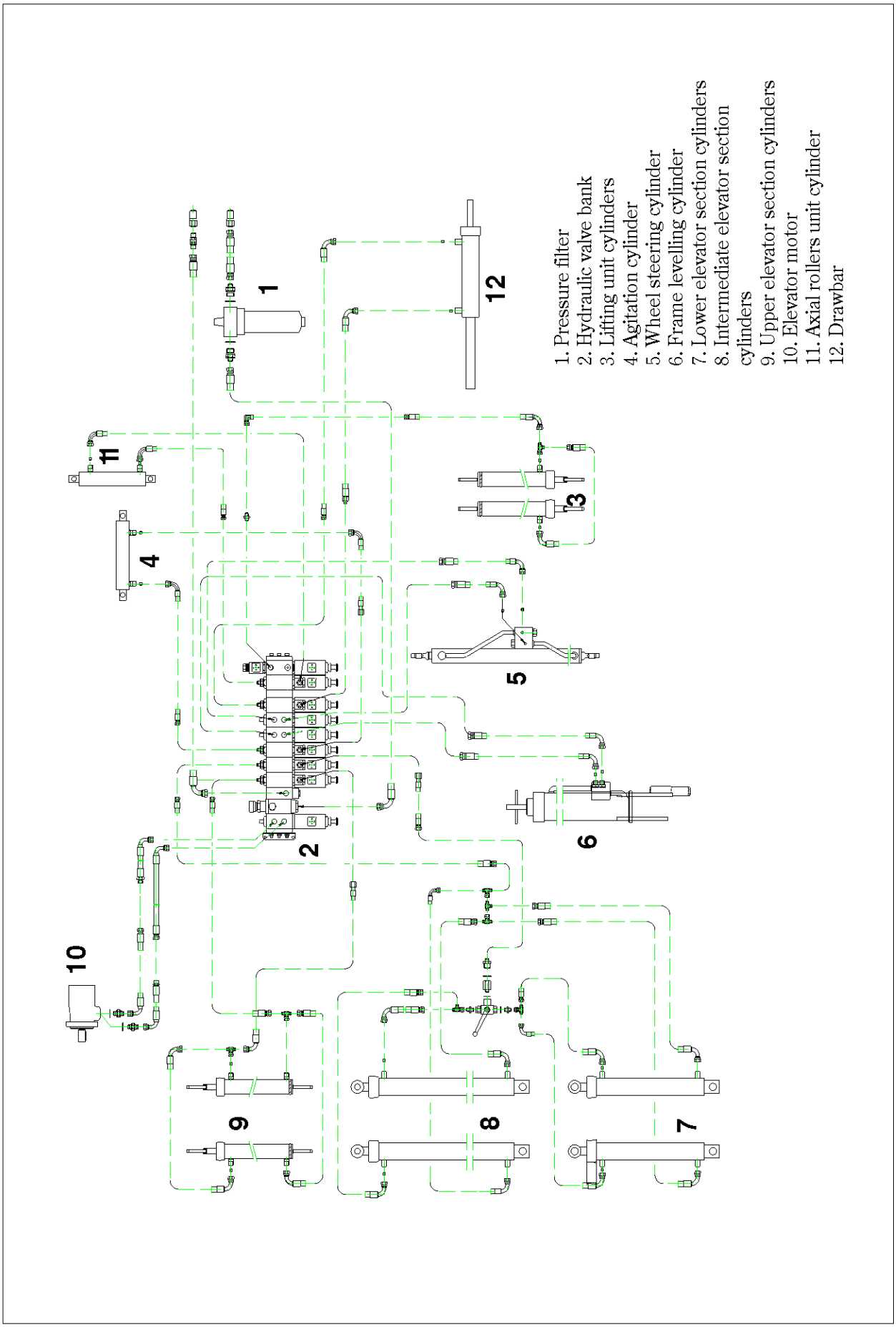
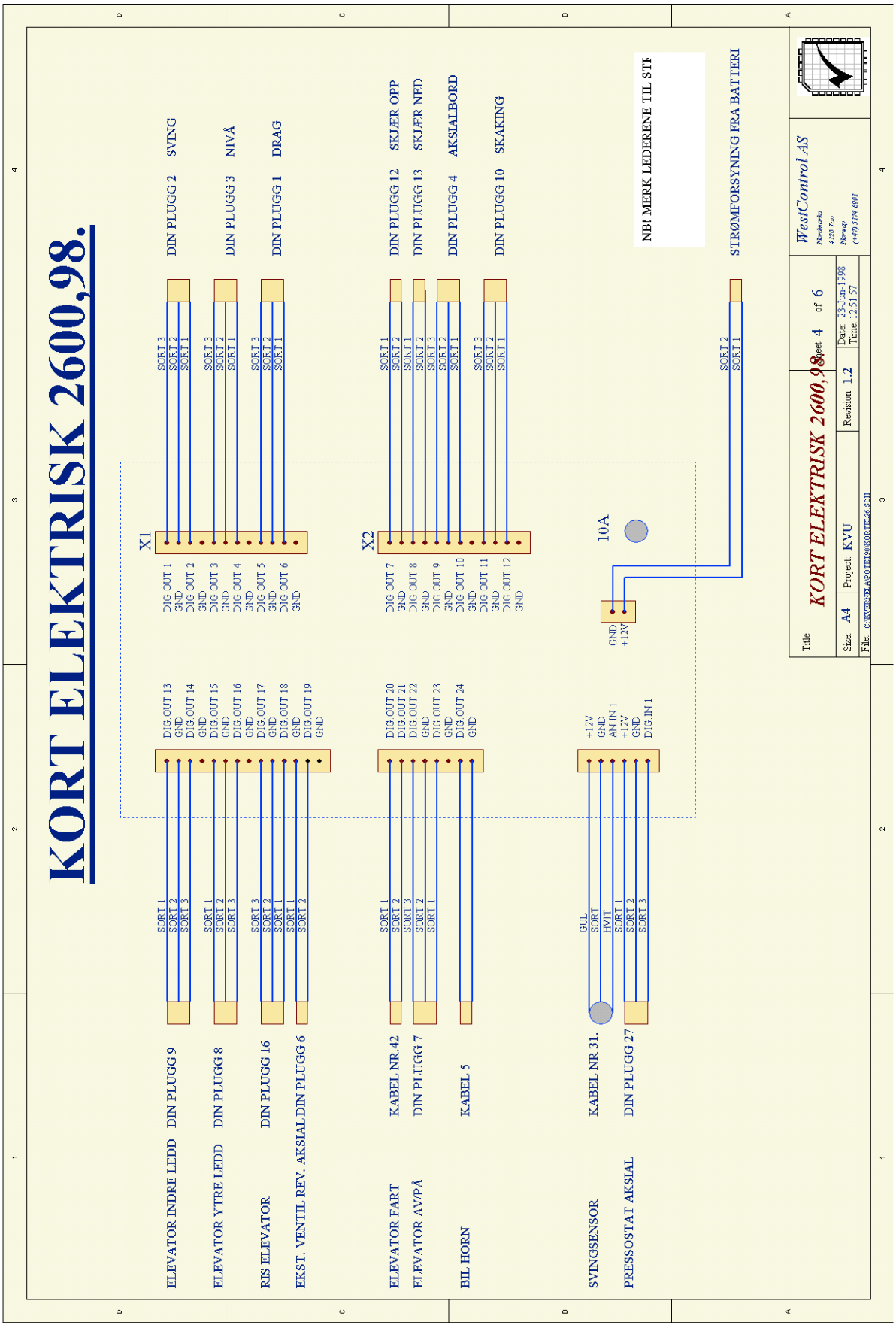

1. Pressure filter
2. Hydraulic valve bank
3. Lifting unit cylinders
4. Agitation cylinder
5. Wheel steering cylinder
6. Frame levelling cylinder
7. Lower elevator section cylinders
8. Intermediate elevator section cylinders
9. Upper elevator section cylinders
10. Elevator motor
11. Axial rollers unit cylinder
12. Drawbar
1
2
3
4
5
6
7
8
9
10
11
12

Fig. V

10.4 Circuit diagram electric controls Card C



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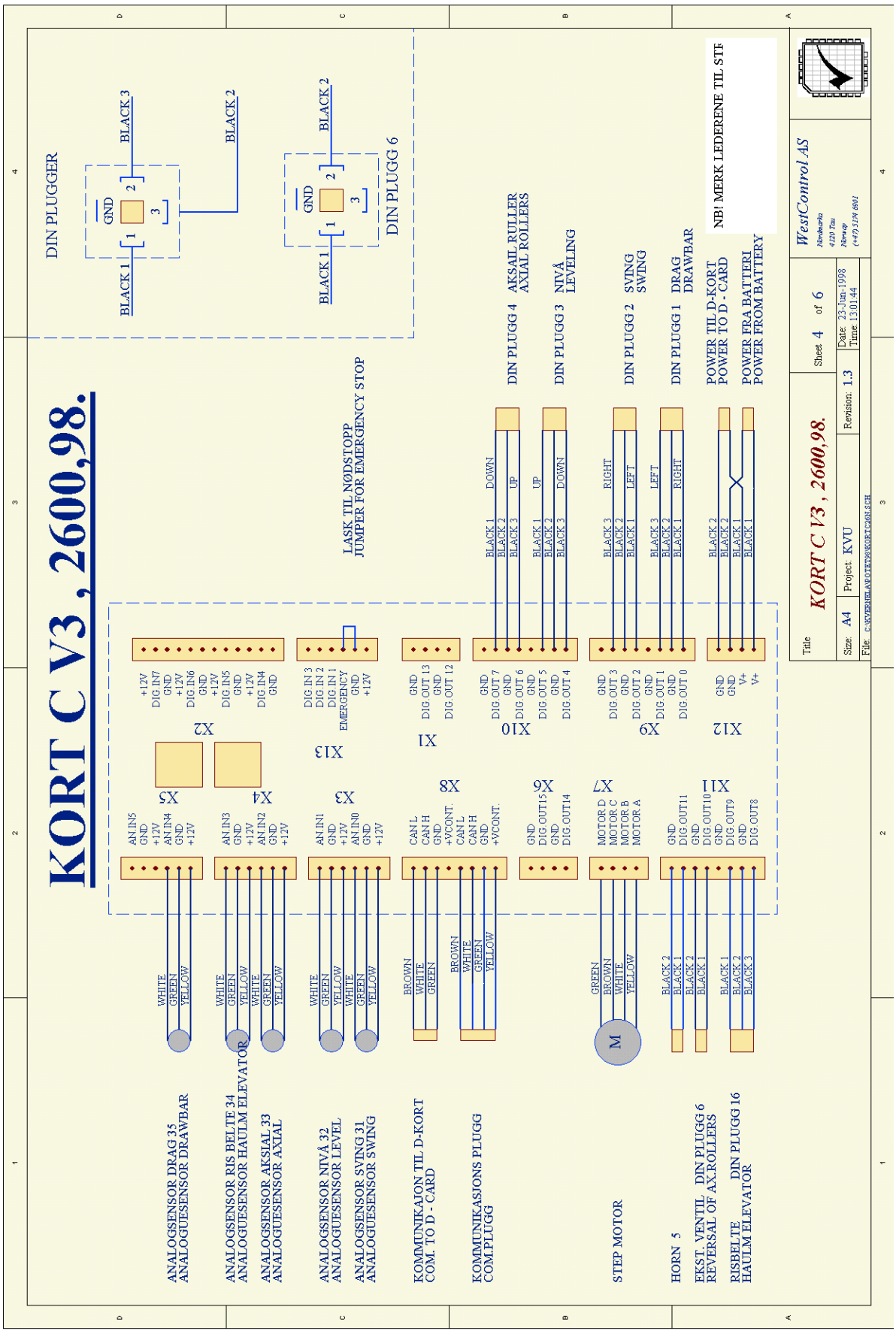
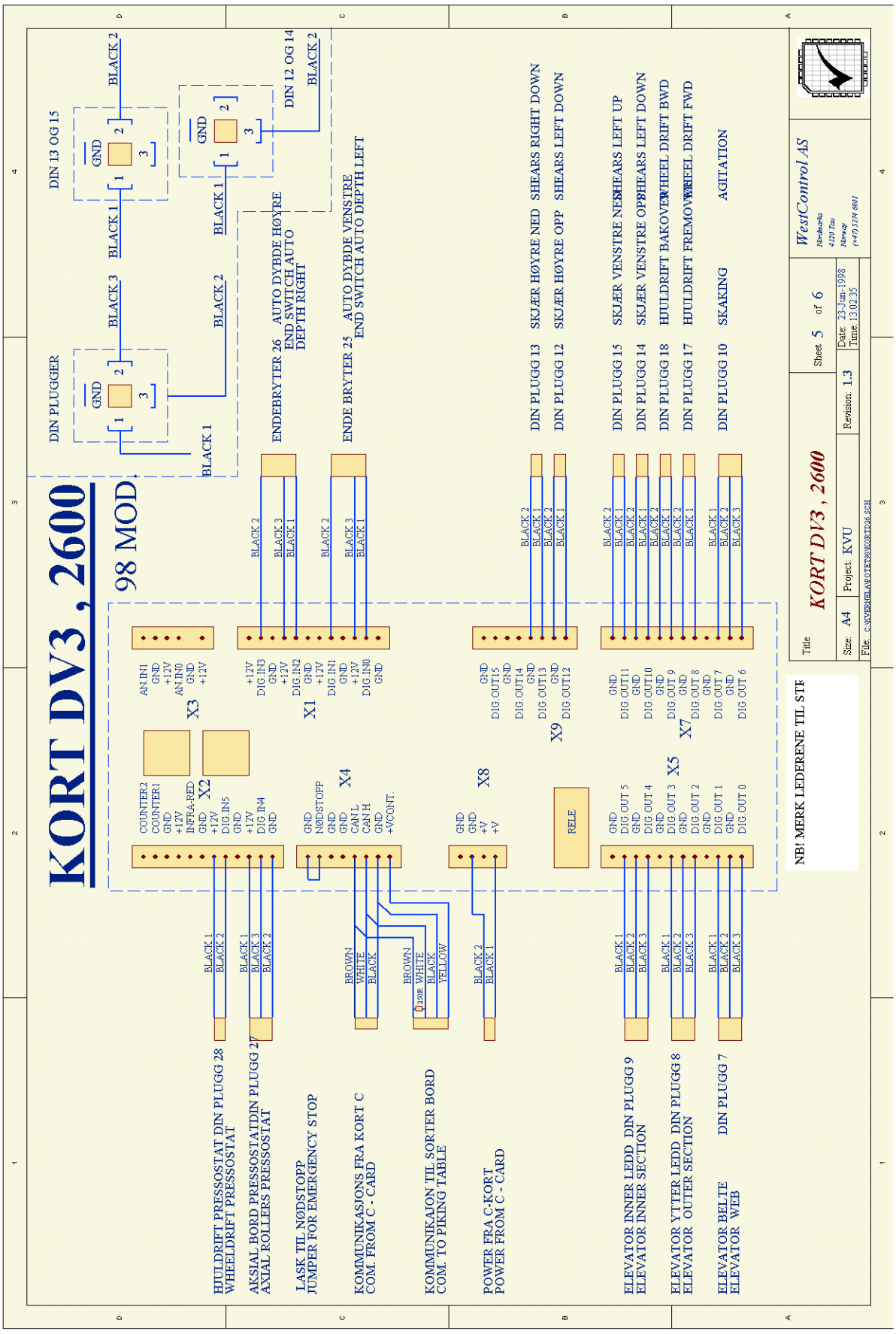
10.5 Circuit diagram electronic controls Card C



10.6 Circuit diagram electronic controls Card D



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Notes