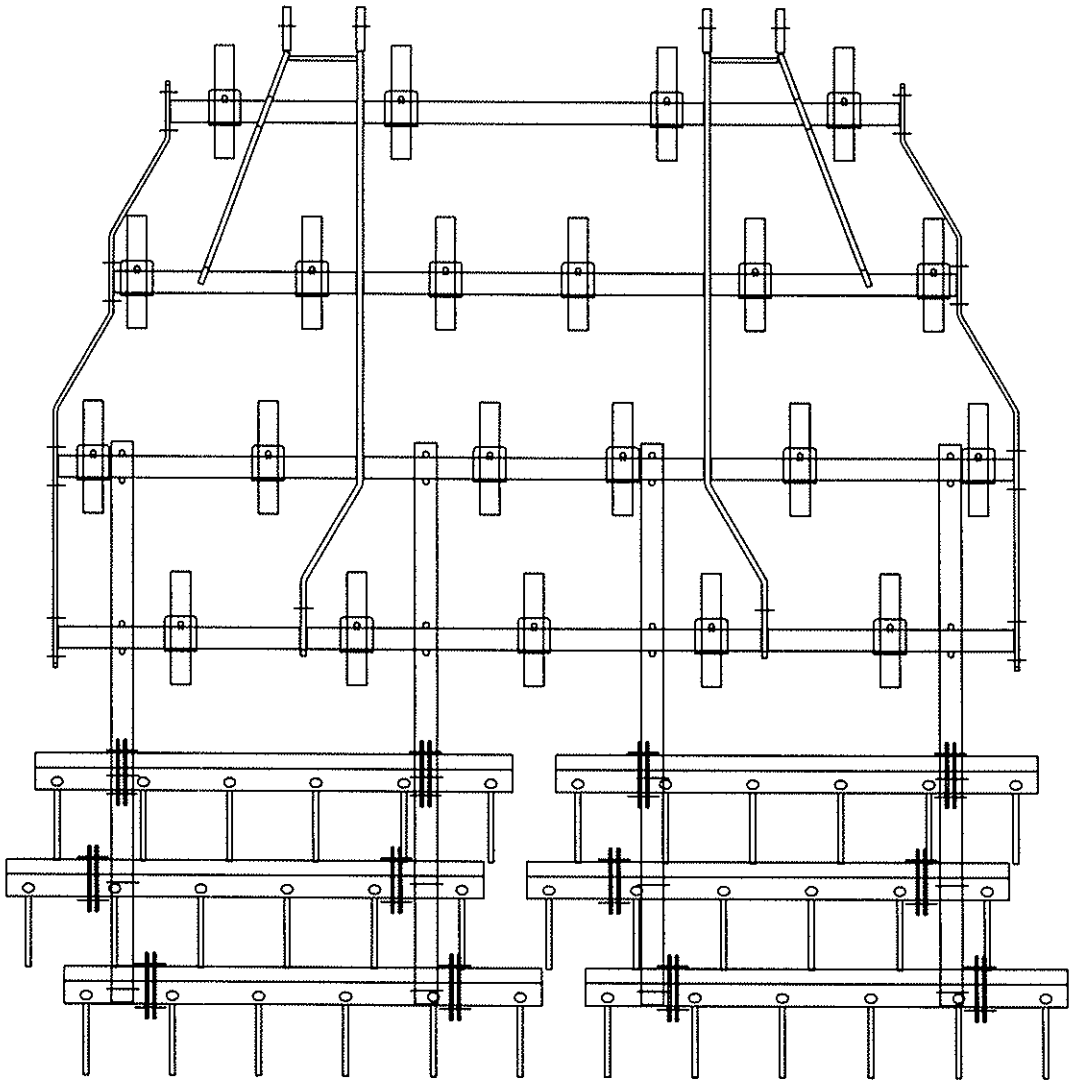
KONGSKILDE

800 SERIES
FLEX DRAG SPIKE HARROWS



3 BAR SECTIONS FOR
800 SERIES CULTIVATORS
ASSEMBLY INSTRUCTIONS &
OPERATING GUIDE

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INTRODUCTION:

The Kongskilde Flex Drag-Spike Harrow has been developed as a levelling attachment for field cultivators. When properly adjusted the Harrow will help to prepare a level surface for planting in various field conditions and soil types.

The 800 Series Flex Drag-Spike Harrow kits were designed with a special hanger arm arrangement for mounting directly to the rear toolbar tubes of Kongskilde 800 Series Cultivators only. Drag Harrow Kits are available for most Kongskilde Cultivator Models and can also be mounted to a wide range of other field cultivator brands with optional OEM mounting kits.
(See dealer for details).

This booklet has been developed to assist you in assembling your 3 Bar Drag-Spike Harrow Kit for 800 Series Cultivator sizes from 4' to 21'.

PRE ASSEMBLY TIPS:

Prior to assembling the Flex Spike Drag Harrows, the cultivator should be carefully lowered to the ground, (resting on the tines), on a flat level area.

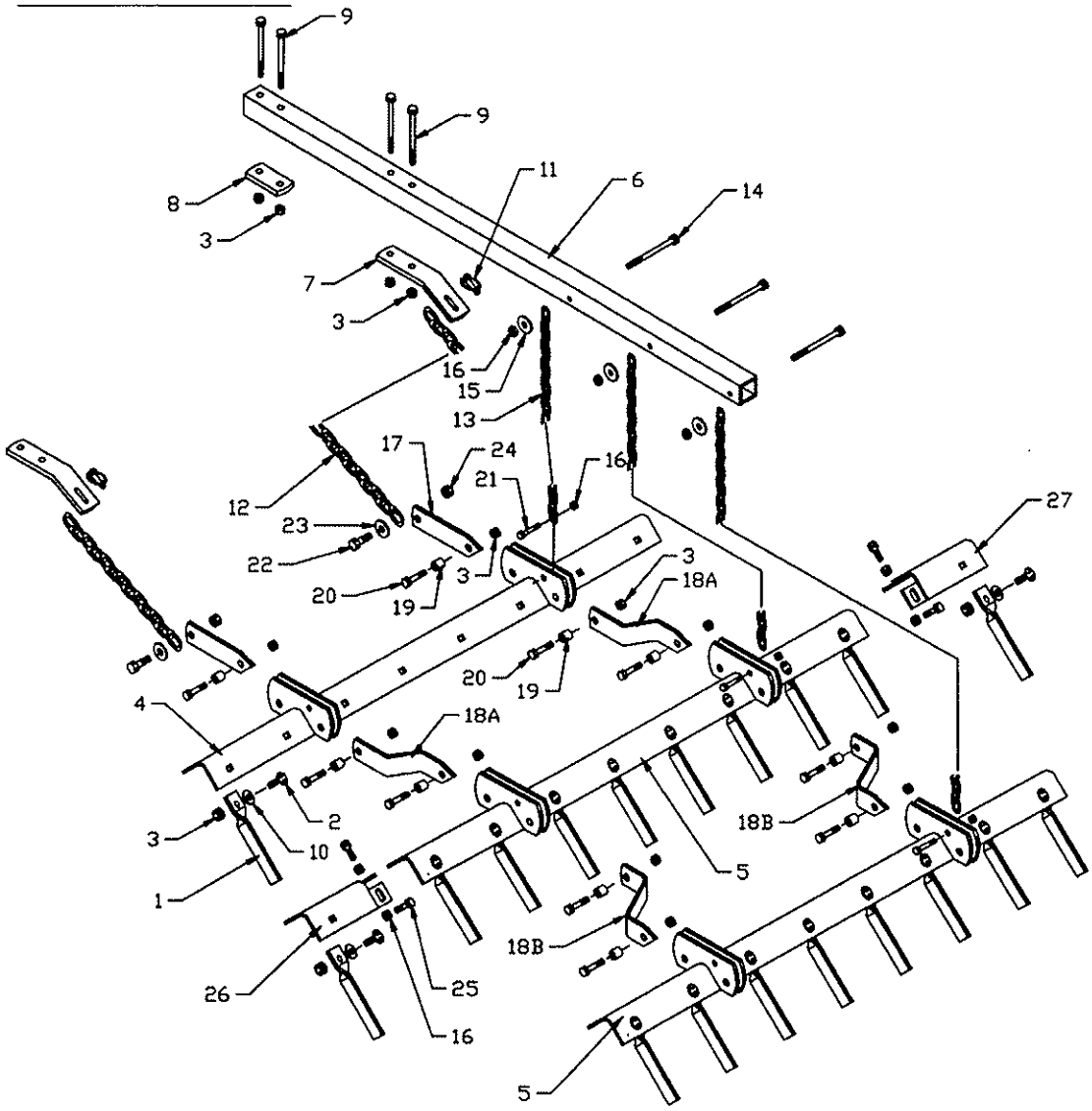
The spike drag harrow bars are shipped from the factory with the spikes pre-assembled to the bars. In order to assemble the 3 bar sections, it is best to carefully unpack the bundles with the carrier arms and assembly hardware bags and lay them out behind the cultivator sections according to their size (working width). Care must be taken when unpacking these "bundles" not to mix up the harrow bar lengths with that of another section.

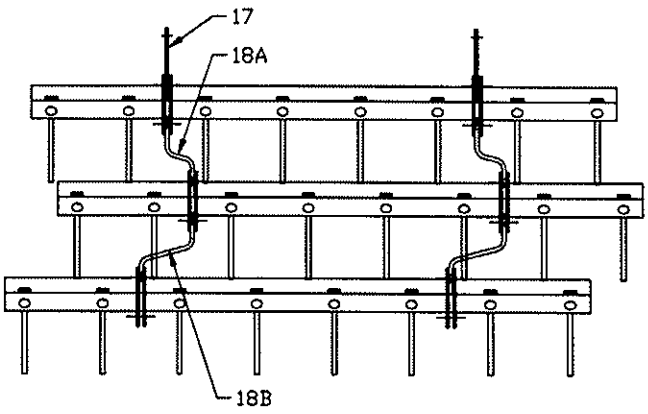
Refer to the parts list and assembly diagram on page 4. This diagram will help you to identify the items required for proper assembly. Layout diagrams are provided in the back of the book for each machine size.

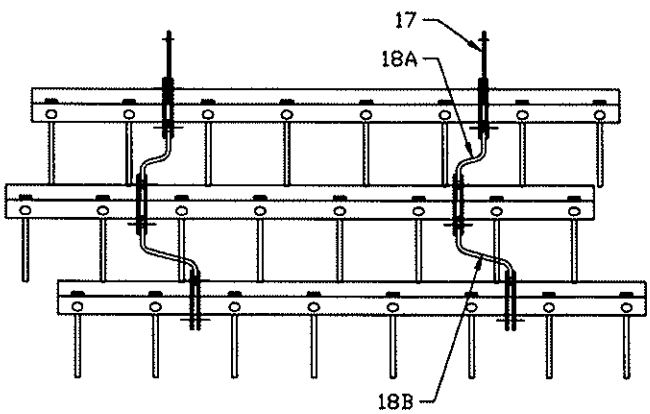
NEW!: As an added feature, the straight and offset joiner links have been double sheared on one end with two different angle cuts. This gives you the opportunity to set the spikes bars to run at a shallow angle of about 30° for levelling in light soils, or a steeper angle of about 45° for breaking clods and lumps in heavier or "Buckshot" soils. However, you must choose this option for all sections before starting the assembly, as all sections must be set the same way. See Note below.

Note: *All joiner links and spike bars must be set to run at the same angle. Do not try to mix one angle setting with another, as this will not allow for proper spacing (offset) of the spikes.*

PARTS DIAGRAM:







Spare part list / 800 Series Flex Drag Spike Harrows. Date: 1998, 11.

Fig.	Part no.	Description
1	02-060-100	Drag Spike
2	00-361-036	Carriage Bolt 1/2" - 13 x 1-1/2"
3	00-366-005	Locknut 1/2"
4	02-060-101	Harrow Bar Weldment 700 mm - 4 Spike
	02-060-102	Harrow Bar Weldment 1100 mm - 6 Spike
	02-060-103	Harrow Bar Weldment 1300 mm - 7 Spike
	02-060-104	Harrow Bar Weldment 1500 mm - 8 Spike
	02-060-105	Harrow Bar Weldment 1900 mm - 10 Spike
5	02-060-134	Harrow Bar Assembly 700 mm (Includes Items 1, 2, 3, 4) - 4 Spikes
	02-060-135	Harrow Bar Assembly 1100 mm (Includes Items 1, 2, 3, 4) - 6 Spikes
	02-060-136	Harrow Bar Assembly 1300 mm (Includes Items 1, 2, 3, 4) - 7 Spikes
	02-060-137	Harrow Bar Assembly 1500 mm (Includes Items 1, 2, 3, 4) - 8 Spikes
	02-060-138	Harrow Bar Assembly 1900 mm (Includes Items 1, 2, 3, 4) - 10 Spikes
6	02-060-206	3 Bar Hanger Arm Tube
7	02-060-207	Pull Link Bracket
8	02-060-208	Backing Plate
9	00-356-134	Bolt 1/2" x 5-1/2"
10	00-381-050	Flatwasher 1/2"
11	00-331-014	Lynch Pin 5/16" x 1-1/2"
12	02-060-197	Draw Chain
13	02-060-140	Hanger Chain
14	00-356-019	Bolt 3/8" x 3"
15	00-381-006	Flatwasher 3/8"
16	00-366-004	Locknut 3/8"
17	02-060-114	Straight Joiner Link*
18A	02-060-118	Offset Joiner Link - 67 Right (3 Bar)*
18B	02-060-117	Offset Joiner Link - 134 Left (3 Bar)*
19	02-060-112	Bushing
20	00-356-139	Bolt 1/2" x 1-3/4"
21	00-356-115	Bolt 3/8" x 1-1/2"
22	00-356-145	Bolt 3/4" x 2"
23	00-381-009	Washer 3/4"
24	00-366-007	Locknut 3/4"
25	00-356-016	Bolt 3/8" x 1-1/4"
26	02-060-193	Harrow Bar Extension - LH
27	02-060-194	Harrow Bar Extension - RH
	02-060-480	Harrow Bar Extension Kit - LH (Includes items 1, 2, 3, 16, 25 & 26)
	02-060-481	Harrow Bar Extension Kit - RH (Includes items 1, 2, 3, 16, 25 & 27)
*		*NOTE: Diagrams show offset links assembled for shallow working angle. For steep angle setting, flip offset brackets over and assemble opposite to diagram.

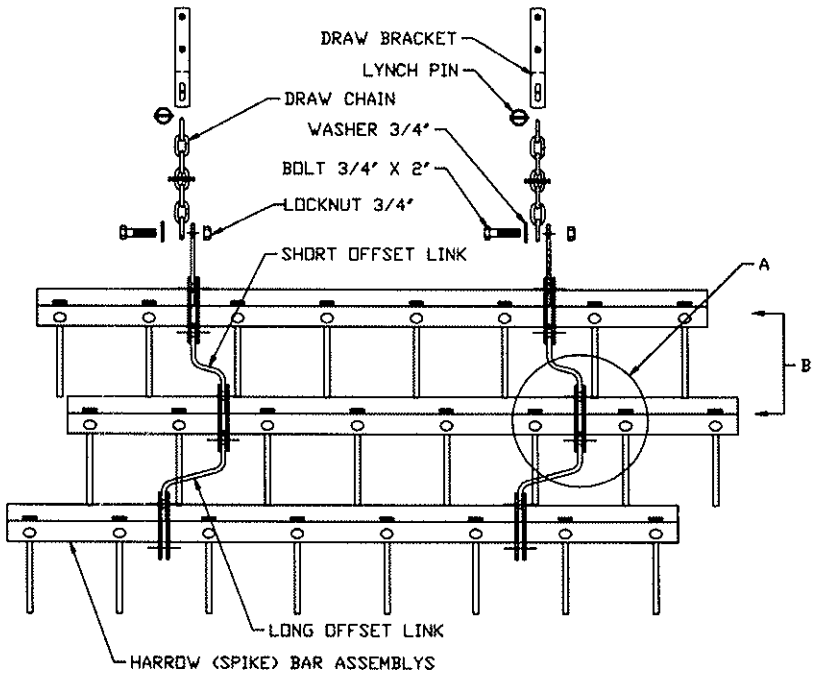
ASSEMBLY INSTRUCTIONS: For Shallow 30° Working Angle
(Levelling in heavy residue / lighter soils)

1. Before starting, be sure you have the correct quantity and size of drag harrow bundles for the machine that is being assembled. The size combinations and mounting location for each machine are shown on the layout pages in the back of the book.

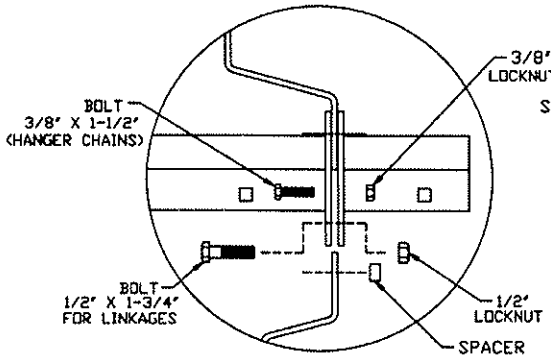
2. Each harrow section may be assembled separately and then positioned behind the cultivator. However these harrow sections are very heavy and awkward to move when completely assembled. You may want to position them behind the cultivator first and then complete the assembly.

3. Lay the 3 bar harrow sections out behind the cultivator and assemble the offset joiner links and chains according to the diagram below.
Start with the centre harrow section first then assemble the right and left hand sections, (if applicable).

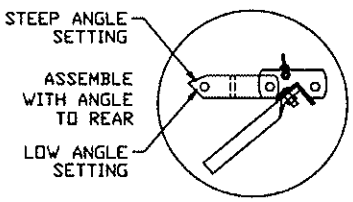
3 BAR SECTION - SHALLOW ANGLE



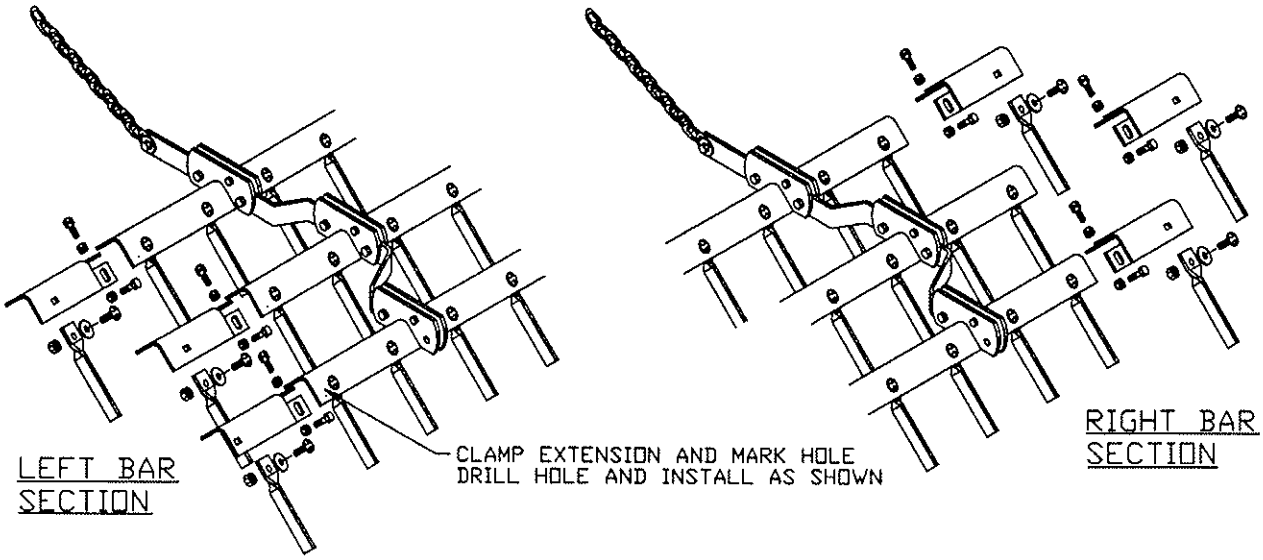
VIEW A



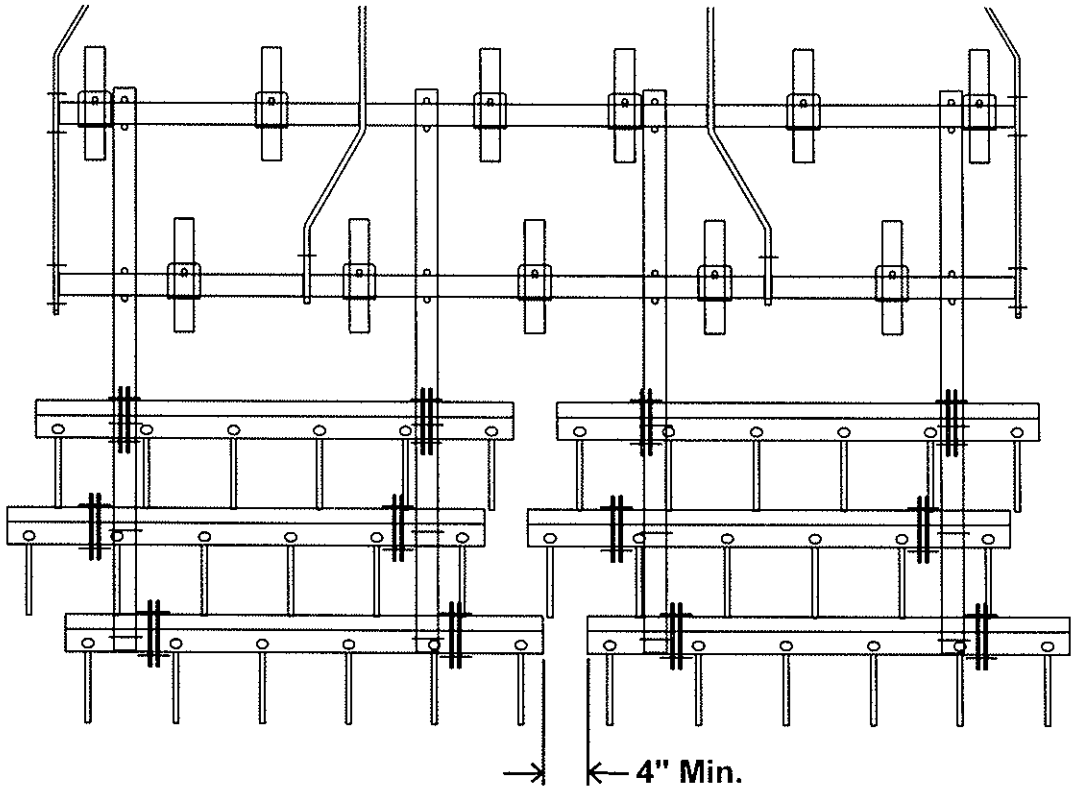
VIEW B



4. Note: On some cultivator models you will need to mount a special extension to the ends of the spike bars. Mark the locations for the bolt holes, or clamp the extensions to the spike bar and use them as a guide for drilling. Secure with bolts and locknuts supplied. See detail below.



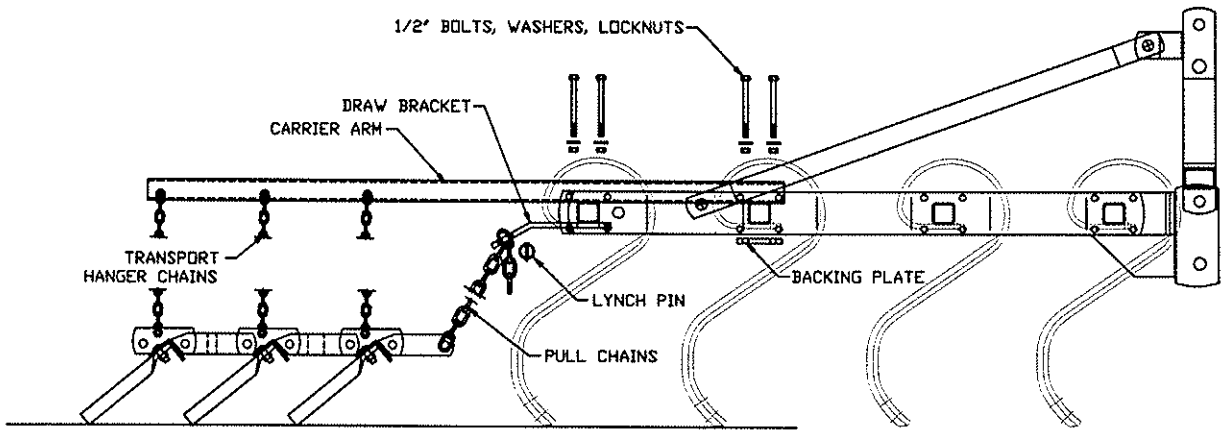
5. Mount the carrier arms to the 2 rear toolbar tubes of the cultivator frame with the U-bolts, washers and locknuts provided. Position the arms directly above the chain brackets on the drag harrow assemblies according to the diagram below.
NOTE: Centre the 3-Bar harrows on the cultivator frame keeping about 4" Minimum between sections.



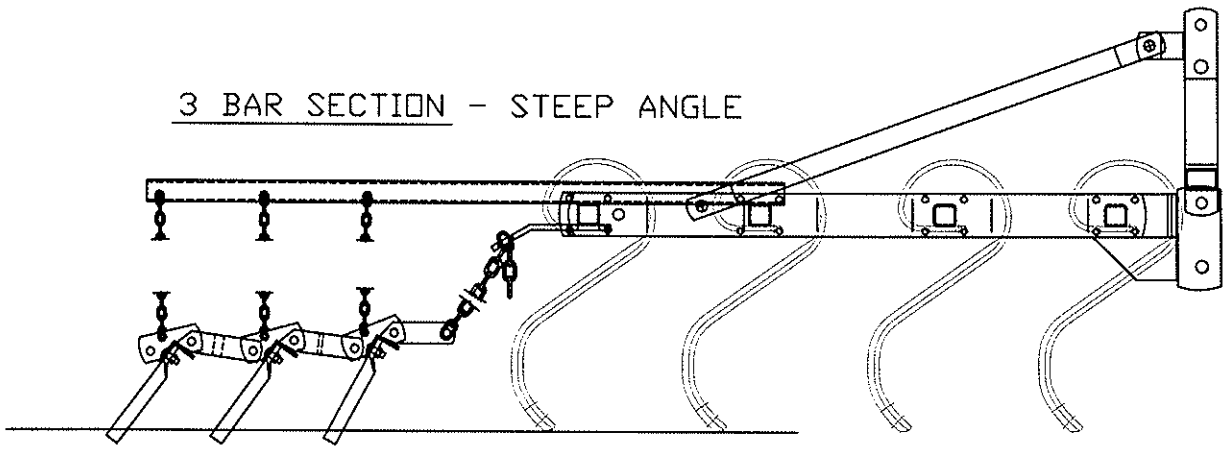
6. Connect the pull chains by inserting a link thru the slot in the draw bracket under the carrier arm and secure with the lynch pin provided. The length of the pull chains may be adjusted as required to obtain optimal levelling and grooming of the soil surface.
(see field settings pg.12)

7. Connect the transport chains to the carrier arms. Always connect the chain to the side of the carrier arm that is the closest. Be consistent with both arms. The length of these chains may also be adjusted as required to obtain optimal levelling and grooming of the soil surface. (see field settings pg.12)

3 BAR SECTION - SHALLOW ANGLE



3 BAR SECTION - STEEP ANGLE



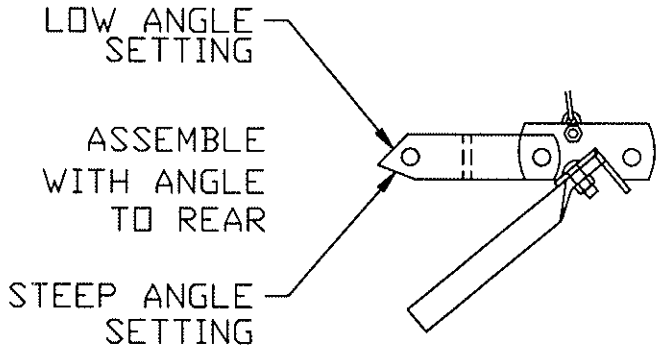
8. Mount the carrier arms and harrow sections to the wings in a similar manner as in points 4 to 7.
NOTE: To avoid interference between the harrow sections there should be a minimum of 4" between the ends of each harrow bar.

9. Ensure that all bolts are tight.

ASSEMBLY INSTRUCTIONS: For Steep 45° Working Angle
(Breaking lumps & levelling in heavy "buckshot" soils)

The 3 Bar Flex Drag Spike Harrows were initially designed to work as a levelling harrow in high residue conditions without the adverse effects of other similar type harrows available on the market, (specifically bunching and dumping of residue).
Testing has demonstrated that in some field conditions and soil types a more aggressive working angle on the spikes has improved the breaking ability of the harrow with respect to clods and lumps. However, there may be a trade-off in that the harrow may have a reduced ability to clear residue in some field conditions.

The Straight and Offset Joiner Links for the Flex-Spike Drag Harrows have been sheared with two different angles on the rear end in order to accommodate both working conditions.
See diagram below.



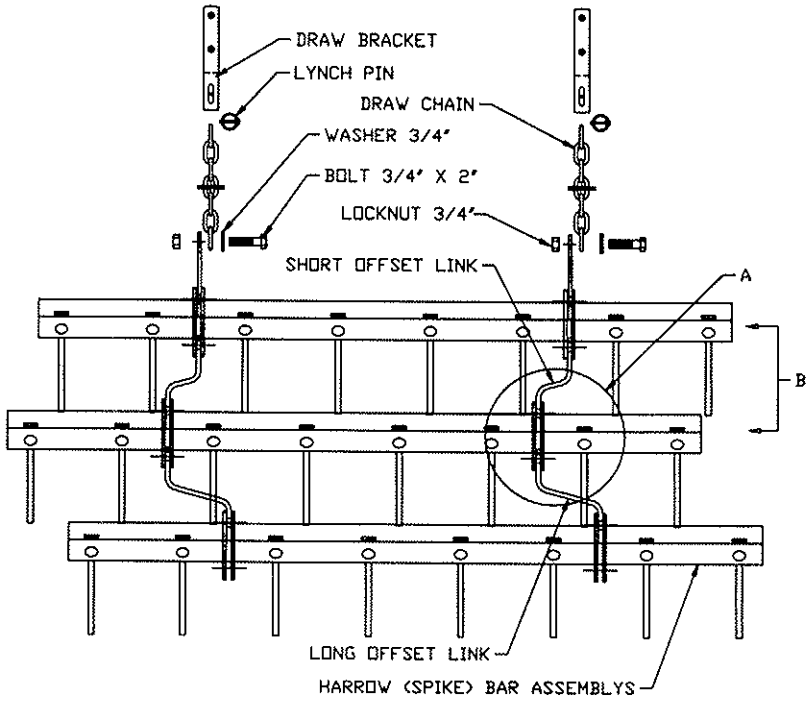
Pre-Assembled Harrows in the field may be modified by disassembling the offset brackets, and then flipping them over and reassembled opposite to the original offset. This modification to the linkages stands the spike up about 45° to 50° from the original 30°.

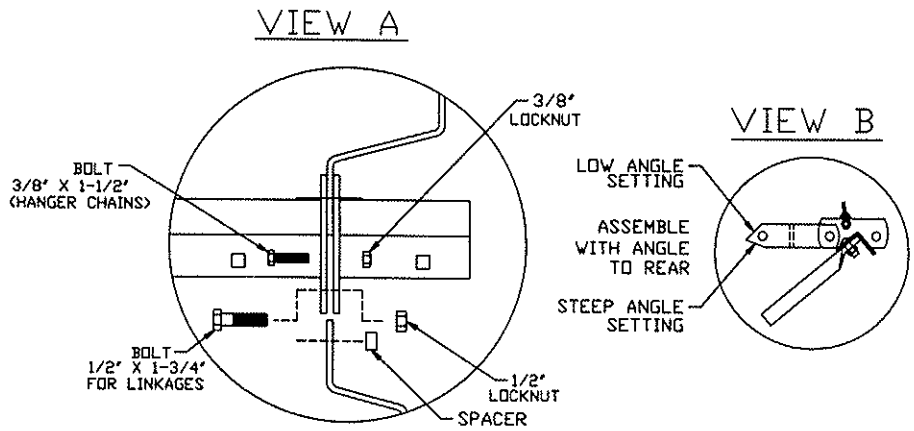
NOTE: This modification must be done to all offset linkages to allow for proper re-assembly.

When the links are assembled as shown in the assembly diagram on page 6 the spikes will be working in a shallow 30° angle .
However if the links are flipped over, as shown in the diagrams on page 10, a steeper and more aggressive working angle of about 45° to 50° is achieved.

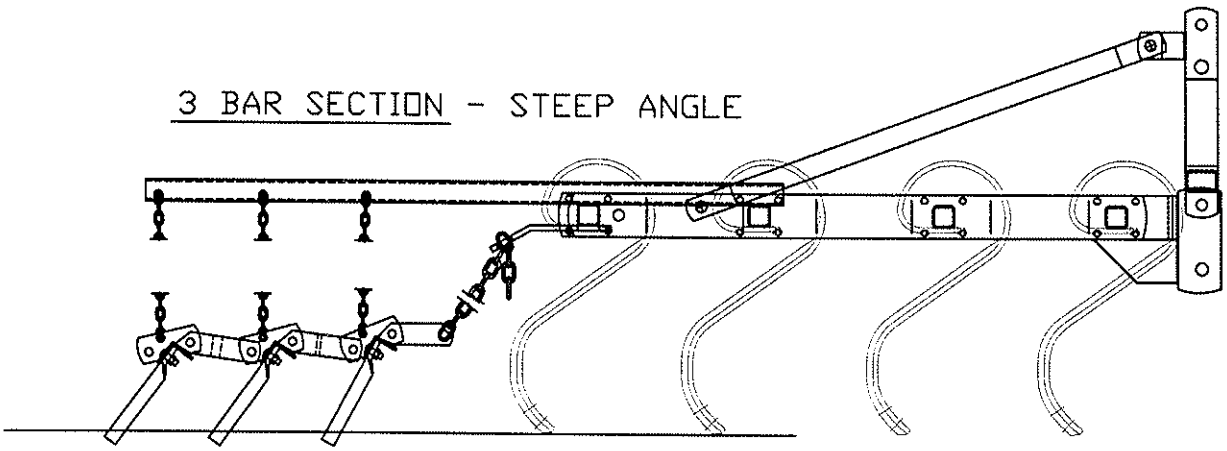
NOTE 1: This means that the harrow bars will be offset in the opposite direction to the lay-outs shown in the back of the book. For example; a right offset joiner link set in the shallow angle position becomes a left offset link when flipped over into the steep angle position.
NOTE 2: All offset brackets must be assembled to work at the same angle; either shallow or steep. You do not have the option to mix one angle setting with another. Therefore on a 3 bar harrow for example, you cannot set the front rows to run at the steep angle and the rear 2 rows to run shallow. All spike bars must work at the same angle to allow for proper spacing between the spikes.

3 BAR SECTION - STEEP ANGLE





3 BAR SECTION - STEEP ANGLE



ADJUSTMENTS / PRECAUTIONS:

When the assembly of the harrows has been completed check to make sure that the complete assembly appears evenly spaced and centred across the back of the cultivator. If the harrow assembly is not centred you will have to shift the harrow sections as required. Improper centring of the harrows may cause the cultivator to pull crooked in the field.

Check to make sure that the 4" spacing between the drag harrow sections has been maintained. It is important to insure that the spacing between the spikes is maintained to ensure the soil surface is groomed evenly. It is also important that the drag sections have enough clearance between each other so they will not hit each other as they work and move up and down over the surface of the ground.

Check all nuts and bolts and secure if loose.

Take care when lifting and moving the cultivator for the first time after completing the assembly. Check to make sure that the harrows do not interfere with other cultivator frame components when in transport.

DANGER! NEVER STAND OR WORK IN THE AREA UNDER AN UNSUPPORTED CULTIVATOR FRAME.

a) **ALWAYS USE SUPPORT STANDS WHEN WORKING ON THE MACHINE.**

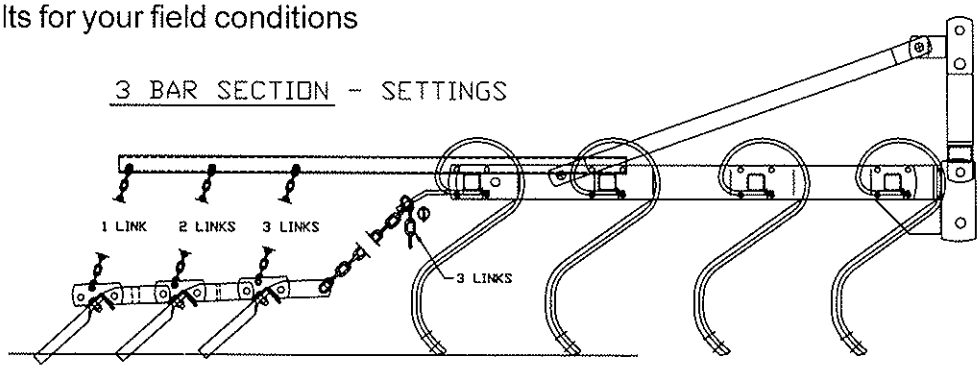
b) **USE EXTREME CAUTION WHEN WORKING AROUND HEAVY EQUIPMENT.**

c) **BLOCK THE WHEELS AND MAKE SURE THAT THE UNIT IS SUPPORTED TO PREVENT IT FROM FALLING BEFORE ATTEMPTING TO MAKE ADJUSTMENTS OR WHEN PERFORMING MAINTENANCE OPERATIONS.**

FIELD SETTINGS:

A) The pull chains for the drag harrows may be shortened in order to raise the front bar and therefore increase the working angle of the spikes. This will make the harrow more aggressive but may reduce the ability of the harrow to clear residue in some conditions. This setting will vary depending on working conditions. (See Note C below).
Initially, the 3rd chain link should be inserted thru the slot in the draw bracket and secured with the lynch pin.

B) The transport chains may be shortened to reduce the working depth of the harrow. This will change the working angle of the spikes slightly and the soil will take on a "groomed" appearance. Shortening the chains will also reduce the weight or pressure of the drag harrow on the soil surface that is needed for levelling.
In some situations the hanger chains may be adjusted so that the front 2 chains are shorter than the rear chains. This will make the front 2 rows of spikes higher and more aggressive for breaking lumps, leaving the rear rows of spikes to pull low and flat for levelling the soil.
Some experimentation with the settings A and B above, will be required to obtain the best results for your field conditions



C) **NOTE:** There are many factors that can affect the ability of the harrows to level the soil surface behind the cultivator; Cultivator tine spacing, type of shares (sweeps), cultivating depth, ground speed, direction of travel across the field (angle), soil type, and soil conditions like moisture content and crop residue levels, all have an affect on the quality and levelness of the seed bed. Therefore, do not expect the same settings to work in every case. Be prepared to adapt and adjust your equipment and operating practices to obtain the best results for each field condition.

MAINTENANCE:

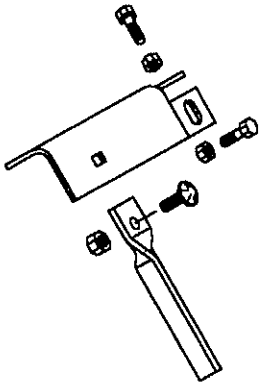
A) Periodically check all nuts and bolts and secure if loose.

B) Periodically check and remove any foreign material that may become tangled in the harrow sections.

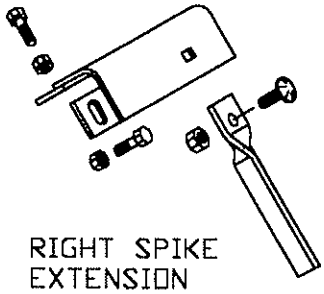
C) Always check the condition of your field cultivator and levelling attachments at regular intervals and keep in good repair. Optimal performance cannot be expected of equipment in poor condition.

INSTALLATION OF SPIKE BAR EXTENSIONS

Flex Drag-Spike Harrows are available in modular sections of; 2.5', 4', 4.5', 5', and 6.5'.
Each of the above sections can be extended 8" on either end with single spike extensions, therefore providing a wide range of working widths to suit most applications.

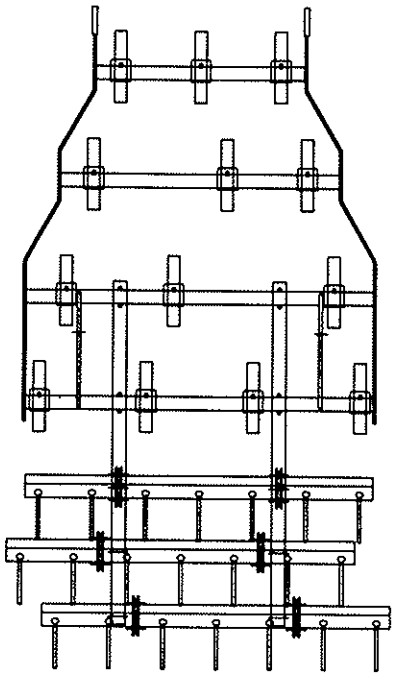


LEFT SPIKE
EXTENSION



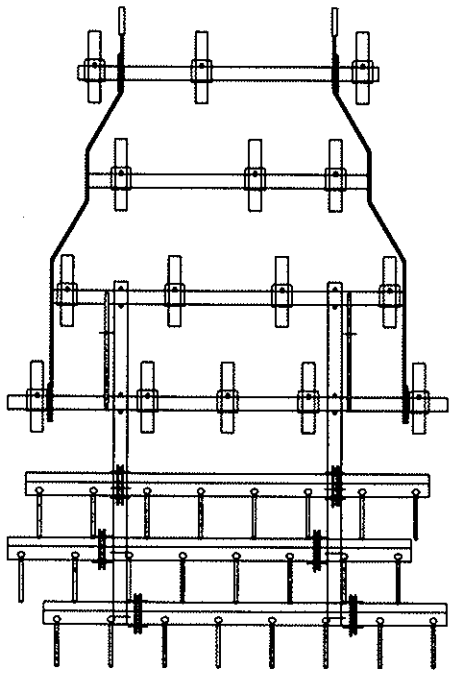
RIGHT SPIKE
EXTENSION

CULTIVATOR MODEL 804-03



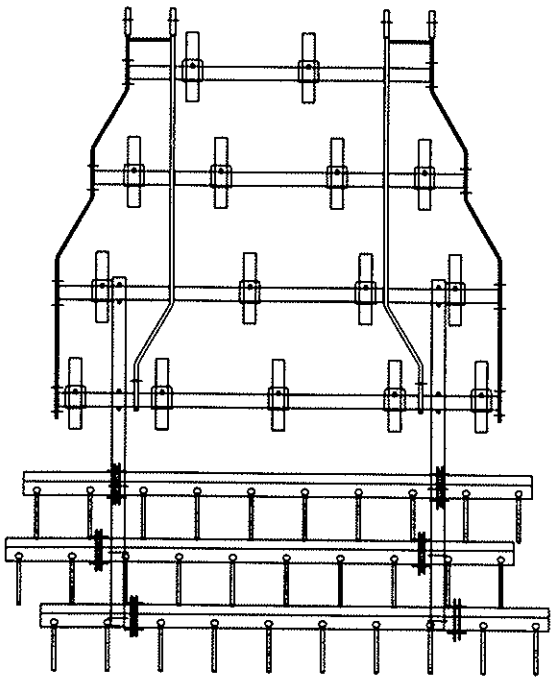
1300
7 SPIKE

CULTIVATOR MODEL 804-11



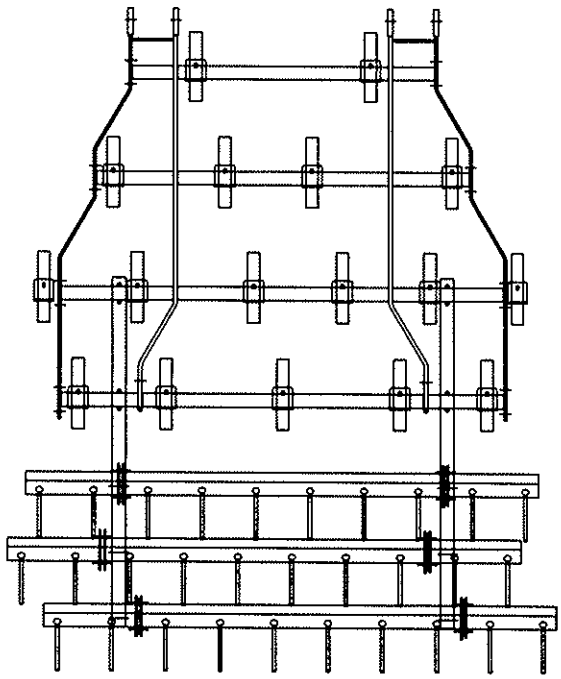
1500
8 SPIKE

CULTIVATOR MODEL 805



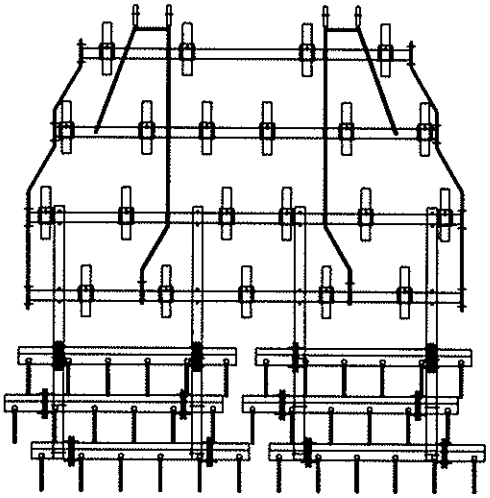
1900
10 SPIKE

CULTIVATOR MODEL 806



1900
10 SPIKE

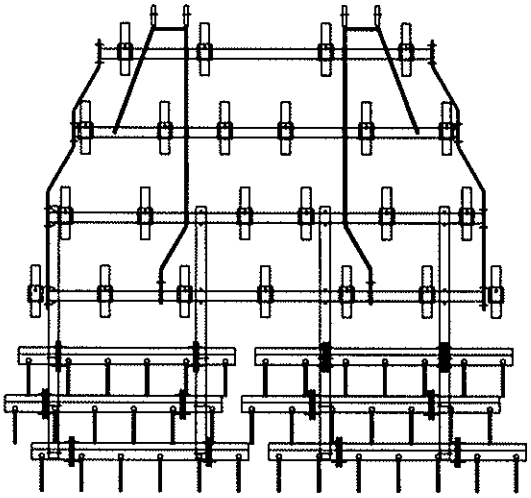
CULTIVATOR MODEL 807



1100
6 SPIKE

1100
6 SPIKE

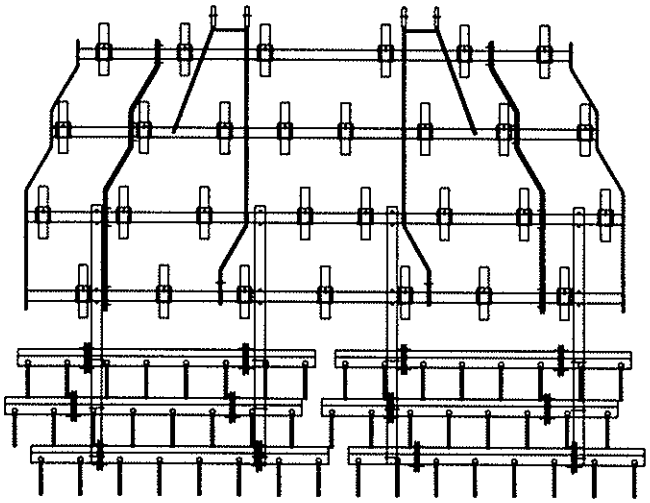
CULTIVATOR MODEL 808



1100
6 SPIKE

1300
7 SPIKE

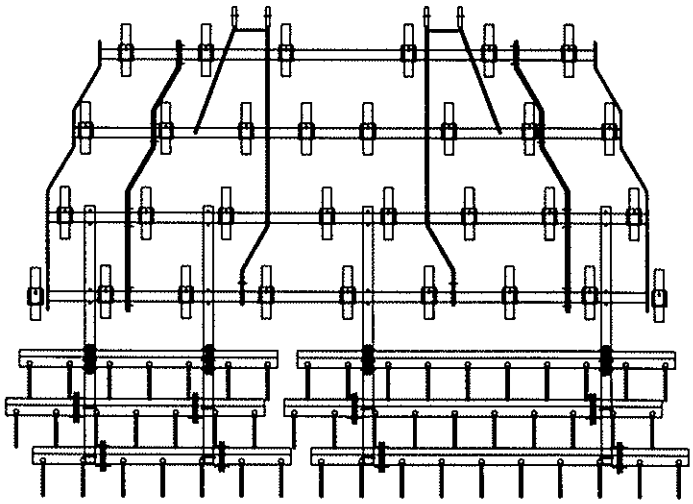
CULTIVATOR MODEL 810



1500
8 SPIKE

1500
8 SPIKE

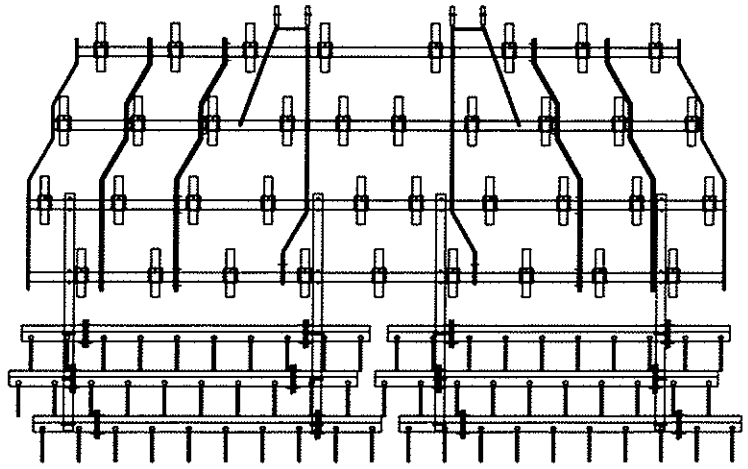
CULTIVATOR MODEL 811



1300
7 SPIKE

1900
10 SPIKE

CULTIVATOR MODEL 812



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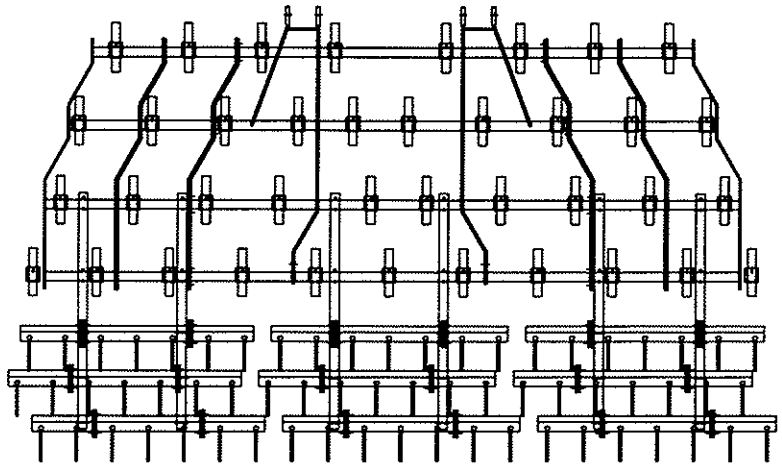

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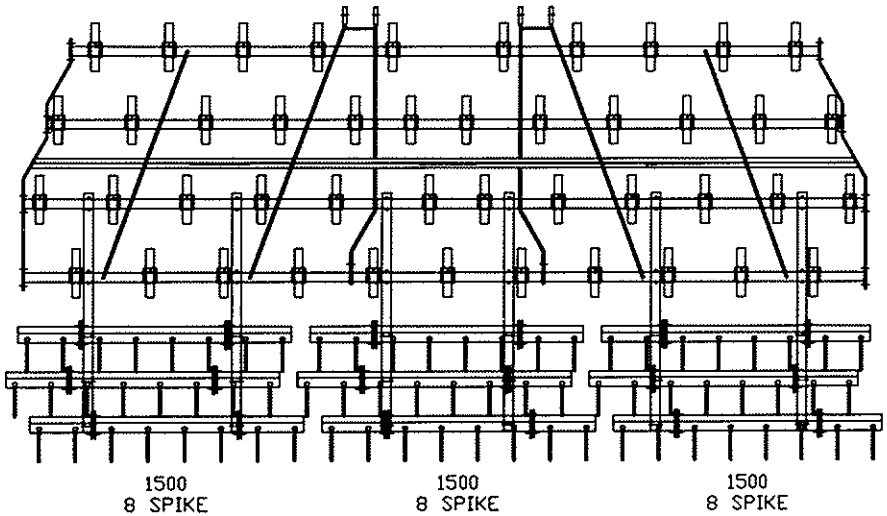

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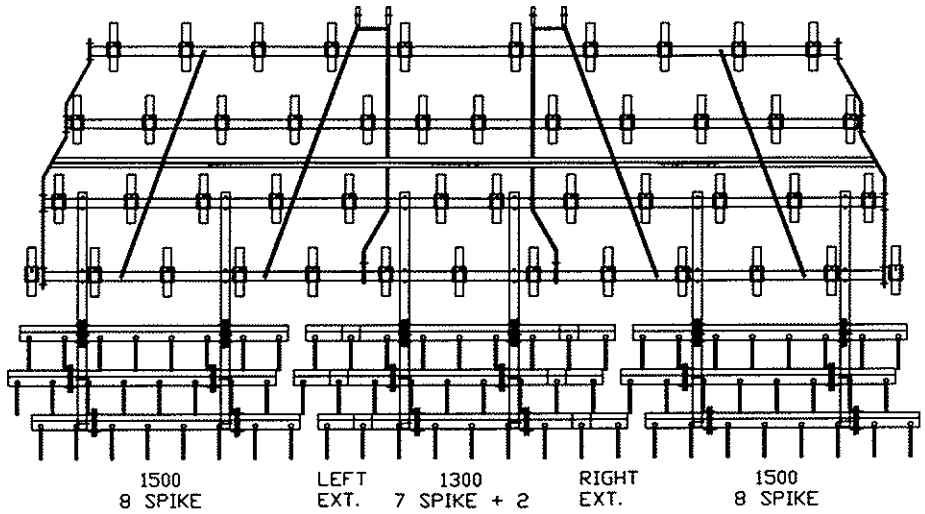

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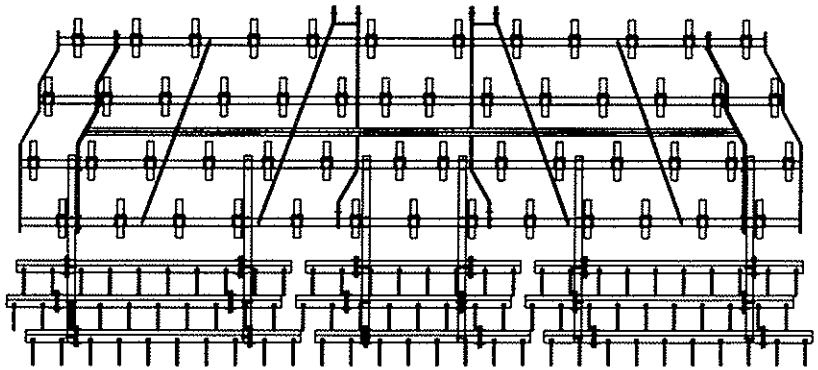

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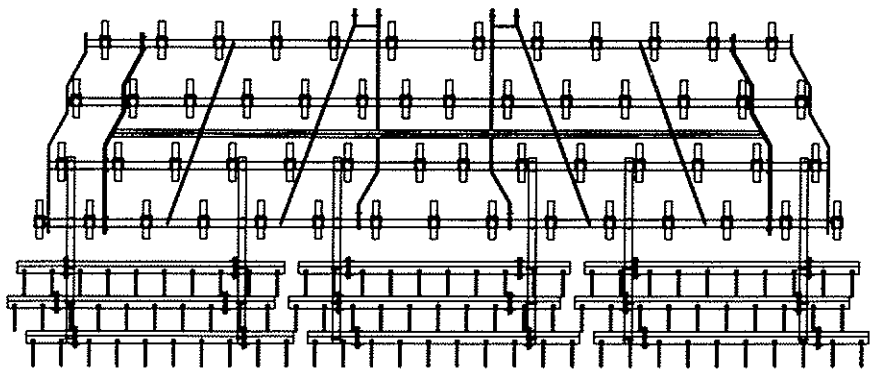
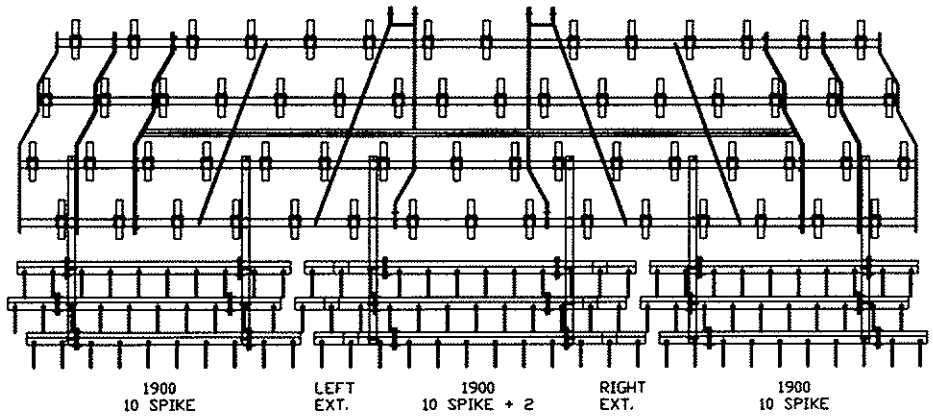


CULTIVATOR MODEL 820



CULTIVATOR MODEL 821