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INTRODUCTION:

Kongskilde 300SB Spike Bar Leveller 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 300SB Spike Bar Leveller was designed to be used alone or in combination with Kongskilde 300SS Double Spiral Rota-Harrows.





300SB SPIKE BAR LEVELLER300SB & 300SS COMBINATION HARROWThe 300SB Harrow can be ordered in two configurations:



A) - Standard mounting brackets and hardware for mounting directly to the rear
2" x 3" accessory tube on 2600 & 3500
Series field cultivators.



B) - Extended mounting brackets and hardware for mounting to the rear 2.5" x 2.5" toolbar tube on 2800 & 3800 Series field cultivators.

This booklet has been developed to assist you in assembling your Harrow Kit for Kongskilde 2600, 3500, 2800 & 3800 Series Field Cultivators.

With special OEM mounting kits the 300SB Harrow can also be mounted to a variety of other field cultivator makes and models.

*(See dealer for details).

***NOTE:** When mounting 300SB Harrows to other cultivator makes or models, take care to insure that the harrows will be adequately attached and supported to the rear framework of the cultivator. It is also important to make sure that the harrows will have enough clearance and do not interfere with other frame components during operation of the unit in the field or when folding for road transport or storage.

The 300SB Harrow may not be suitable for adaptation or mounting to all field cultivator makes and models and Kongskilde makes no warranty thereof.

PRE ASSEMBLY TIPS:

Prior to assembling the 300SB Harrows, the cultivator should be carefully unfolded and lowered to the ground, (resting on the tines), on a flat level area.

The harrows are shipped from the factory in component form and include the pre-assembled spike bar sections and the mounting brackets with hanger arms. In most cases there are additional assembly hardware bags and an envelope containing the spare parts list and assembly instruction manuals.

If you are assembling the 300SB Harrows in combination with other Harrows, treat the assembly as two separate harrow systems and carefully follow the assembly instructions provided for both harrows. In some cases it may be necessary to shift the mounting bracket locations to one side or the other in order to make room for mounting both harrow systems on the rear frame of the cultivator.

The basic order of assembly is as follows:

- Choose the layout diagram for your cultivator model from the Harrow Mounting Patterns Booklet provided and position the harrow sections behind the machine accordingly.

- Attach the mounting bracket and arm assemblies to the rear frame tube of the cultivator.
- Attach the Harrow assemblies to the mounting arms.

- Check the assembly according to the layout diagram and shift the sections as necessary

to obtain an even spacing and to ensure that the harrow appears balanced from side to side. - Secure all nuts and bolts.

(Refer to the detailed assembly instructions provided for each of the above stages)

Refer to the 300SB Harrow Spare Parts List provided. This booklet will help you to identify the items required for proper assembly.

Refer to the operating instructions in this manual for making adjustments and to obtain optimal levelling and performance.

*(Kongskilde reserves the right to make changes to product designs and specifications without notice or obligation to rework.)

ASSEMBLY INSTRUCTIONS:

Before starting, be sure you have the correct quantity and size of spike bar sections for the size of machine that you are mounting them to. The size combinations and approximate mounting bracket locations are shown on the layouts in the Harrow Mounting Patterns booklet provided for each cultivator model. As mentioned earlier, 2600/3500 series cultivators take a different mounting bracket from the 2800/3800 series cultivators due to the difference in the tine height and the size of the rear frame tube.

1) Lay out the spike bars behind the cultivator according to the layout diagram.

2) Always start the assembly of the harrows with the centre spike bar in the middle of the cultivator centre section. If you make the mistake of starting the assembly out on one end of the wing you will have difficulty positioning the mounting brackets and keeping the harrow centered across the entire width of the cultivator. If the harrow is not centered, the cultivator may not pull straight in the field. Leave all nuts and bolts loose until the entire harrow assembly is attached to the machine and has been checked according to the diagram. In cases where there is not a spike bar section in the centre of the machine, pay careful attention to the layout diagram for correct placement and centring of the spike bar sections.



3) Attach the two hanger arm assemblies to the rear frame tube of the cultivator with the mounting brackets, bolts and nuts supplied. Make sure that the mounting brackets are equal distances from the centre point of the machine so that the centre spike bar will be in the centre of the machine when attached to the arms.



4) Attach the centre spike bar section to the arms by placing the lip of the spike bar angle into one of the 5 notches in the hanger arm and securing the bar in place with the lower spacer, backing plate and U-Bolt.

	5 POSITION OF ADJUSTME	S ENT { }
INSERT LIP OF BAR IN FIRST NOTCH		

NOTE: The 5 notches in the arm provide an opportunity to change the aggressiveness or depth setting of the spike bar. The setting you choose initially will likely need to be changed once you get to the field, so for now set them all in the upper position or 1st notch. (See the section on Field Settings and Adjustments later in this manual).

5) If there is spring pressure on the bar at this point, remove the upper spring tension adjustment pin so that the spike bar can be assembled and allowed to rest on the ground without spring pressure.



6) Important Note: While the cultivator is lowered to the ground and resting on the tines, the harrow arm should be at a rearward angle with the tips of the spikes resting on the ground. The upper pin should be placed through the upper set of holes in the side plates so that there is no spring pressure on the bar at this time. (This can be adjusted later in the section on Field Settings.)



7) The purpose of the lower pin is to act as a transport stop to keep the arm and spike bar from hanging straight down and contacting the road in transport. The stop pin also holds the spike bar arm at the approximate working angle and prevents the spikes from being driven straight into the ground when the cultivator is lowered in the field.

Insert the lower pin through a set of holes in the side plates below the arm, so that when the cultivator is raised the harrow arm will be held at an angle that will prevent the spike bar from pivoting down lower than the depth of the tines.



8) Attach the remaining sections of spike bar to the cultivator frame by alternating assembly from side to side. This will keep the harrow centered on the machine. Attach the mounting brackets and arms to the cultivator frame tube then attach the spike bars to the arms. Allow 2" spacing between the ends of the spike bars sections but allow 3" - 4" spacing at the hinge points to allow for wing float clearance.



9) When you are satisfied with the spacing of the spike bars and position of the mounting brackets, tighten all nuts and bolts.

FIELD SETTINGS AND ADJUSTMENTS:

Before attempting to set the levelling attachments it is important to make sure that the cultivator itself is properly adjusted and working level from side to side and front to back at the desired depth. In many cases, levelling problems originally blamed on the harrows were actually caused by improper set up (i.e.: tine pattern), or adjustment (i.e.: levelness) of the cultivator. The harrows cannot be expected to compensate for a cultivator that has not been set up and adjusted properly. Refer to the Field Settings section in the Operating Instructions for the cultivator first, and then adjust the levelling attachments.

The Spike Bar Levelling Harrows have been designed to break lumps, level off high and low spots and groom the surface of the soil before planting. Testing conducted on the 300SB Spike Bar Leveller has demonstrated that in some field conditions a steep working angle on the spike bar and constant spring pressure has improved the breaking ability of the harrow with respect to clods and lumps. Whereas, lowering the angle of the spike bar or angling the spikes, increases the ability of the harrow to drag dirt and level.

However, there may be some trade-off in that the harrow may have a reduced ability to clear residue when set too aggressive in some field conditions. In this case it may be necessary to experiment by changing the spring pressure, or changing the spike or bar angle in order to obtain the desired results for your conditions.

1) The 300SB harrow has the possibility to adjust the depth of the spike bar by loosening the Ubolts and setting the lip of the bar into one of the 5 notches. Lowering the spike bar will also change the working angle of the arm as the spike bar will lay flatter due to the increased arm length and distance from the tip of the spikes to pivot point on the mounting bracket.

Diagram A shows the position of the spike bar as it is lowered to each of the 5 depth settings.



Diagram B shows the effect on the working angle of the arm and how much farther the spring is streatched when the spike bar is lowered.

(Note how the spike bar lays flatter or farther back as the bar is set to a lower notch.)



2) NOTE: When the spike bar is raised or lowered on the adjustment arm, you may also have to check and reposition the spring pressure pins and transport stop pins accordingly in order to maintain spring pressure and road transport clearance.

Diagram A shows the location of the transport pin and spring pin when the spike bar is in the 1st notch.



Diagram B shows how the transport and spring pins are repositioned when the spike bar is in the 5th notch to provide the same transport clearance and spring tension.



3) The point at which the spring pressure becomes "active" is adjusted by changing the location of the upper spring pin. The spike bar and arms can swing back free or under constant spring tension depending on what holes in the spring adjust plates you place the upper pin in. The arms will swing back free until they contact the upper spring pin where the pressure is then applied to the bar.



4) The angle of the spikes can be adjusted from straight to 22.5° or 45° by removing the pivot bolt in the centre of the spike bar and angling the spikes right or left to the first or second hole setting. Line up the holes in the bar and the adjustment plate and secure the spikes at the desired angle with the carriage bolt and locknut.



5) There are many factors that can affect the ability of your new harrow attachment to level the soil surface behind the cultivator. Cultivator tine spacing, type of shares (sweeps vs. goosefoot), cultivating depth, ground speed, direction of travel across the field, soil type and field conditions like moisture content and surface residue levels, all have an affect on the quality and levelness of the seed bed and soil surface. Finding the best setting will therefore require some experimentation. Be prepared to adapt and adjust your equipment and operating practices to obtain the best results for each field condition.

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 rota harrows may cause the cultivator to pull crooked in the field.

Check to make sure that the 2" spacing between the harrow sections has been maintained. It is important to insure that the spike bar 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 to make sure that the 4" spacing between the centre section and wing harrows sections that meet at the wing hinges has been maintained. It is important that the harrow sections will not hit each other should the wing drop below the centre section when working on uneven ground.

Check all nuts and bolts and secure if loose.

Take care when folding the cultivator for transport for the first time after completing the assembly. Check to make sure that the harrows do not interfere with each other or other cultivator frame components when folding and unfolding.

<u>DANGER!</u> NEVER STAND OR WORK IN THE AREA BELOW THE WINGS OR UNDER AN UNSUPPORTED CULTIVATOR FRAME.

- a) ALWAYS USE WING LOCK PINS, AND WHEEL CYLINDER TRANSPORT LOCKS.
- 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.

MAINTENANCE:

- 1) Periodically check all nuts and bolts and secure if loose.
- 2) Regularly check and remove any foreign materials that may become entangled in the harrow sections.
- 3) Periodically check the pivot points for signs of wear. Replace pivot bushings before side play becomes excessive and starts to wear into the fasteners or cause the pivot holes to become worn.
- 4) Check and replace bent, broken or worn out spikes or other wearing parts as required.
- 5) Always check the condition of your field cultivator and levelling attachments at regular intervals and keep them in good repair, Optimal performance cannot be expected of equipment that is allowed to deteriorate into poor condition.

INSTALLATION ON OTHER CULTIVATOR MAKES:

Kongskilde 300SB Harrows are also available in modular sections for adaptation to other tillage machines. An optional OEM Mounting Kit provides for easy installation on most field cultivator makes and models with tubular frames. See your dealer for details or refer to the OEM Mounting Kit Parts Booklet.