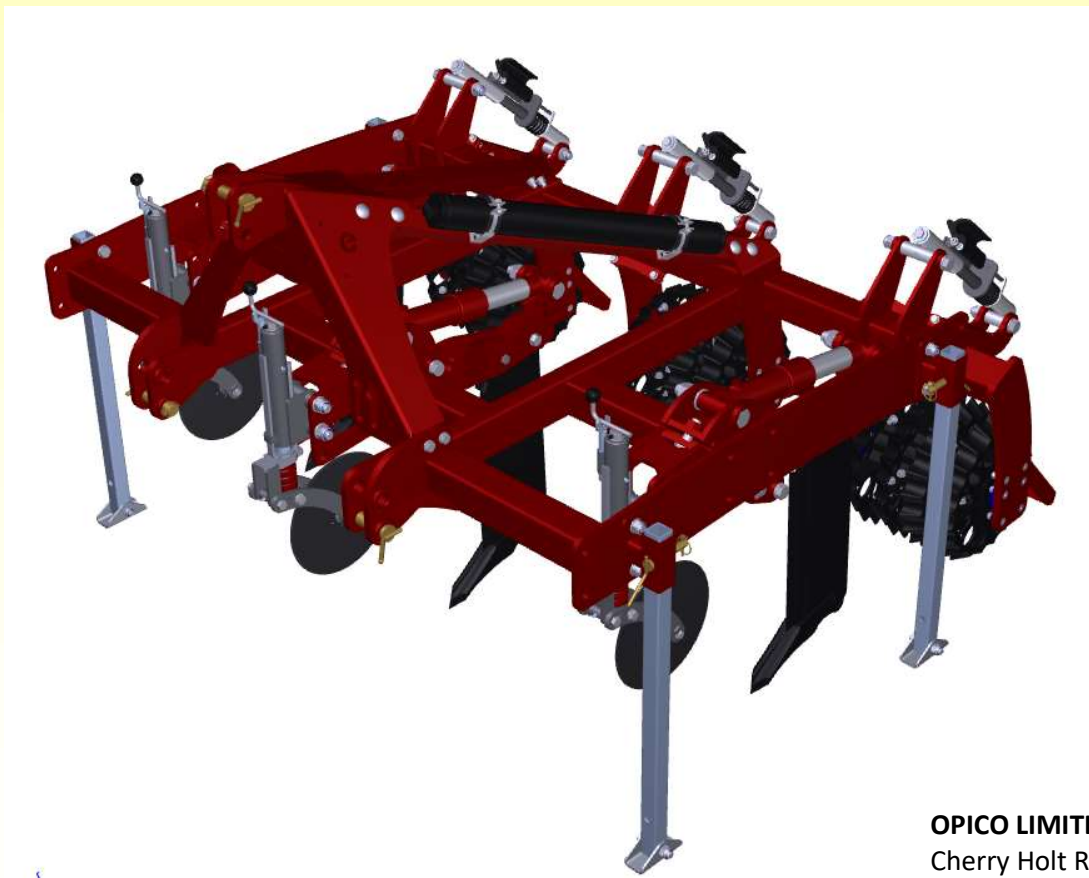


## OPERATION MANUAL & SAFETY INSTRUCTIONS

# HYDRAULIC ROCK PROTECTION



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## GLOSSARY



If you come across this symbol and heading, there is a direct hazard to life and health of man and animal!



This heading refers to possible risks of damage to machine(s), crops, buildings, etc. But also to possible financial and/or legal problems (warranty, liability, and the like)!

## NOTE

This indicates a tip to make work easier, better and safer.

All figures, dimensions and weights are free of engagement.

References to direction in the text, such as "left", "right", "front" and "rear", are always meant to be seen from the forward travel direction of the tractor.

The same applies to the directions clockwise and counter clockwise.

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# INTRODUCTION

Dear user,

This is the operation manual for the hydraulic rock protection system.



Read the operation manual carefully before starting to work with the machine and observe all instructions!

Pass on all safety instructions to other (fellow) users!

In order to use the hydraulic rock protection system as safely as possible, you should be well aware of all recommendations and instructions in this manual. Damage and accidents caused by non-observance of these recommendations and instructions are for your responsibility.

Make sure to store this operation manual carefully and in a safe place for future use.

Please apply to your dealer in case there should still be questions after reading this manual.

EVERS AGRO B.V.  
Almelo, 02 July 2019

# 1. SAFETY INSTRUCTIONS



Read and understand these instructions before working with the machine!

If these safety instructions aren't observed, all liability of the manufacturer for any damage is excluded!

## 1.1 Hydraulic system

- The hydraulic system carries a high pressure!
- When connecting hydraulic cylinders the instructions for connecting hydraulic hoses must be observed!
- Hoses from the cylinders must be routed in such manner that under all transport and operating conditions they cannot cause undesirable situations and/or cannot hinder any functions!
- Never try to locate or shut off a leak in the hydraulic system with your hands. Fluid under high pressure can easily penetrate skin and clothing and it can cause severe injuries. When injured see a doctor immediately! Danger of infection!
- Ensure that the hydraulic system of the tractor and that of the machine are pressure less when connecting or disconnecting the hose!
- The hydraulically operated parts may only be operated when there is nobody within the danger zone (turning circle) of these parts!
- When hydraulically folding frame sections are in the transport position (folded up) the lock pins with inserted retaining clip must be placed in the holes intended for that purpose!
- For hydraulic connectors between tractor and machine the couplings and plugs must be marked. When connections are interchanged, the function reverses (e.g. lifting/lowering) - Risk of accidents!
- Check the hydraulic hoses, pipes and all connections regularly and replace them in case of deterioration and damage. New hoses must satisfy the technical specifications prescribed by the manufacturer!
- Before carrying out work on the hydraulic system, the machine must be lowered to the ground and the hydraulic system must be made pressure less (move the lever of the control valve a few times back and forth with the engine switched off)!
- In transport position the control valve of the hydraulic functions must be in the neutral position!
- Always lay down a disconnected hydraulic hose in such a manner that the plug stays clean!

## 1.2 Maintenance

- Repair, maintenance and cleaning activities, as well as repairing malfunctions, must be only carried out with the tractor engine switched off. Remove the ignition key!
- When the machine must be in lifted position for repair, cleaning or maintenance, support legs must be used. Only work on a firm surface!
- Regularly check whether all bolts and nuts are still tight. Tighten if necessary!
- Parts must at least satisfy the technical specifications prescribed by the manufacturer!
- Always check whether replaced and/or dismantled parts are mounted correctly before using the machine again!
- Ensure that any damage is repaired at once before using the machine again!
- When conducting electrical welding operations on the tractor or on the mounted implement remove cable from the generator and the battery!
- Before working on the electric gear disconnect battery cables!
- For replacing any tools with cutting edges, always use the suitable tools and gloves!
- Dispose of old oils and grease as prescribed by law.
- After using the machine and/or cleaning, grease the rams of the cylinders to prevent corrosion.



After using the machine and/or after cleaning the machine with water, grease the rams of the cylinders to prevent corrosion!

## 2. MOUNTING AND DISMOUNTING

### 2.1 Mounting the hydraulic



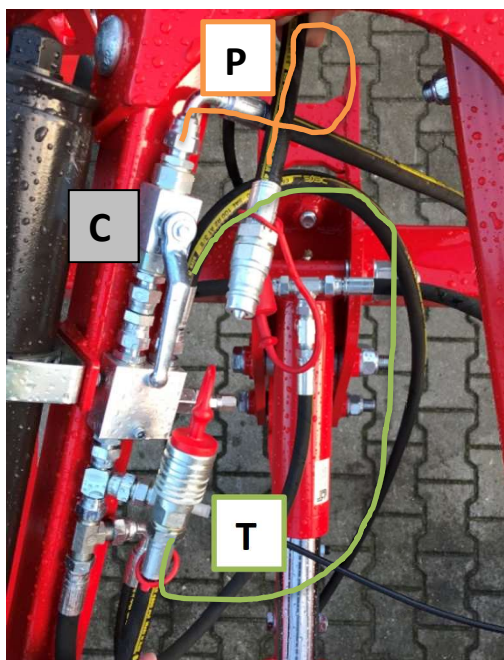
See chapter 1 "SAFETY INSTRUCTIONS" sub sub 1.1 "Hydraulic system".

Only connect or disconnect the hydraulic hoses when the hydraulic system of tractor and that of the machine are pressure less and the crane of the hydraulic rock protection is shut!

The hydraulic power lift of the machine must be connected on a double acting spool valve of the tractor.



It is very important that the free return hose of the hydraulic rock protection is connected directly and without pressure to the oil container of the tractor. This hose is marked with a metal sheet connected to the hose and a T on the hydraulic block. If this hose is not connected properly the pressure safety will not work!



When connecting the hydraulic rock protection hoses, make sure that the crane (C) on the machine is shut. The pressure hose (P) should be connected to a single acting spool valve. The hose P is the pressure hose, T is the free return hose (fig 6.2)

Fig 6.2 P is the pressure hose, T is the free return hose, C is the crane



## 2.2 How does the rock protection work

When a share hits a rock the hydraulic protection will make sure that the share moves upwards.

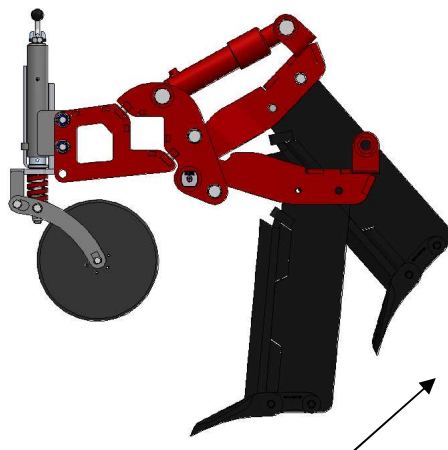


Fig 2.1 A rock passed upwards

The hydraulic part will function as follows:

The system will be set in the right pressure. When a rock hits a share and moves the share upwards, the oil will make the pressure in the system higher. The oil will be stored in the nitrogen bulb. When the rock is passed the share will be set back automatically because of the high pressure in the system. When more times move upwards in the same time, the nitrogen bulb isn't able to store all of the oil, and the pressure in the system will get very high. In this case the overflow valve (220 bar) will make sure that the system gets not overloaded, and returns the oil to the tractor through the free return hose. If the free return hose is not connected directly to the oil container of the tractor, the system won't be able to release its pressure!

When this has happened, the system must be set again to the right pressure.

## 2.3 Dismounting and storing

- Make sure that the tractor hydraulic is set to position control.
- Clean the machine thoroughly with water.
- Grease the rams of the cylinders to prevent corrosion!



After using the machine and/or after cleaning the machine with water, grease the rams of the cylinders to prevent corrosion!



## 2.4 Adjusting the hydraulic rock protection

### **Make sure that the hoses are connected properly!**

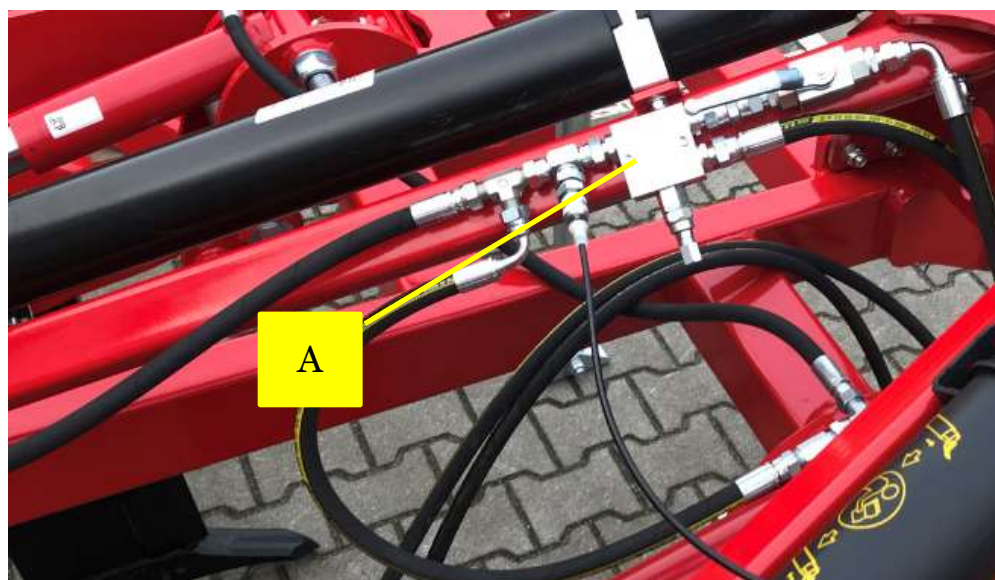
Now you can bring the system on the right pressure. The pressure needed depends on the soil. A hard soil needs a higher pressure than a loose soil. In most cases this is between the 20 and 50 bar. The pressure can be adjusted by providing oil to the machine with the tractor's hydraulics. You can check the pressure of the system on the manometer, which is mounted just above the top link on the machine. When the valve is opened the system will be made pressure less, if the system isn't pressure less, the hoses are not connected properly

By providing oil to the machine with the spool valve of the tractor you can adjust the pressure of the rock protection till the necessary pressure. Close immediately the valve on the subsoiler to keep the right pressure. The rock protection is adjusted. When the system pressure is correct, the machine is ready to use. By using the machine for the first time it's better to heighten the pressure in small steps to find the right pressure for the rock protection.

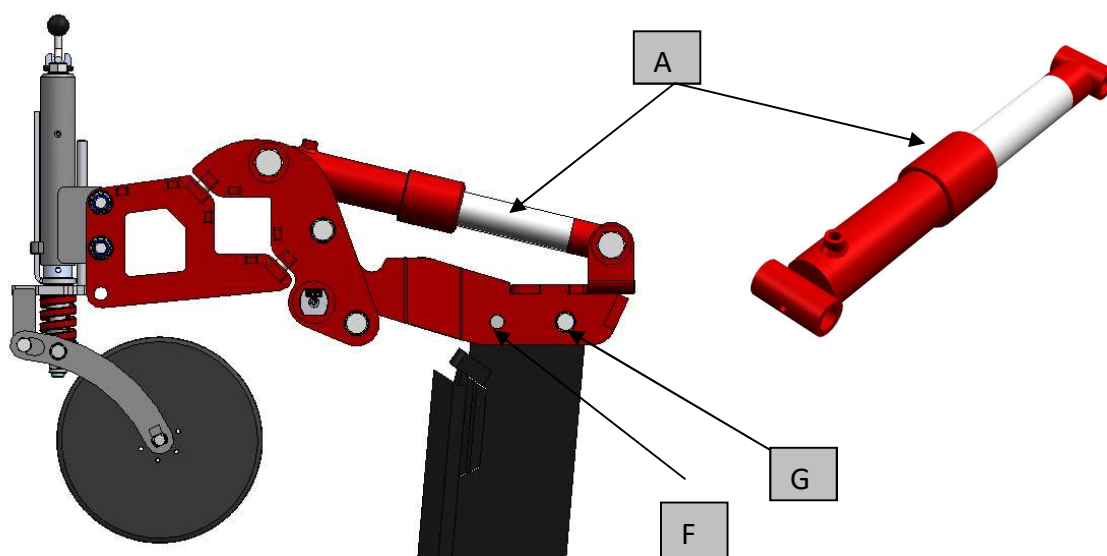
It isn't allowed to readjust the pressure valve on the machine.



It isn't allowed to readjust the pressure valve (A) on the machine. (fig 2.4)



## APPENDIX I: PARTS LIST



Pos.	Part no.	Description
D	990863	Cylinder rock protector D60 / 200 (single acting)
D*	990905	Sealkit for cylinder
F	990120	Shearbolt Quality 10.9 M16x90
G	990130	Hexagon head bolt M20x90