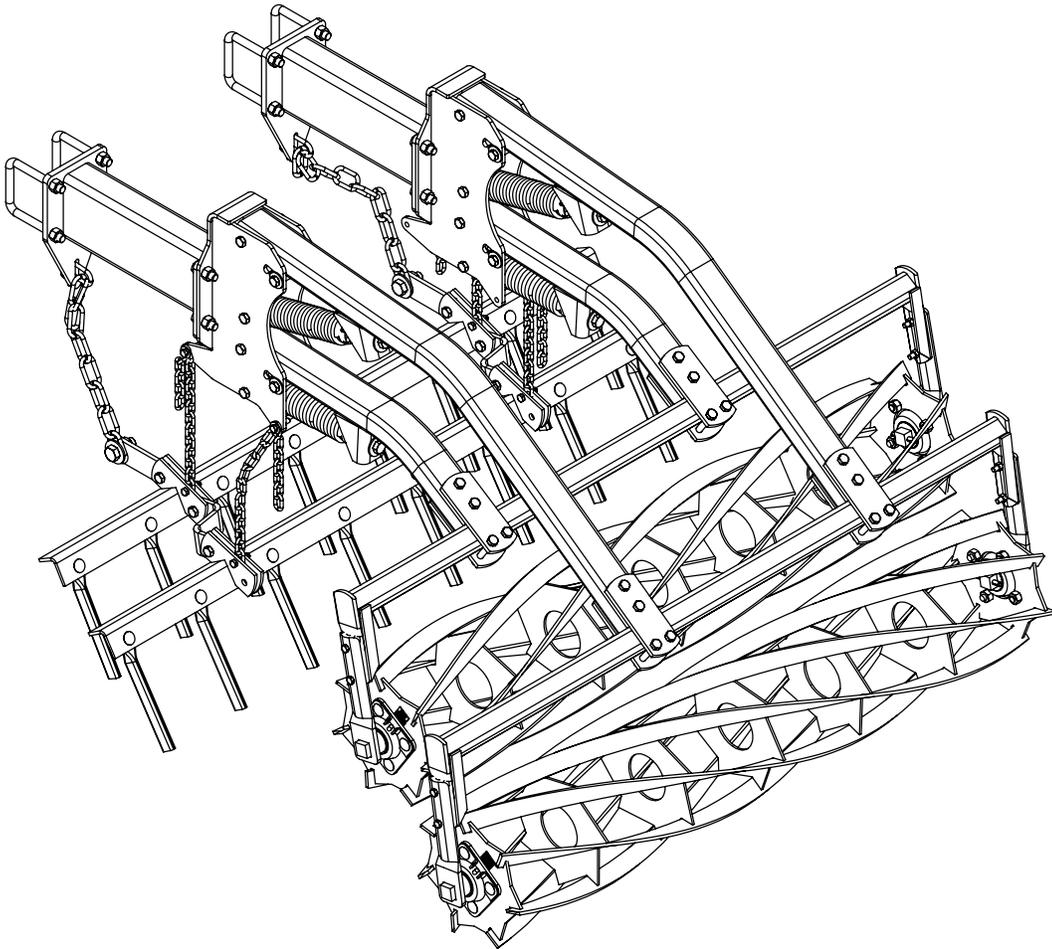


300 DDSS Harrows

Flex Drag & Spiral Rollers

Kongskilde
300 DDSS



*Model may not be exactly as shown.
Kongskilde reserves the right to make changes to product designs and specifications without notice or obligation to rework.
See your local Kongskilde representative for current product specifications and options.

Assembly Instructions
and Operating Guide

760000222 - Revision 4

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Introduction:

Please take the time to carefully read all the instruction booklets provided with your new Kongskilde product. Once you are finished reading do not throw these guides out. Keep them for later review.

The Kongskilde 300 DDSS Harrow has been developed as a leveling attachment for the 8200 Series field cultivators. When properly adjusted the harrow will help to prepare a level surface for planting in various field conditions and soil types.

The 300 DDSS is comprised of an optional 2-Bar Flex Drag-Spike harrow with Double Spiral Bar Rota Harrow to achieve maximum leveling and a superior seed bed.

This booklet has been developed to assist in assembling and operating the 300 DDSS Harrow. Harrow mounting patterns for each cultivator size are provided in a separate booklet.

Pre-Assembly Tips

Prior to assembling the harrows, the cultivator should be carefully unfolded and lowered so the tines are resting on a flat level area.

The 300 DDSS should be assembled in the following stages depending on harrow configuration:

Installation of optional 2-Bar Flex Drag-Spike w/Double Spiral Bar Rota Harrow

1. Position and attach the extension arms to the cultivator.
2. Mount the harrow arms to the extension arms
3. Position and attach the 2-Bar Flex Drag-Spike sections to the arms.
4. Position and mount the Spiral Bar Rota Harrows to the arms.

Installation of Double Spiral Rota Harrow Only

1. Position and attach harrow arms to the cultivator
2. Position and mount the Spiral Bar Rota Harrows to the arms.

Refer to following detailed instructions for each stage.

Harrow Extension Arm Assembly (Optional)

Instructions:

NOTE: Determine whether shallow or steep angle will be used for drag-spikes before positioning extension arms. Refer to assembly supplement section for details.

-Use harrow layout book to position extension arms and attach extensions to rear of cultivator frame with u-bolts.

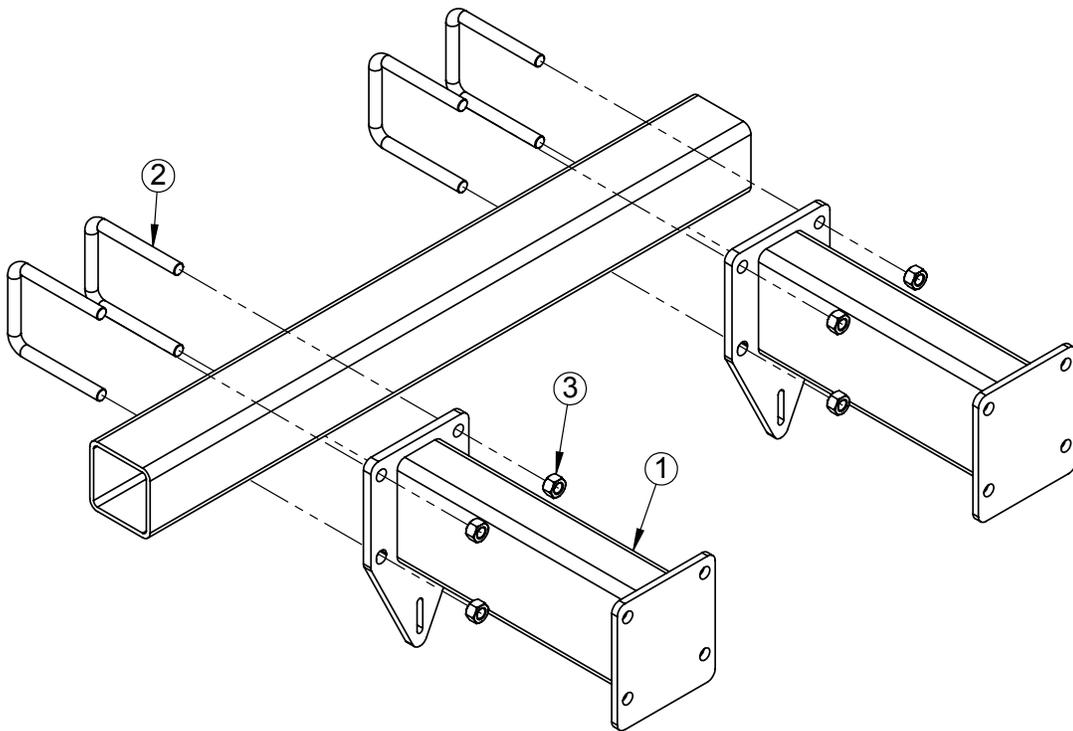
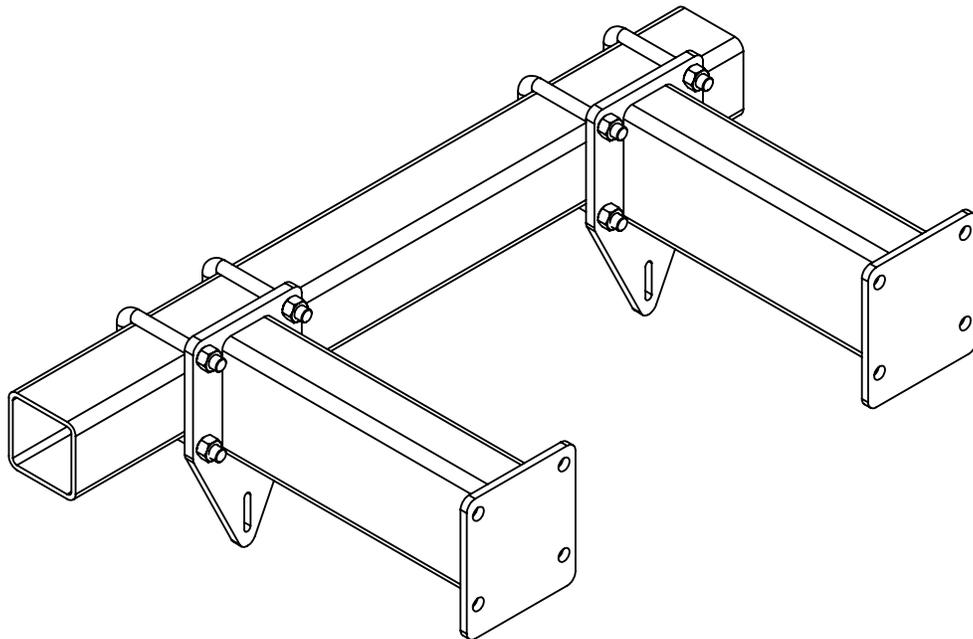


Fig.	Part no.	Qty	Description
1	760052000	2	Harrow Extension Wdmt
2	600373058	4	U-Bolt 5/8" X 4" X 5 1/2"
3	600366031	8	Stover Locknut Type C - 5/8" UNC



Harrow Arm Assembly

Instructions:

- If using 2-Bar Flex Drag-Spike option, mount the pre-assembled harrow arms to the extensions using the hardware listed on the next page.
- If not using 2-Bar Flex Drag-Spike option, mount the pre-assembled harrow arms directly to the cultivator using the u-bolts listed on the previous page.

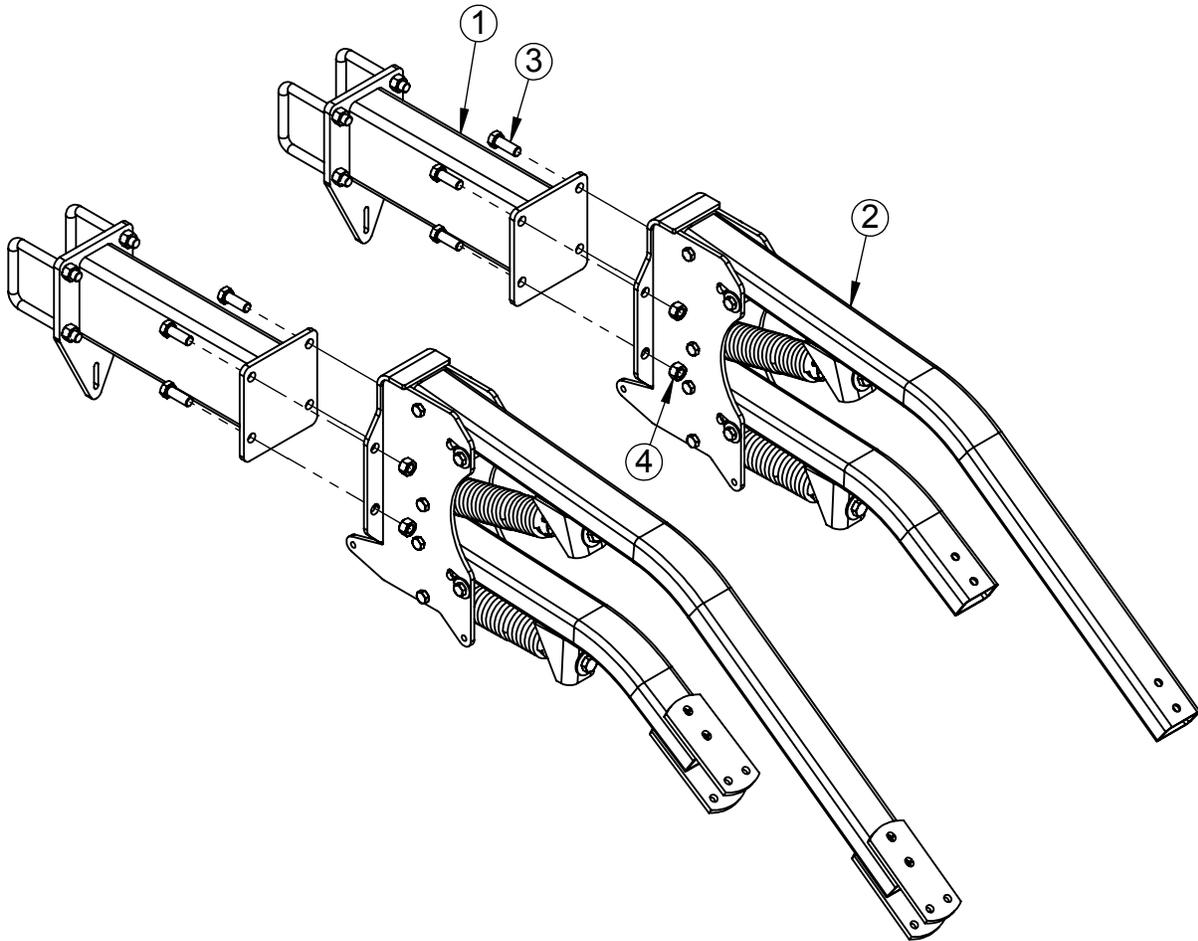
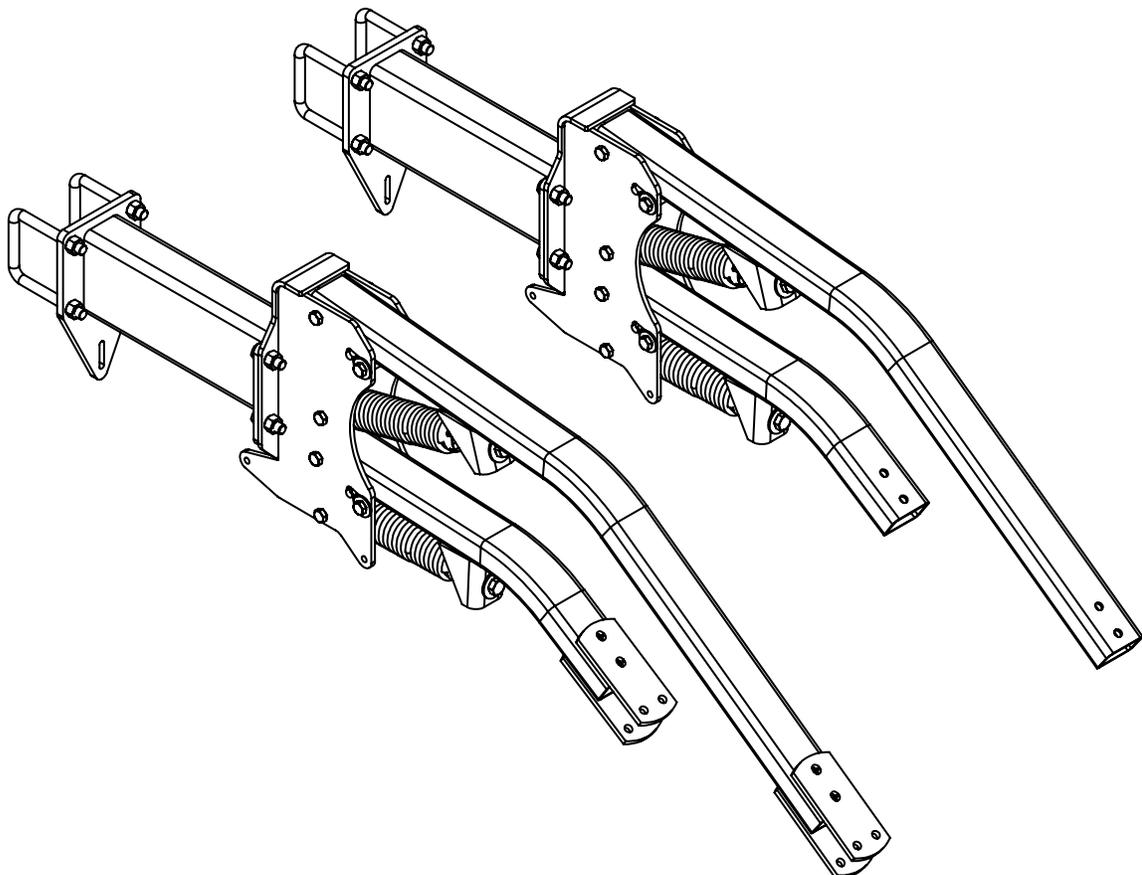


Fig.	Part no.	Qty	Description
1	760052000	2	Harrow Extension Wdmt (Optional)
2	760053012	2	300 SS Harrow Arm Assembly
3	600356023	8	Bolt 5/8" x 1-3/4" Gr. 5
4	600366031	8	Stover Locknut Type C - 5/8" UNC



Harrow Arm Part Details

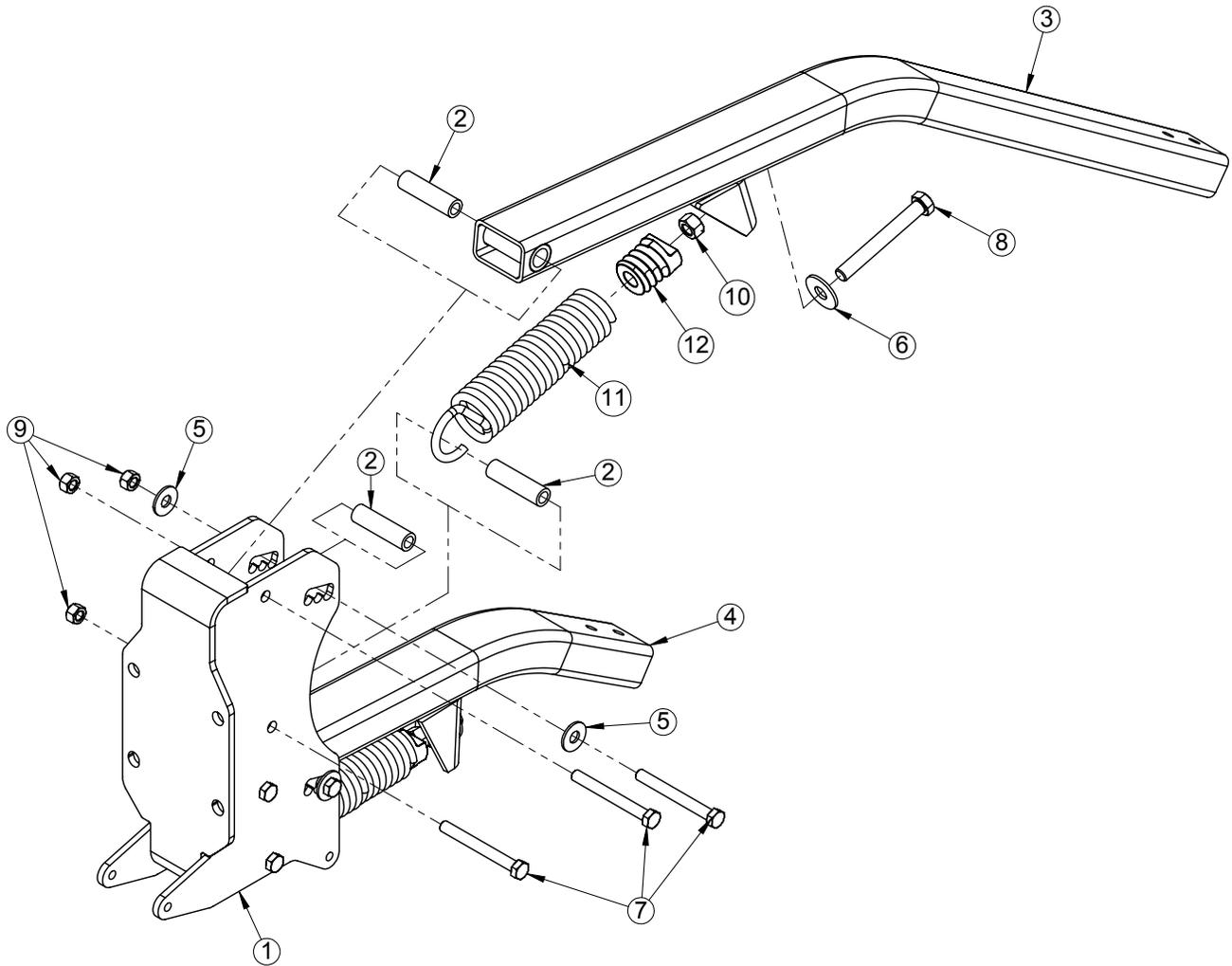
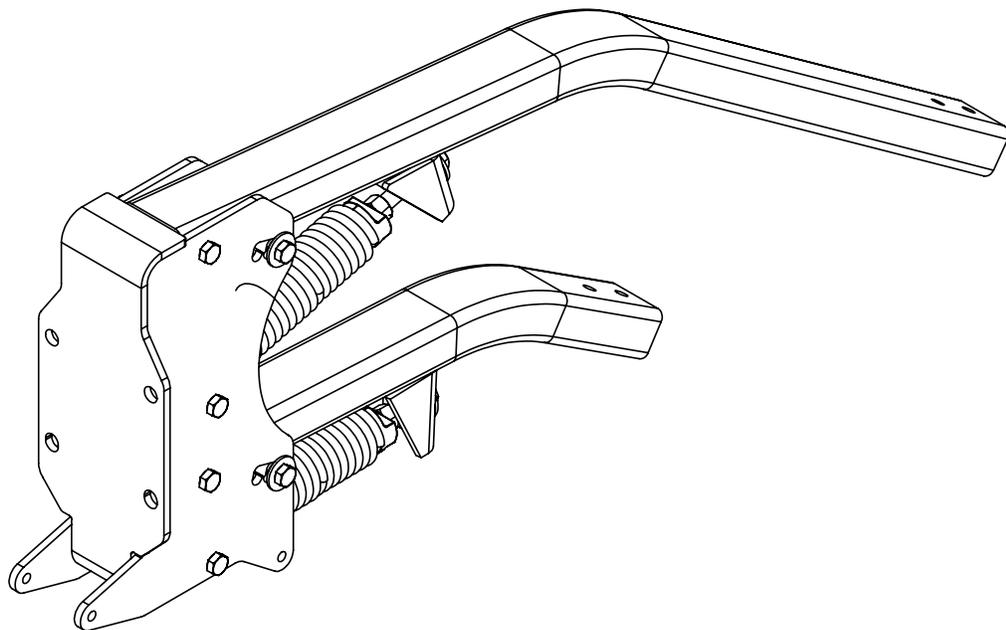


Fig.	Part no.	Qty	Description
1	760052004	1	Harrow Roller Bracket Weldment
2	603150180	6	Wear Bushing
3	603150188	1	Intermediate Arm Weldment
4	603150187	1	Short Arm Weldment
5	600381050	4	Flat Washer 1/2"
6	600381020	2	Flat Washer 5/8"
7	600356030	6	Bolt 1/2" x 4-1/2" Gr. 5
8	600373072	2	Bolt 5/8" x 5" Full Thread
9	600366030	6	Stover Locknut Type C - 1/2" - UNC
10	600365014	2	Standard Nut 5/8" Plated
11	603150017	2	Spring
12	603150018	2	Spring Insert



2-Bar Flex Drag-Spike Assembly (Optional)

Instructions:

-Position drag-spike assemblies behind machine according to layout manual and attach to arms with hardware and chains provided. With cultivator tines resting on ground, chains should be positioned to allow spikes to rest on ground so that when cultivator is raised, spikes will be even with/just below tines. Hanger chains should be mounted to the side of the arm closest to chain mounting on drag section.

NOTE: Drag-spike assemblies are designed with offset brackets which can be reversed to allow a steep or shallow working angle. Please refer to assembly supplement section for details.

Initial Settings

Pull Chain

-Use 7 Links

Front Hanger Chain

-Use 12 Links

Rear Hanger Chain

-Use 10 Links

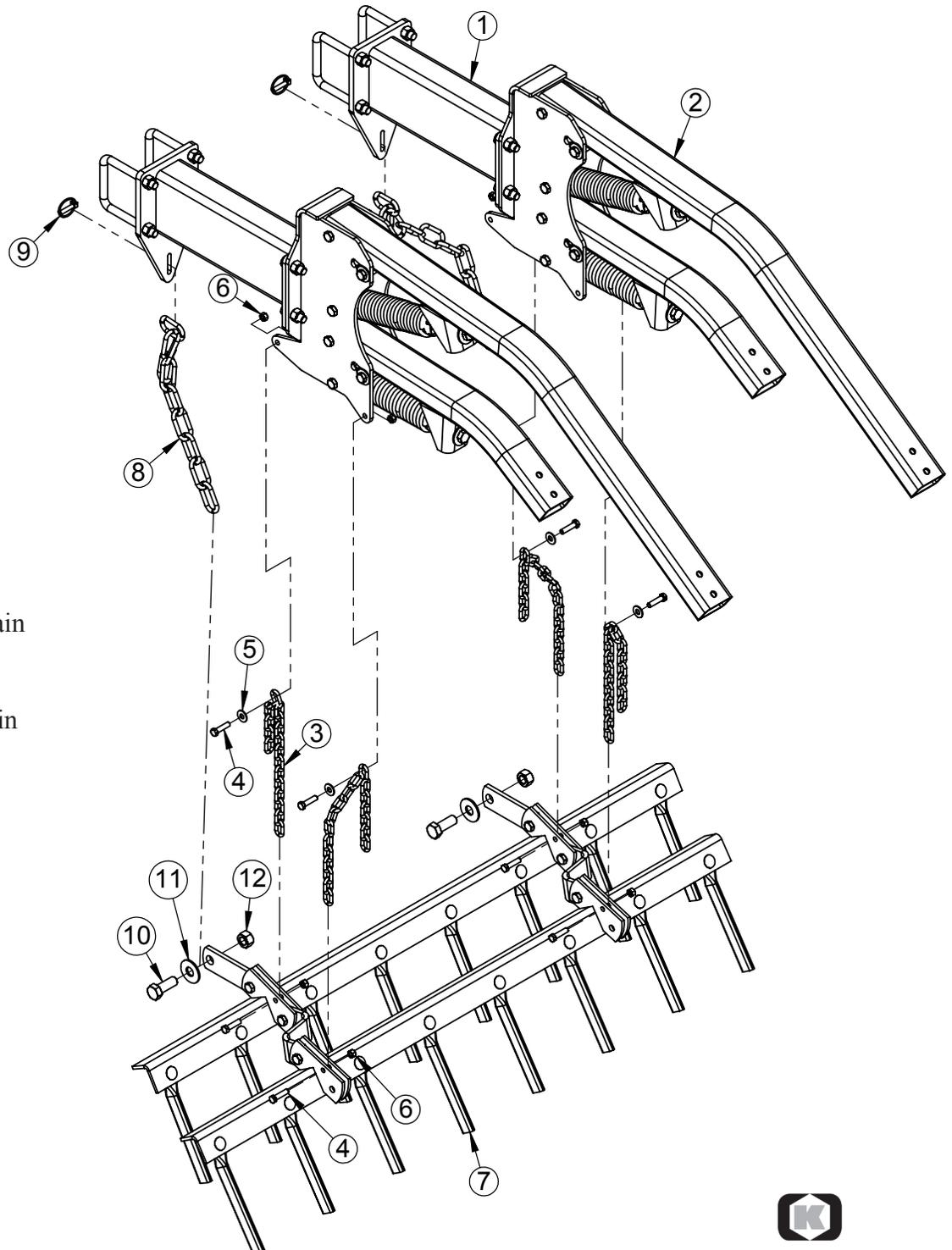
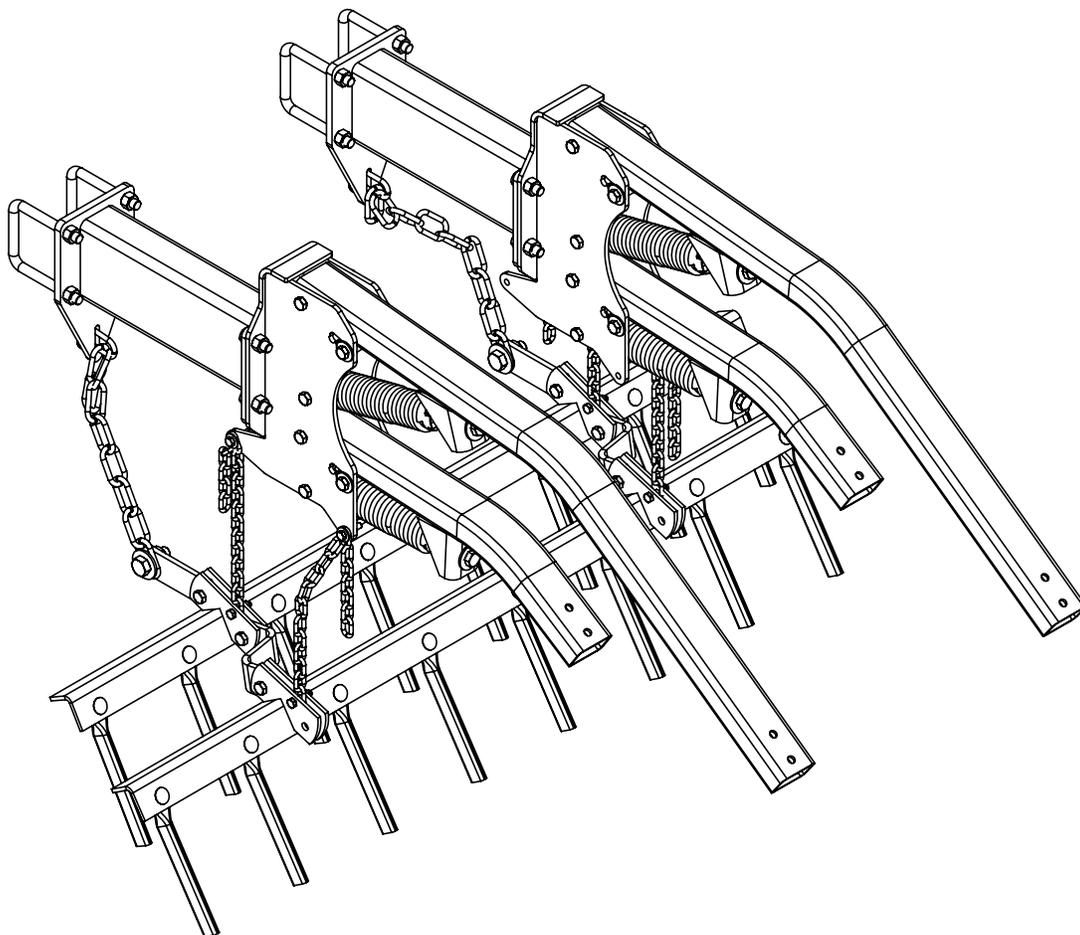


Fig.	Part no.	Qty	Description
1	760052000	2	Harrow Extension Wdmt
2	760053000	2	300 SS Harrow Arm Assembly
3	602060140	4	Hanger Chain
4	600356115	8	Bolt 3/8" x 1-1/2" Gr. 5
5	600381006	4	Flat Washer 3/8"
6	600366028	8	Stover Locknut Type C - 3/8" UNC
7	760053008	1	2 Bar Harrow Drag Assembly, 1500 (8 Spike)
	760053004	-	2 Bar Harrow Drag Assembly, 700 (4 Spike)
	760053005	-	2 Bar Harrow Drag Assembly, 900 (5 Spike)
	760053006	-	2 Bar Harrow Drag Assembly, 1100 (6 Spike)
	760053007	-	2 Bar Harrow Drag Assembly, 1300 (7 Spike)
	760053009	-	2 Bar Harrow Drag Assembly, 1700 (9 Spike)
	760053010	-	2 Bar Harrow Drag Assembly, 1900 (10 Spike)
8	602060197	2	Draw Chain 10 Link
9	100333014	2	Lynch Pin LSF 8mm x 40
10	600356145	2	Bolt 3/4" x 2" Gr. 5
11	600381009	2	Flat Washer 3/4"
12	600366024	2	Stover Locknut Type C - 3/4" UNC



2-Bar Flex Drag-Spike Part Details

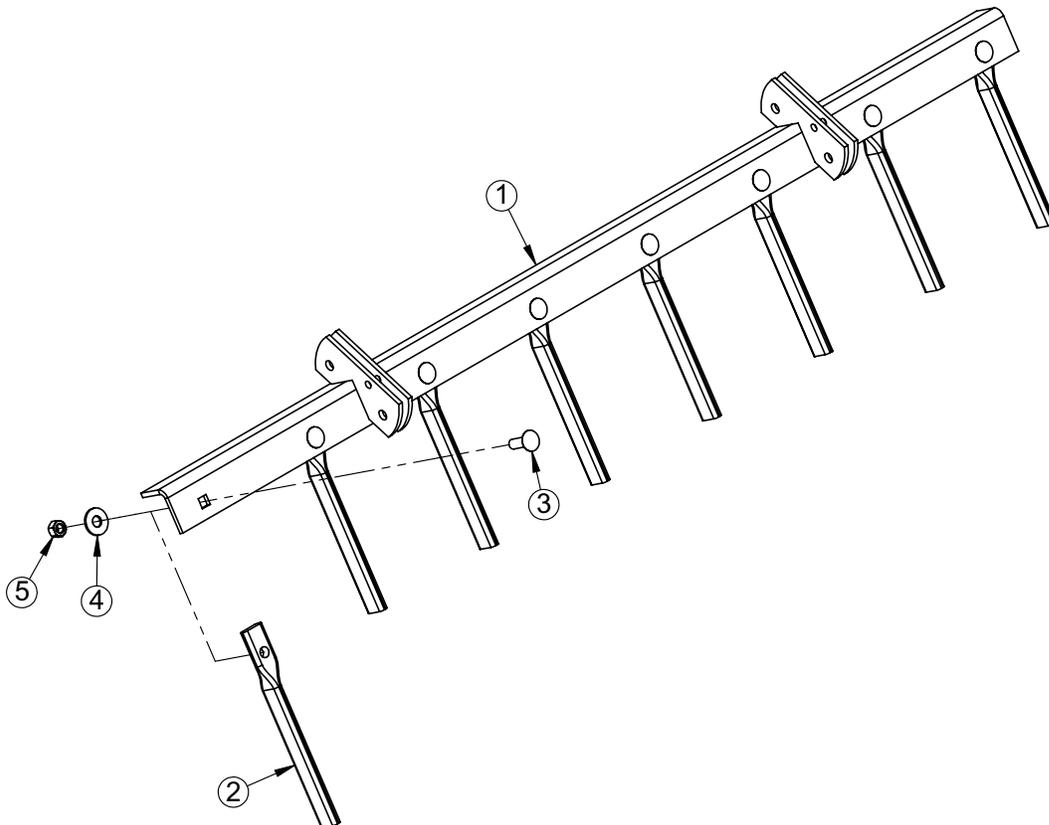
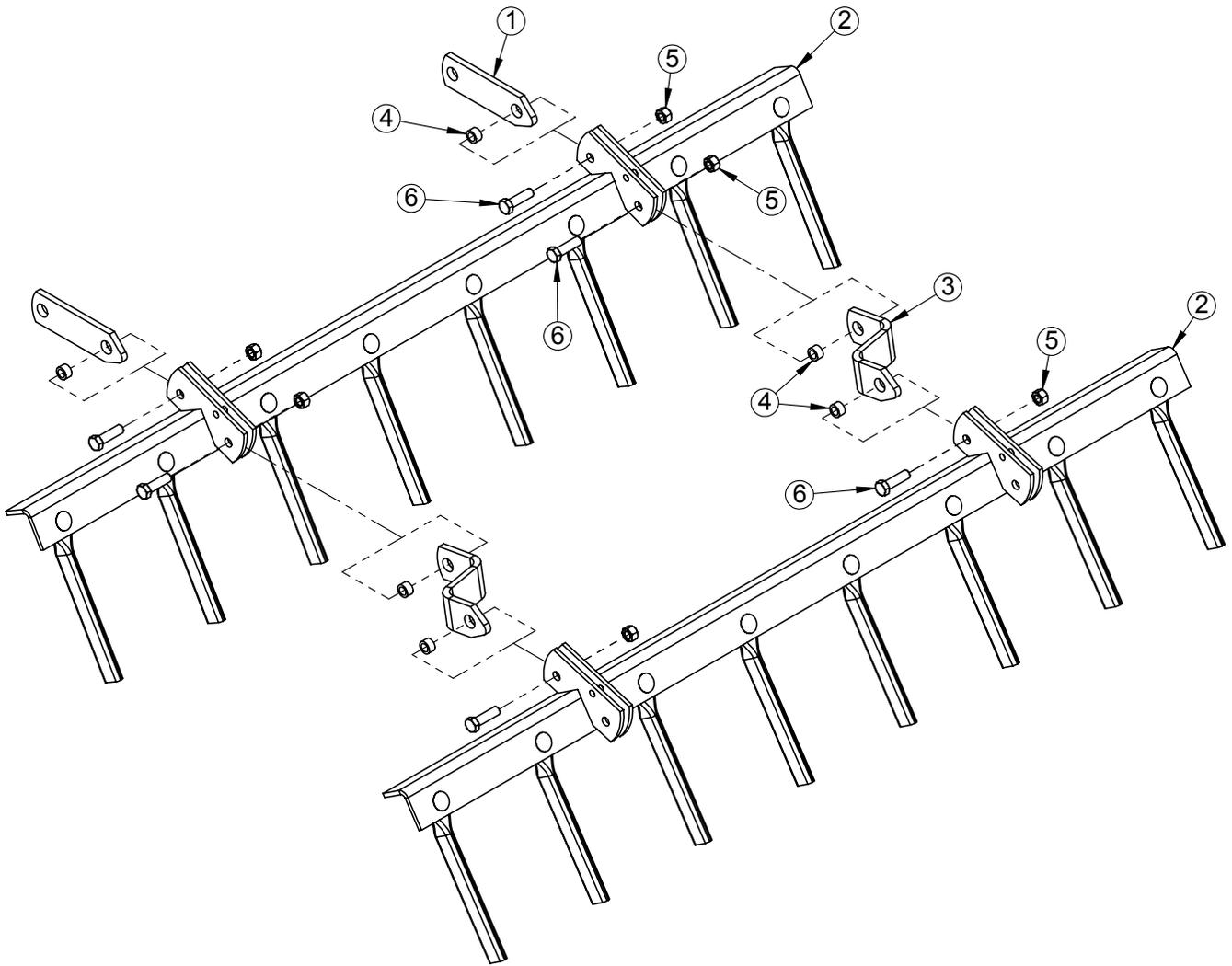
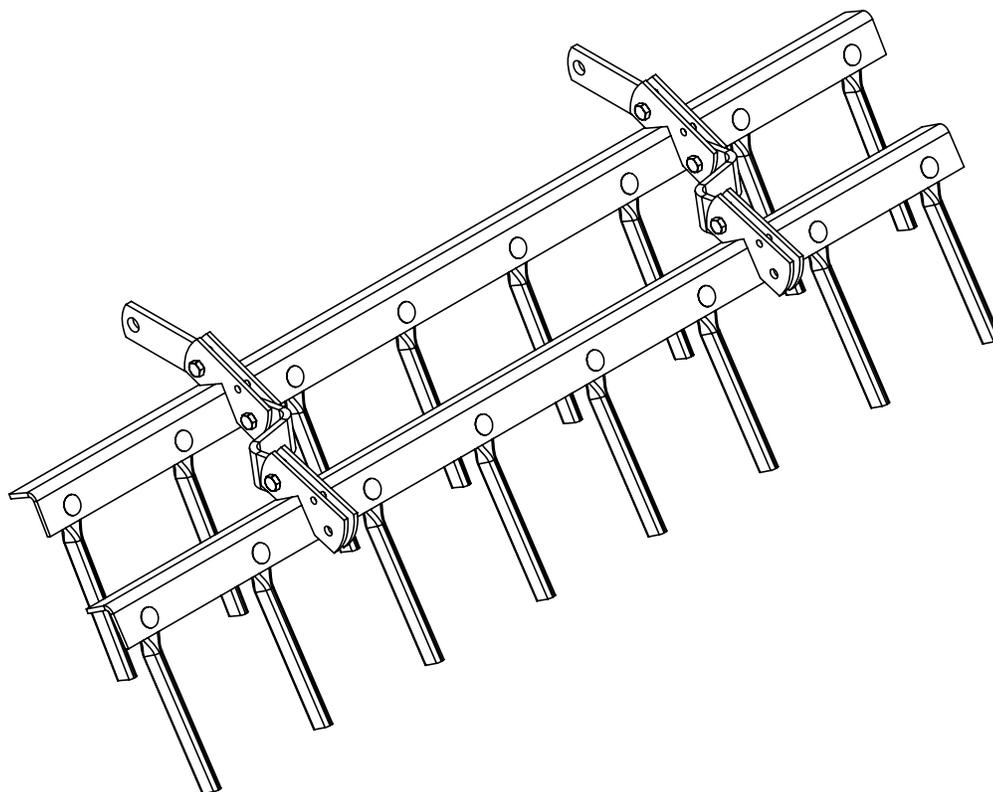


Fig.	Part no.	Qty	Description
1	602060114	2	Straight Joiner Link
2	602060137	2	1500 Harrow Bar Assembly 8 Spike
	602060134	-	700 Harrow Bar Assembly 4 Spike
	760053001	-	900 Harrow Bar Assembly 5 Spike
	602060135	-	1100 Harrow Bar Assembly 6 Spike
	602060136	-	1300 Harrow Bar Assembly 7 Spike
	760053002	-	1700 Harrow Bar Assembly 9 Spike
	602060138	-	1900 Harrow Bar Assembly 10 Spike
3	760051005	2	2-Bar Drag 100 Right Offset Link
4	602060112	6	Bushing
5	600366030	6	Stover Locknut Type C - 1/2" - UNC
6	600356139	6	Bolt 1/2" x 1-3/4" Gr. 5
1	602060104	1	1500 Harrow Bar Weldment
	602060101	-	700 Harrow Bar Weldment
	760052002	-	900 Harrow Bar Weldment
	602060102	-	1100 Harrow Bar Weldment
	602060103	-	1300 Harrow Bar Weldment
	760052003	-	1700 Harrow Bar Weldment
	602060105	-	1900 Harrow Bar Weldment
2	102060100		1 Hole Spike Tine
3	600361036		Carriage Bolt 1/2" x 1-1/2"
4	600381050		Flat Washer 1/2"
5	600366030		Stover Locknut Type C - 1/2" - UNC



Roller Assembly

Instructions:

- Position and mount correct frames and Spiral Bar Rota-Harrow widths to harrow arms according to harrow layout manual. Bearing arms on rollers should be mounted to outside of frame ears.
- Left rollers are always mounted in front of the right rollers.

IMPORTANT: Rollers are bidirectional. Please see assembly supplement section for correct mounting.

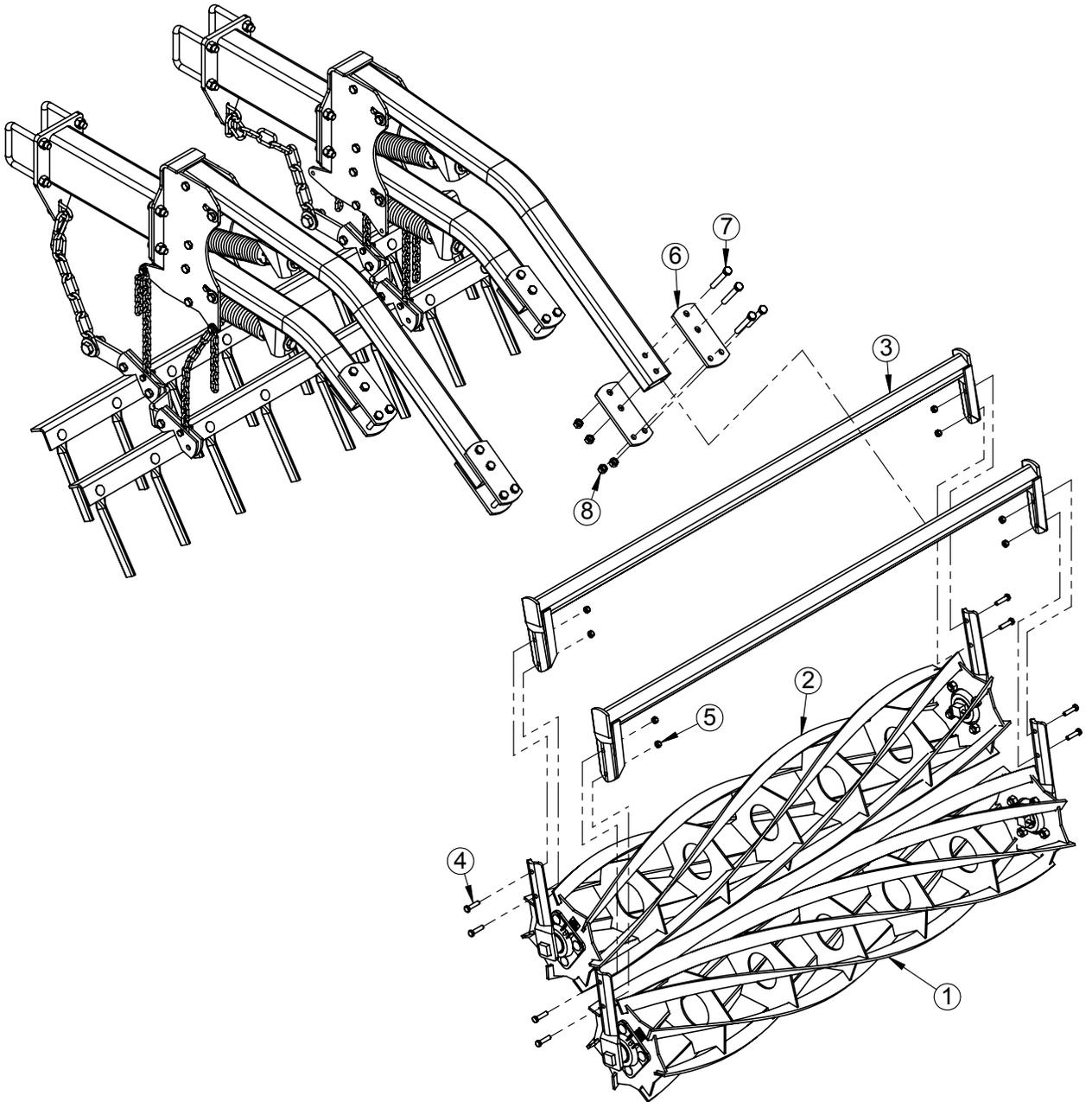
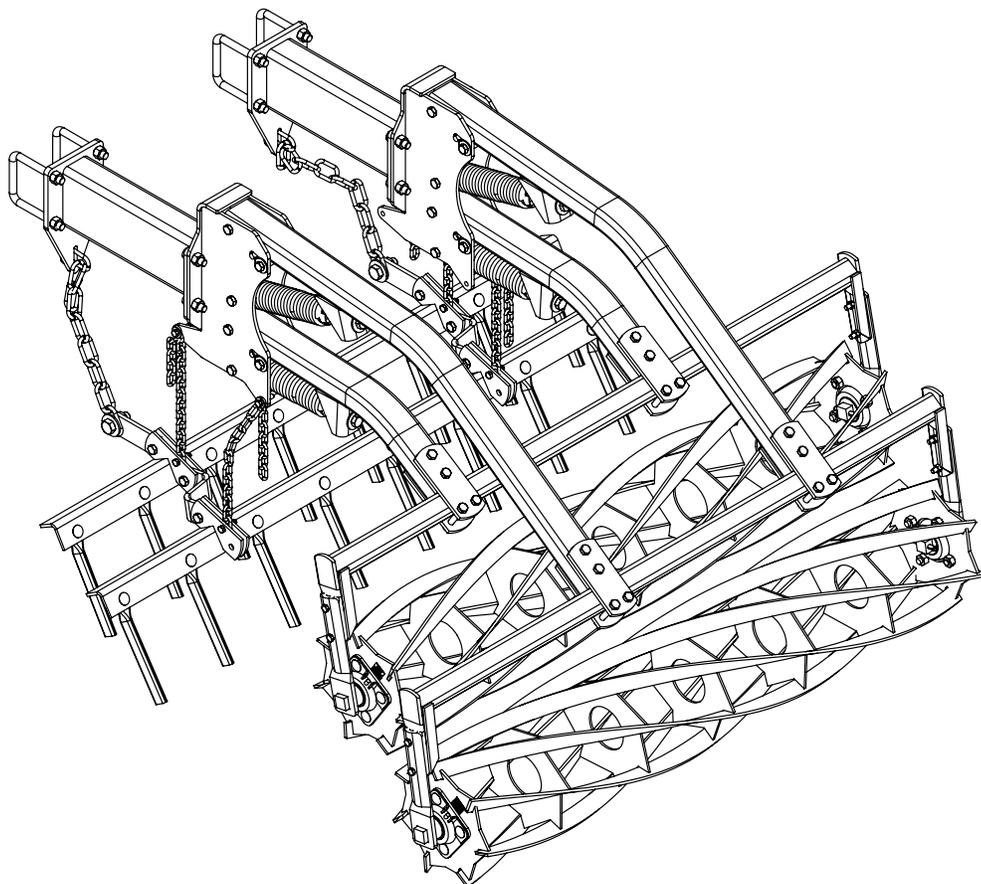


Fig.	Part no.	Qty	Description
1	603151284	1	Roller Assembly 63" Right - Shaftless
	603151278	-	Roller Assembly 32" Right - Shaftless
	603151280	-	Roller Assembly 47" Right - Shaftless
	603151282	-	Roller Assembly 55" Right - Shaftless
	603151286	-	Roller Assembly 71" Right - Shaftless
2	603151285	1	Roller Assembly 63" Left - Shaftless
	603151279	-	Roller Assembly 32" Left - Shaftless
	603151281	-	Roller Assembly 47" Left - Shaftless
	603151283	-	Roller Assembly 55" Left - Shaftless
	603151287	-	Roller Assembly 71" Left - Shaftless
3	603150198	2	63" Roller Frame
	603150195	-	32" Roller Frame
	603150196	-	47" Roller Frame
	603150197	-	55" Roller Frame
	603150199	-	71" Roller Frame
4	600355002	8	Bolt 3/8" x 1-1/2" Gr. 8 Plated
5	600366028	8	Stover Locknut Type C - 3/8" UNC
6	603150191	8	Roller Frame Mounting Plate
7	600356137	16	Bolt 1/2" x 3-1/2" Gr. 5
8	600366030	16	Stover Locknut Type C - 1/2" UNC



Roller Part Details

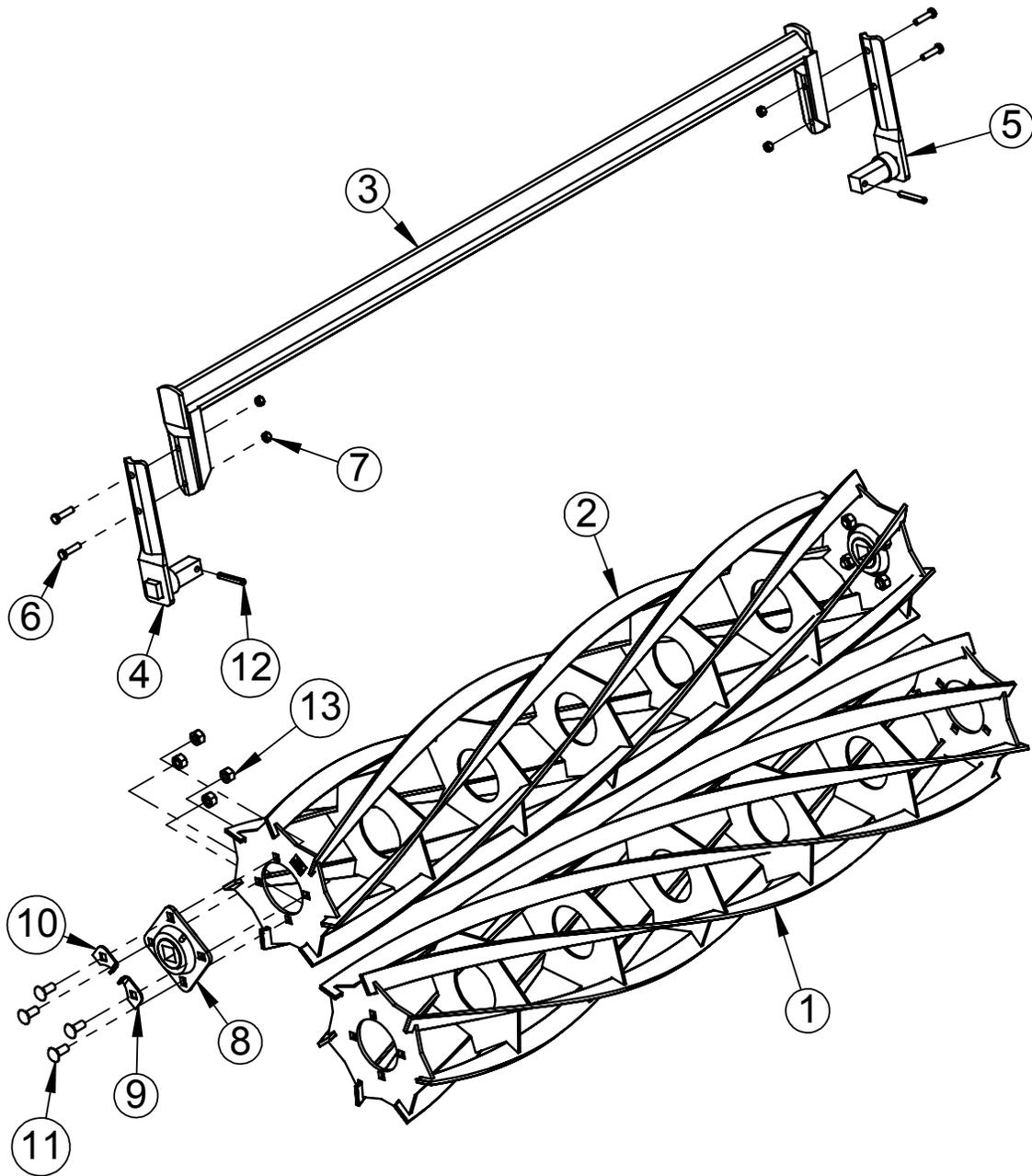
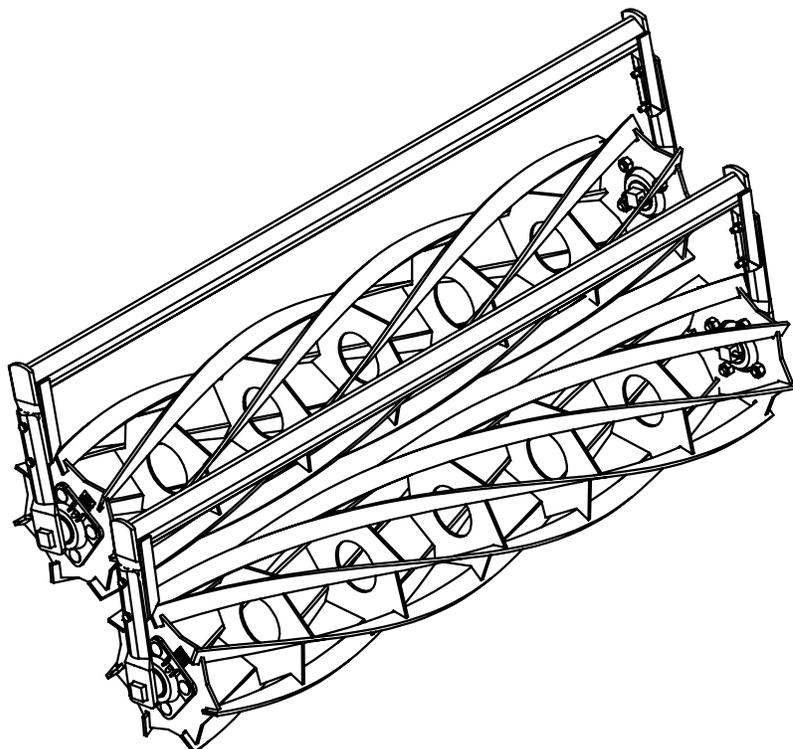
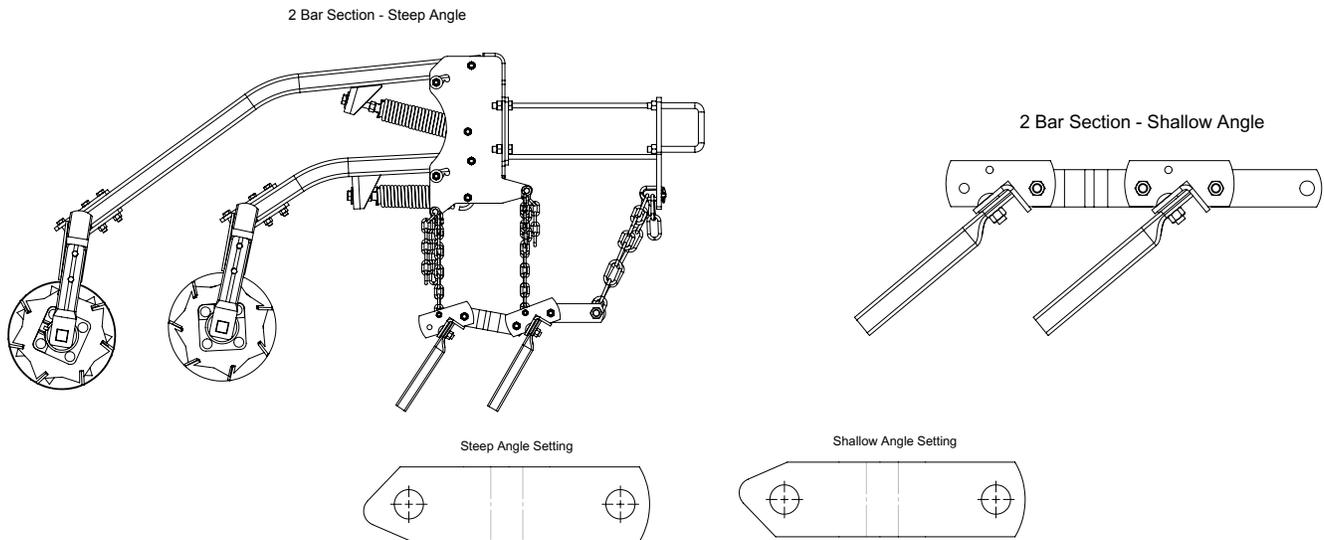


Fig.	Part no.	Qty	Description
1	603151273	1	63" Right Shaftless Roller Weldment
	603151253	-	32" Right Shaftless Roller Weldment
	603151257	-	47" Right Shaftless Roller Weldment
	603151271	-	55" Right Shaftless Roller Weldment
	603151275	-	71" Right Shaftless Roller Weldment
2	603151274	1	63" Left Shaftless Roller Weldment
	603151254	-	32" Left Shaftless Roller Weldment
	603151258	-	47" Left Shaftless Roller Weldment
	603151272	-	55" Left Shaftless Roller Weldment
	603151276	-	71" Left Shaftless Roller Weldment
3	603150198	2	63" Frame
	603150195	-	32" Roller Frame
	603150196	-	47" Roller Frame
	603150197	-	55" Roller Frame
	603150199	-	71" Roller Frame
4	603151262	2	Roller Harrow Bearing Arm Left
5	603151270	2	Roller Harrow Bearing Arm Right
6	600355002	8	Bolt 3/8" x 1-1/2" Gr. 8, Plated
7	600366028	8	Stover Locknut Type C - 3/8" - UNC
8	600451006	4	Harrow Bearing 1-1/8" Square (FD209)
9	603151241	4	Roller Bearing Shield Right
10	603151240	4	Roller Bearing Shield Left
11	600361034	16	Carriage Bolt 1/2" x 1-1/4"
12	600383013	4	Roll Pin 3/8" 2-1/2"



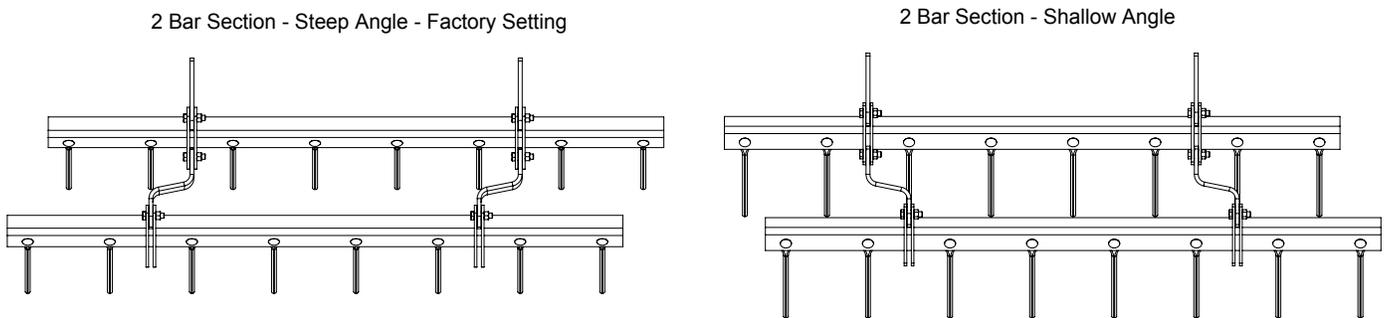
Assembly Supplement: Working Angle of 2-Bar Drag Harrow

As an added feature, the straight and offset joiner links of the 2 bar drag sections have 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 leveling in heavy residue or lighter soils, or set at a steeper angle of about 45° for breaking clods and lumps in heavier soils. The harrows come pre-assembled from the factory on the steep angle setting. However, If you want to change to the shallow angle setting you must flip the offset brackets over on all sections before starting the assembly, as all sections must be set the same way. See Diagrams & Notes below.



NOTE 1: Depending on the setting chosen, the links may be flipped over and offset in the opposite direction to the diagrams shown in the harrow layout booklets.

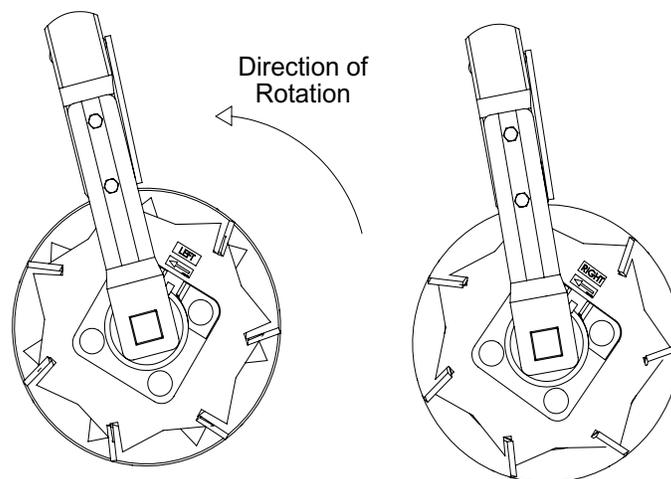
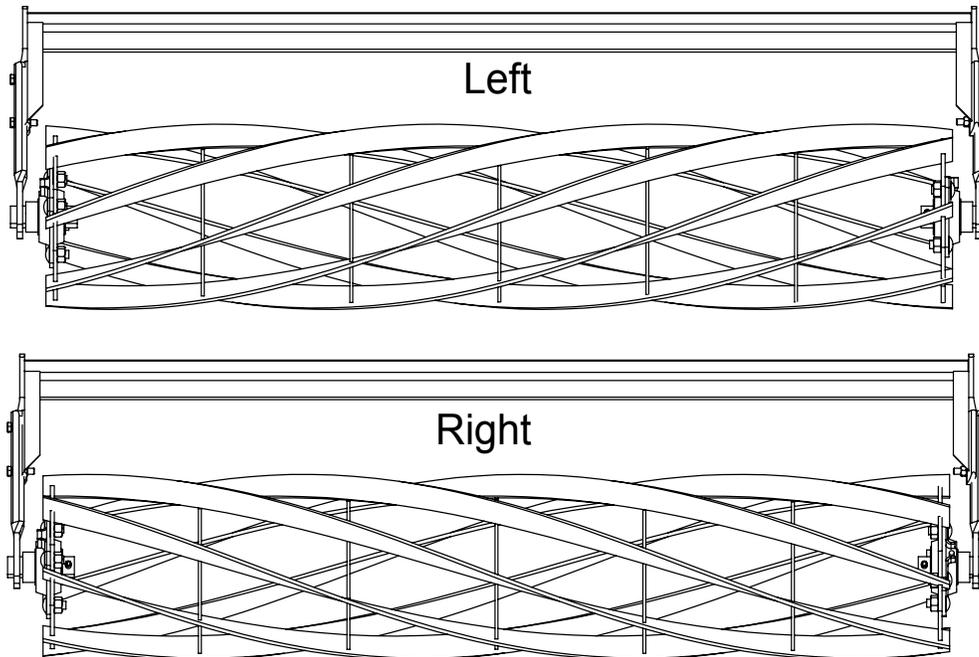
NOTE 2: All offset brackets must be assembled to work at the same angle; either shallow or steep. All spike bars must work at the same angle to allow for proper spacing between the spikes.



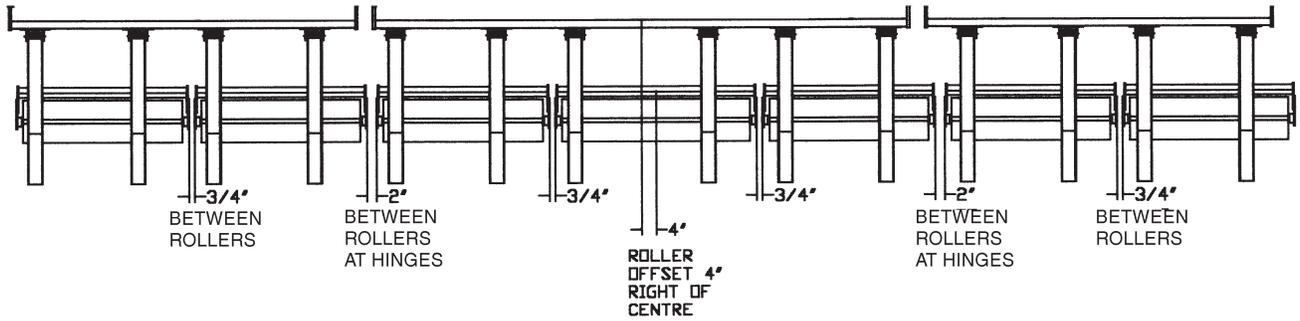
IMPORTANT: If using the shallow angle setting, left and right side harrow arm dimensions in harrow layout manual must be switched: dimension on the right side, used for the left and dimension on the left side used for the right.

Assembly Supplement: Rollers

When assembling the 300 DDSS Harrows it is important to note that there are left and right hand rollers. These are identified by a decal on the roller assemblies. If the decal is missing the rollers can be identified by looking at them from the end. The left rollers have the spiral bar turning to the left and the right roller spiral bars turn to the right. Mount the rollers to the roller frames with the 3/8" x 1-1/2" bolts and locknuts provided. The gusset on the frames should be on top with the bearing arms mounted to the outside of the frames. See diagram below.

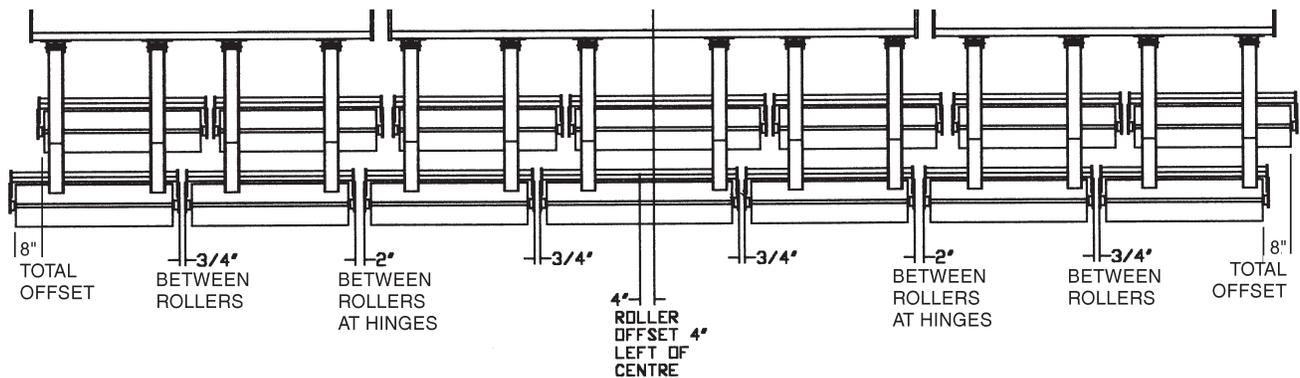


Start assembling the rollers with the front, middle roller in the center section and work out in both directions to the wings. Shift the center roller to the right so that it is 4" right of center and tighten to roller frame. See sample diagram below.



Attach rollers with $3/4"$ gap between adjacent rollers except where frame hinges leave about a $2"$ gap as shown above.

Assemble rear row of rollers (right hand) starting with the center roller. Rear center roller should be shifted $4"$ to the left of center and tightened to roller frame. See sample diagram below.



Assembly Completion:

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 centered you will have to shift the harrow sections as required. Improper centering of the rollers 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 folding the cultivator for transport for the first time after completing the assembly. Check to make sure that the harrows do not interfere with other cultivator frame components when folding and unfolding.



DANGER! 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.

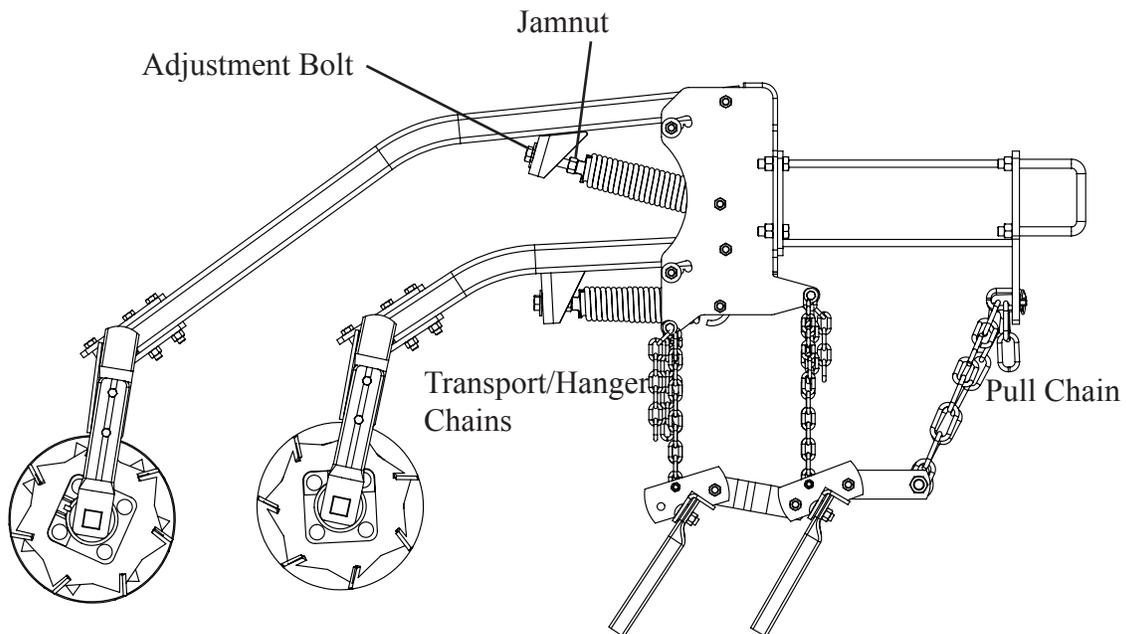
Field Adjustments and Settings:

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 D).

B) The transport chains may be shortened to reduce the working depth of the harrow. This will also 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.

Some experimentation with the settings A and B above, will be required to obtain the best results for your field conditions.

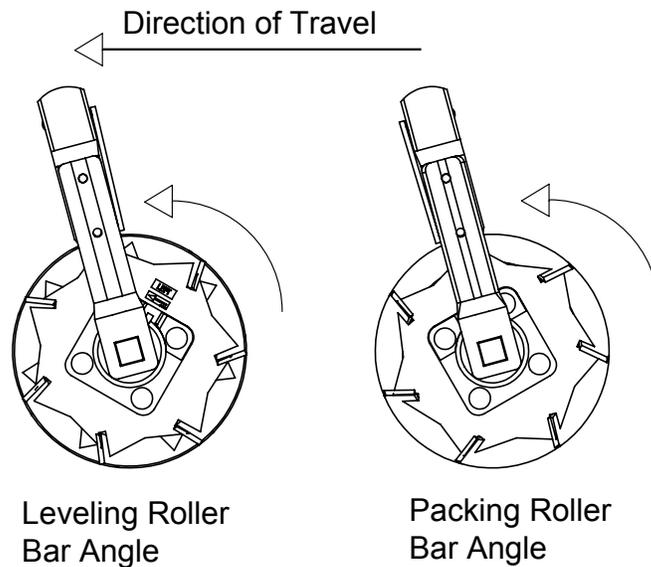
C) The down pressure on the rollers can be increased or decreased by loosening the jamnut and turning the spring adjustment bolt with a socket wrench. Tighten adjustment bolt to increase down pressure. Adjust the down pressure on the rollers as required to firm the soil, break lumps and obtain an even granular soil surface. Secure the jamnut to prevent the adjustment bolt from working loose.



D) NOTE: There are many factors that can affect the ability of the harrows to level or even out 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.

E) Spiral bar rollers can be run as a leveling and crumbling roller, or as a packing and firming roller. When assembled in the frames as described earlier in this manual, the rollers are set up to run as a leveling and crumbling roller.

To set as a packing and firming roller, the roller frames can be turned end for end without detaching the rollers from the roller frames. This will alter the angle at which the spiral bars enter the soil and hence act as a packing roller. See diagram below



Maintenance:

- A) Periodically check all nuts and bolts and secure if loose.
- B) Lubricate the roller bearings after every 12 hours of operation. **DO NOT OVER GREASE THE ROLLER BEARING:** Over greasing may cause damage to the bearing seals.
- C) Periodically check and remove any foreign material that may become tangled in the harrow sections or wound around the rollers or bearings. Remove any objects (ie: stones) that have become trapped in the rollers.
- D) Always check the condition of your field cultivator and leveling attachments at regular intervals and keep in good repair. Optimal performance cannot be expected of equipment in poor condition.

