

# HOWARD Swing-Plow with hydraulic Non-Stop-Stoneprotection

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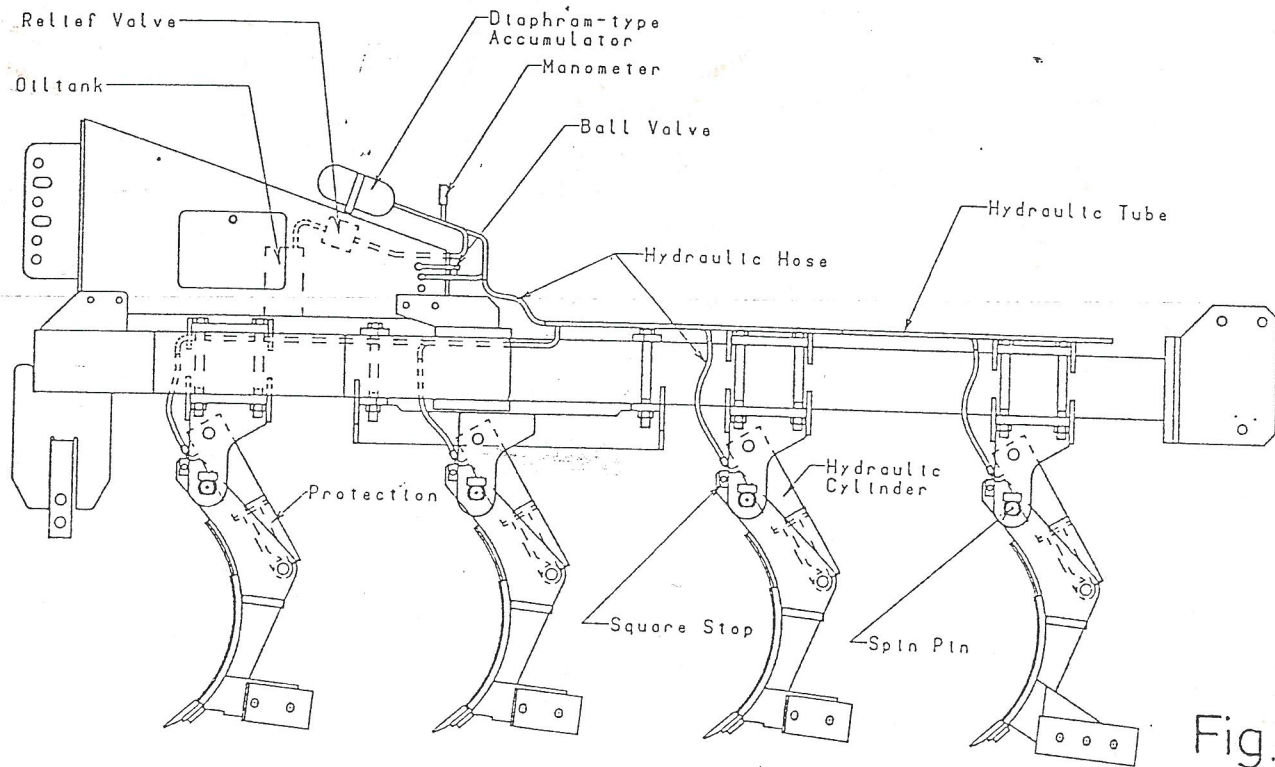


Fig.

## Hydraulic Non-Stop-Stoneprotection for the HOWARD Swing-Plow

In most cases the Swing-Plow can be protected with a shearbolt against overload. But in very stony conditions this system comes to its limit of practicability and economy. Where the protection often works, the use of a non-stop-protection is efficient. Without stopping the tractor the plow body avoids the obstruction and the oil in the hydraulic cylinder passes to the accumulator. Subsequently the pressure of the system puts the plow body automatically back in its working position, Fig.2.

The hydraulic Non-Stop-Stoneprotection of the Swing-Plow enables therefore also in very stony conditions a high field efficiency and guarantees a good economy.

With the help of the tractor hydraulics you can adjust the stoneprotection to suit the soil conditions. Hard soil requires a higher pressure in the system to avoid too fast a reaction. But in softer soil a lower pressure is sufficient.

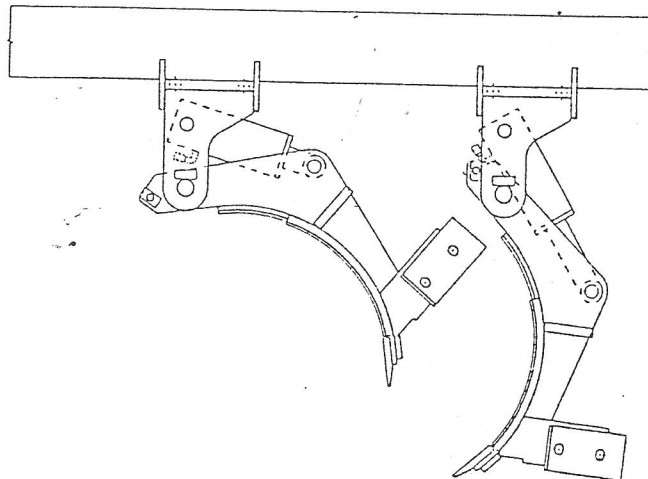
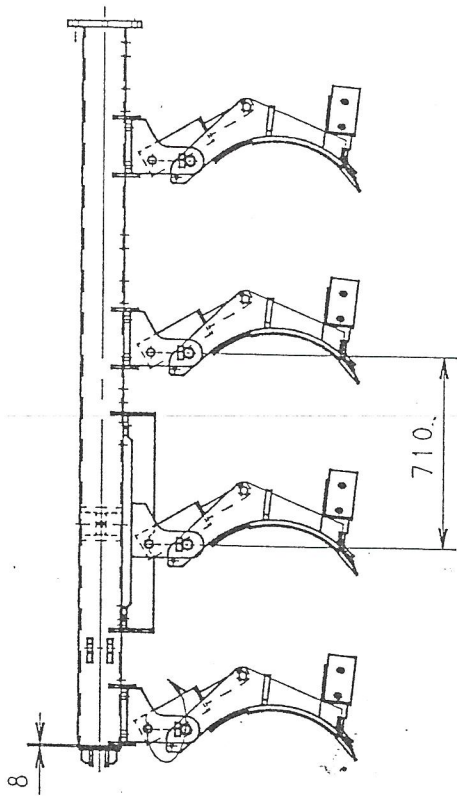
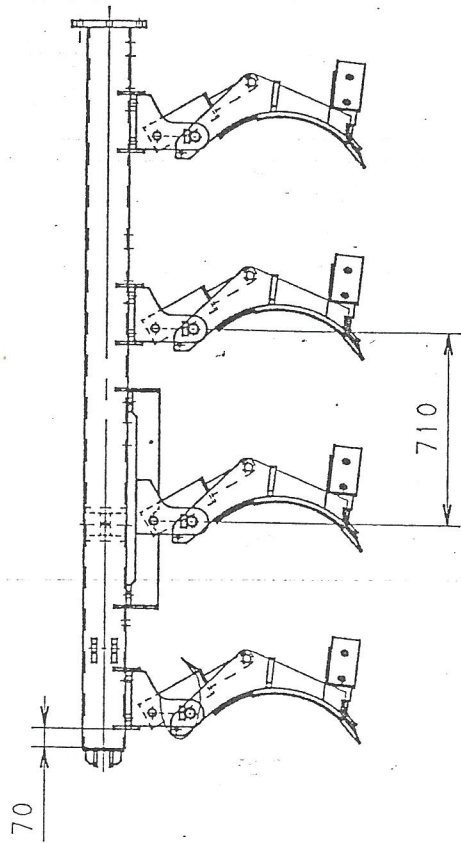


Fig. 2

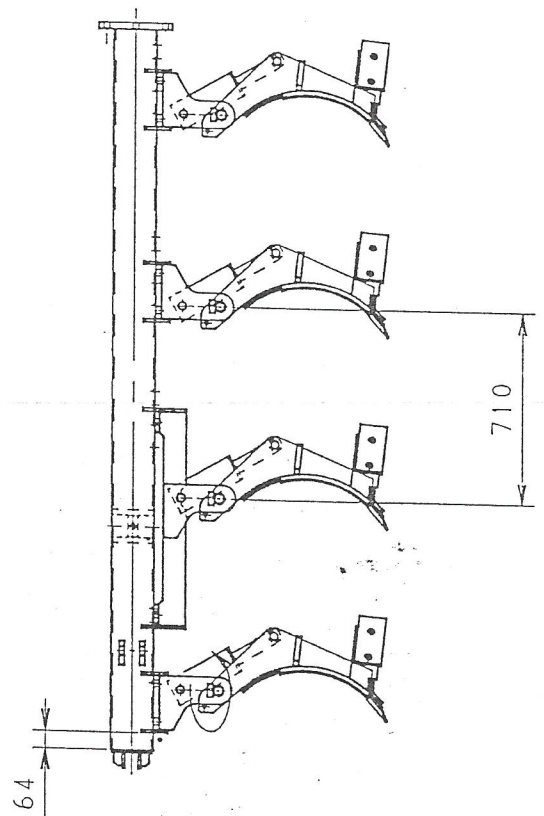
$A \approx 1,45 \text{ m}$



$A \approx 1,35 \text{ m}$



$A \approx 1,20 \text{ m}$



$A \approx 1,10 \text{ m}$

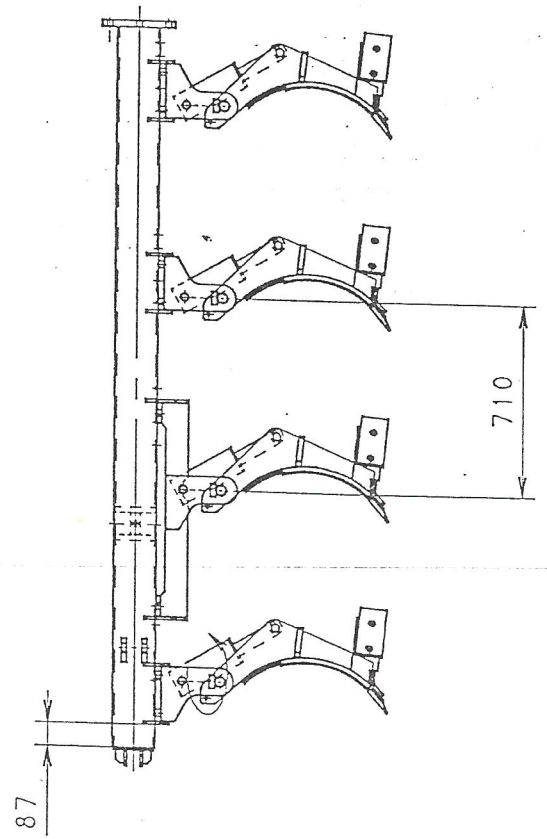


Fig.3

## Adjustment hints

The first you have to adjust the Swing-Plow according to Fig.3 to the inner track of the tractor, Fig.4. (Note it may be necessary to turn around the leg!) If the first furrow width isn't right during ploughing correct the adjustment because the inner track measurement we give are only guidance values.

Under normal conditions it is right to choose position A for the angle of slant action, Fig.5. The position B enables more penetration of the soil even in very hard conditions because of the aggressive angle.

To change the angle of slant action you have to depressurize the hydraulic system (see chapter 'First use').

Now you have to bring the Swing-Plow into the transport position and put it down. The square stops get space when you drive forward a few inches and you can change the adjustment.

Afterwards you have to fill up the system again to the pressure you want.

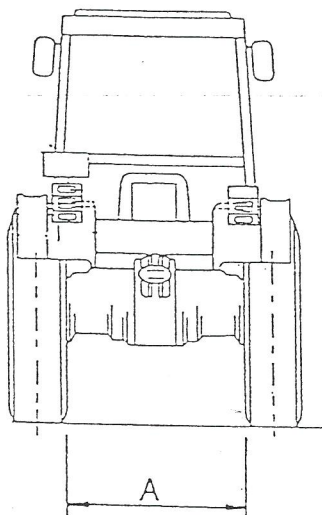


Fig.4

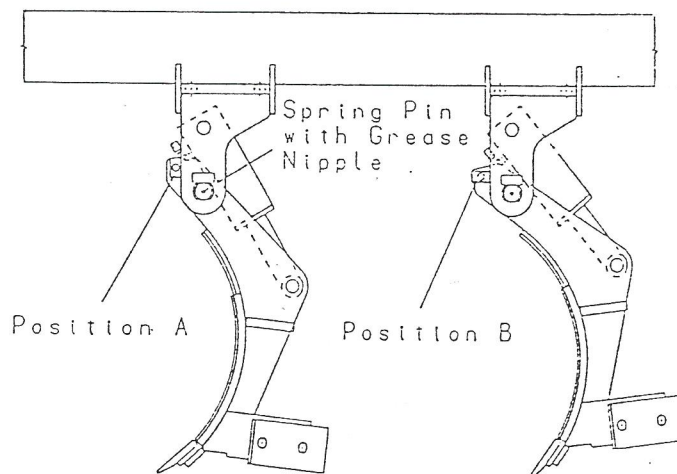


Fig.5

## First Use

The hydraulic system of the stoneprotection is a closed system, Fig.6.

At any time the manometer shows the momentary pressure. A check relief valve prevents an unacceptable pressure increase and it leads the oil to an oil tank in the topmast (check the oil level from time to time).

The system is connected to the swinging hydraulics of the Swing-Plow through a ball valve to fill, adjust and empty it.

To fill the system you have to open at first the ball valve (mark of the handle square in flowing-direction). Then you have to bring the beam of the Swing-Plow in the right working position. After reaching the stop hold on to the lever of the spool valve and the oil is passes into the system of the stoneprotection, increasing the pressure.

When it reaches the required pressure (100 to 130 bar) let the lever go and close the ball valve (mark of the handle square in closing direction). If a higher pressure is needed the pressure of the gas has to be increased. (It is necessary to call the manufacturer!)

To empty the system you have to open the ball valve. Then you have to bring the beam of the Swing-Plow in the left working position.

After reaching the stop hold the lever of the spool valve and the oil passes back to tractor.

The manometer shows the pressure decrease.

Now close the ball valve.

You have to take care that you put down the Swing-Plow only in transport position (danger of overturning).

**CAUTION :** You have to take care that the pressure of the hydraulic system of the stoneprotection is at least 50 bar, because otherwise the plow can tip.

When you empty the system you have to support the plow before removing the tractor!



# Hydraulic Circuit Swing-Plow with Stoneprotection

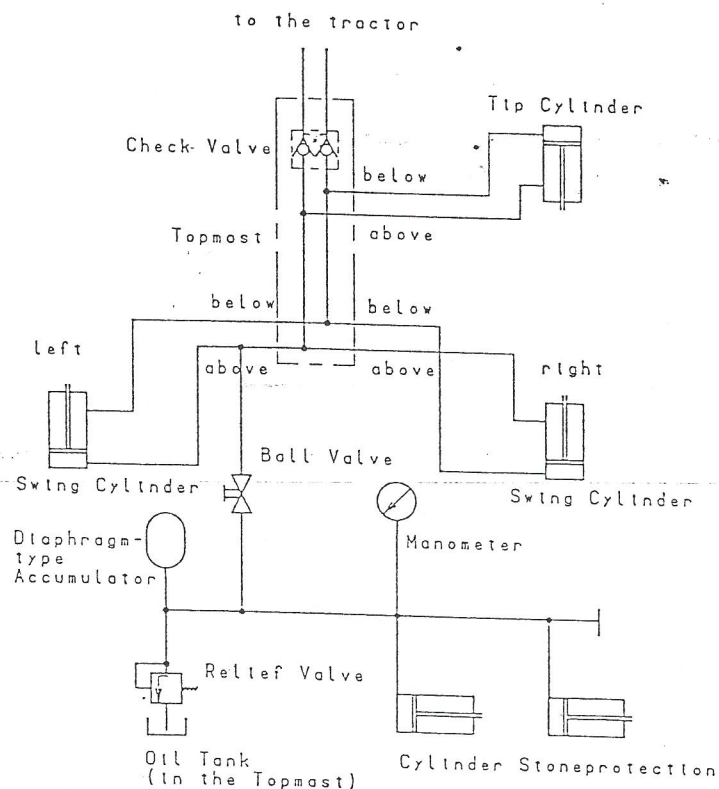


Fig.6

### Lubrication

Each time the Swing-Plow is used (including the first time) check whether all nuts and bolts are tight.

Check the hydraulic system for leakages.

**CAUTION :** When locating leakages use suitable equipment because there is danger of injury.

Periodically you have to check the hydraulic hoses and change them if they are damaged.

The replacement hydraulic hose have to correspond to the technical requirement of the manufacturer.

Grease daily the pivot pin of the pivot of the plow body, Fig.5.

From time to time you have to check the oil level of the oiltank in the topmast and eventually empty it.

### Safety Precautions

Prior to operating check the Swing-Plow for traffic and working safety.

The hydraulic system is under high pressure!

Before you work on the hydraulic system lower the implement and support it, depressurize the system and stop the engine.

Only an expert is allowed to change the gas pressure of the accumulator.

The accumulator contains pressure gas. Don't let the accumulator fall down and don't expose it to a temperature over 150°C.

