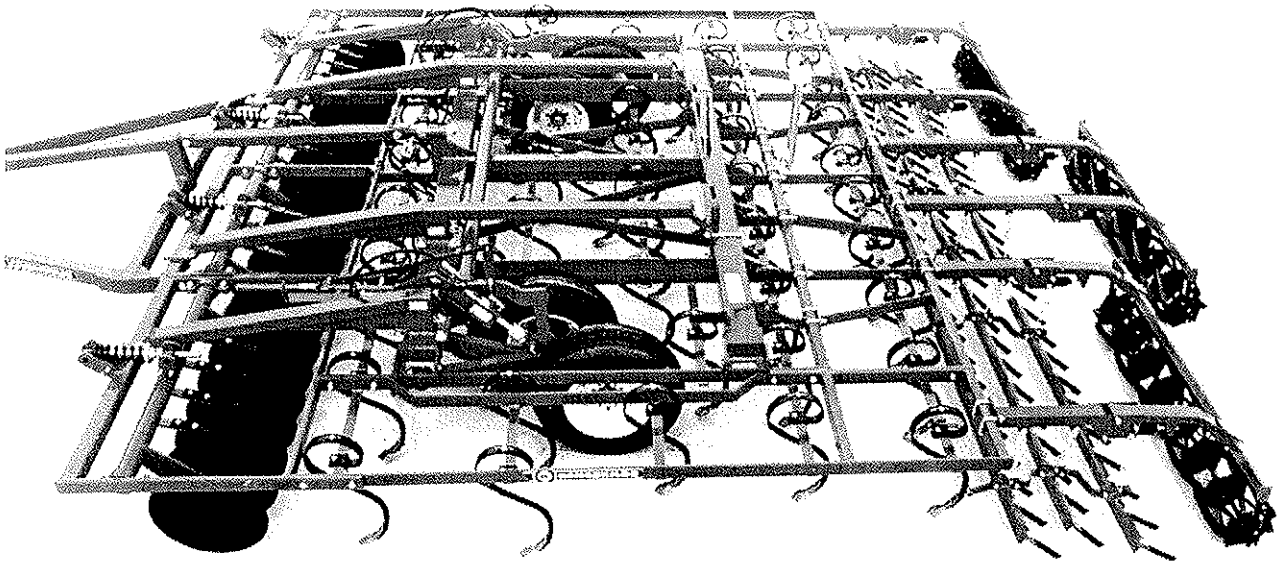
KONGSKILDE

RES-TILL
CUTTING DISC ATTACHMENT

For 3500 Series Field Cultivators
12', 14', 16' Rigid Models
20', 23', 25', 28', 31', Folding Models



OWNERS MANUAL
Warranty Certificate
Operating Guide

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FEB. 1997

CUTTING DISC CULTIVATOR
OPERATING INSTRUCTIONS

SAFETY-ALERT SYMBOL

BE ALERT!

THIS SYMBOL MEANS

WARNING !

CAUTION !

DANGER !

TABLE OF CONTENTS

INTRODUCTION

This manual has been developed to assist you in the operating and servicing of your new Kongskilde product. Read it carefully: it will provide you with information that will enable you to obtain years of dependable service.

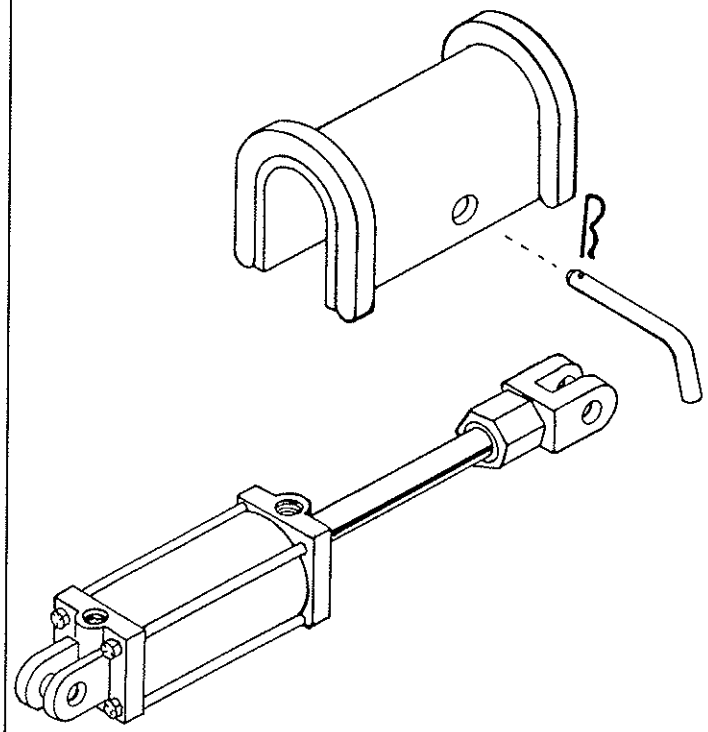
If your did not receive a warranty registration form, contact your dealer. He will be able to obtain one for you. It is important that the warranty registration be completed and returned to validate the warranty protection period.

PRODUCT SAFETY PRECAUTION

1. Read owner's manual.
2. Make certain all safety decals, reflectors and SMV signs are applied to your unit.
3. Comply with all state and local laws concerning transporting the machinery on public roadways.
4. Do not transport the implement over 20 m.p.h.
5. Always make certain all wing transport pins and wheel field lock out bars are secured before transporting.

6. Never remove lock out pins or transport pins until making certain cylinders are filled with oil.
7. Never unfold the unit unless cylinders are completely full of oil.
8. Be certain observers are free of working area whenever folding or unfolding the machinery or in any way using the hydraulic system.

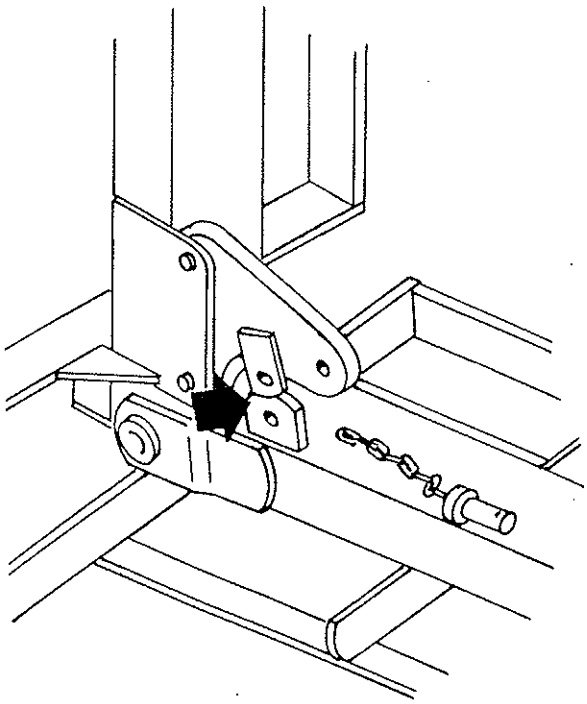
9. Never crawl under machine to adjust or replace tines, shares, etc.., without properly blocking to avoid falling.
10. Be alert when walking around the machinery in transport position to avoid walking into the point of a shank or sweep. Severe head or body injury could result.
11. Check wheel bolts periodically for tightness.



WHEEL LOCK FOR TRANSPORT CYLINDERS

Insert a safety lock over each centre section cylinder rod and fasten the pins as shown. Slowly ease the cultivator down until the wheel lock is wedged firmly in place.

When cultivating the safety locks should be stored in the tractor box or in a place that will not interfere with the safe operation of the equipment.



FOR SAFE TRANSPORT

When the wings are raised for transport position, insert chained lock pins and secure with supplied lynch pin to ensure that wings will not fall uncontrollably.

OPERATING INSTRUCTIONS

1. When hooking to the tractor always use a safety pin through the drawpin.
   Note: 3/8" hoses activate wings.
   1/2" hoses activate wheels.

2. Remove the wing lock pins. Activate the hydraulics to lower the wings after checking to see that no observers or obstructions are in the path of the wings.

3. For field operation the wing fold cylinders must be fully extended to allow the wings to float.

4. Remove transport locks from the centre section wheel cylinders.

5. Level the cultivator for the tractor drawbar height and working depth by following the procedure outlined in this manual.

6. Lift the machine out of the ground when turning. Turning with the tines or discs in the soil causes higher stresses in the frame, twists the tines and causes premature failure.

7. Periodically lift the cultivator completely out of the ground and hold the remote lever briefly. This rephases the wheel cylinders and keeps the wings at a uniform working depth with the centre section.

8. When not in use, park the cultivator on level areas only. Release all hydraulic pressure and ensure that the unit is stable before removing hitch pin.

OPERATING ADJUSTMENTS

1. Set the working depth of the cultivator by adjusting the mechanical depth stops on the centre section wheel cylinders. **NOTE:** Take care to set both stops the same in order to prevent twisting of the rockshaft.

2. If the cultivator wings are not level from side to side, adjust the wheel cylinder uprights on the wing. First loosen the 3/4" x 3" bolts A then adjust the 3/4" x 4" bolt B against its stop block. Lock the upright in position by tightening the 3/4" x 3" bolts. When the desired setting is obtained - Lock Jamnut C.

   Note: The 3/4 x 4" adjusting bolt is not designed to act as an adjustable stop - the upright must be locked in position.

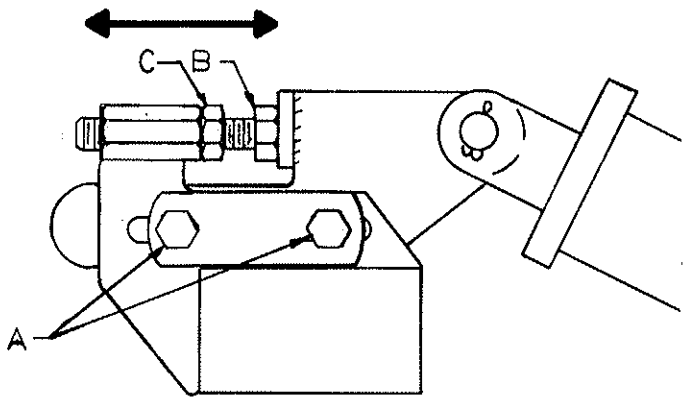


FIGURE 3 Wheel cylinder upright adjustment.

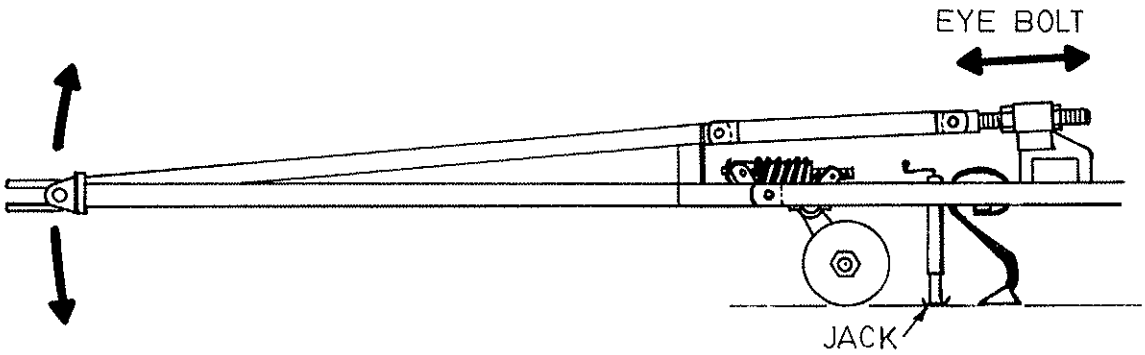


FIGURE 4

3. Fore & aft levelling is accomplished by adjusting the eye bolt connecting the top link of the cultivator to the hitch. Use the jack mounted to the front of the frame extension to take the weight off the top link of the cultivator hitch. Turn the 1 3/4" nuts to adjust the eye bolt. Front and rear tines should be working the soil to the same depth.

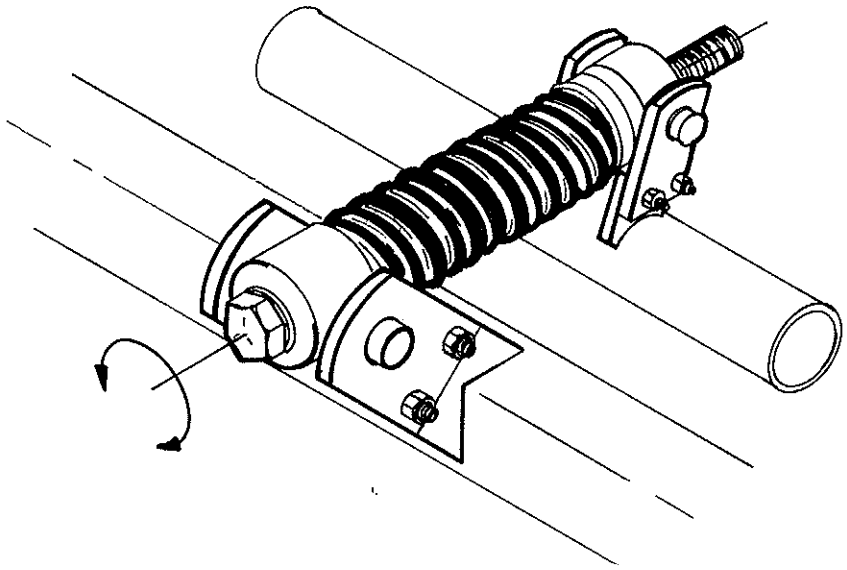


FIGURE 5A

4. The cutting disc depth is adjusted by means of the spring rod assembly. Use a 1 1/2" wrench to turn the spring rod in the lower trunnion. The spring is tensioned in the factory and should not require any further adjustment. All the gangs should be set to the same working depth.

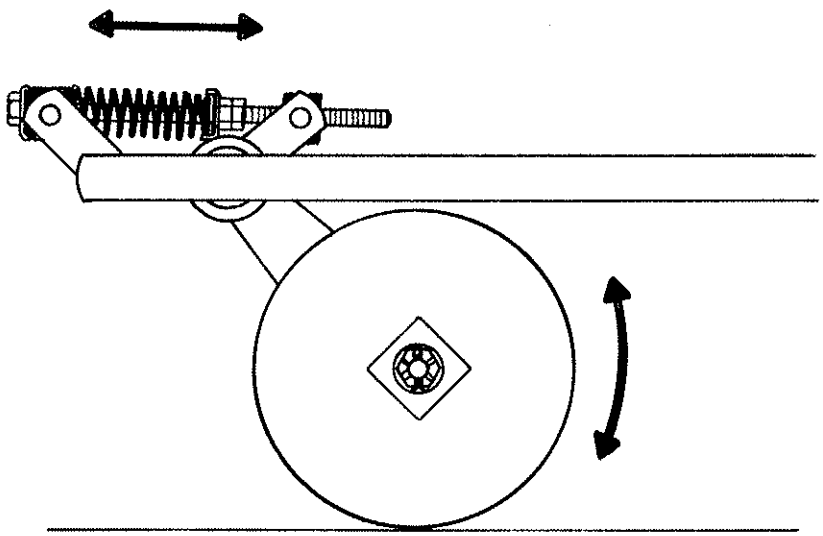


FIGURE 5B

FIELD LEVELLING PROCEDURE

1. Set the working depth of the cultivator as described in step 1, page 5.

2. Raise the disk gangs (see page 6, step 4) high enough so there is no visible movement in the spring assembly while cultivating. This should remove any effects on levelling that the discs create, and ease the levelling procedure.

3. Cultivate a short distance and stop. Level the cultivator in the fore aft direction using the precedure in step 3, page 5.

4. Then adjust the wheel cylinder uprights on the wings (see step 2, page 5) to level the machine from side to side.

5. Repeat step 3 & 4 until you are satisfied that all the tines are working the soil at a uniform depth.

6. Lower the disc gangs equally until they effectively cut the trash.

   Note: Setting the discs too deep will hold the front of the cultivator out of the ground when working in heavy soils. Setting the discs too shallow will cause the cultivator to nose dive in light or sandy soils.

7. Recheck the fore aft levelling of the cultivator after adjusting the disc gangs.

MAINTENANCE & LUBRICATION

1. Grease the rockshaft bearings, wing hinges, disc gang cradles, and disc gang bearings daily.

2. Grease the wheel bearings and tandem arm bearings weekly.

3. Inspect the wheel arm bushings regularly for signs of excessive wear.

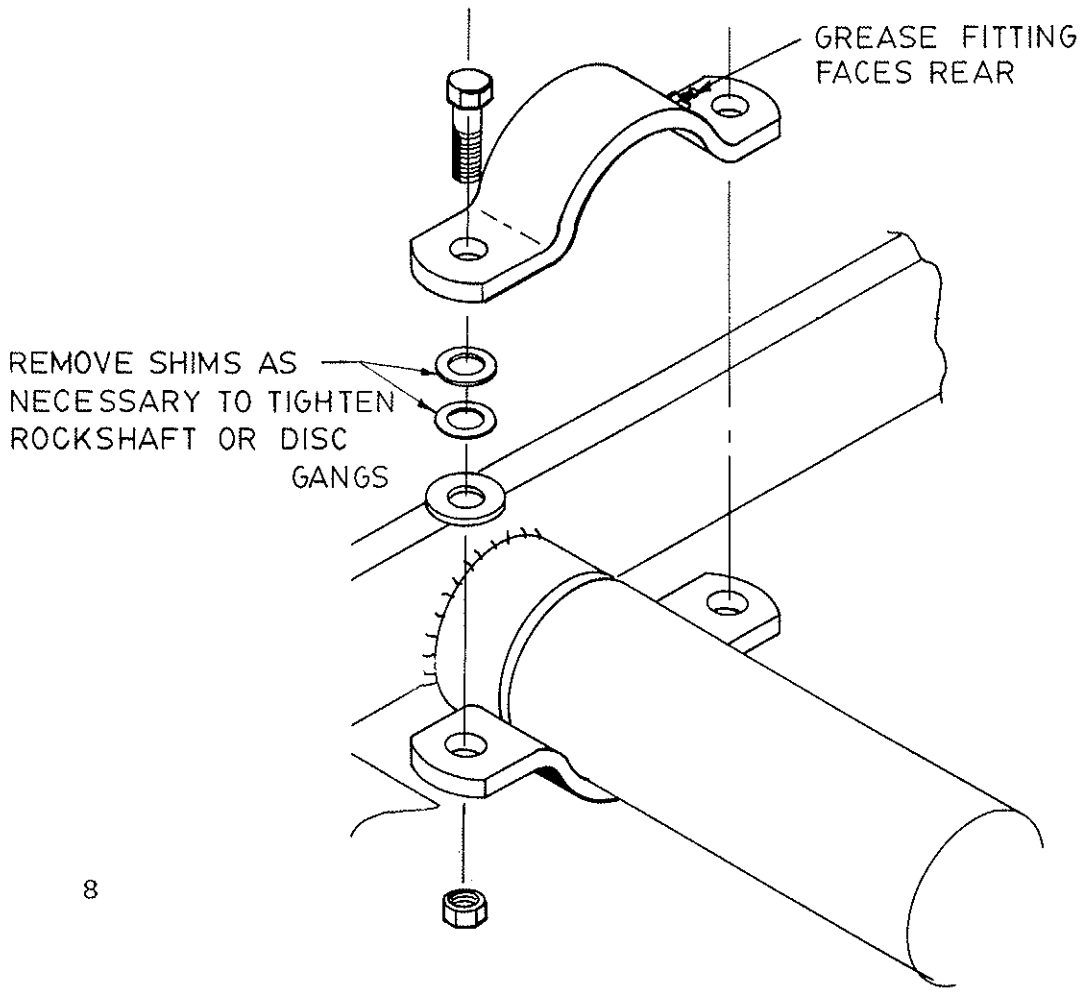
4. Check the tire inflation regularly.

5. Inspect shares daily & replace worn ones.

6. Keep all bolts and nuts tight.

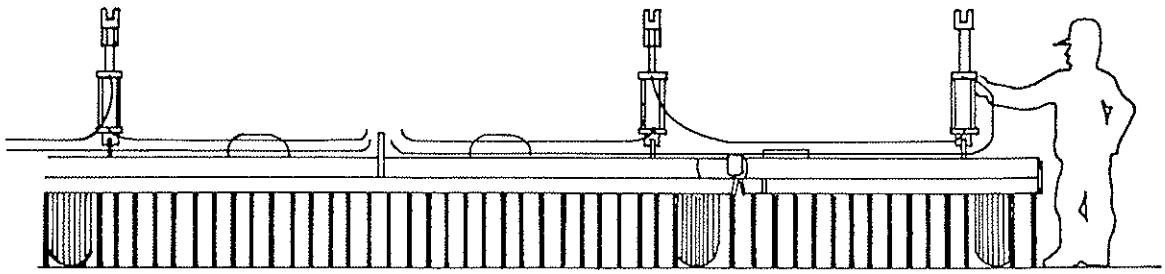
7. After a certain period of time, the rockshaft may become loose. If this occurs, the rockshaft should be re-tightened by removing shims from between the bearings in the following manner.

   A) Lower the cultivator to the ground
   B) Loosen 3/4" nuts and remove bolts
   C) Remove as many shims as necessary
   D) Replace bolts, assemble and tighten nuts.



8. Disc gangs may also loosen in a similar manner to the rockshaft. The gangs should be re-tightened by removing shims from between the bearing cradles in the following procedure.
   A) Lower the cultivator to the ground
   B) Lower disc gang by adjusting spring rod
   C) Loosen 3/4" nuts and remove bolts
   D) Remove as many shims as necessary
   E) Replace bolts, assemble and tighten nuts.

9. To remove air from the wheel cylinders use the following procedure:
   A) Position cylinders according to sketch below with rod clevises pointed vertically.
   B) Activate cylinders through two full cycles of extension and retraction.
   C) Extend cylinders completely and hold lever while relief valve squeals for a minimum of 30 seconds.
   D) Activate cylinders to full extension and retraction, they should now move in unison. If not repeat step C) as there may still be some air in the lines.



Note: If wheels do not work in unison, go back to hydraulic line layout, figure 7, and check hoses for incorrect assembly.

10. If the wings are in the folded position with uncharged cylinders wings should be lowered to the ground in a safe manner.

DO NOT USE HYDRAULICS TO LOWER THE WINGS!

Remove clevis pins from the cylinder rod. Hold the wing cylinders vertical and stroke the cylinders several times to remove all the air from the system. Replace clevis pins.

3500 RES-TILL HYDRAULICS 20' - 28'

Sketch No.		Description
1		1/2" Hose Assembly 171" all models
2		3/8" Hose Assembly 236" all models
3		3/8" Hose Assembly 81" all models
4		3/8" Hose Assembly 32" all models
5		3/8" Hose Assembly 60" all models
6		3/8" Hose Assembly 96" - 23', 25'
7		3/8" Hose Assembly 112" - 28'
8		3/8" Hose Assembly 145" - 23', 25'
9		3/8" Hose Assembly 160" - 28'
10		Union Tee 3/8" JIC 37° all models
11		Union Tee 1/2" JIC 37° all models
12		90 Elbow 1/2" O-ring x 1/2" JIC all models
13	00 474 322	Cylinder 3 1/2" x 8" Center
14	00 474 323	Cylinder 3 1/4" x 8" Wing
15	01 140 199	Cylinder 3 1/2" x 24" Wing Fold- 20'to 25'
15A	00 474 347	Cylinder 4" x 24" Wing Fold - 28' and up.
16		Transport Stop
17		Pin
18		Hair Pin
19	00 474 345	Cylinder 3 1/2" x 8 with Mech. Stop
20		Mechanical Depth Stop
21		3/8" Hose Extension Assembly 26"
22		1/2" Hose Extension Assembly 26"
23		3/8" Hose Assembly 81" - 20'
24		3/8" Hose Assembly 130" - 20'

Wing Fold Cylinders no.15 - 20' to 25', or no.15A - 28' to 34' are positioned on rear of cultivator with rams pointing to outside of cultivator and port holes towards the top.

3 1/2" cylinders no. 13 & 19 are mounted on the center section with the rams pointing towards the wheels and ports in top position.

3 1/4" cylinders no. 14 are mounted on each wing with rams pointing towards the wheel and ports in top position.

Lock hoses to cultivator with clamps supplied.

TO TIGHTEN J.I.C. FLARE CONNECTIONS

A. Finger tighten as much as possible.
B. 1/6 Turn (one flat section on hex) is sufficient to seal connection.

Over tightening could crack the swivel nut.

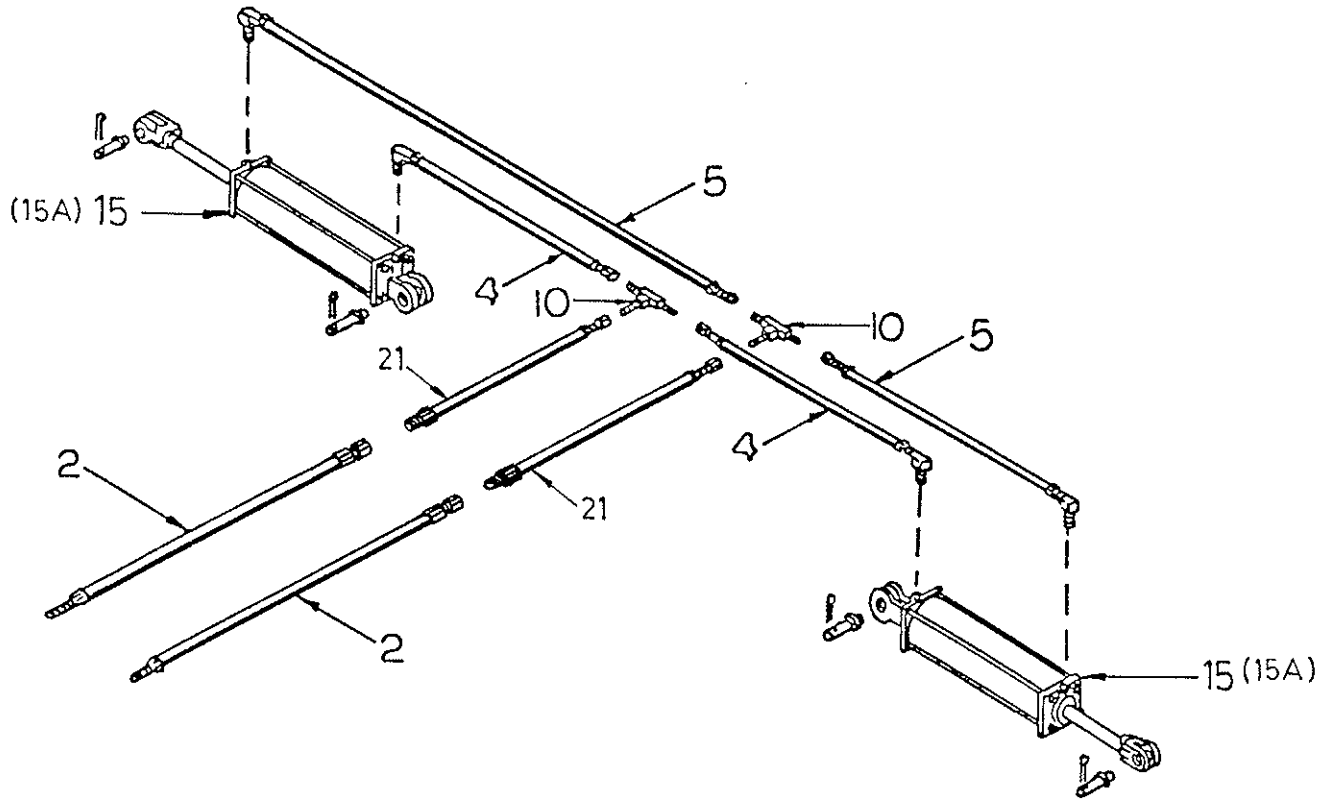


FIGURE 8 Wing Hydraulics.

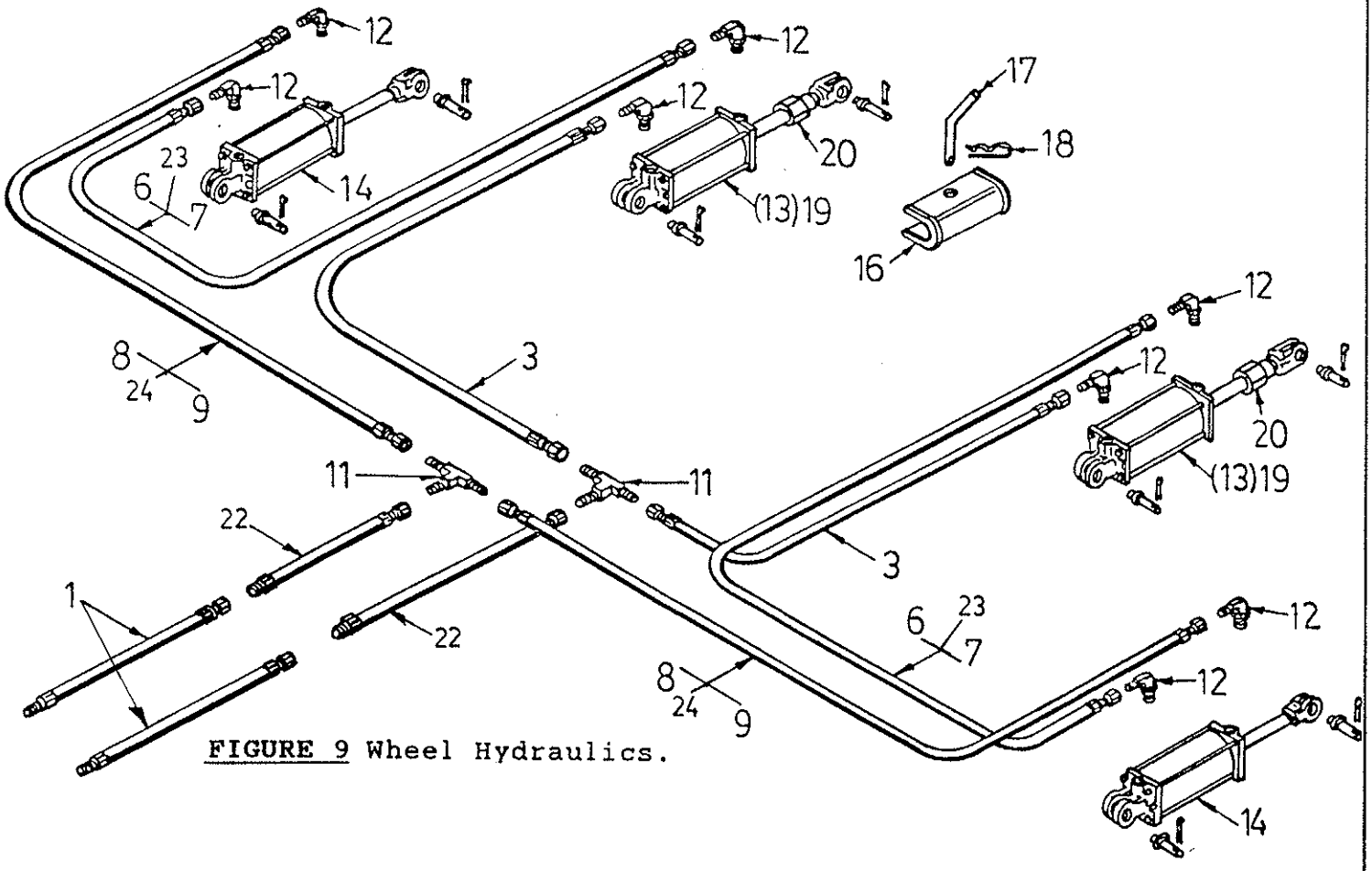


FIGURE 9 Wheel Hydraulics.

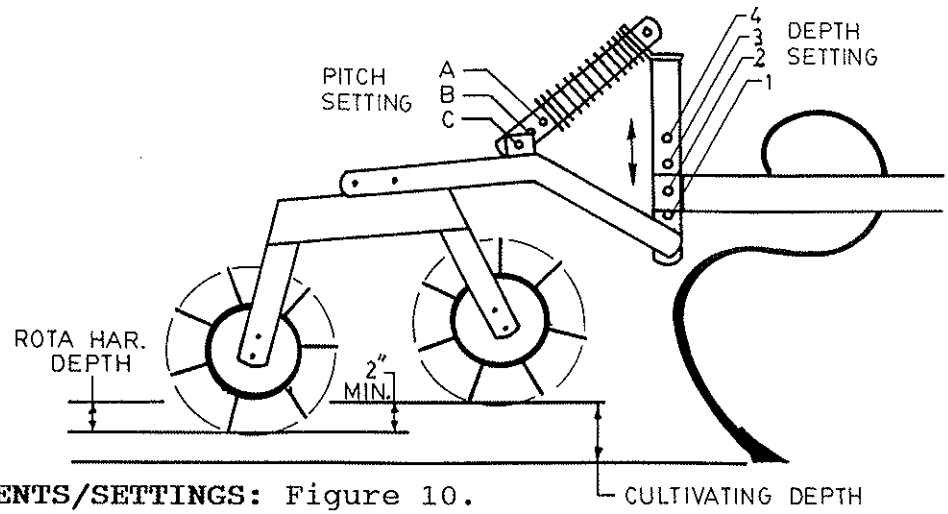
HYDRAULIC TROUBLE SHOOTING CHART		
Problem	Cause	Remedy
1) Cultivator cylinders do not work in unison. Cylinders spongy.	Air in System	Raise cultivator to highest transport position. Hold the hydraulic lever on the tractor in the "raise" position for approx. 30 seconds. Flow passes through the cylinder bypass ports to flush air out of the system.
2) Wing cylinder contracts when master extends.	Hose connections wrong.	Check circuit according to figures 8 & 9 . pg. 11
3) Wing cylinders stroke further than master cylinders when retracting wings too deep.	a) Wrong hose connections b) Cylinder sizes or locations wrong.	Check circuit according to figures 8 & 9 . pg. 11 Centre section cyl. 3 1/2 x 8 Wing Cyl. 3 1/4 x 8.
4) One section of cultivator settles down in use.	a) System not being rephased. b) External leak from cylinder, hose or fitting. c) Internal leak in cylinder.	When the cylinders are extended fully each cylinder bypasses a small amount of oil to allow other cylinders to catch up. This rephasing is done each time the cultivator is raised fully to the top and must be done periodically and is recommended at each end of the field. Repair leaking component. Install new cylinder seal kit in the wing cylinder that settles.
5) Entire cultivator settles	a) Tractor valve leaking back.	To check, remove hose from the tractor when cultivator is raised. This eliminates the tractor valve from the circuit. **CAUTION:** Make certain your tractor connections safely allow this operation.

5) Entire cultivator settles.	b) External leak. c) Wing cylinder and at least one master leaking internally.	Repair leaking component. Install new cylinder seal kits.
6) Cultivator settles in transport or while parked.	Not using transport blocks.	The hydraulic system is not intended to hold the cultivator up permanently. A slow settling when not in use is normal.
7) Cylinders will not rephase.	a) Dirt blocking bypass ports in cylinder. b) Faulty cylinder.	Air pressure can be used to determine which cylinder will not bypass when extended. Rephasing cylinder and repair parts must be used in this service.
8) Air returns to system causing problems 1, 4, 5 to recur.	a) Air entering system b) See item 7.	Check tractor oil level. Check tractor hydraulic pump. See item 7.
Note: A mixture of oil and air forms a foam which may give unexpected results. It may take a few hours use before all foam is expelled.		
9) Centre section is not level or goes out of level in use.	a)Rockshaft bolt broken. b)Rockshaft bent.	Replace broken bolt. Always adjust depth stops the same. See Dealer for instructions on straightening the shaft in place.
10) Both centre section and one wing settle together. Remaining wing raises. (or stays at the top)	Internal leak in the master cylinder on the side which the wing rises.	Install new cylinder seal kit.

FIELD SETTING FOR DOUBLE ROTA/CRUMBLER HARROWS

The Kongskilde Double Rota Harrows are used to break large lumps into smaller ones and to throw the soil up into the air, thus segregating the fines from the lumps and producing a level seedbed. The Double Rota Harrow attachment is also recommended in order to obtain optimum benefits from soil incorporated herbicides.

The rota harrows are mounted closely behind the last row of cultivator tines to allow the soil to enter the harrows while it is still moving. In lighter soils it may be necessary to move the harrows further back to allow the soil to settle before entering the harrows. A special extension bracket is available for this purpose. This will allow the harrow tines to work under the soil and throw it into the air as it leaves the harrow.



ADJUSTMENTS/SETTINGS: Figure 10.

1. The double rota harrow should penetrate the soil at the depth of approximately 1/2 of the working depth of the cultivator tines.
2. The depth setting can be adjusted by selecting one of the 4-holes in the harrows vertical mounting bar.

   NOTE: If the front rollers are set too deep the soil may build up in front of them, particularly in lighter soils or trashy conditions. If this occurs, adjust the harrows by raising them one set of holes on the mounting bars.

3. The front roller should be set approximately 2 inches (50mm) higher than the rear roller. This is to allow a smoother flow of soil from the tines thru the the double rota harrows.
4. The difference in height between the front and rear rollers - **Harrow Pitch** - is adjusted by selecting one of the 3 holes in the spring arm, (A,B,or C).

   NOTE: If the rear rollers are set too deep, or have too much down pressure, marks may be left in the soil by the harrow supports. If this occurs, reduce the spring pressure on the rear roller by changing the pitch one set of holes on spring arm.

Both the 4 holes in the mounting bar and the 3 holes in the spring arm must be adjusted in unison to achieve the correct setting.

FIELD SETTING FOR FLE FINGER HARROWS

1. The FLE finger harrows can be adjusted to 4 different angle settings by rotating the stop block to position 1, 2, 3, or 4. Position 1 is the largest angle and thus will provide the least aggressive action in the soil. If a more aggressive action is desired, the angle of attack can be steepened by rotating the block to position 2, 3, or 4 as desired.

2. You will note that there are 3 holes in the mounting arms of the tine bars. These holes allow the tine bars to be lowered as the tines become worn down from use. It should not be necessary to use this adjustment for any other purpose.

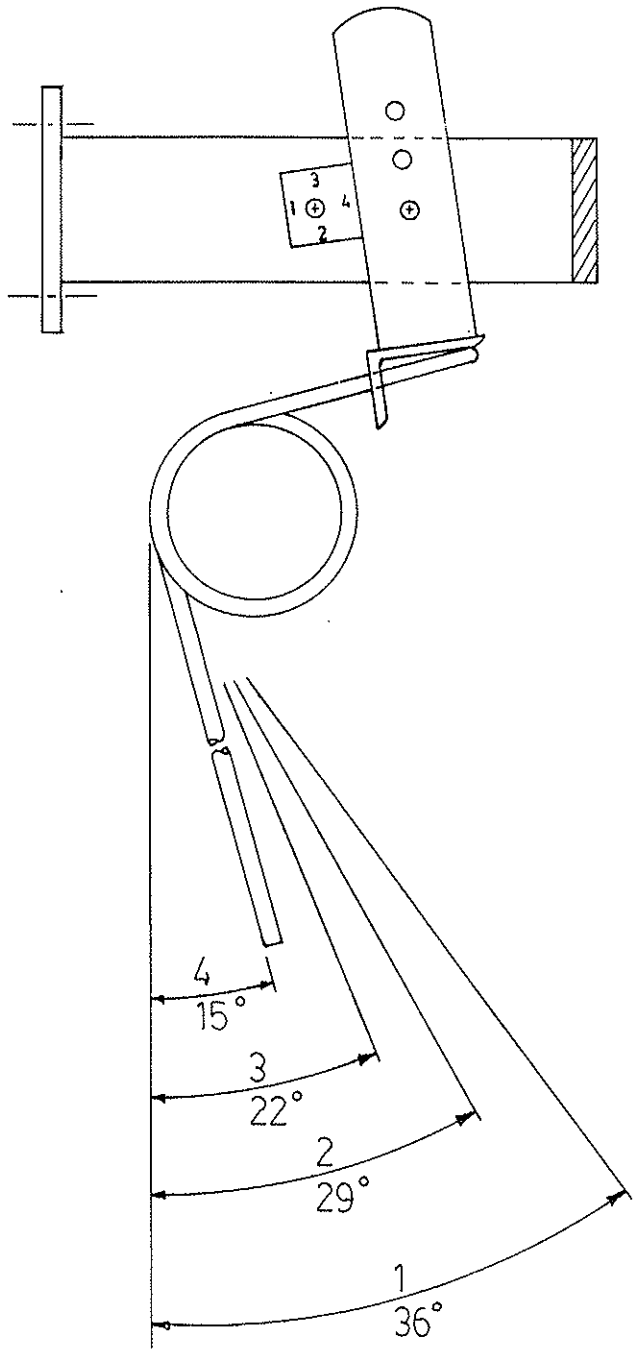


FIGURE 11