

CULTIVATOR FOR SIMPLIFIED TILLAGE

## CROSS HP



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Before starting machine read the operating manual and follow the safety instructions contained in it.



## CE Declaration of Conformity

### CE Declaration of Conformity

#### UNIA Sp. z o.o.

st. Szosa Torunska 32/38  
86 – 300 Grudziadz, Poland

Herewith declare with full responsibility that our product:  
cultivator for simplified tillage

#### CROSS HP

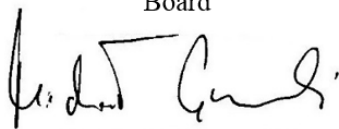
type / model : .....  
manufacturing year : .....  
serial no. : .....

is in compliance with the Ordinance of the Minister of Economy of October 21, 2008 (Journal of Laws No. 199, item 1228) and the EU Directive 2006/42/EC of May 17, 2006 and the Ordinance of the Minister of Infrastructure of May 4, 2009 (Journal of Laws No. 75/2009, item 639) and the following standards:

PN-EN ISO 12100:2012	PN-EN-ISO 13857:2010
PN-ISO 3600:1998	PN-EN-ISO 4413:2011
PN-ISO 11684:1998	PN-EN 349+A1:2010
PN-EN ISO 11688-1:2010	PN-EN 14017+A2:2009
PN-EN ISO 4254-1:2016-02	PN-EN 13739-1:2012

This CE Declaration of Conformity is no longer valid if the machine has been modified or reconstructed without the manufacturer's consent.

Member of the Management  
Board

  
Michał Guzowski

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Board

  
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Grudziadz, 05.12.2017



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# **CROSS HP**

## **MAINTENANCE AND OPERATING MANUAL**

Machine identification data:

Type	
Production year	
Serial no.	



**This maintenance and operating manual is an integral part of the machine. It is important that the manual is always in the possession of the machine user. Access to the manual should be provided to machine operators and cooperating persons while operation, regulation, repairs and renovations.**



**Before starting the machine please read the operating manual and follow the recommendations and instructions regarding safety and proper usage of the machine.**

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## PREFACE:

When buying the machine, check completeness of its accessories that include the following components:

- Operating Manual
- Warranty Card

## 1. Precautions

### 1.1. Before you Begin to Use Your Machine



- Read the instruction manual.
- Pay always special attention to the text and illustrations marked with this symbol!
  - These machines are intended for agricultural use only. Any use outside of this purpose shall be considered as not intended use. Learn how to use your machine correctly and carefully!
  - The machine may be dangerous when driven by not authorized individual or when operated carelessly.

### 1.2. Health and safety regulations

- Before each start, check whether the tractor and machine are safe for road traffic and operation!
- The tractor working with the machine must be equipped with the weights on the front axis! Balance of the tractor with the attached machine, its steerability and braking ability must always be kept.
- When connecting and disconnecting the machine to/from the tractor, its lifting and lowering on the hydraulic lift of the tractor, setting the machine in the transport and working positions and on the headlands, ensure that no bystanders and in particular children are present in the vicinity of the machine. Perform these operations slowly, without sudden jerks!
- Never stay between the tractor and cultivator when the tractor's engine is running!
- The machine may only be operated, maintained and repaired by the personnel who know its construction and are aware of the existing hazards!
- There are some places where crushing or cutting may occur on the parts actuated by the forces other than the human force (e.g. the hydraulic system). When connecting the hydraulic hoses to the hydraulic system of the tractor, always ensure that the hydraulics is depressurized! Check positions of the control levers of the tractor hydraulic system. Only actuate the hydraulically operated attachments when there is nobody present within their range of operation! Check the hydraulic hoses on regular basis and replace them with new items when damaged or worn!
- When driving on highways with the machine attached, lock the operating lever against its lowering!
- The attached warning and indicating signs contain information on safe work: they are intended for your safety!

- Before you start work, learn thoroughly operation of all devices and actuators and functions of the machine. It is too late for this after you start work!
- Avoid wearing any loose clothing, which could be caught by rotating components of the machine.
- Always keep the machine clean in order to avoid fire!
- Always check the surroundings before you start operation. Make sure that you have sufficient visibility!!
- Never back or reverse the tractor when the machine is lowered to the working position. When reversing, pay attention to the components that protrude far away and do not use the independent brakes of the tractor!
- Check air pressure in the wheels of the tractor and cultivator regularly.
- Never transport people on the machine and load it with any additional weights when operating the machine or transporting it!
- Check and attach the traffic equipment, such as lighting, warning devices and possible protective devices.
- Observe the admissible axial loads, total weights and transport dimensions.
- Check tightness of screws and nuts on regular basis and tighten them if required.
- Always use appropriate tools and wear safety gloves when changing tools.
- The spare parts must be conforming to the revisions specified by the manufacturer. This may only be provided by the genuine spare parts. Use typical protection devices and pins for securing all bolts of the unit (tractor + machine). Never use any temporary means of protection, such as screws, bars, wires etc., which can cause damage to the machine or tractor during transport and cause a safety hazard for other road users!
- Attach and disconnect the machine to/from the tractor after having parked the machine on a flat and hardened surface and with the tractor engine stopped. Store the machines unfolded.
- Store the machine in the locations inaccessible for unauthorized people or animals when not in use.
- Besides the above guidelines, follow the general safety rules.

### 1.3. Servicing



- Service the machine when it is lowered onto the ground! If the machine is coupled with the tractor, engine of the tractor must be off and brakes on!
- Use only tools in good technical condition and genuine materials and spare parts for servicing.
- Always protect the machine with appropriate supports when performing any maintenance or repair work on the machine lifted up.

### 1.4. Transport on highways




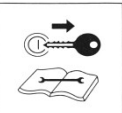










- Never exceed the speed limits allowed on highways and follow traffic regulations of the respective country!
- Pay special attention when passing and overtaking other vehicles and on curves (the unit is pivotally connected to the tractor)!



- The machine, as the part of the vehicle that protrudes outside the rear side outline of the tractor covering the rear lamps of the tractor, poses a threat for other vehicles in the traffic.
- When transporting the machine on highways, always use warning lights, distinguishing plate and side reflectors.
- Maximum width of the machine, which can be moved on highways is specified in the detailed regulations of the country of use. They should be observed.

### 1.5. Safety Symbol

A			Read through the Operating Manual thoroughly before operating the machine
B			Stop the tractor engine and take away the ignition key before any servicing and repair work
C			Keep safe distance off the machine
D			Never reach into the crushing area as long as the components can move
E			Stay away of the machine tilting area
F			Points of attaching hooks of the lifting equipment
G			Speed limit sign

H	<p><b>UWAGA</b> PROSIMY O REGULARNE SMAROWANIE PUNKTÓW SMARNYCH</p> <p><b>ATTENTION</b> PLEASE OIL REGULARLY LUBRICATION POINTS UNDER THE OPERATING MANUAL</p> <p><b>ACHTUNG</b> WIR BITTEN REGELMÄßIG DIE SCHMEIRSTELLEN LAUT BETRIEBSANLEITUNG ZU SCHMIEREN</p>	Lubricate the machine on regular basis
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Safety signs and inscriptions should be protected against damage, dirt and overpainting. Replace any damaged or illegible signs and inscriptions with new ones that are available from the manufacturer or vendor of the machines.

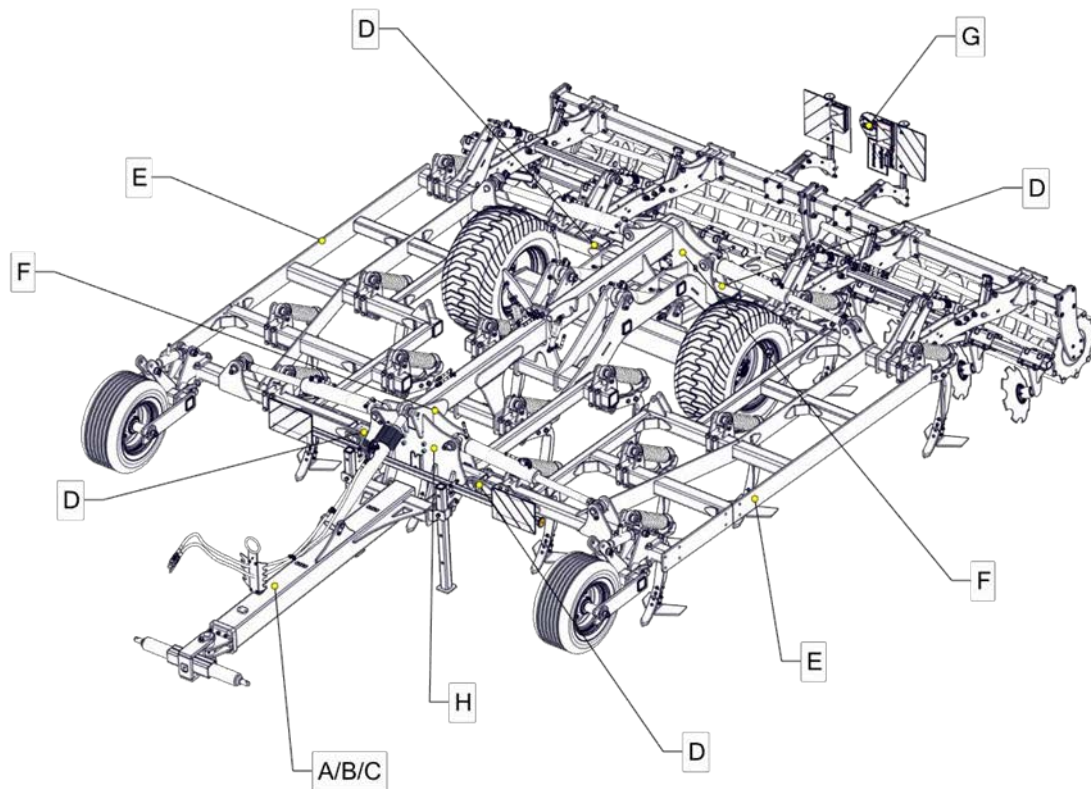




Fig 1: Location of the safety symbols

## 1.6. Nameplate

The unit data can be found on the nameplate

		Sales Department Phone: +48 564510500 e-mail: info@uniamachines.com uniamachines.com			
Producent / Producer <b>UNIA Sp. z o.o.</b> 86-300 Grudziądz, ul. Szosa Toruńska 32/38					
MODEL					
TYP / TYPE					
ROK PROD. / YEAR					
NUMER / SERIAL NO.					
<b>MADE IN EU</b>					

## 2. Technical and Identification Data

**CROSS HP** cultivators are versatile units used for ploughless tillage, well-proven in the technology of simplified cultivation, and thanks to the tines with undercutters, also for skimming;

- they are based on 4 rows of spring-protected tines
- single-row harrow type A
- secondary tillage roller
- hydraulic adjustment of working depth

The machines are manufactured in the following widths:

4.0 m; 5.0 m 6.0 m – version hydraulically foldable for transport

Compact units for stubble cultivation based on traditional as well as on simplified technology allow for the treatment of large areas with a low power tractor.

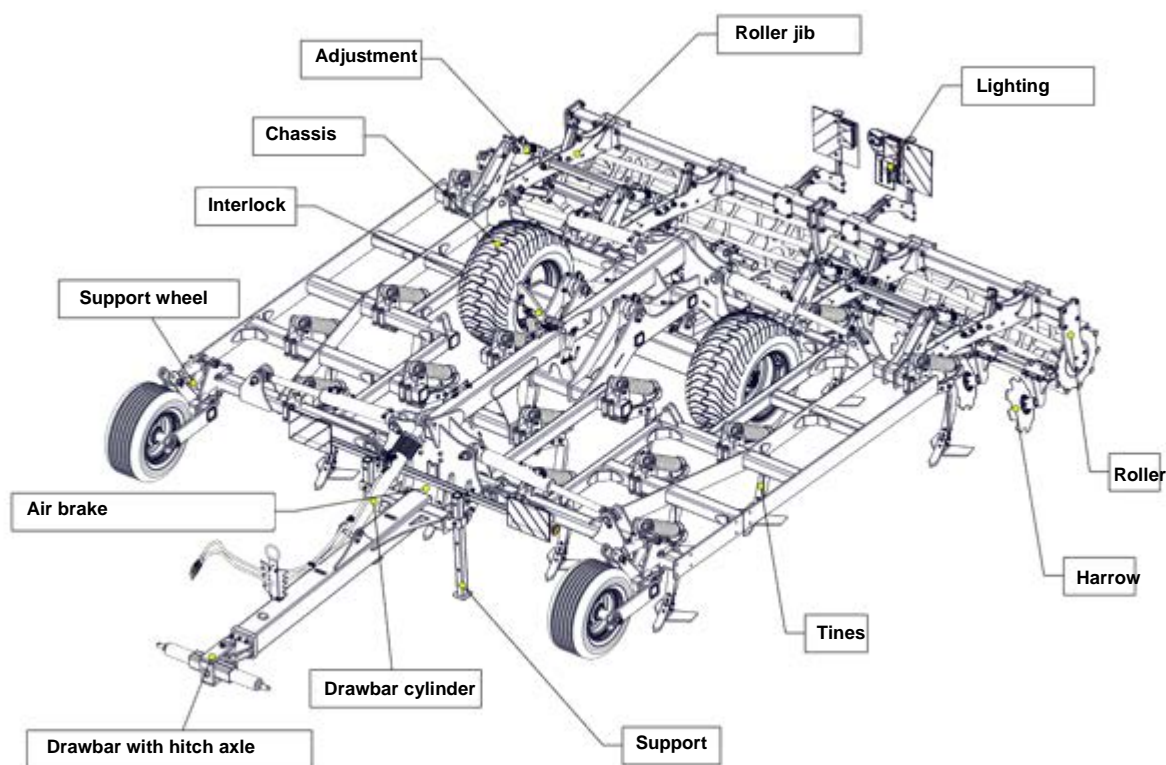


Fig 2: Construction of CROSS HP(5H; 6H, 8H)

## 2.1. CROSS HP Specifications

Item	Parameters		U/m	Type of unit		
				4H	5H	6H
1	Type of cultivator		-	Semi-mounted / drawn		
2	Working width		m	4	5	6
3	Type of harrow		pc.	A, ø460		
4	No. of CX tines		pc.	13	17	19
5	Tine spacing		cm	31	29.5	31.5
6	Max. working depth of tines		cm	30 (without undercutters)		
7	Max. working depth of discs		cm	8÷9		
8	Clearance under the frame		cm	85		
9	Spacing of tine rows		cm	750		
10	Working speed		km/h	10÷15		
11	Effective capacity		ha/h	4.0÷6.0	5.0÷7.5	6.0÷9.0
12	Power demand		HP	200÷260	240÷300	280÷360
13	Operators		No.	one		
14	Overall dimensions	L	cm	890	890	890
		W		474	674	674
		H		170	170	170
15	Transport width		cm	300	300	300
16	Transport height		cm	309	364	401
17	Weight without accessories		kg	6400	7000	7400

### 3. Operating Manual

#### 3.1. First Start

Before the first start of the machine:

- read the Operating Manual thoroughly
- check technical condition of the machine, and in particular, condition of its working parts, protecting mechanisms and the hydraulic system. When finding any damaged or worn parts, replace them with new ones
- check tightening of all screws, bolts and nuts. Tighten any loose nuts especially at the beginning of operation of the machine
- check fitting of the quick-connectors of the hydraulic hoses of the machine to the sockets on the tractor
- check, whether the disc coulters, rollers and spindles (turnbuckles) can rotate without any jams
- check the pressure in tyres acc. to the manufacturer's recommendations
- check, whether the components requiring lubrication are lubricated
- check, whether the machine attachment system fits the tractor attachment system
- drain
- empty the hydraulic system and refill it with oil identical to oil contained in the tractor the machine will be connected to

#### 3.2. Preparation of the Unit (Tractor + Machine)

- pressure in the tractor wheels must be equal on the same axle in order to provide uniform working depth of the machine
- the tractor lower links (c) must be stiffened (lock the oblong holes) and at the same height above the ground level
- set the lifting rods of the tractor links (w) so that you can pull down the lower links below the hitch axle in order to achieve the required working depth, while obtaining sufficient lifting height of the links for transport
- mount the front axle weights in order to keep balance of the tractor and the machine
- the tractor front axle must always be loaded with min 20 % of the tractor net weight
- do not exceed the max allowable axle loads of the tractor individual axles
- quick-connectors of the machine hydraulic hoses must fit the sockets on the tractor
- the hitch axle should be in the middle of the machine

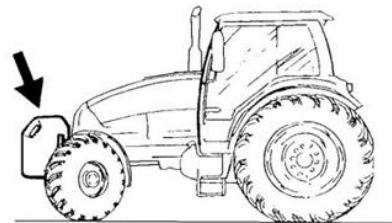


Fig. 3: Tractor lifting rod

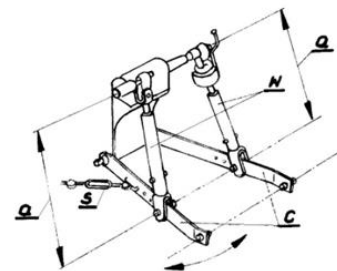


Fig. 4: Front axle weight

- category of the lower articulated joint of the hitch axle must be the same on both the tractor and the machine sides!

### 3.3. Connection and Disconnection

The tractor should stand on a hard and plain surface in order to connect the machine to it in a correct and safe way.

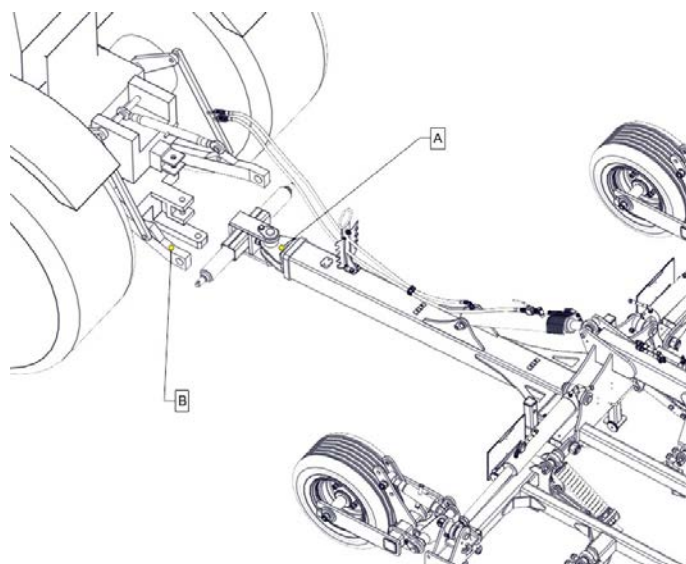


Fig. 5: Connecting the semi-mounted machine

#### Mounting

- shift the tractor hydraulics to the position control
- back the tractor to a distance that allows connection of the hitch axle (A) (tow hitch type [D]) to the tractor lower links (lift arms) (B) (with the tractor tow hitch type [E])
- secure the hitch axle (A) (tow hitch type [D]) in the tractor lower links (lift arms) (B) (with the tractor tow hitch type [E]) with bolts and cotter pins
- connect the machine hydraulic hoses to the tractor external hydraulic system and check the hoses for tightness. Check lifting, lowering and unfolding of the machine. Remember to connect all hoses to all tractor 2-way hydraulic connectors in pairs
- lift and secure the support (C)

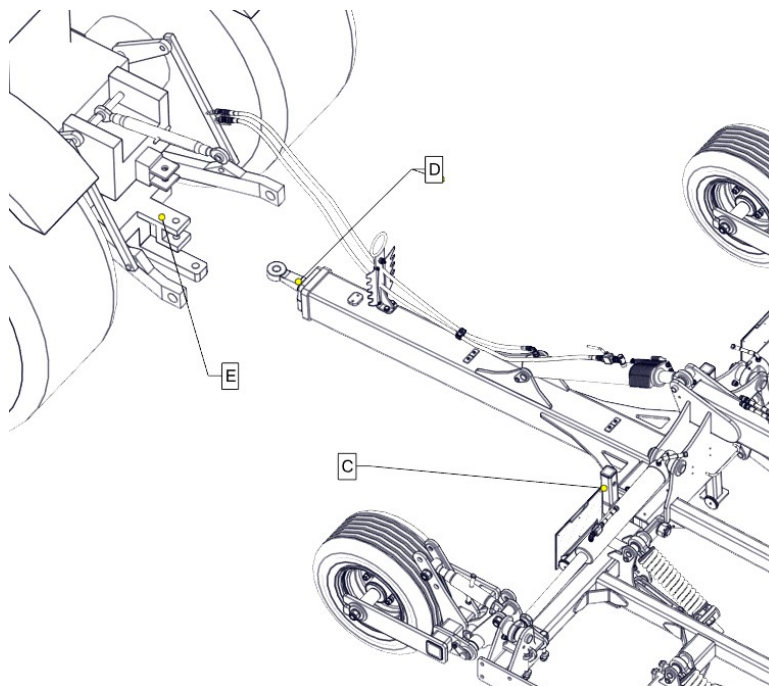


Fig. 6: Connecting the drawn machine to the tractor drawbar (hitch)

#### Disconnection

- unfold the machine
- lower and secure the support (C)
- lower the machine onto a flat and hard surface
- depressurize the cultivator hydraulic system by shifting the tractor hydraulic levers to their free (floating) position
- disconnect the hydraulic hoses and hitch axle (A) (tow hitch type [D])



### 3.4. Transport on highways

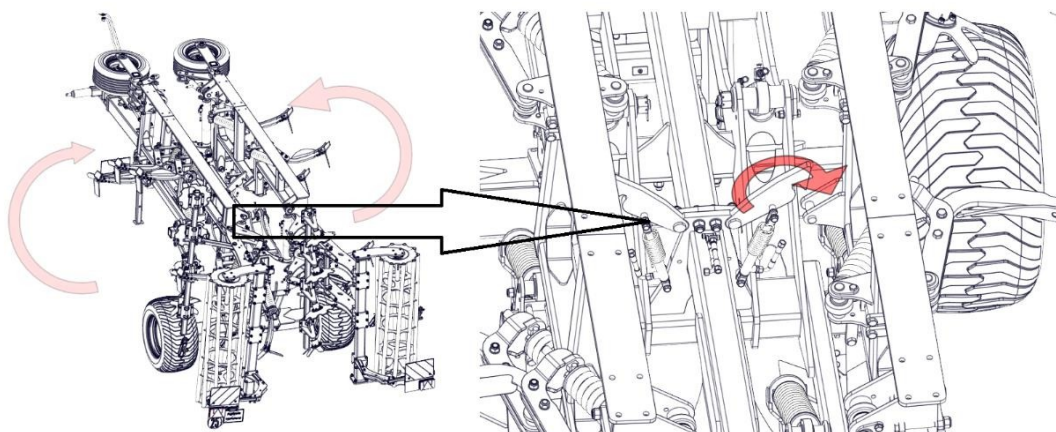


Fig. 7: Transport

- to transport the machine, fold the side sections (A) of the hydraulically foldable machines and secure the outermost frames against unfolding using the hydraulic catch pawls (B)
- the unit consisting of a tractor and agricultural machine connected to it must meet the same requirements as the tractor alone
- driving the unit (i.e. tractor and cultivator) on highways without proper 'C' marking is not allowed
- adjust the chains tensioning the tractor side links (stabilizer arms) accordingly before driving; they should limit the excessive side movements of the cultivator.



### 3.5. Adjustment of the Cultivator

#### 3.5.1. Working Depth Adjustment

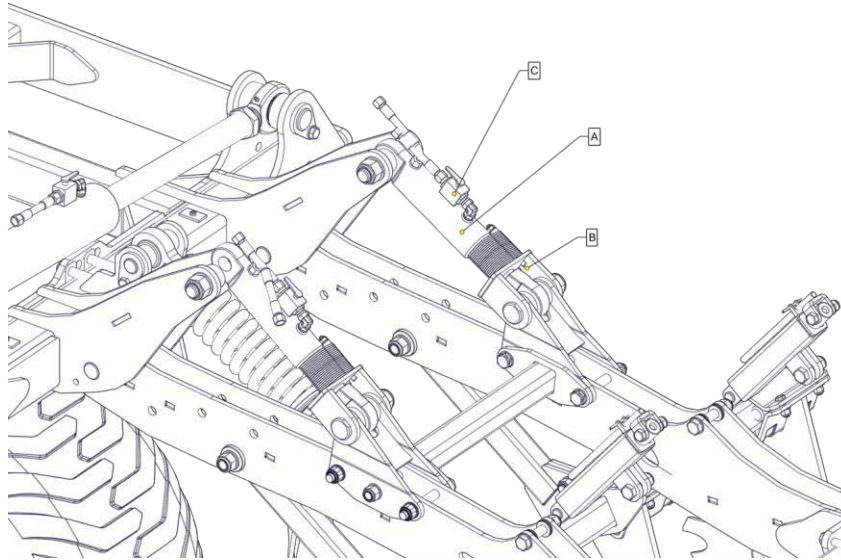


Fig. 8: Working depth adjustment

- Perform hydraulic adjustment by pressurizing the cylinder (A) from the tractor cab, which extends the cylinder. Then, put on the required number of stops (B) and pressurize the cylinder (A) again to slide it back to the stops (B). Through this, you can raise or lower the rear roller of the machine. Secure the cylinder (A) against dropping down with the lever (C). (Set all 4 cylinders to the same depth.)
- Then, after the initial setup of the roller cylinders, adjust the drawbar cylinder.
- When adjusting the working depth with the roller and drawbar cylinders, keep in mind the parallel position of the machine frame during operation.
- If required, repeat the steps above several times to obtain the desired working depth.
- After setting the working depth, you can begin adjustment of the disc harrow and support wheels.

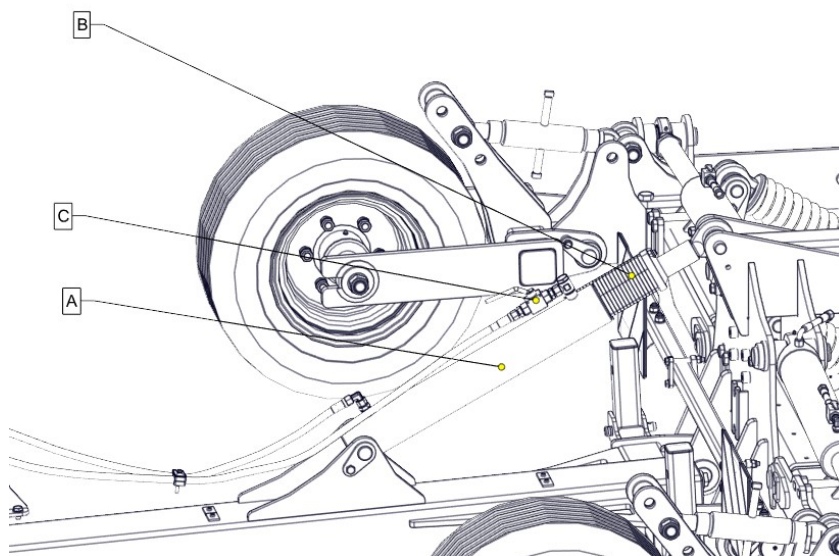


Fig. 9: Adjustment of the drawbar cylinder

### 3.5.2. Adjustment of the Working Depth of the Disc Harrow Type A

- Set the position of the harrow by turning the adjustment spindle handle accordingly: the longer the spindle, the deeper harrow operation.
- The harrow should never operate deeper than the tines.
- The harrow is used for levelling the field surface after the tine section passage.

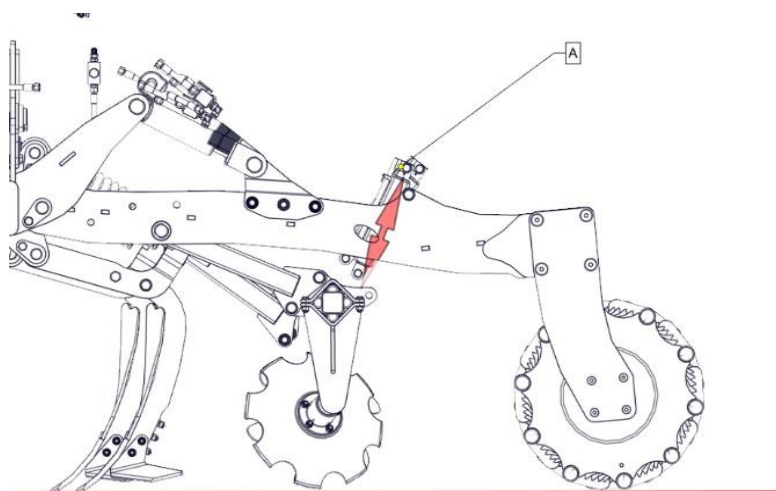


Fig. 10: Adjustment of the harrow type A

### 3.5.3. Heavy-Duty Tine, Type CX-A

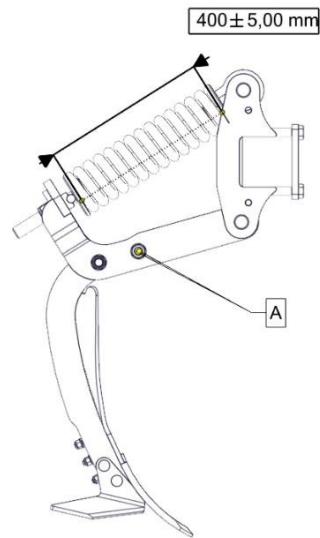


Fig. 11: Tine protection

- Tines of CROSS HP feature automatic protection against overload in the form of a compression spring.
- Overload protection is preset to 5500N of the trigger force on the coulter share point.

**THIS SETTING MUST NOT BE CHANGED!**

- Only trained personnel may disassembly the protection device.
- Any intervention in the mechanism may result in serious personal injury or even death.
- Check all screw connections around the tine and tighten any loose connections before each use.
- Measure the spring tension (compression) on a regular basis..
- A sheared bolt [A], which breaks after exceeding a limit value is an additional safety measure.

**USE ONLY GENUINE PROTECTION DEVICES!**

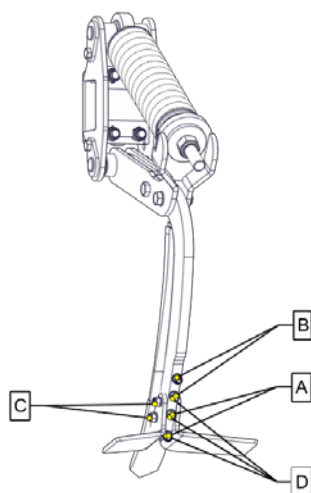


Fig. 12: Tine working components

- Replace any working components as soon as the effects of the machine operation deteriorate.
- Remove the screws [C] to replace the undercutters.
- remove the screws [A] to replace the coulter.
- Remove the screws [B] to replace the mouldboard.
- Remove the screws [D] to replace the narrow coulter.
- You may need to use a drift in order to remove the screws from the slots after removing the nuts.
- Remove the undercutters before replacing the coulter.

**USE ONLY GENUINE SPARE PARTS!**

### 3.5.4. Adjustment of Folding

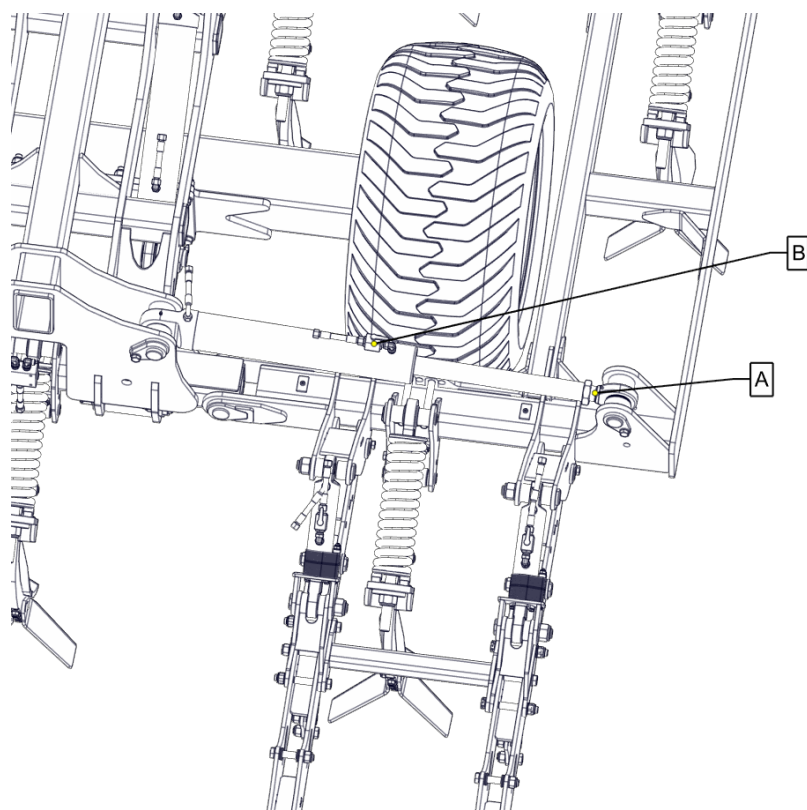


Fig. 13: Adjustment of the folding hydraulics

- The cylinders [A] for folding have a threaded eye that allows adjustment of the cylinder length.
- Screw the eye in (i.e. shorten the cylinder) of max -5mm in order to level the frame, if it is set too low.
- Screw the eye out (i.e. extend the cylinder) of max 15mm in order to level the frame, if it is set too high.
- Block any flow in the hydraulic system after unfolding the machine and before beginning work using the valve [B] on each of 4 cylinders.
- Unfolded side frames should hang below the middle frame of approx. 2-5°.

### 3.5.5. Adjustment of the Working Depth on the Support Wheel

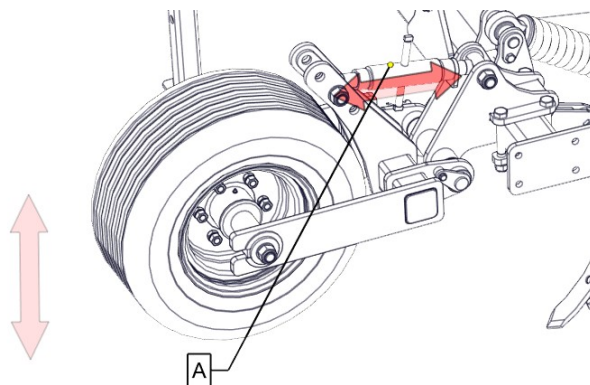


Fig.:14 Wheel depth adjustment

- Adjust by rotating the spindle A anticlockwise or clockwise to lift or lower the support wheel, accordingly.

### 3.5.6. Lighting

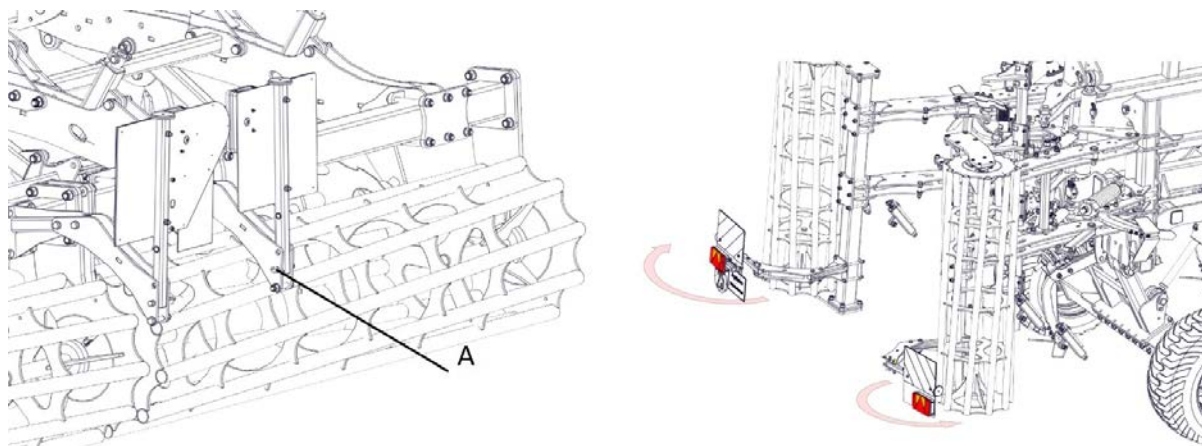


Fig. 15: Lighting

Lighting is available as optional accessory

- The rear lighting brackets can be set in transport and operating positions.
- In order to change their position, release and remove the bolt [A] and shift the lighting bracket manually.
- Caution! Improper position of lamps during operation may permanently damage the components.
- Always change the position of the lamps after unfolding and before lowering the machine onto the wheels.

### 3.5.7. Adjustment of Brakes

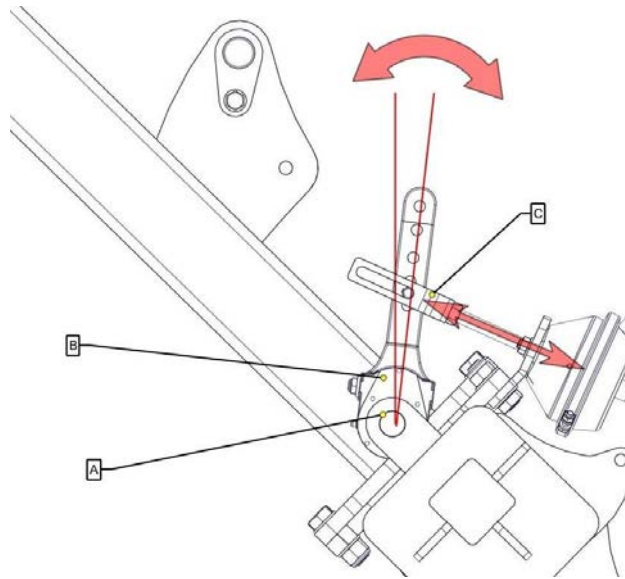


Fig.:16 Adjustment of brakes

- Inspect and adjust the air brake twice a year, before beginning the field work (i.e. using the machine) or after the machine operator states any drop in the braking force.
- Adjustment of the braking force consists of decreasing the idle stroke of the cylinder. Begin from depressurizing the braking system, and then disconnect the lever (B) from the yoke (C) and unscrew the yoke (C) towards the lever (B). Reconnect the system.
- If the further adjustment of the yoke (C) is impossible, replace the position of the lever (B) on the splined connection of the brake expander (A). You can do this step only once – if the braking force continue to drop, begin adjustment from verification condition of the brake linings.

**CAUTION! THE SYSTEM IS PRESSURIZED!**



- Depressurize the system before beginning any work on it.
- Daily maintenance consists of checking the system for leaks and visual inspection of air lines.

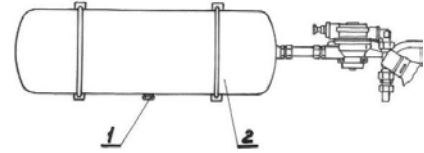


Fig. 17: Dewatering of the system

- Replace any damaged components with new ones immediately.
- Dewater the air system at least twice a year and in particular before the winter. In order to do this, remove the plug (1) in the bottom part of the air tank (2). Replace the plug and check the system for leaks after dewatering.
- Clean the line filter as required, however not less frequently than once a year.
- Add an antifreeze agent for the safe operation of valves in the compressed air system. Follow the tractor manufacturer's recommendations.
- Release brakes and depressurize the system and drain the water from the tank before the winter storage.

### 3.5.8. Frame Weight

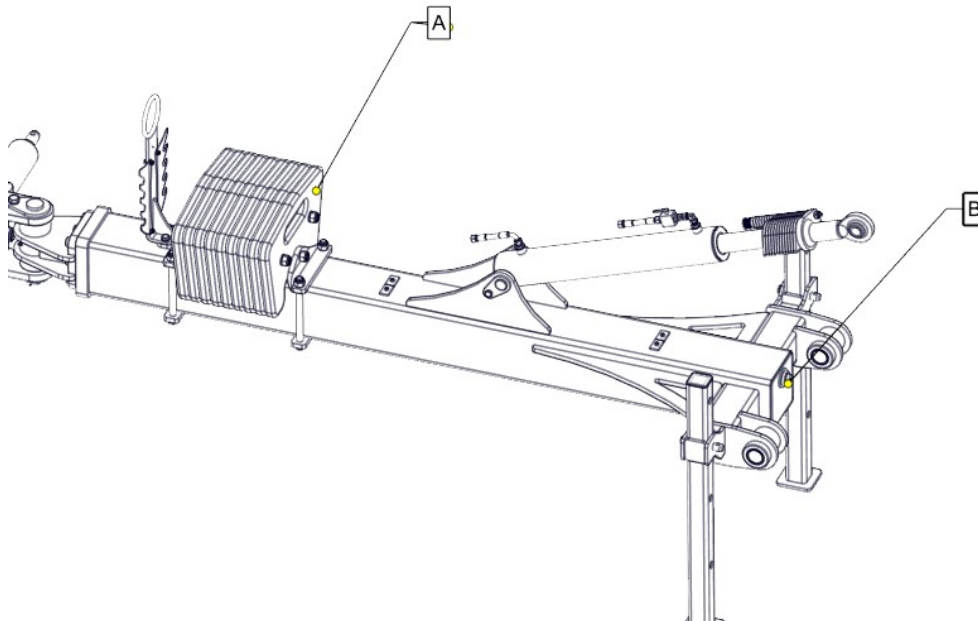


Fig.:18 Frame weight

Load on the hitch is low in the CROSS HP machines. A set of weights [A] of a total weight of approx. 300 kg is installed on the machine in order to improve the comfort of work on it.



- Moreover, it is possible to fill the drawbar with bulk material through the filling opening [B], depending on the optional accessories ordered.

Caution! When the weight is not installed, there is a risk that the drawbar can bounce up while disconnecting the machine, which can lead to a serious injury.

**PERFORM ALL REPAIRS AND MAINTENANCE ON THE MACHINE UNFOLDED!**

### 3.6. Operation (see par. II Safety)



Before beginning the field work with the machine:

- disassemble the warning signs (together with the screwed brackets) for transport on highways
- unfold the foldable units (4H; 5H & 6H) to the working position after disconnection of the locking rod
- switch the hydraulic system to the position or mixed control mode

Adjust the cultivator during the first passage. When the unit is correctly levelled, its frame is parallel to the ground. When the cultivator becomes clogged with excessive amount of plant debris, clean it by lifting up on the tractor hydraulic lift for a while.

## 4. Servicing and Maintenance

### 4.1. General



- Always use the genuine spare parts since they are of the proper quality and fit the machine correctly. Besides, it is one of the warranty conditions.



- Set the machine on a hard and equal surface, in the unfolded position and supported on its wheels and front supports before beginning any work at it. Also, disconnect the machine from the tractor (i.e. all hoses and hitch.)

**CAUTION! THE HYDRAULIC SYSTEM IS PRESSURIZED!**

**CAUTION! THE LIGHTING SYSTEM IS LIVE!**

**CAUTION! THE BRAKING SYSTEM IS PRESSURIZED!**

## 4.2. Replacement of the Machine Components



- Replace all working parts (wearing parts) in due time to protect the other, more expensive assemblies against wear.



- Contact the manufacturer's service department in order to replace any component of the hydraulic system and springing.

## 4.3. Bolt, screw and nut tightening torques (Nm)

Fastener class					
Size	Pitch p	6.8	8.8	10.9	12.9
1.	2.	3.	4.	5.	6.
M4	0.7	2.4	3.2	4.5	5.2
M5	0.8	4.5	6	8.4	10
M6	1	8	11	15	17
M8	1.25	18	27	34	40
	1	16	21	30	35
M10	1.5	35	46	65	76
	1.25	31	41	57	67
	1	27	36	50	59
M12	1.75	59	79	111	129
	1.25	49	65	91	107
M14	2	92	124	174	203
	1.5	76	104	143	167
M16	2	127	170	237	277
	1.5	104	139	196	228
M18	2	194	258	363	422
	1.5	135	180	254	296
M20	2.5	250	332	469	546
	1.5	172	229	322	375
M22	2.5	307	415	584	682
	1.5	212	282	397	463
M24	3	432	576	809	942
	2	322	430	603	706
M27	3	640	740	1050	1250
	2	480	552	783	933
M30	3.5	755	1000	1450	1700
	2	560	745	1080	1270

#### 4.4. Hydraulic System

- Drain all oil remaining in the hydraulic system before first start and fill the system with oil recommended and used in the tractor connected to the machine.
- Check the hydraulic system and cylinders for leaks every day and remove any leakages as soon as possible.
- Take care of the cleanliness of the cylinders and especially their piston rods.
- Unfold the machine and set it in the parking position, and depressurize the system before beginning any work at the hydraulic system.
- Only connect and disconnect the hoses to and from the tractor when the hydraulic system is depressurized.
- Replace the hydraulic hoses after five years of operation of the machine at the latest.

#### 4.5. Lighting

- Check the correct connection of the 7-pin plug outputs before the first start.
- Check the lighting, plug, wiring and lamps every day.
- Check cleanliness of the reflector plates.

## 4.6 Lubrication

- Use mineral oils for lubrication. Clean the lubrication points before lubricant injection. Lubricate at the marked points.

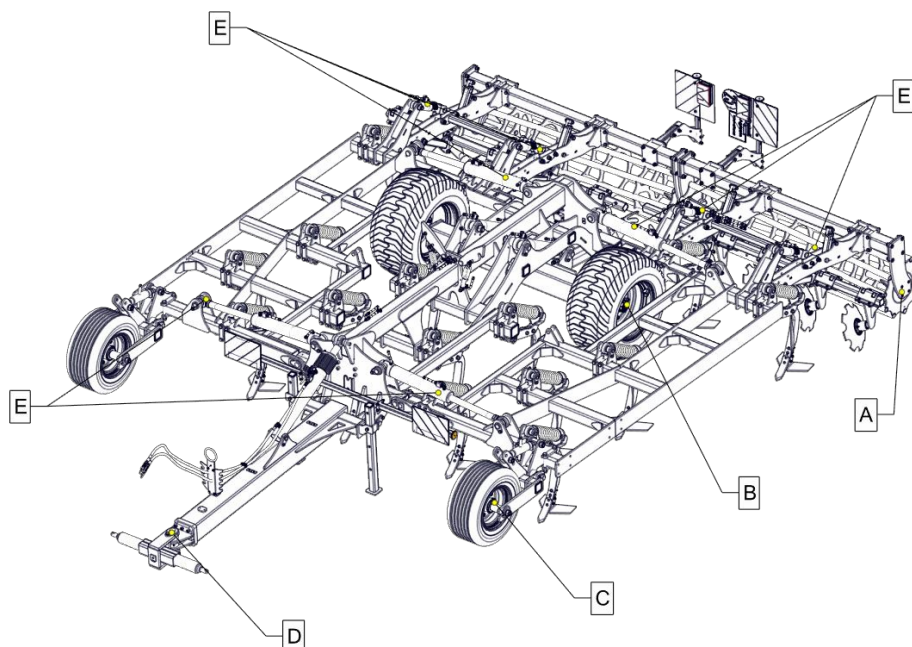


Fig.:19 Lubrication points in CROSS HP

### Lubrication point

Item	Designation	Specification	Lubricant grade	Lubrication interval (h)
1	A	Roller bearings	ŁT-4S-3 grease	20
2	B	Chassis wheel hub	-II-	200
3	C	Support wheel hub	-II-	100
4	D	Axle pins	-II-	50
5	E	Cylinders	-II-	200

- If the machine operation life is shorter than specified for it, lubricate the machine once a year.

#### 4.7. Storage of the Cultivator

Clean the machine from soil each time after finishing work and then inspect all parts and assemblies. Replace any worn or damaged parts with new ones. Tighten any loosen screw connections. Store the machine on hardened surfaces.

After the season:

- clean the cultivator thoroughly
- lubricate the machine at the lubrication points specified in Table 3
- wash faces of the coulter discs, rollers and hitch axle pivots with kerosene and protect them against corrosion applying grease with brush
- repair spot defects of the paintwork by repainting
- when the machine is to be stored outdoors in winter – disassembly the hydraulic cylinder together with the hoses and keep them in a dry, well ventilated and possibly darkened room

#### 4.8. Disassembly and Disposal

- After its working life, the cultivator is to be scrapped. Disassembly should be performed by a specialized company.

#### 4.9 Warranty Conditions and Warranty Services



Agricultural machinery is warranted to the provisions specified in the Instruction Manual for proper operation and maintenance. Under the warranty period, only the genuine parts made by 'UNIA' Grudziądz may be used.

Any modifications or repairs made by the user are not allowed in the warranty period. This may lead to loss of warranty. For more detailed information on how to file a complaint, see the Warranty Card attached to each machine together with its Operating Manual.

The warranty services are performed by: the supplier (dealer) entered to the Warranty Card when buying the machine.

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## QUESTIONNAIRE

Please read the entire questionnaire and write a short answer:

1. Machine ..... serial number .....  
received on.....
2. Have any deficiencies or damages occurred during the transport? If so, please specify what : .....  
.....  
.....
3. When did you start work with the machine.....
4. How many [ha] have you worked with the machin.....
5. Tractor power (HP).....
6. Which damages occurred.....  
.....  
.....
7. What is your general opinion about machine's work .....  
.....  
.....
8. What difficulties occur during the operation of the machine .....  
.....  
.....
9. Your comments regarding changes, improvements of construction and machine operation .....  
.....  
.....  
.....  
.....
10. Your remarks concerning this manual.....  
.....  
.....  
.....

User address :

Name & surname

Place

Postal code

Province

Date

Signature





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