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SAMPO ROSENLEW

Comia



C6
C8

Combine Harvester
Instruction Book

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Englanti

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THIS BOOK

The purpose of this book is to enable the Operator to handle and maintain the combine efficiently. It is of utmost importance that the Operator becomes familiar with the structures, adjustments and maintenance of his machine. Compliance with the advice and instructions given in this manual guarantees the best results at the lowest costs.

Have this manual always in the cab, in the special pocket reserved for it, for convenient reference.

This manual provides descriptions of as well as operating and maintenance instructions for several models in the series. One combine does not have all the described features. The actual structure and number of accessories and optional equipment depend on what was agreed in the delivery contract. This is to be kept in mind when reading the manual.

Item "Technical Specifications" has a description of all the features of the combine in accordance with the delivery contract. It does, however, not include retro-fitted accessories.

The Manufacturer reserves the right to modify the structure, adjustments or accessories of the combine as well as the service and maintenance instructions without further notice.

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SAFETY PRECAUTIONS

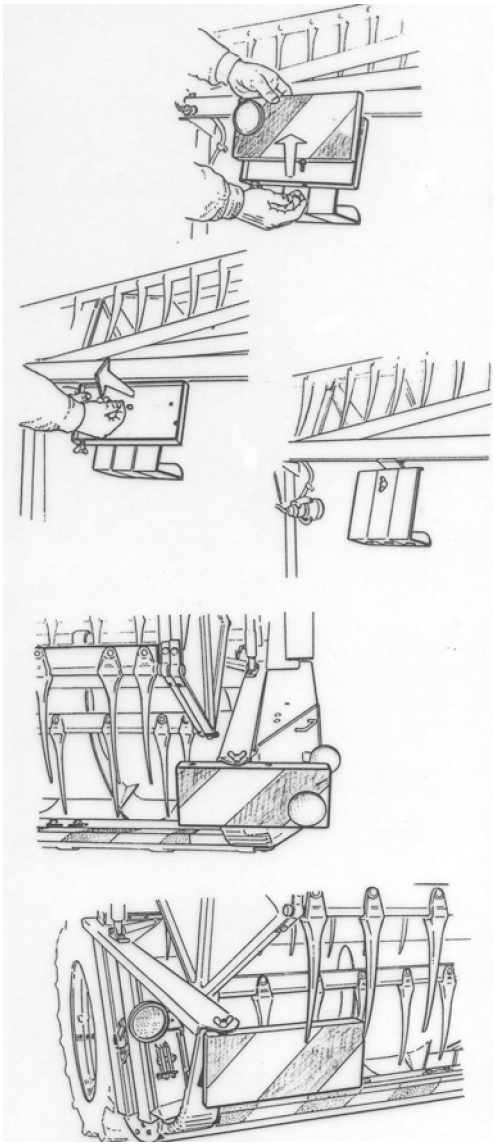
Read carefully these instructions on safety and use before starting to operate the combine. Time spent in becoming familiar with the instructions now, will save you money or may even spare you from injury.
Before accepting the delivery of the combine, make sure it conforms to the delivery contract.
Do not fit the combine with any accessories not approved of by the Manufacturer. The Manufacturer of the Combine is not responsible for any damage or injury caused by such accessories either to people or property.

1. TRANSPORTATION ON A VEHICLE OR BY RAIL

Make sure you know the measurements and weights of the combine and the transporter. When driving the combine on the road, comply with the relevant statutory traffic regulations. Use increased tyre pressure (2-2.5 Bar) to improve stability.
Fix the combine securely in the transporter. For road transport, lower the cutting table fully or remove it.

2. DRIVING IN TRAFFIC

When driving on public roads, comply with the relevant statutory traffic regulations. Remember that the combine has rear-wheel steering.
Brake pedals must be latched together. Test brake functions before driving on the road. Brake smoothly as the rear wheels of the combine easily rise from the ground when applying the brakes violently. The threshing equipment must be disengaged, the straw dividers removed and the unloading pipe locked for road transport.
On combines with the Premium Plus cab, the safety switch on the instrument panel shall be depressed. (The switch is released to its top-most position by turning the knob clockwise.)
The knife guard and the front warning signs shall be fitted onto the table. (Fitting of the front warning signs in accordance with the enclosed illustrations.)
The front and rear lights and the rear-view mirrors shall be correctly aligned.
Never drive downhill with the gear in neutral. Never carry passengers on the machine.
Never use the combine for transporting goods.
Always have the grain tank empty when driving on the road.

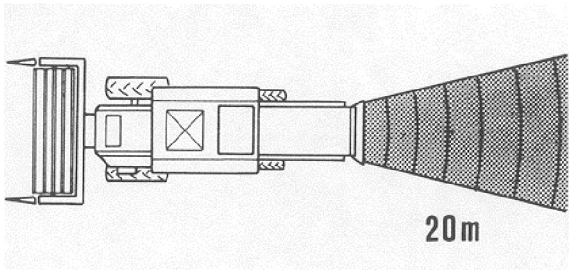


A1

3. THRESHING

Get familiar with the structure of the combine by studying the manual before starting threshing.
Wear appropriate clothing. Avoid loose clothing that may get entangled in moving parts. Use of hearing protectors is recommended.
Make sure the protective guards are properly attached and in good condition.
When working with combine harvester it is advisable to keep the cabin doors closed.
Sound the signal to warn people around the combine before starting the engine.
Adjust the rear-view mirrors before starting to ensure good visibility of the road or the working area behind.

Never use the combine for anything but threshing.
Manual feeding of crops onto the cutting table is prohibited.
Before starting, particularly reversing, make sure that everybody nearby is aware of your intentions.
Test the brakes as soon as you start, and stop immediately if the brakes or steering operate defectively.
Never adjust the seat or steering wheel while driving.
Never leave the cab while the combine is moving.
Never leave the engine running unattended.
Do not open any guards with the engine running.
Do not climb on top of the grain tank or the straw walkers with the engine running, and do not let anybody else do it either.
Beware of the cutting mechanism and the rotating chopper knife.
Keep in mind that with the chopper rotating, there is a 20 m no-access danger zone behind the chopper.
Drive carefully on hillsides; the combine may overturn, particularly with the grain tank full.
The combine cab is no safety cab.
THE RIGHT-HAND SIDE DOOR MAY BE USED AS AN EMERGENCY EXIT. PULL UP THE HANDLE, AND OPEN THE WINDOW. Fig. EXIT
Note the recommended safety distances when threshing under power lines.
Stop the engine before cleaning or servicing the combine.
Stop the combine and the engine immediately if there is an alarm or any abnormal sounds or smells. Find out the reason for them, and solve the problem before carrying on with threshing.
Support or lock the cutting table and the reel before going beneath them.
Never clean the combine without proper equipment.
When leaving the combine, lower the cutting table, lock the parking brake, stop the engine and remove the ignition key.

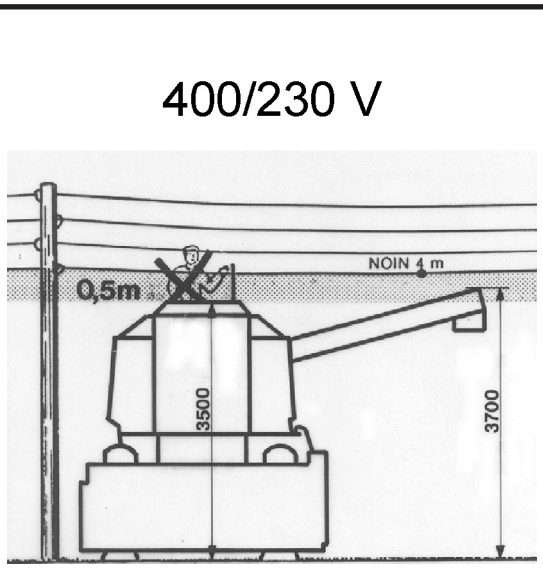


A2



SAFETY DISTANCES WHEN THRESHING UNDER OPEN-WIRE POWER LINES

The minimum clearance between the combine and power lines with voltage must be in accordance with the enclosed illustration, in which the danger zone is darkened.
Low-voltage power lines, fig. A3 (240/400V) can be distinguished from high-voltage line, fig. A4...A5 (over 1 kV) by the smaller insulators and the fact that there are usually 4 low-voltage lines.
In case the height or voltage of the power line is difficult to estimate, the Electric Company shall be consulted.

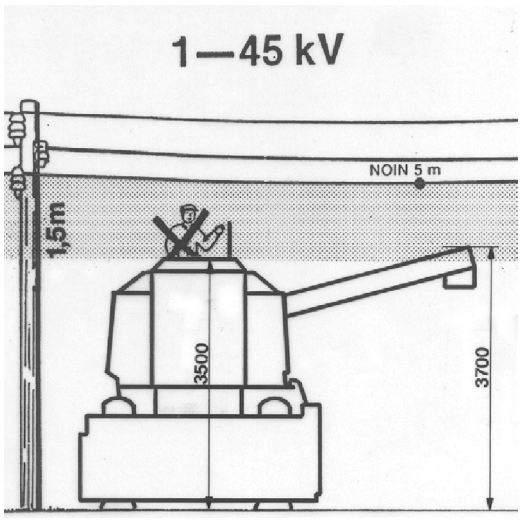


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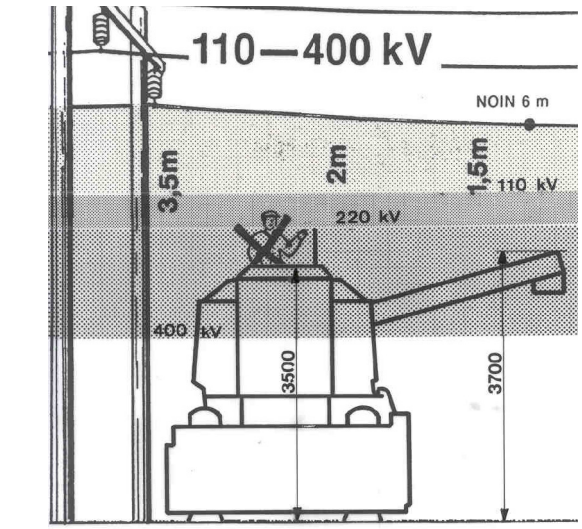
In Case of an Accident

If there is an accident despite all precautions, keep calm and consider carefully what to do. First try to reverse the combine away from the power line. If there are other people near, ask them to check that the combine is not stuck in the line.
If the combine is just leaning against the lines, try to drive it away from them. Follow the advice from the people nearby. Due to their own safety, they shall stay a minimum of 20 metres away from the combine touching the power line.
If the combine cannot be driven off, and you have to leave the combine, jump down with your feet together in order not to touch the combine and the ground simultaneously. Do not make yourself a conductor through which electricity can pass; the real danger lies in touching the combine and the ground simultaneously. Get away from the combine jumping either with your feet together, or with only one foot on the ground at a time.



A4

Otherwise the electric field on the ground may create a fatal electric current between your legs. You will be safe at a distance of 20 metres from the combine.
Beware of broken power lines lying on the ground.
A combine touching a power line may catch fire. Leave the combine immediately if smoke starts coming from the tyres.
Make sure the combine will be guarded at a safe distance. Do not try to get on the combine even if the power in the power lines may seem to have gone off. Remember that open-wire lines never have a ”blown fuse”, but they are always dangerous unless made dead by an electrician. Even if the power went off, it might come back on in a while due to technical reasons. This may be repeated several times.
Contact the Electric Company and inform them about the exact site of the accident. By doing this, any risk can be eliminated and the fault repaired.
Ask the Electric Company for advice and follow it. Inform them about any contact with power lines even if there was no actual damage.

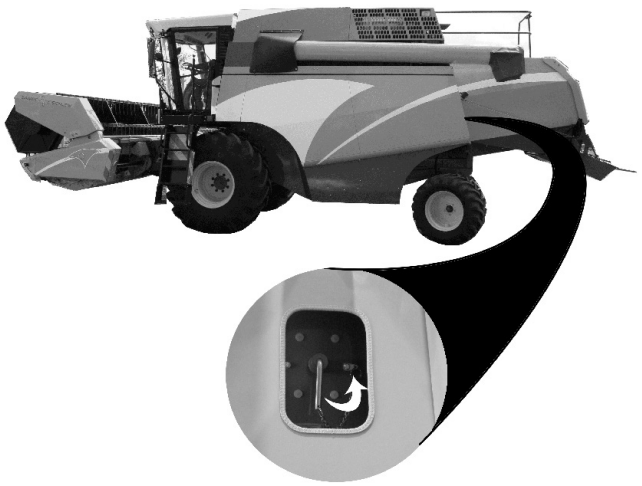


A5

Source: Koneviesti Magazine 15/87

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4. REPAIR AND SERVICE



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Always keep the combine in good condition.
Check the condition of fast moving parts daily. Pay special attention to the transmission mechanism and the rotating chopper knives. Replace defective parts before they become dangerous.
Clean, repair and service the combine with the transmission and engine off, the ignition key off the ignition switch and the master switch in its off position.
Disconnect the negative battery cable before repairing the engine or any electrical instruments.
Do not use inappropriate tools to connect and disconnect the battery.
Do not make an open fire or smoke near the battery.
Handle the battery acids with care.
Do not add air in the tyres without a pressure gauge due to risk of explosion.
Do not add coolant with the engine running.
Do not remove the radiator cap from an overheated engine.
Do not refuel with the engine running.
Beware of hot surfaces of the engine and exhaust pipe.
Do not smoke while fuelling.
Do not adjust the hydraulic working pressure without a pressure gauge due to possible damage to the hoses.

When servicing the hydraulics, be aware of the high pressure in the system. Make sure there is no pressure in the system or in the pressure accumulator before disconnecting the connectors.
Never use over-sized fuses; they involve risk of accident.
Never start the combine with anything but the ignition key.
When refitting a wheel, tighten the fixing screws to the correct torque.
Attach accessories such as the trailer using the appropriate equipment.
Tow the combine only from designated points.

5. THE LAWS AND REGULATIONS

Combine harvester is a complex device, and dangerous if misused. User manual must always be preserved with the machine at the place reserved for it and if needed, new drivers should be instructed to operate the machine
Different countries have different safety at work and traffic regulations. Get to know the existing regulations of your area.

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This symbol in the manual refers to a special risk involved in taking a certain measure, due to which extra caution shall be practised.

6. FIRE SAFETY

Two factors are needed to start a fire: flammable material and ignition; oxygen is always available.
Threshing generates a lot of light and highly flammable dust. Therefore it is important to clean the combine on a regular basis, and the engine compartment daily.
Oil and fuel leaks increase the risk of fire. Repair any defects immediately.
High temperature near the exhaust pipe makes the area fire-prone. A fire may also be caused by a short circuit in the electric system, slipping of an overloaded belt, a damaged bearing or overheating of the brakes.
Make sure there is at least one 6-kilo class AB fire extinguisher located in its marked place on the combine at all times.

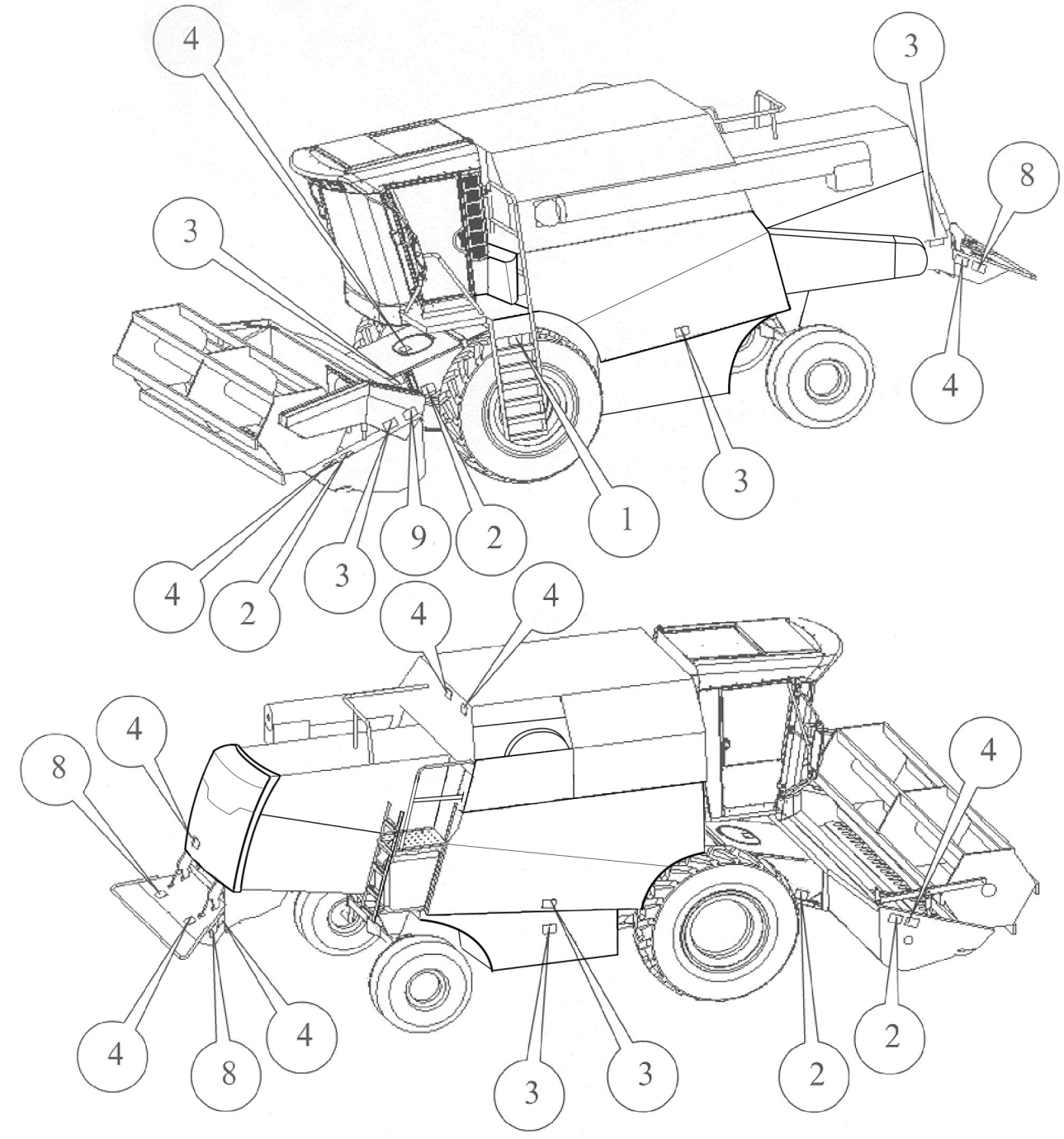
In particularly dry and dusty circumstances another similar extinguisher is to be placed near the engine compartment.



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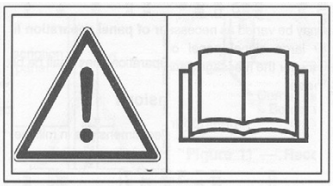
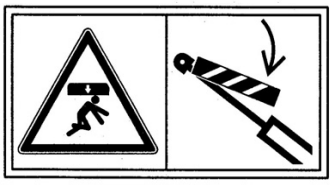
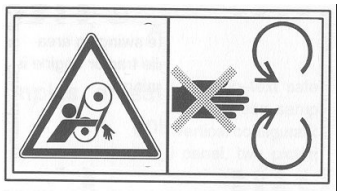
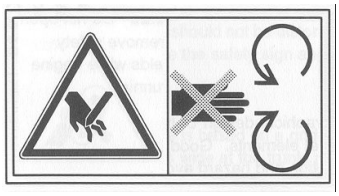
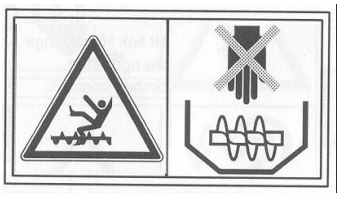
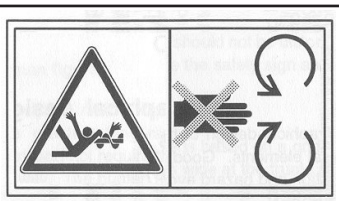
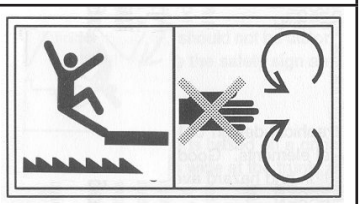
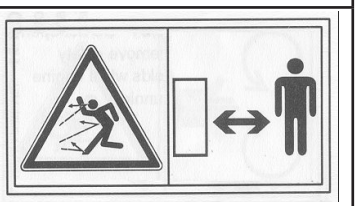
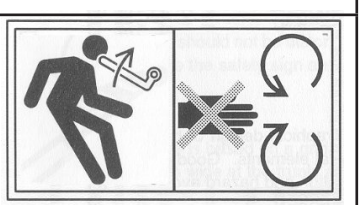
MARKING THE DANGER POINTS

Although an effort has been made to build the combine as safe to use as possible, there are certain risks involved in its use. These are to be kept in mind when operating the combine.
The danger points have been marked on the combine using hazard pictorials. On the following page you will find the locations of and the key to these symbols. Ensure that undamaged danger markings are displayed on the combine. The hazard pictorials are based on the international ISO 11 684 standard.



HAZARD PICTORIALS

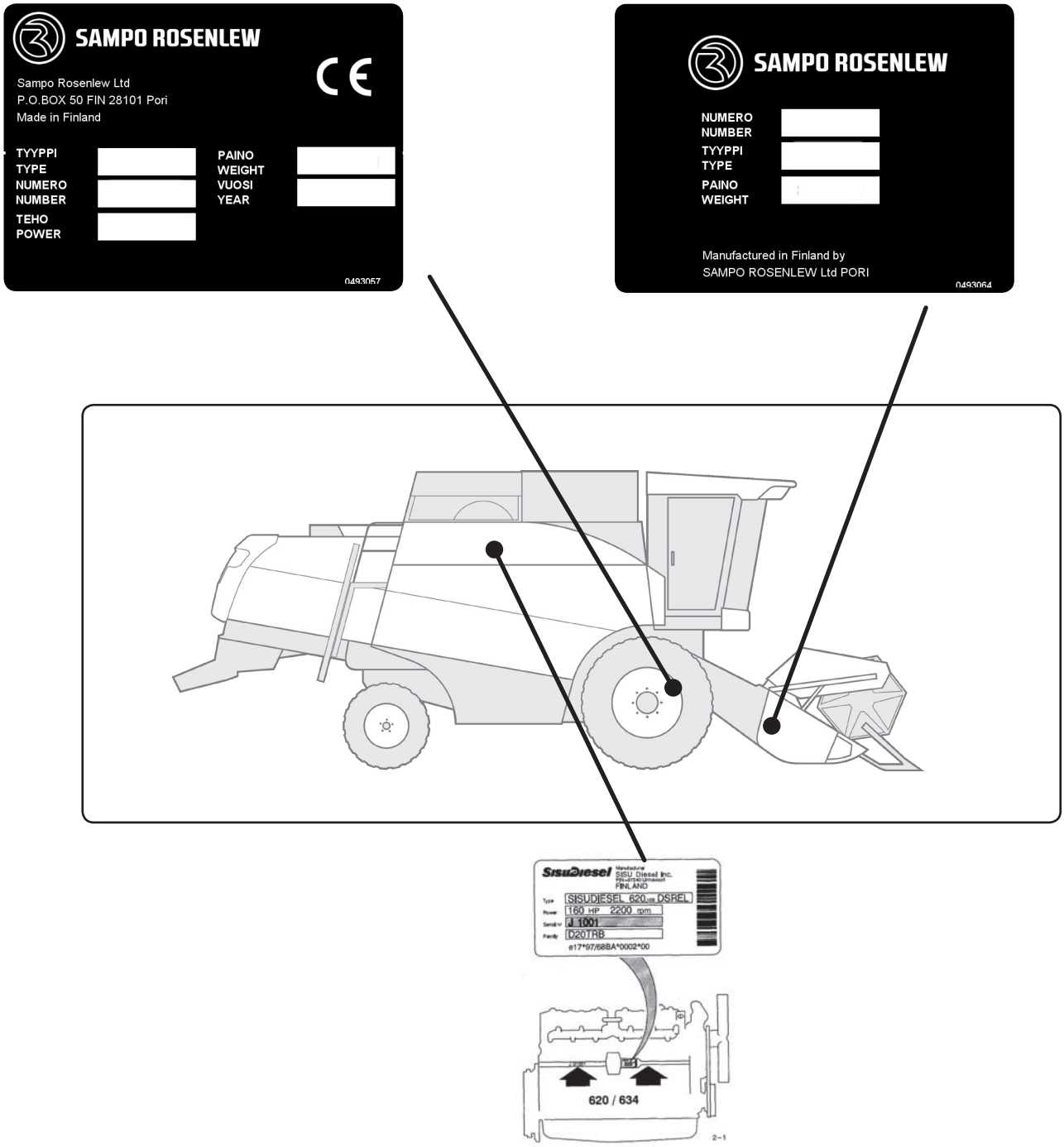
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Danger	How to avoid it	Nr.	Symbol
Subject to danger due to insufficient information	Read the manual before starting the combine	1	
A raised part may fall down	Support raised parts before going under them	2	
Gap in belt drive	Stop the engine and remove the ignition key before removing any guards	3	
Getting entangled in moving parts	Stop the engine and remove the ignition key before removing any guards and/or reaching into a danger zone	4	
Getting entangled in rotating auge	Stop the engine and remove the ignition key before removing any guards	5	
Getting entangled in rotating auger	Do not reach into an opening with the engine running	6	
Falling into moving machinery	Stop the engine and remove the ignition key before removing any guards	7	
Danger caused by flying objects	Keep at a safe distance from the combine	8	
Kickback or upward motion of arm handle	Stop the engine and remove the ignition key before inserting the handle	9	

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TYPE MARKING

When ordering spare parts or service, always quote the type marking and number shown on he machine plate of the combine. When ordering parts for the cutting table, also quote the type marking and number shown on the cutting table.
When ordering engine parts, also quote the engine number.
Write down the numbers of the combine and engine on this page (and in the spare part list).



Engine Number

Note! Left side of the combine = The side of the cab with the stairs
Right side of the combine = The side with the fuel tank

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TECHNICAL SPECIFICATION

(ISO 6689 standard has been used in measuring)

Cutting table

Cutting width (m)	3,9	4,2	4,5	4,8	5,1
Cutting height (m)	-0,20…+1,20				
Knife, Number of Strokes	1020 cycles/min				

Reel

Diameter (m)	1,05
Speed range (rpm)	16...51 WobbleBox (WB)

Threshing Cylinder

Width (m)	1,11	Pre-threshing Cylinder	1,11
Diameter (m)	0,5		0,4
Number of rasp bars	7 or 8		
Speed range (rpm)	600...1300 MD 400...1150 HD (Maize)		

Concave

Area (m²)	0,51	Pre-Concave	0,34
Angle of wrap	105°		
Number of bars	12		
Clearance in front (mm)	6...42		

Straw Walkers

Number	5
Separating area (m²)	4,80

Shaker Shoe (m²)

	Area 3.40 m²	Chaffer 1,74 + 0,33 m²	Sieve 1,33 m²

Grain Tank

Volume (m³)	4,40	5,40
Unloading height (m)	4,0	

Engine	C6	C8
Power kW / hp / num. of cylinders	126/170/4	154/210/6
RPM	2000	2000
Traction Drive	Hydrostatic	

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Driving speed (km/h)*

Final drive	Hydrostatic Traction Drive
I	0… 6,9
II	0… 11
III	0… 25
4WD	0... 6
4WD	0... 9

* Speeds may vary depending on the size of the tyres

Turning radius (m) 5,9 (6,2 C8)

Tyres / Air pressure (bar)

Front

Tyres	Weight Limit kg										
	5700	6000	6200	6600	6800	7100	7500	7800	8500	8600	10500
18.4- 34 157A8	1,5	1,5	1,5	1,6	1,6	1,6	1,9	1,9			
18.4R34 144A8	1,5	1,5	1,5	1,6	1,6	1,6	1,9	1,9			
520/70R34 148A8	1,5	1,5	1,5	1,6	1,6	1,6	1,9	1,9			
600/65R34 158A8	1,2	1,2	1,2	1,3	1,3	1,4	1,5	1,8	1,9	1,9	2,0
750/65R26 166A8	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,1	1,2	1,2	1,3
800/55-30.5 172A8	0.8	0.8	0.8	0.8	0.8	0.8	1,0	1,2	1,4	1,4	1,6

Rear

Tyres	Weight Limit kg										
	3450	5700	6000	6200	6600	6800	7100	7500	7700	8600	10500
11.5-15.3 10 PLY	1,2	1,7	1,8	1,8	1,9	1,9	2,0	2,0	2,0		
360/70R20 120A8	1,4	1,6	1,7	1,7	1,8	1,8	1,8	1,9	1,9	2,0	2,0
420/65R20 125A8	1,4	1,6	1,7	1,7	1,7	1,8	1,8	1,8	1,9	1,9	1,9
550/45-22,5 153A8/149B	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

Wheel track (m)

Front

	Tyres			
	18.4R34	520/70R34	600/65R34	750/65R26
	2,35 / 2,52	2,35 / 2,52	2,35 / 2,52	2,55

Rear

	Tyres		
	11.5-15.3	360/70R20	420/65R20
Normal	2,2	2,42 (2,43 4WD)	2,42 (2,43 4WD)
Narrow	1,85	2,07 (2,08 4WD)	2,07 (2,08 4WD)

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Volumes (See manual, LUBRICATION)

Fuel tank (litres)	350
Cooling system (litres)	(4 cyl.= 29) (6 cyl =33)
Urea (litres)	30

Weight (kg)	C6	C8
Without cutting table and chopper	8490	9280

Cutting table (m)	3,9	4,2	4,5	4,8	5,1
Weight (kg)	1190	1240	1290	1340	1400

Chopper weight (kg)	190
Maize table. 4 row. (kg)	1300

Length (m)	C6	C8
On the road	8,7	9,1
Without cutting table	7,15	7,55
In the field	9,95	10,35

Width (m)

On the road without cutting table

Tyres			
18.4R34	520/70R34	600/65R34	750/65R26
2,82 / 2,99	2,87 / 3,04	2,95 / 3,12	3,30

With table (m)	3,9	4,2	4,5	4,8	5,1
	4,42	4,73	5,03	5,34	5,64

Height with cabin (m)	3,7
Noise level in cabin dB(A)	75

The weighted acceleration subjected to operator’s arms does not exceed 2,5 m/s² (ISO-5349)
The weighted acceleration subjected to operator’s body does not exceed 0,5 m/s² (ISO-2361)

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CERTIFICATE ON CONFORMITY TO THE EU DIRECTIVES

Manufacturer
Sampo-Rosenlew Ltd
Konepajanranta 2A, P.O.Box 50
28101 Pori Finland

Collector of technical specification
Kalle Pärkö
Sampo-Rosenlew Ltd
Konepajanranta 2A, P.O.Box 50
28101 Pori Finland

Declares that the machinery placed on the market:

Combine Harvester

Type: _____

Serial Number: _____

complies with the technical requirements specified in the:

2006/42/EC machinery directive
97/68/EEC engine emission directive
89/336/EEC electromagnetic compatibility

The machinery has been designed in conformity with the following international standards:

EN-ISO 4254-7 Combine harvesters and forage harvesters, Safety
EN-ISO 14121-1 Safety of machinery. Risk assessment
EN-ISO 14982-1998 EMC acceptance criteria

16.12.2013 Pori



Jali Prihti
Managing Director
Sampo Rosenlew Ltd

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ACCEPTANCE INSPECTION AND GETTING STARTED

The combine leaves the factory packaged in an appropriate way to ensure undamaged delivery.
Before start-up the following steps shall be taken:

- Read the Operating Manual carefully before start-up.
- Remove all loose parts stored in the grain tank during transportation.
- Make sure the combine was not damaged in transit and that no parts are missing. (When necessary, contact the dealer or the transport company.)
- Make sure the combine complies with the purchase agreement. (When necessary, contact the dealer.)
- Refit the parts removed before transportation, such as the rotating inlet screen in the engine, lights, mirrors, etc.
- Put the fire extinguisher in its place.
- Check the oil and coolant levels.
- In case the combine has been stored for a longer period of time, change all the oils before starting harvesting.
- Check and lower the tyre pressures in compliance with the recommendations given in the Operating Manual.
- Make sure the threshing mechanism can rotate freely and that there are no foreign objects inside the combine before starting the engine.
- Engage the cutting table.
- Assemble, fit and adjust the straw dividers as shown in the drawings in the Spare Parts Catalogue.
- Fit the crop lifters as instructed in the Operating Manual.
- Have a trial run as instructed in the item ”Storage when Not in Use”.

IMPORTANT NUMBERS

Check and write down the following numbers:

The combine serial number _____

The cutting table serial number _____

The engine serial number _____

The cab key number _____

The fuel tank key number _____

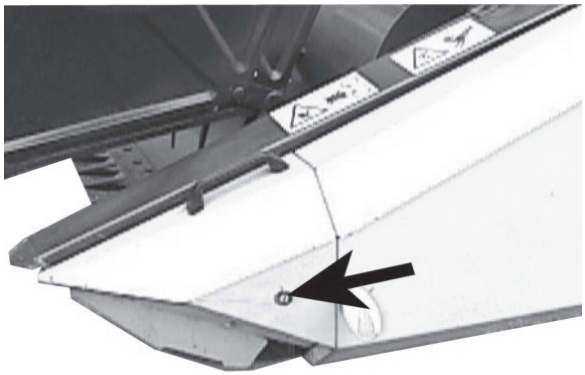
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OPENING THE GUARDS

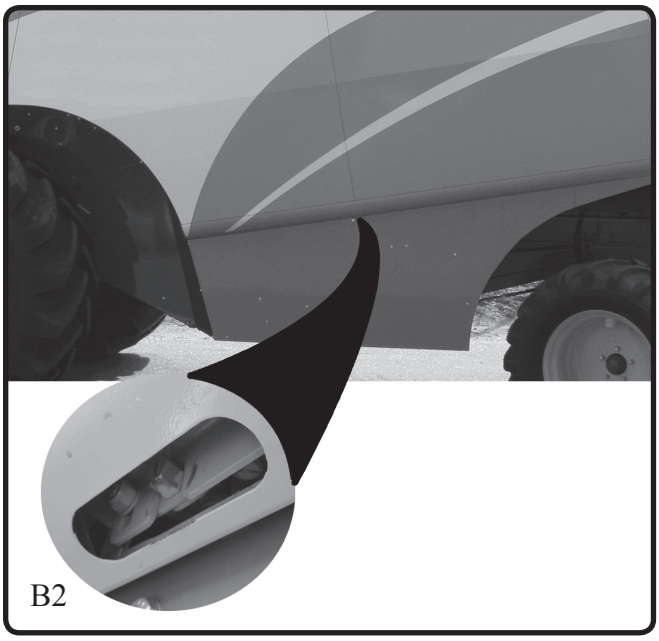
To ensure safety, the movable guards in the combine have been equipped with a locking device. They cannot be opened without the appropriate tool supplied with every combine, hanging on a hook on the back wall of the cab. The guards are locked automatically when closed. Some guards also have additional clamps.

- Unlock the guard at the left end of the cutting table, fig.B1 by turning the locking device counter-clock wise.To open the guard, pull the handle outwards and lift the guard slightly upwards at the same time. The guard gets locked automatically when closed.

- Open the side guards by placing the tool in the hole at the lower part of the guard and turning the lock open with the tool. The guard opens when the lower edge is pulled outwards. The guard gets locked in the upper position. It is released from the upper position by lifting the guard and turning the locking device open near the gas spring. Fig. B2.



B1



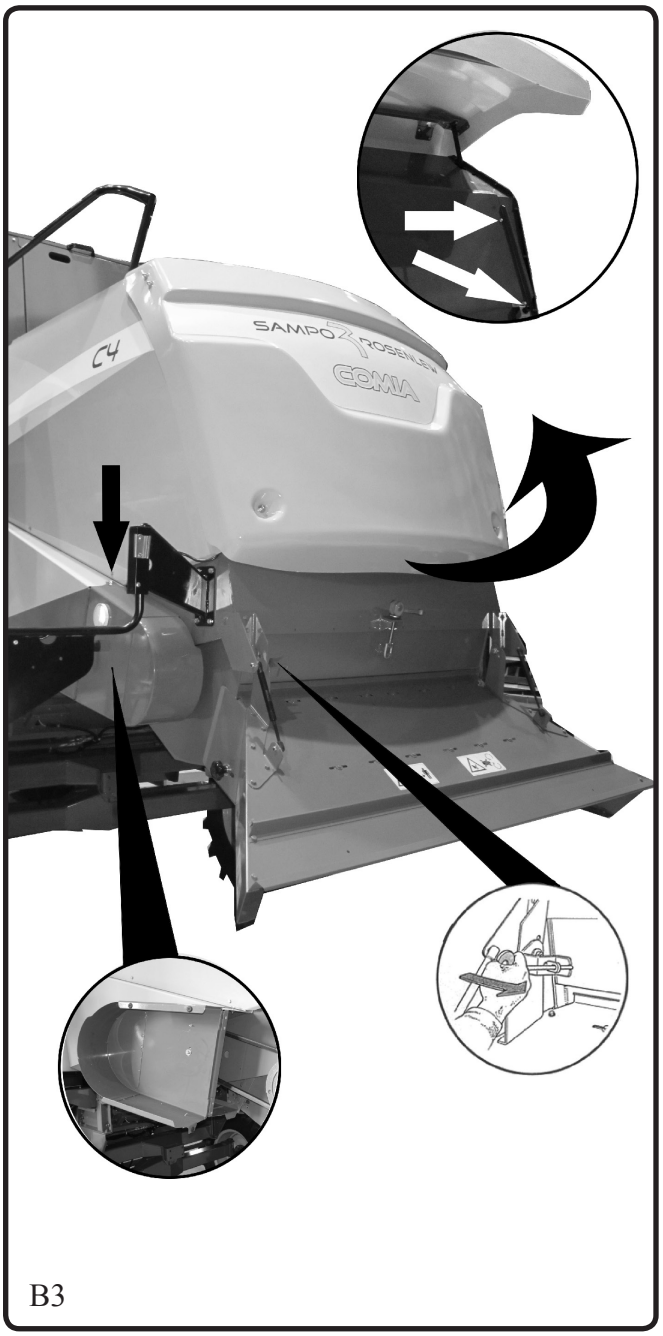
B2

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- The rear guard of the chopper (straw spreader) is released by levering the locking pivot to the right with the tool. The guard also gets locked in the upper position and is released correspondingly.

- Choppers belt guard is opened by loosening the bolt on the guard and turning the cover open.The guard is secured in the upper position with a rubber strip.

- Straw hoods plastic cover is opened by lifting the bottom upwards, then loose the bolts of the inner guard and remove inner guard.

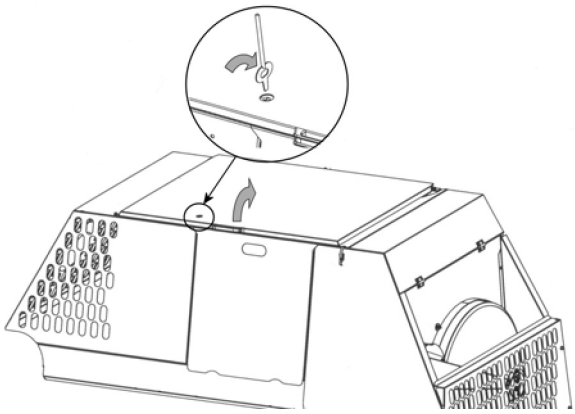


B3

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Engine Compartment

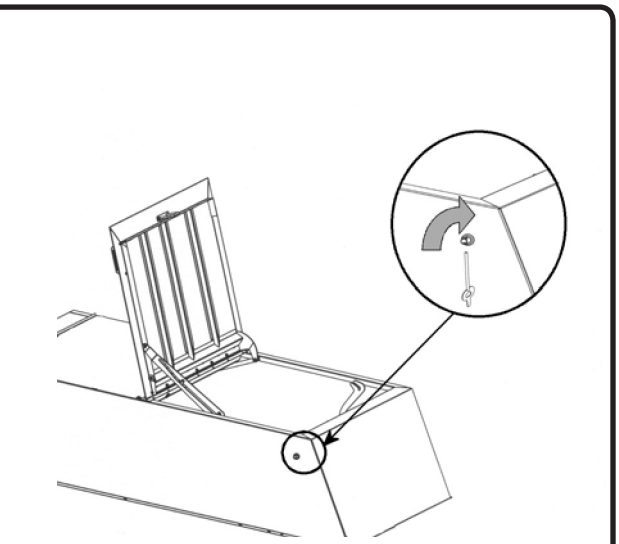
To open the cover on the engine compartment



B6

To unlock the grain tank cover, turn the lock shaft with the key.
The cover can also be opened from the inside.

Clean, repair and service the combine with the transmission and engine off, the ignition key off the ignition switch and the master switch disconnected.



B7

To unlock the top door to the straw walker compartment remove the bolt with 13mm wrench and lift the cover.

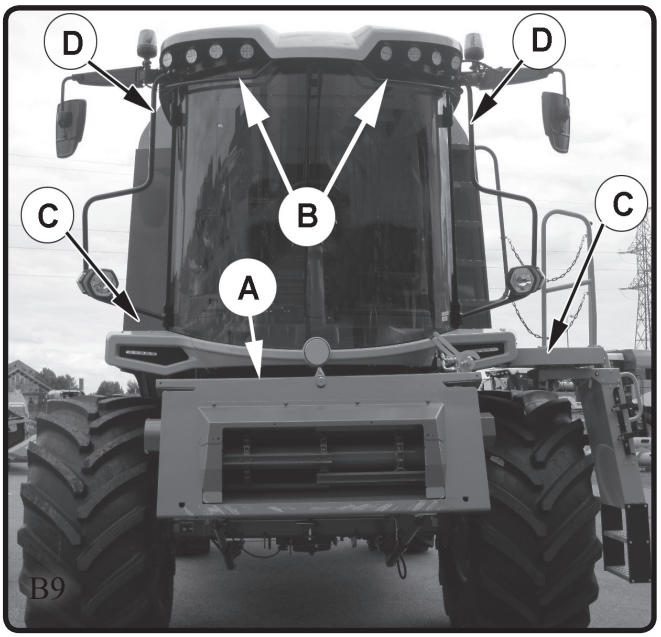


B8

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Windscreen cleaning and adjusting mirrors

When cleaning the windscreen, climb on top of the crop elevator and hold on of the top arms B.
(Figure B9)
When manually adjusting rear view mirrors, climb on the platform C and hold on of the top light arms D.
(Figure B9)

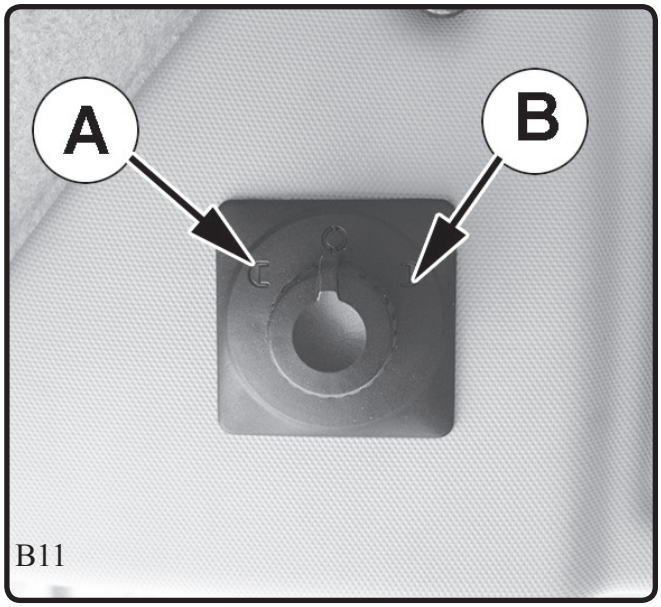


Fire extinguisher is placed in the stairs. (A, Figure B10).



Electrically adjustable mirrors (Fig.B11)

- Turn the switch to position A when adjusting left mirror
- Turn the switch to position B when adjusting right mirror



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STRUCTURE AND FUNCTIONS OF THE COMBINE

Standard Threshing Mechanism

The cutting and feeding equipment takes the crops in for threshing.

The straw dividers limit the crop to be cut and bring it within reach of the reel.
The reel, together with the crop lifters, lift the laid-down crop up and take it from the cutting knife onto the table auger.
The table auger gathers the cut crop and feeds it onto the crop elevator, which takes the crop forward to be threshed. Stones and other heavy objects are pushed to the stone trap thus preventing damage to the threshing mechanism.

The threshing mechanism separates the grains from the straw.

The threshing cylinder beats the grain off on the concave. Most of the threshed grain and chaff go through the concave into the grain pan.
The rear beater and the concave extension take the threshed straw onto the straw walkers.

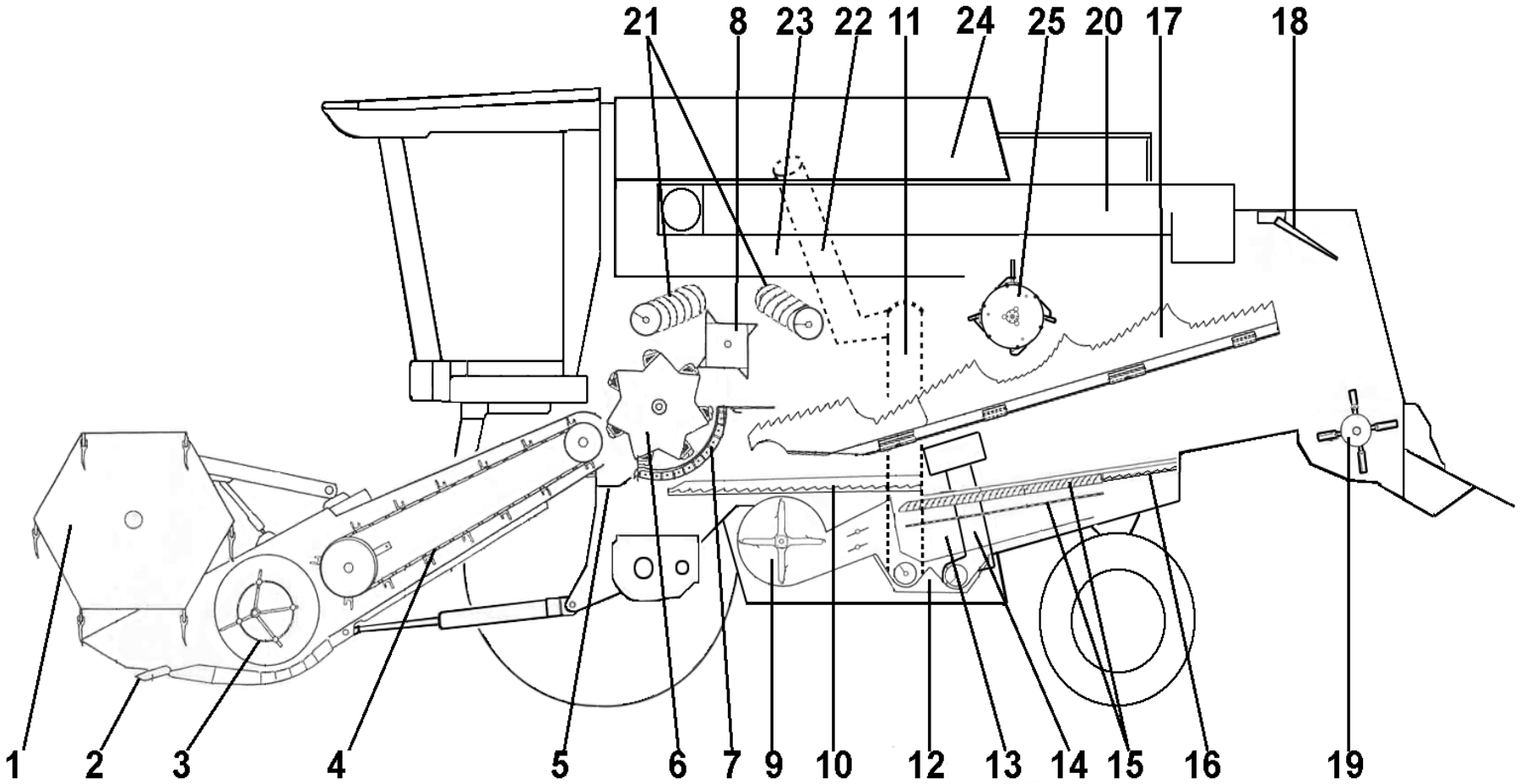
The separating and cleaning equipment sieves the grains.

The straw walkers separate the grains from the straw and eject the straw out to the field from the rear of the combine. The CSP ruffling drum placed above the straw walkers intensifies the separation of loose grains from the straw by opening a fluffier area into the straw flow (accessory). The grains run along the bottom grooves to the grain pan.
The grain pan takes the threshed material to the shaker shoe. The chaff and any light remains are sorted topmost in the grain pan with the grain at the bottom.
The air stream from the fan lifts the light chaff in the air and transports it over the shaker shoe and out of the machine. Heavier grains and any partly threshed material fall through the chaff sieve. Any larger remains move out along the sieve. Clean grain falls onto the grain auger through the grain sieve and is transported from there by the grain elevator and filling auger to the grain tank.
The grains and occasional straw bits, which lie on the shaker shoe extension, fall to the returns course to be re-threshed.

The chopper cuts and spreads the straw.

After the straw walkers, the straw is either discharged uncut onto the field or taken to the chopper, which cuts and spreads it out.

CUT - AWAY PICTURE OF THE COMBINE, Standard Threshing Mechanism



1. Pick-up reel
2. Cutter bar
3. Table auger
4. Crop elevator
5. Stone trap
6. Threshing cylinder
7. Concave
8. Rear beater
9. Fan
10. Grain pan
11. Grain elevator
12. Auger housing
13. Shaker shoe
14. Return auger
15. Sieves
16. Sieve extension
17. Straw walker
18. Straw alarm
19. Straw chopper
20. Unloading pipe
21. Bottom augers
22. Filling auger
23. Grain tank
24. Engine
25. CSP

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STRUCTURE AND FUNCTIONS OF THE COMBINE

The TS Threshing Mechanism

The cutting and feeding equipment takes the crops in for threshing.

The straw dividers limit the crop to be cut and bring it within reach of the reel.
The reel, together with the crop lifters, lift the laid-down crop up and take it from the cutting knife onto the table auger.
The table auger gathers the cut crop and feeds it onto the crop elevator, which takes the crop forward to be threshed. Stones and other heavy objects are pushed to the stone trap thus preventing damage to the threshing mechanism.

The threshing mechanism separates the grains from the straw.

The cut crop first comes onto the pre-cylinder, which gently separates the most easily threshable grains and ejects them through the pre-concave to the front of the grain pan. The pre-cylinder also evens out the feed onto the main cylinder.
The rest of the grains are threshed off by the main cylinder and concave. Most of the threshed grain and chaff go through the concave into the grain pan.
The rear beater and the concave extension take the threshed straw onto the straw walkers.

The separating and cleaning equipment sieves the grains.

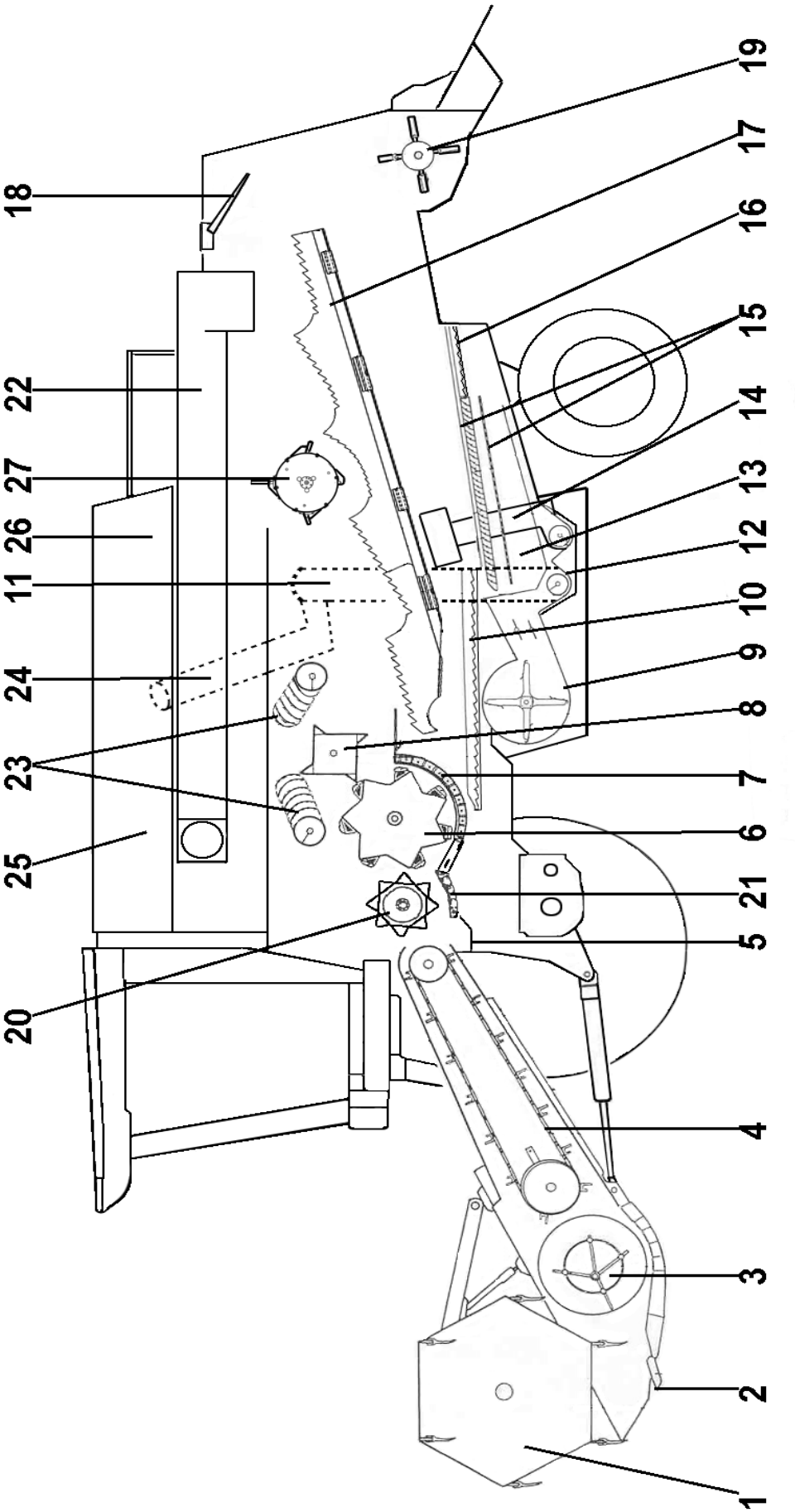
The straw walkers separate the grains from the straw and eject the straw out to the field from the rear of the combine. The CSP ruffling drum placed above the straw walkers intensifies the separation of loose grains from the straw by opening a fluffier area into the straw flow (accessory). The grains run along the bottom grooves to the grain pan.
The grain pan takes the threshed material to the shaker shoe. The chaff and any light remains are sorted topmost in the grain pan with the grain at the bottom.
The air stream from the fan lifts the light chaff in the air and transports it over the shaker shoe and out of the machine. Heavier grains and any partly threshed material fall through the chaff sieve. Any larger remains move out along the sieve. Clean grain falls onto the grain auger through the grain sieve and is transported from there by the grain elevator and filling auger to the grain tank.
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The chopper cuts and spreads the straw.

After the straw walkers, the straw is either discharged uncut onto the field or taken to the chopper, which cuts and spreads it out.

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CUT - AWAY PICTURE OF THE COMBINE; the TS Threshing Mechanism



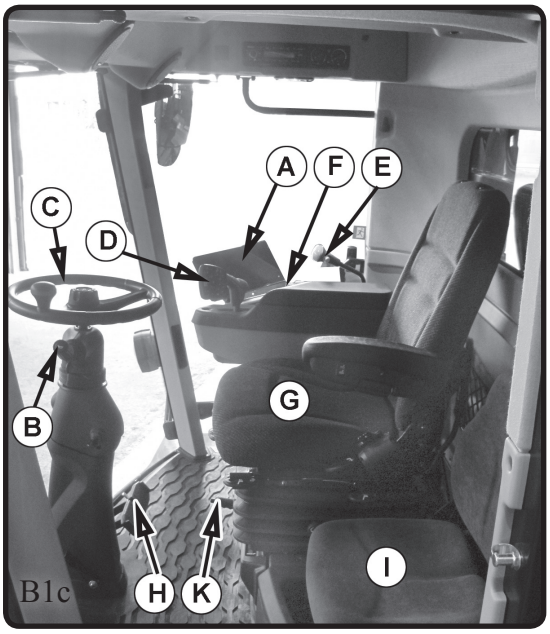
1. Pick-up reel
2. Cutter bar
3. Table auger
4. Crop elevator
5. Stone trap
6. Threshing cylinder
7. Concave
8. Rear beater
9. Fan
10. Grain pan
11. Grain elevator
12. Auger housing
13. Shaker shoe
14. Return auger
15. Sieves
16. Sieve extension
17. Straw walkers
18. Straw alarm
19. Straw chopper
20. Pre-cylinder
21. Pre-concave
22. Unloading auger
23. Bottom augers
24. Filling auger
25. Grain tank
26. Engine
27. CSP

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OPERATOR´S CONTROLS AND INSTRUMENTS

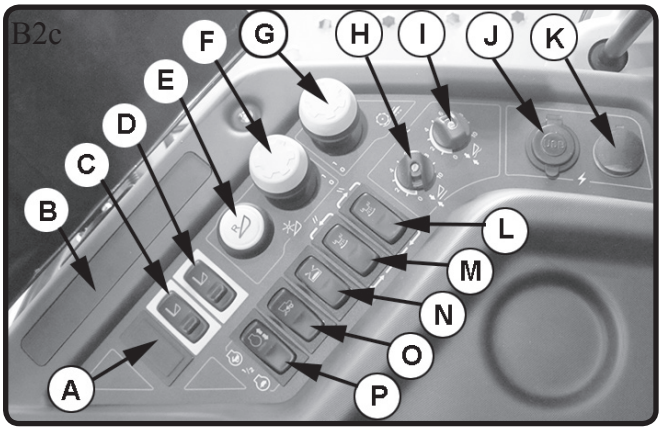
Operator's Platform / Cab (fig. B1c)

A Comvision- display
B Multi-function Lever
C Steering Wheel
D Traction Speed Control Lever
E Gear Lever
F Instrument Panel
G Seat
H Brake Pedals
I Buddy Seat
K Handbrake



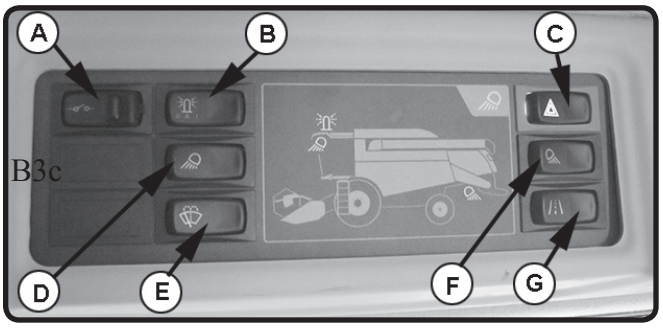
Instrument Panel (fig. B2c)

A Cover
B Instruction light panel
C Vertical Knife, left (optional)
D Vertical Knife, right (optional)
E Reversing of Cutting Table and Feeding Mech.
F Cutting Table Start/Stop
G Threshing Mech. Start/Stop
H AHC Pre-setting height
I AHC Automatic height
J USB
K Electric Outlet
L Direction of Straw Chopper Spray
M Direction of Straw Chopper Spray
N Grain tank cover raising
O 4WD Switch (optional)
P Electric accelerator



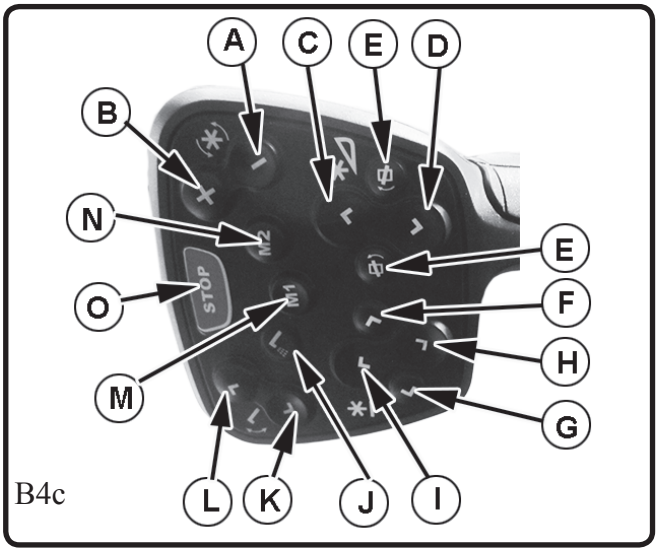
Switches (fig. B3c)

A Main switch
B Rotating Flasher
C Emergency Flasher
D Working Lights
E Windscreen Wiper/Washer
F Working Lights
G Safety Switch, driving in traffic



Multi-Function lever switches (Fig.B4c)

A Decrease pick-up reel RPM
B Increase pick-up reel RPM
C Cutting table up
D Cutting table down
E Cutting table tilt
F Pick-up reel backward
G Pick-up reel onward
H Pick-up reel down
I Pick-up reel up
J Grain tank unloading start/stop
K Unloading tube out
L Unloading tube in
M Memory slot 1
N Memory slot 2
O Emergency stop (Stops cutting table and unloading)



SIGNALS AND SYMBOLS

Ignition Switch

Master Switch (electric)

Ignition Signal

Stop Control Lever

Oil Warning Light

Alternator Warning Light

Engine Revolutions, electric control

Gear Change Decal

Horn

Flasher

Dip Switch

Headlights

Working Light

Windscreen Wiper

Temperature Control

Air Conditioning

Hand Brake

Table Height Control

Reel Height Control

Threshing Mechanism Lever

Speed Control Lever

Cutting Table Clutch

Grain Tank Unloading Lever

Cylinder Speed

Concave Clearance

Reel Fore & Aft Control

Reel Speed Control

Air Volume Control

Air Direction Control Lever

Reversing Switch of Cutting Table

Four-wheel Drive

Rotating Flasher

Emergency Flasher

Swinging of Unloading Pipe

CSP Drum

Grain Tank Full

Grain Elevator Alarm

Bottom Auger Alarm

Return Auger Alarm

Straw Alarm

Coolant Temperature Alarm

Emergency Exit

Engine Malfunction Light

Safety Switch, driving in traffic

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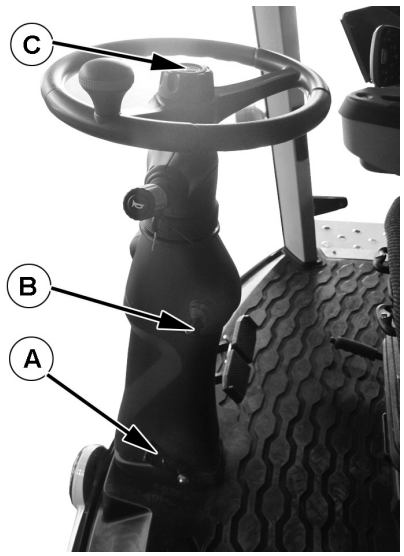
OPERATION AND ADJUSTMENT

STEERING WHEEL Position Can Be Adjusted (Triple Adjustment Steering Column)

To adjust the steering column angle, depress pedal A and tilt the whole column forward or backward (Fig. K1b).

The steering column folds in the middle. Lift the lever B up and adjust the steering wheel to the desired position.

To adjust the height of the steering wheel, loosen the knob C (Fig. K1b) and adjust the steering wheel to the desired position. Remember tighten the knob C.



K1b

Drive Lever (K1d)

On combines with hydrostatic transmission traction speed and direction is controlled with a drive lever.



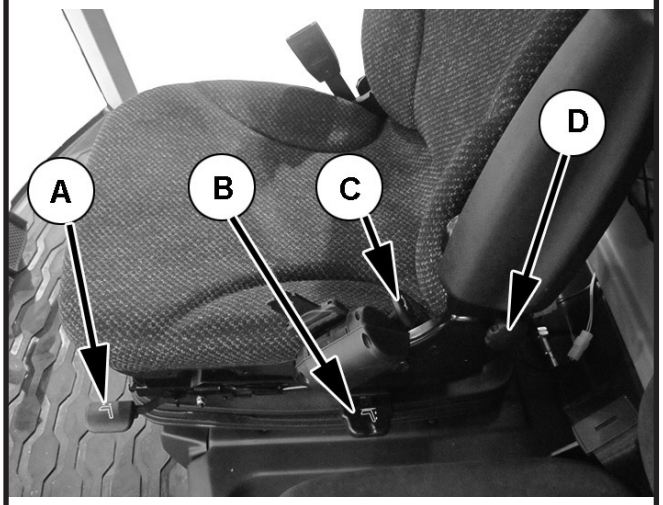
K1d

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OPERATOR'S SEAT Adjustments

Seat Type 1 (fig. K2a)

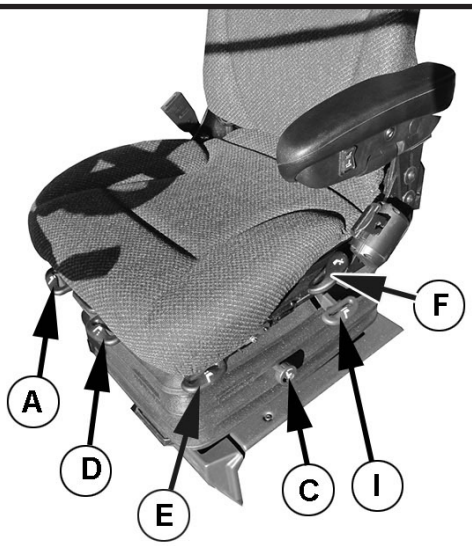
To adjust the fore and aft position, release lever A under the seat and move the seat to the required position.
Adjust the height by raising or lowering lever B.
Adjust the backrest angle by releasing lever C and turning the backrest.
Adjust the armrest height by loosing hand wheel D. The height of the armrest can be adjusted by moving its fixing point. Remember tighten the hand wheel D.

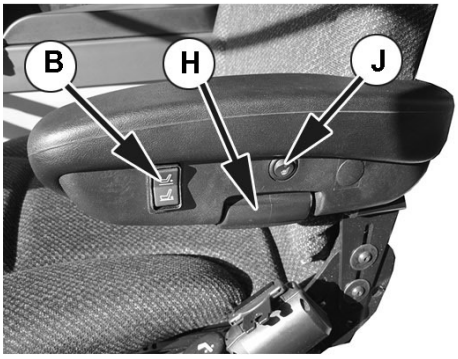


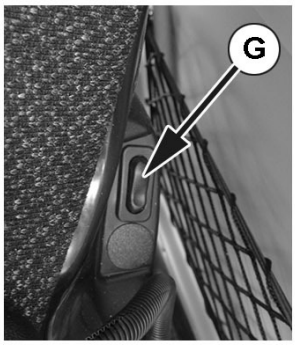
K2a

Seat Type 2 (Fig. K2b)

To adjust the fore and aft position, release lever A under the seat and move the seat to the required position.
To adjust the height, push adjustment switch B briefly after being seated. The seat will be automatically adjusted to suit the driver´s weight. From this position the seat can be moved up and down by using the adjustment switch in the required
direction.
Adjust the suspension to suit the weight of the operator by turning screw C.
To adjust the backrest angle, release lever F and turn the backrest.
To adjust the lumbar support, push adjustment switch G behind the backrest.
Adjust the armrest angle by turning hand wheel H.
To adjust height of the front part of the seat, release lever D.
To switch on seat heating, use switch J.
To adjust the seat in relation to the backrest , use lever E.
Movements of the seat backward and forward is enabled or disabled using lever I.





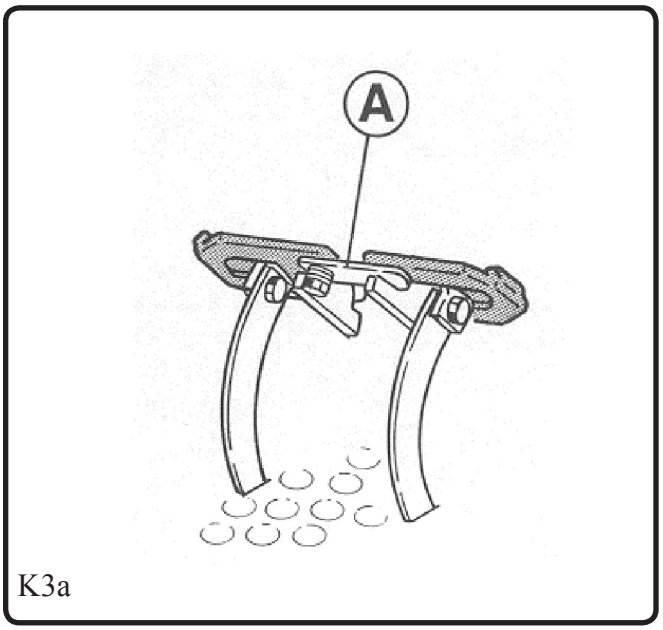


K2b

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BRAKES (Fig. K3a) While Driving and Turning

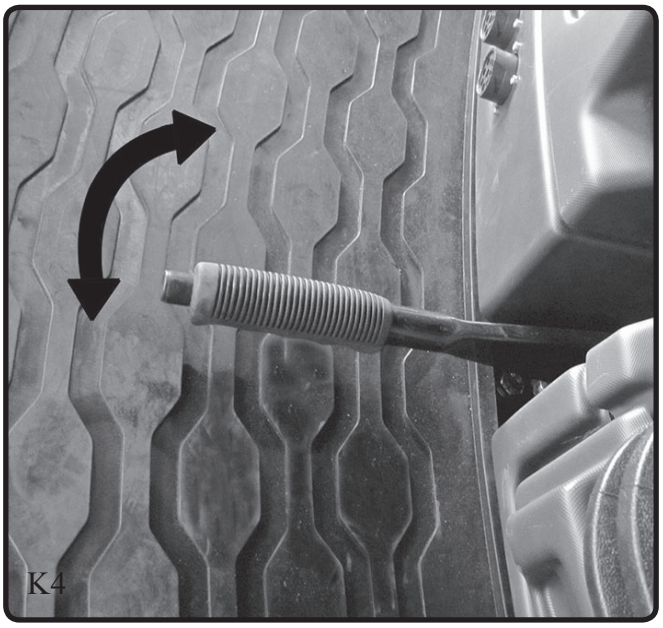
The brakes operate on the front wheels through the drive shafts. They may be used separately as steering brakes by releasing locking pin A. When driving on the road, the brake pedals must be latched together.



K3a

HAND BRAKE (fig. K4)

The hand brake operates on the intermediate shaft of the gears. Use the brake only when parking, and fully release it before starting. A symbol light warns of an unreleased parking brake. That light is on only when ignition is switched on.

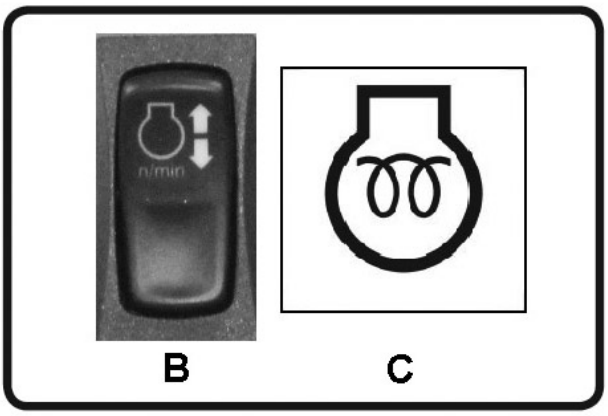

K4

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Starting the ENGINE with Ignition Key

The combine is equipped with a safety ignition system, which prevents the combine from moving when the engine is being started. It allows the start-up to take place only with the traction speed control lever in neutral.

It is advisable, however, always to start the engine with the gear in neutral.



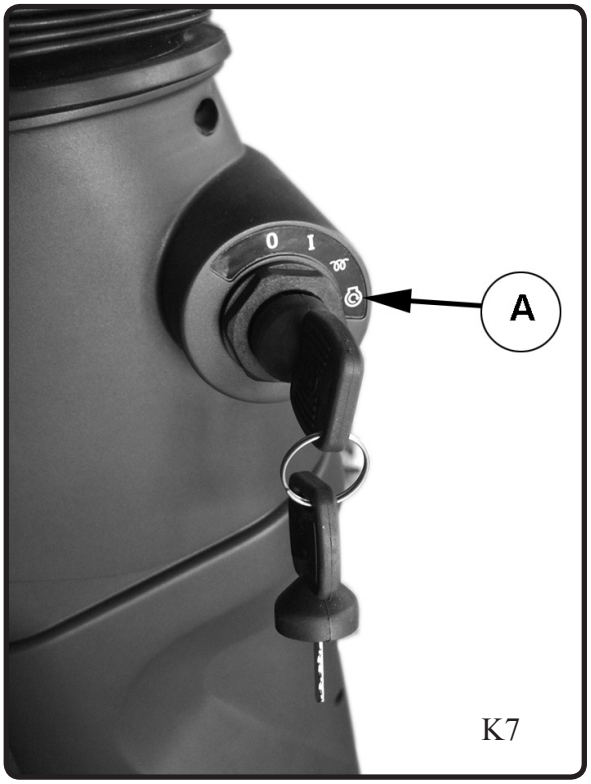
K6

Electrically controlled engines, Fig. K6
Electrically controlled engines have no throttle lever but a throttle control switch with three positions. On idle the switch B rear is depressed. Fig. K6.
The power is switched on by turning the ignition key to the right. The alternator and oil pressure warning lights will come on.
To start turn the key to position A. Do not start until the lights have come on. It takes some time to activate the control unit.

Cold weather starting at below +5°C

The engines are equipped with a pre-heating resistance controlled by the engine control unit. In cold weather it functions automatically. When pre-heating switches itself on, control light C, fig. **K6**, comes on. Start the engine as soon as the control light goes off. After the engine has started, the heater switches itself on again for some time.

Fault Codes on Electrically Controlled Engines
Fault codes are shown by the Comvision- display. For more details, see engine manual.



K7

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The ignition lock allows only one start-up function. Turn the key to the “STOP” position before restarting. Combines with hydrostatic transmission must not be started in temperatures below –30°C as the oil is too stiff and the machinery may get damaged. (If there is stiffer, VG46 type of oil in traction hydraulics, the lowest starting temperature is –15°C.)

Turning the ENGINE off

Before turning the engine off, move the throttle to the idling position and disengage the threshing mechanism. To stop electrically controlled engines, turn the ignition key to the STOP position.

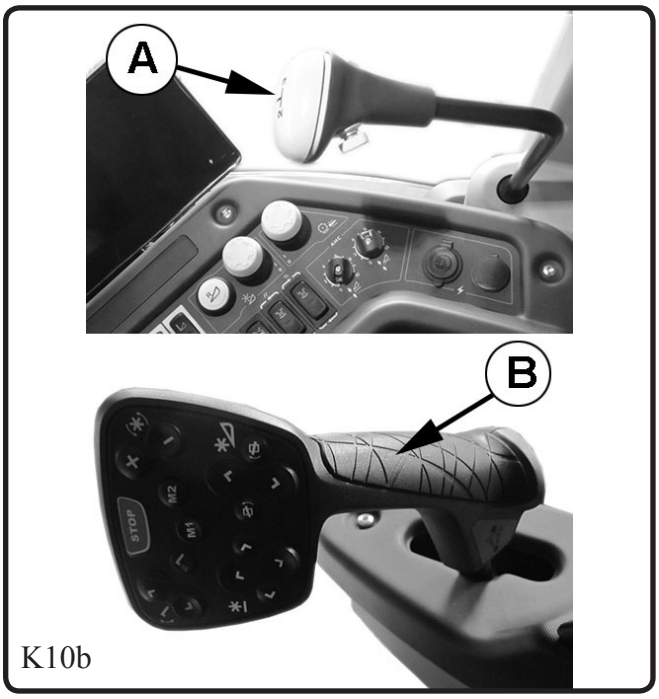
The engine must not be turned off immediately after threshing, but let it cool down on idle for some minutes to equalize the temperatures.

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TRANSMISSION, hydrostatic

Hydrostatic Transmission has Three Speed Ranges (Fig. K10b)

Engine power is transmitted to the hydraulic pump by means of a multi-groove belt. Transmission from the pump to the hydraulic motor of the gearbox takes place by means of liquid. Pump output is adjusted steplessly moving the drive lever between position 0 and the +/- maximum.
There are three gear speed ranges, which are selected using lever A, fig. K10b. Ranges 1 and 2 are for threshing and range 3 for driving on the road. Never use range 3 on the field. Gears should be changed on level ground with drive lever B, fig. K10b, in its mid position.
The speed and direction of the combine are controlled using drive lever B, fig. K10b. With the lever in its mid position, the combine is stationary if the gear is on and the engine running.
The combine will move forward when the drive lever is pushed forward from its mid position. The further the lever is pushed, the higher the speed.
To reverse the combine, pull the lever backward from the mid position.



K10b

A combine equipped with hydrostatic transmission must never be parked using only the gear, but the parking brake must always be engaged. A hydraulic engine cannot keep the combine stationary for a long period.

Optional FOUR-WHEEL DRIVE

Combines with hydrostatic transmission can be equipped with four-wheel drive. Back-wheel drive is switched on electrically using switch C on the instrument panel, fig. K10C. The coupling can be done with the combine moving.
Four-wheel drive may be used in speed ranges 1 and 2 only.


K10c

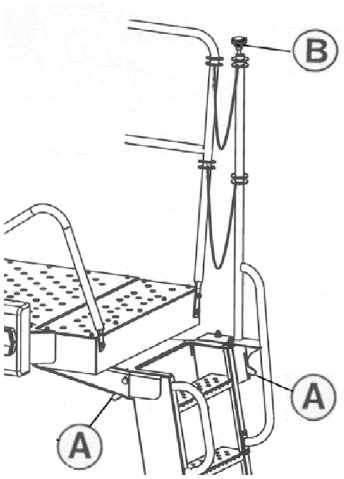
When towing the combine, the four-wheel drive switch must be off and the engine running to allow the wheel motors to be disengaged. Short-distance towing at a low speed is permitted if the engine and the driving pump cannot be kept running.

Switch four-wheel drive off when driving down a steep hill. The combine may rush forward unless the rear wheels grip the ground.

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Stairs (Fig. K12c)

The stairs to the cab can be turned from their normal position forward to the front of the wheel to reduce the width of the combine. When standing on the ground, release the locking by lifting lever A. When standing on the cab platform, release the locking by lifting knob B.
The stairs shall always be turned when the combine is driven on the road without the cutting table.



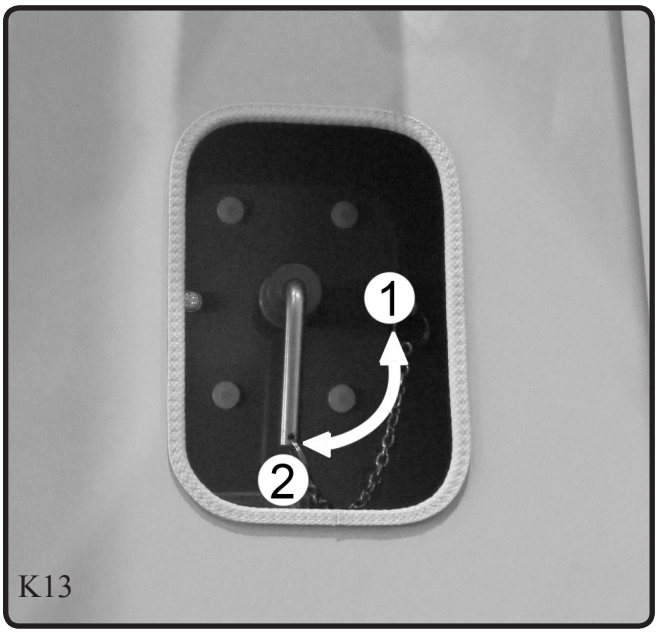
K12c

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MASTER SWITCH (Fig. K13) Controls Electricity for the Whole Combine

There is a master switch to control the electrical equipment of the combine.
It is located on the side of electric box, left side of the combine. Cabin is equipped with a backlight feature, which keeps the light on when the ignition switch is set to zero positon, but the main power is switched on.

The current is connected in position 2, and switched off in position 1, in which position the key may be removed.



K13

Electrically Controlled Master Switch

Depending on the specification, there is an option of an electrically controlled master switch.
The operating switch is placed in cabin, see controls p.24.
The switch turns off current in all other electrical devices, but not the radio's memory and not current of engines equipped with the SCR system.

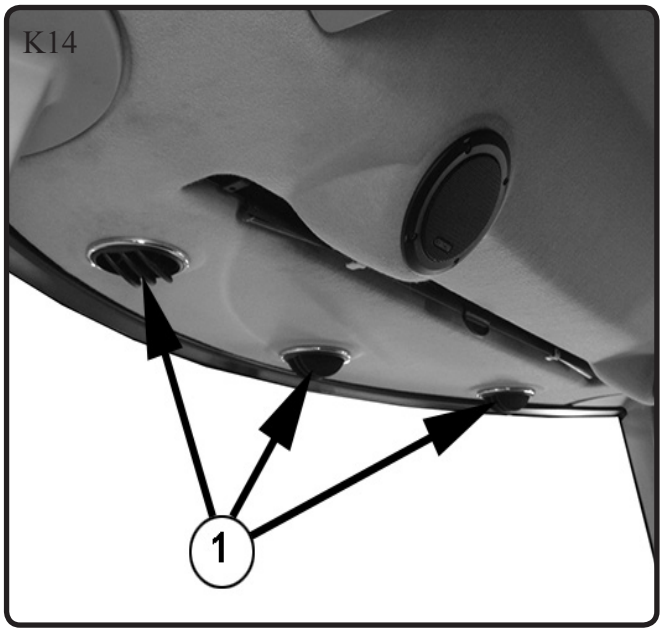
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CAB (fig. K14 and K15) Fresh-air Fan Provides Good Ventilation

The fan is started using switch A. To change the airflow direction, turn nozzles 1 at the front top of the cab. Air coming into the fan is taken through detachable coarse mesh and fine filters.

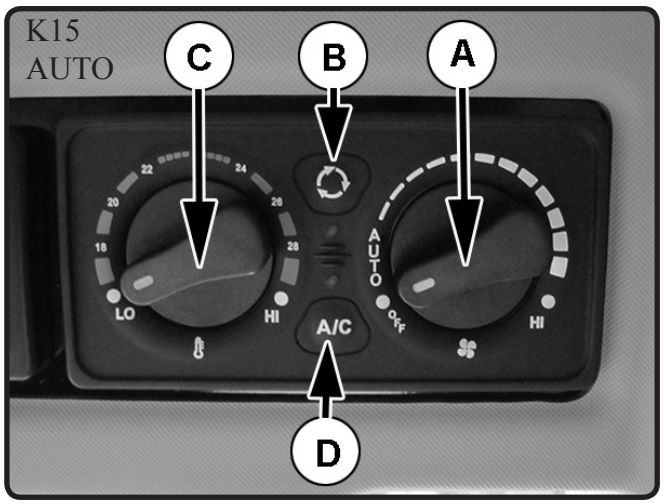
To keep up the fan capacity and to secure the purity of the air, the filters have to be cleaned daily and replaced often enough to prevent harmful impurities and fungi from clogging the filters. In dusty conditions it is necessary to clean the coarse mesh filter several times a day.

By pushing button B, cab indoor air can be circulated through the fan, which reduces the need for outdoor air and thus reduces the risk of blocked filters.
When circulating indoor air, it is circulated through inner filter in the left side of the cabin.



HEATER Provides Additional Heat from the Engine

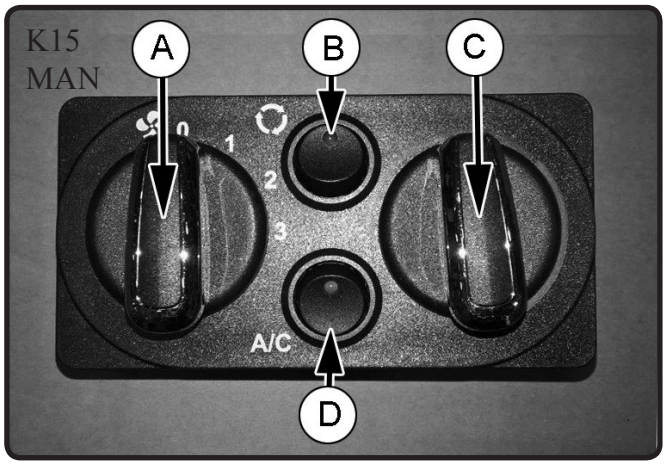
The air in the cab is heated by a heating element in which the engine coolant circulates. Turn switch C to the right to increase the amount of coolant circulating in the element. This will increase the temperature in the cab.



AIR CONDITIONER Cools the Air in the Cab

The cab can be equipped with an air conditioner system.
Push switch D to switch on air conditioning. Push switch B to re-circulate the cooled cab air, which will further cool down the cab.
Note! A difference of over 8°C between indoor and outdoor temperatures is harmful to your health.

Keep the cab door closed when the air-conditioning is on.



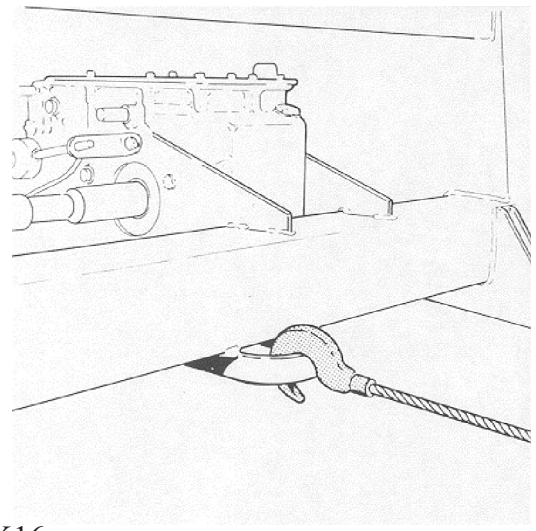
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TOWING (Figs. K16 and K17) Allowed from Towing Points Only

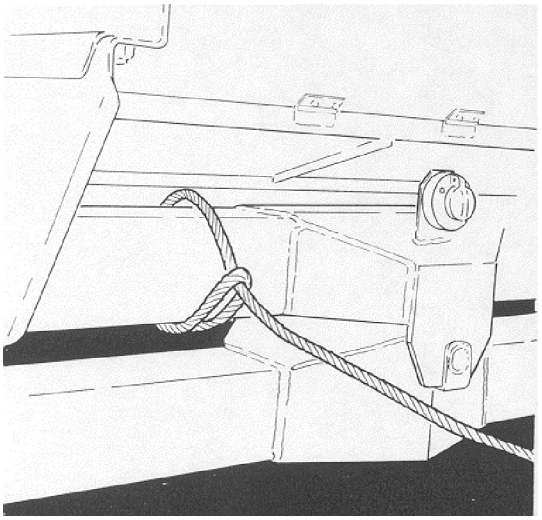
The combine may be towed from designated points only. When towing forward, the towline is hooked to the link on the front axle, fig. K16.
When towing backward, wind the towline round the rear carrier, fig. K17. The towline must not be wound round the rear axle.
With the combine on tow, the operator shall be in the cab and the engine running to enable steering. The brakes must be latched together and the gear in neutral. Four-wheel drive must be off.

Unless the engine can be started, the combine must be towed with great care; without power steering engaged, the combine is slow and heavy to handle.

When towing on the road, statutory traffic regulations shall be followed.



K16

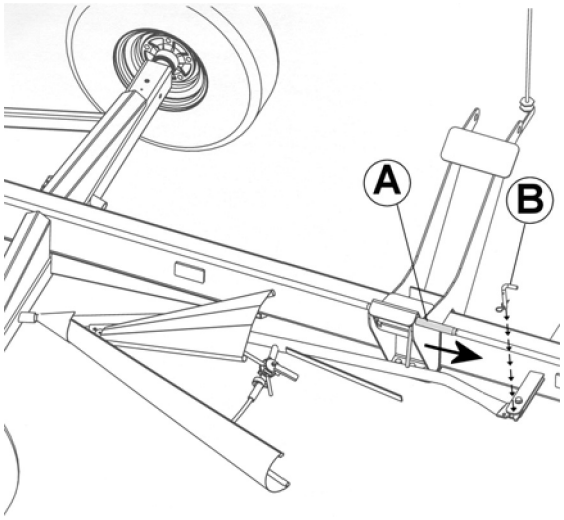


K17

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TABLE TRAILER (Figs. K20, K21 and K22) for Road Transport of Wide Cutting Tables

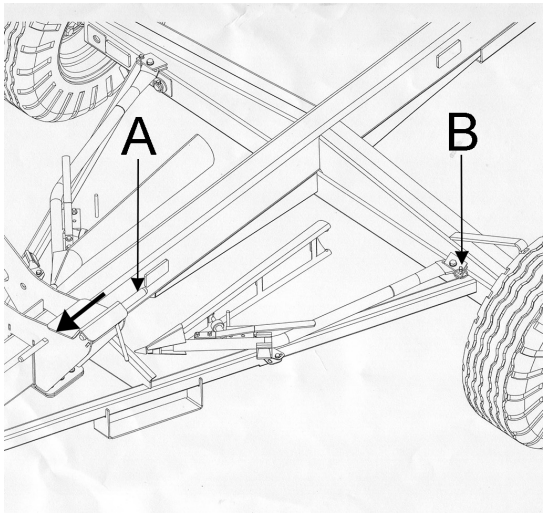
The need for a table trailer depends on farm conditions. The trailer may be necessary for a 3.9m cutting table if transportation is necessary on busy, narrow roads. Tables 4.2 m and 4.5 m wide should always be transported on a trailer in order not to inconvenience traffic and risk the safety of road users.
The trailer has no traction unit, but shall be towed attached to the combine. No other cargo except a cutting table must be transported on the trailer, nor must any other attachment except a trailer be hooked to the combine towing hook. In case the trailer is attached to another traction unit, a tractor, for example, the attachment shall be made in accordance with instructions, and statutory traffic regulations shall be followed.



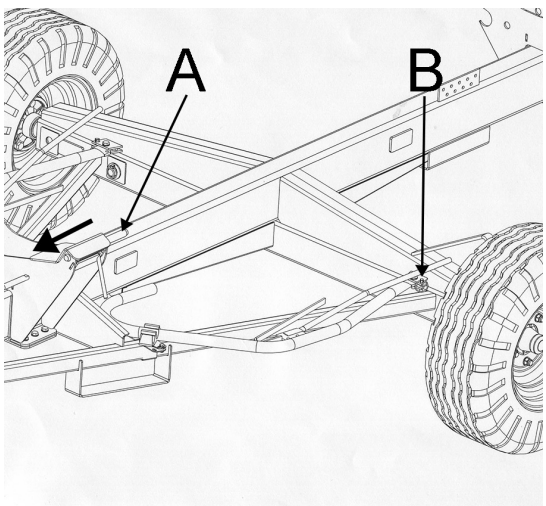
K20a

Placing the Table on the Trailer

Remove the table from the combine as instructed in paragraph ”Removing the Table”.
Place the trailer on level ground and align its frame with the ground by adjusting the cam wheel.
Pull locking pins A into their open position, fig. K20.
Remove the straw dividers from the table and place them on the brackets on the trailer. Depending on the type of dividers, the brackets are either at the front or the back of the axle. Lock the dividers with ring cotter and/or locking pivot B, fig. K20. When needed, adjust the guides of the adjustable divider in a narrower position so that the table bottom does not touch the divider. Straw dividers with foldable frames do not need to be removed. They can be turned to their transport position.



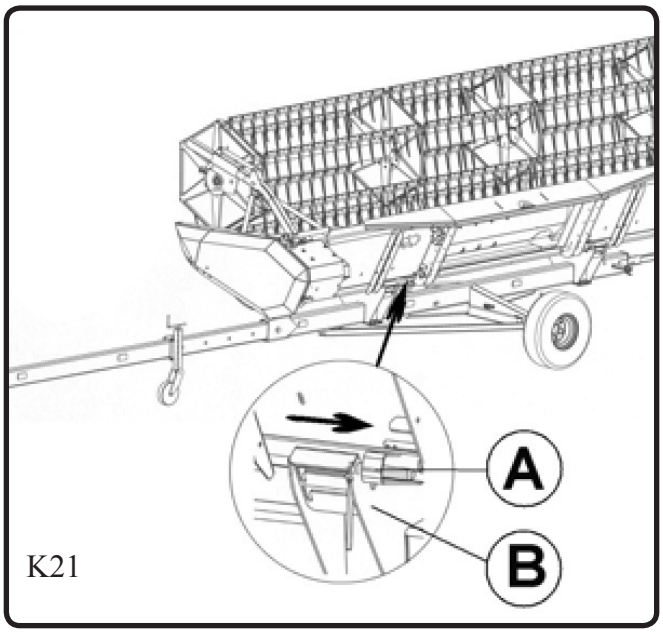
K20b



K20c

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Drive the table above the trailer from the left-hand side so that the knife is level with the trailer marking sticks and brackets A, fig K21, are between carriers B. Lower the table slowly.
Make sure the table is positioned correctly:
Reverse slowly so that the rear end of the table is against both the carrier limiters.
Lower the crop elevator further so that it becomes disengaged from the cutting table and back up the combine with caution. Raise the crop elevator as soon as possible.
Push the rear locking pins into their locking position. Fig. K21.
Place the winch on the axle (fig K21b), hook the table with the winch and tighten.
Hook the trailer to the combine and plug in the electric cable.



K21

Attaching of the Cutting Table to the Combine

is done in reverse order. In case the trailer must be left on the road temporarily, place appropriate warning signs.


K21b

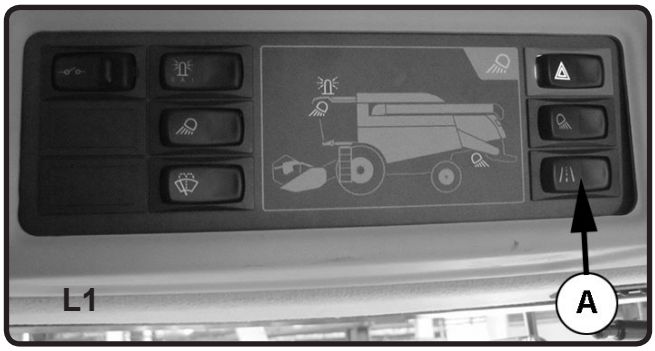
Trailer on Tow

Extreme caution shall be exercised when towing the trailer.
The total length of the vehicle is approx. 15 m, so turning the vehicle requires space.
Do not turn the rear wheels to their extreme position as the trailer arm may touch the rear wheel and the vehicle will get stuck.
However, if this is the case, the situation can be helped by backing up the combine and using the steering brake at the same time.

Reverse very carefully. Watch the trailer movements in the mirror.

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SAFETY SWITCH

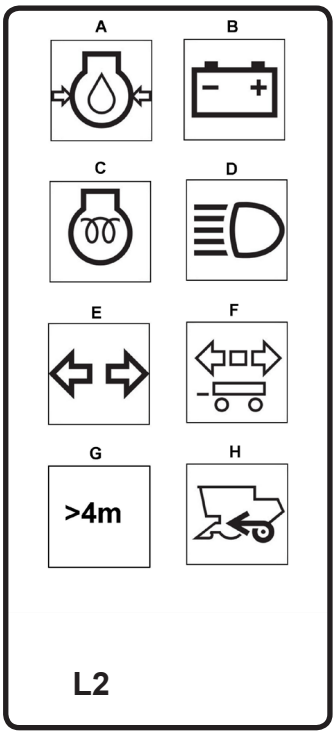


L1

There is safety switch (A, Fig L1) on the instrument panel. It must be switched off before any mechanisms can be switched on.
When the safety switch is pressed, all engaged mechanisms (threshing, chopper, cutting table and unloading) stop.
The safety switch also stops the reversing of the feeding equipment.
The unloading pipe cannot be turned with the safety switch pressed. **The switch must always be depressed when driving on the road!**
Engaging 3rd gear will switch on driving mode in Comvision display and disengage same mechanisms as safety switch.

WARNING LIGHTS and CONTROL LIGHTS(fig. L2) warn

There are control lights on the instrument panel to indicate the mode of combine functions.



L2

A Engine oil pressure too low
B Charging not working
C Pre-heating
D Head lights
E Flasher
F Trailer flasher
G Max. height exceeds 4 m
H 4WD switched on

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STRAW DIVIDERS (Fig. L3) Can be Adjusted

The straw dividers are fitted on both sides of the cutting table. Their height is adjusted using slide pieces D with holes.

Depending on the specification the dividers can be of the following types:

Long torpedo dividers with fixed frames
Short torpedo dividers with fixed frames
Medium-long torpedo dividers with foldable frames
Arc-type dividers

Adjust guide plates A and B to suit the threshing conditions. The outside guide tube is attached to the divider at the front and to the tableside at the rear. The adjuster for the tube is at the rear. Always attach the tube to the side of the uncut crop.

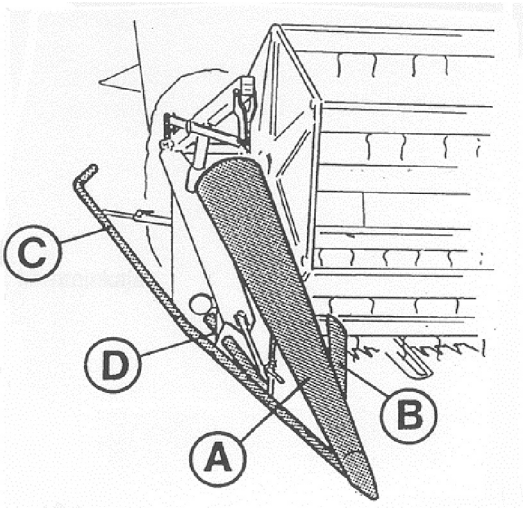
Long dividers are used to thresh long-strawed crops such as rye and oats.

Short dividers are used to thresh short-strawed crops such as barley and wheat.

Dividers with foldable frames are suited for different crops. They do not need to be removed but can be turned to their transport position.

Arc-type dividers are suited for short-strawed crops and for crops that do not need dividing but are pressed down in a narrow section, such as turnip rape and flax.

The straw divider can be replaced with an electric vertical knife. It is particularly efficient when threshing oil plants.



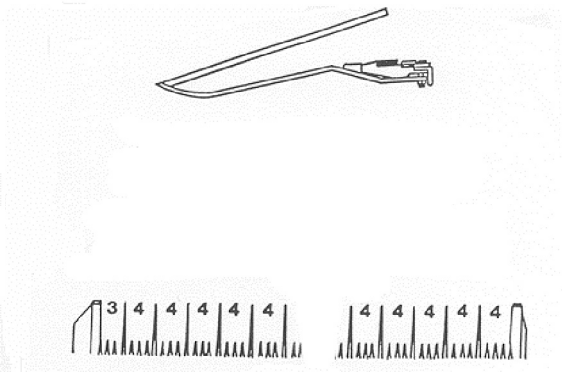
L3

CROP LIFTERS (Fig. L4) Spaced Correctly

The appropriate number of crop lifters for a 3.9 m table 12, a 4.2 m table 13, a 4.5 m table 14, a 4.8 m table 15 and 5.1m table 16 crop lifters.

Attach the crop lifters with the knife finger fixing screw as shown in the figure. The numbers indicate the number of finger spaces.

The crop lifters operate well if clearance to the ground is 8…10 cm, which clearance also prevents stone pick. In some cases, when threshing peas for example, it may be advisable to install more lifters, maybe even in every other knife finger.



L4

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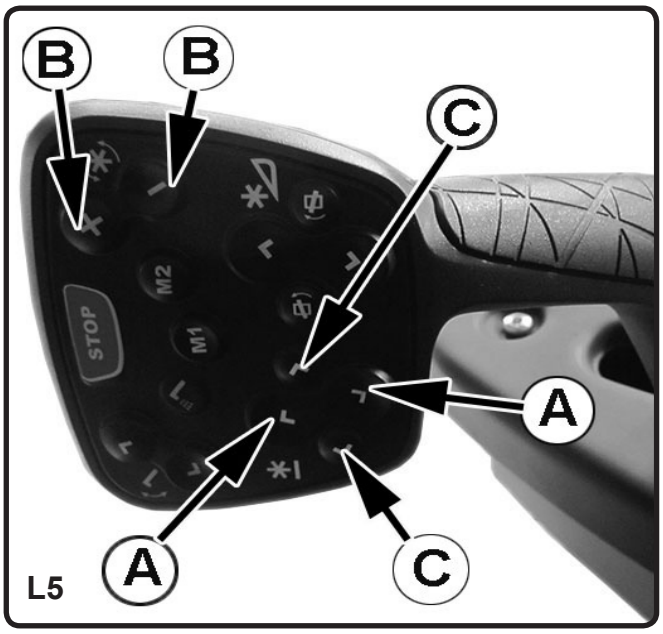
REEL ADJUSTMENTS

Four Adjustable Settings (figs. L5 and L6)

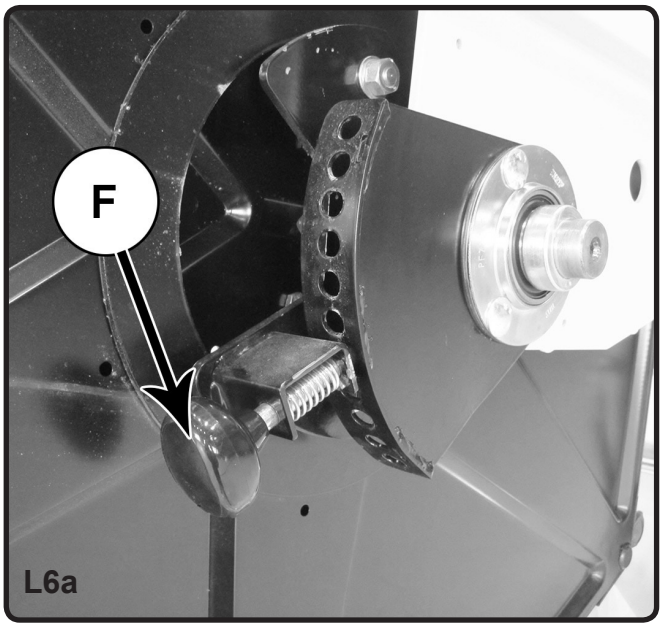
1. Reel height is controlled by switches A, fig. L5.
2. Reel speed is controlled by switches B, fig. L5. Speed can only be adjusted with the reel rotating.
3. The fore and aft adjustment is made by switches C,fig. L5.
4. The blade angles are adjusted by pulling at button F and turning the adjustment lever in the required direction, fig. L6a. When harvesting laid-down crops, the tines shall be adjusted to gather the crops efficiently.

Do not adjust the reel in its rear-most position if the tine angle is adjusted rearwards. The tines may reach the table auger and get damaged.

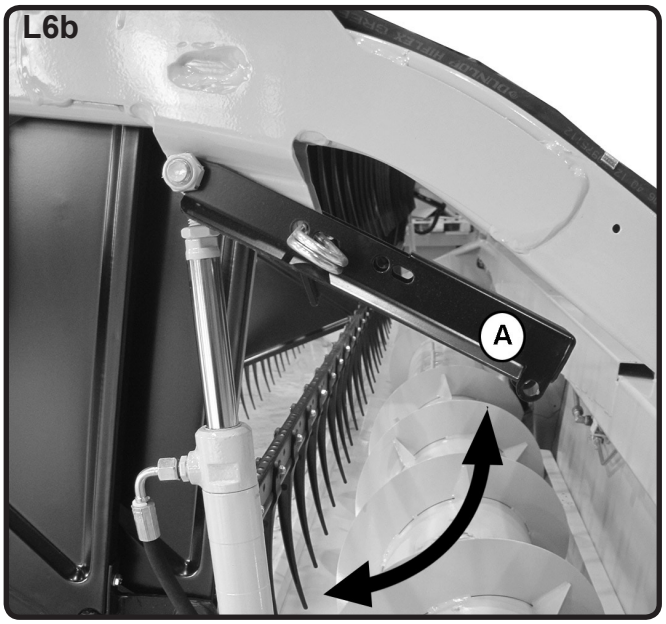
Place locking A on the reel, fig. L6b, in the support position if working beneath a raised reel.



L5



L6a



L6b

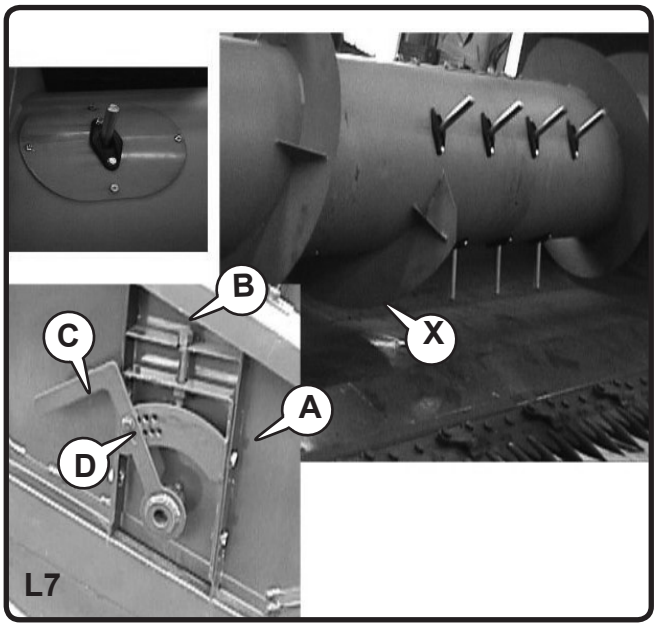
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CUTTING KNIFE Must Be Kept in Good Condition!

No actual knife adjustments can be made during threshing. The knife must be in perfect condition to produce good threshing results. For more precise service and adjustment instructions, see under Maintenance. A spare knife is stored in the case at the top of the table.

TABLE AUGER (fig. L7) Height and Finger Positions Are Adjustable

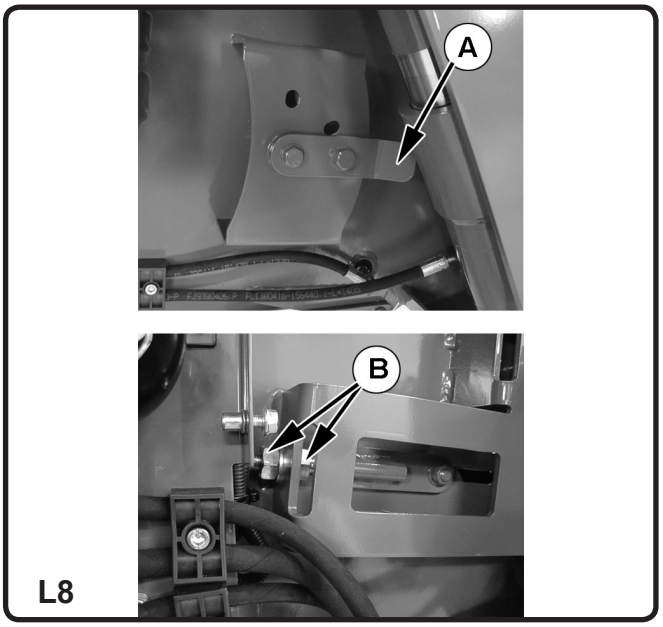
Adjust the feed auger vertically to suit the amount of straw in the crop being threshed.
Average clearance X is 10 – 15 mm. When threshing e.g. heavy rye or turnip rape, adjust clearance X between the auger and cutting table wider, approx. 30…40 mm. In special conditions even a 5 mm clearance can be used.
To adjust, loosen screws A at both ends of the cutting table. Now the table auger can be lifted or lowered as required using adjustment screws B. Clearance between the feed auger and the bottom must be equal at both ends of the table. After moving the feed auger, check the drive belt tension. Loosen screw D to adjust the feed finger position with lever C at the right hand end of the cutting table. A minimum clearance of 10 mm is required between the feed fingers and the table bottom. The fingers must recede into the auger sufficiently early to allow the crop to be transported forward. Otherwise tall and damp crops in particular may wrap around the auger.



Depending on the model, the table auger may be equipped with a safety switch. Adjustment instructions under “Service and Maintenance”.

Adjust Feeder House Conveyor Chain Tension fig. L8

IMPORTANT: Make sure that height and tension are always correctly adjusted.
The feeder house has a fixed top roller and a floating bottom roller to enable the feeder house to oscillate according to the flow of the crop on it. Adjust the clearance between the bottom roller and the bottom of the feeder house by changing the position of lever (A). Adjust the feeder house conveyor chain tension with nuts (B). To check the tension, open the inspection door at the top of the feeder house. The tension is correct when the deflection midway between the top and bottom roller is approximately 80 mm. If the chain is assembled too tight, it wears out quickly and in some cases it can even break.



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CUTTING AND FEEDING MECHANISM REVERSE DRIVE

Electrically Controlled Reverse Drive (Fig. L10a) Eliminates Blockage on the Table

Blockage in crop feed may stop the table auger and crop elevator. This is cleared by running the feed mechanism backwards. To do this, disengage the drive to the table and press reverse switch Fig L10a. The table auger and elevator will rotate in reverse direction and clear the blockage.



L10a



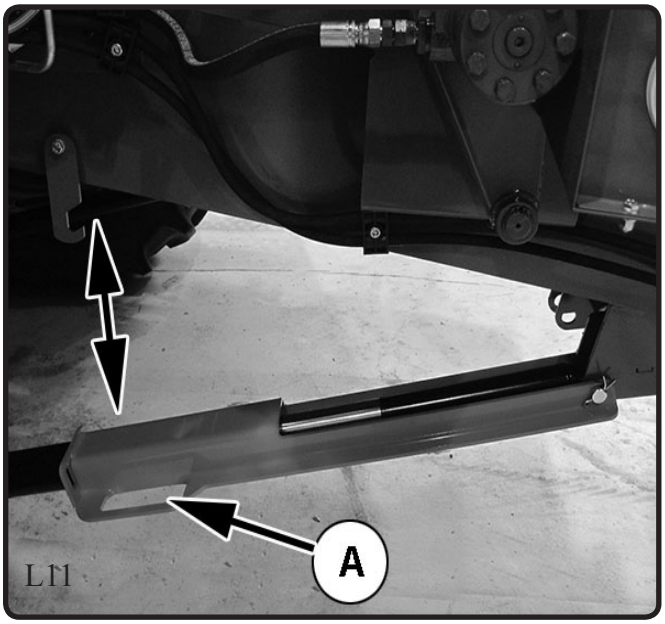
L10b

NOTE! Reverse drive will only operate with the engine running and switch depressed.

Engaging and Disengaging of the CUTTING TABLE

The cutting table is engaged and disengaged using switch (Fig. L10b). Pull up yellow switch to engage the table.

Caution! The cutting and feeding mechanism disengaged using the clutch pedal can start running when, for instance, feeding disorders are being eliminated from the table. Therefore, always stop the engine before any work is carried out on the table.



L11

Supporting of the CUTTING TABLE (Fig. L11)

Before doing repairs and maintenance beneath the table, raise it to its full height and lock the support over the ram using lever A, on the right-hand side of the table auger.

Do not use the cutting table support while driving on the road!

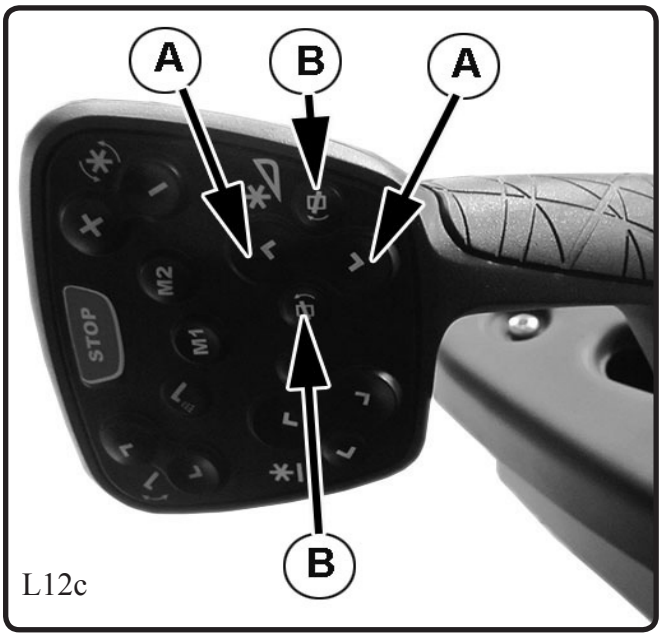
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Height of the CUTTING TABLE (Fig. L12c)

Electrically Controlled Adjustments

Switches A, fig. L12c, adjust the height.
Table lowering speed can be adjusted steplessly by turning the knob in the control valve above the right-side front fender. Speed increases clockwise and decreases counter-clockwise.
When pressing “SHIFT”- button in front of the drive lever cutting table up and down movements are slow.

Cutting height is shown on the Comvision display.



L12c

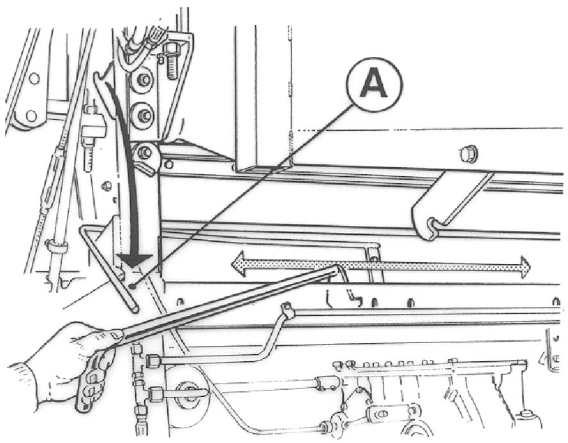
Side Tilt of the CUTTING TABLE

The transverse position of the cutting table to the ground can be adjusted hydraulically using switches B on the traction speed control lever, fig. L12C. Side tilt may be needed on a sloping field when the combine tends to tilt downhill.

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STONE TRAP (Fig. L15) Must Be Emptied Regularly

The stone trap prevents stones from getting into the concave. It is located between the crop elevator and concave. The hinged bottom can be opened and locked using lever A.
The stone trap must be emptied daily; the contents of it must be of soft nature. When harvesting short stubble on stony fields, empty the stone trap more often.



L15

Engage THRESHING MECHANISM at Engine Idling Speed Only

Engage and disengage the threshing mechanism using switch (fig. L16), by pulling up yellow switch. The function is electro-hydraulic.

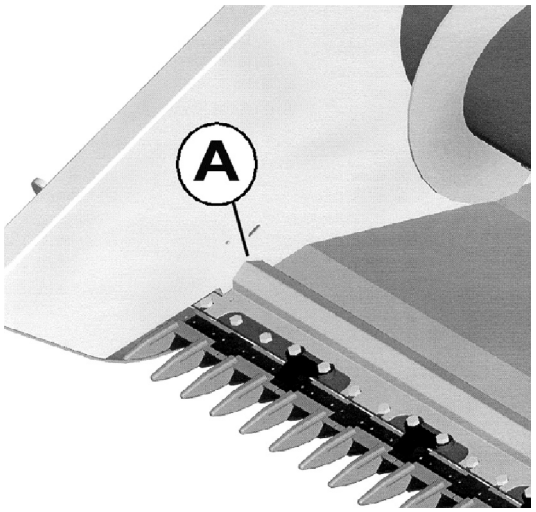
**NOTE! ENGAGE AND DISENGAGE THE THRESHING MECHANISM AT ENGINE IDLING SPEED ONLY.
DO NOT INCREASE THE ENGINE SPEED BEFORE THE WHOLE THRESHING MECHANISM HAS BEEN SWITCHED ON!**



L16

STONE BLOCK Behind the Knife

Optional stone block A can be fitted on the cutting table behind the knife. Fig. L17. It has proved extremely useful on fields with a lot of small stones. They are stopped by the stone block and can be removed from there by hand. Always stop the combine and the engine and fit the supports for the table and the pick-up reel before carrying out any work on the cutting table.



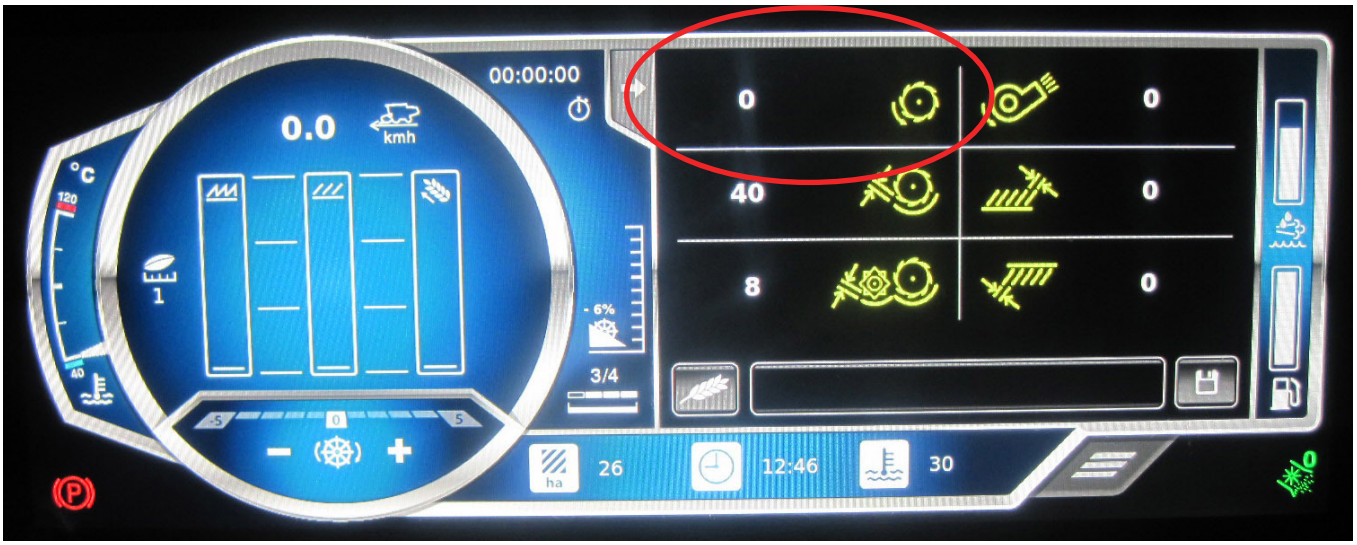
L17

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Control of THRESHING CYLINDER Speed (fig. L18b)

The speed of the threshing cylinder is controlled using Comvision- display. The rotation speed may be changed with the threshing mechanism running only. The threshing cylinder speed is displayed in Comvision-display.

Settings for various crops are given in the adjustment table on the cab window.



L18b

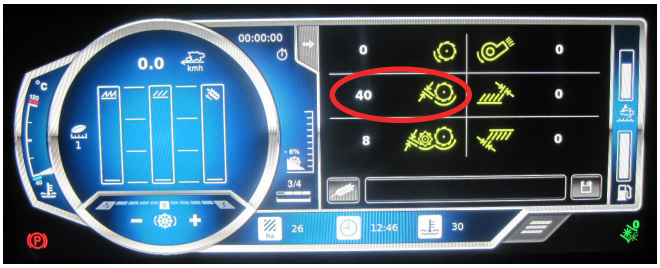
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Standard Threshing Cylinder

Adjusting of the CONCAVE Clearance (figs. L20a and L22a)

Clearance between the concave and the threshing cylinder is adjusted using Comvision- display. Clearance is also displayed in Comvision-display.

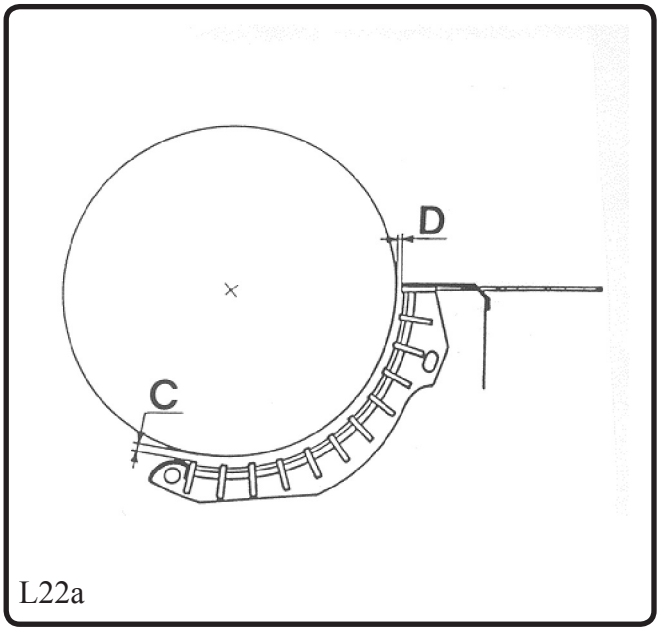
The adjusting mechanism has been designed to maintain the ratio between the front and rear clearances. The normal ratio is 2:1; front clearance C is double rear clearance D, fig. L22a. The concave clearance should be checked at the beginning of each harvest season. See the settings for various crops in the adjustment table on the cab window.



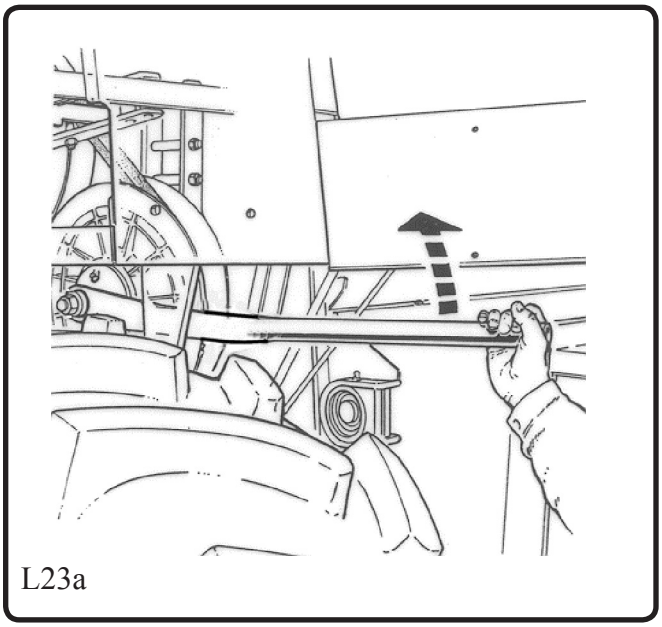
L20a

REVERSING THE CYLINDER (Fig. L23a)

In order to remove a blockage from the threshing cylinder, a tool is supplied by means of which the reel may be turned manually (fig. L23a).
The engine must be stopped and the threshing mechanism coupling off. The concave should be adjusted in its bottom position. If necessary, the blockage may also be cleared through the service openings.



L22a



L23a

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The TS Threshing Cylinder

Adjusting of PRE-CONCAVE (figs. L20b and L22b)

Clearance E between the pre-concave and pre-cylinder is adjusted using Comvision- display.

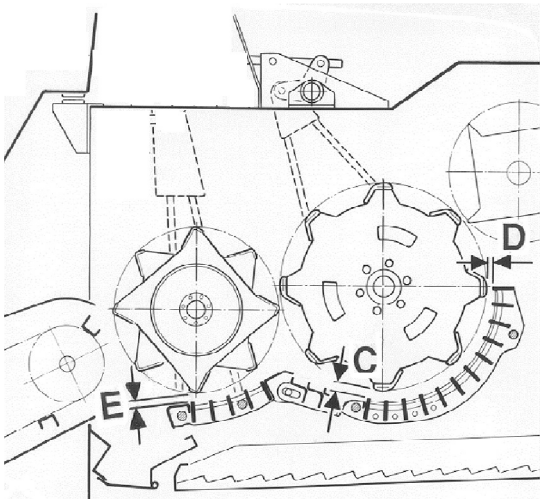
Clearance is also displayed in Comvision-display.



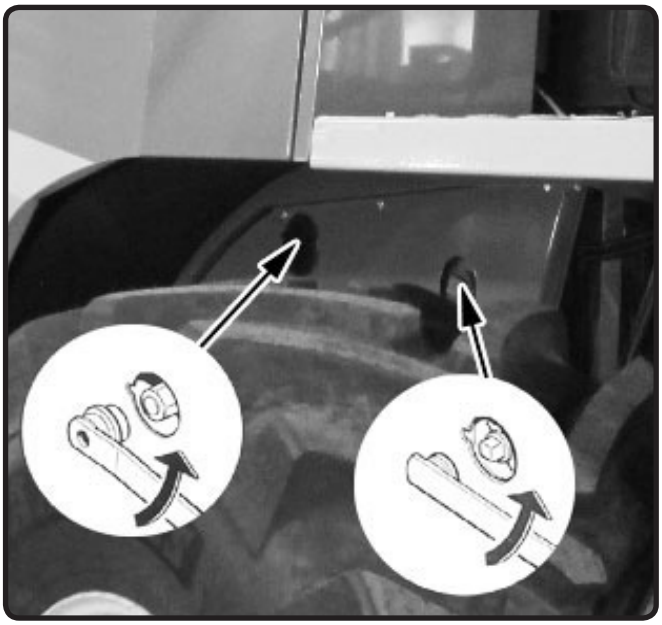
L20b

REVERSING THE CYLINDER (Fig. L23b)

In order to remove a blockage from the threshing cylinder, a tool is supplied by means of which the reel may be turned manually (fig. L23b). One end of the tool is used to turn the pre-cylinder, the other to turn the threshing cylinder. Open the plastic guards on the fender to gain access to the shaft ends on the cylinders. The guard can be opened with the guard opening tool.
The engine must be stopped and the threshing mechanism coupling off. The concave should be adjusted in its bottom position. If necessary, the blockage may also be cleared through the service openings.



L22b

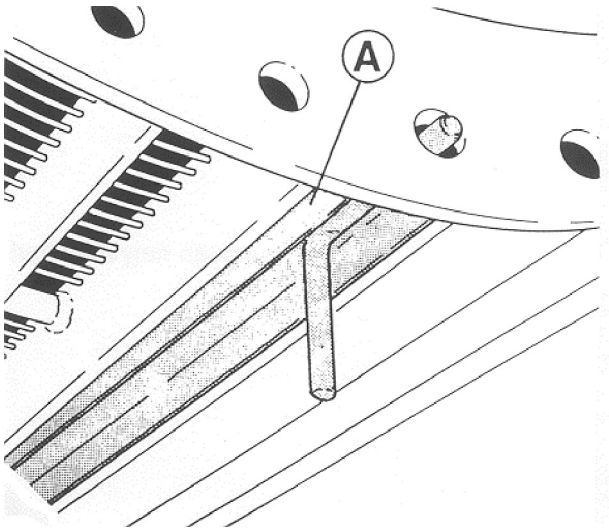


L23b

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CONCAVE FILLER PLATES (Fig. L24)
Remove the Barbs

The threshing effect of the concave can be improved by fitting filler plates A under the first concave beaters. Pass the filler plates through the holes at both ends of the concave where the springs keep them fixed. A maximum of four filler plates can be fitted.
The best way to fit them is through the bottom when the grain pan cassettes have been first removed.
The same filler plates fit the main concave and the preconcave on the TS model.



L24

STRAW WALKER Bottoms Can Be Adjusted
Cassette Bottom Straw Walkers (Fig. L25a)

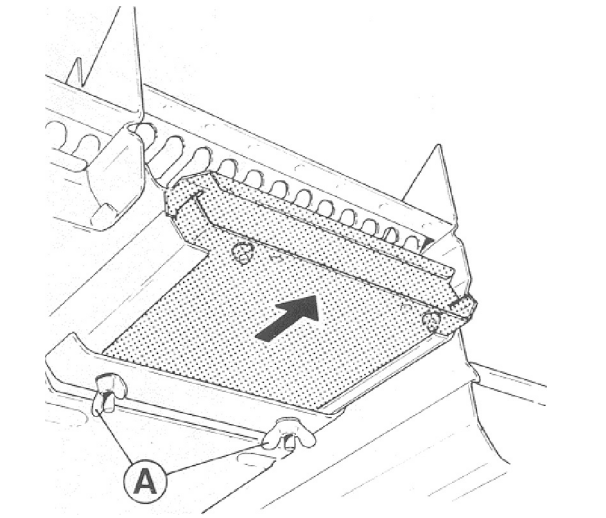
The bottom cassettes of the straw walkers can be removed for cleaning by releasing clamps A and pulling the cassettes out through the rear door to the chaff hood.

Closed Bottom Straw Walkers (Fig. L25b)

At the back of the straw walkers there are separately adjustable extensions A. They can be used to adjust the separating efficiency depending on the conditions. The extensions can be removed for cleaning.

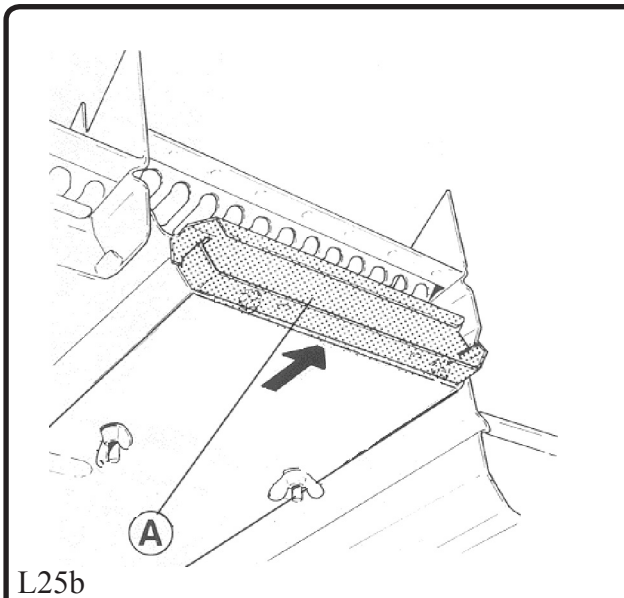
Chaff Alarm

The switch on top of the chaff hood lights an alarm lamp if an excessive accumulation of straw causes a blockage.
Immediately disengage the threshing mechanism, clear the blockage and find the cause for the trouble before going on working.



L25a

NOTE! Always check the operation of the alarm before starting harvest.



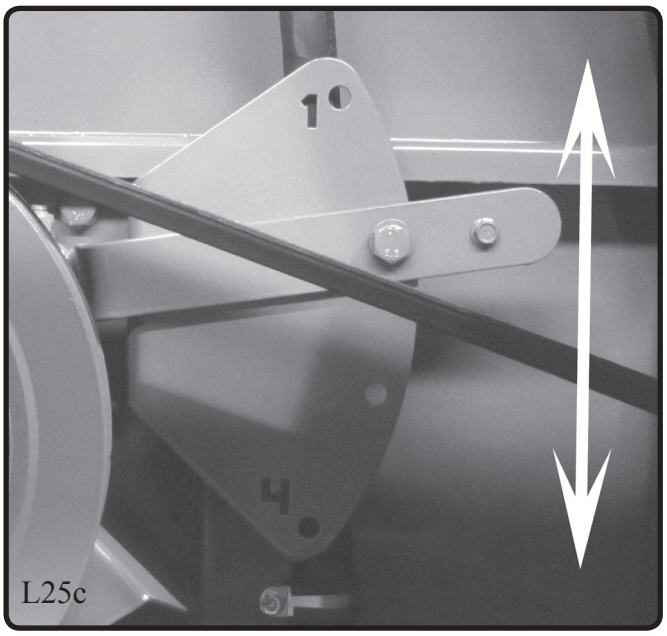
L25b

https://truckmanualshub.com/

CSP Straw Ruffler (fig. L25c)

Depending on the specification, there may be a chain-driven ruffling drum above the straw walkers to fluff up the mass of straw to improve grain separation. The ruffler finger angle can be adjusted by changing the position of the adjustment lever on the left side of the combine. The normal position is in the upper part of the adjustment range (1).
When the lever is moved downwards, the fingers will retract earlier in the direction of rotation. This should be done when threshing turnip rape of flax.
A speed monitor monitors the ruffler rotation. Activated alarm indicates a speed drop in the CSP drum.

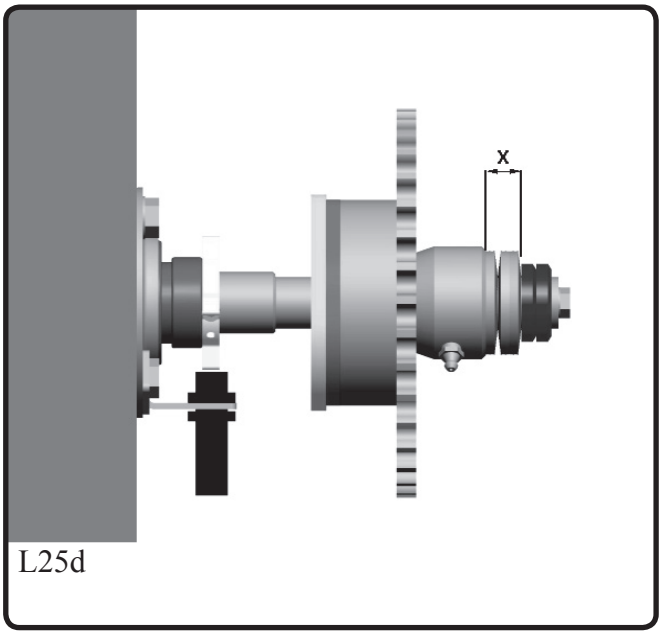
Check the drive chain tension regularly.



L25c

Adjustment of the sliding coupling of CSP (fig.L25d)

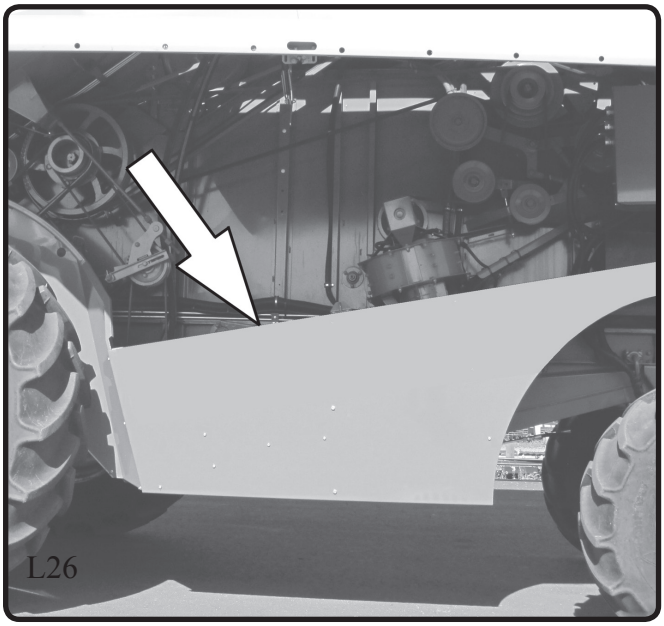
Measure X of the spring pack is 16mm.



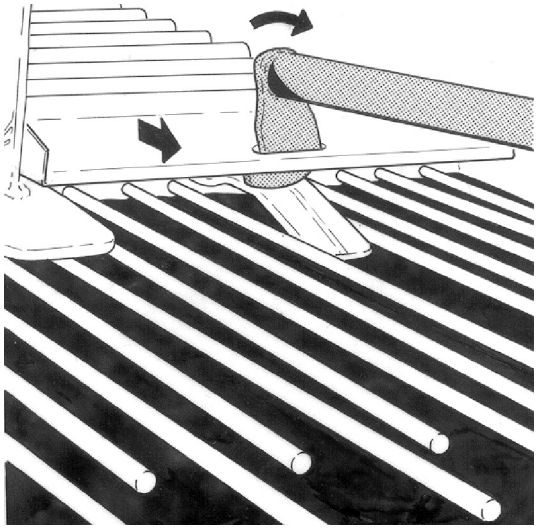
L25d

Clean the GRAIN PAN Segments (Figs. L26 and L27)

Each segment in the grain pan can be separately removed for cleaning. A removal tool is supplied in the left lower guard, fig. L26. Pass the flat end of the tool into the hole at the rear of the segment and, by turning the tool, release the segment from the spring and pull back out of the machine, fig. L27.
When harvesting in damp conditions, check daily that the segment surfaces are clean, and remove any sticking dirt. A dirty surface will reduce the transporting ability and cause uneven burden on sieves and increase threshing losses. Moreover, the dirt will cause extra weight, burden the grain pan and may even lead to damage.


L26

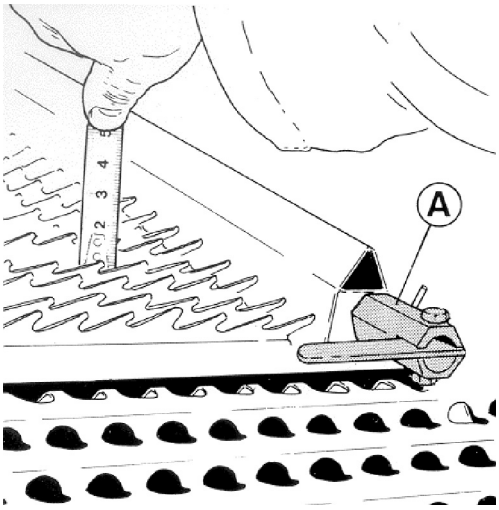
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L27

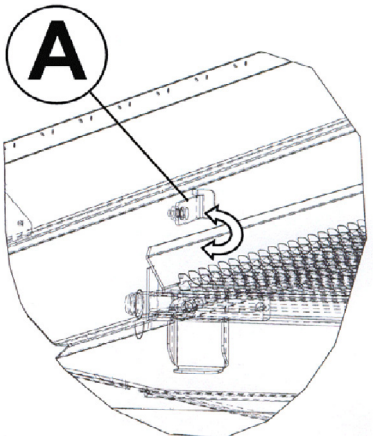
SHAKER SHOE Adjustments (Fig. L28)

The shaker shoe houses two sieves; the top one is an adjustable chaffer sieve and the bottom one either an exchangeable grain sieve or an adjustable lamella sieve. Settings for various crops are given in the “Approximate Settings“ table.
The space between the lamellas is adjusted by screw A at the rear of the sieve.
Fig. L28 illustrates how the space between the lamellas is measured.



L28

The adjustment of the top limiter in the bottom sieve depends on the type of sieve used: with a fixed sieve turn limiter A to its vertical position; with an adjustable sieve to its horizontal position.

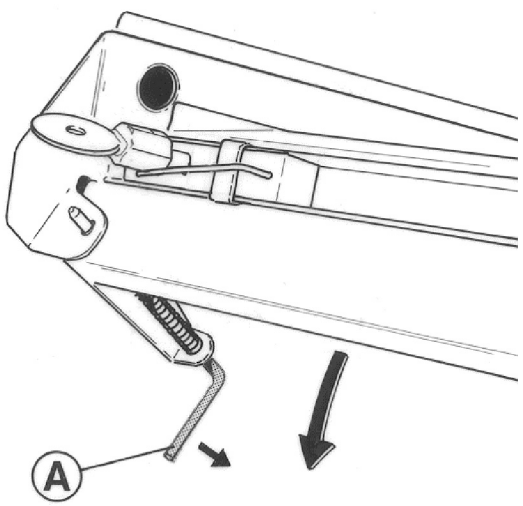


L28a

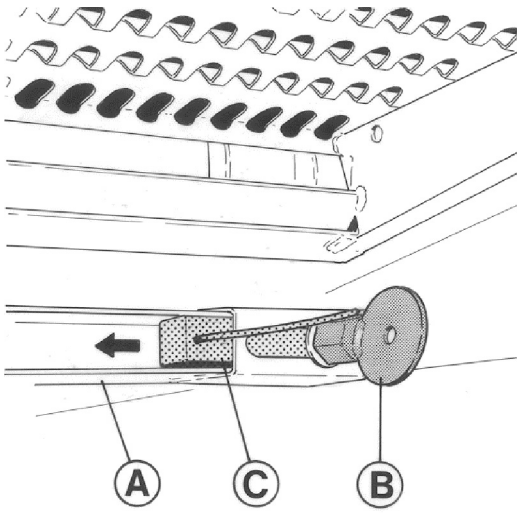
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Changing and Locking of SIEVES (Figs. L29 and L30)

To change the grain sieve, release pawls A on the extension bottom (fig. L29) and fully lower the bottom. Unscrew screws B of locking arm A (fig. L30) and pull locking pieces C out of the holes on the shaker shoe wall, to draw locking arm A and the grain sieve off the frame.
To clean the chaffer sieve, unscrew screws A, fig. L31, and remove the plate locking pieces from the fixing holes on the shaker shoe walls. First remove the sieve plate in the extension and then the chaffer sieve.



L29



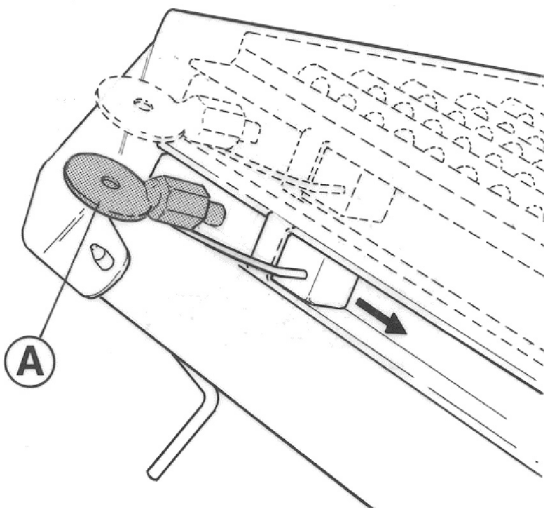
L30

Raise the SIEVE EXTENSION on Sloping Ground (Fig. L31)

The sieve extension can be angled in two positions. To adjust, move the locking pieces either to the upper or lower fixing holes. The lower position is used when threshing on level ground and the upper position on sloping ground.

For sloping ground a special slope extension is available with open toothed edges.

An extension with smaller holes is available to be used when threshing rape and turnip rape. This ensures a cleaner threshing result.



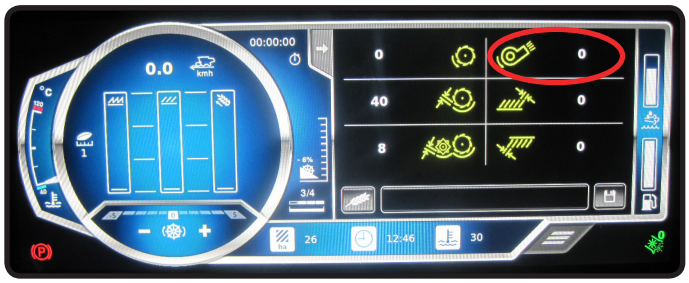
L31

https://truckmanualshub.com/

CLEANING FAN (Figs. L32, L33 and L34) Provides Sufficient Air Flow

The airflow is adjusted steplessly by changing the variator speed.
The cleaning fan speed is adjusted in Comvision- display.
The cleaning fan speed is displayed in Comvision-display.

Fan speed must be between 600…1000 RPM not to damage the drive belts.
NOTE! Adjustments can only be made with the threshing mechanism engaged.

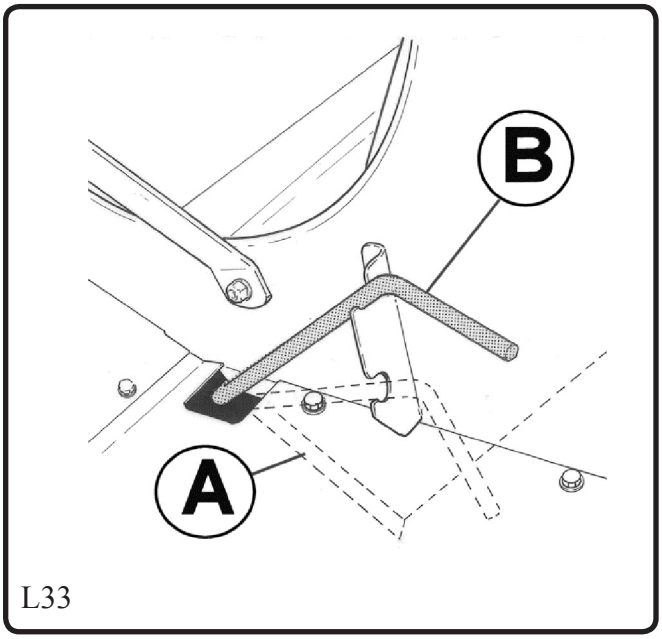


L32

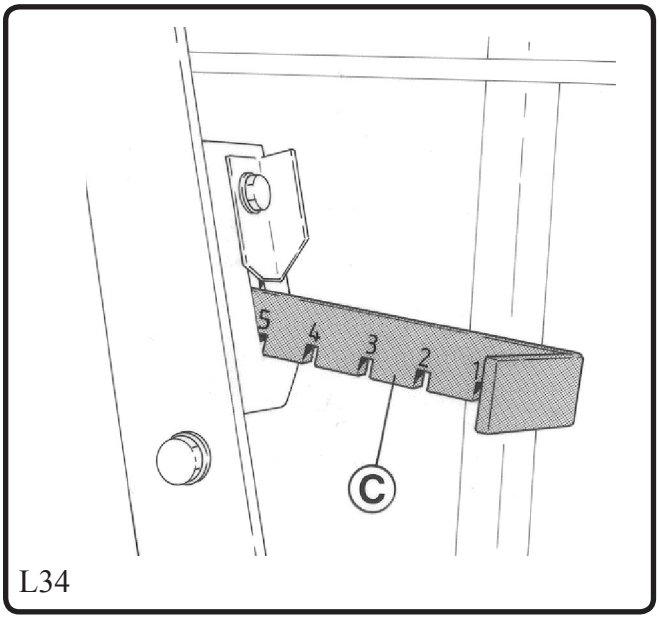
With smaller seeds requiring a weaker airflow, open door A beneath the fan using lever B, fig. L33, and find the correct airflow by adjusting the variator with the door open.

Adjust the airflow direction using regulating rod C, fig. L34. With the rod in its front position, the air is directed forward and up. By moving the rod backwards, the air direction turns down and rearwards.

Suggested air speed and direction settings for various crops are given in the “Approximate Settings“ table.



L33

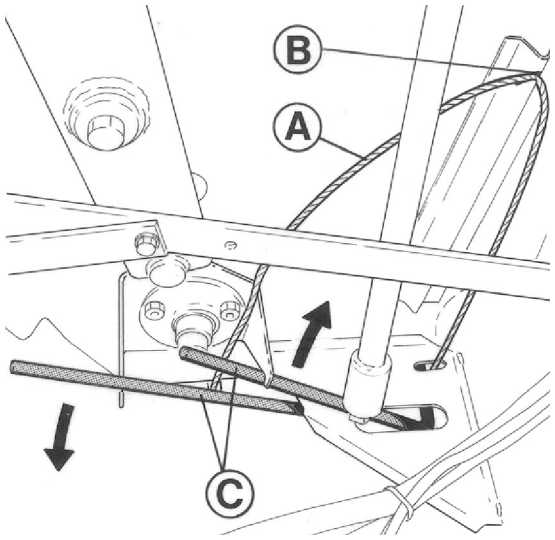


L34

https://truckmanualshub.com/

AUGER HOUSING (Fig. L35) Bottoms Can Be Opened from the Side

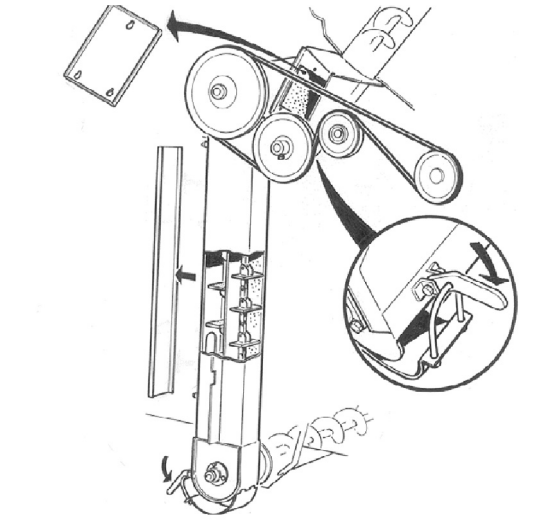
From the shaker shoe, the grains fall onto the front transport auger and the returns to the rear transport auger. The bottom troughs can be opened by lifting wire A from groove B and letting locking levers C go down, which will open the doors. To close the doors, lift the wire back to groove B and turn up the locking levers.
An alarm indicates if the return bottom auger is blocked. Immediately stop the machine, clear the blockage and find the cause for the trouble.



L35

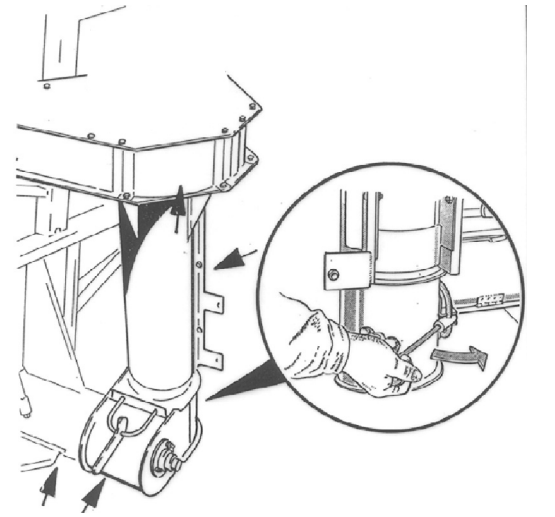
GRAIN ELEVATOR AND GRAIN AUGER (Fig. L36) Must Be Kept Clean and the Alarms in Working Order

The grain elevator and the auger attached to it are on the right-hand side of the combine.
The elevator doors enable the Operator to check the tension of the chains and clean the elevator. An alarm will indicate a drop in the elevator speed and / or slipping of the overload clutch. Any blockage can be cleared through the elevator service doors. After having cleared a blockage, operate the threshing mechanism at low speed for some time before continuing threshing.
The auger next to the elevator fills the grain tank. Doors both in the lower end of the auger and in the auger housing inside the grain tank can be opened to clean the auger. Especially when harvesting in damp conditions, the grain transport system must be cleaned often to maintain its transporting capacity.


L36

A Warning Light Controls the RETURN AUGER (Fig. L37) Operation

The return auger is located on the left-hand side of the combine. A warning light will flash when there is a blockage in the auger. There are doors in the auger housing and the lower end for cleaning and clearing any blockage. The rearmost cleaning door can be opened with a guard-opening tool.


L37

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Safe Working in the GRAIN TANK (Figs L38b and L39b)

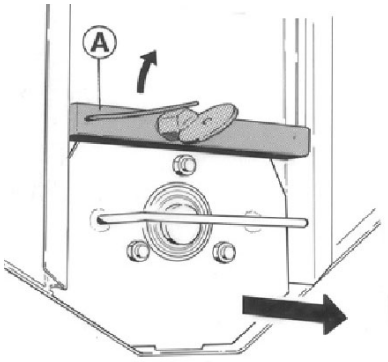
The grain tank is filled by the grain auger, and an alarm sounds when it is full. The height of the alarm sensor can be adjusted by moving the sensor from one hole to another. This will either advance or postpone the alarm.

When cleaning or servicing inside the grain tank, the engine must be off and the ignition key
removed to make sure the combine cannot be started.

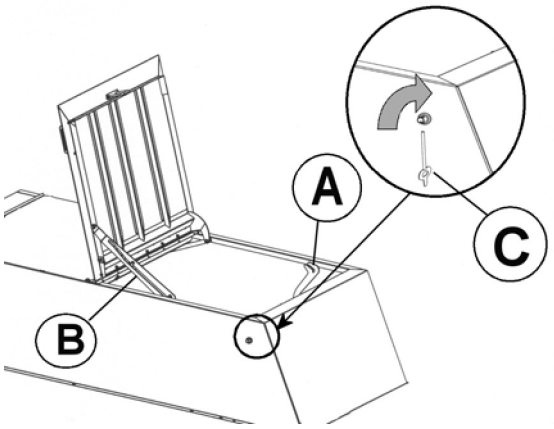
While threshing, the grain tank cover may be locked ajar using locking device A inside the tank cover to allow more light into the tank. While servicing, locking device B secures the cover will stay open.

For safety reasons, the grain tank cover can only be opened with guard key C, fig. L39b.

To facilitate cleaning, the bottom augers can be removed by detaching latch A. The right end of the grain tank has doors for cleaning and the back wall has doors for servicing the engine.



L38b



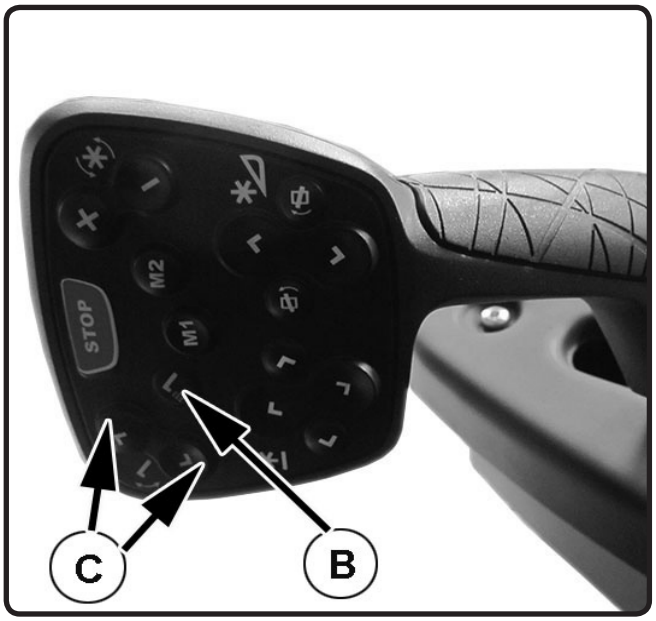
L39b

https://truckmanualshub.com/

Turning and Operating of the UNLOADING PIPE (Figs. L41c)

Switches C on the traction lever are used to swing the unloading pipe into the unloading position. The safety switch (A fig L42) must be in its off position before swinging of the unloading pipe.
Depending on the specification there may be a quick operation to turn the pipe. In this case pressing one button will turn the pipe to its extreme position. The movement will stop if either button is pressed during turning. Another press will turn the pipe in the required direction.
The movement can also be stopped by depressing SAFETY SWITCH. **The switch shall always be depressed when driving on the road.**

Note! Unloading may not be connected until the pipe is all the way up.



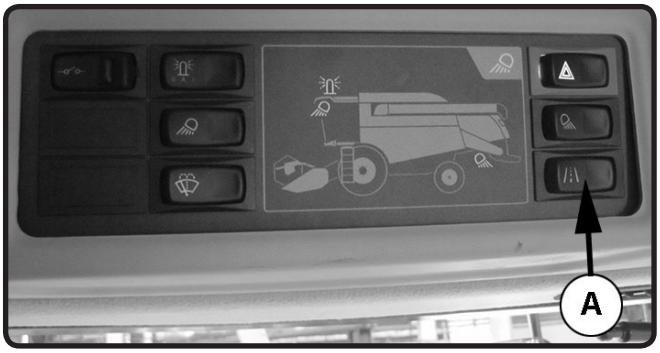
L41c

Unloading is switched on by depressing the operating switch B twice. Unloading will stop when the switch is pressed again.

While unloading, it must be monitored that there is always enough space for the unloading grain beneath the top end of the pipe. The auger and the transmission may get damaged unless the grain can unload unhampered.

All the functions mentioned above are possible with the engine running. The threshing mechanism does not need to be engaged.

The driver must sit on the seat in order to unloading and the cutting table to be functional.



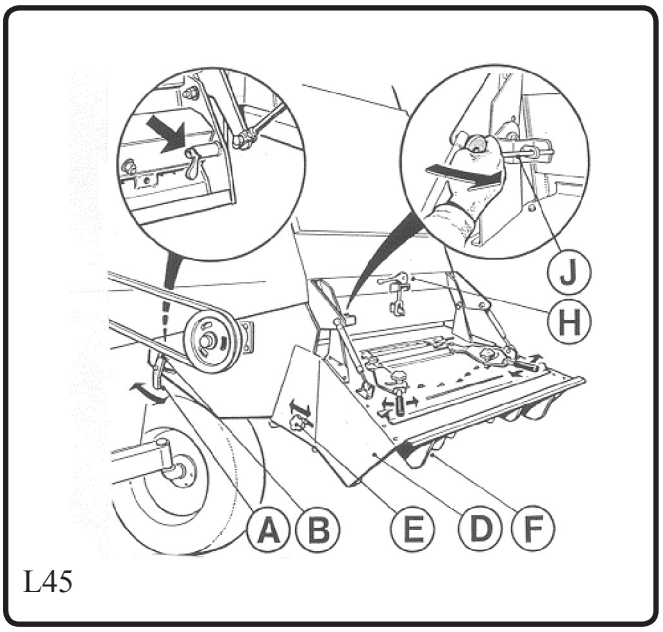
L42

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Danger Zone behind the STRAW CHOPPER (Figs. L45, L46 and L47)

Beware of the rotating straw chopper knife!
Never make adjustments or clean the chopper while the engine is running!
Never stand in the no-access danger zone behind the rotating chopper!

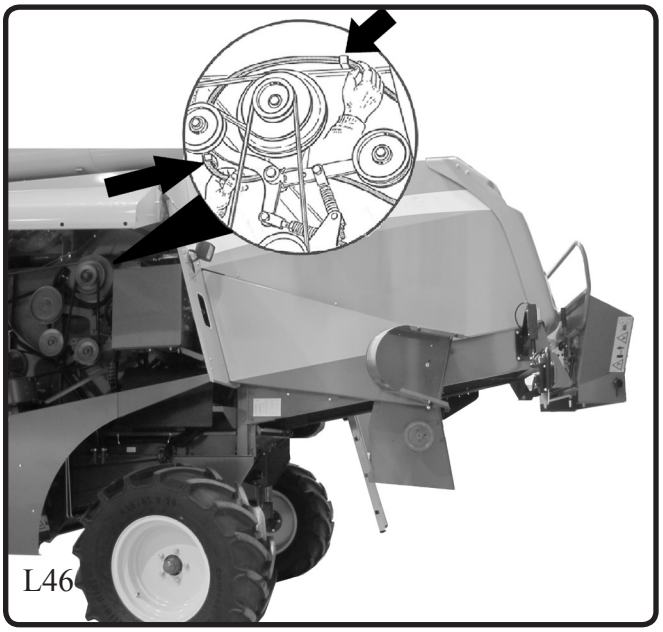
The degree of chopping can be varied by turning counter knife beam A, fig. L45. To do this, slacken screws B on both sides of the chopper, and turn the counter knife beam into the required position using the lever in the left-hand end of the beam turn.
The top-most position of the counter knives can be used when chopping dry straw to produce short chaff. **When chopping damp straw, it is advisable to use the mid position.** For turnip rape and flax use the lowest position.
The height of chaff spray is adjusted by changing the position of spray hood D after slackening screws E in the holes on both sides of the chopper. In the upper position the chaff is distributed over a wider area, while it is distributed in a narrower area with the spray hood in its lower position. The width and sideways direction of the spray is adjusted by changing the position of vanes F. This is done either with screws or quick-catch depending on the model.



L45

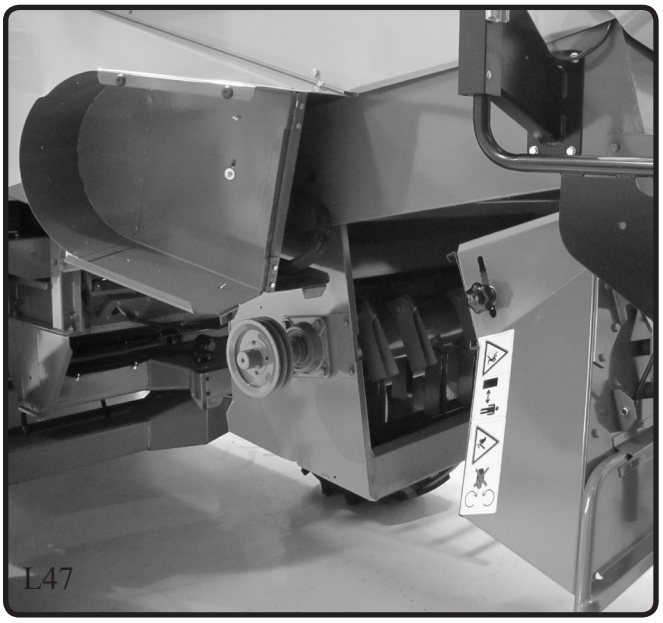
NOTE! Avoid adjusting the spray hood in such positions that the chaff is spread onto uncut crop, as this can block the knife, overload the sieves and result in poor grain in the tank.
To obtain long straw, turn the chopper down, fig. L46 and do the following:

Release quick-catch H, fig. L45.
Release the spray hood locking with tool J (or the quick-catch) and turn the spray hood against the straw hood where it will get locked.
Open the belt guard with the tool and turn the guard to its top position.
Turn the chopper down. The gas springs dampen the lowering and hold the chopper down.
Remove the drive belt from the pulley and place it on the hooks behind, making sure that there is no friction, fig. L46.


L46

NOTE! For safety reasons, always remove the belt and hang it on the hooks when the spray hood is turned against the straw hood.

When driving on the road with the chopper lowered, the chopper knives must be protected by the spray hood, fig. L47. This position is for transport only. Before starting threshing, the spray hood must be lifted against the straw hood.


L47

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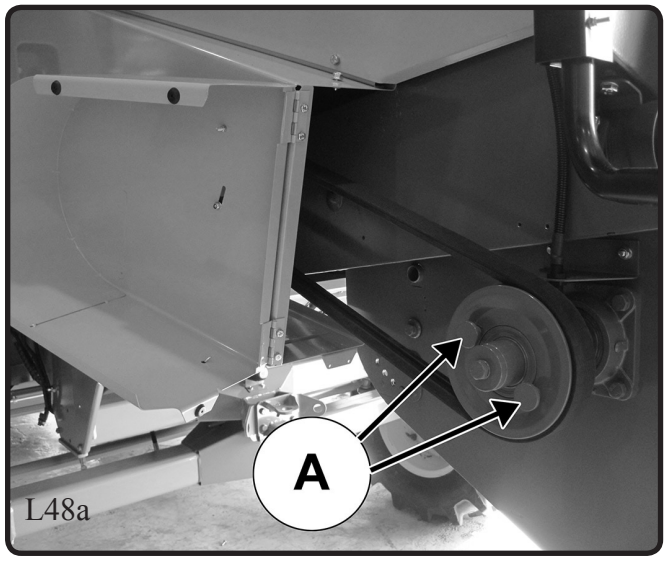
Straw chopper with the guide plate

The straw chopper is powered directly by the engine by means of a separate belt drive.
The straw chopper will always switch on as the threshing mechanism is started if the two locking pins A fig. L48a on the straw chopper shaft are are pushed in. When the locking pins are pulled out, straw chopper shaft does not rotate.

The control lever is on the rear right. The straw is guided to the chopper with the plate in position B. In position A unchopped straw is guided onto the field. Fig. L48b.

The locking pins may be pushed in even if unchopped straw is guided onto the field. That is if a long straw is momentarily wanted.

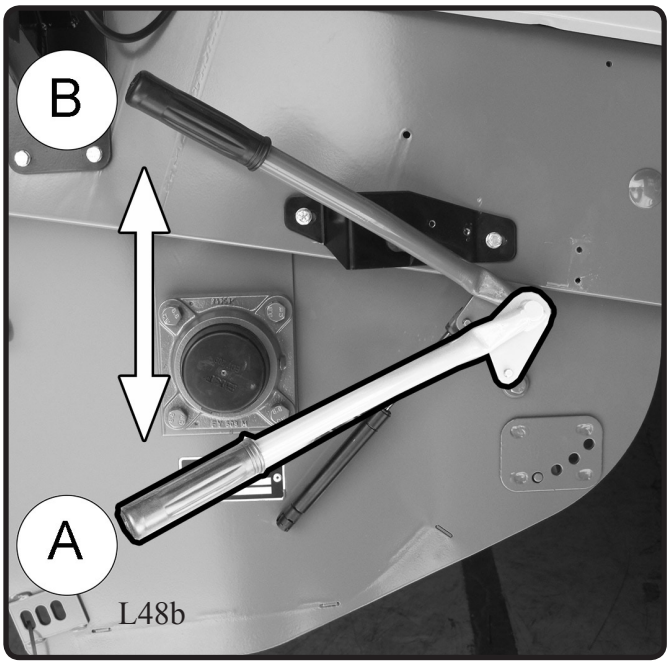
The degree of chopping can be varied by turning counter knife beam A, fig. L48c. To do this, slacken screws B on both sides of the chopper, and turn the counter knife beam into the required position.
With the counter knives at right angles to the rotor centre, the straw is chopped short and chopping absorbs more power. With the counter knives down from the rotor centre, the chaff is cut longer and the power demand decreases. In their lowest position, the chopping action is minimal, but for turnip rape and flax still sufficient and recommended.



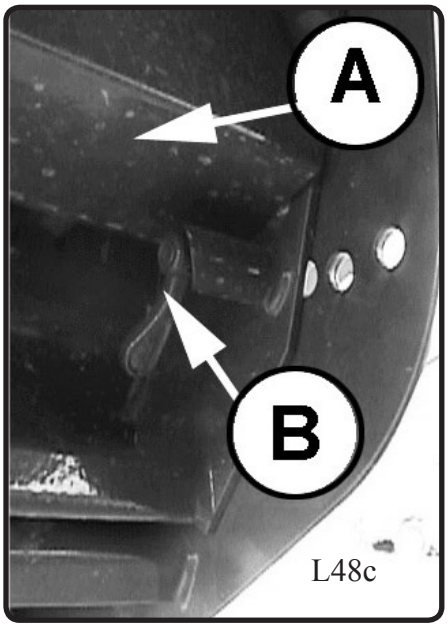
L48a

CHAFF SPREADER Spreads the Chaff Evenly on the Field

The specification of the combine may include a chaff spreader. The spreader will switch on whenever the threshing mechanism is running.
The spreader is fastened behind the shaker shoe with joints. It is turned to the front in its working position. The rear position is needed while servicing the sieves.



L48b

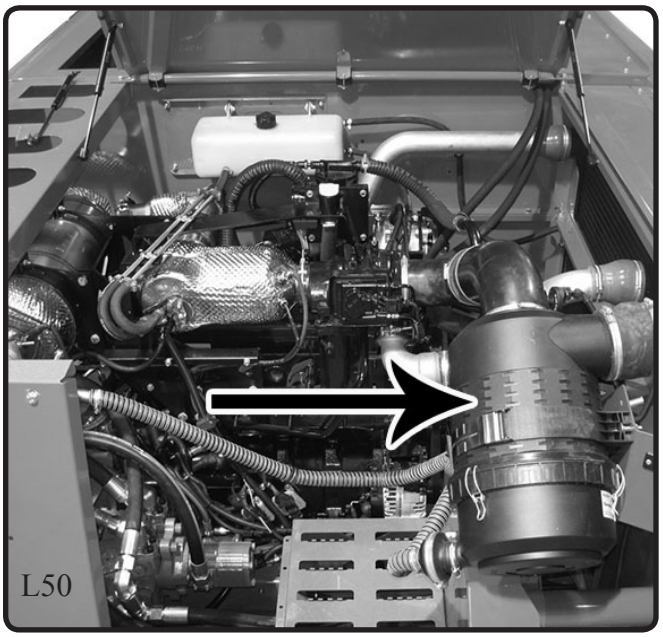


L48c

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ENGINE, Source of Power

The engine is a water-cooled four-stroke direct-injection diesel. For a more detailed description of the engine, see the engine manual.
The power is transmitted from the rear of the engine to the traction, threshing mechanism, grain tank unloading and hydraulic pump. At the front of the engine, one belt drives the fan and alternator and another the compressor of the optional cab cooling system.

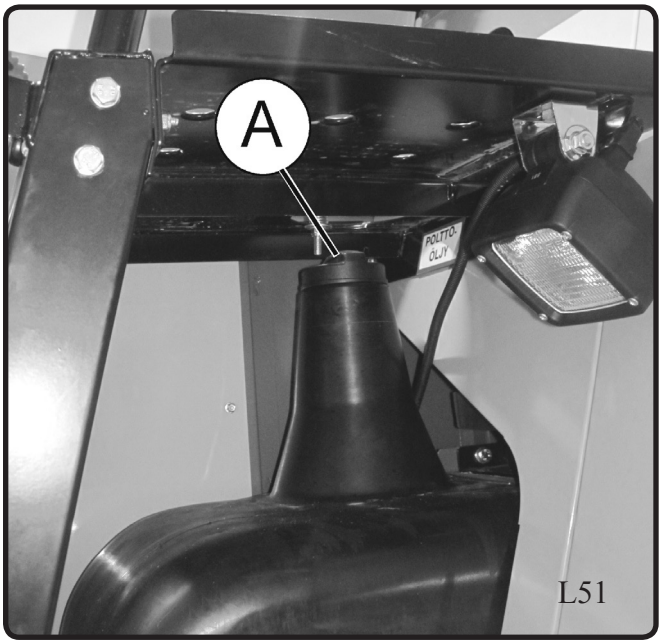

L50

Suction Air Filters (Fig. L50)

The engine suction air is cleaned by a coarse filter and a two-part paper filter. Comvision-display indicates a blockage in the filter system. See cleaning instructions under ”Maintenance”. The coarse filter is on the filter housing and it is being emptied continuously by means of the exhaust fume ejector.

The Fuel Tank (Fig. L51) Shall Be Filled with Pure Fuel Only

The fuel tank is on the right side of the combine. Use high-quality gas oil as fuel. See the grade recommendations in the Engine Manual. The fuel shall be pure and water-free.
Before refuelling, remove all impurities from around filler A. Never drain a spare tank into the fuel tank, as impurities and water tend to settle on the bottom. Never fill fuel from a storage tank into which fuel has been added on the same day. Impurities have not settled on the bottom yet.
If fuel is added from a spare tank, a funnel with a sieve should be used.
There is a stopcock at the tank end. The pre-filter is equipped with an electric fuel pump.



L51

On the outer rim of the fuel tank filler plug there are air channels through which air goes into the tank. Make sure these channels do not get blocked. Never use a filler plug that does not have air channels.

For the requirements of the alternative fuel, see engine manual.

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4th generation AGCO SISU POWER motors has adopted exhaust gas treatment with SCR technology (Selective Catalytic Reduction). In SCR technology a liquid called DEF (Diesel Exhaust Fluid) is injected into exhaust gases. Most commonly known trademarks of DEF are AdBlue, Air1 and Greenox.

For the DEF requirements, see engine manual.

DEF tank (30 liters) is located under the right guard, and the filler neck shown in Figure L51B.



L51B

Be careful when handling DEF. DEF is aggressive to some materials and corrosive to some metals. DEF becomes crystalline when in contact with air. In case of a spillage rinse with plenty of water and dry with a clean cloth.

Even small amounts of diesel fuel in DEF tank may damage the gaskets of the SCR system!

Combine is not equipped with a heating system for DEF, so use of combine below -10 ° C temperatures is prohibited. Start up and short-term transfers are possible.

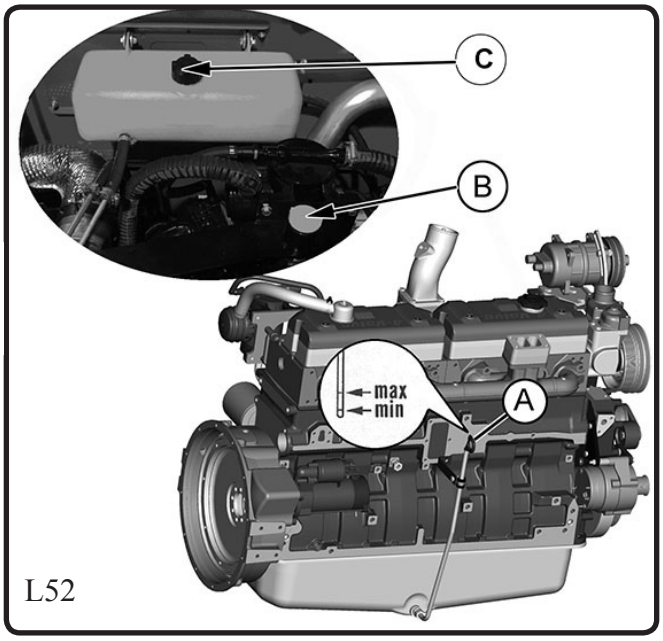
AGCO SISU POWER SCR system is durable and almost maintenance free. Only main filter change for supply module is required in normal use. AGCO SISU POWER SCR is equipped with on-board diagnostic, which will warn the operator or limit the usage of the machine if any problems (e.g. leakages or blocking of lines) occur in the system.

For the maintenance and adjustment of SCR, see engine manual.

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Lubrication System

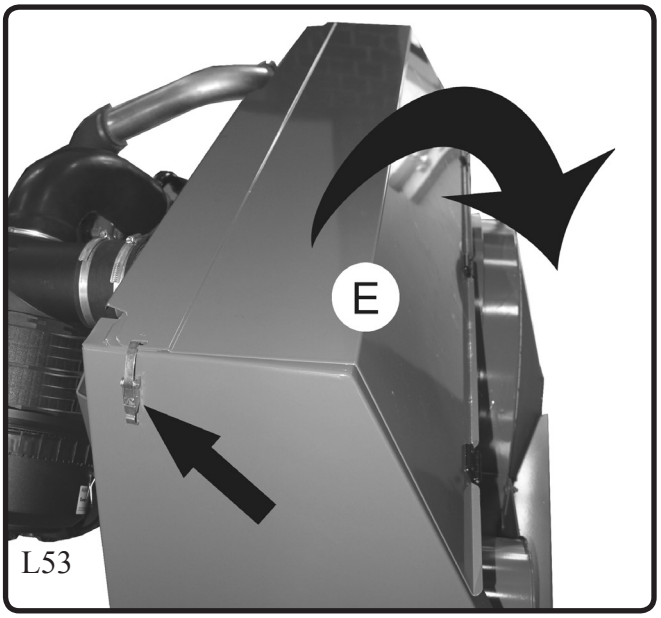
It is of utmost importance to use correct lubricating oil, in accordance with the load placed on the engine. See Lubrication Table under ”Maintenance”.
Check the oil level daily before starting; it shall be between the minimum and maximum marks on dipstick A, preferably near the maximum, fig. L52. Oil is refilled through filler B. A warning light indicates low oil pressure. Should the oil pressure warning light come on with the engine running, stop the engine immediately and find the cause for the trouble.



L52

Cooling System

When the combine leaves the factory, the engine cooling system has antifreeze added. Do not use ordinary water as coolant because of the risk of corrosion.
Check the radiator coolant level daily before starting. It must be in the middle line of the expansion tank when the engine is cold.
The coolant temperature gauge in the Comvision-display indicates the temperature of the engine coolant. In normal working conditions the needle must be between 80 -100°C. The alarm temperature is approx. 106°C. If the temperature starts to rise, check that the outside of the radiator is not clogged. Direct compressed air from the side of the fan through the radiator, or use a brush for cleaning. Always be careful not to damage the lamellas. To clean the equipment, open protective cover E above the radiator, fig. L53. Any impurities are removed through the emptying door below.



L53

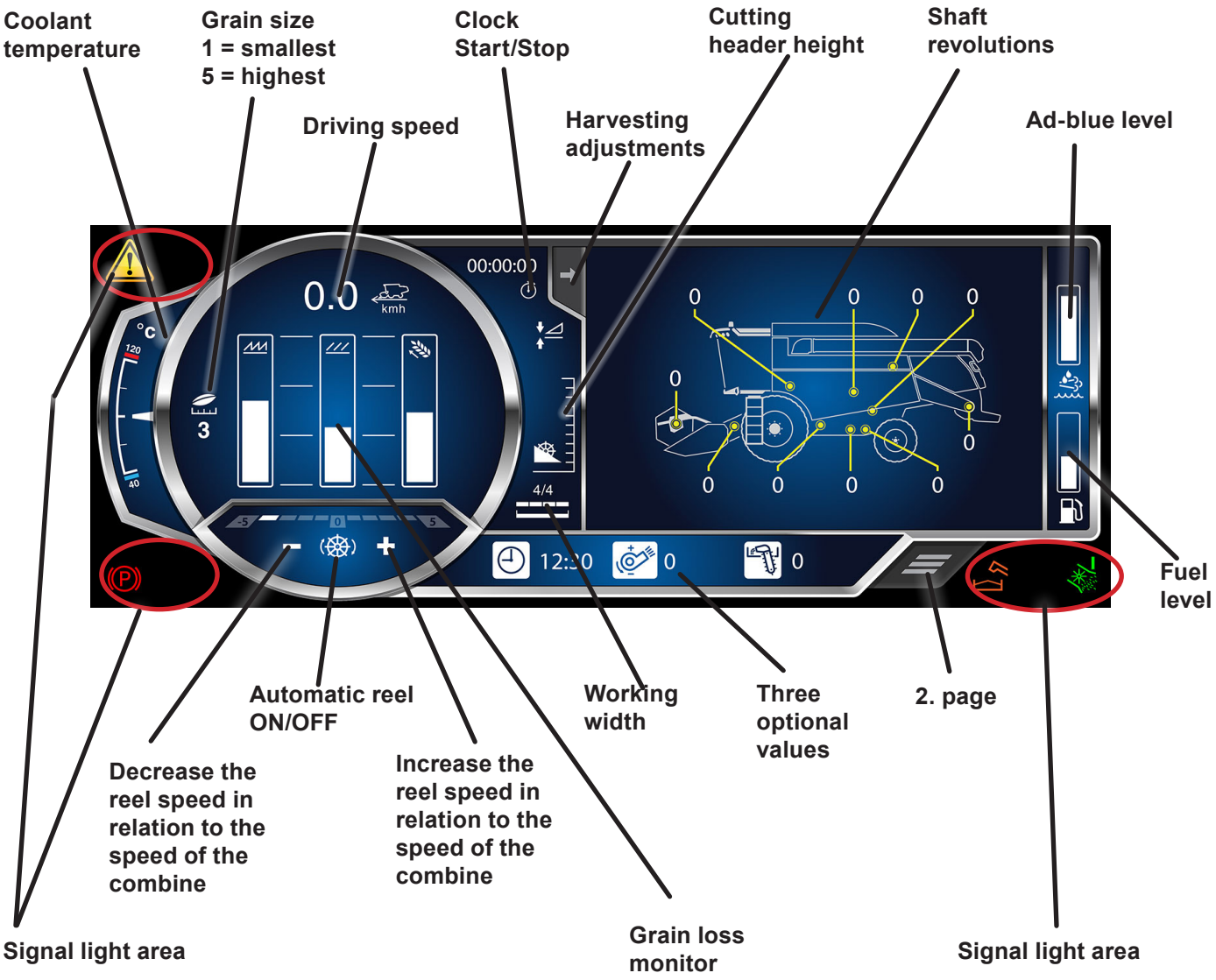
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COMVISION

This section deals with the use of the COMVISION monitor. In addition to grain losses the monitor also measures the threshed area, the threshing time used, it estimates the finishing time for the section, monitors and alarms the rotation speeds of certain shafts, adjusts reel speed, controls the grain tank filling up and measures the amount and quality of the returns. Comvision shows also engine information.
Harvesting adjustments are controlled in Comvision.

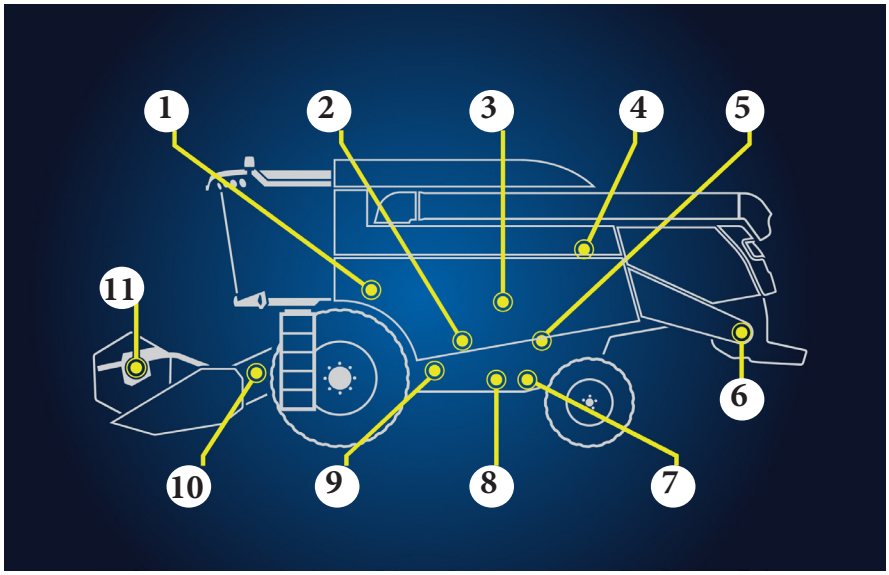
The equipment consists of a touchscreen main unit, loss sensors, pulse sensors and limiter switches. The equipment is connected to the forward speed sensor, the threshing cylinder, CSP and fan speed sensors, the grain tank sensors and the straw alarm sensor. There is a sensor on the return auger to measure the amount of returns.

The figure below shows the home view, from which you can select the required function by pressing the icon.



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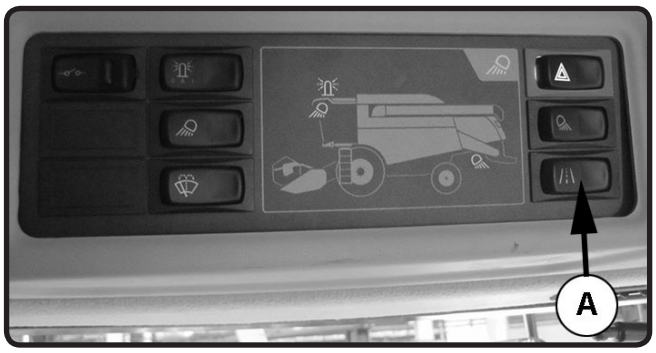
“ **Shaft revolutions**” shows shaft speeds.



- Threshing cylinder (1)
- Returns (C10&C12) (2)
- Straw walker (3)
- CSP drum (4)
- Returns (C6&C8) (5)
- Chopper (6)
- Returns (C6&C8) (7)
- Grain elevator (8)
- Fan (9)
- Feeder (10)
- Pick-up reel (11)

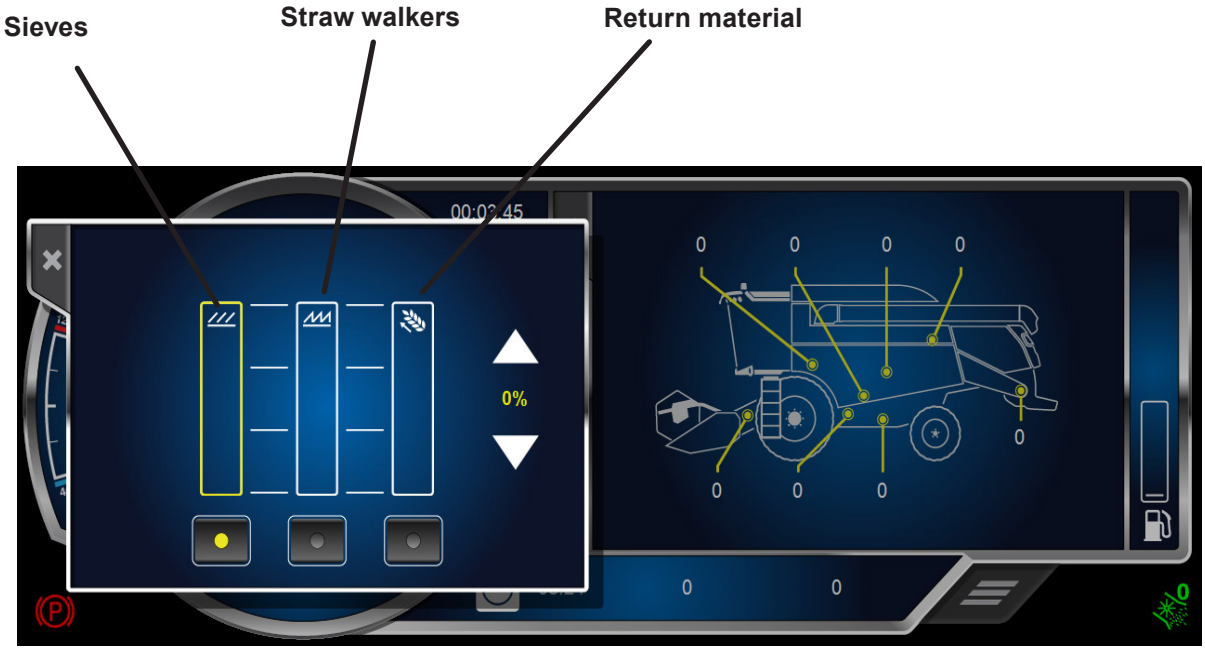
Engaging 3rd gear or pressing safety switch A (driving in traffic switch) will switch on driving mode in Comvision display.

Driving speed meter with trip meter shows on the left side of the monitor.



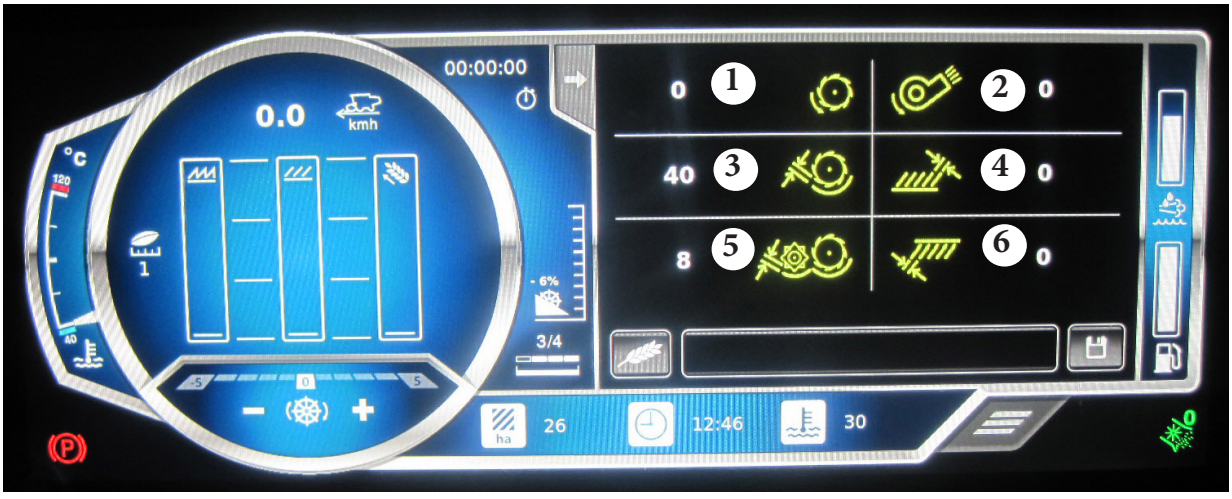


When pressing grain loss monitor at home page, new window will pop-up on the left side of the monitor.
On this window you can adjust the sensitivity of the grain loss display. Select the bar you want to adjust and press button UP or DOWN .



When pressing **Harvesting adjustments** at home page, new window will pop-up on the right side of the monitor.
On this window you can adjust:

1. **Threshing cylinder RPM**
2. **Fan RPM**
3. **Concave cap**
4. **Upper sieve**
5. **Pre-Concave cap**
6. **Lower sieve**



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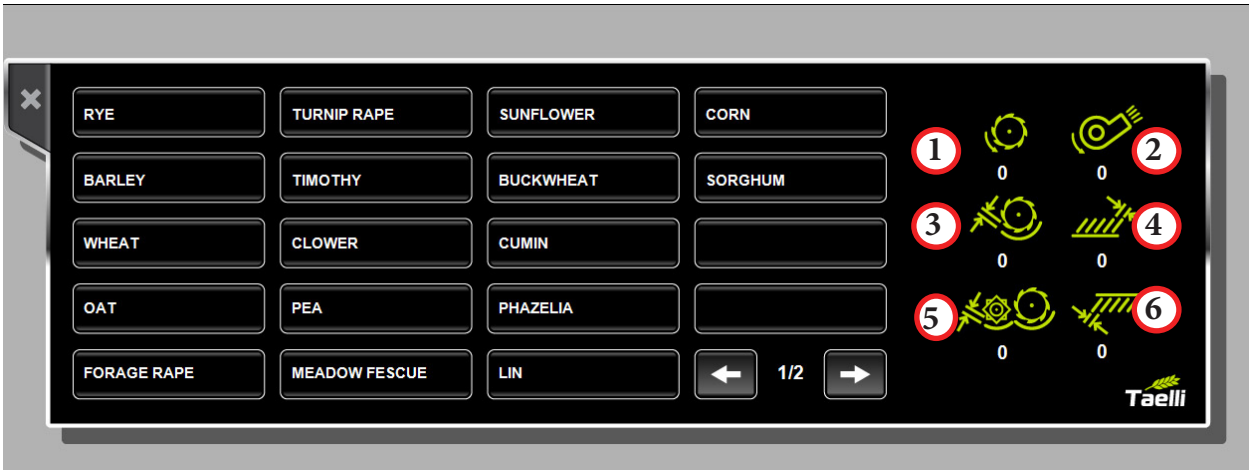
When pressing the value, new window will pop-up on the right side of the monitor.
On this window you can adjust the selected value with arrow UP or DOWN.
After adjustment, accept or reject the value with the buttons at the bottom of the window.



When pressing grain crop symbol at **Harvesting adjustments** window, "Taelli"- control system (OPTION) will pop-up. On this window you can make proper adjustments for different crops and then moving between them becomes more easy.

Pre-adjustments can be made for:

1. **Threshing cylinder RPM**
2. **Fan RPM**
3. **Concave cap**
4. **Upper sieve**
5. **Pre-Concave cap**
6. **Lower sieve**



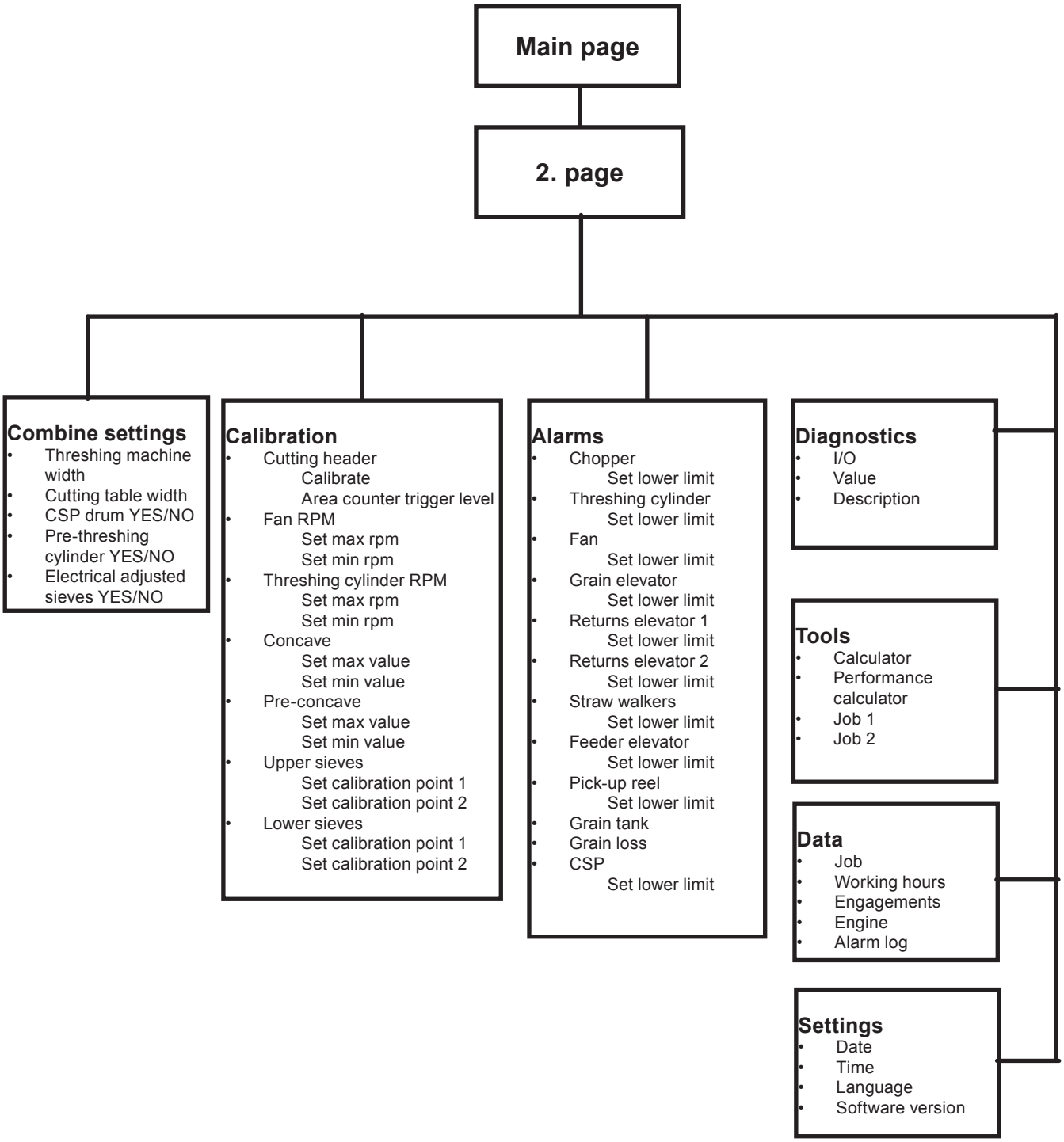
Pressing any meter on bottom of the home view will open a window which displays all meters.
You can choose three meters to be displayed in home view simply by pressing desired meter.



1. Hectares threshed
2. Bottom auger RPM
3. CSP RPM
4. Oil pressure
5. The outdoor temperature
6. Hectares left
7. Return RPM
8. Engine RPM
9. DEF consumption liter/hours
10. Total fuel consumption
11. Hectares per hour
12. Feeder Elevator RPM
13. Fuel consumption liter/hours
14. Fuel temperature
15. Charge pressure
16. Estimated time by which the programmed area is threshed at current speed
17. Fan RPM
18. Coolant temperature
19. The charge air temperature
20. The fuel feed pressure
21. Chopper RPM
22. Grain elevator RPM
23. The engine load percentage
24. DEF temperature
25. Operating Hours
26. Threshing cylinder RPM
27. Time
28. The battery voltage
29. Exhaust temperature
30. Fuel consumption liter/hectare

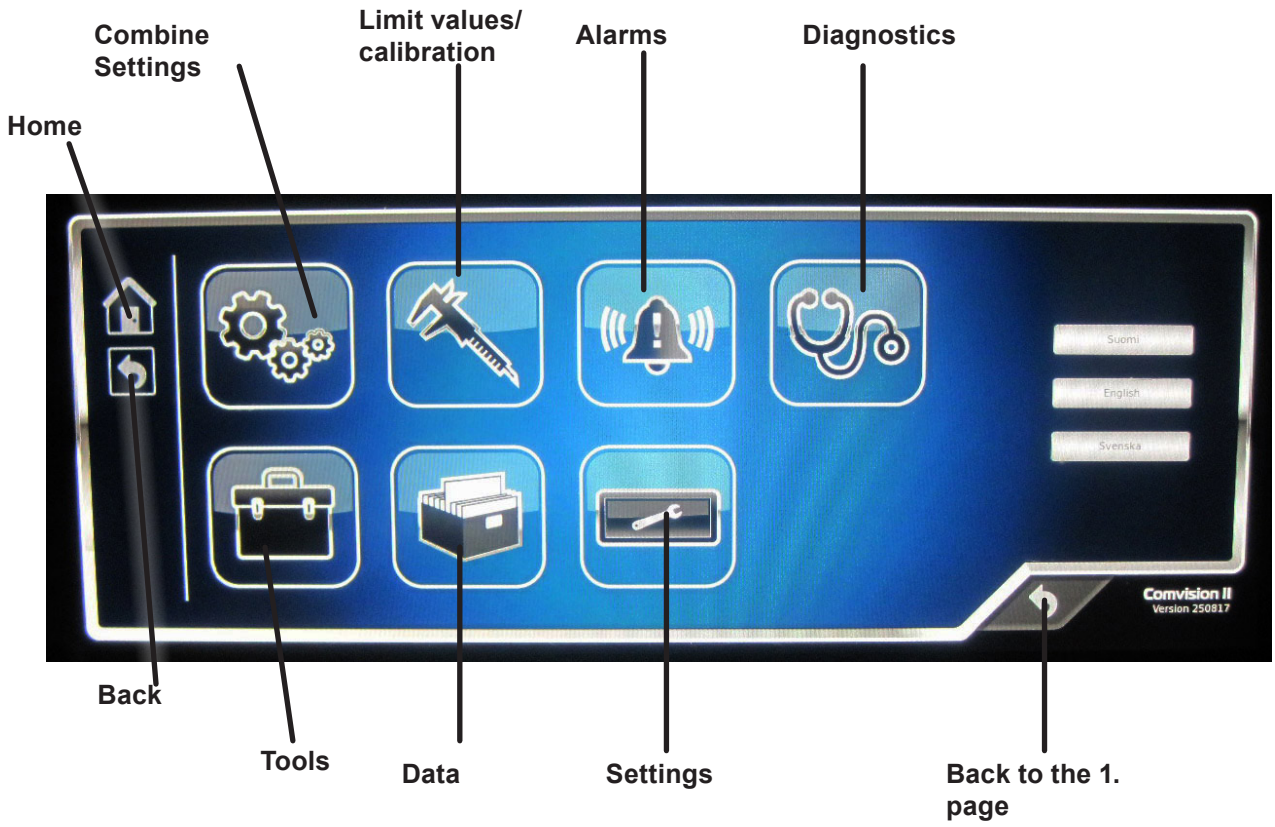
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The Comvision menu structure is shown in figure below.



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2. page button at the main page opens a menu for settings, calibration, adjusting alarms, diagnostics, tools for harvesting and data menus.

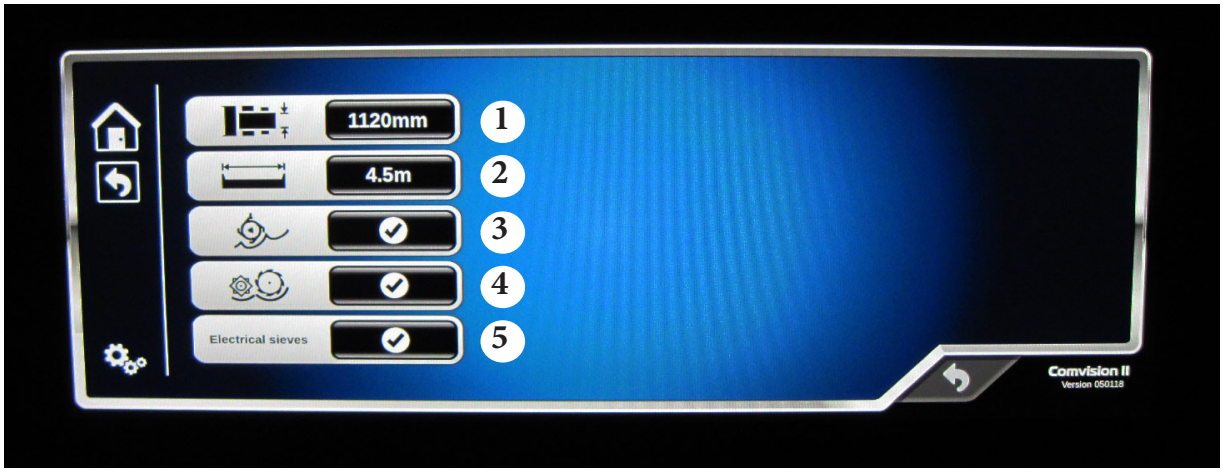


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Combine Settings

Combine Settings button allows you to set the combine's basic settings:

Threshing machine width 1120mm/1340mm	(1)
Cutting header width	(2)
CSP drum YES/NO	(3)
Pre-threshing cylinder YES/NO	(4)
Electrical adjusted sieves YES/NO	(5)



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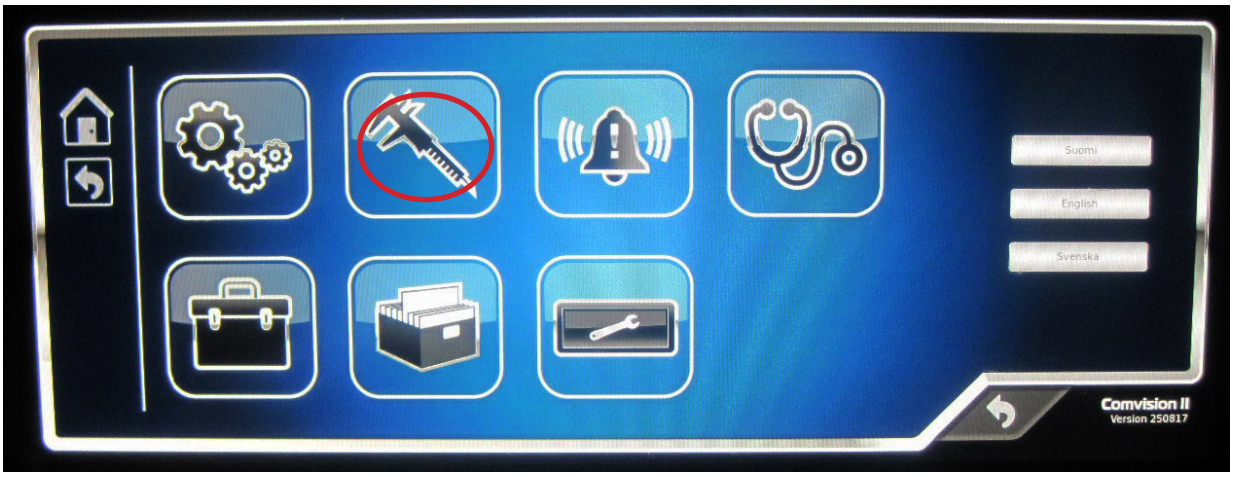
Calibrations

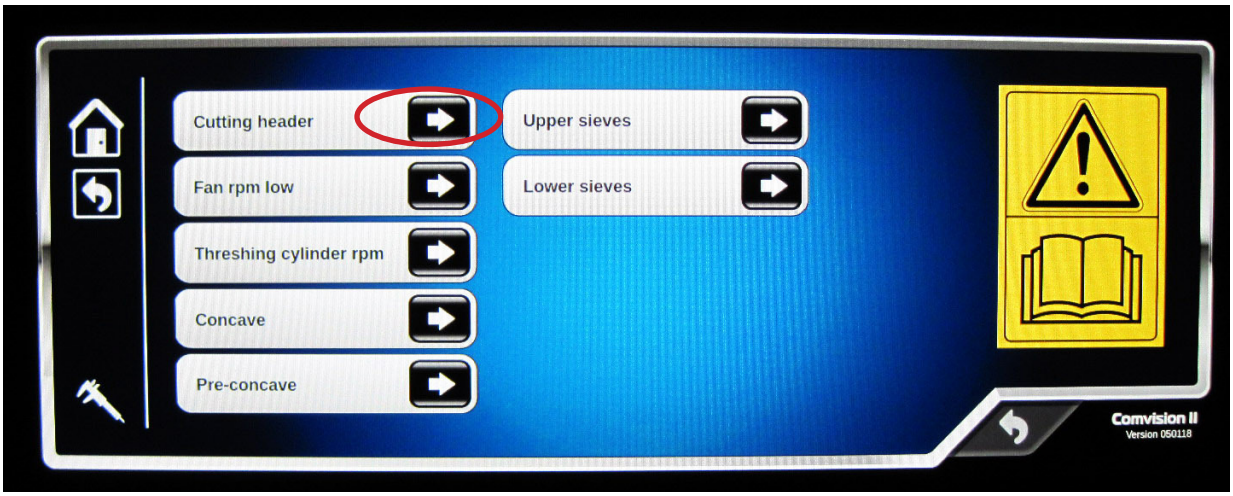
Cutting header calibration

Cutting header calibration. This calibration calibrates header height sensor which is on the right hand side on top of feeder house. This calibrates also AHC header automatic sensors (OPTION) which are on the cutting header.
When to do this calibration:

- If you replace header height or AHC sensor
- If you replace cabin control unit
- If header height indicator in Comvision is not logic.
- If AHC reaction is not logic.

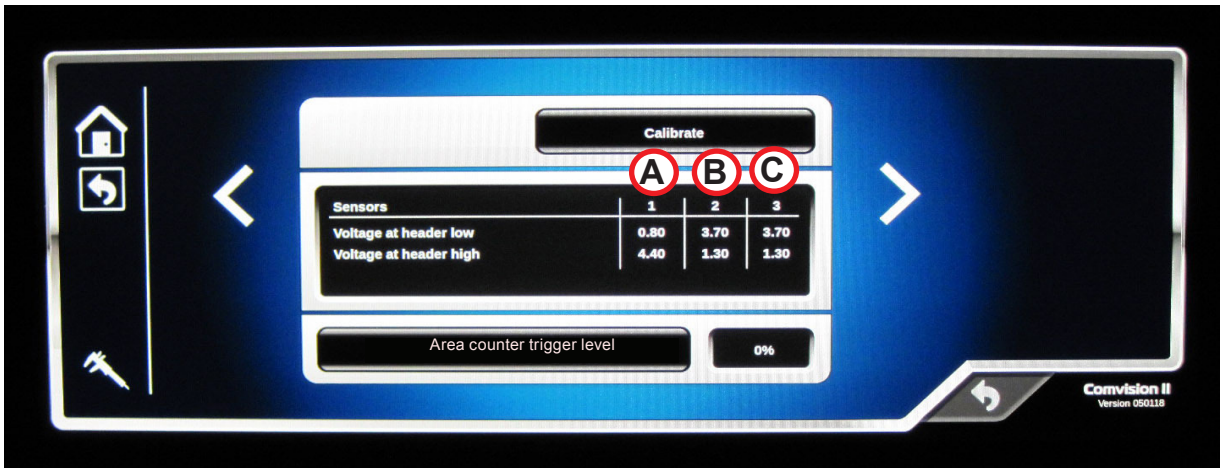
Calibration steps:
Engine running and combine has to be on flat surface. BE CAREFUL: Cutting header moves up and down during the calibration.







Make sure combine and cutting header are on flat surface. Lower cutting header down on the ground. Push and hold down cutting header lowering button together with rising button. Hold buttons on the bottom until calibration starts and header begins to rise. Release buttons and wait until cutting header stops moving and calibration ends.



After calibration you can see the calibration values in columns. (A) Feeder house sensor. (B) Left hand side AHC sensor. (C) Right hand side AHC sensor. Values are Voltage values from sensors to cabin control unit when cutting header is down against ground and maximum up position.

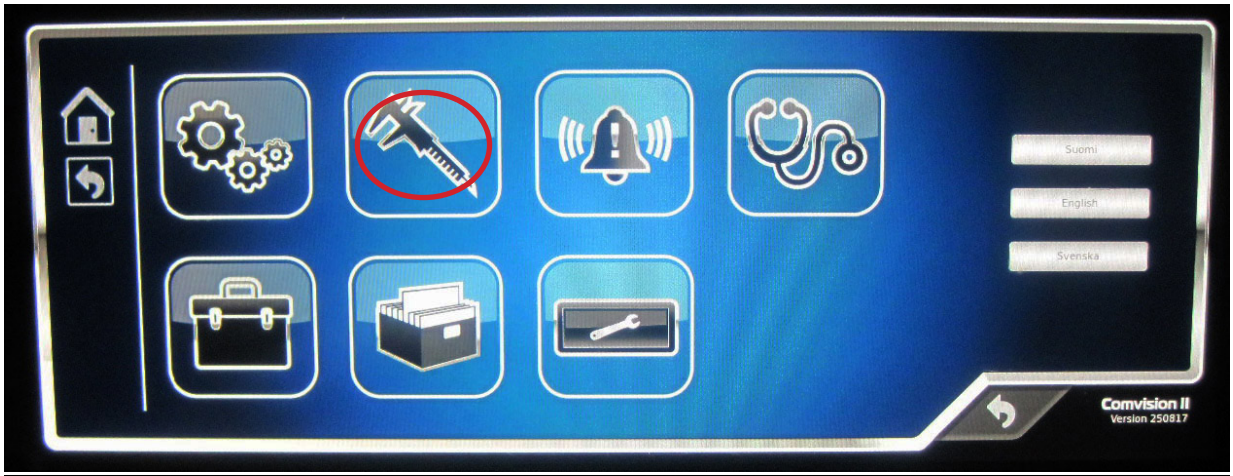
https://truckmanualshub.com/

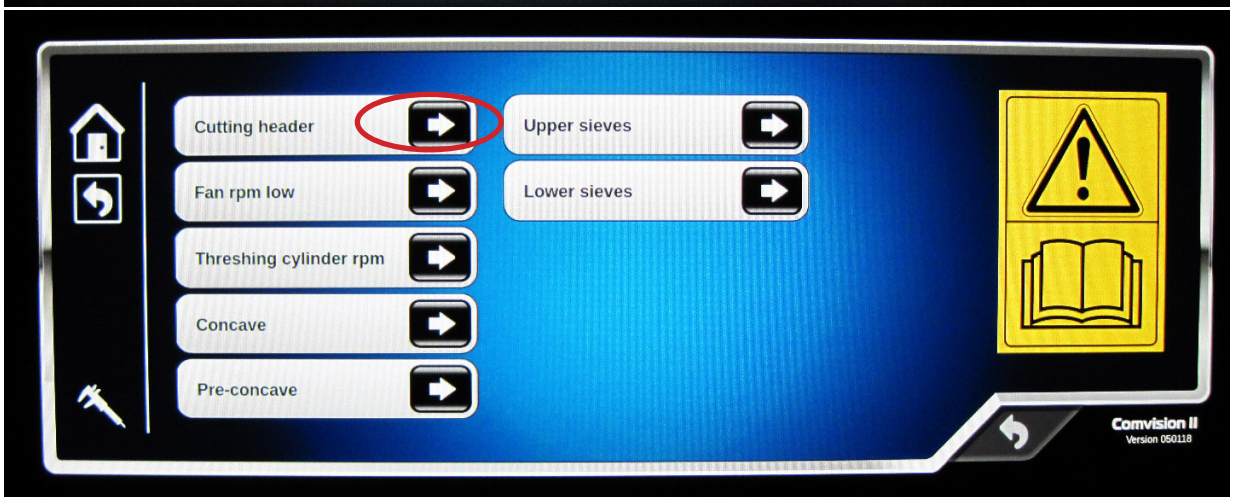
Hectare counter activation height calibration

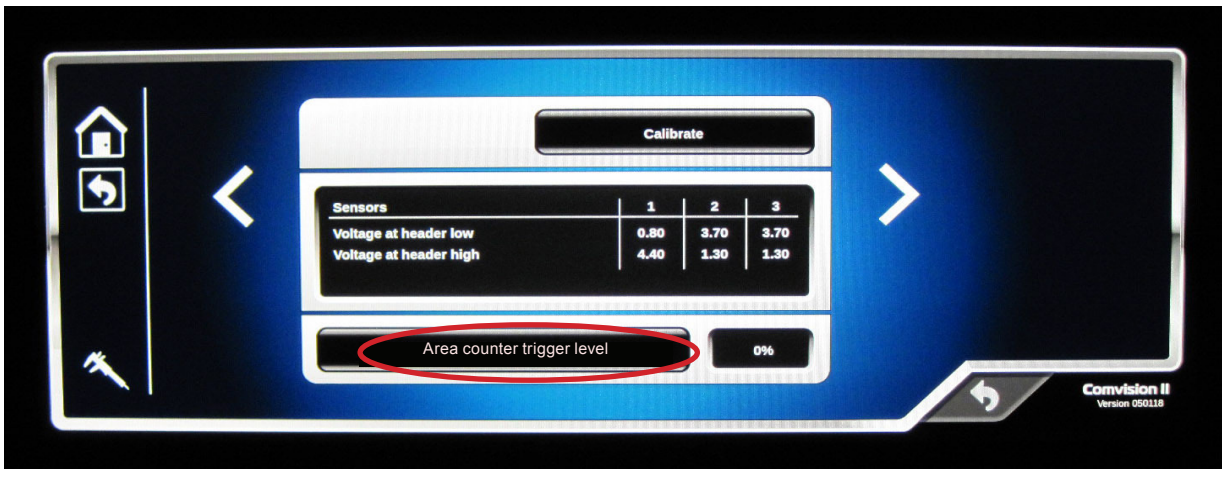
With this calibration we calibrate cutting header height where hectare counter activates/deactivates.
When to do this calibration:

- After cutting header calibration
- If hectare counters do not work properly
- After replacing Comvision

Calibration steps:
Engine running







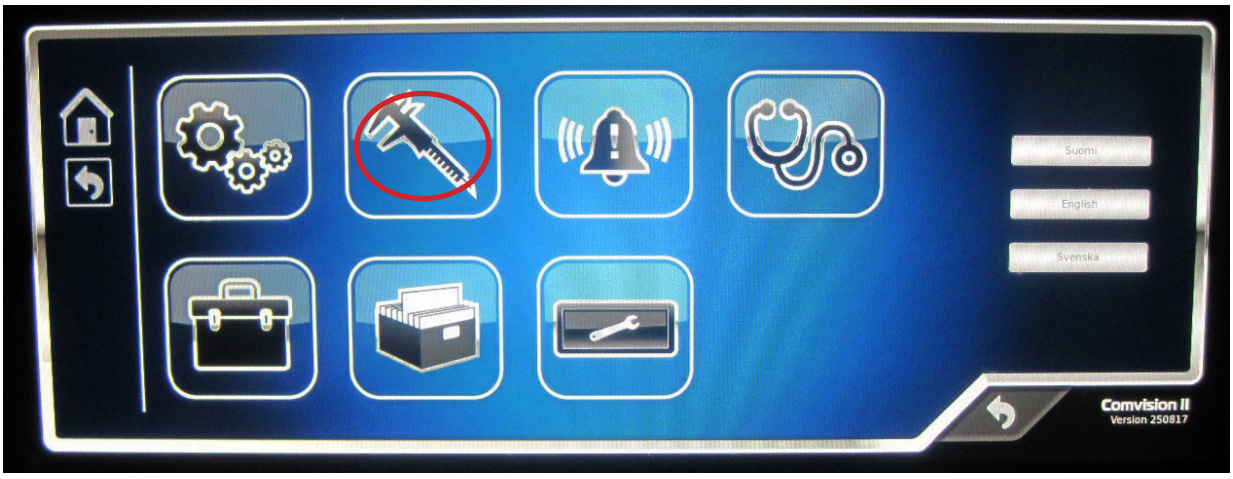
Adjust cutting header to height which you want hectare counter to activate/deactivate and push “save” button.

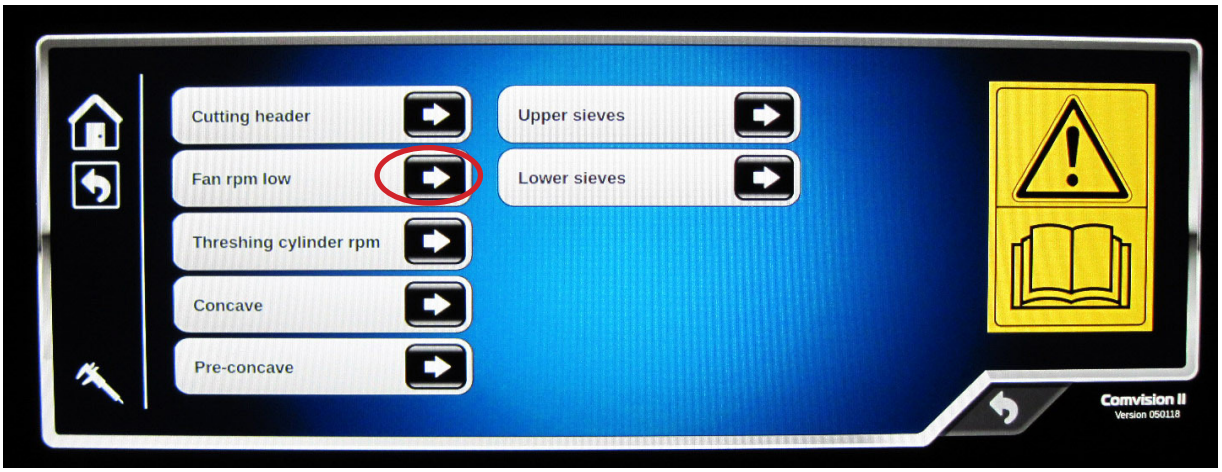
Fan rpm calibration

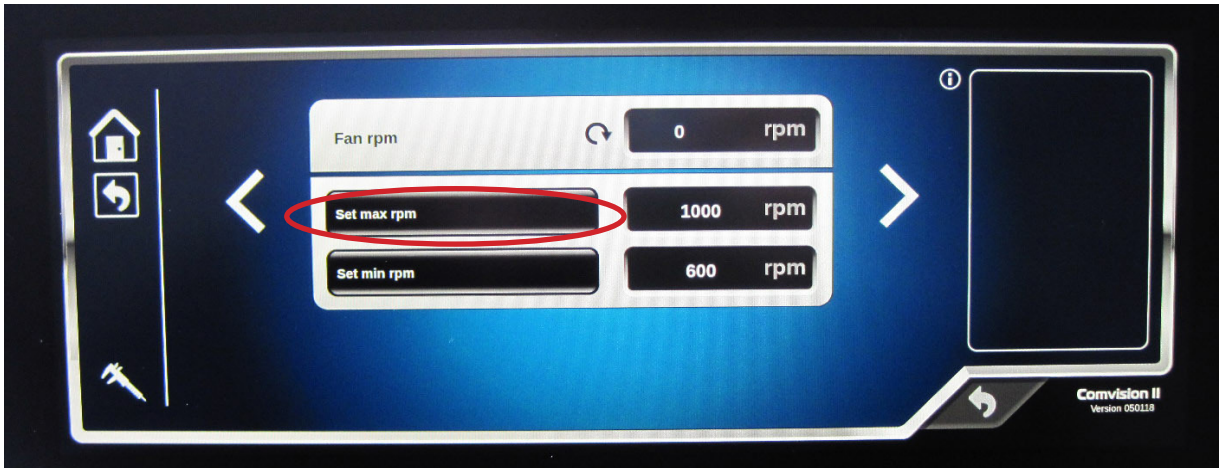
This calibration tells the Comvision which is the maximum and minimum possible fan speed. If this calibration is not Ok, it is possible that adjusting automatic tries to run adjusting motor, even after it has already reached maximum or minimum position. It can break down the adjusting motor.

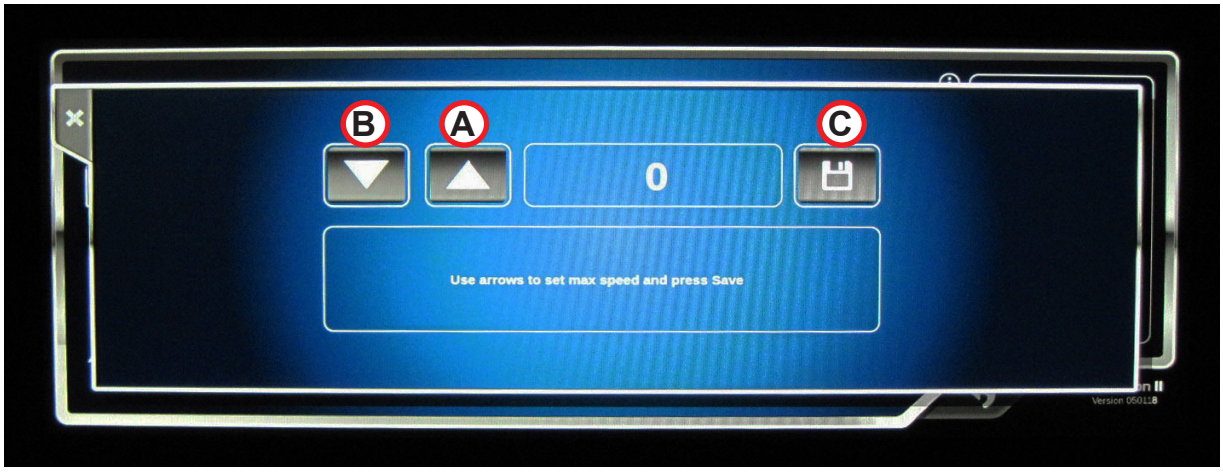
When to do this calibration:
- After replacing fan variator belt(s)
- After tightening fan variator belt
- After replacing Comvision
- If because of some reason fan minimum and/or maximum speed has changed

Calibration steps:
Engine running with operating RPM.

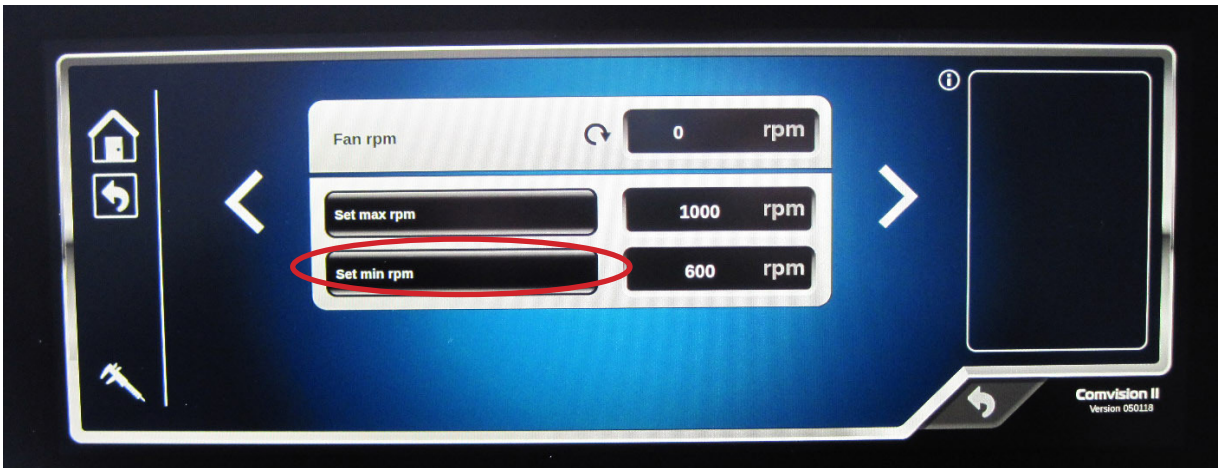


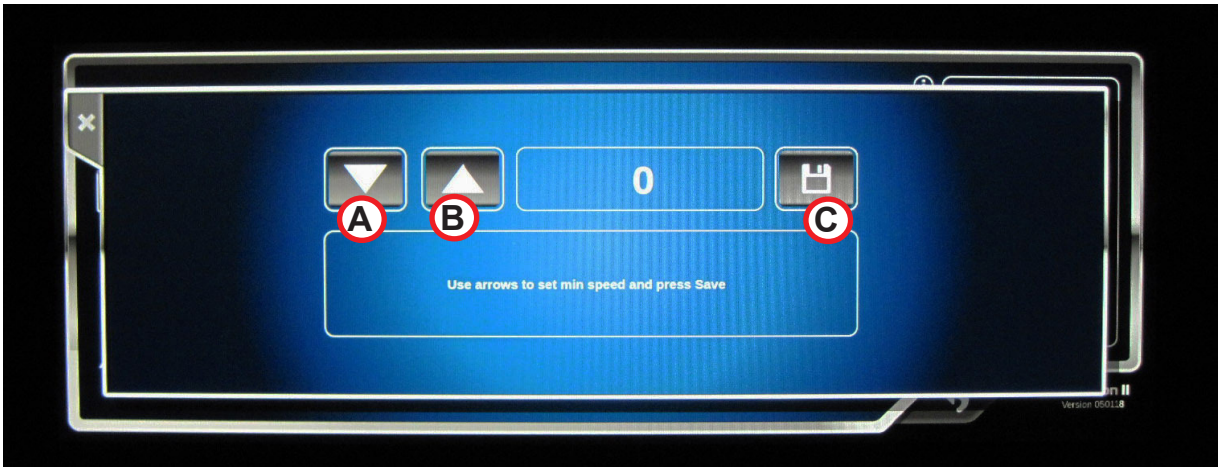






Push button (A) until fan speed doesn´t raise anymore. Lower speed 50 units with (B) button. Save calibration value with (C) button.





Push button (A) until fan speed doesn't lower anymore. Raise speed 50 units with (B) button. Save calibration value with (C) button.

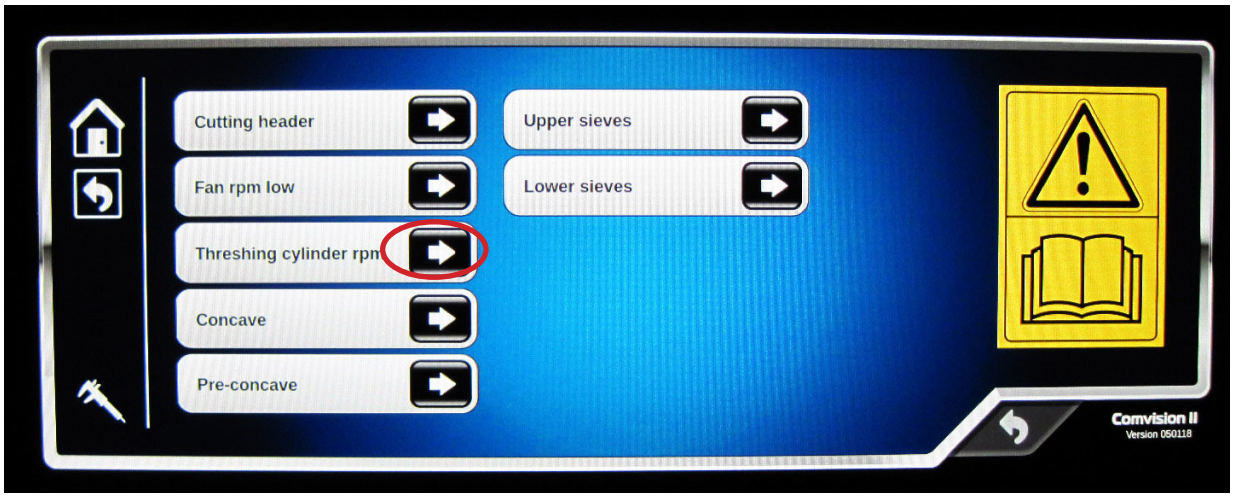
Threshing cylinder rpm calibration

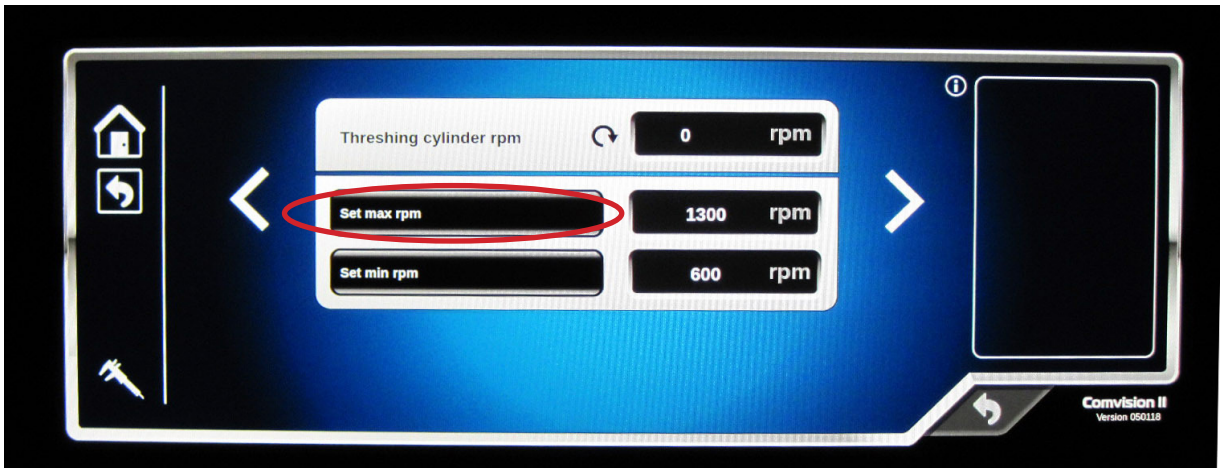
This calibration informs the Comvision which is the maximum and minimum possible threshing cylinder speed. If this calibration is not Ok, it is possible that adjusting automatic tries to run adjusting motor, even after it has already reached maximum or minimum position. It can break down the adjusting motor.

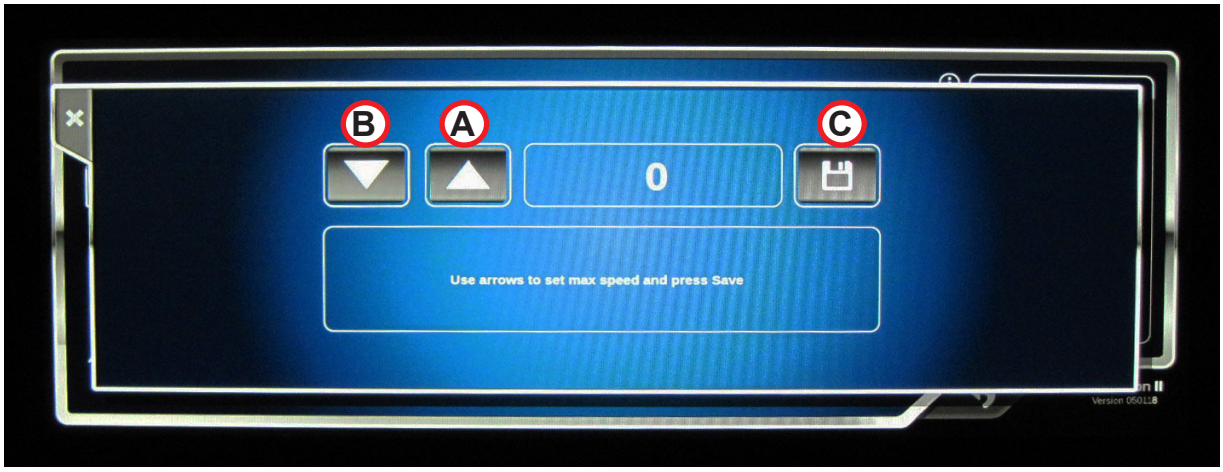
When to do this calibration:
- After replacing operating belt of threshing cylinder
- After tightening belt of threshing cylinder
- After replacing Comvision
- If threshing cylinder minimum or maximum RPM has changed because of some reason

Calibration steps:
Engine running with operating RPM.

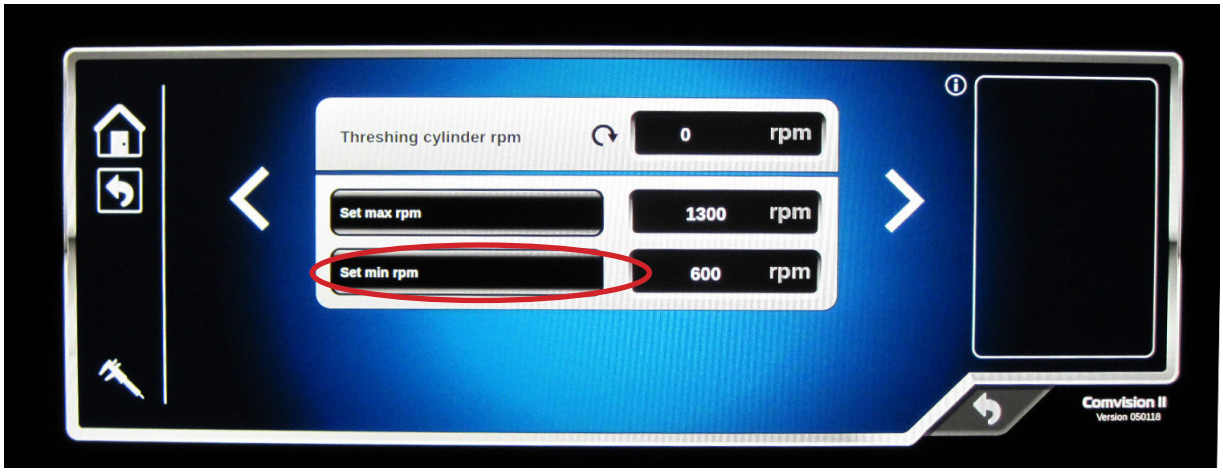


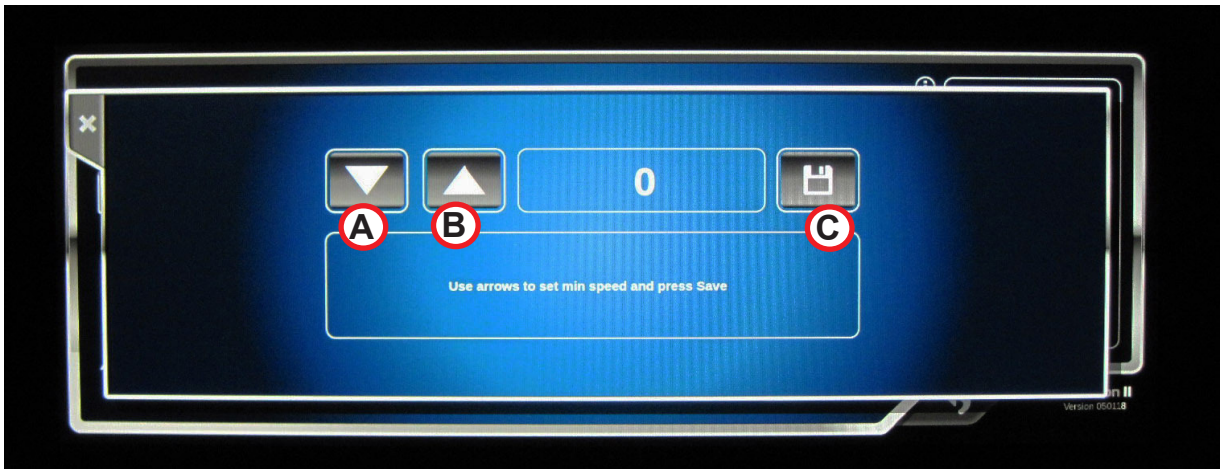






Push button (A) until threshing cylinder speed doesn´t raise anymore. Lower speed 50 units with (B) button. Save calibration value with (C) button.





Push button (A) until fan speed doesn't lower anymore. Raise speed 50 units with (B) button. Save calibration value with (C) button.

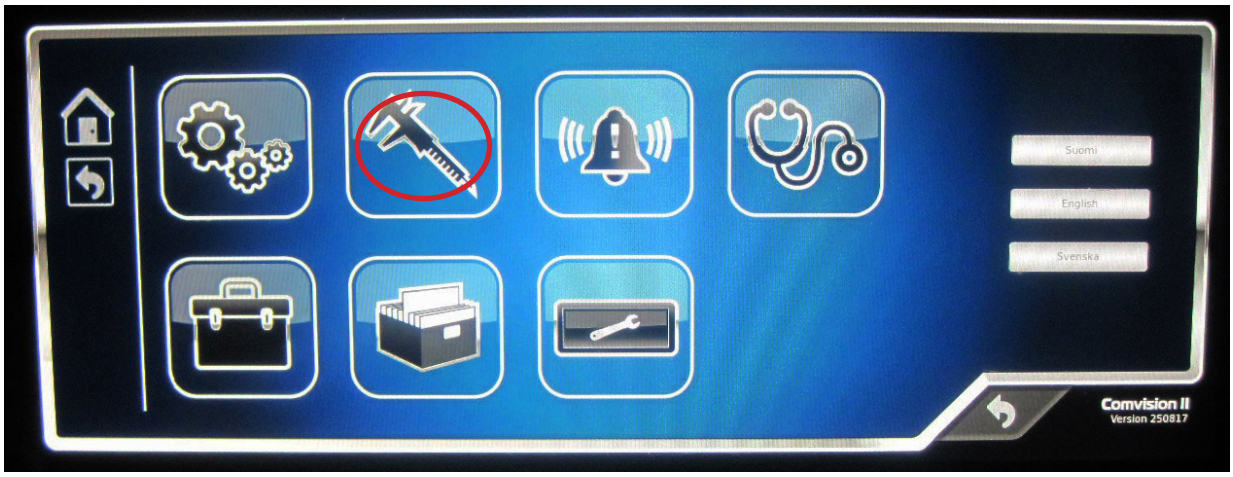
Concave calibration

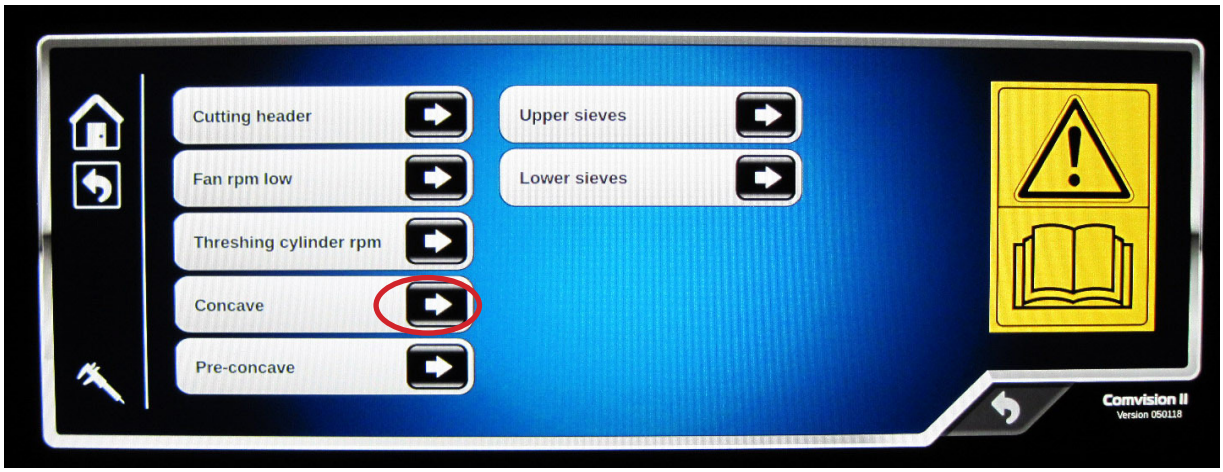
When to do this calibration:
- After Concave mechanical adjustment
- After replacing Comvision

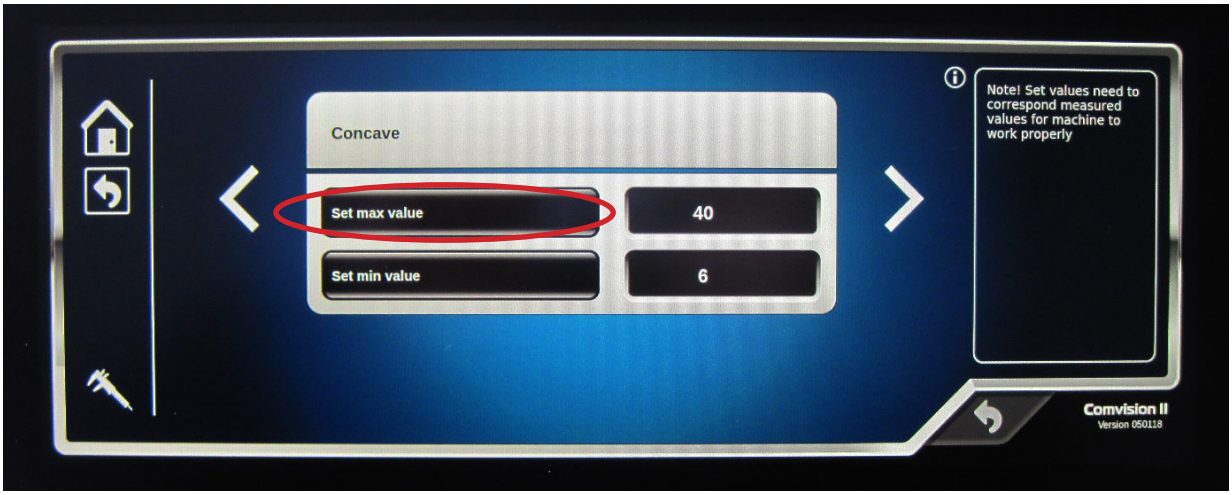
Calibration steps:

Concave mechanical basic adjustment has to be related to operators manual: Checking concave to cylinder clearance.

Power on.



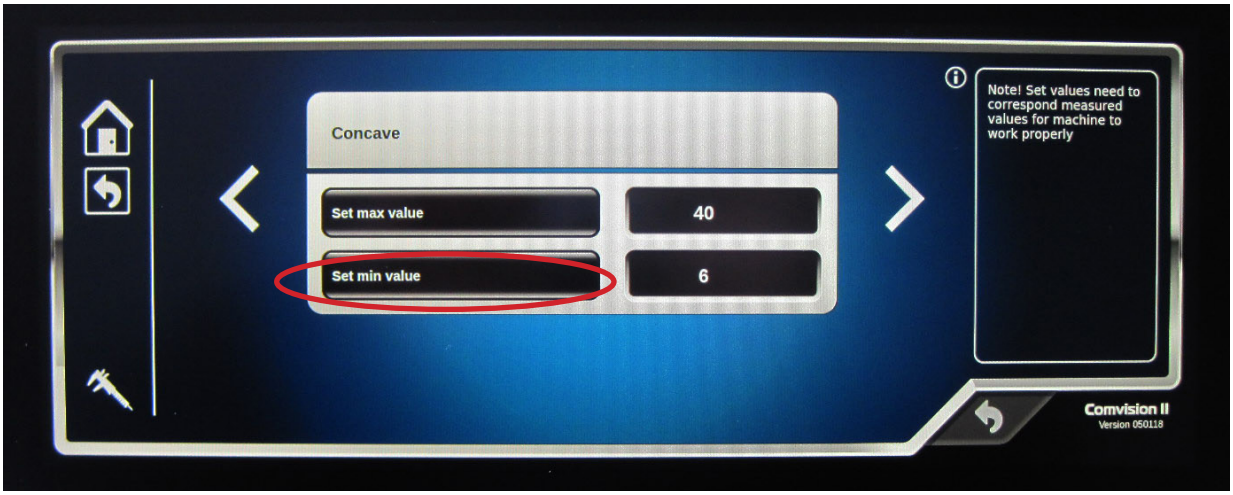






Add value 40 with keyboard which pops-up and accept value with OK button.

If concave mechanical basic adjustment is not related to instruction in operators manual, measure the clearance between concave rasp bar and threshing bar in front of the concave when concave is in maximum position. Use measured value in millimeters here. Otherwise concave clearance display in Comvision is not same as real clearance in concave.





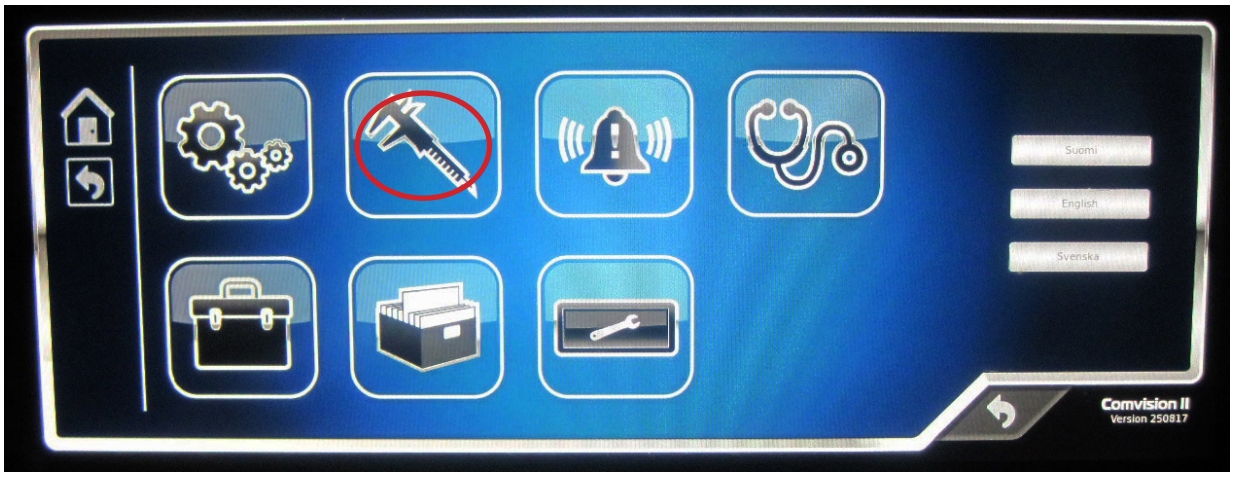
Add value 6 with keyboard which pops-up and accept value with OK button.

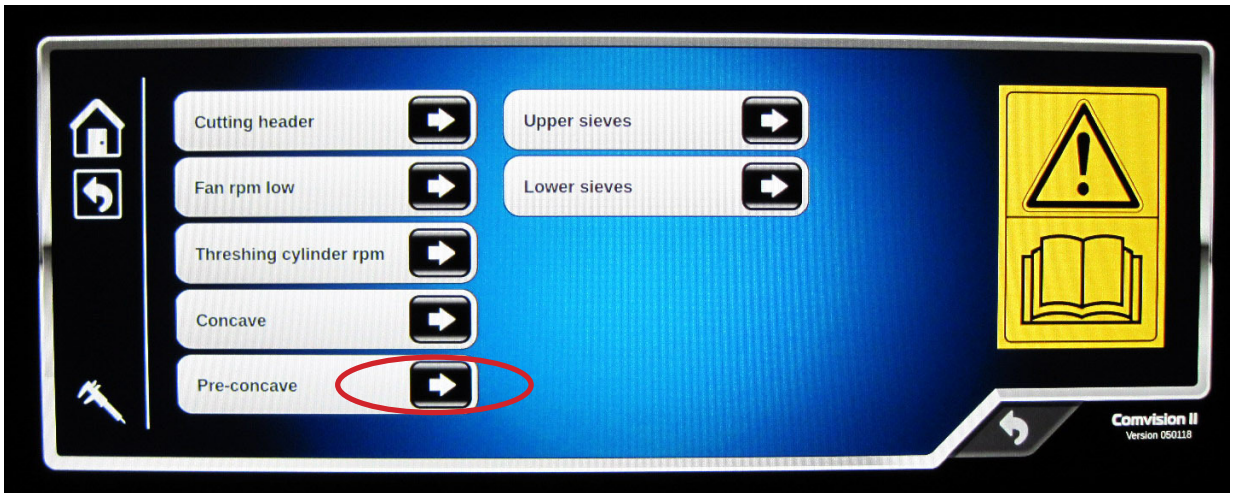
If concave mechanical basic adjustment is not related to instruction in operators manual, measure the clearance between concave rasp bar and threshing bar in front of the concave when concave is in minimum position. Use measured value in millimeters here. Otherwise concave clearance display in Comvision is not same as real clearance in concave.

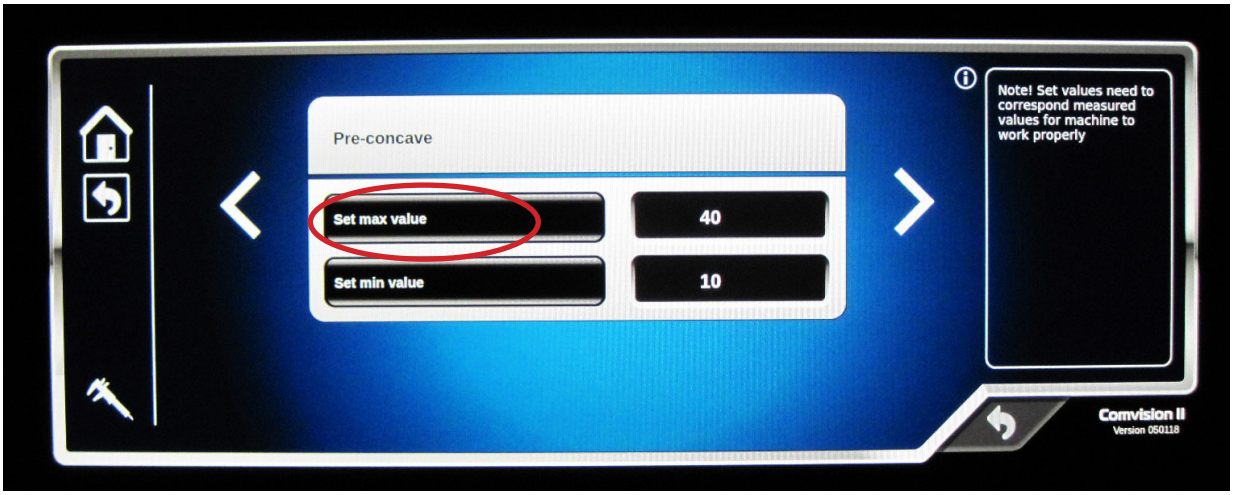
Pre-Concave calibration

When to do this calibration:
- After Pre-Concave mechanical adjustment
- After replacing Comvision

Calibration steps:
Pre-concave mechanical basic adjustment has to be related to operators manual: Checking of pre-cylinder clearance.
Power on.



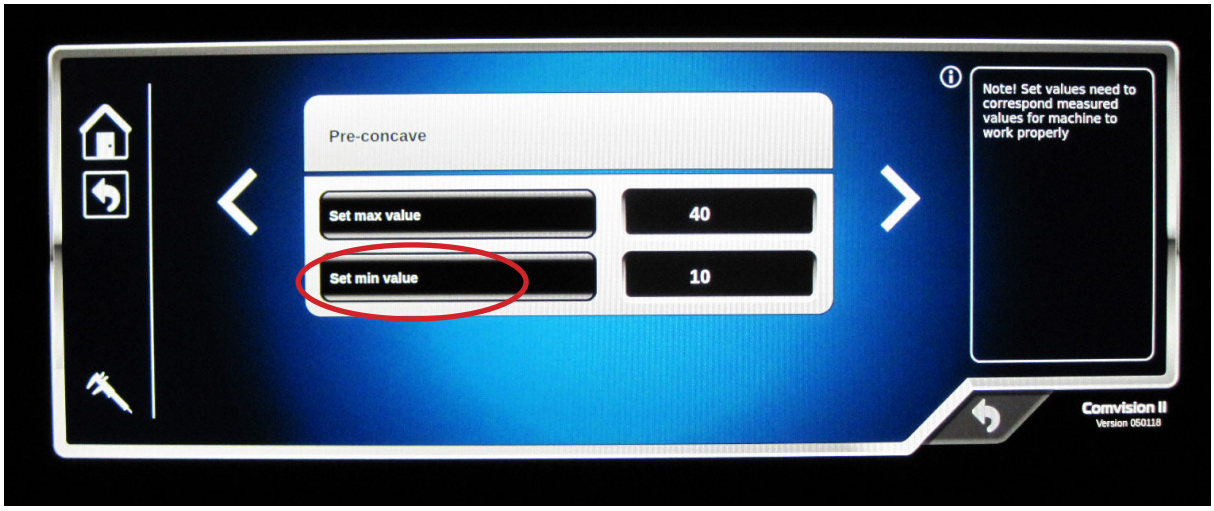






Add value 40 with keyboard which pops-up and accept value with OK button.

If pre-concave mechanical basic adjustment is not related to instruction in operators manual, measure the clearance from pre-cylinder to pre-concave at second rasp when pre-concave is in maximum position. Use measured value in millimeters here. Otherwise pre-concave clearance display in Comvision is not same as real clearance in pre-concave.





Add value 10 with keyboard which pops-up and accept value with OK button.

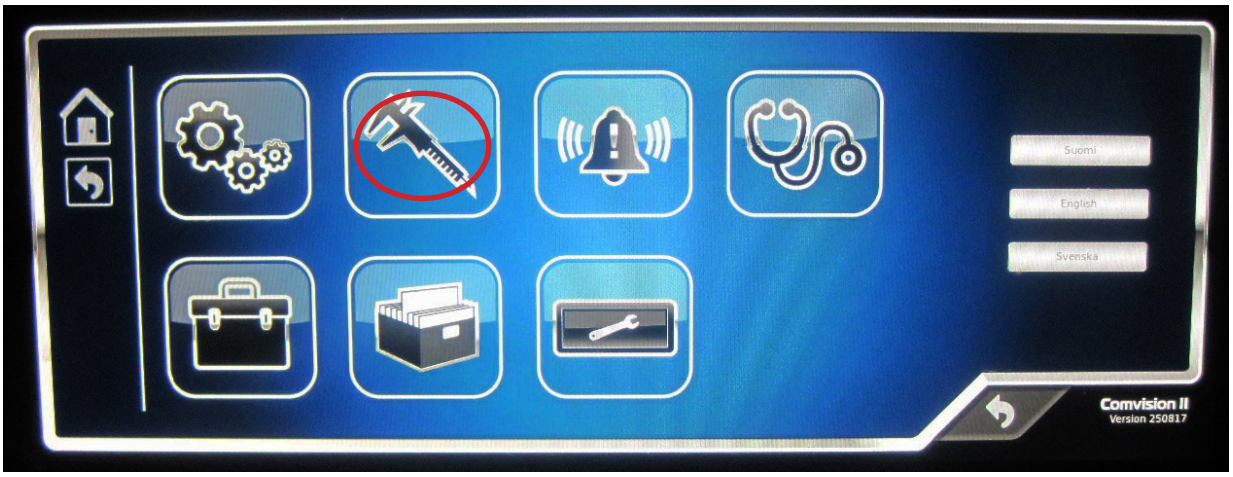
If pre-concave mechanical basic adjustment is not related to instruction in operators manual, measure the clearance from pre-cylinder to pre-concave at second rasp when pre-concave is in minimum position. Use measured value in millimeters here. Otherwise pre-concave clearance display in Comvision is not same as real clearance in pre-concave.

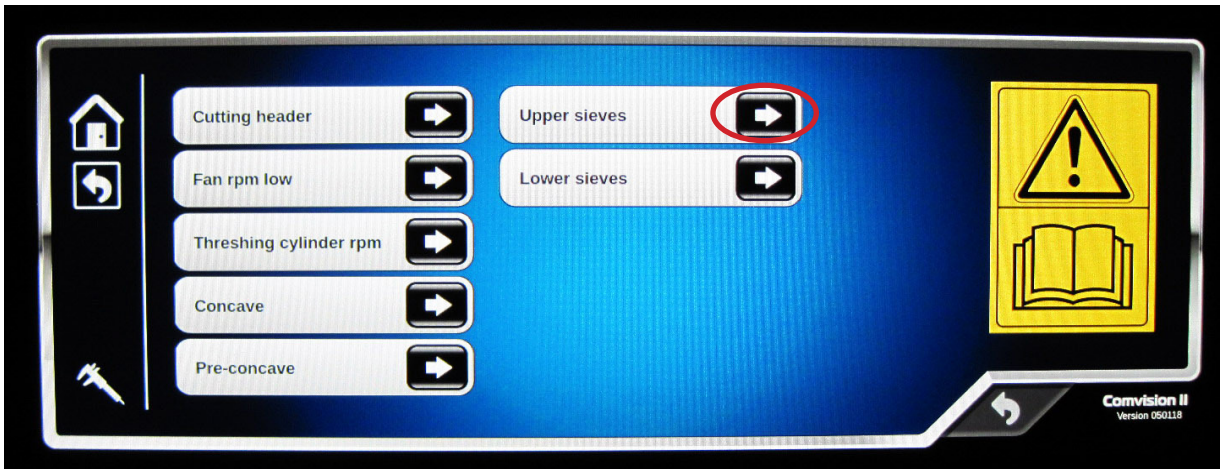
Upper sieve calibration

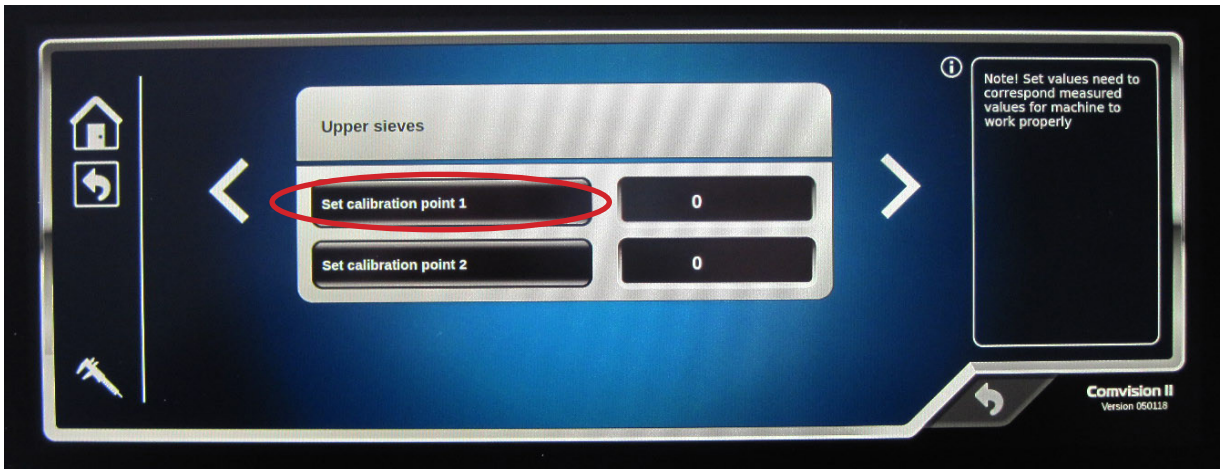
When to do this calibration:

- After replacing upper sieve operating actuator
- After replacing or adjusting upper sieve operating cable
- After replacing Comvision

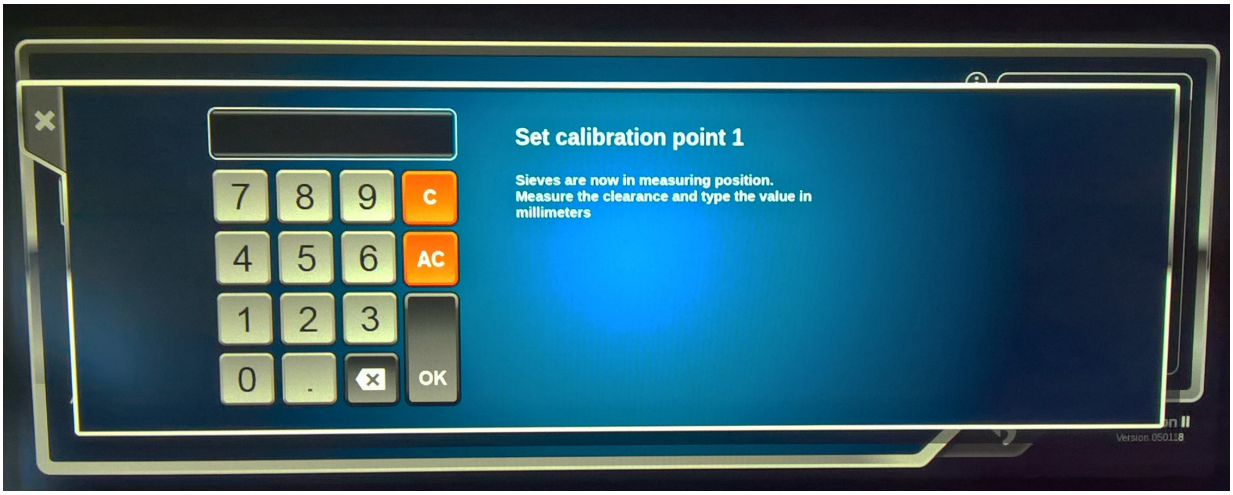
Calibration steps:
Power on.

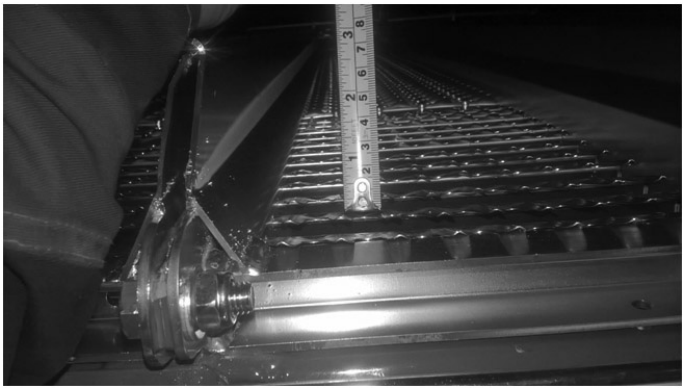




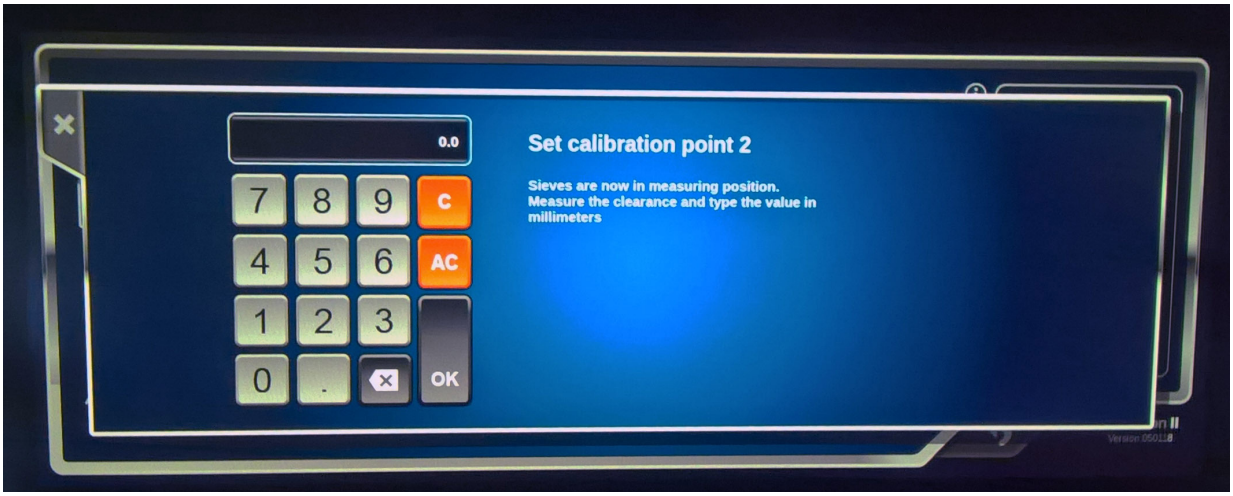


Operating actuator runs upper sieve to open and close positions automatically. And automatically calibrates those values.





When keyboard pops-up you have to measure the upper sieve opening clearance and input the 1st value. Accept with OK button.



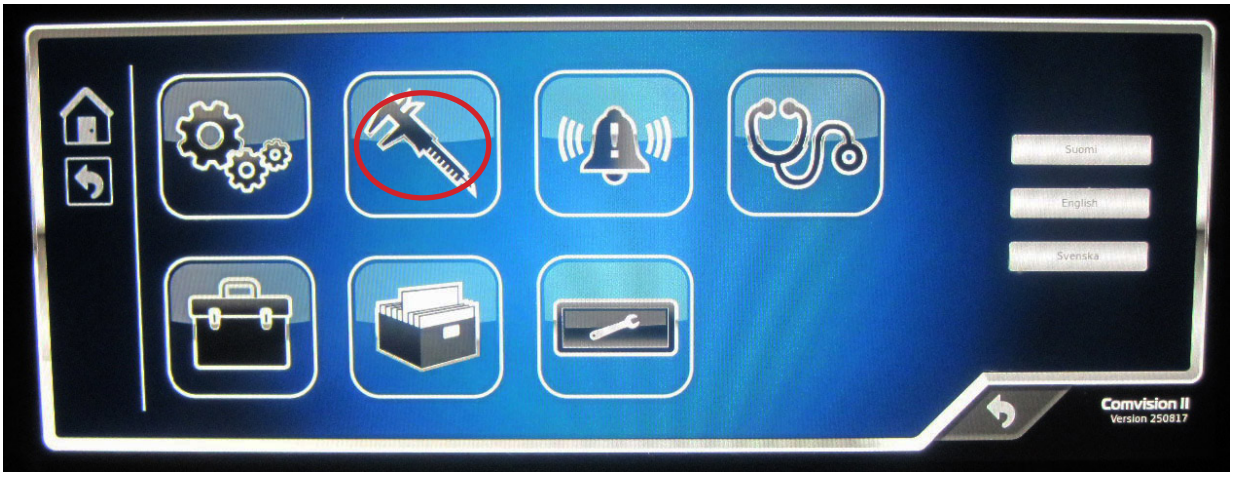
When keyboard pops-up again you have to measure the upper sieve opening clearance and input the 2nd value. Accept with OK button.

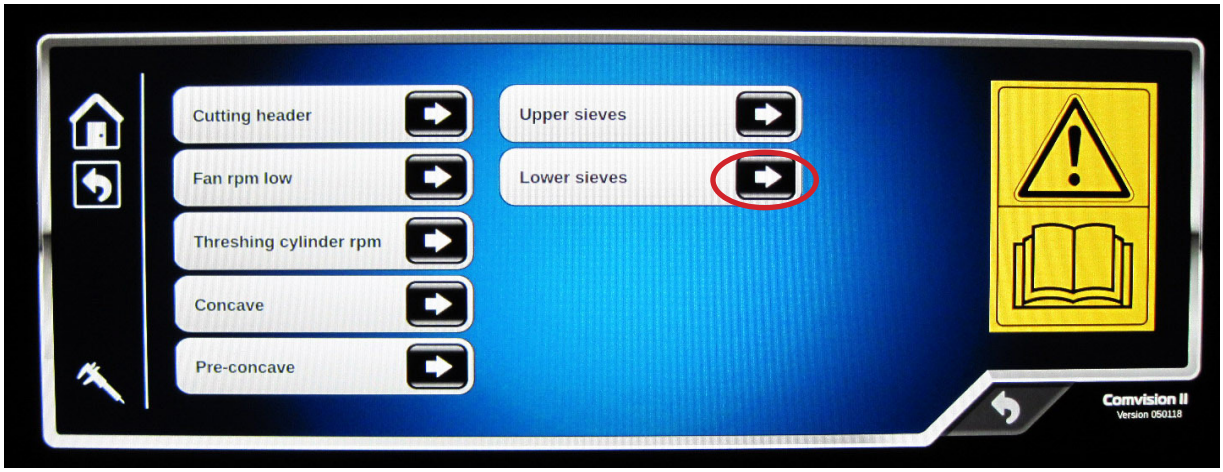
Lower sieve calibration

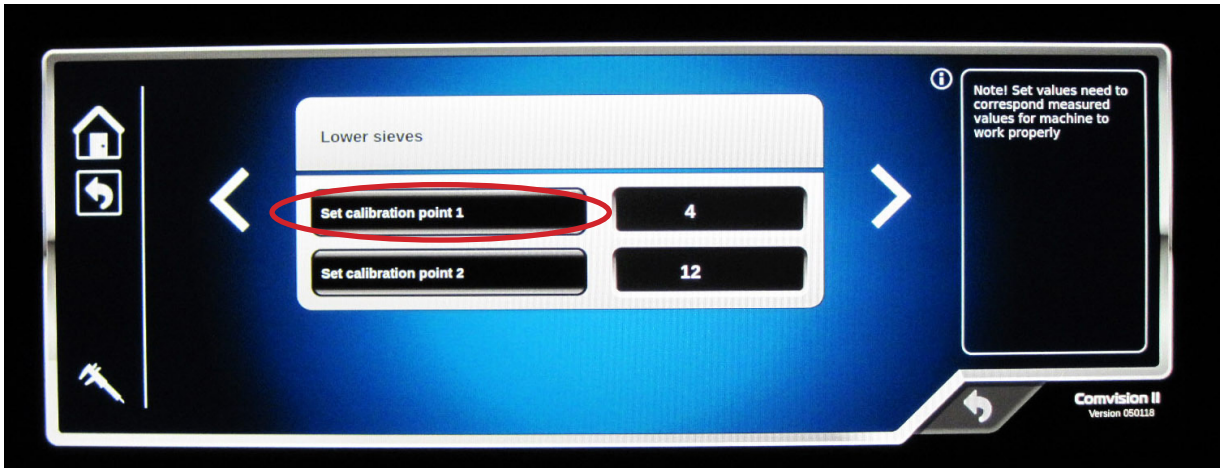
When to do this calibration:

After replacing lower sieve operating actuator
After replacing or adjusting lower sieve operating cable
After replacing Comvision

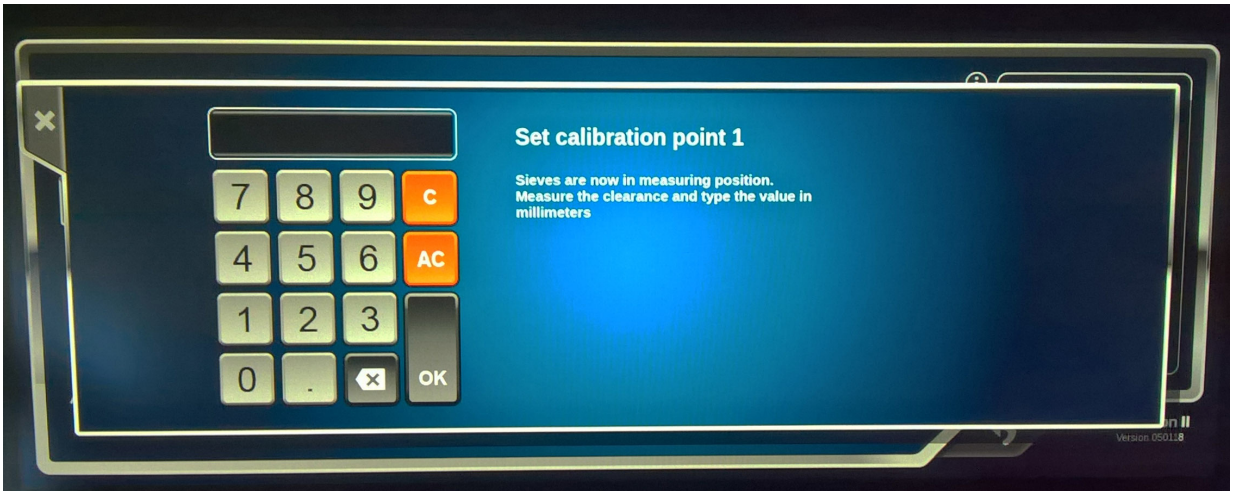
Calibration steps:
Power on.





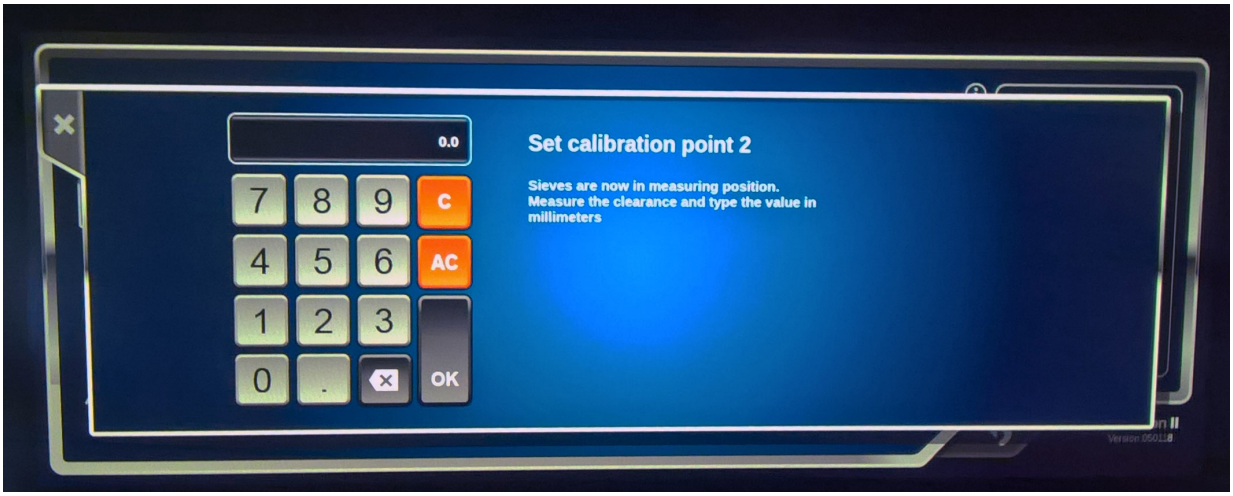


Operating actuator runs lower sieve to open and close positions automatically. And automatically calibrates those values.





When keyboard pops-up you have to measure the lower sieve opening clearance and input the 1st value. Accept with OK button.

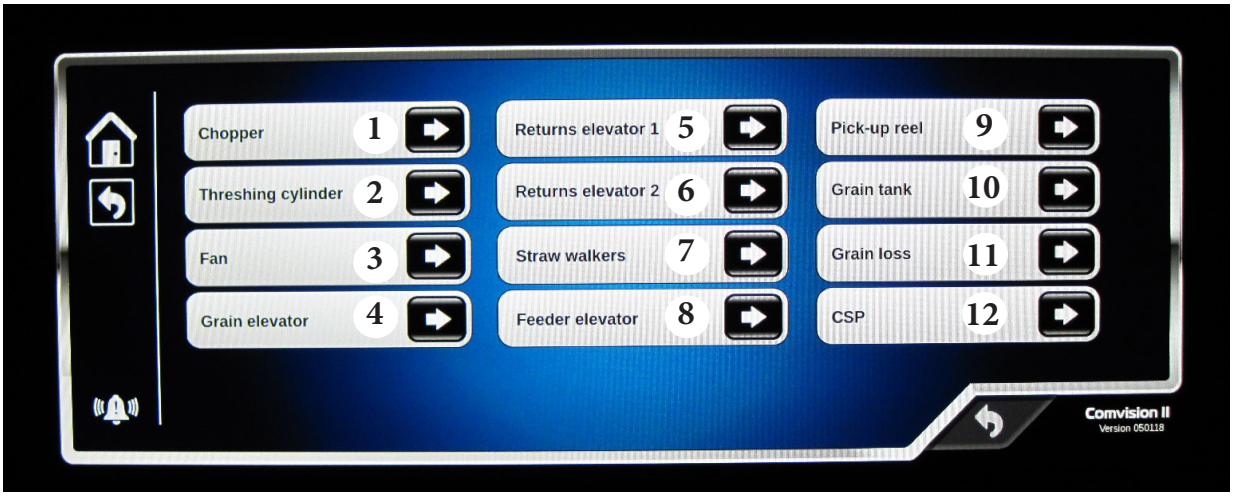


When keyboard pops-up again you have to measure the lower sieve opening clearance and input the 2nd value. Accept with OK button.

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Alarms

Alarms button allows you to set the combine's alarm settings:



- Chopper (1)
  Set lower limit
- Threshing cylinder (2)
  Set lower limit
- Fan (3)
  Set lower limit
- Grain elevator (4)
  Set lower limit
- Returns elevator 1 (5)
  Set lower limit
- Returns elevator 2 (6)
  Set lower limit
- Straw walkers (7)
  Set lower limit
- Feeder elevator (8)
  Set lower limit
- Pick-up reel (9)
  Set lower limit
- Grain tank (10)
- Grain loss (11)
- CSP (12)
  Set lower limit

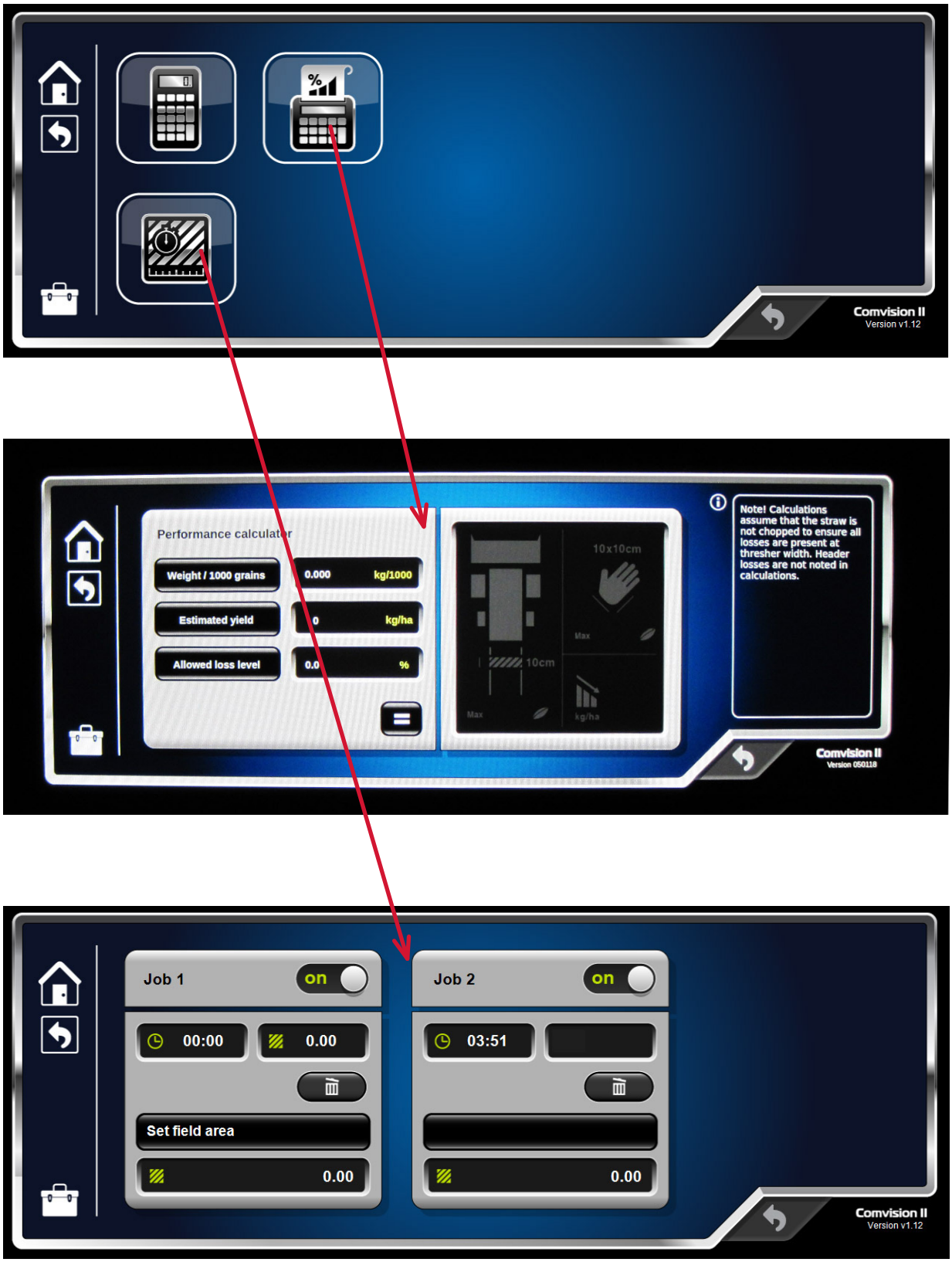
Diagnostics

Diagnostics button allows you to see the combine's all inputs and outputs, their values and descriptions.
Diagnostics contains multiple pages.



Tools

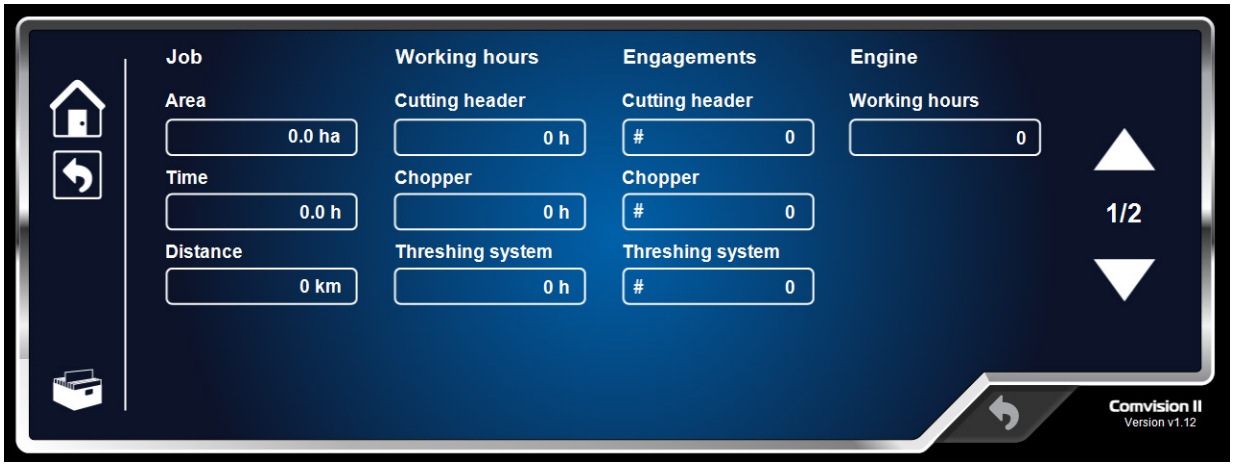
Tools menu contains basic calculator, performance calculator and calculator for job 1 and job 2.

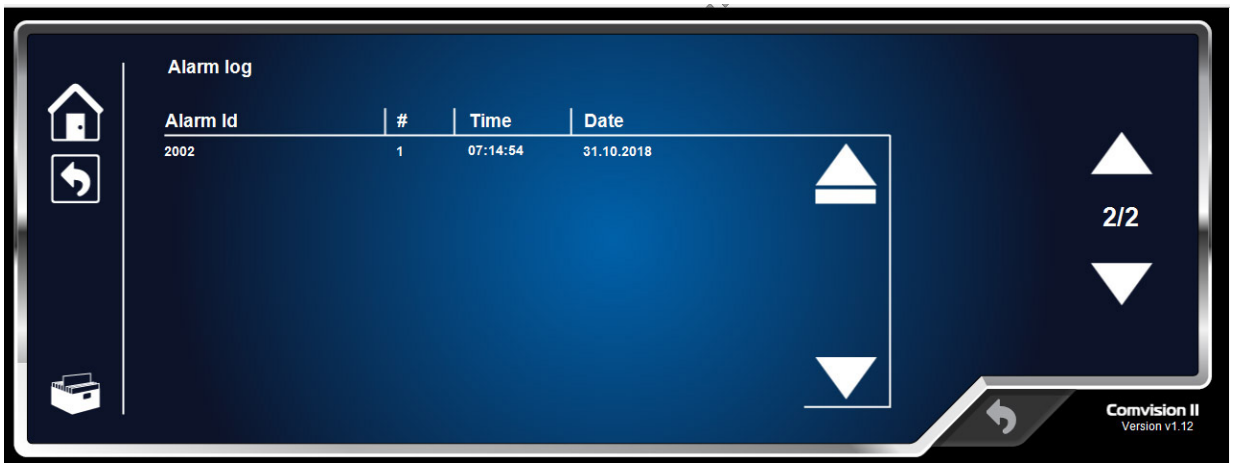


Data

Data menu shows several specifications for the combine:

- Job
- Working hours
- Engagements
- Engine
- Alarm log (2nd page)





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Settings

Settings button allows you to set the Comvision basic settings:

- Date (1)
- Time (2)
- Language (3)
- Software version BC=Back controller, CABIN=Cabin controller (4)
- RAC (Reverse Activated Camera, drive handle controlled) (5)



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Operation / adjustment
There is no separate power switch in the equipment, but it gets switched on when the engine is started. Starting up takes a while.
The basic factory settings can be adjusted to suit the conditions.

Rotation control
Alarm limits have been set on shaft rotation control. These limits can be adjusted if necessary. The fan and cylinder limits depend on the variator adjustment. An advisable alarm limit is 8-20% below normal speed. Alarm can be switched off if so required.

Automatic adjustment of the pick-up reel
In the automatic position reel speed should be adjusted either higher or lower than the selected rate of ground speed. However, the adjustment range sets its own limits. No adjustment is made with the table raised or with the table stopped.
The adjustment system has limiter switches that stop the servomotor at the end of the adjustment range.

Service
Loss sensors require regular service. Their surfaces must be kept clean. In damp conditions dirt may accumulate on the sensor surfaces. Remove the dirt while still damp. Do not use a sharp tool.
Check the condition of the pulse sensors.
The sensor for the amount of returns may also get dirty. It can be cleaned through the service door on the housing of the returns threshing machinery.

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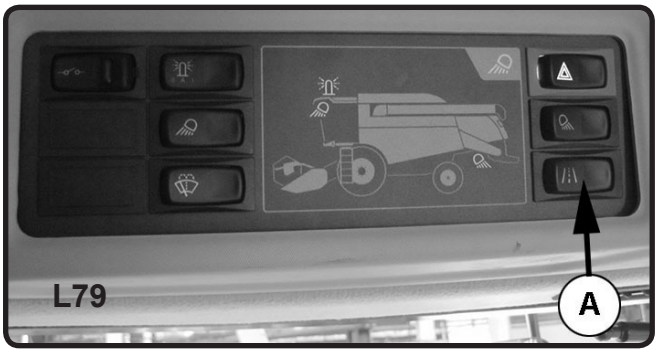
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AUTOMATIC CUTTING HEIGHT CONTROL (AHC)

Introduction

Instructions on how to use the automatic height control (AHC) of the cutting table.

It is advisable to read first the combine operating manual, particularly chapter “Operator Controls and Instruments” and in chapter “Threshing Equipment” paragraphs dealing with the pick-up reel and the cutting table.



L79

Safety Precautions

Always keep the equipment in good condition. Make sure you repair any defects as soon as they appear. Faulty equipment must not be used.

Keep in mind that when the equipment is switched on, there is an automatic movement.

When using the automatic mode, make sure there are no people or animals within a danger zone.

When using the ”start-up” feature, ensure that there is enough space to move the cutting table and that there is a strong level support beneath the cutting table onto which the table can be lowered.

When turning the unloading pipe, ensure that there is enough open space on the left side of the combine to allow the pipe to turn unhindered.

Always press down the SAFETY SWITCH A (Figure L79)at the instrument panel before moving onto the road. This will prevent unintentional turning of the unloading pipe on the road.

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General Description

The AHC system includes the following functions:

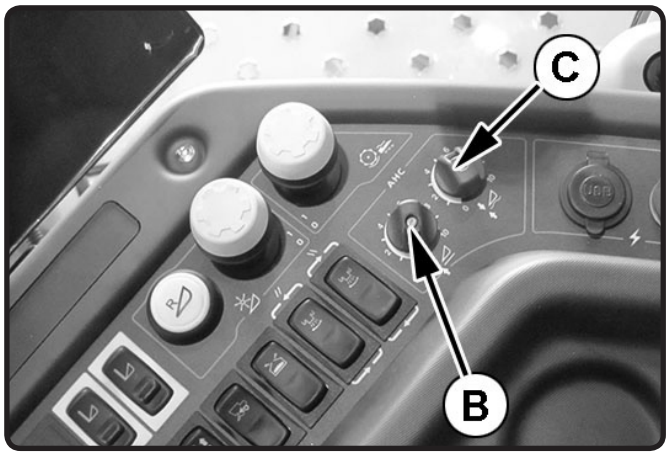
- Presetting of the table height to allow the cutting table to be lowered to a preset height in relation to the combine frame at the touch of a button.
- Automatic height control of the cutting table to adjust the table height in relation to the ground.

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Operator Controls

Switch Panel, Fig. L80
The switch panel of the system is located in the cab. The panel houses two adjustment knobs B and C

- Adjustment knobs B and C set the desired cutting height separately for presetting and for automatic setting. Knob B on the left adjusts the preset height and knob C on the right the automatic height.
- The Comvision- display shows which mode has been selected.



L80

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Adjustment of Lowering Speed

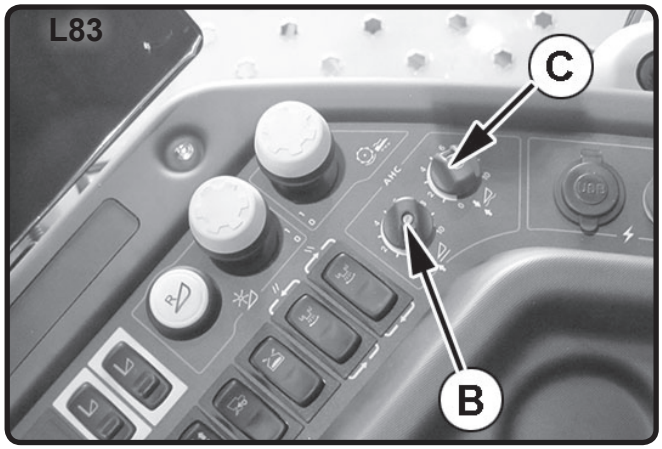
The adjustment knob in the lowering valve adjusts the lowering speed of the cutting table. Make sure the speed is adjusted slow enough. Loosen the adjustment screw to slow down the speed and tighten it to increase speed. Note that if the adjustment screw is loosened all the way, the table will not lower. If the lowering speed is too high, there is a rattling sound and vibration when the table is being lowered to its automatic height.

Fitting of a Table not Equipped with Sensors

The combine can be fitted with a cutting table that does not have height sensors. If this is the case, there are no automatic adjustments.

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Use AHC



Automatic Height Control

Basic Adjustment

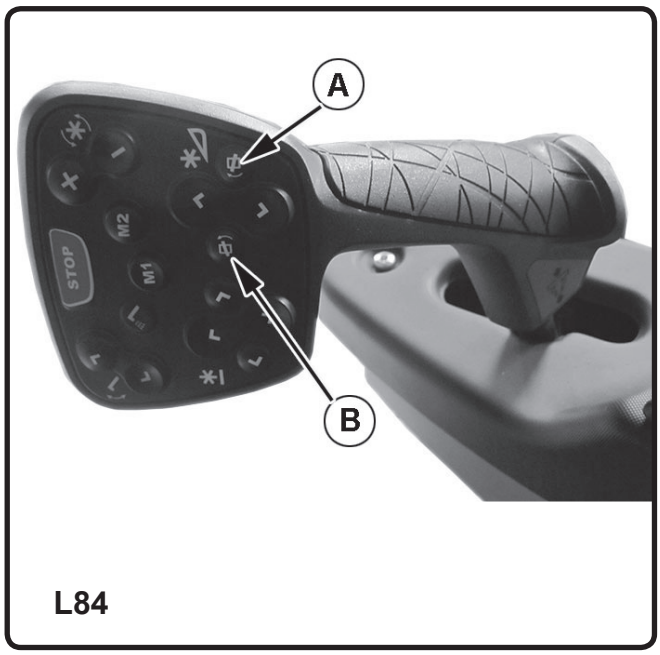
- Activate ”pre-lowering height” by pressing button M1 on the drive handle. In this mode you can adjust the pre-lowering height by turning left-sideregulating switch B on the switch panel. Activate ”automatic height” by pressing button M2 on the drive handle. Adjust the cutting height by turning right-side regulating switch C on the switch panel.

While Threshing

- Buttons M1 and M2 can be pressed to go from any height direct to the pre-selected cutting height. Fig. L84.
- When either of the automatic modes has been activated and the cutting height is adjusted up or down manually, the system goes to a stand-by position. Automatic features can be re-activated by pressing buttons M1 or M2 to obtain the desired mode

AHC system can store two values in storage places.
To save the current position of the cutting table to storage place, hold SHIFT button in front of the drive lever with button A or B for at least 2 seconds. The cutting table height value remains saved until a new value replaces the old one.
To use stored cutting table height push SHIFT button with button A or B.

With the automatic height adjustment on, the height sensors guide the lifting of the table in such a way that both table ends stay at the same height in relation to the ground.



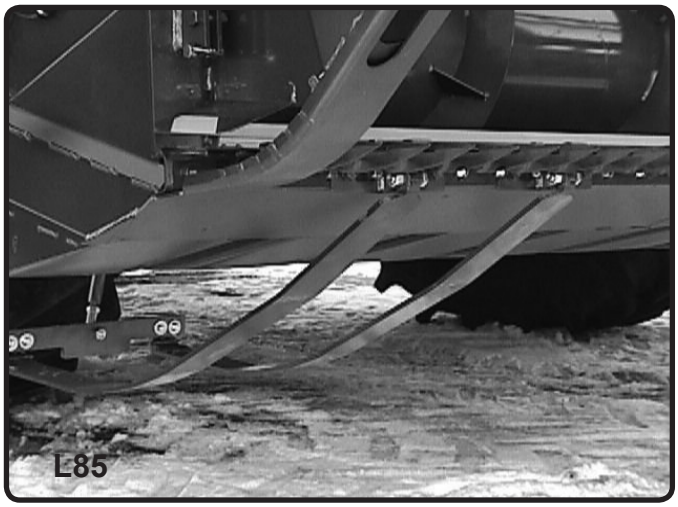
L84

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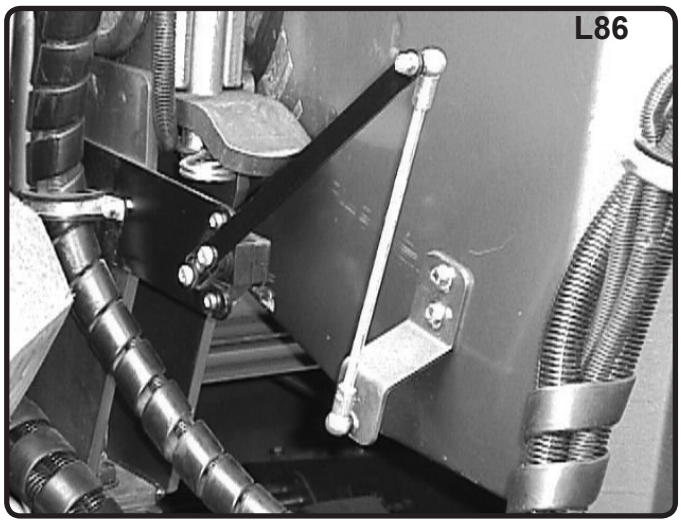
Maintenance

During threshing keep an eye on the runners to see if they accumulate soil between themselves and the cutting table. Accumulated soil can prevent the runner from operating correctly near the ground surface, in other words, when the runner operation is at its mort important. Remove any soil off the runner.

Check periodically that the sensor runners can move unhindered from one extreme to the other.

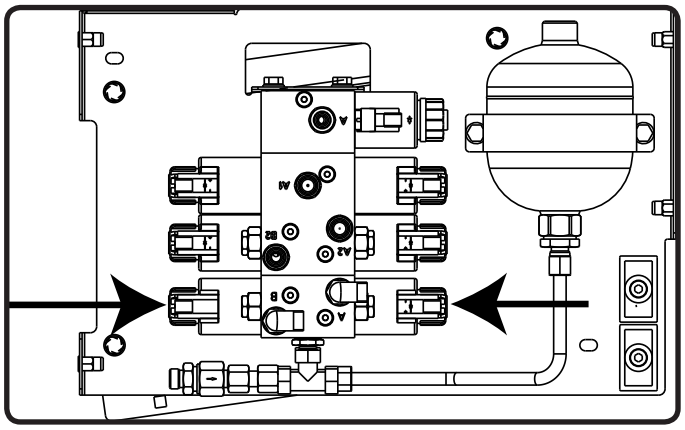

L85

Crop Elevator Angle Sensor, Fig. L86
The lever mechanism of the height sensor on the right side of the crop elevator becomes easily bent. When carrying out maintenance work, make sure not to damage the levers and the sensor.


L86

Lubrication
The rear joints in the cutting table sensor runners are to be lubricated with grease every 50 hours.
The front joint in the sensor runners are to be lubricated with oil every 50 hours.

WARNING!
When carrying out service jobs on hydraulics, ensure that the pressure stored in the system is released in a safe manner.
• Because of the counter valve and the additional gas accumulator installed in the pipes, there is always some pressure in the hydraulic control valves. This can be released with the engine stopped by pressing the manual control studs at the ends of the solenoids on the table side tilt valve with a pin (Fig. L88).
• The valve is of double-acting type. Both the solenoids must be pressed alternately as the accumulator holds enough oil for a couple of tilting movements. The tilt bar in front of the crop elevator (and the table) move during this function. Make sure nothing gets squeezed by the bar while it moves.


L88

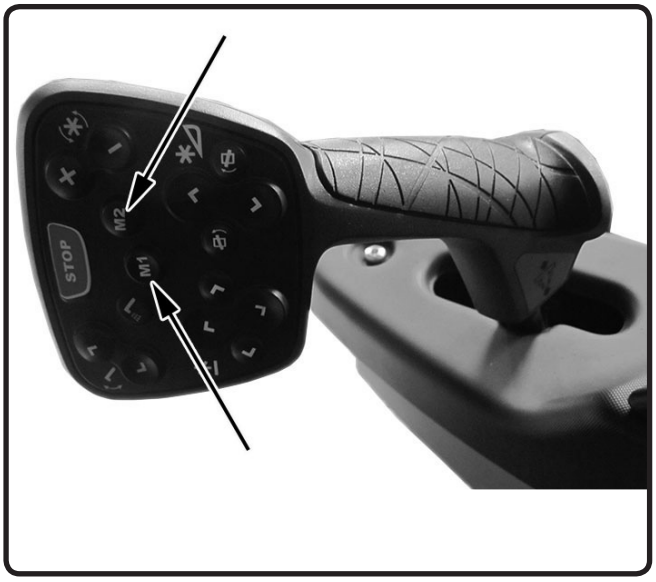
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DHC (when no AHC)

Presetting of Cutting Height

Safety Precautions

Always keep the equipment in good condition. Make sure you repair any defects as soon as they appear. Faulty equipment must not be used.



L87

Keep in mind that when the equipment is switched on, there is an automatic movement.
Make sure there are no people or animals within a danger zone when moving the cutting table.

Use

The DHC is a system by means of which a cutting table is set to the preset cutting height at a short touch of a button.

DHC system can store two values in storage places.

To save the current position of the cutting table to storage place, hold button M1 or M2 for at least 2 seconds. The cutting table height value remains saved until a new value replaces the old one.

To use stored cutting table height push button M1 or M2.

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DRIVING AND THRESHING INSTRUCTIONS

Before Starting the Combine Check that:



There are no foreign objects inside the combine.
The oil levels are correct (engine, hydraulic tanks).
There is coolant in the cooling system.
There is fuel in the tank.
The threshing mechanism and unloading pipe clutches are in neutral.
There are no people or animals near the combine.
Always before starting, sound the signal to warn those nearby.

Starting the Engine:

Hydrostatic Traction Transmission



Select the required gear with the traction speed control lever in its mid position.
Push the lever slowly forward or backward to drive the combine in the respective direction.
Adjust ground speed with the traction speed control level.
If the temperature is below 0oC, idle the engine for some 15 minutes before starting off to allow the oil in traction hydraulics to warm up.

Test the brakes.

Note! Speed range 3 is only meant to be used when driving on the road with the grain tank empty. Using it on the field is prohibited.

Changing Gears:

Hydrostatic Traction Transmission

On hydrostatic combines gears must always be changed with the combine stationary on level ground. First change the gear to neural and then select the required gear. If necessary, “drive” on hydraulics for a while to engage the gear. This brings the gears to the right positions in relation to each other.

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When Driving on the Road:



The brake pedals must be latched together.
Brake smoothly as the rear wheels easily rise from the ground when applying the brakes violently.
Never drive downhill with the gear in neutral.
In accordance with the statutory traffic regulations when driving on the road, the cutting table guards shall be mounted, the front and rear lights correctly aligned, only the headlights on and the grain tank empty.

When Driving on the Field:

The brakes may be used independently to reduce the turning radius.

In Soft Field Conditions:



To improve the carrying capacity, the front tyre air pressure may be reduced by approx. 20 kPa (0.2 bar) below the normal pressure.
Do not reduce the air pressure in the rear tyres.
With reduced tyre pressure, only half-fill the grain tank.
When returning to normal harvesting conditions or the road, return to recommended pressures.

On Steep Slopes:



To improve the stability of the combine, increase the tyre pressure by approx. 30 kPa (0.3 bar) above the normal pressure.
To eliminate the risk of overturning, only half-fill the grain tank.

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Threshing Instructions

Choose the Correct Time and Conditions

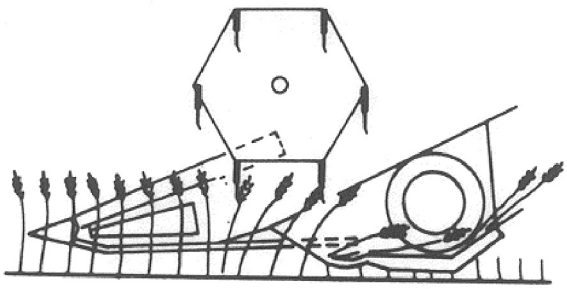
Before starting the harvest, make sure that the crop to be threshed is ripe and dry enough. The germinating power of most crops is easily reduced if the threshing moisture exceeds 25%.
Moreover, moist crops complicate harvesting and overload the threshing mechanism. They also easily stick onto the surfaces of the separating equipment and elevators, which will increase the need for cleaning.
Particularly in dry conditions with moisture below 12%, straw becomes chopped extremely easily. This will hinder the straw walker operation and burden the shaker shoe excessively.

Good Threshing Results with Even Feed

Always run the engine at maximum revolutions when threshing. When threshing, it is important to adjust the forward speed, the cutting height and the reel according to crop conditions to achieve as even feed as possible. Do not cut too low. Leafy matter moistens the straw leading to a poor threshing result.
Empty the stone trap daily. Before emptying, stop the engine, lock the parking brake and fit the cutting table support.

Start with the Recommended Settings

In the table at the end of this chapter you will find settings and adjustments for different crops. After adjusting your combine according to these recommended settings, test run the combine at the speed you will use in harvesting. Monitor the quality of the grain in the tank and the losses in the field.
Note! When stopping threshing heavy-strawed crops without the chopper, it is important to make sure that all the straw comes out of the straw walkers without clogging the chaff hood.



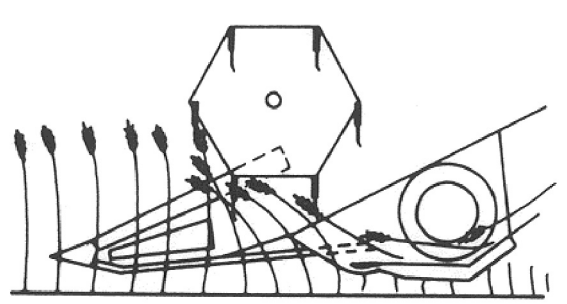
M1

Reel Position in Accordance With Crop

For normal standing crops, set the reel in its rear position at such a height that the reel tines lightly strike the crop. Reel speed slightly higher than the combine ground speed to ensure the crop is feeding head first, fig. M1.

For short-strawed crops, lower the reel so that the tines strike just above the knife. The reel speed increases the faster you drive and the shorter the straw is cut with the heads. The reel must pull in the heads toward the table auger.

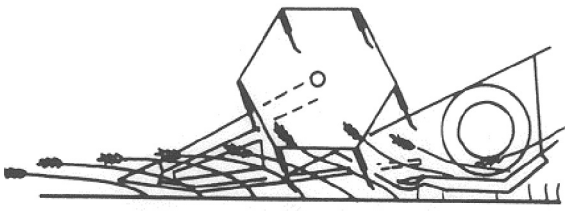
For long-strawed standing crops, set the reel in its forward position, the speed lower than the combine ground speed so that the heads are pushed forward and the crop is laid butt first onto the table, fig. M2.



M2

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For laid-down crops, set the reel forward, reel speed higher than the combine ground speed and the reel angled to facilitate the gathering of the crop, the knife cutting below the heads, fig. M3. When using crop lifters, the reel should feed the cut crop onto the table auger with the reel tines in the normal position.



M3

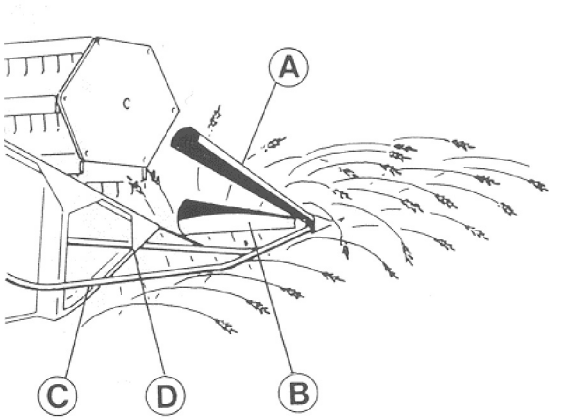
Adjust the straw dividers to reduce table losses and improve feeding.

To avoid threshing losses caused by the straw dividers, pay special attention to adjusting them according to the conditions and crops.

Adjust the height of the dividers with slide piece D, fig. M4, so that in laid-down crops the dividers follow the contours of the field beneath the crop. In standing crops the head of the divider should be set 10…cm above the knife.

Adjust side guide plate B so that it prevents the cut crop from getting between the table end and the reel end. Long-strawed reclining or laid-down crops are limited and lifted by upper guide plate A so that the reel can gather the crop for cutting and convey it to the table auger.

Side guide tube C is used in long-strawed crops to move the uncut crop aside.



M4

Estimation of Threshing Losses

2 % is generally considered the maximum acceptable threshing mechanism loss. The losses can be calculated as follows: Estimated yield 5000 kg/ha, the weight of 1000 grains 35 g. Within the cutting width of the combine, max. 3 grains may be found in a palm-sized area of 1 sq.dm.

Sources of grain loss:

Shedding in the field before harvesting
The table
Unthreshed grain
The shaker shoe
The straw walkers

Before making any readjustments, make a methodical check in the above order to determine the cause for the loss. Make one adjustment at a time and check the result with a test run.
Check the crop in front of the combine well to ensure that shedding has not occurred before the machine has touched the crops.
To test for the table loss, stop the combine and reverse it one combine length; any grain loss can easily be seen in the field.

Causes for table loss:

The reel has threshed the grain onto the field due to too high or low revolutions and too wide a clearance.
Local blockage in the knife causes a depressed and uncut section in the field. This may be due to a damaged knife plate or finger.
Remember that uneven feed onto the cylinder causes disturbances in the whole threshing mechanism and leads to extensive grain losses.

Always aim at even feed when threshing!

Unthreshed Grain

Check that the grain gets threshed off the heads. Check the long straw on the straw walkers as the chopper also removes the unthreshed grains efficiently.
Cylinder speed should be moderate and concave clearance as wide as possible to obtain unbroken grain and straw as well as minimal grain losses. It is not necessary to aim at complete threshing. Particularly when threshing seed grain, the minimal recommended speed setting for the cylinder should be used, as high cylinder speed damages germinability more easily than minimal concave clearance.

Unthreshed grain loss can be caused by:

Cylinder speed too low
Cylinder-concave clearance too wide
Uneven feed
Crop too green in parts
Damaged cylinder or concave.

Shaker Shoe Losses

If the sample coming from the sieves (taken on a shovel, for example) shows grain being lost, check for the following:

Uneven feed
Blocked concave and/or straw walkers
Excessive forward speed
Cylinder-concave clearance too small
Too much weed
Crop too damp

Straw Walker Losses

If the sample coming from the straw walkers shows grain being lost, check for the following:

Uneven feed
Blocked concave and/or straw walkers
Excessive forward speed
Cylinder-concave clearance too small
Too much weed
Crop too damp

Quality of Grain in the Tank

If there is crushed or cracked grain in the sample, the reason could be

Cylinder speed too high
Cylinder-concave clearance too small
Blocked concave
Crop too green in parts

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If the sample is not clean, the reason could be:

Insufficient fan speed
Incorrect direction of fans
Grain sieve holes too large for crop
Chaffer sieve set too wide open
Forward speed too low (insufficient load on the threshing mechanism)
Crop sparse in places and weedy
Cylinder-concave clearance too small
Too many breaks in threshing (turning, etc.)

Malfunction Problems

The cylinder winds up and gets clogged:
Crop damp or green
Forward speed too high
Cylinder-concave clearance too wide
Cylinder speed too low
Cylinder bars damaged or worn
Rear beater damaged

The grain auger gets clogged:
Chaffer sieve set too wide open
Insufficient fan speed

The return auger gets clogged:
Grain sieve holes too small
Grain sieve blocked
Insufficient fan speed
Chaffer sieve set too wide open

Cleaning Instructions When Going From One Crop To Another



Drive the combine on level ground. Change the gear into neutral and lock the parking brake. Remove the ignition key whenever the engine is switched off to ascertain that no outsiders can start the combine. Do not implement any cleaning operations with the engine running!
Cleaning with compressed air is recommended. An appropriate brush may also be used.
Support the reel and the cutting table in their top positions.
Open the stone trap and empty it with a cassette key, for instance.
Open all cleaning doors (not those to the grain tank).
Remove and clean all sieves.
Clean the supporting grooves of the sieves in the shaker shoe.
Lock the back door in the shaker shoe.
Remove and clean the bottom grooves in the straw walkers.
Run the threshing mechanism for 2-3 min. with the cleaning fan at maximum speed and push the direction lever to and fro.
Lift and lower the cutting table, but do not start it. Leave the table in its bottom position.
Stop the threshing mechanism.
Check that the grain pan is empty. If necessary, remove and clean the cassettes.
Check the spaces between the return and grain augers and remove any remaining grain.
Shake the chain of the feeding elevator to make the grains run down. Clean the elevator inside and out.
Clean the cutting table.
Remove the bottom augers of the grain tank and the part of the unloading pipe in the grain tank.
Brush the bottom furrows, discharging the grains through the bottom door.
Clean the unloading pipe by turning the auger manually counter-clockwise with the pipe being raised half way up to make the grains run out through the bottom door.
After cleaning, refit the parts and close the doors.

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APPROXIMATE SETTINGS

This table only gives recommended settings. While threshing, adjust the settings according to the harvesting conditions.

Crop	Threshing Cylinder	Concave Settings		Shaker shoe		Fan	
	RPM	Pre Concave mm	Main Concave front mm	Chaffer sieve open mm	Grain sieve hole Adjustment sieve mm	RPM	Direction notch
Rye	950... 1250	14...20	8...15	10...15	10...12 4...10	700... 850	2...3
Barley	950... 1300	12...20	6...12	12...16	12...16 4...12	700... 850	2...3
Wheat	900... 1300	14...20	8...12	10...14	10...12 3...8	700... 850	2...3
Oats	800... 1200	14...20	9...16	12...16	12...16 4...10	700... 850	2...3
Rape	750... 1000	18...25	20...30	6...10	5 0...3	600... 650*	2...3
Turnip rape	750... 1000	18...25	15...25	5...7	5 0...3	600... 650*	2...3
Timothy	700... 1000	12...20	9...12	0...3	3...5 0...3	600.. 650*	5 (closed)
Clover	1100... 1300	10...13	6...9	14...17	5 0...5	600... 650*	2...3
Pea	600... 800	25...35	24...27	12...18	16 8...14	650... 750	2...3
Meadow fescue	800... 1050	14...16	6...12	8...10	5 2...5	600... 650*	2...3
Sun flower	450... 600	35...40	30...35	11...13	12...16	650... 750	2...3
Buckwheat	700... 1000	14...20	6...9	12...16	8...12	600... 700	2...3
Cumin	600... 850	16...22	15...20	5...8	5	600... 650*	2...3
Honey flower	600... 950	15...22	10...16	2...5	5...12	600... 700*	5
Flax	900... 1300	8...12	6...8	5...8	5	600... 700	2...3
Maize	600... 900	35...40	30...35	12...16	16	800... 900	2..3
Soybean	450... 600	20...30	15...18	14...17	12...16 10...14	650...800	2...3
Sorghum	600... 1000	10...15	6...12	8...12	5...8 3...7	700... 850	2...3
Rice	600... 1100	16...28	16...28	10...14	10...16 8...14	550... 800	2...3

*) with the bottom door open

The normal front:rear clearance ratio is 2:1 in the main concave. In dry conditions when straw is extremely brittle, it is advisable to use concave ratio 1.5:1...1:1, see fig. L22. I.e. clearance at the rear of the concave is bigger than in the normal setting. This will reduce straw damage and walker losses. The setting is changed by adjusting the rear supports of the concave longer as explained in chapter ”Maintenance”, fig. P22. A non-standard ratio shall be checked every time clearance is adjusted from the cab. The adjustment mechanism automatically maintains the 2:1 clearance ratio. Return to the standard setting when working in normal conditions again.

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SERVICE AND MAINTENANCE

Safety

Installations and adjustments can only be made by a person with the required skills and qualifications and the necessary knowledge of the machine in question.

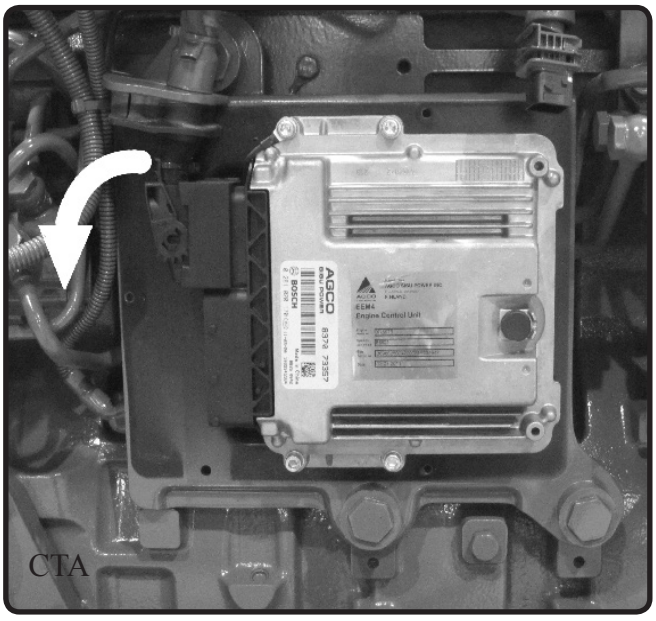
Installations, adjustments and repairs must be undertaken with the engine stopped and the ignition key off.
All the moving parts must be in balance and stopped and, when necessary, locked. Support the cutting table and the reel in their top positions. Ensure that there is no pressurized energy in the fluid systems before opening mechanical or hydraulic couplings. (The gas accumulator for the table, the air conditioning equipment, the radiator, etc.)
Double-check that there is no risk of injury when starting the engine either during or after service measures.

Ensure that all periodic checks and cleaning are carried out on time in compliance with the instructions so that no such malfunctions may occur which can cause any risk or hazard.


LH

General Instructions

- Make sure you are skilled enough to service the combine before undertaking any maintenance work. If not sure, contact a qualified service man.
- Get acquainted with the combine structure and the following service instructions before undertaking any work.
- Wear appropriate protective clothing.
- Use appropriate tools and other equipment.
- Handle the combine and any work materials in such a manner that there is no risk of injuring yourself or anybody else, or harming the environment.


CTA

WELDING

The regular service measures required do not involve welding, but it may sometimes be necessary when doing repairs. Only qualified hot work operators are allowed to weld.

Welding causes a considerable fire risk. Clean the combine carefully before undertaking any welding work and make sure you have a fire extinguisher handy. Appropriate fire watch shall be seen to.

The electrical system of the combine houses several components with semiconductors. They get easily damaged when there are voltage peaks caused by arc welding. The main principle is to detach any structures that require welding. If any fixed combine structures need to be welded, take the following precautions:

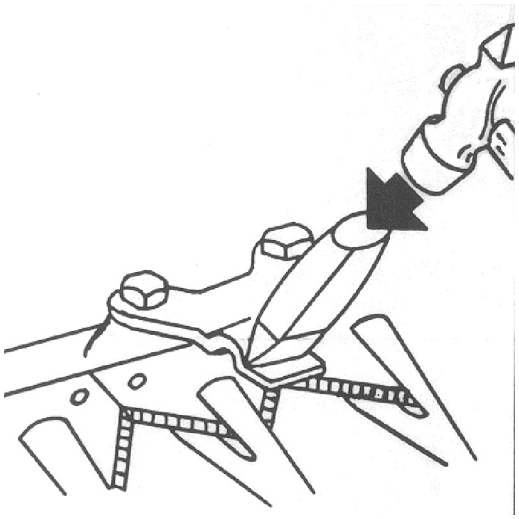
- Switch off the master switch or disconnect one of the battery cables.
- Disconnect connector to the Comvision- display unit Fig. LH
- Disconnect the feeder cable to the control unit of the Common-Rail motor. First remove the protective cover off the unit attached to the motor. Turn the locking clip on the connector and pull the connector open. Fig. CTA
- Disconnect the connector of SCR supply module

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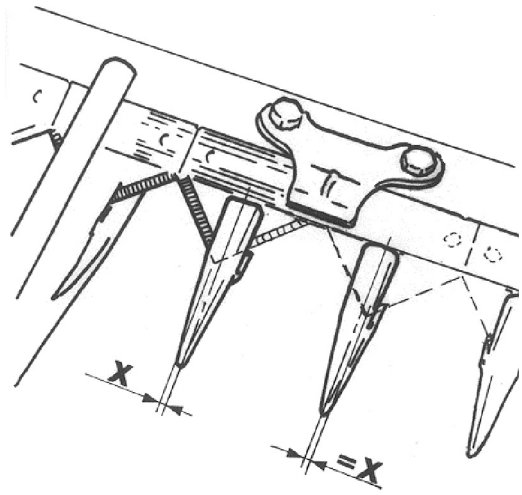
The Functioning of the Combine Is Based on the Condition of the KNIFE

Check that each knife holder touches the knife section lightly. Adjust by striking the holder down, fig. P1.
Check that each knife section touches the corresponding finger. If a knife section is bent, resulting in too wide a gap between the finger and knife section, replace the section.

Check the reversing points of the knife, fig. P2. The knife sections should centre in the knife fingers at the inner and outer extremity of its stroke.



P1



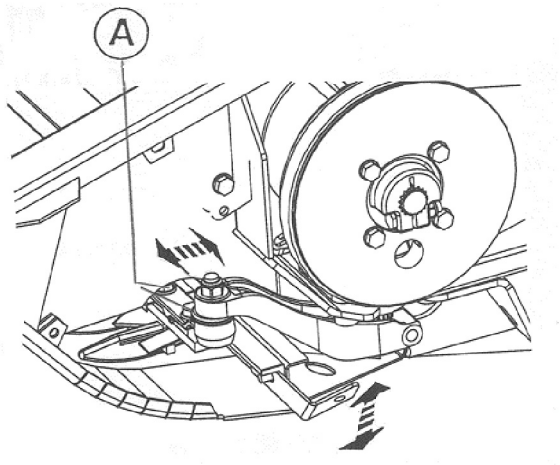
P2

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CHANGING OF THE KNIFE

Belt-driven Knife

First remove the lower guard of the knife drive. Remove fixing screws A, fig. P5, on the connecting lever and remove the knife.



P5

Check the Knife Fore/Aft and Up/Down Positions

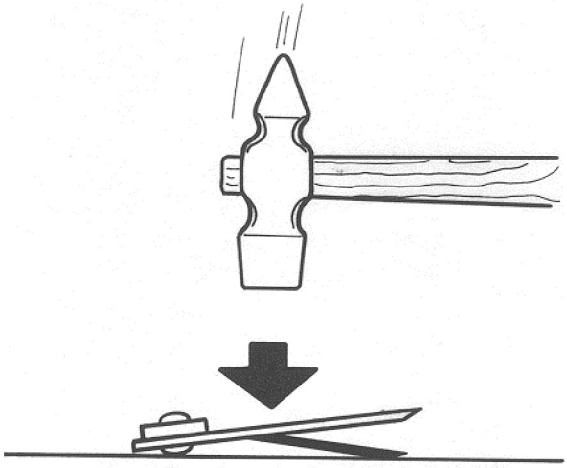
The fore/aft direction is adjusted using screw joint A, fig. P5.
The fore/aft position is correct when the knife tang and the joint fixing piece can move freely for the whole length of the stroke without brushing the edges of the groove or the heads of the locking screws on the knife finger.
The up/down position is correct when the bottom surface of the first knife section brushes the cutting surface of the knife finger. Usually this does not need adjusting.
The up/down position is adjusted by shifting the drive lever in its groove joint.
Make sure the knife moves lightly when turning the drive pulley of the knife drive unit by hand with the belt disengaged.

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Replacing of a KNIFE SECTION

Screw-on knife sections

Screw-on knife sections can be replaced without removing the knife from the cutting table. Ensure that adjacent knife sections are aligned with each other. If necessary, remove the knife and align as shown in figures P13 and P14 or replace bent knife sections.

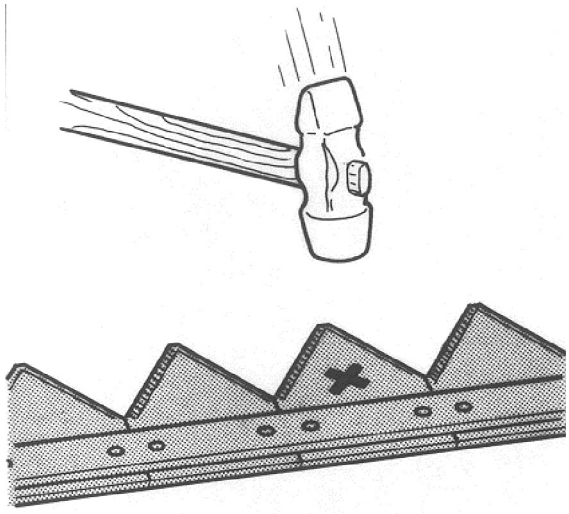


P13

Alignment of the KNIFE FINGERS

Check the heightwise position of the knife fingers. The heightwise difference between the cutting surfaces of adjacent fingers must not exceed 1 mm. Visual inspection can be made by checking the alignment of the fingers from the side of the table.
Straighten or replace bent knife fingers.

It is important to remember that the two pairs of knife fingers on the left differ from the other fingers.



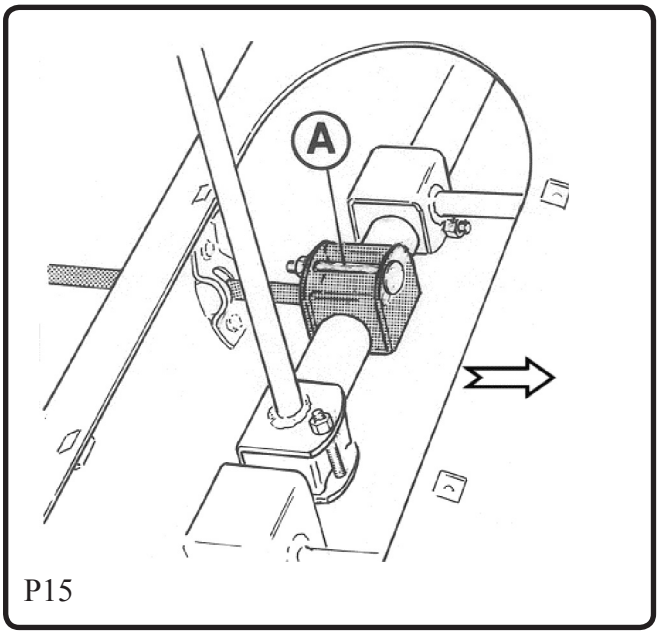
P14

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TABLE AUGER FINGERS Must Be Straight

Straighten or replace a bent finger. To remove the finger, which is necessary in both cases, open the door in the table auger housing and turn the auger until locking screw A can be unscrewed, fig. P15.
Place reel supports before undertaking any work!

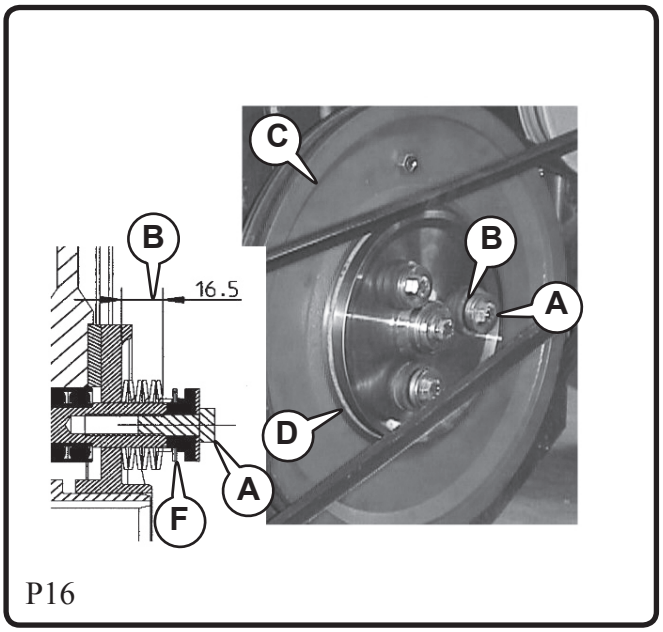
A bent finger will wear the guiding bearing and crankshaft bearing quickly. When replacing a finger, check the bearing condition and replace the bearings, if necessary.
The feed finger has a groove at which the finger will break when it comes into contact with a hard obstacle. The broken finger will fall inside the feeder auger. Replace the finger and remove the broken part from inside the auger.



P15

The OVERLOAD CLUTCH of the TABLE AUGER shall be checked before starting harvest.

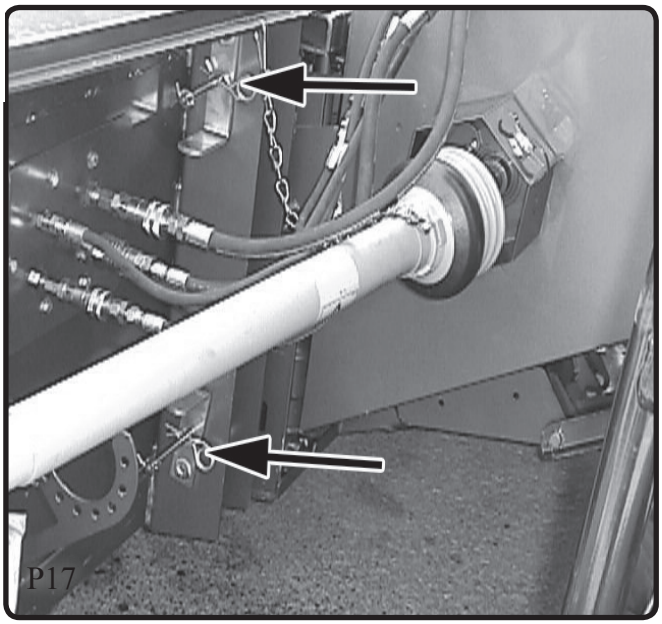
The function of the overload clutch protecting the table auger shall be checked annually before starting harvest.
To do this, slacken nut A, fig. P16, which tensions the cup spring pack, so that spring packs B will slacken. After this, turn belt pulley C to ensure that friction plate D is not stuck. Open the clutch, if necessary, and remove any rust from the friction surfaces.
After checking, tension the spring packs to their original measure. If necessary, move adjustment plates F under the springs.



P16

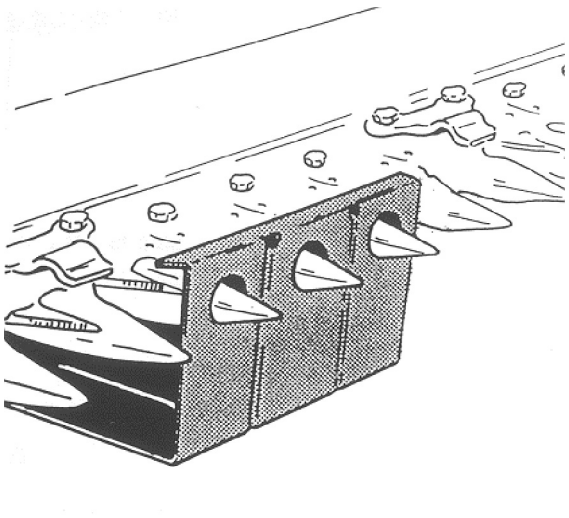
Removing of the TABLE in the Correct Order

The cutting table may only be removed on hard, level ground.
Lower the reel into its lowest position.
Stop the engine.
Disconnect the hydraulic piping between the combine and the table. Cover the hose connectors with plugs and put the hoses in their holders.
If the machine is equipped with a hydraulic quick
coupling unit, set the connector on the side of the combine on its holder.
Remove the transmission shaft from the crop elevator
and place it on the holder on the table.
Pull the locking pins in the connection between the crop elevator and the table outwards to their extreme positions. Use cotters to secure them open P17.
Place the table support in between the knife fingers, in the approximate centre of the knife, as shown in fig. P19.
Lower the table onto the support ensuring that the support remains in position and that the crop elevator


P17

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comes away from the rear of the table.
When the crop elevator is entirely off the table, reverse the combine, checking that the table does not move.

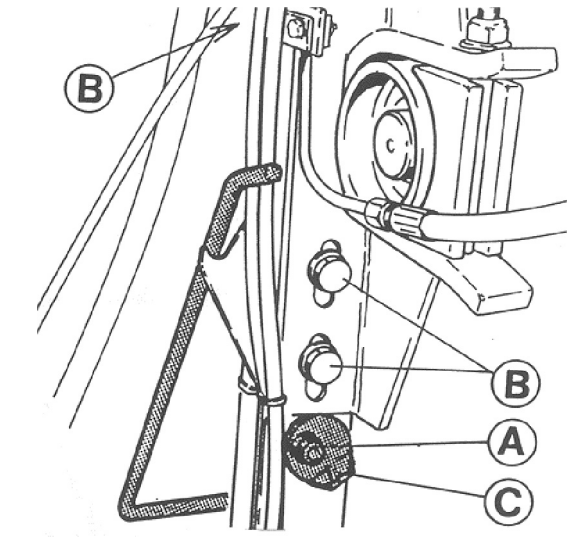


P19

CUTTING TABLE Parallel to the Ground

The widthwise position of the cutting table can be adjusted by changing the height of the fork brackets of the crop elevator on both sides of the table, as follows:

- Lower the cutting table onto the ground.
- Slacken screws A and B, fig. P20.
- Turn eccentric plate C in the required direction.
- After adjusting, tighten the screws.
- The adjustment is made on both sides of the crop elevator.

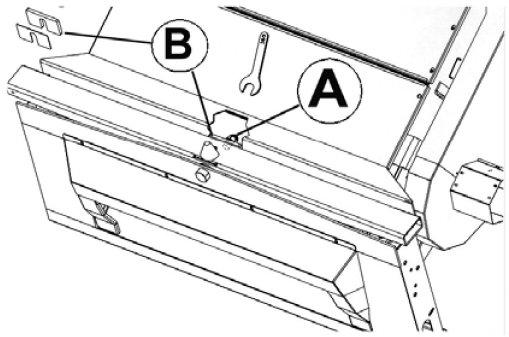


P20

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Adjusting of the CUTTING TABLE ANGLE in Soft Conditions:

The cutting table angle can be adjusted in relation to the ground. This may be necessary due to soil properties, for example.
To make the adjustment loosen locking nut A, fig. P21, on the centre shaft of the side tilt beam at the front of the crop elevator and add or remove adjustment plates B. After adjustment tighten nut A.
The factory setting is one 12 mm adjustment plate. There are additional plates in the tool kit. With all the plates installed, the knife reaches furthest down to cut laid down crops.

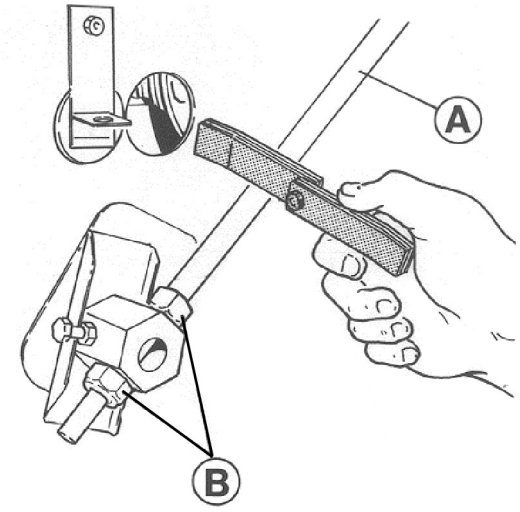


P21

Cylinder/Concave CLEARANCE

Periodically, preferably at the beginning of each harvesting season, check the position of the concave in relation to the threshing cylinder, i.e. the cylinder/concave clearance. Use tool R152308.

- Adjust the concave adjustment indicator to position 6.
- Now the clearance, i.e. the feed distance between the first concave rasp bar and a cylinder rasp bar, should be 6 mm.
- Correspondingly, the clearance between the last concave rasp bar and a cylinder rasp bar shall be 3 mm.
- If there is deviation, adjust the clearance using nuts B at the lower end of the concave adjusting arm A, fig. P22.
- Check the measurements from all four corners of the concave.



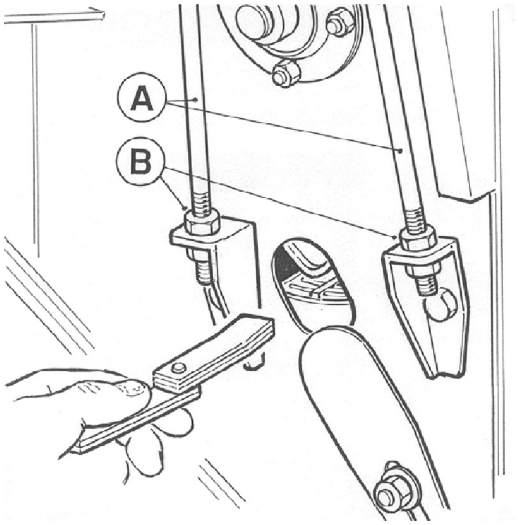
P22

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Checking of PRE-CYLINDER Clearance, Fig. P23

Check the clearance using R152308.

- Turn the pre-concave to minimum position.
- Make sure the clearance between the pre-cylinder and the concave is 10 mm.
- If necessary, adjust the length of supporters A with nuts B, fig. P23.
- Check the clearance on both sides of the combine.



P23

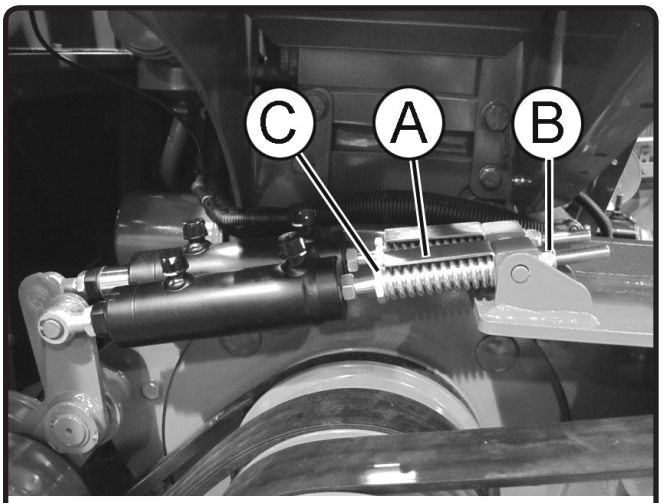
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BELT TENSIONING

Check the tension of all the transmission belts on a regular bases in accordance with the instructions.
NOTE: Check the tension of all the belts after the first day of harvesting and always after a belt change.

THRESHING MECHANISM DRIVE BELT

The belt and its tensioning device are located under the left side guard of the combine and in the engine compartment.
Check the drive belt tension with the threshing mechanism running.
Be very careful when carrying out the check.
End of measuring plate A shall come up to the outer edge of the hexagonal part of the adjuster sleeve when the threshing mechanism is running at normal speed without any load. Fig. P25.
When necessary, the adjustment is made with the engine stopped and the ignition key removed.
To adjust the belt, loosen locking nut B and turn adjuster sleeve C in the required direction as far as needed.
Check and readjust if necessary.
Lock locking nut B.

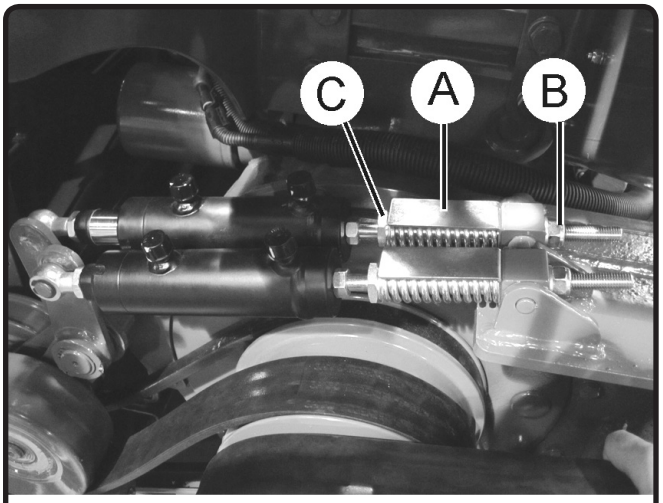


P25

If the engine stops when harvesting, for example, by blockage in the threshing mechanism, threshing mechanism must be released manually by turning the jockey pulley arm before the motor is re-started. This is made with the engine stopped and the ignition key removed.

GRAIN TANK UNLOADING BELT

The belt and its tensioning device are located under the left side guard of the combine and in the engine compartment.
Check the belt tension with the unloading mechanism running. For safety reasons the threshing mechanism shall be disengaged.
Be very careful when carrying out the check.
End of measuring plate A shall come up to the outer edge of the hexagonal part of the adjuster sleeve when the unloading mechanism is running at normal speed without any load. Fig. P26.
When necessary, the adjustment is made with the engine stopped and the ignition key removed.
To adjust the belt, loosen locking nut B and turn adjuster sleeve C in the required direction as far as needed.
Check and readjust if necessary.
Lock locking nut B.

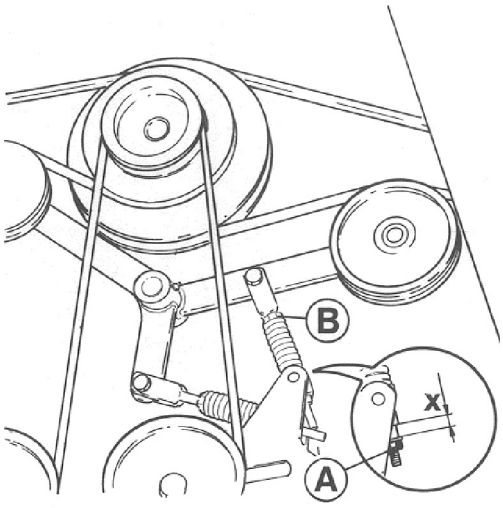


P26

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STRAW CHOPPER BELTS

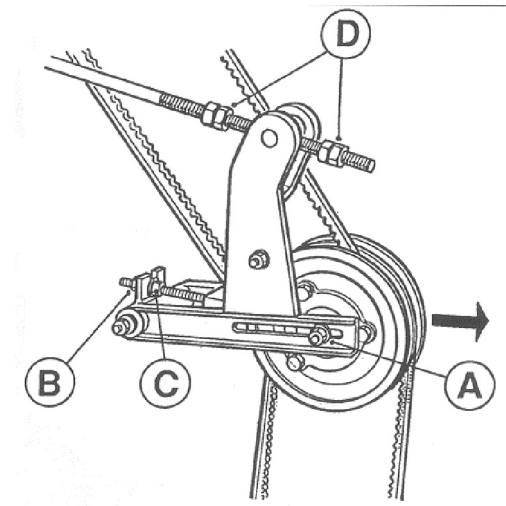
Spring-loaded jockey pulleys tension the belts automatically. In any case, check that pre-tension measurement X of the spring is 5…10 mm, fig. P27. If necessary, slacken lock nut A and turn bushing B down to achieve the afore-mentioned pre-tension measurement. Then lock nut A.



P27

FAN VARIATOR BELTS

To tension the belts, slacken nut A on the middle shaft of the variator pulleys and regulator nut B, fig. P32. Nut C is slackened to move the variator pulleys in the direction indicated by the arrow, which will tension the belts. After the adjustment, tighten the slackened nuts.
After the adjustment, check the adjustment range of the variator. If necessary, adjust limiter nuts D so that the belts on the variator pulleys do not rise above the outer rims of the pulleys in their extreme positions.

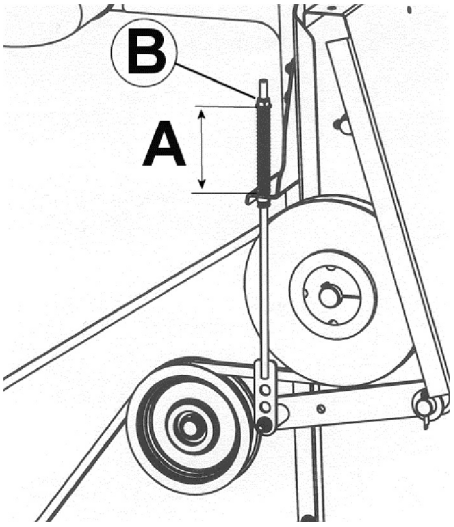


P32

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COOLER UNIT DRIVE (Rotating Inlet Screen)

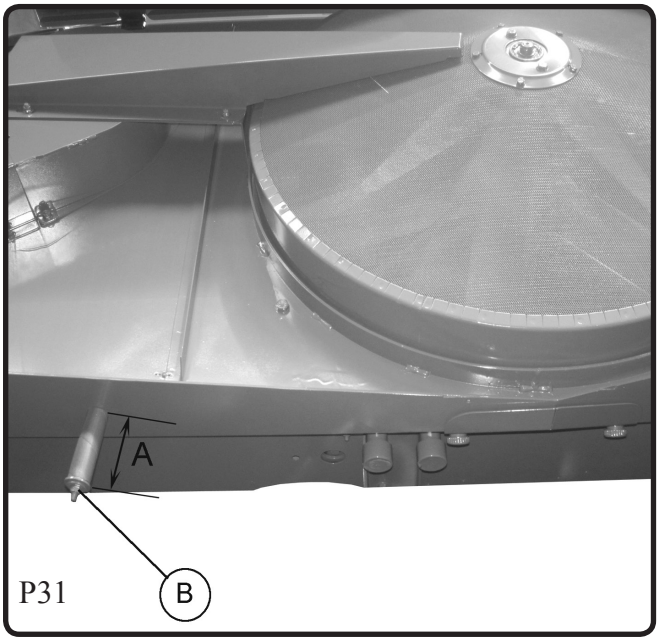
Belt tension is correct when length A of the spring is same as length of the tube covering it.(105±2 mm.)
If necessary, turn nut B to tension the belt. Fig. P30.



P30

FAN DRIVE BELT (Rotating Inlet Screen)

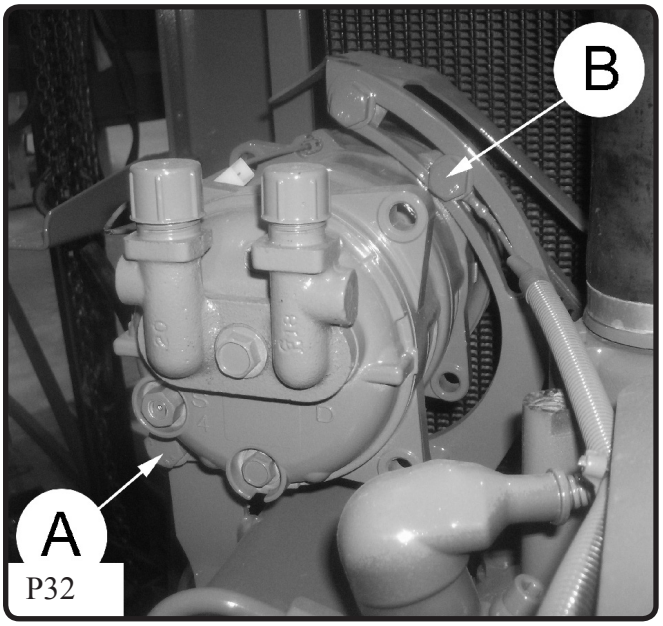
Belt tension is correct when length A of the spring is same as length of the tube covering it.(105±2 mm.)
If necessary, turn nut B to tension the belt. Fig. P31.



P31

COMPRESSOR BELT IN THE AIR CONDITIONER (Rotating Inlet Screen)

Tension is correct when the belt deflects some 5 mm (50N = 5 kg) when pressed with the thumb.
Slacken locking nuts A and regulating nut B, fig. P32.
Turn the compressor to tension the belt. Tighten screws B and A.

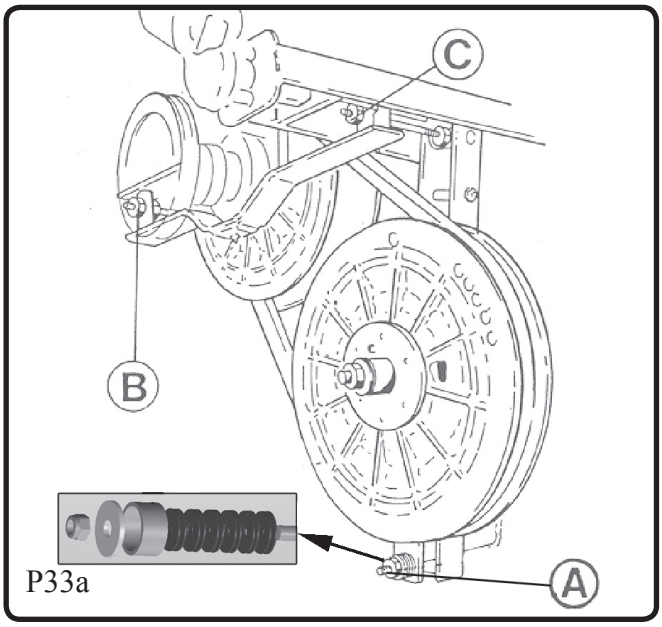


P32

THRESHING CYLINDER VARIATOR BELT

Standard Threshing Mechanism

To tension the belt, tighten anchor bolts A and B (on the housing) and connecting bolt C (between the variator arms), fig. P33a. The connecting bolt must be turned two turns per each turn of the anchor bolts, to retain the transmission ratio of the variator.
When tensioning the belt, operate the pulleys by hand to allow the belt to move evenly on the pulleys. Belt tension is checked with the variator midway within the adjustment range. The tension is correct when bushing (A) can be rotated by hand, but it must not roll loosely.
Check the tension of the bushing daily.
After the adjustment, check that the variator arms do not touch the outer shell of the variator pulley in their minimum or maximum positions. There must be a clearance of at least 1 mm. If necessary, adjust the arms using screws A-C or B-C.



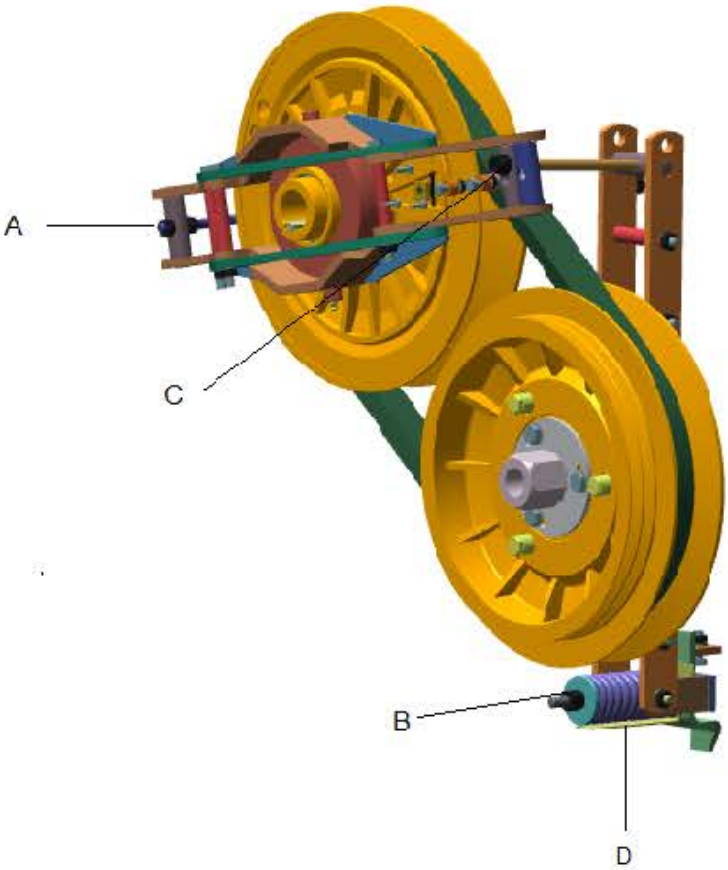
P33a

MY2020 MODELS

THRESHING CYLINDER VARIATOR BELT

Standard Threshing Mechanism

To tension the belt, tighten anchor bolts A and B (on the housing) and connecting bolt C (between the variator arms), The connecting bolt must be turned two turns per each turn of the anchor bolts, to retain the transmission ratio of the variator.
When tensioning the belt, operate the pulleys by hand to allow the belt to move evenly on the pulleys. Belt tension is checked with the variator midway within the adjustment range. The tension is correct when spring indicator (D) is same level like a spring

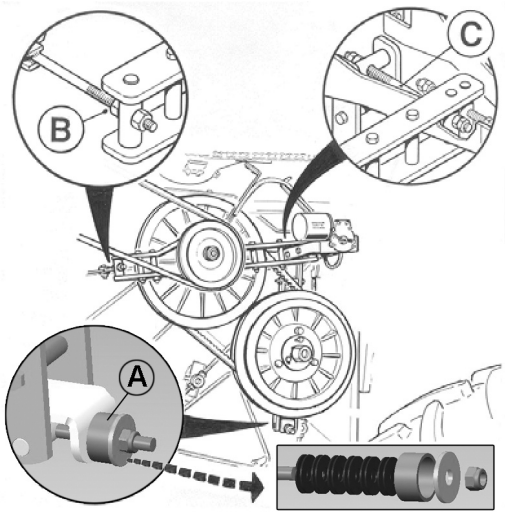


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THRESHING CYLINDER VARIATOR BELT

The TS Threshing Mechanism

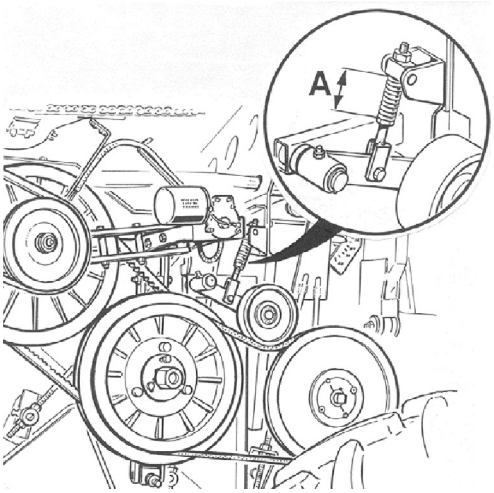
To tension the belt, tighten anchor bolts A and B (on the housing) and connecting bolt C (between the variator arms), fig. P33b. The connecting bolt must be turned two turns per each turn of the anchor bolts, to retain the transmission ratio of the variator.
When tensioning the belt, operate the pulleys by hand to allow the belt to move evenly on the pulleys. Belt tension is checked with the variator midway within the adjustment range. The tension is correct when bushing (A) can be rotated by hand, but it must not roll loosely.
Check the tension of the bushing daily.
After the adjustment, check that the variator arms do not touch the outer shell of the variator pulley in their minimum or maximum positions. There must be a clearance of at least 1 mm. If necessary, adjust the arms using screws A-C or B-C.



P33b

PRE-CYLINDER BELT

The belt is tensioned by a spring-loaded jockey pulley. The tension is correct, when spring length A, fig. P34, is 76+2 mm.



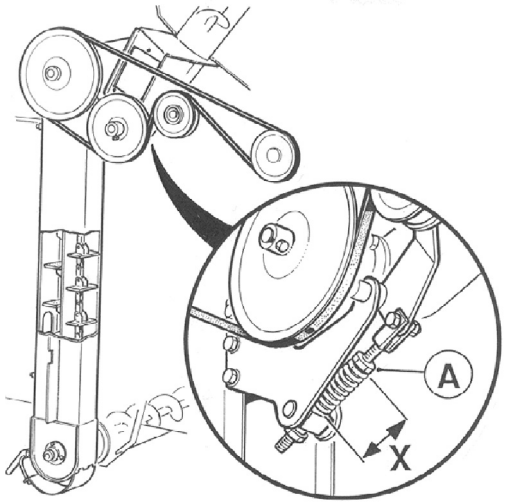
P34

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GRAIN ELEVATOR BELT

Gear Driven Top Auger

Belt tension is maintained by a spring-loaded jockey pulley. The tension is correct when length X of the spring, fig. 35b, is 76...78 mm. When necessary, turn bushing A, fig. P35b, to tighten the belt.

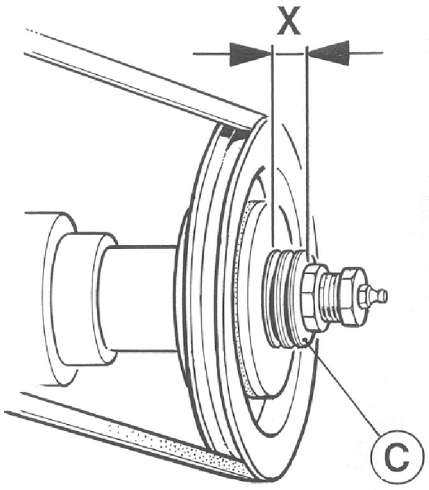


P35b

GRAIN ELEVATOR OVERLOAD CLUTCH

The overload clutch is of friction plate type and located on the rear beater shaft by the drive pulley.
Open the clutch before the harvesting season and remove any rust from the friction surfaces.

Combines with a filling auger equipped with a gearbox (Fig. 35b) have a large-diameter single-disc safety clutch. There are ten belleville springs fitted with two plates always facing in the same direction and the pairs alternately facing each other.
Clutch spring tension is correct when thickness C of the spring pack is 22 mm, fig. P36.



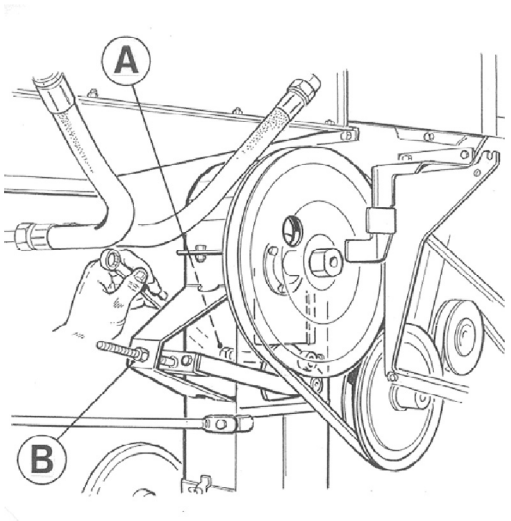
P36

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GRAIN ELEVATOR CHAIN

The Standard Threshing Mechanism

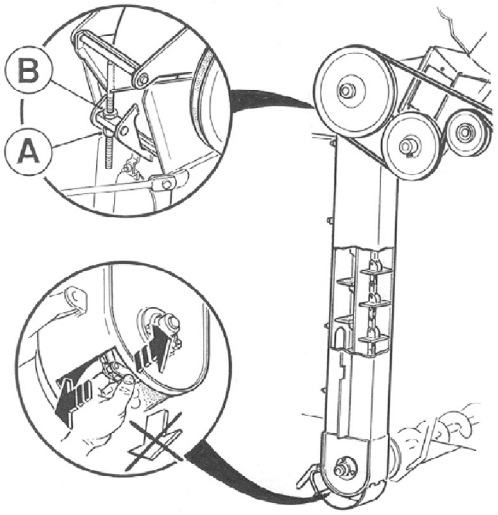
Check the tension of the chain through the cleaning door at the bottom of the elevator. Check the tension with one tooth on the bottom sprocket pointing downwards. The tension is correct when the chain can be moved sideways by hand on the lowest sprocket, but there is no radial play. Before any adjustment, slacken the elevator drive belt.
To tighten the chain, slacken locking nut A, fig. P37a and turn regulator nut B.
Keep tensioning the chain until tight spots can be felt when turning the drive pulley with the belt slack as the chain goes ”over a tooth”. Now slacken the chain a little so that there is no jerking.
Tighten nut A after adjustments. Finally, adjust the grain elevator drive belt to its correct tension.



P37a

The TS Threshing Mechanism

Check the tension of the chain through the cleaning door at the bottom of the elevator. Check the tension with one tooth on the bottom sprocket pointing downwards. The tension is correct when the chain can be moved sideways by hand on the lowest sprocket, but there is no radial play. Before any adjustment, slacken the elevator drive belt.
To tighten the chain, slacken locking nut A, fig. P37b and turn regulator nut B.
Keep tensioning the chain until tight spots can be felt when turning the drive pulley with the belt slack as the chain goes ”over a tooth”. Now slacken the chain a little so that there is no jerking.
Tighten nut A after adjustments. Finally, adjust the grain elevator drive belt to its correct tension.



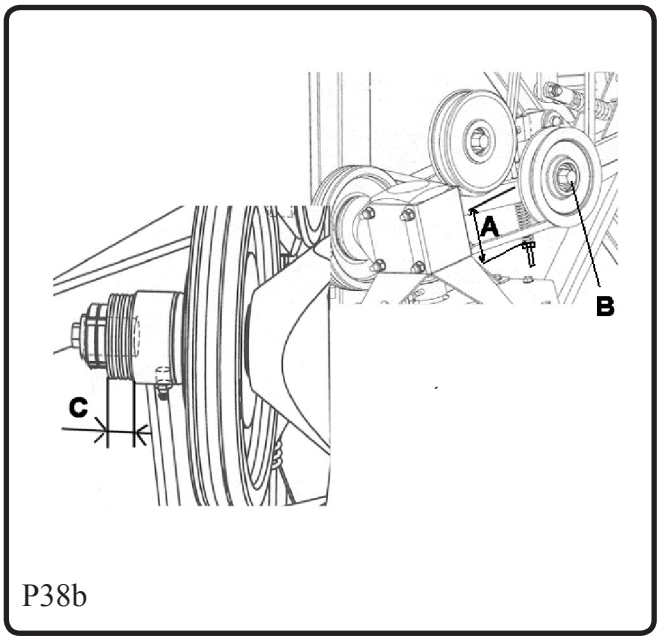
P37b

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RETURN AUGER BELT and Overload Clutch

Gear Driven Return Auger

Belt tension is maintained by a spring-loaded jockey pulley. The tension is correct when the length of the threaded section of the spring is 105...110 mm. When necessary, the position of idler B can be changed.
The overload clutch is located by the drive pulley of the gear. It is a friction plate clutch. The function of the clutch shall be checked before every harvesting season. Slacken the spring to ensure that the plate is not stuck. After checking, tension the spring to the required tension.
The tension of the clutch is correct when spring pack C is 14 mm thick.



P38b

STRAW WALKER BELT

Belt tension is maintained by a spring-loaded jockey pulley. The tension is correct when the length of the spring A is 75...79mm.

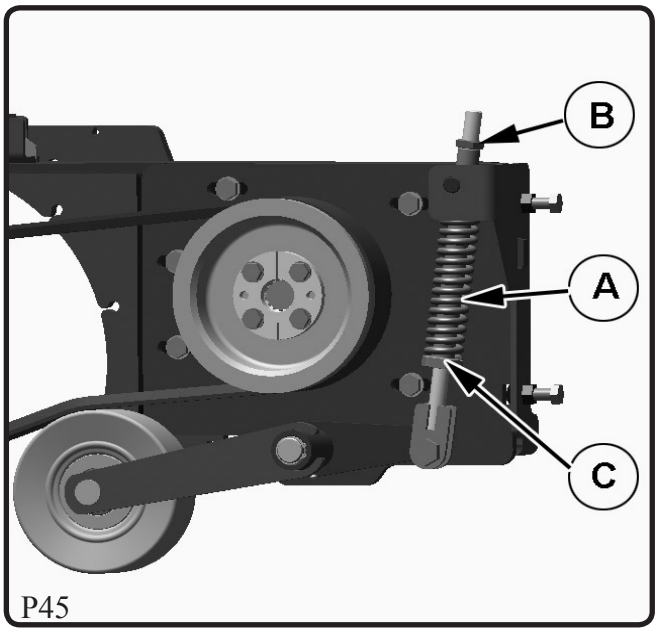


P39

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DRIVE BELT IN THE HYDRAULIC TRANSMISSION

The appropriate tension in maintained automatically by a spring-loaded jockey pulley. The tension is correct when spring length A is 165mm. When necessary, the adjustment is made with the engine stopped and the ignition key removed.
To adjust the belt, loosen locking nut B and turn adjuster sleeve C in the required direction as far as needed.
Lock locking nut B.



P45

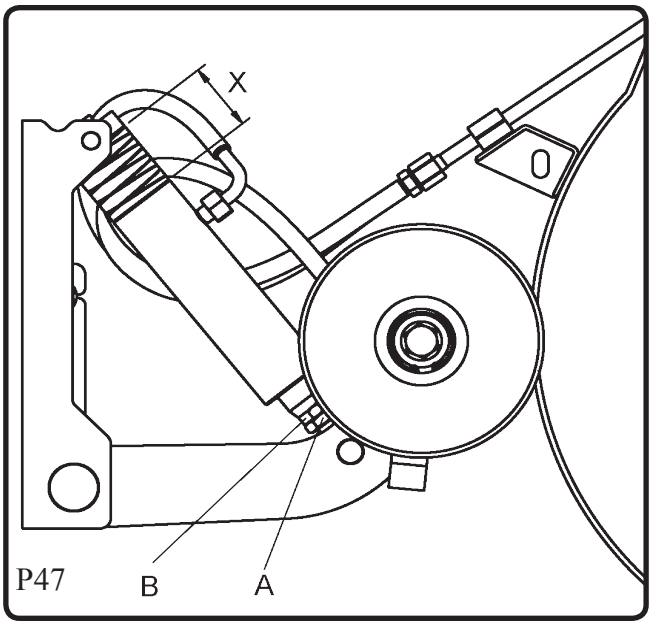
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CUTTING TABLE CLUTCH BELT

Check the tension with the belt drive engaged.

The tension is easier to adjust with the belt drive disengaged, but it must be checked while engaged.

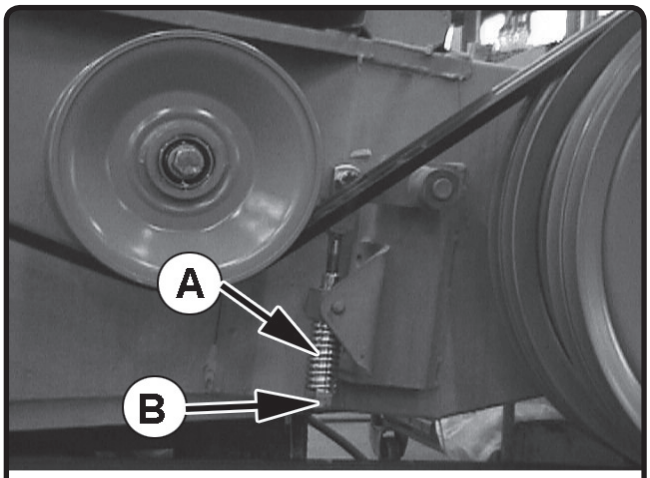
Slacken lock nut A, fig. P47.
Rotate the piston rod B until the spring tension X is 31-37 mm. Be careful not to over-tension the spring as that leads to too tight a belt. Lock nut A after adjustment.



P47

CUTTING TABLE DRIVE BELT

The belt and its tensioning device are located under the left side guard of the crop elevator.
The tension is correct when spring length A in the tensioning device is 72 - 74 mm. When necessary, adjust the tension by turning adjuster sleeve B in the required direction. Fig. P48.

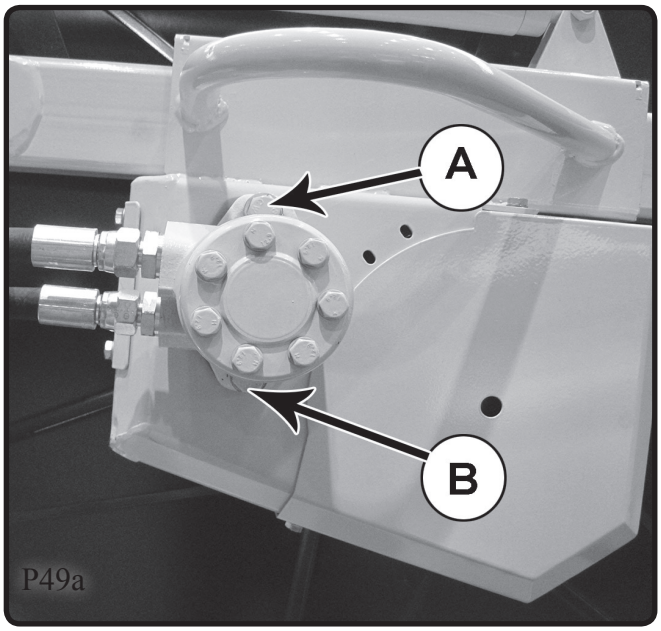


P48

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REEL CHAIN

To tension the chain, loosen screws A and B, fig. P49a, and turn hydraulic motor. There must not be slackness in the chain, but it must rotate lightly without any jerks.

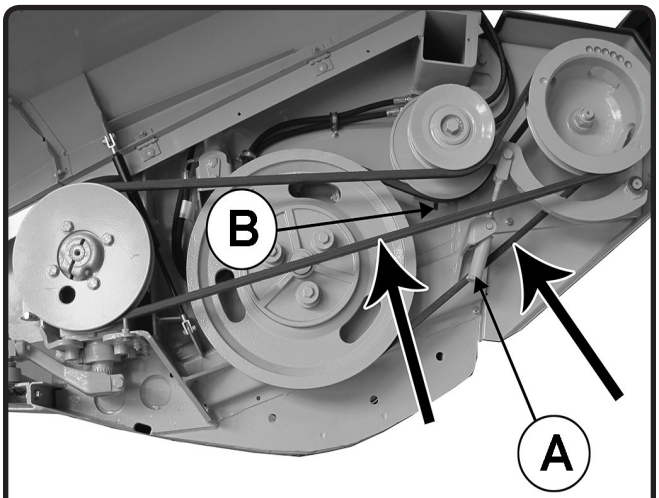


P49a

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KNIFE DRIVE BELT

The belt and its tensioning device are located under the left side guard of the cutting table.
The belt-tensioning device is stiff, without any spring.
The belt tension is correct when the deflection midway on the lower span is 16 mm when pressing by thumb (45 N = 4.5kg).
If necessary, the tension is adjusted by turning adjuster sleeve A in the required direction. Fig. P50.



P50

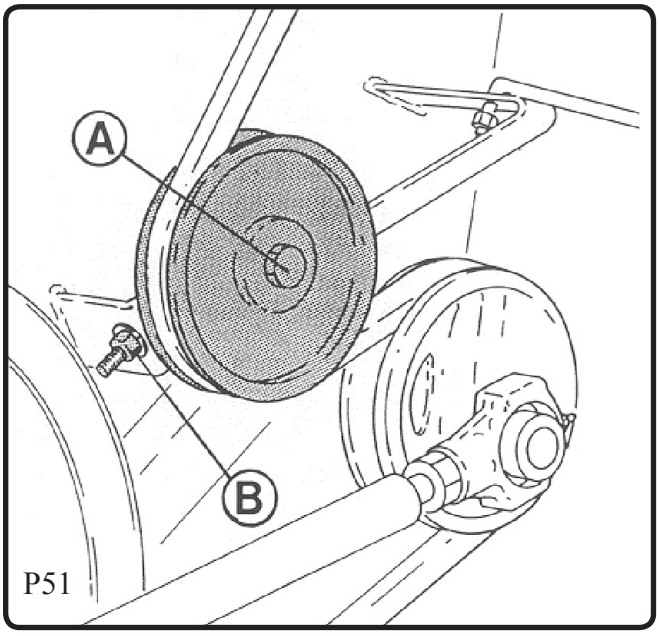
TABLE AUGER DRIVE BELT

The belt and its tensioning device are located under the left side guard of the cutting table.
The belt-tensioning device is stiff, without any spring.
The belt tension is correct when the deflection midway on the lower span is 11 mm when pressing by thumb (65 N = 6.5 kg).
If necessary, the tension is adjusted by turning screw B. Fig. P50.

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BELTS WITH FIXED TENSION

To tension the drive belts in the shaker shoe and table auger, slacken middle shaft A, fig. P51, of the jockey pulley and either by screwing nut B (table auger) or moving the jockey pulley using a suitable lever tension the belt as required.



P51

General V-BELT Tensions (Fig. P52)

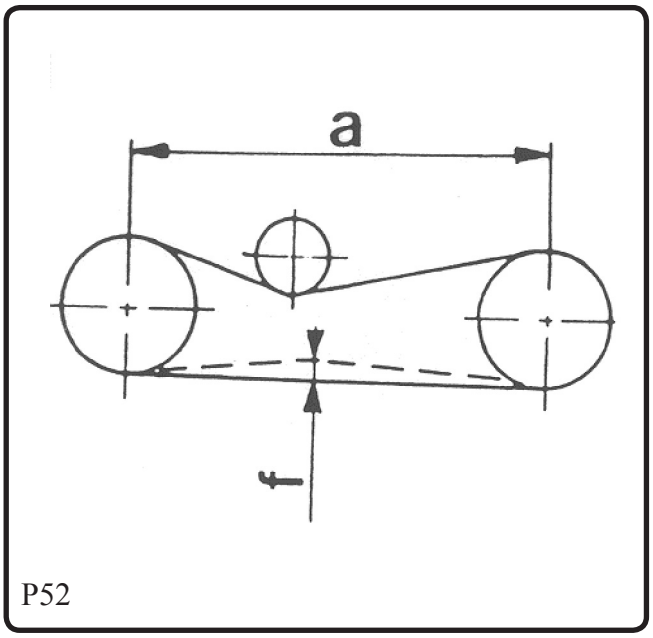
Check the tension by pressing with your thumb midway between the shafts.

Shaft distance a/mm	Deflection f/mm
less than 500	20
500 - 1000	30
1000 -1500	50
1500 - 2000	70

After replacing the BELTS, return the bows and belt supports to their original positions.

When changing the drive belts in the threshing mechanism, grain tank unloading and cutting table, check that the belt supports and the bows round the pulleys are refitted correctly. Mark the positions before removing the parts to ensure re-assembly in the same positions. A new belt must be tensioned after a few operating hours.

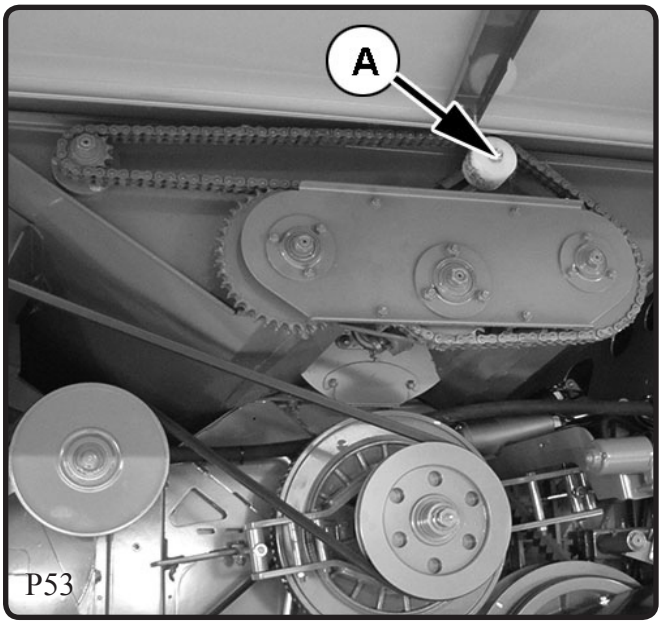
Always use original belts. They have been tested by the Manufacturer to meet the quality requirements.



P52

GRAIN TANK CHAIN

To tension the chain, loosen screw A fig. P53, and tension the chain by moving the roller. Tighten nut A. There must not be slackness in the chain, but it must rotate lightly without any jerks.



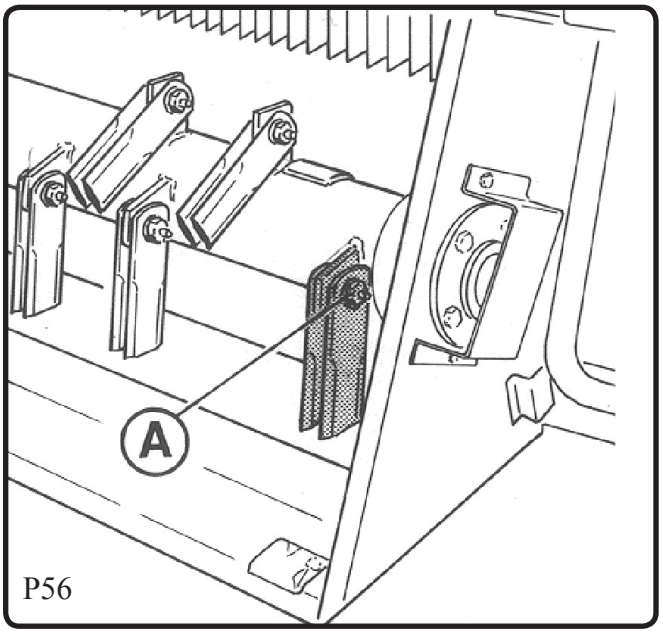
P53

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Changing of CHOPPER KNIVES

If the rotor knives (or knife) are worn, they can be inverted. Broken or damaged knives must be replaced. To maintain the rotor balance, it is important always to change the two opposite knives as well.

To remove a knife, unscrew locknut A, fig. P56. Now remove the fixing screw from the joint, which will disassemble the joint.
Counter knives are fastened with a locking rod, which is pulled out before changing the knives.

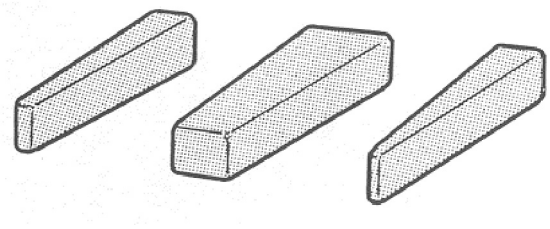


P56

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Removing a GIB KEY with a Tool

To keep a gib key in good condition for re-use, use tool set R116007 to remove it, fig. P58.

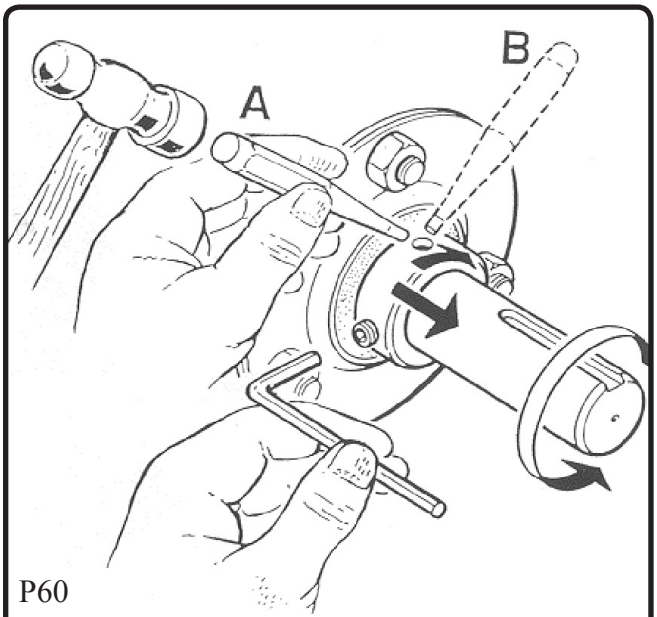


P58

Removing and Refitting of a Bearing Locked with an ECCENTRIC RING

A Removing:
Slacken the grub screw in the locking ring and open the eccentric ring by hitting the ring in the opposite direction of shaft rotation with a mandrel.
Unscrew the flange locking screws, remove the outer flange and pull the bearing off the shaft.

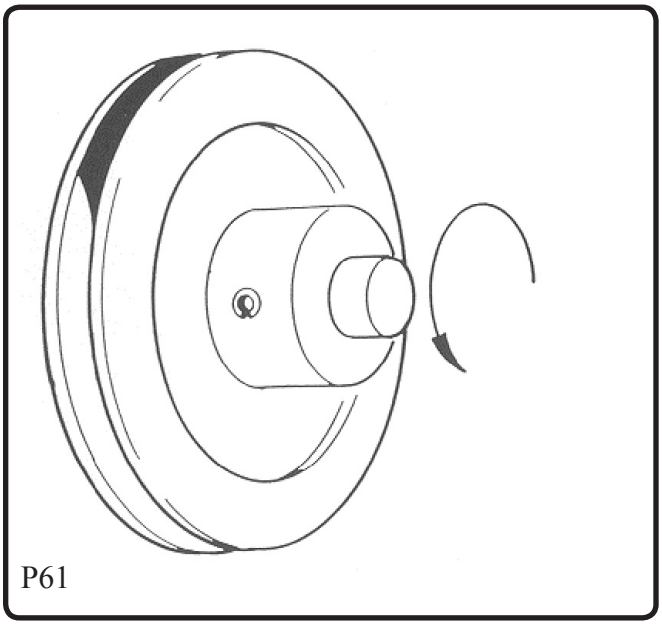
B Refitting:
Fit the inner bearing flange.
Fit the bearing, locking ring and outer bearing flange. Fit the fastening screws of the flanges and tighten by hand.
Check the shaft position and tighten the flange screws.
Lock the locking ring in the direction of shaft rotation by hitting it with a mandrel.
Lock the grub screw on the locking ring.



P60

Correct Direction of the SPRING COTTER NOTCH

Note the position of the cotter notch in regard to the load direction, fig. P61.
Some joints have two cotters within each other in which case the notches face each other.



P61

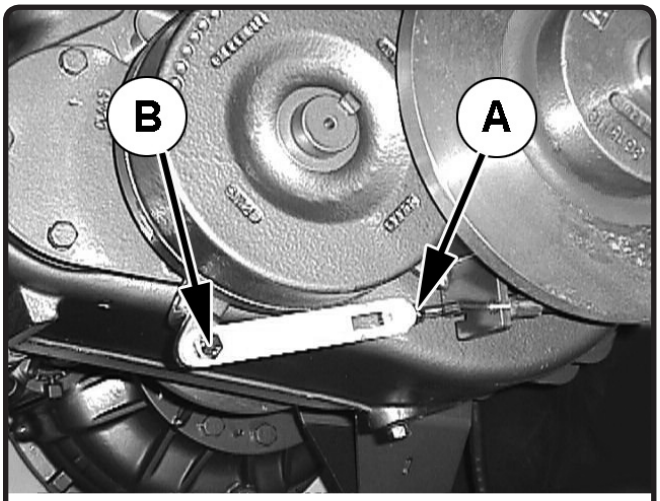
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BRAKES

The driving brakes are of hydraulic disc brake type. They do not need any adjusting. Monitor the friction plates for wear and replace when necessary.
The brake fluid tank is behind the cab left side of the combine.
Check the fluid level on a regular basis. The fluid shall be changed every two years.

HAND BRAKE Adjustment

The brakes shall be adjusted on a regular basis due to wear of the brake bands. The free travel of the hand lever on the toothed arc must not exceed 5-6 teeth. The adjustment can be made either at the upper or lower end of the brake wire. The easiest way is to adjust the brake lever at the lower end of the wire. Locking nut A is slackened, fig. P62, pin B of the fork is removed and the fork is turned to shorten the wire as required. After the adjustment, lock the slackened joints.



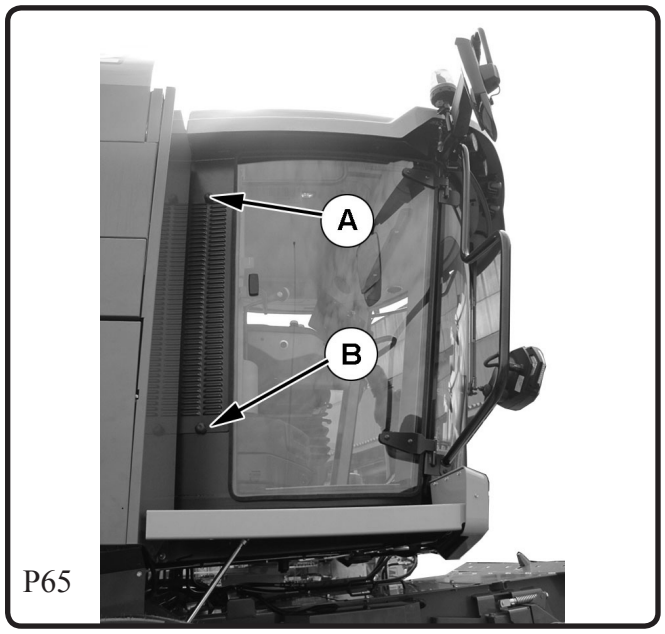
P62

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CAB Ventilation, Heating and Air Conditioning

Regular daily cleaning of the suction air filters is the most important maintenance measure. The filter is of two-stage type. At the front there is a course mesh filter in a frame. Behind it there is a fine filter, a replaceable paper element. To remove the side filter, unscrew screw A and slacken screw B, fig. P65. The best way to clean the filters is with compressed air. The course mesh filter may be washed in washing-up liquid, if necessary. The paper filter must be replaced minimum once a year. Filter inside the cabin on the left side must also be replaced minimum once a year, fig 65A.

The condenser in the air conditioning equipment on the engine compartment must be cleaned daily, if necessary, by blowing air into the cell from the engine side. Any debris may be removed from the sieve chamber by opening the chamber cover and bottom. Take care not to damage the heating cell.
The evaporator and the heating cell as well as the air channels and the fan shall be cleaned minimum once a year, and in dusty conditions more often.

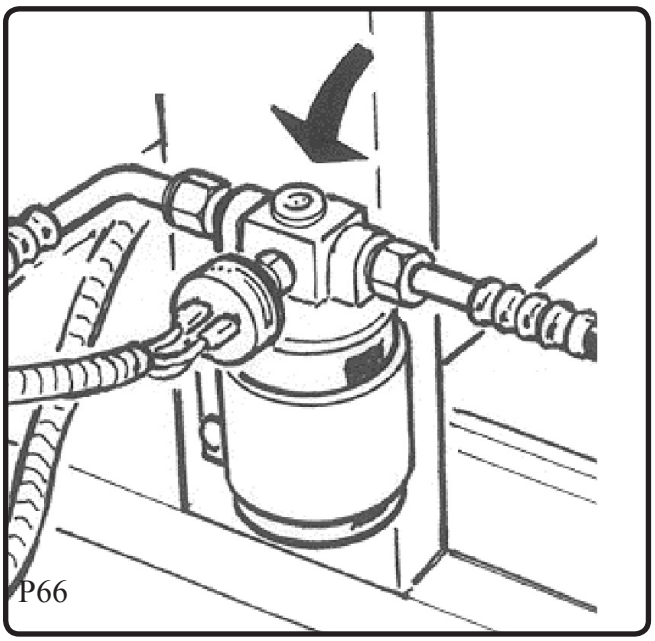


P65


P65A

Checking of the Liquid Level in the COOLING SYSTEM

The check shall be conducted at the beginning of every harvesting season. Coolant may seep gradually through the shaft gaskets out of the system. This may occur particularly if the cooling system is unused for long periods. Slight seeping is always normal.
The check is made by running the cooling system at full capacity. Look through the small inspection window on top of the drying cartridge, fig. P66, to make sure there are no gas bubbles, but liquid behind the window. The incidence of gas bubbles is allowed only for a short period after the compressor switches on. The dryer is located in the engine compartment in the coolant hose between the condenser and the cab.
Be very careful when making the check, as the engine compartment guard must be opened and the engine started. Beware of the running belt drives and fan blade in particular.
If necessary, the refill shall be done by an authorised service outlet.


P66

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ENGINE

(Complete service and maintenance instructions for the engine are provided in a separate engine manual)

Oil Change Always after the Harvesting Season

The oil is changed every 300 h and in connection with the winter service.
The old oil is drained from the warm engine by removing plug A off the oil drain pipe, fig. P70 on the left side of the combine.
Used oil is problem waste, which shall be disposed of in an appropriate manner.

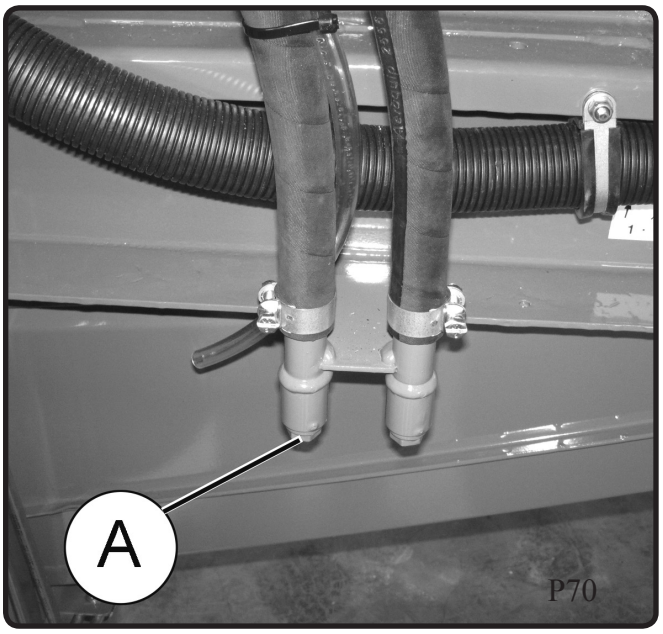
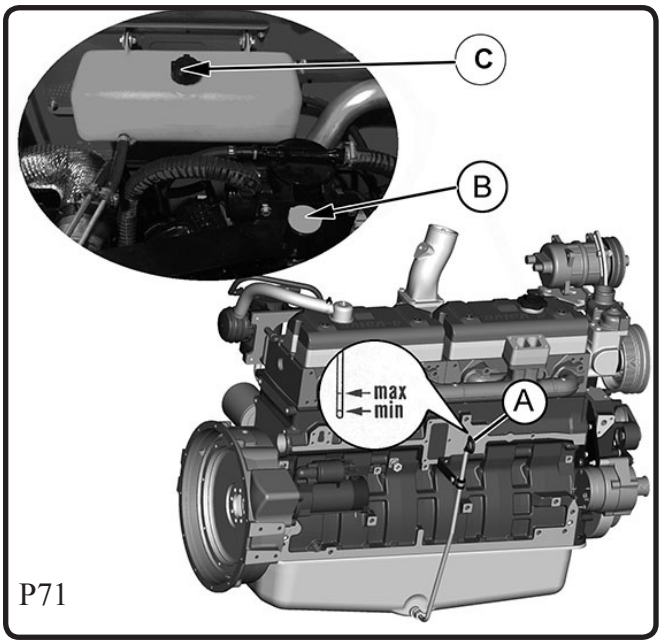


Fig. P71

A Oil Measuring Dipstick
B Oil Filler
C Adding coolant



Types and quantities of oil to be used are given in the oil table and the engine manual.

Replacement of the Oil Filter

The oil filter is replaced every time the oil is changed.
The filter is replaced through the service door on the back wall of the grain tank. Remove the ignition key before the operation to ascertain no outsiders can start the engine.
Used filters are problem waste, which shall be disposed of in an appropriate manner.
Check the instructions for filter change in the engine manual.

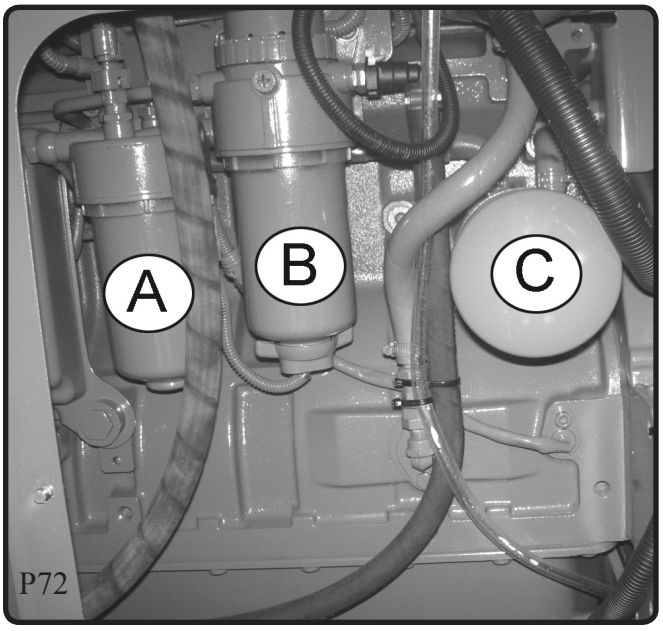
Fuel Filters

Filters are located in the side of the engine.

Fuel pre-filter (B Figure P72).
In connection with the pre-filter is also a water separator. Weekly drain water from the water separator.
Primary filter (A Figure P72).

The filter is replaced through the service door on the back wall of the grain tank.

Replace the filters as instructed in the service table or more often in case of clogged filters. Fault code “LOW FUEL PRESSURE” refers to a clogged pre-filter or air leak in the pipes.
Used filters are problem waste, which shall be disposed of in an appropriate manner.
See instructions for filter replacement in the engine manual.



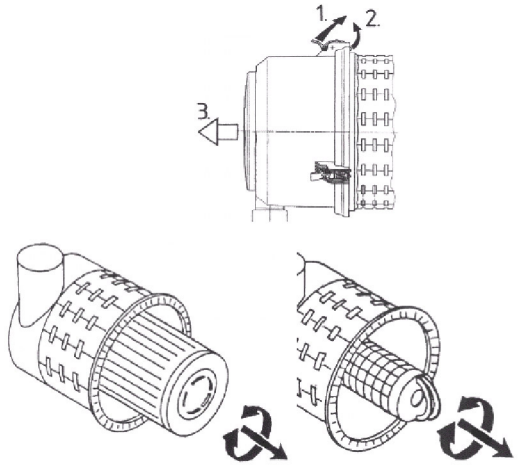
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Air Filter

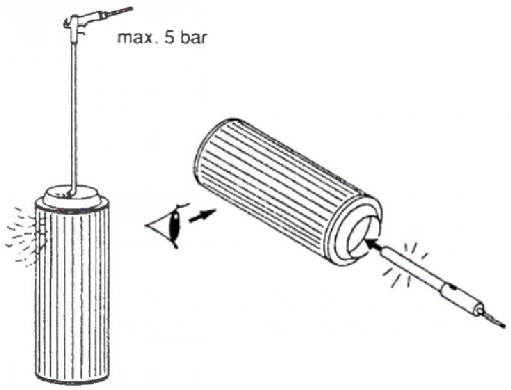
The engine suction air is purified by a pre-filter and a double-element, dry paper filter. Perfect functioning of the filter is an essential prerequisite for long engine life. The filter housing is located in the engine compartment. Filter system blockage is indicated in Comvision-display. The cover of the filter housing is attached with locking brackets and the filter cartridges are under the cover, fig. P73. Both the filters shall always be replaced at the beginning of the harvesting season.
The outer filter cartridge shall be replaced when the blockage indicator shows the filter needs servicing or at least once a year. **The outer cartridge may also be cleaned**. The outer cartridge can be cleaned a maximum of five times.
Open the catches on the filter back cover and twist the cartridge out of the housing. Be careful not to damage the paper. Do not remove the inner cartridge unless it needs replacing. The filter protects the suction channel against impurities during service.
Blow dry compressed air (not exceeding 5 bar) inside the filter. Take care not to damage the filter cartridge nor allow dust inside the cartridge.
After cleaning, the condition of the filter is checked. Direct a strong light to the inside of the filter. In case the outer filter cartridge is broken, it shall be replaced. The inner filter shall also be replaced as it has become dirty. Otherwise the inner cartridge is replaced after five services or at least every other year.
Clean the inside of the filter housing carefully before removing the inner cartridge. When refitting the filters, ensure that the gaskets are intact, mating surfaces clean and that the filter fits properly.

When servicing the filter, check the condition and attachment of the air hoses and the purity of the hose in the exhaust fume ejector.

Note! Do not run the engine without filters.



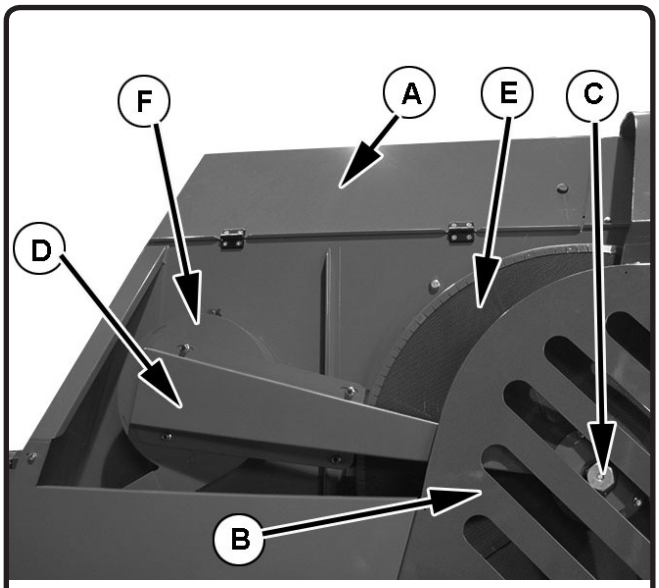
P73



P74

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Cleaning of the ENGINE RADIATOR (Fig. P76)



P76

Depending on the combine specification, in addition to water-cooling, the combine may be equipped with oil cooling, intermediate cooling for intake air and AC cooling.
Depending on the type of engine, the cooling fan is fitted either to the engine water pump or in front of the cooling cells.
The cooling system has cleaning doors both on the top and bottom to facilitate cleaning. Models with a rotating air intake screen have a top door fixed with latches A, fig. P76.
The easiest way to clean the radiator is to blow compressed air from the side of the engine. Loose debris may be removed with a soft brush. Always be careful not to damage the lamellas.
In connection with every service, make sure that the dust gaskets are undamaged and properly fitted and that all the doors close tightly. Even the slightest air leaks at the front of the radiator allow debris into it.

Removing and Refitting of the ROTATING SCREEN

The cooling air intake screen may have to be removed for cleaning or other maintenance measures such as changing of belts. It shall be done in the following manner:

- Remove protective screen B
- Remove cam D of the air extractor
- Undo fixing nut C on the inlet screen and pull screen E off
- If the belt needs changing, the rotor wheel in air extractor housing F and the plate behind it need to be removed

When refitting, keep the following in mind:

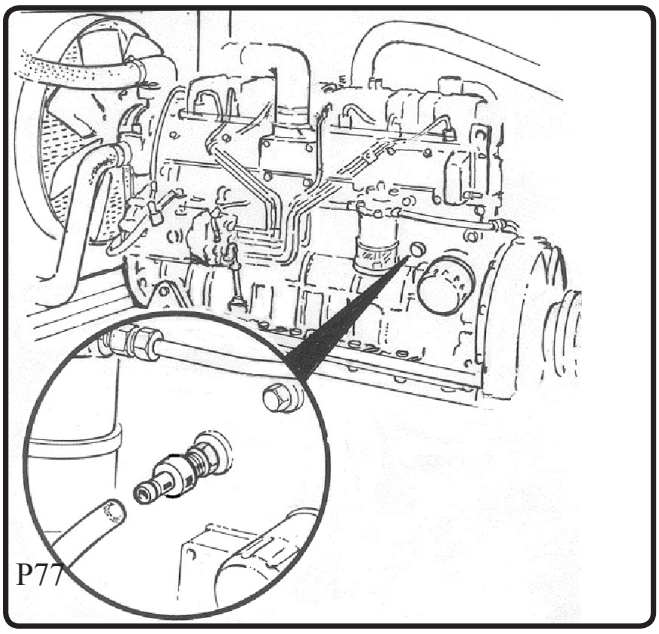
- Centre the plate behind the rotor wheel in relation to the drive shaft
- Make sure that the air extractor and screen E can rotate freely.

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COOLING SYSTEM

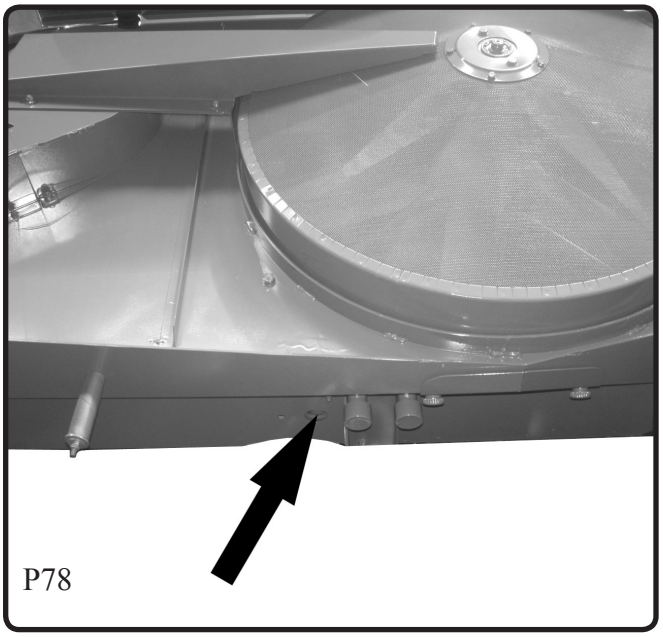
Draining of the Cooling System

The coolant shall be changed every other year in order to maintain its anti-corrosion properties.
The cooling system is drained by opening the drain taps on the left side of the engine at the rear and in the lower part of the radiator as well as the cap on the radiators expansion tank, figs. P77 and P78. Depending on the type of combine, the drain tap is in the engine compartment or below the cell, beneath the side guard.
In order to drain the heater cell as well, turn the temperature controller to maximum heating.
Used coolant is problem waste and shall be disposed of in an appropriate manner.


P77

Filling of the Cooling System

The cooling system is filled with coolant with 40-50 % of ethylene glycol added. Never use plain water as coolant. Before filling the system, the engine must have cooled off entirely. When refilling the cooling system, remember that the coolant expands considerably when getting warm, so the system must not be filled all the way up, but the upper tank shall be left 20-30 mm below the rim. (Depending on the type of combine, the filler is either on top of the radiator or the expansion tank.) See instructions in the engine manual. After filling, run the engine with the heater in its maximum position for approx. 5 min. to bleed the air from the heater. Check the liquid level after this.

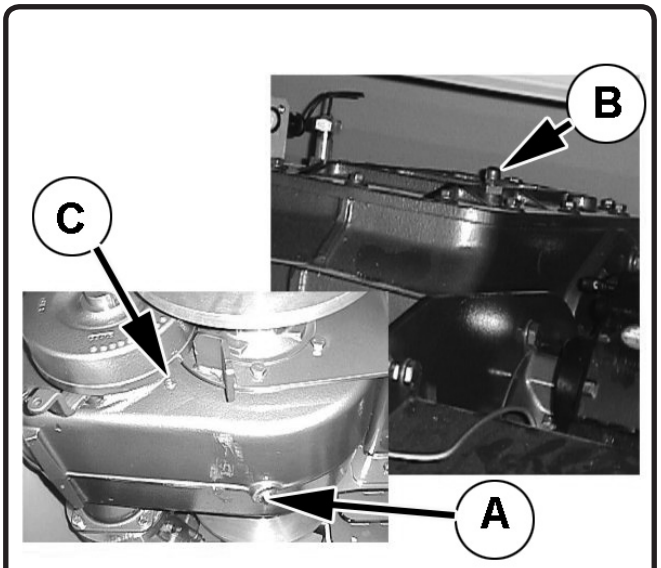

P78

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GEARS

The GEARBOX (fig. R1)

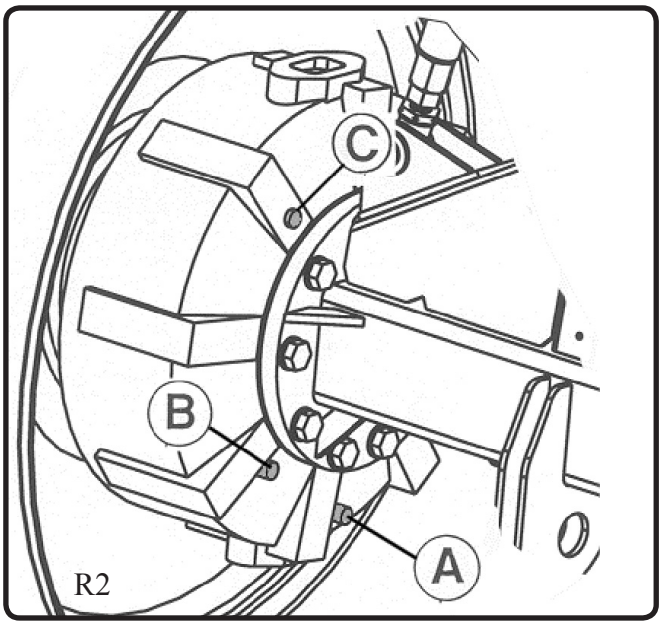
Check in check plug C that the oil level is level with the rim.
Change the oil every 600 h or once a year.
Drain the oil by unplugging oil drain A. New oil is poured into filler B. The oil level shall be at the height of check plug C on the right side of the gearbox.
Used oil is problem waste, which shall be disposed of in an appropriate manner.
Use an oil type in accordance with the oil table.
Check and clean, if necessary, the breather on the cover



R1

CLOSED FINAL DRIVES (Fig. R2)

Change the oil every 1200 h or at least every other year. The oil is drained by unplugging oil drain A.
Clean the bottom plug magnet.
New oil is poured in through a funnel into filler B at level with rim C.
Used oil is problem waste, which shall be disposed of in an appropriate manner.
Use an oil type in accordance with the oil table.
Check and clean, if necessary, breather C in the upper section of the final drive.

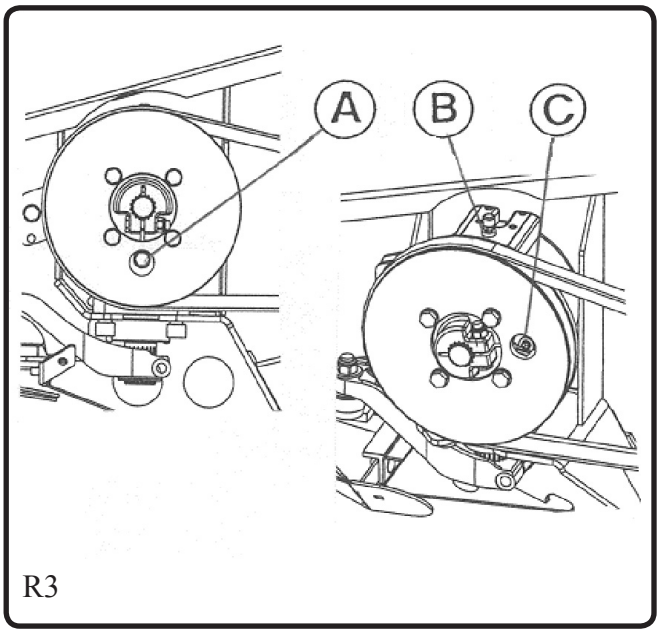


R2

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KNIFE DRIVE UNIT (Fig. R3)

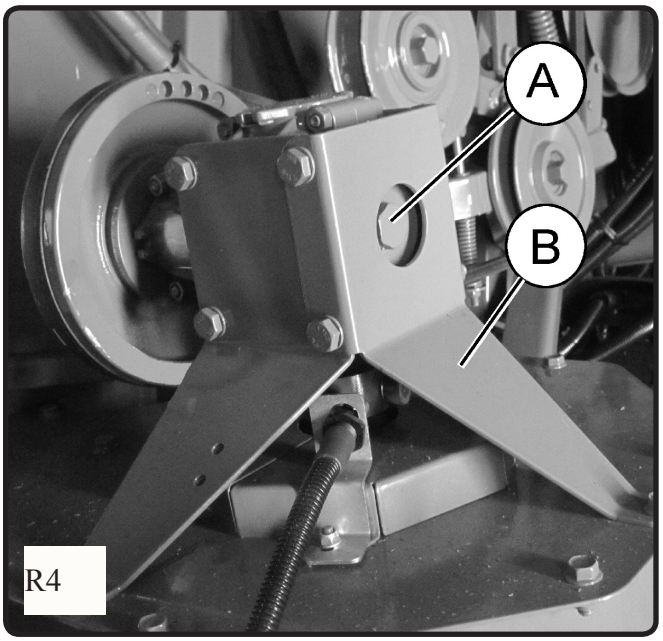
Check in opening C on the drive pulley that oil is level with the rim of the opening.
Change the oil every 600 h or once a year. The oil is drained by unplugging oil drain A. Turn the pulley to an appropriate position.
New oil is poured in through a funnel into filler B at level with rim C.
Used oil is problem waste, which shall be disposed of in an appropriate manner.



R3

GEAR BOX IN THE RETURN AUGER (Fig. R4)

The oil in the wobble box shall be changed at least once a year as instructed in the service table.
Old oil can be drained using a suction pump through drain A. If necessary, first remove support plate B if there is no hole in it.
Fill the wobble box with new oil level with the rim.



R4

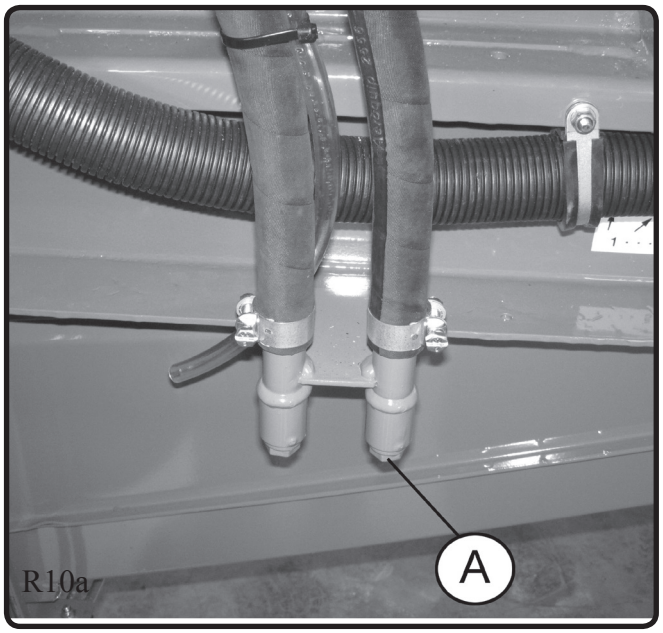
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HYDRAULICS

(Hydrostatic Traction Transmission)

General Description

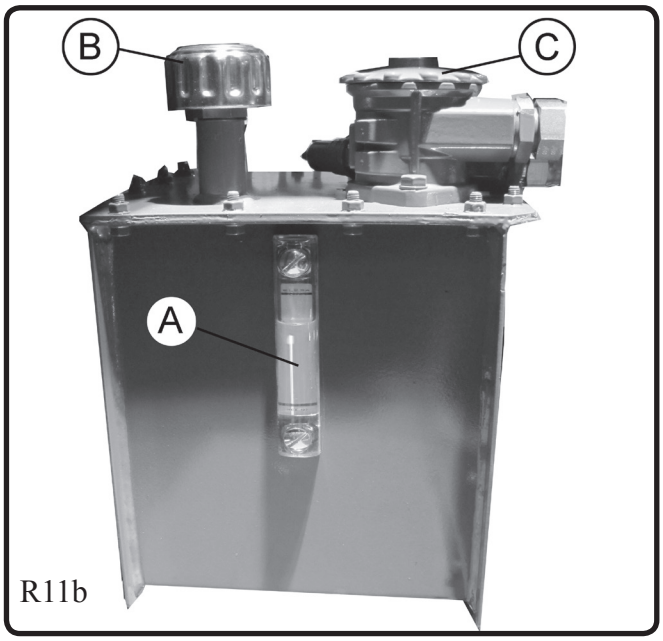
Traction hydraulics and working hydraulics use a joint oil tank and filter. Both systems have their own pumps. Hydrostatic steering gets its oil from working hydraulics by means of a priority valve. The valve always supplies the amount of oil needed in steering and the rest can be used in other hydraulics.
There is also an oil cooler in the system located in the traction hydraulics return line before the filter.
The control valves in working hydraulics are electrically controlled and located at the front beneath the right side guard.
There are two valves: the control valves of table height and free circulation; the control valves of the unloading pipe. Movement speeds are regulated by restrictors at the control valve gates except for the table lowering speed, which can be adjusted.
Pump output in working hydraulics is 28 l/min.
Working pressure is restricted to 180 Bar.
Pump output in traction hydraulics is 180 l/min.
Working pressure is 400 Bar



R10a

Adjustment of Table Lowering Speed

The table lowering speed can be adjusted steplessly by regulating knob A, fig. R12, on the valve.



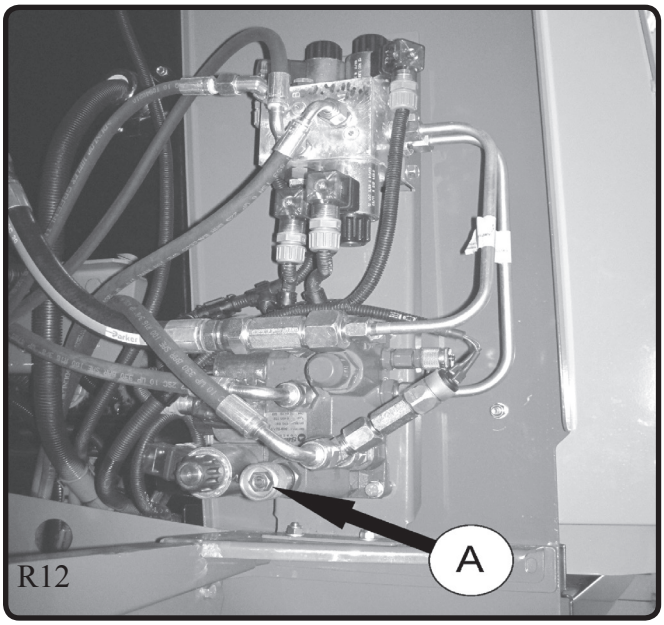
R11b

Daily Service

The oil tank is in the engine compartment. Periodic service measures include checking of the oil level and changing of the oil and filters. To check the oil level, there is transparent measuring glass A, fig, R11b, on the oil tank. The oil level must be visible in the glass, near the maximum, with the cutting table and the reel lowered. New pure oil is added through filler B, when necessary. Before unplugging the filler, clean the whole area carefully to prevent any impurities from getting into the tank. Keep the area around the oil tank always clean. Daily service measures also include checking and, if necessary, cleaning of the oil cooler. The cooler is positioned at the front of the engine radiator.

Oil Change

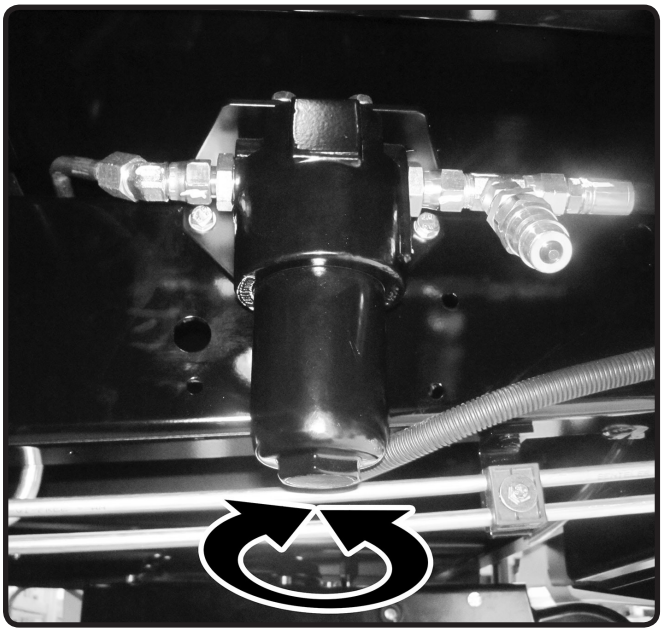
The oil and filters are changed every 600 h or at least once a year before the beginning of the harvesting season to remove any condensed water from the system after the winter. The oil is drained by opening drain A, fig. R10a. After draining of the oil, replace filter cartridge C. Clean the area round the filter carefully before removing the filter. Check and, if necessary, change the filter cover gasket before refitting. Use original filters only to ensure perfect functioning of transmission. Fill the filter housing with pure oil before closing the cover.



R12

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Used oil and filter are problem waste, which shall be disposed of in an appropriate manner.
Use an oil type in accordance with the oil table. Make sure the oil is free from any impurities. Always use a clean funnel.
After oil change let the engine idle for some 15 minutes during which time no hydraulics must be used. During this time the oil circulates through the filters several times and the impurities in the oil are filtered off. Monitor the oil level and check for leaks in the filter.
Also the breather, which functions as a filler, shall be changed every 1200 h or every two years.
Check the condition of the hydraulic hoses periodically. Replace damaged hoses immediately with new original ones.
Air is bled from the system by turning the steering wheel several times from one extreme to the other with the engine running. Monitor the oil level in the measuring hose and add oil if necessary.



R13

Pressure filter
The pressure filter is located underneath the cabin. The pressure filter is replaced by turning the bottom of the filter off, after which the filter can be replaced by hand, fig. R13. The filter is replaced after the first 50 hours, after which the changeover interval in every two years.

4 WD on Models Equipped with it

4WD uses the pump and oil in traction hydraulics.
The only service feature required is the greasing of the gasket housing on the shaft of the rear wheel hub motor. The nipple is on the outer rim of the hub motor. Greasing is done in the autumn after the harvesting season. Apply only one or two squeezes of grease. Too much grease may damage the seals.

Chaff Spreader

The optional chaff spreader is located behind the shaker shoe. The spreader has three different quick settings. The two front-most ones are working settings. The rear-most setting is used when the shaker shoe is serviced or when the chaff is not spread.
If necessary the spreader is easy to remove. If removed, the hoses in the working circuit are to be connected. There are no features that would require periodic service measures.

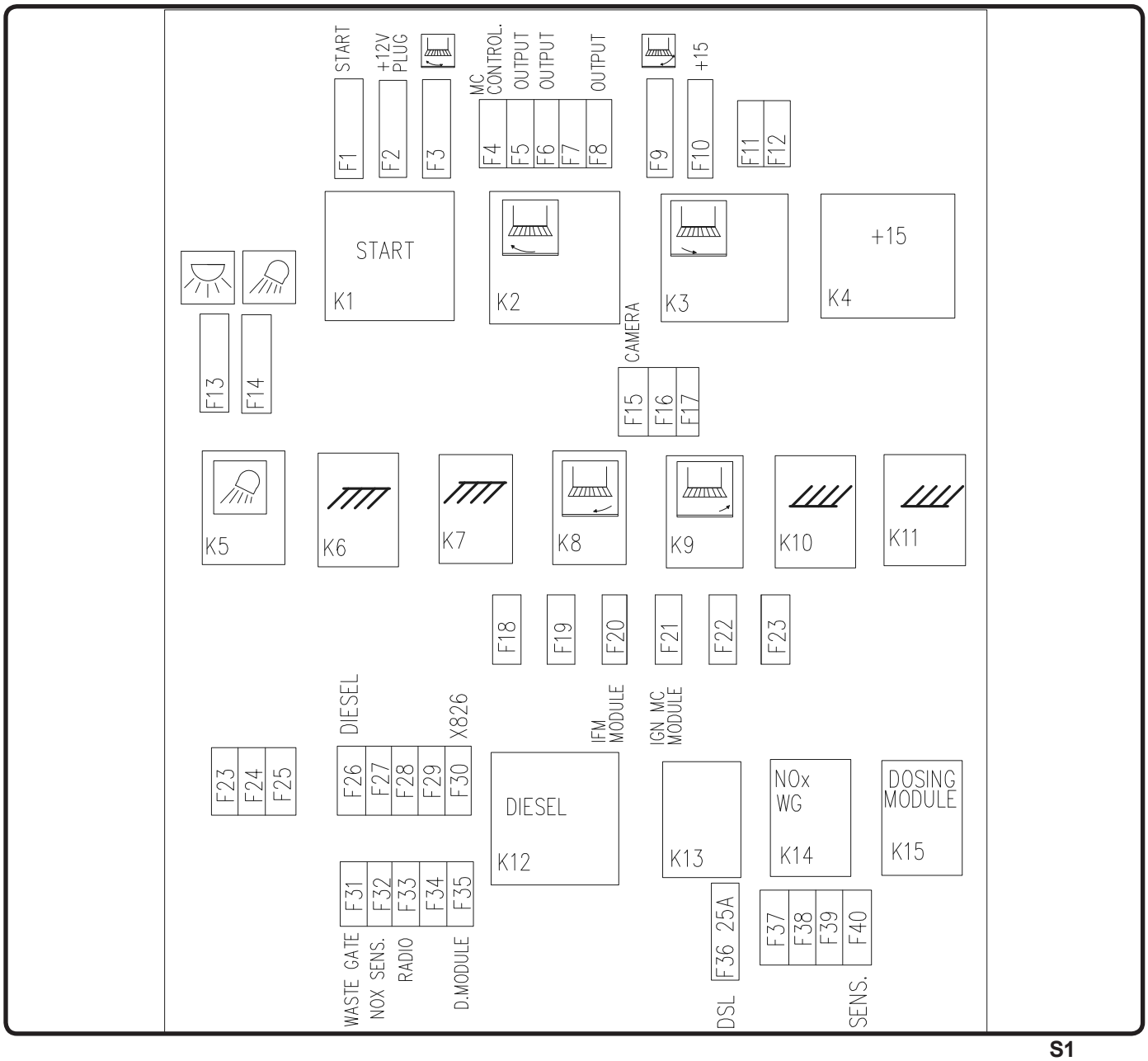
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ELECTRICAL SYSTEM

The engine is equipped with an alternator. The master switch or the battery cables must not be disconnected with the engine running.

FUSES Fig. S1

Fuses F1-F40 are located in circuit board under the instrument panel. Fuses 2F1-2F40 are located in the rear switchboard (fig. S1) under left side guard. Main fuses are also located in circuit board under the instrument panel and on the side of the rear electrical box under left side guard.
The control relays for different functions are located under the instrument panel and in rear switchboard . The functions and locations of the relays are illustrated on the instruction sticker stuck on the inside of the service door to the rear electrical box.



S1

Fuses

Electric box in the cabin

1F	60A	Main fuse, Circuit board
2F	30A	Main fuse, Ignition
3F	60A	Main fuse, Circuit board in the cabin roof

Electric box, rear

4F	150A	Main fuse, Cabin power supply
5F	40A	Main fuse, Circuit board rear
6F	250A	Main fuse, Grid heater
7F	100A	Main fuse, Vertical knife

Electric box, rear

2F1	25A	Start
2F2	20A	+12V Plug
2F3	25A	Straw spreader adjustment
2F4	5A	Loss monitor controller
2F5	10A	Controller CR711S
2F6	15A	Controller CR711S
2F7	7,5A	Option
2F8	10A	Controller M30711
2F9	20A	Straw spreader-, Sieve-adjustment
2F10	25A	Controllers, camera
2F11	7,5A	Option
2F12	7,5A	Option
2F13	20A	Work lights side guards, Sieve
2F14	20A	Work lights rear
2F15	5A	Camera
2F16	10A	Option
2F17	10A	Option
2F18	7,5A	Option
2F19	7,5A	Option
2F20	3A	Controller CR711S
2F21	3A	Loss sensor controller
2F22	7,5A	Option
2F23	5A	Light of the electrical main switch
2F24	3A	Controller CR711S
2F25	7,5A	Option
2F26	5A	ECU Impulse
2F27	5A	Option
2F28	5A	Option
2F29	5A	Option
2F30	5A	Diagnostic plug
2F31	10A	Wastegate
2F32	10A	Nox-sensors
2F33	5A	Radio Memory (+Batt)
2F34	5A	Electrical main switch
2F35	15A	Urea-Module
2F36	25A	Engine ECU
2F37	7,5A	Option
2F38	7,5A	Option
2F39	7,5A	Option
2F40	3A	Sensors

Electric box in the cabin

F1	25A	Concave adjustment motor
F2	20A	Steering column
F3	25A Aut.	Crain tank cover
F4	5A	Indoor light
F5	10A	Blinker I/O-Module
F6	15A	Seat compressor
F7	7,5A	+12V plug, +5V USB-charging
F8	10A	Air Conditioning compressor
F9	20A	Treshing unit and blower adjustment motor
F10	25A	Engine running
F11	7,5A	Parking lights, Right
F12	7,5A	Parking lights, Left
F13	20A	Windscreen wiper
F14	20A	Cabin fan
F15	5A	Armrest buttons
F16	10A	Four wheel drive
F17	10A	CR0303 Output
F18	7,5A	Option
F19	7,5A	Option
F20	3A	Daytime running lights, Right
F21	3A	Daytime running lights, Left
F22	7,5A	High beam, Right
F23	5A	Radio, Electric Mirrors
F24	3A	Diagnostic plugs
F25	7,5A	Brake lights
F26	5A	Engine IGN
F27	5A	Controller CR0303
F28	5A	Tank cover, spreader, fan relay
F29	5A	+12V Plug, Cool box
F30	5A	Display, Indicator lights,Controller CR2014
F31	10A	Turn signal lights
F32	10A	Option
F33	5A	Display +30
F34	5A	Cabin fan panel
F35	15A	Option
F36	25A	Option
F37	7,5A	High beam, Left
F38	7,5A	Lowbeam, Right
F39	7,5A	Lowbeam, Left
F40	3A	Start

In the cabin roof

F100	5A	Internal air circulation, Manual-AC

On the side of the feeder house

F200	50A	Vertical knife
F201	50A	Vertical knife

Behind the radio

F701	25A	Option
F702	7,5A	Work lights Front, Left
F703	15A	Beacons
F704	7,5A	Beacon-, Work lights-, Road switch control
F705	15A	Work lights Front, Left
F706	15A	Work lights Front, Right
F707	15A	Hazard blinker
F708	7,5A	Work lights Front, Right

Do not fit an oversized fuse, as it may damage the cables and the respective electrical devices. If a fuse blows on the same location repeatedly, find the reason for it and remedy it.

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Relays

Electric box, rear

2K1 Start
2K2 Chopper spreader adjustment, Left
2K3 Chopper spreader adjustment, Left
2K4 MC-controller, M30711, camera
2K5 Work lights rear

2K6 Sieves- electric adjustment,
2K7 Sieves- electric adjustment
2K8 Chopper spreader adjustment, Right
2K9 Chopper spreader adjustment, Right
2K10 Sieves- electric adjustment
2K11 Sieves- electric adjustment
2K12 Engine ECU

2K14 Wastegate, Nox-sensors
2K15 Urea-Module

Electric box in the cabin

K1 Concave adjustment motors
K2 Crain tank cover
K3 Crain tank cover
K4 Engine running
K5 Fan
K8 Treshing drum
K9 Treshing drum
K10 Blower
K11 Blower
K12 Air Conditioning compressor
K13 Daytime running lights
K14 Option
K15 Option

In the cabin roof

K100 Manual-AC, slow speed
K101 Manual-AC, medium speed
K102 Manual-AC, fast speed
K103 Fan, internal circulation flap
K104 Fan, internal circulation flap

Behind the radio

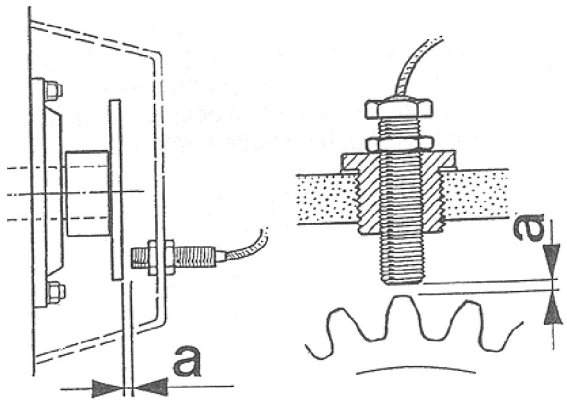
K701 Work lights Front, Left
K702 Beacons
K703 Work lights Front, Right
K704 Work lights Front, Right
K705 Beacon-, Work lights-, Road switch control
K706 Work lights Front, Left

The engine control unit is attached to the grain tank side of the engine.

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Sensors of ELECTRICAL SPEEDOMETERS

The sensor of electrical speedometer (driving speed) is located in the gearbox. To guarantee the correct functioning of the sensor, make sure that distance a between the sensor and the gear is 1+/- 0.5 mm. (Fig S6.) Make any necessary adjustments by turning the sensor fixing nuts. The sensor must not touch the rotating gear. Maximum tightening torque 5 Nm.



S6

The Rotation Sensors

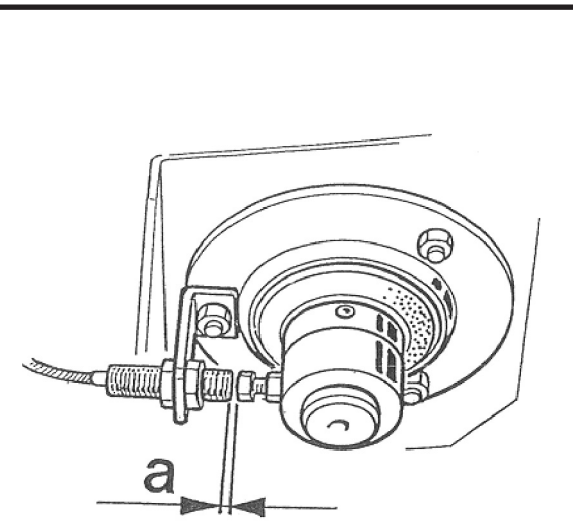
The threshing monitor have rotation sensors located on several shafts. A suitable distance ranges between 1-4 mm. Fig, S7

The Approaching Sensor

The threshing monitor is equipped with a angle sensor to detect the cutting table height. The sensor is located at the top right of the crop elevator.

The Reel Rotation Sensor

The threshing monitor has a rotation sensor located on the reel shaft. It consists of an inductive sensor and a star plate attached on the shaft. The distance from the sensor head **a** to the edge of the star plate shall be 1-1.5 mm. Fig S6



S7

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BATTERY



The gas generated by the battery is very explosive. Avoid open fire and sparks in the vicinity of the battery. When servicing any electrical equipment, disconnect the negative cable of the battery.

Checking the Charge State of the Battery



During the harvesting period the engine recharging equipment keeps the battery charged. At other times, check the state of the battery at regular intervals and recharge if necessary. An acid gauge may be used for checking. In the table below you can see the charge state of the battery compared with the acid specific weight.

Specific weight reading	Charged state
1 280	Fully charged
1 240	75 % ”
1 200	50 % ”
1 160	25 % ”
1 120	No charge

Do not leave a flat battery unused for a long time. A low-charged battery freezes easily and exposure to frost will cause extensive damage. If a recharging device is available, recharging can also be done at home.

Before starting to recharge:
Disconnect the battery cables.
Unplug the cells.
Check the fluid level.
Use 5-10 % of the Ah of the battery for charging current. For example: A 100 Ah battery may be recharged using 5-10 ampere current. Recommended recharging interval is 6 -10 weeks.

Cleaning of the Battery and Other Maintenance



Clean the battery cover regularly.
Remove any oxidisation off the poles and cable lugs.
Make sure the cable lugs are properly tightened.
Coat the outer faces of the poles and lugs with Vaseline.
Check the fluid level before the harvesting season and before winter storage. Add distilled water if necessary up to the upper fluid level.

Note! Wrong connection of either the battery or the generator will damage the generator. Before electrical welding, disconnect the battery and generator cables.

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Using Auxiliary Battery

If an auxiliary battery is needed for starting, proceed as follows:



Check that the voltage of the auxiliary battery is 12 V.
Make sure the combine battery has not frozen; a flat battery freezes in -10°C.

Follow carefully the connecting sequence given below:

With the auxiliary starting cables connect the positive poles of the batteries (marked with red paint, a P or a + symbol).

Connect the end of one auxiliary starting cable to the negative pole of the auxiliary battery (marked with blue paint, an N or a - symbol) and the last free end to the negative pole of the discharged battery.

Do not lean over the batteries while making the connections.
Start the engine.
Disconnect the cables in exactly the opposite order.

Fitting of Additional Electrical Equipment

When fitting additional electrical equipment to the combine, the capacity of the charging generator must be taken into account, 120 A. The total consumption of a standard combine is over 60 A in the dark comprising:

Head lights	12 A
Working lights	35 A
Fan in the cab	14 A
Air conditioning	10 A
Electronic engine regulator	15 A

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LUBRICATION

Do not lubricate while the engine is running. Remove the key and lock the parking brake before starting lubricating. The cutting table and reel supports must be locked or lowered when lubricating.
The table below gives recommended lubricants to be used in different temperatures. The table also gives different types of air conditioning liquids, although they do not normally have to be changed.

Recommended lubricant	Oil grade API	SAE Grade		Filling quantity litres	Change intervals
		-10...+30C	+10...+45C		
Engine AgcoSisuDiesel - Common Rail	CJ-4	10W30	15W40	Depending on cyl. number 4 cyl. 13 l (49 AWF 11,5 l) 6 cyl. 25 l	300h or 1 year
Gearbox	GL-5	80W90	85W140	7 l	600h or 1 year
Final drive	GL-5	80W90	85W140	left 3.0 l right 3.0 l	1200h or 2 year
Working hydraulics	Shell Esso	Tellus T46 Univis N46	Tellus T46 Univis N46	22 l (Change)	600h or 1 year
Grain elevator gear box	Shell	Gadus S3 V120G	Gadus S3 V120G	0.25kg	
Return auger gear box	GL-5	80W90	85W140	0.35 l	600h or 1 year
Knife drive unit	GL-5	80W90	85W140	1,2 l	600h or 1 year
Lubrication with oil	CB/CC	10W30	10W30	15W40	
Lubrication with grease	Lithium grease	NLGI 2	NLGI 2		
Oil in the AC	PAG	500SUS	500SUS	0.16 l first filling	
Agent in the AC	HFC R134a			1.6kg	

The combine leaves the factory filled with oil intended to be used in temperatures -10...+30°C except with Shell Tellus S4 VX 32 in the traction hydraulic system. With refills it is advisable to start using oil types intended for local temperatures.
If the combine is used in areas where only biologically decomposable hydraulic oils should be used, the Manufacturer should be consulted about the choice of oil.

Correct lubrication is of major importance to the perfect functioning and long working life of the combine, due to which the lubrication recommendations shall be followed carefully while simultaneously monitoring if any place demands more lubrication.

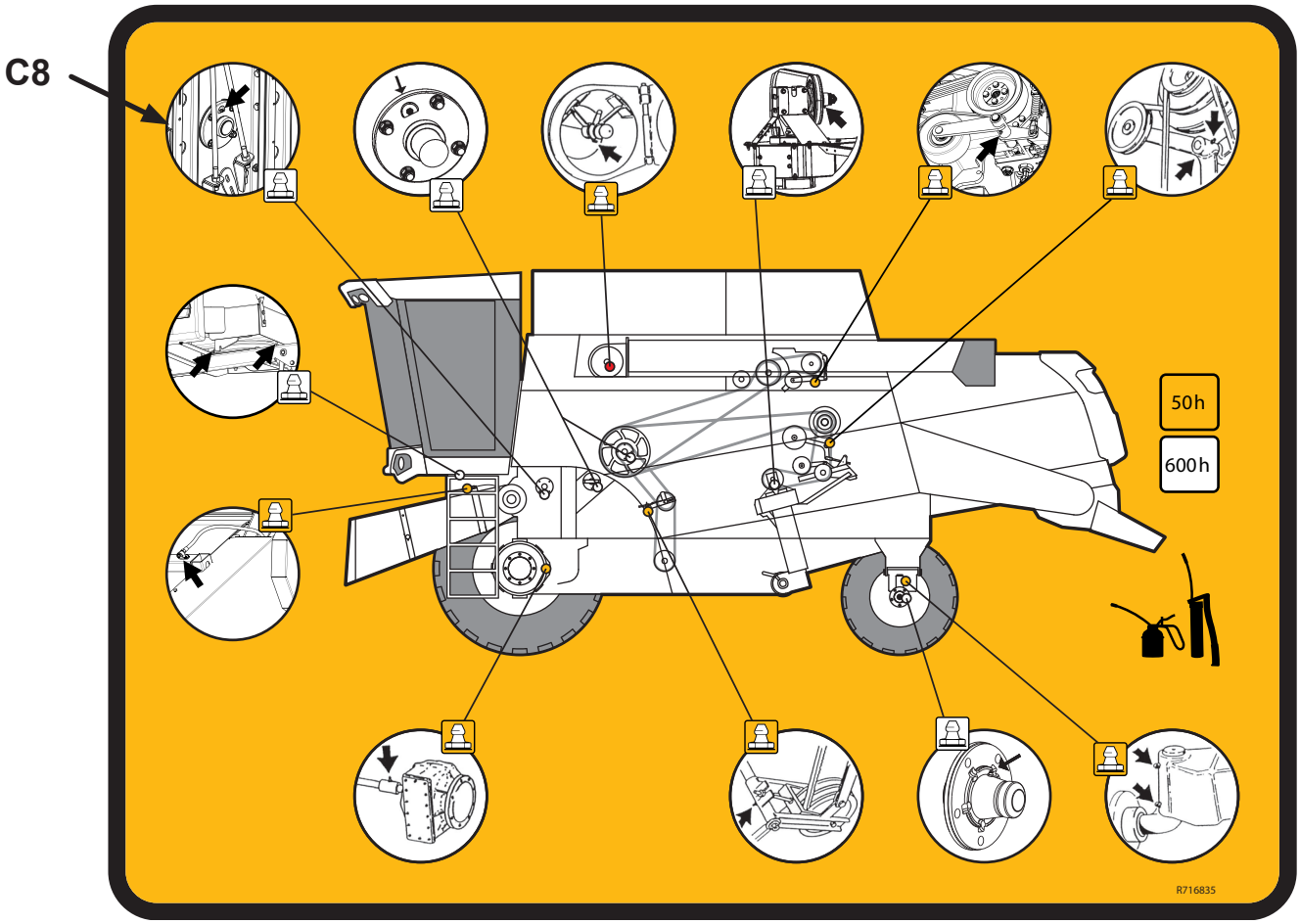
All the lubricants shall be pure. Even slightest impurities may cause damage. Oil fillers and nipples shall be wiped clean. The nipples are lubricated with grease in accordance with the lubrication table. Apply machine or engine oil to places to be oiled.

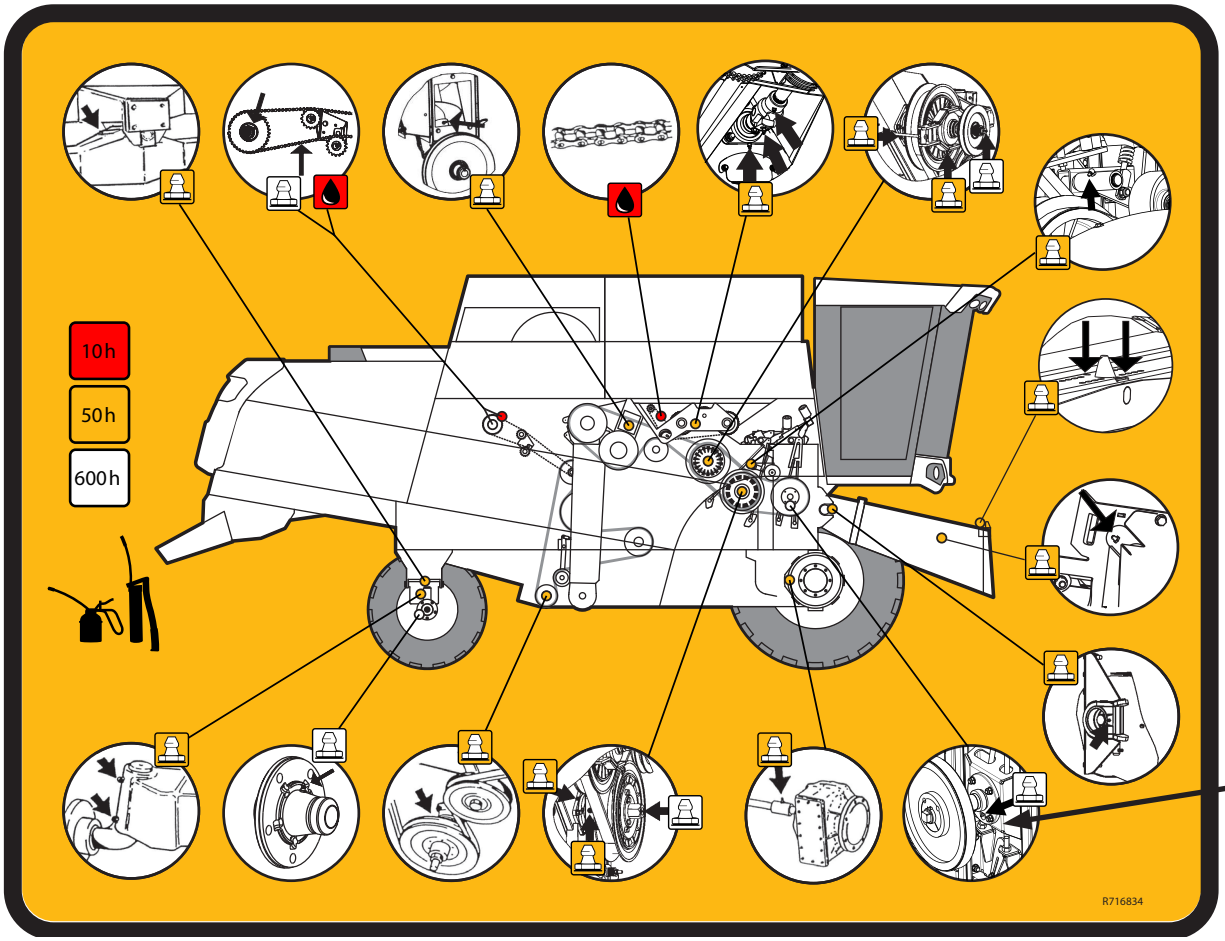
The overload clutches and the variator pulleys must be lubricated carefully. Excessive lubrication will cause unnecessary slipping of the clutches and damage to the belts, if lubricants come into contact with the belts or friction plates.

After lubrication the variator pulleys are adjusted with the threshing mechanism running between different speed ranges, which will spread the lubricants evenly on the surfaces

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LUBRICATION DIAGRAM





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SUMMARY OF PERIODICAL MAINTENANCE PROCEDURES

For more detailed instructions on engine adjustments and maintenance, see the engine manual.

Daily:

- Check the engine oil level.
- Clean the engine compartment
- Check the radiator and inlet sieve for dirt
- Check the radiator coolant level.
- Check the intercooler for dirt
- Check the fluid and oil connections for leaks.
- Lubricate the points to be lubricated daily.
- Check the function of the alarm system.
- Check the condition of the cab air filter.
- Check the condition and tension of belts visually.
- Check the chopper knives.
- Service the engine air filter if the service indicator alarms.
- Check the tightening of the wheel nuts/bolts first hour and then each 10 hours till 50 total hours.
- Check tension of variator drive belt.

Every 50 working hours:

- Lubricate all the points specified in the table.
- Check the battery fluid level.
- Clean round the breather on the hydraulic tank.
- Check the gearbox oil level.
- Check the oil level in the final drives
- Check the oil level in the return auger gear box (on combines equipped with it).
- Check the knife condition.
- Check the oil level in knife drive (combines with oil bath drive).
- Check the concave basic setting.
- Check the condition of the threshing equipment.
- Check the condition of the power transmission equipment.
- Check the tension of belts and chains.
- Check the operations of safety clutches.
- Check and clean the cab air filter.
- Check the tension of the grain elevator belt.
- Check the tension of the grain pan chain.
- Check the brake functions.
- Check the brake fluid level.
- Check the light functions.
- Check the tyre pressures. (Recommended tyre pressures are given in Technical Specifications)
- Replace the pressure filter after the first 50 operating hours. (After this, every two years)

Every 300 working hours or yearly:

- Change the engine oil and filter.
- Change the engine air filters.
- Lubricate the fan variator hub. (Oil)
- Lubricate the fan variator regulator. (Oil)
- Lubricate the cylinder variator regulator. (Oil)
- Lubricate the pedal shafts. (Oil)
- Lubricate the gear lever joints and bearings. (Oil)
- Lubricate the clutch lever joints. (Oil)
- Lubricate the auger and joints in concave adjustment. (Oil and grease)
- Change the cab air filters.
- Check the battery fluid level.
- Check the inlet hoses in the radiator and engine visually, replace if needed. Replace at least every 5 years.

Every 600 working hours or yearly:

- Change the oil in the gearbox.
- Change the fuel filters.
- Change the oil in the return auger wobble box.
- Lubricate the bearings on the left-hand side of the threshing cylinder and rear beater. (TS)
- Change the hydraulic oil and filter.
- Lubricate the middle shaft of the stairs.
- Lubricate the wheel bearings.
- Grease the shaft gasket in the rear wheel hydraulic motor (on 4WD models, once a year)
- Sensitize and adjust the friction plate type safety clutches
- Lubricate the hinges and lock on the cab door.
- Change the oil in knife drive (combines with oil bath drive).
- Check the condition of the hydraulic hoses. Replace at least every 10 years.
- Replace the main filter of SCR supply module

Every 1200 working hours or every other year:

- Change the oil in the final drives (models with closed final drives).
- Change the breather in the traction hydraulics.
- Change the radiator fluid in the engine.
- Change the brake fluid.
- Replace the pressure filter.

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STORAGE WHEN NOT IN USE

To guarantee the operating reliability of the combine, proper service and storage are of great importance. The service before winter storage can be divided into three parts, in order of performance: cleaning, checking and protection. A dry store or shed is ideal storage for the combine.

Cleaning:

Open the stone trap and all doors. Remove and wash all detachable guards, sieves, the bottom cassettes of the grain pan and straw walkers as well as the grain tank bottom augers. Dirt is efficiently removed from a dry combine by compressed air. A high-pressure washer may be used with caution. To reduce drying time use warm water and idle the threshing machinery.
Do not direct water jets at the bearings as the packing does not hold against a strong spray of water.
In normal seasons, it is not necessary to wash the inner parts of the combine in water; the inside of the combine can be raked clean with a suitable tool. Apply suitable solvent on heavily greasy spots before washing.
Start cleaning from the top. Clean the radiator cells by blowing air from the direction of the engine.

Checking:

Take a pen and paper and write down all the shortcomings and required service measures in the following order:

- Condition of knives.
- Draw-in fingers and bearings.
- Slip damages and breaks in belts and the remaining tensioning margin.
- Condition of and basic settings for the cylinder and concave.
- Condition of the grain pan and shaker shoe packing.
- Bearing clearances and fastenings.
- Wear, corrosion and dents.
- Rotor knives and counter-knives of the chopper as well as rotor bearings.

It is important to have the recorded defects repaired before storage to ensure the efficient functioning of the combine at the beginning of the following harvesting season.

Protection:

Use pure engine oil or special protective oil in a sprayer.

- Places to be protected:
- Knife (protective oil)
- Draw-in fingers (protective oil)
- Worn paint (paint)
- Electrical connections (special protective spray)
- Chains (oil); rotate the mechanism by hand to ensure even lubrication.
- Transmission chains (unloading and the reel) shall be disengaged, cleaned with a solvent and lubricated with molybdenic oil.
- Lubrication of the rotor knife joints of the chopper.

After protection all the cleaning doors, the grain pan and straw walker bottoms and sieves are left open to produce a draught inside the combine. This will prevent rodents from nesting in the inner parts of the combine.

Pre-storage Service of the Air Conditioner:

Use compressed air to clean the cooler condenser and evaporator cells. In case the combine engine is run during storage, the cooler should also be switched on for a few minutes. To operate the cooling system in cold weather, have the heater on at full capacity and the ventilator fan stopped for approx. 15 min. during which time the air conditioning sensor will warm up and enable the switching on of the compressor. After this the ventilator fan is run at its lowest speed and the cooling at full capacity.

Pre-storage Service of Engine:

- Clean the engine on the outside.
- Change the fuel filters.
- Change the engine oil.
- Change the engine oil filter.
- Drain and clean the fuel tank.
- Check the anti-freezing quality of the coolant. It must be a minimum of - 25°C.
- Run the engine min. 10 minutes.
- Seal the exhaust pipe, inlet opening of the air filter and the breather with e.g. masking tape or plastic film.

Other Pre-storage Measures:

- Change the oil in the gearbox. Clean the magnet in the bottom plug and the breather filter.
- Clean the air filter.
- Disconnect the battery, the negative pole first, clean the top of the battery with warm water and store it in a dry cool place.
- Clean the cable lugs and apply grease to them.
- It is not necessary to remove or loosen the V belts for storage. Engage the driving belts of the threshing mechanism, unloading and the cutting table, but remember to disengage the threshing mechanism when starting the engine the next time.
- Check the tyre air pressure.
- Lubricate all points to be lubricated and run the threshing mechanism after that.
- Lower the cutting table and the pick-up reel to allow the cylinder pistons to go in.
- Turn the steering to its extreme left position to allow the cylinder piston to go in all the way.

After-storage Attention

- Remove the engine opening covers.
- Fit new air filters (engine and cab).
- Fasten the fully charged battery, the positive pole first.
- Check the coolant level.
- Change the oil and filters in the working hydraulics and in the traction hydraulics.
- Check the hydraulic and gear box oil levels.
- Check the belt and chain tensions.
- Make sure the rotor knives of the chopper turn.
- Turn the coolant pump by the fan to loosen a possibly stuck sealing.
- Open slightly the bottom plug of the fuel tank and drain any condensed water from the tank bottom.
- Disengage the belt clutches.
- Run the engine on the starter a few revolutions with the stopper in the stop position or with the running solenoid cable disconnected to allow oil pressure into the bearings prior to the actual starting.
- Check that there are no foreign objects inside the combine.
- Start the engine and let it run on fast idle for about 3 minutes.
- Watch the oil pressure and alternator warning lights.
- Check for any coolant, oil or fuel leaks.
- Carefully engage the threshing mechanism.
- Gradually raise the RPM to the normal level, simultaneously monitoring the function of the threshing mechanism.
- Stop the threshing mechanism and the engine and close all doors.
- Set the threshing settings for the first threshing.

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RECOMMENDED TOOLS AND ACCESSORIES

For do-it-yourself maintenance it is necessary to replenish the tools supplied with the combine with the special tools mentioned under Maintenance as well as with the fork, ring and socket wrench kits, observing the wrench gap table below and the wrench gaps of 16, 17.5 and 27 mm for the hose and pipe couplings.

Recommended Accessories

For the Cutter Bar

- Knife sections 25 pcs
- Knife section screws 50
- Fingers 2 ”
- Knife holders 2 ”

For the Table Auger:

- Fingers 4 pcs
- Finger bearings 4 ”
- Bearing holders 2 ”
-

For the Reel:

- Plastic tines 5 pcs

General Parts

- Hexagonal screws M6-M12, the most common lengths of 16-40 mm, strength class minimum 8.8.
- Hexagonal nuts M6-M12, strength class 8.
- A few lock nuts.
- Washers and spring washers, 6.5-13 mm.
- Plate screws 4.8, lengths 9.5-19 mm.
- Split cotters 3x20 and 5x30 mm.
- Wire cotters 2.5x50 mm.
- Spring cotters, 3-8 mm, lengths 20-50 mm.
- Circlip cotters 10 mm.
- Grease nipples 6 mm and 1/8”, straight and angled.
- Additional loops for chains.
- Fuses 7.5, 15 and 25 A.

SCREW JOINTS

It is important to tighten the screw joints into the correct tightening torque. Wrench gaps and torque for the screws:

Screw size	Wrench gap mm	Torque for screws of 8.8 strength class
M 6	10	11 Nm
M 8	13	25
M 10	17	47
M 12	19	78
M 14	22	120
M 16	24	180
M 20	30	335

Note! Torque for fixing screws in the wheels:

Front wheels	M18 screws	350 Nm	(Grease lubricated hubs)
	M22	600	(Oil-bathed hubs)
Rear wheels	M16	180 ”	
	M22	500	(4WD)

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DISCARDING OF THE COMBINE

Even the best of products will come to the end of its useful lifetime and it is time to discard it. It is important to make sure the discarded combine will not be harmful to the environment. Below you will find a list of things to consider before discarding the combine:

Do not let the discarded combine spoil the scenery. Store it indoors.

- Lower all the hydraulically raised parts of the combine. (Cutting table, reel, unloading pipe)
- Remove the battery and take it to an appropriate problem waste collection centre.
- Drain all the fuel into a spare tank.
- Drain all the oil from the engine, gearbox, final drives and hydraulic systems into an appropriate collection dish. Drain the oil from all the pipes, cylinders and hydraulic components.
- Drain the coolant into a collection dish.
- If the combine is equipped with air conditioning, let an authorised service outlet drain the cold gas and oil.

If the combine is to be scrapped, follow the below given procedure:

- Disassemble the combine starting from the top.
- In case flame cutting or other spark generating measures are used, pay careful attention to fire precautions. There may be highly flammable dust and grease in the combine structure.
- Beware of any moving machine parts.
- Most of the combine material is steel.
- There is copper in the radiator and electric conductors, start-up motor and alternator.
- There is rubber in the tyres, belts and hoses.
- There is plastic in the crop elevator tines, cab interior, lamps and lights. Pay attention to the recyclability of the components.
- There is glass in the cab, mirrors, lamps and lights.
- There is no asbestos in the combine structure.
- There are minor quantities of heavy metals, such as lead in the slide bearings.
- Take all the recyclable parts to a recycling centre.