



FIELDMASTER

'94

ACTIVE HARROW

Assembly-Operator Parts Manual

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Warranty Claim

High-Line Mfg. Inc. warrants its products to the original owner for a period of two years from date of purchase, subject to the following.

- 1st year Parts & Labour
- 2nd year Parts Only

- All matters related with the warranty of products must be handled through an authorized High-Line Manufacturing dealer.
- Any labour subject to warranty must be authorized by a High-Line Mfg. Inc. Representative, before work is started.
- Machines used for rental, custom work, industrial or construction use will be warranted for a period of 30 days from date of purchase. (Parts and Labour)
- Warranty will be void if any component of this machine is altered or modified in any way, unless written permission is given by High-Line Mfg. Inc.
- High-Line Mfg. Inc. will not assume any responsibility for whatever damage may occur to equipment to which this machine may be attached.
- Warranty terms and conditions are subject to provincial and state legislation.

IMPORTANT

Please read entire manual before you assemble your Active Harrows

1. Presidents Message

This operator manual has been prepared to provide information necessary for the safe and efficient operation of your Active Harrows. In it you will find assembly instructions and detailed parts diagrams.

If you should find that you require information not covered in this manual, feel free to consult us or your local dealer.

Should the need arise, this manual will assist you in acquiring replacement parts. Should your dealer not have the parts you require in stock, he will be happy to order them for you.

The Field Master Active Harrow was designed to work in the heaviest of stubble without plugging. A little time and effort spent in proper maintenance will increase the performance and durability of your Active Harrows.

In order to maintain high standard, changes or improvements are made from time to time. High-Line Manufacturing Inc. reserves the right to make those changes and add improvements when practical to do so without incurring any obligation to make such changes and improvements on machines sold previously.

High-Line Manufacturing Inc. thanks and congratulates you for selecting the Field Master Active Harrows as the Harrow of your choice

Raymond Bussiere
President



P.O. Box 307, Honda, Saskatchewan, S0K 4N0
Phone 1-800-665-2010 Fax (306) 258-2010

2. Description of Active Harrows Parts

2.1 Working Characteristics

What makes this harrow so revolutionary? Its rotating steel spikes! The harrowing action of these spikes allow the Active Harrow to perform tasks that are not possible with diamond or tine harrows.

Unlike conventional harrows, the Active Harrow's rotating spikes prevent straw from dragging allowing this harrow to be used in the heaviest of stubble without plugging.

The Active Harrow's rotating spikes deposit straw and weeds on the surface shielding your topsoil from wind erosion, moisture loss and ensuring that straw and weeds don't compete with your crop for valuable nitrogen.

The Active Harrow's design does not create furrows but a smooth field surface. This method not only reduces run-off but causes less topsoil to be exposed to the elements.

Designed for maximum performance under the most demanding conditions. The Active Harrow is constructed with 7/8" stress-proof steel spikes welded onto a heavy 8" pipe and supported by 1-1/4" self-aligning steel bearings.

Before mounting your new Active Harrows it is important to identify all parts and know the terminology used to name the parts. The following section describes each part of the Active Harrow assembly.

2.2 Left & Right Active Harrow

Assembly of the Active Harrows can be confusing if the right and left harrows are not clearly identified. To recognize which are the left and right harrow, a person must look at the leading edge of the harrow. The leading edge is the side of the harrow which penetrates the soil first. This side has small triangular gussets on the first two rows of teeth and the teeth are angled greater than 90 degrees. Figures 1 and 2 show the leading edge of an Active Harrow.

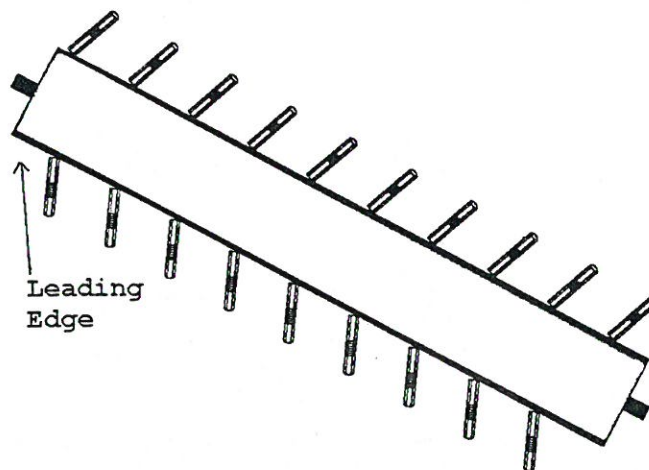


Figure 1. Active Harrow Leading Edge

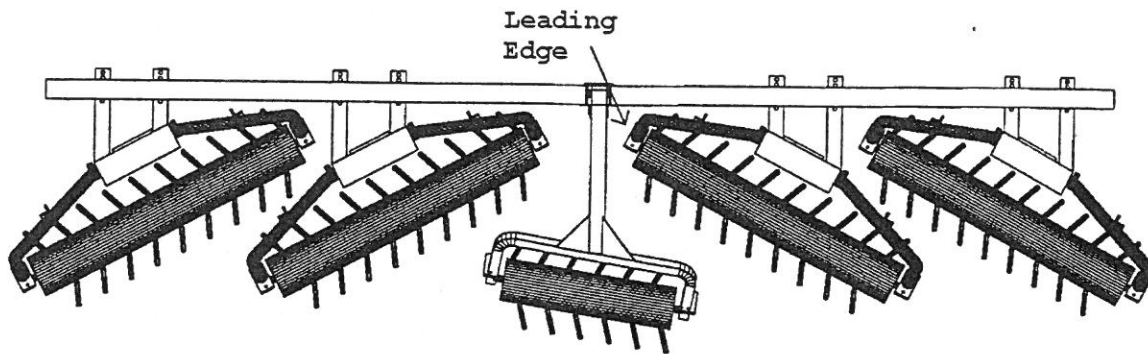


Figure 2. Active Harrow Leading Edge from Cultivator View

When looking directly into the leading edge, you will be able to identify the left and right active harrow by the direction of teeth on the top (Figure 3). When the teeth are slanted left, it is a left harrow and when slanted right, a right harrow.

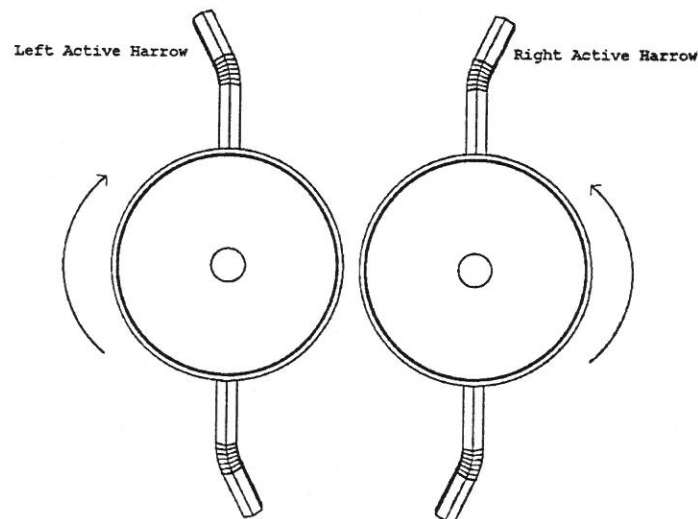


Figure 3. Left & Right Active Harrow

2.3 Working Length

This manual refers to Active Harrows being available in four lengths, 2ft, 4ft, 5ft and 6ft. When measured from end plate to end plate the lengths will be longer however the referenced length refers to working width. Since the Active Harrow works at an angle, it covers less distance than its overall length. Figure 4 shows the difference between the actual and working widths. Table 1 shows the actual width compared to the working width.

Table 1. Actual & Working Widths

Actual	Working
59-3/4"	48"
83-3/4"	72"
71-3/4"	60"

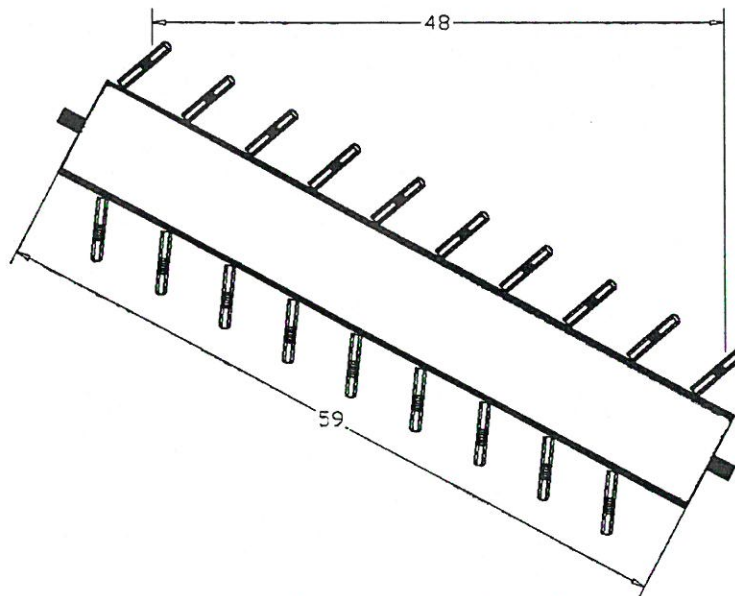


Figure 4. Actual & Working Widths

2.4 Overbrace

The overbrace mounts directly to the Active Harrow drum along with the bearings. There are four different lengths to match the four different lengths of Active Harrows. An overbrace may be mounted on either a right or left Active Harrow. A four foot overbrace is shown in Figure 5. The two foot overbrace shown in Figure 6 is different because it mounts in the centre of the cultivator between the left and right Active Harrows.

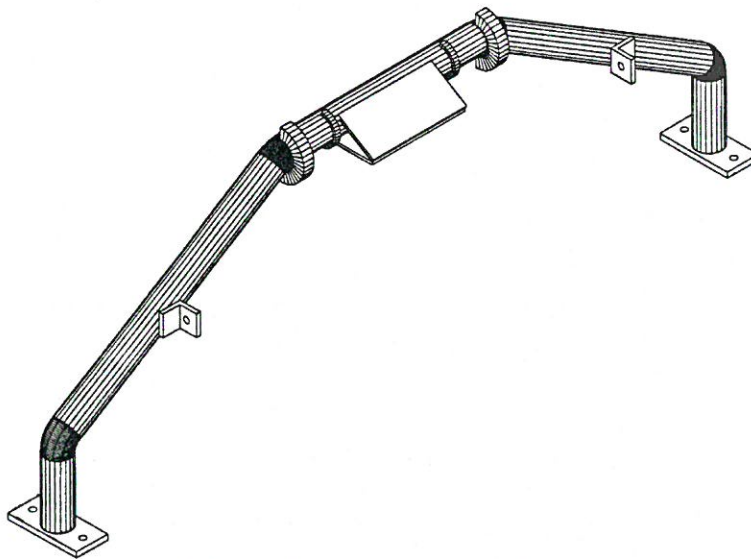


Figure 5. Four Foot Overbrace

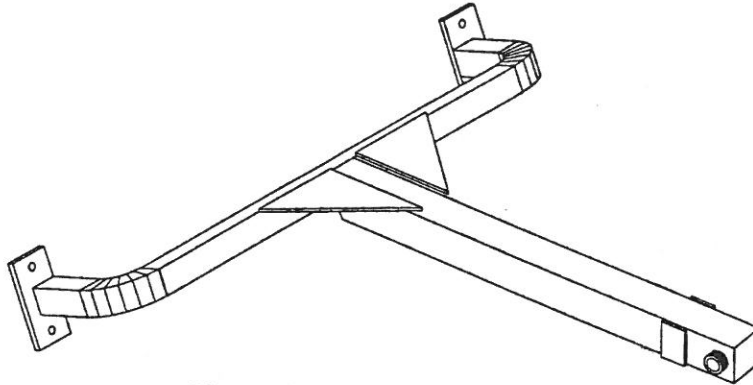


Figure 6. Two Foot Overbrace

2.5 Subframe Arms

Subframe arms mount the Active Harrow Subframe to the frame of the cultivator. The arm is positioned so the subframe is lower than the frame of the cultivator.

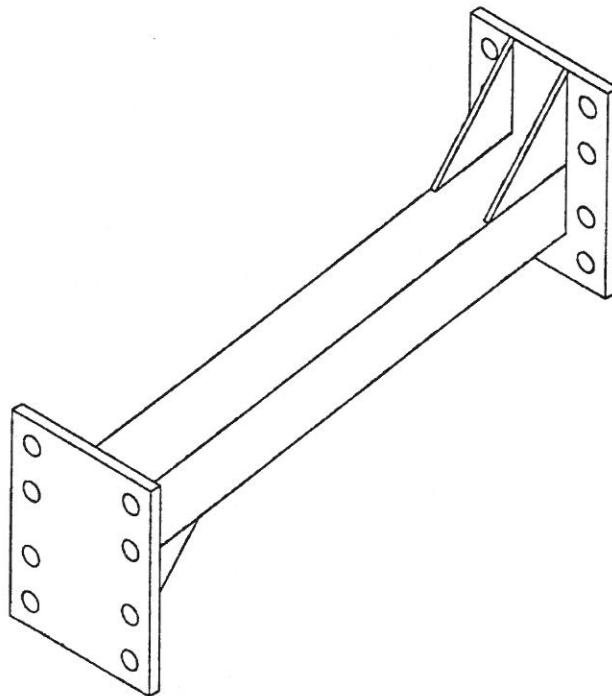


Figure 7. Subframe Arm

2.6 Left & Right Mounting Brackets

Mounting brackets connect the overbraces to the subframe. For the 4ft, 5ft and 6ft Active Harrow the mounting brackets are the same except there are rights and lefts to match the Active Harrows. Figure 8 shows the left, right and centre mounting brackets.

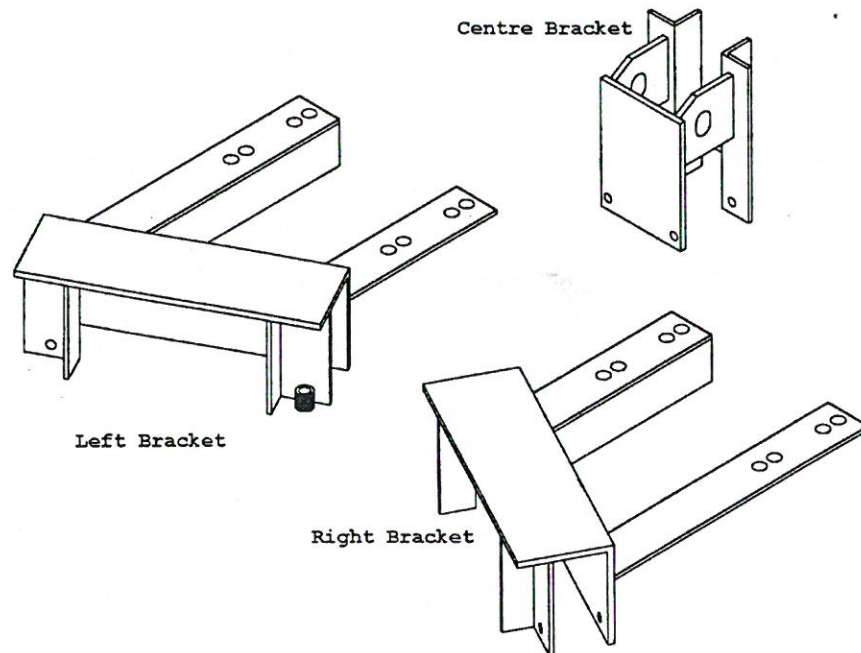


Figure 8. Left, Right & Centre Mounting Brackets

3. Assembly Instructions

Most of the Active Harrow is pre-assembled to avoid confusion of the left and right mounting brackets and harrows. The following three sections need only to be referred to when requesting parts.

3.1 Overbrace & Mounting Brackets (Pre-Assembled)

Figure 9 shows how the overbrace and mounting bracket are assembled. The overbrace (Item #3) needs to be oriented downward to hit the mounting bracket when in transport position. Items #5 and #10 need to be placed correctly. Item #5 mounts on the long arm side of the mounting bracket and item #10 mounts on the short arm side of the mounting bracket.

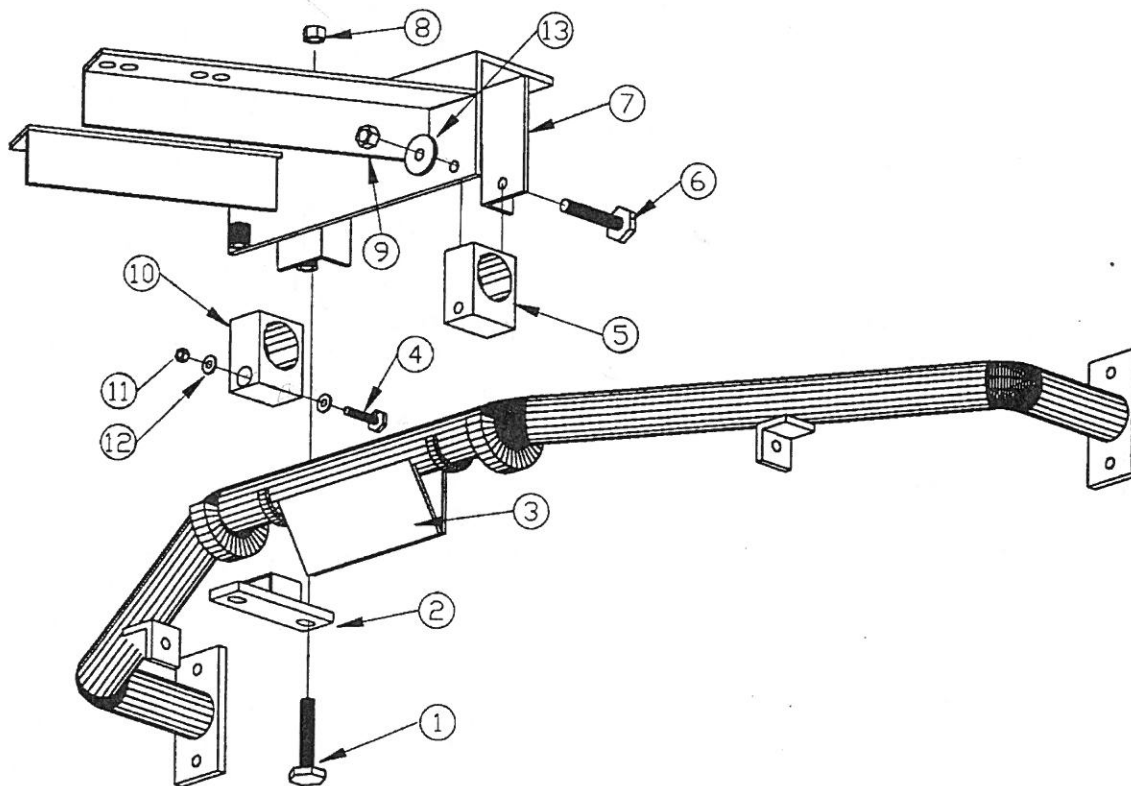


Figure 9. Mounting Bracket & Overbrace

Table 2. Mounting Bracket & Overbrace Parts List

Item No.	Part No.	Description
1	B5C0856P	1/2" x 3-1/2" UNC Gr. 5 Bolt
2	60032	Block Stop Bracket
3	60035	4ft Overbrace
	60016	5ft Overbrace
	60227	6ft Overbrace
4	B5C0632P	3/8" x 2" UNC Gr. 5 Bolt
5	60030	Rub Wear Block
6	B5C0880P	1/2" x 5" UNC Gr. 5 Bolt
7	60224	Left A.H. Mounting Bracket
	60225	Right A.H. Mounting Bracket
8	LNC08	1/2" UNC Lock Nut
9	LNC08	1/2" UNC Lock Nut
10	60033	Rub Moving Block
11	LNC06	3/8" UNC Lock Nut
12	FW06P	3/8" Flat Washer
13	92081	2" O.D. x 9/16" I.D. Flat Washer
Not Shown	60230	Eyebolt & Link Chain <i>6 links</i>
Not Shown	LNC08	1/2" UNC Lock Nut

The two foot centre overbrace and mounting bracket are shown in Figure 10. The mounting bracket and overbrace can be assembled incorrectly easily but mounted on the subframe only one way as shown.

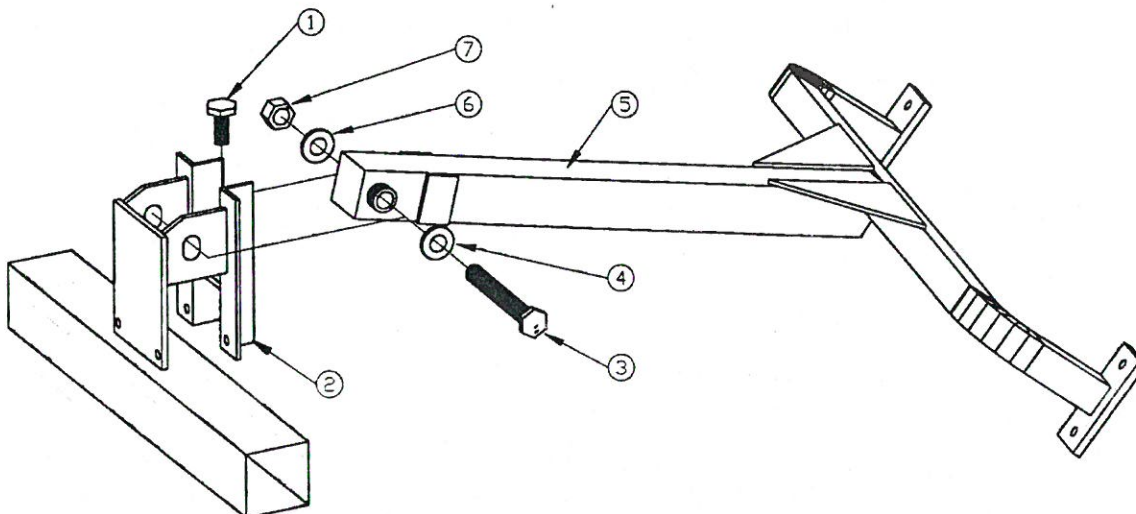


Figure 10. Two foot Mounting Bracket & Overbrace

Table 3. Two foot Mounting Bracket & Overbrace Parts List

Item No.	Part No.	Description
1	B5C1232	3/4"x2" UNC Gr. 5 Bolt
2	60102	2FT Mounting Bracket
3	B5C16120P	1"x7-1/2" UNC Gr. 5 Bolt
4	FW16P	1" Flat Washer
5	60100	2FT Overbrace
6	FW16P	1" Flat Washer
7	LNC16	1" UNC Locknut

Item #1 is an adjusting bolt to raise the center overbrace for transport position. If the center Active Harrow hits the ground in transport position, raise the adjusting bolt until the Active Harrow clears the surface.

3.2 Overbrace & Active Harrow Drum (Pre-Assembled)

Assembly of the drum and overbrace is straight forward as shown in Figure 11. Note the difference between the left and right bearings. The difference is the location of the grease zerk. Both zerks should be pointing behind the Active Harrow for easier lubrication.

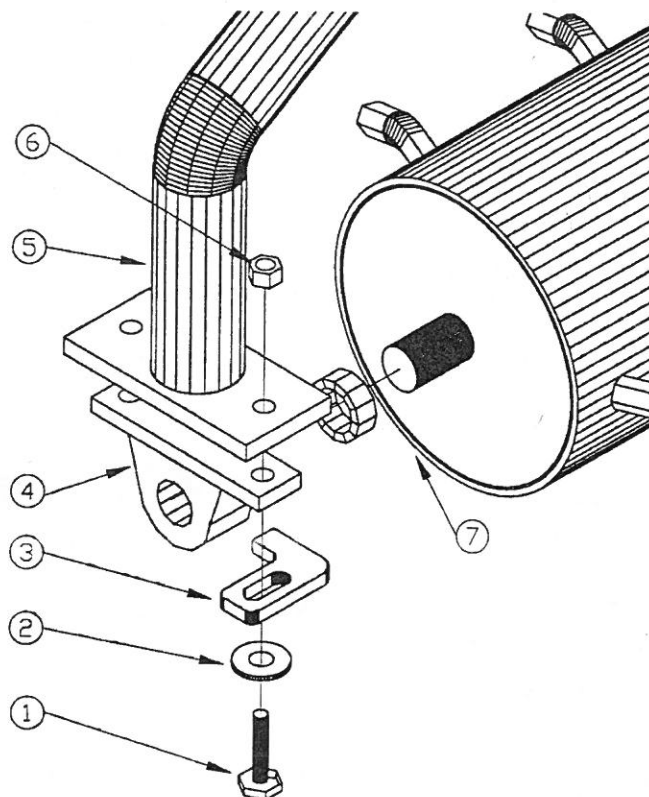


Figure 11. Active Harrow Drum & Overbrace Assembly

Table 4. Active Harrow Drum & Overbrace Assembly Parts List

Item No.	Part No.	Description
1	B5C0840	1/2"x2-1/2" UNC Gr. 5 Bolt
2	FW08P	1/2" Flat Washer
3	60034	Harrow Scraper
4	92083	1-1/4" Bearing
		1-1/4" Lock Collar
5		Active Harrow Overbrace
6	LNC08	1/2" UNC Lock Nut
7		Active Harrow Drum

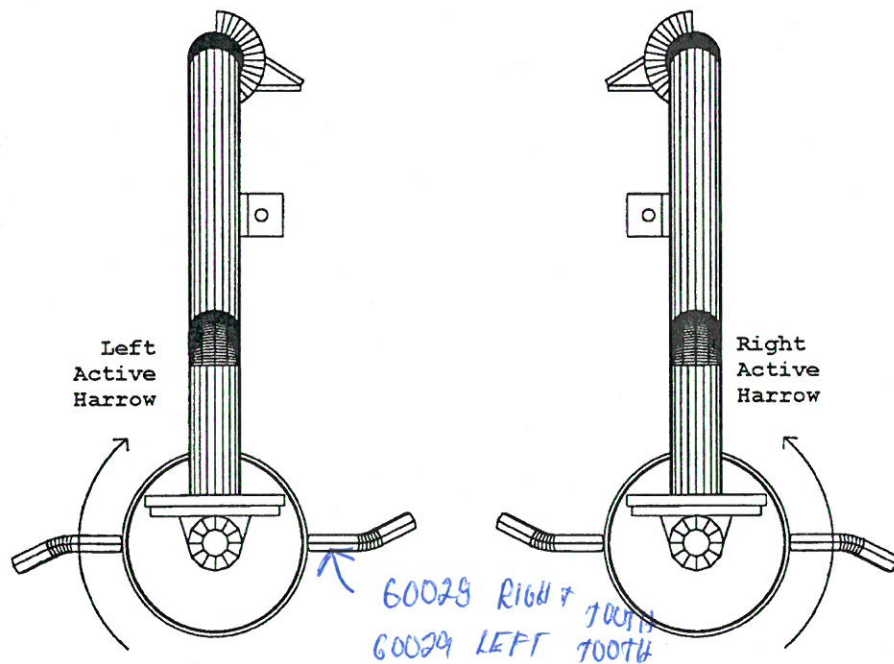


Figure 12. Overbrace & Active Harrow View From Leading Edge

The scraper, item #3, is used to scrape the side of the Active harrow drum free of dirt and plant material. It may be positioned closer or further away from the drum depending on field conditions.

3.3 Subframe Arms, Subframe & Mounting Bracket Assembly

Figure 13 shows the assembly of the mounting brackets to the subframe arms and the subframe and Table 5 lists the parts shown in Figure 13.

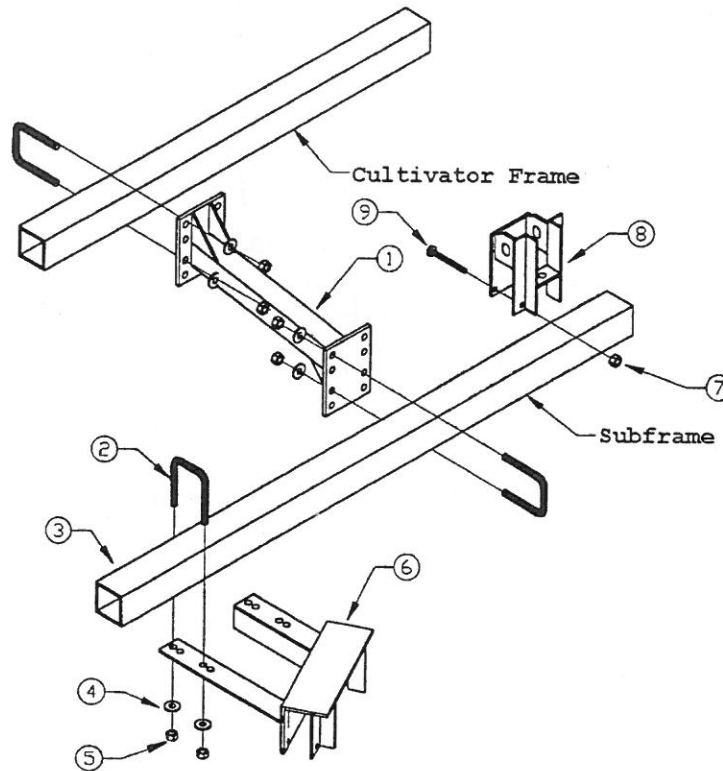


Figure 13 Assembly of Subframe Arms, Subframe & Active Harrow Brackets

Table 5. Figure 13 Parts List

Item No.	Part No.	Description
1	60025	31" Mounted Subframe
2	UB126496	3/4"x4"x6" U bolt
3	60038	Subframe 4"x4"x.125"x60"
	60039	Subframe 4"x4"x.125"x108"
	60026	Subframe 4"x4"x.125"x132"
	60040	Subframe 4"x4"x.125"x180"
	60047	Subframe 4"x4"x.125"x216"
4	LW12P	3/4" Lock Washer Plated
5	NC12P	3/4" UNC Nut Plated
6	60224	Left Mounting Bracket
	60225	Right Mounting Bracket
7	LNC08	1/2" UNC Lock Nut
8	60102	2FT Mounting Bracket
9	B5C0888	1/2"x 5-1/2" UNC Gr. 5 Bolt

Table 6 lists suggested Active Harrow configurations for different cultivator sizes. Ensure the Active Harrows supplied match your cultivator size. The subframes supplied should be approximately the same width of your cultivator sections. The centre subframe however should be slightly longer than the centre of the cultivator.

Table 6. Mounted Active Harrow Suggested Configuration

Cultivator Size	4' Sections	5' Sections	6' Sections
19'--->20'	2	2	
21'--->22'		4	
23'--->24'		2	2
25'--->26'			4
27'--->28'	4	2	
29'--->30'	2	4	
31'--->32'		6	
33'--->34'	2		4
35'--->36'		2	4
37'--->38'			6
39'--->40'	2	6	
41'--->42'		8	
43'--->44'		6	2
45'--->46'		4	4
47'--->48'		2	6
49'--->50'			8
51'--->52'		10	
53'--->54'	2	4	4
55'--->56'		6	4

The number of subframe arms required may vary depending on subframe length. Table 7 shows the suggested number of subframe arms according to subframe length. Care needs to be taken when positioning the subframe arms. Arms cannot be positioned near transport locks or directly behind shanks. Position the subframe arms evenly as possible to distribute the load of the active harrow equally on the cultivator.

Table 7. Required Sub frame Arms

Sub frame Length	Sub frame Arms
60"	2
108"	2
132"	2
180"	3
216"	3

To accommodate different cultivator heights, the subframe arms have two sets of mounting holes on the upper and lower end of the subframe arms. By positioning the U bolts in the two positions, the height can vary up to four inches.

3.4 Active Harrow Layout

Once the subframe arms & subframe have been loosely mounted the Active harrow may be mounted. The following instructions should aid installation.

1. Locate the centre of the cultivator and mount the centre of the two foot overbrace in the centre. Do not tighten bolts until final assembly.
2. Mount a left or right Active Harrow on its respective side as shown in Figure 14. The overlap should be approximately one or two tines.

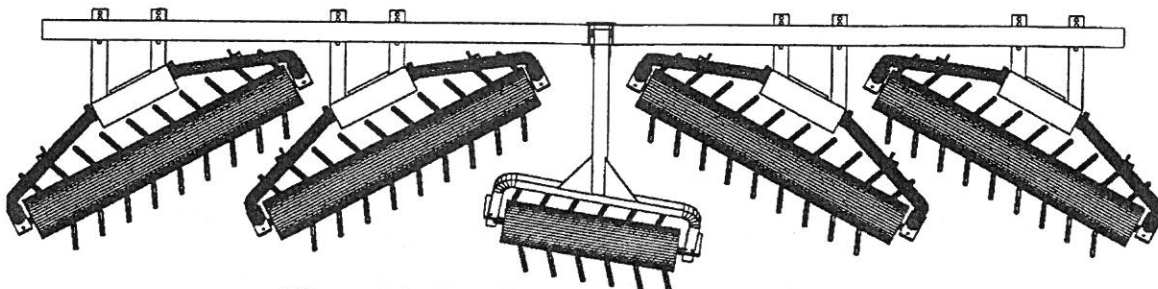


Figure 14. Two foot Centre Section Mounting

3. Work from the centre out, alternate mounting the left and right harrows on the left and right sides respectively as you go outwards. As a rule of thumb, the angle iron where the eye-bolt is bolted should line up with the bearing on the Active Harrow behind it.
4. Once the centre subframe is finished, ensure that the end Active Harrow is beyond the pivot point of the wing on the cultivator.
5. If a mounting bracket conflicts with a subframe arm it may be necessary to move the subframe arm to miss the mounting bracket. This may be difficult since obstructions on the cultivator are also difficult to avoid.
6. When satisfied with position of the Active Harrows, all bolts can be tightened.
7. Raise and lower the cultivator to check if the height of the Active Harrow is acceptable in road and field position. In field position there should be adequate room between the overbrace stop plate and the bottom of the mounting bracket to pivot slightly. For cultivators with a floating hitch, it may be necessary to lock the hitch when transporting because the Active Harrows may drag.

4. Operation

Operation of the Active Harrow is simple and straightforward. The Active Harrows can be made more aggressive by bolting the mounting bracket at an angle as shown in Figure 15. By off setting the U bolts the angle of the Active Harrows increase by five degrees.

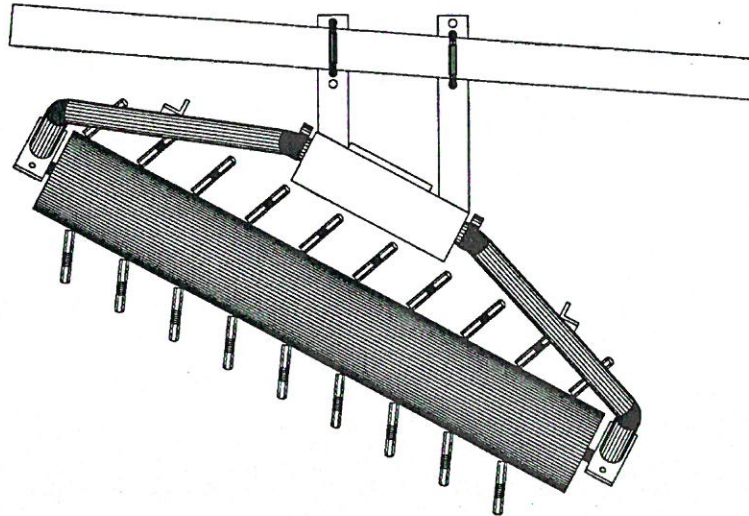


Figure 15. Active Harrow in Aggressive Position

The eye-bolt chain link on the lagging end of the Active Harrow is used to center the mounting bracket in the working position. The chain should be tightened in the field, after the Active Harrows has been pulled. If the overbrace rubs against the mounting bracket then tighten the nut on the eye-bolt.

One adjustment available is the stop bracket shown on Figure 9, item #2. Because the leading edge has a tendency to dig in, it may be necessary to raise the leading edge of the Active Harrow using the lifting bolts, item #1 of Figure 9.