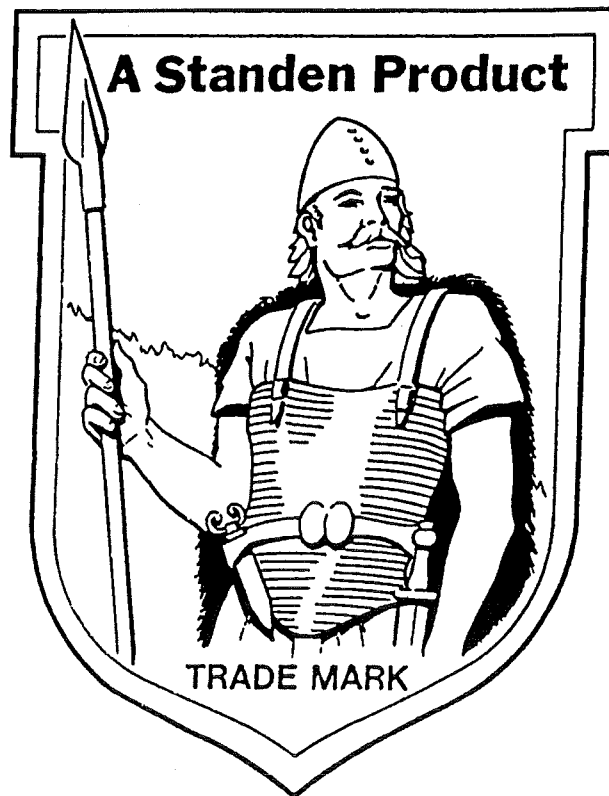


Standen



Multivator Hoe

From April 1990

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INTRODUCTION

This manual provides the information for adjustments and maintenance of the Standen Multivator.

To obtain the best results from the machine and before putting the machine to work, read through the manual carefully to get a full understanding of the various combinations and settings that can be obtained.

When making adjustments, allow the machine to settle to its new setting before making more adjustments.

The Multivator can be mounted on the front of the tractor or alternatively on the rear three point linkage. When used rear mounted it is necessary to fit a self-steering attachment, comprising of two single deep ribbed 500 x 16 wheels, designed to follow a previously made groove cut in the soil by attaching two marker tines to the drill and subsequently to the Multivator for later hoeing operations.

Various row widths are obtainable by single adjustments and by interchanging the blades. Check that all nuts and bolts are tight especially before starting off a new machine, and during the first day or two of work.

Do not reverse or turn sharply unless the machine is in the raised position.

Pay particular attention to the maintenance of the machine.

Pay particular attention to the safety precautions, they are written as a warning to protect you and others from injury.

Date Purchased

Date Started Work

Serial Number

Agents Name

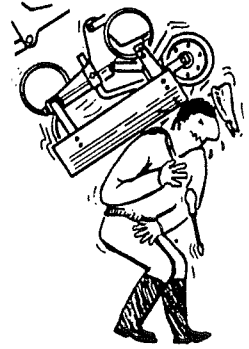
Agents Address

Agents Telephone Number

Safety Precautions

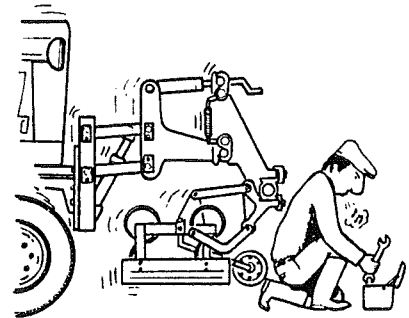
NEVER

Work under the machine when it is in a raised position on the tractor hydraulics.



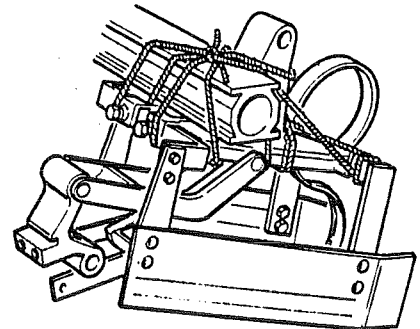
NEVER

Set the machine in motion before ensuring that everyone in the vicinity is aware of your intention.



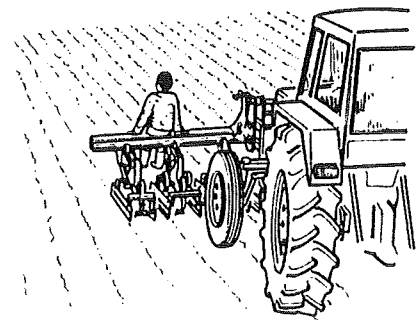
NEVER

Operate the machine in a state of disrepair.



NEVER

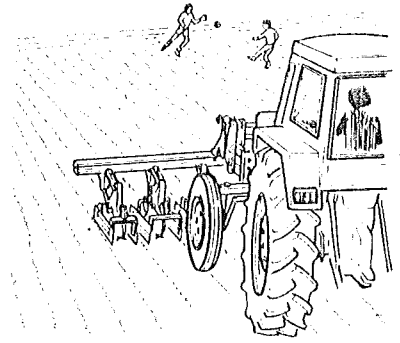
Allow anyone especially children to ride on the machine.





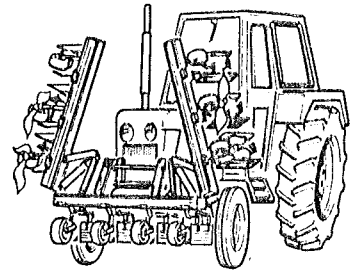
NEVER

Allow children to be in the vicinity where machines are working.



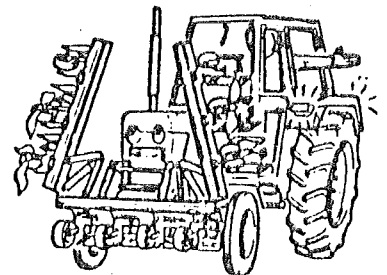
NEVER

Transport the machine on the tractor, in a folded position, without making sure that protruding parts are clearly defined to other road users.



NEVER

Turn onto or off the highway without giving your signal of intention to do so or without ensuring there is sufficient room to manoeuvre with safety.



TRACTOR WHEEL SETTINGS

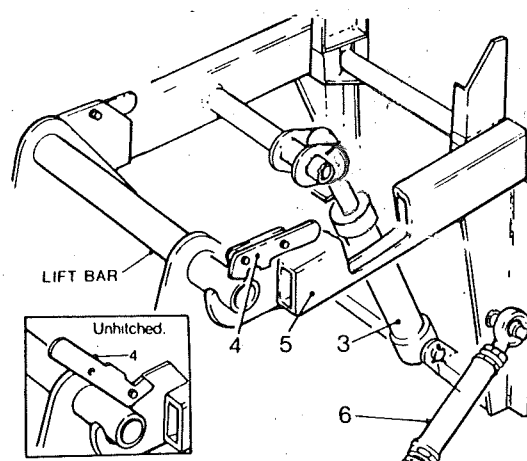
Before fitting the Multivator to the tractor it is important to first set the tractor wheels to centrally straddle the row of the crop. For example, if the crop is growing at 20" (50.8 cm) the distance measured between the tractor tyre centres must be 60" (152.40cm.). If it is desired to straddle three rows, this will ensure that the wheels run in a central line between the rows. When carrying out wheel adjustments take care to place the jack on firm ground under a solid part of the tractor. Before removing the wheel place a stout support under the tractor frame in case the jack should become dislodged. The instructions for adjusting the tractor wheels are given in the tractor manufacturer's handbook.

FITTING THE MULTIVATOR TO THE TRACTOR FRONT MOUNTING

An important feature of the Multivator is the quick-fit attachment which is fitted to the front of the tractor to enable the Multivator to be quickly attached or removed. It is supported by mounting brackets (Item 1 fig 1) bolted to each side of the tractor, the mounting brackets are supplied to fit any type or size of tractor, and may vary in their shape and attaching points, but once fitted, the quick fit frame can easily be attached by the fixing bolts provided

With the tractor mounting brackets and the mounting frame assembly (Item 1 fig.1) in position on the tractor and with the hydraulic ram (Item 3 fig.1) connected to the tractor external hydraulics, the quick hitch system can be used.

1. Drive the tractor forward and locate the hooks on the lift arms (Item 5 fig.1) around the lift bar on the Multivator. Ensure that the lift bar is fully located in the hooks before any attempt is made to lift the Multivator.
2. Lift the Multivator by actuating the hydraulic ram (Item 3 fig.1). Ensure that the latch (Item 4 fig.1) has positioned itself over the Multivator lift bar as shown in fig 1.
3. Fit the stabilizer links (Item 6 fig.1) between the mounting frame (Item 1 fig.1) and the Multivator



REAR MOUNTING

For mounting the "Multivator" to the rear of the tractor a separate rear mounting 'A' frame (Item 1 fig 2) should be fitted in place of the front mounting equipment, (although the 'A' frame is standard and part of the front mounting frame on 12 row models). To the 'A' frame is fitted the tractor lift arms (Item 2 fig 2) and the tractor top adjusting link (Item 3 fig 2). Fit the check chains (Item 4 fig 2) to the tractor lift arms and adjust so that the machine is central to the tractor but allowing approximately 2 inch of side movement to the lift arms.

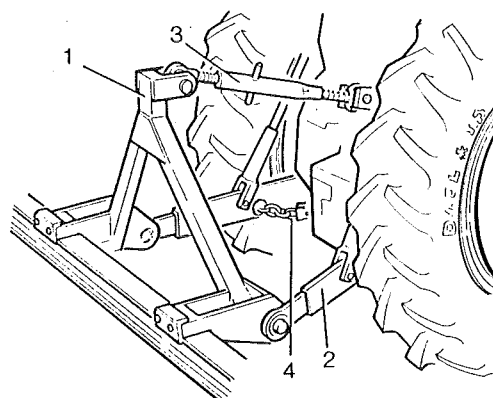
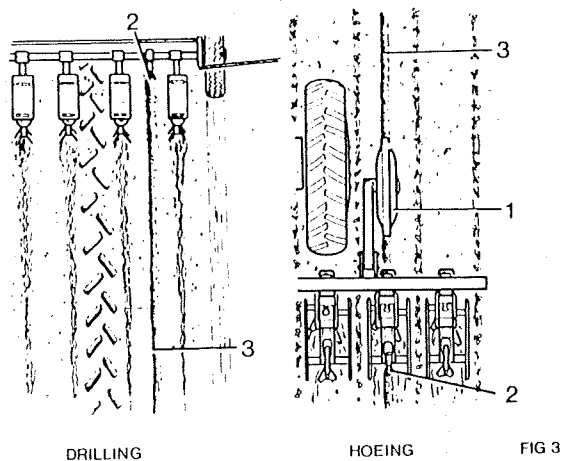


FIG 2

SELF STEERING SYSTEM

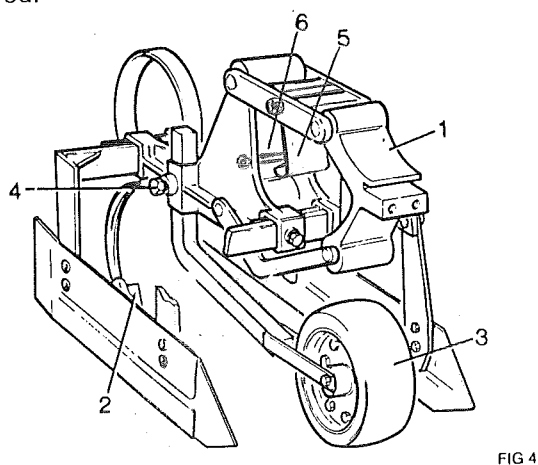
When using the Multivator rear mounted onto the tractor, it is necessary to fit the self-steering wheels fitted with the deep ribbed tyre (Item 1 fig 3) designed to locate the deep groove previously made by a marker tine (Item 2 fig 3) attached to the drill by means of a bracket appropriate for the seed drill used.



For all subsequent cultivations the marker tine (Item 2 fig 3) is fitted to the rear of the Multivator, replacing the last blade. Care should be taken when selecting the placing of the marker tine to ensure that during any following operations, the tractor wheels do not run in the previously made groove, as shown in (Item 3 fig 3).

HOE UNITS (Depth Control)

Each hoe unit (Item 1 fig 4) is mounted on parallel linkage allowing the unit to move vertically to ensure positive depth control on undulating ground. The cutting depth of the blades (Item 2 fig 4) is determined by the setting of the depth control wheel (Item 3 fig 4) enabling each unit to be set individually to the depth required.



To adjust the depth control (Item 3 fig 4) loosen the retaining stud (Item 4 fig 4) and raise or lower the wheel in the bracket to the required position and tighten the retaining stud (Item 4 fig 4).

The setting angle of the hoe main beam will also effect the depth of the cutting blades.

The setting angle of the hoe main beam is adjusted by turning the adjusting stabilizer links (Item 6 fig.1) fitted to front mounted hoes, and the tractor top adjusting link (Item 3 fig 2) when the hoe is rear mounted.

MODULE LOCK UP

Provision is made to lock up separately any one of the individual modules out of work, this is beneficial on hoeing out slip rows when coming up to the headland

rows. To lock up the module, Lift the module and hook the latch (Item 5 fig 4) around the retaining pin (Item 6 fig 4)

ROW WIDTH ADJUSTMENT

Each hoe unit (Item 1 fig 5) can be moved along the hoe main beam (Item 2 fig 5) for row width adjustment by first releasing the retaining bolt and clamp (Item 3 fig 5), finally ensuring the distance between each unit corresponds with the distance of the drilled crop rows, with the hoe units correctly positioned on the main beam each unit is adjustable for inter-row distances.

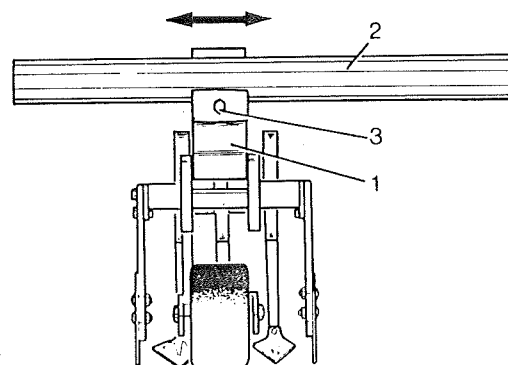


FIG 5

SIDE SHIELDS

To adjust the inter-row distances, ensure that each unit is central to the crop rows and adjust the side shields (Item 1 fig 6) to miss the side of the growing plants by approximately 2" (5 cm.). As each unit is so adjusted, the final distance between the shields is approximately 4" (10 cm.). It is recommended that the distance between the shields is increased by $\frac{3}{4}$ " (2 cm.) at the rear, and the depth of the shields is increased by $\frac{3}{8}$ " (1 cm.) at the rear. To adjust the shields (Item 1 fig 6) loosen the adjusting bolts (Item 2 fig 6) and slide the side shield supporting legs (Item 3 fig 6) through the bracket (Item 4 fig 6) so moving the shields to or from the plants.

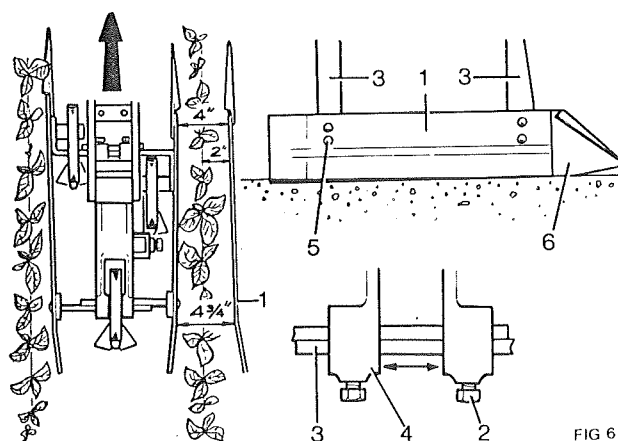


FIG 6

To adjust the depth of the shields loosen the retaining nut (Item 5 fig 6) and raise or lower the shields in the adjusting slots.

At the front of the shields are fitted the leaf lifters (Item 6 fig 6) designed to lift the leaves, allowing for closer hoeing to the plants without damaging the foliage.

DISCS

Provision is made to fit discs (Item 1 fig 7) to run in front of the side shields. The discs are beneficial when a crust has formed on the land as they will ensure the crust is cut close to the plant without damage to the crop. The discs are fitted with a spring to eliminate damage to the disc and simultaneously holding it firmly in the ground.

The discs are adjustable for depth of cut and the spring is adjustable for tension. To adjust the depth of cut release the disc assembly by loosening the fixing bolt (Item 2 fig 7) and move the disc either up or down to obtain the required depth and resecure. To adjust the tension of the spring move the setscrew (Item 4 fig 7) away from the stop plate (Item 8 fig 7) and remove the disc leg (Item 6 fig 7) from the spring anchor (Item 7 fig 7). Now the spring can be repositioned in either the upper or lower hole in the spring anchor (Item 7 fig 7). Re-assemble and position the setscrew (Item 4 fig 7), ensuring that the head of the setscrew is flat against the stop plate (Item 8 fig 7).

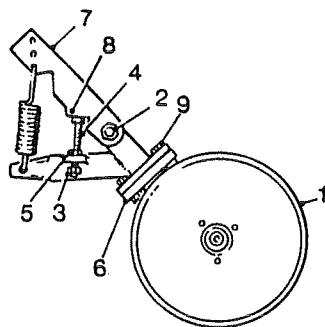


FIG 7

Mostly the front edge of the disc is set $\frac{1}{8}$ " outside the line of the side shield, although in some cases it may be found necessary to alter this position. The adjustment is made by altering the position of the disc leg (item 6 fig 7) in relationship to the spring anchor (item 7 fig 7). To adjust loosen the retaining bolts (item 9 fig 7) and reposition the disc leg (item 6 fig 7) and retighten. The angle of disc can also be adjusted using same method as previously described.

REMOVING SIDE SHIELDS

When the crop has matured to a considerable leaf size it may be desirable to remove the side shields to allow the soil to be placed up to the crown of the plant.

To remove the side shields remove the two front securing bolts (Item 1 Fig 8) and the single rear securing bolts (Item 2 fig 8) and simply lift the shield complete with the front and rear shield arms. (Item 3 & 4 fig 8) clear of the module.

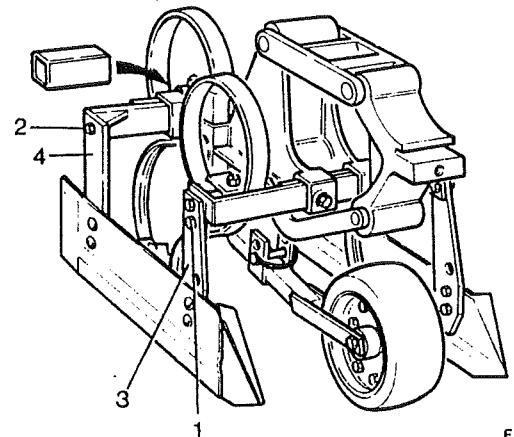


FIG 8

FOLDING MECHANISM FOR EASY TRANSPORT

The hydraulically folding wings are fitted to machines of eight or more units enabling easier transport from field to field when by-passing obstacles or when hoeing out slips.

Each wing is separately operated by a double acting ram (Item 1 fig 9) fitted to each wing.

To divert the oil to alternate rams a hand operated diverter valve (Item 2 fig 9) is used as standard. An electrically operated control is available as an option. When fitting the Multivator to either the front or rear of the tractor, thread the pipes, carefully, from the rams to the tractor external spool valves, ensuring that each pipe cannot be trapped or chafed when the machine is lifted from work or when folding the wings. Under no circumstances may the restrictor valves (Item 3 fig 9) be removed from the hydraulic system.

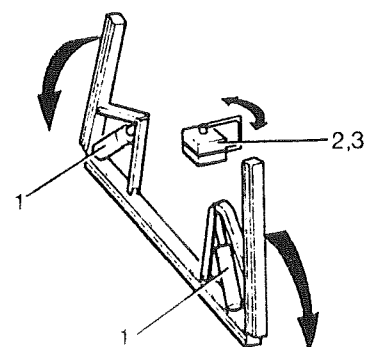


FIG 9

TRACK ERADICATOR WITH DEPTH WHEEL

When using the Multivator front mounted on the tractor a track eradicator can be fitted to the tractor rear three point linkage which is designed to eliminate the soil compressions made by the tractor wheels, at the rear of each wheel is fitted the depth control wheel (Item 1 fig 10) and the 'A' blade (Item 2 fig 10) which are both fitted to the supporting bracket (Item 3 fig 10). The supporting bracket (Item 3 fig 10) is adjustable horizontally across the track eradicator bar by loosening the adjusting stud (Item 4 fig 10). The adjusting stud (Item 5 fig 10) is fitted to adjust the height of the track eradicator bar in relation to the depth wheel (Item 1 fig 10) and the blade (Item 2 fig 10). To adjust the depth of the soil cut by the 'A' blade (Item 2 fig 10) loosen the 'A' blade fixing nuts and bolts (Item 6 fig 10) and adjust the 'A' blade (Item 2 fig 10) by the slots provided in the supporting bracket (Item 3 fig 10) to or from the depth control wheel (Item 1 fig 10). The three point linkage frame should be in an upright position which is adjusted by the adjustable top link (Item 7 fig 10). The tractor check chains (Item 8 fig 10) should be adjusted to ensure the track eradicator is central to the tractor.

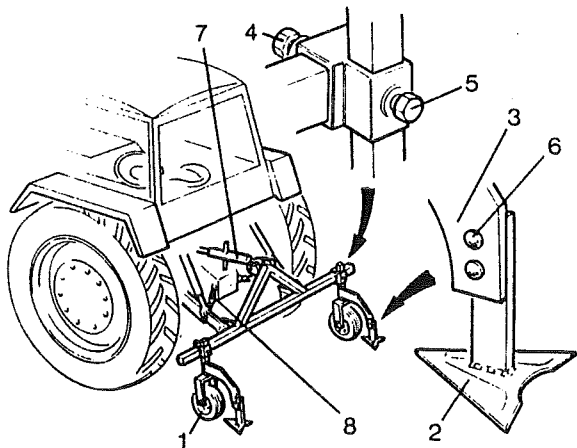


FIG 10

TRACK ERADICATOR Without Depth Wheel

The track eradicator (without depth wheel) is designed to eliminate the soil compressions made by the tractor wheels. At the rear of each tractor wheel is fitted the 'A' blades (Item 1 fig 11) which are fitted to the track eradicator bar (Item 2 fig 11) by the mounting bracket (Item 3 fig 11) and the 'A' blade stalk (Item 4 fig 11). The 'A' blade (Item 1 fig 11) is adjustable horizontally across the track eradicator bar (Item 2 fig 11) by loosening the adjusting stud (Item 5 fig 11). The adjusting stud (Item 6 fig 11) is fitted to adjust the height of the track eradicator bar in relation to the 'A' blades (Item 1 fig 11).

To adjust the cutting depth of the 'A' blades (Item 1 fig 11) set the position control lever, fitter to the tractor hydraulics, to allow the tractor lift arms to carry the track eradicator bar with the 'A' blades (Item 1 fig 11) just penetrating the soil. It is important to start off

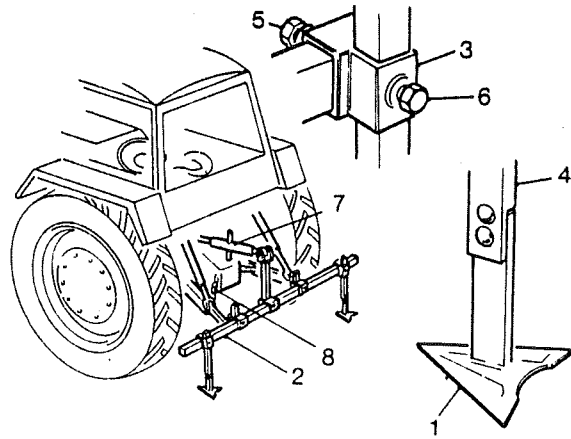


FIG 11

with the 'A' blades cutting shallow and then increase the depth as required. The track eradicator bar (Item 2 fig 11) should be in an upright position, with the 'A' blades (Item 1 fig 11) flat to the ground, adjust the position by the adjustable top link (Item 7 fig 11). The tractor check chains (Item 8 fig 11) should be adjusted to ensure the track eradicator is central to the tractor.

MAIN FRAME SUPPORT BRACKET

Main frame support brackets are designed to support the main frame when the Multivator is removed from the tractor. There are two positions provided in the brackets, the support position and the working position. It is essential that the bracket is in the working position when the machine is in use. To adjust the bracket (Item 1 fig 12) to the support position, fully lift the hoe and release the retaining pin (Item 2 fig 12) to allow the cut away of the centre support plate to rest onto the centre of the side shield support bracket, (Item 3 fig 12), by sliding the centre support plate in the slot provided. Line up the holes in the inner and outer brackets (Item 1-4 fig 12) and replace the retaining pin (Item 2 fig 12). Lower the hoe onto the stops.

To adjust the bracket (Item 1 fig 12) to the working position, reverse the above procedure.

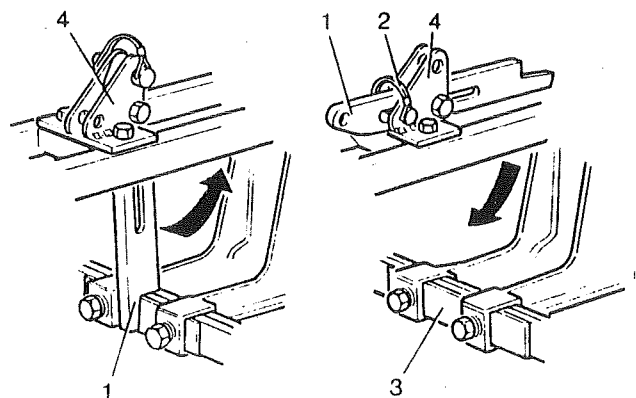
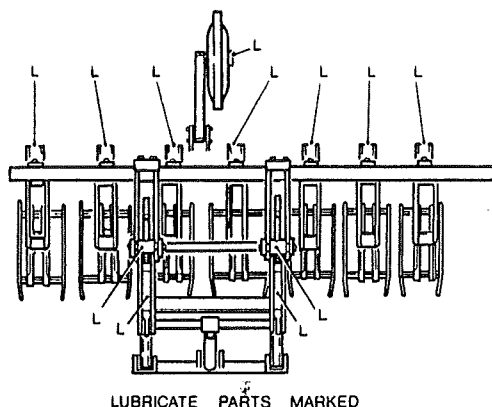


FIG 12

LUBRICATION

Although most of the friction areas on the Multivator do not require greasing because of the fitting of "Oilite" bushes, there are certain points that do require greasing daily, and are shown in the following chart:-



LUBRICATE PARTS MARKED

HOE BLADES

When selecting inter-row combinations, various blades are available to correspond with the distance between the two side shields.

Refer to the chart which explains the various row widths and blade combinations obtainable.

FINAL FIELD SETTING

The final field setting schedule is given below as a sequel to the preceeding information.

- When first driving into the field, position the machine to the crop rows ensuring that the units follow directly in line with the rows as previously drilled and do not overlap a joining row.
- Drive the Multivator forward approximately 5 yards (4 metres), stop, and check that the blades of each module are cutting the soil leaving the rows of plants equally in the centre of uncut soil.
- Drive forward another 15 yards (14 metres), stop, and again check the previous setting, now check the cutting depth of each blade, which should be equal on each unit.
- Ensure that the side shields are at the correct depth in relation to the blades. If the side shields are adjusted too deep it is possible that they will carry the unit, holding the cutting blades out of the soil, resulting in excessive wear of the side shields. Check that the ends of the blades are not fouling the side shields which could, if allowed to do so, restrict the flow of soil.
- If discs are being used, check that each disc is cutting at the same depth and are each cutting a groove directly in line with the front of each side shield. Examine the cutting angle of each disc to ensure that the soil moved by the disc is thrown clear of the inside of the side shield.
- Check that the ram depth stop, fitted to the lifting ram, is adjusted to carry the hoe frame so that the top parallel linkage arm of each module is horizontal or slightly down at the rear when in work, the modules will individually float at this level. At the same time examine the hydraulic hoses and joints for possible oil leaks, check that the hoses are free and cannot be trapped or pinched.
- Check that the track eradicator blades are at the correct working depth and adjust the depth control wheels as necessary. Ensure that track eradicator frame is in an upright position and adjust by the tractor adjustable top link.
- If the machine is rear mounted ensure that the steering wheels are deeply located in the grooves previously cut by the marker tine. Also ensure that the following marker tines are directly in line with the steering wheels.
Adjust the working depth of the marker tine to cut a clean deep groove. Set the steering wheels to carry the hoe frame so that the top parallel linkage arm of each module is horizontal or slightly down at the rear when in work.
- On both rear and front mounted machines observe that the Multivator is in the vertical position. Adjust by turning the tractor adjustable top link on rear mounted models, or, by turning the adjusting handles fitted to the quick-fit frame on front mounted models.
- Some of these adjustments may have to be repeated a few times, but by observation and adjustment a satisfactory result will be obtained.
When all settings are complete, periodically check the adjusting nuts and bolts for tightness.

Row Width and Blade Combinations Chart

<p>1</p>	<p>2</p>	<p>3</p>	<p>4</p>	<p>5</p>	<p>6</p>	<p>7</p>	<p>8</p>	<p>9</p>	<p>10</p>
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MULTIVATOR BLADE MOUNTING CHART

<p>FIG. 1 Row width 12 inch 1 x 7 inch (178 mm.) 'A' blade 10255 - 10256 front support leg 10323 rear support leg</p>	<p>FIG. 6 Discs cannot be fitted to row widths of less than 15 inches. When discs are fitted, short nose 'L' blades are used. Without discs fitted, long nosed 'L' blades are used. Discs can be fitted with all 'A' blades, leaf lifters must be removed.</p>
<p>FIG. 2 Row width 14 inch to 16 inch 2 x 4 inch (102 mm.) 'A' blades 1 x 7 inch (178 mm.) 'A' blade 10257 - 10258 front support leg 10323 rear support leg</p>	<p>FIG. 7 Row width 12 inch to 14 inch 1 x LH 'L' blade 1 x RH 'L' blade 10255 - 10256 front support leg 10323 rear support leg</p>
<p>FIG. 3 Row width 15 inch to 18 inch 2 x 7 inch (178 mm.) 'A' blades 10256 - 10257 front support leg 10323 - 10324 rear support leg</p>	<p>FIG. 8 Row width 14 inch to 16½ inch 1 x 6 inch (152 mm.) LH 'A' blade 1 x 7 inch (178 mm.) 'A' blade 10257 - 10256 front support leg 10323 rear support leg</p>
<p>FIG. 4 Row width 16 inch to 24 inch (For 20 inch to 24 inch interchange LH & RH blades) 1 x 6 inch (152 mm.) LH 'A' blade 1 x 6 inch (152 mm.) RH 'A' blade 1 x 7 inch (178 mm.) 'A' blade 10257 - 10258 front support leg 10324 rear support leg</p>	<p>FIG. 9 Row width 15 inch to 21 inch 1 x LH 'L' blade 10255 - 10256 front support leg 10323 rear support leg</p>
<p>FIG. 5 Row width 18 inch to 24 inch 3 x 7 inch (178 mm.) 'A' blades or 1 x 6 inch (152 mm.) LH 'A' blade 1 x 6 inch (152 mm.) RH 'A' blade 1 x 7 inch (178 mm.) 'A' blade 10257 - 10258 front support leg 10324 rear support leg</p>	<p>FIG. 10 Row width 18 inch to 22 inch 1 x LH 'L' blade 1 x RH 'L' blade 1 x 7 inch (178 mm.) 'A' blade 10257 - 10258 front support leg 10324 rear support leg</p>

Items 10255 and 10256 FRONT support legs are fitted to obtain the narrowest settings using 'L' blades.

Items 10257 and 10258 FRONT support legs are fitted to obtain the narrowest settings using 'A' blades.

Item 10323 REAR support leg is fitted to obtain the narrowest settings using either 'L' blades or 'A' blades.

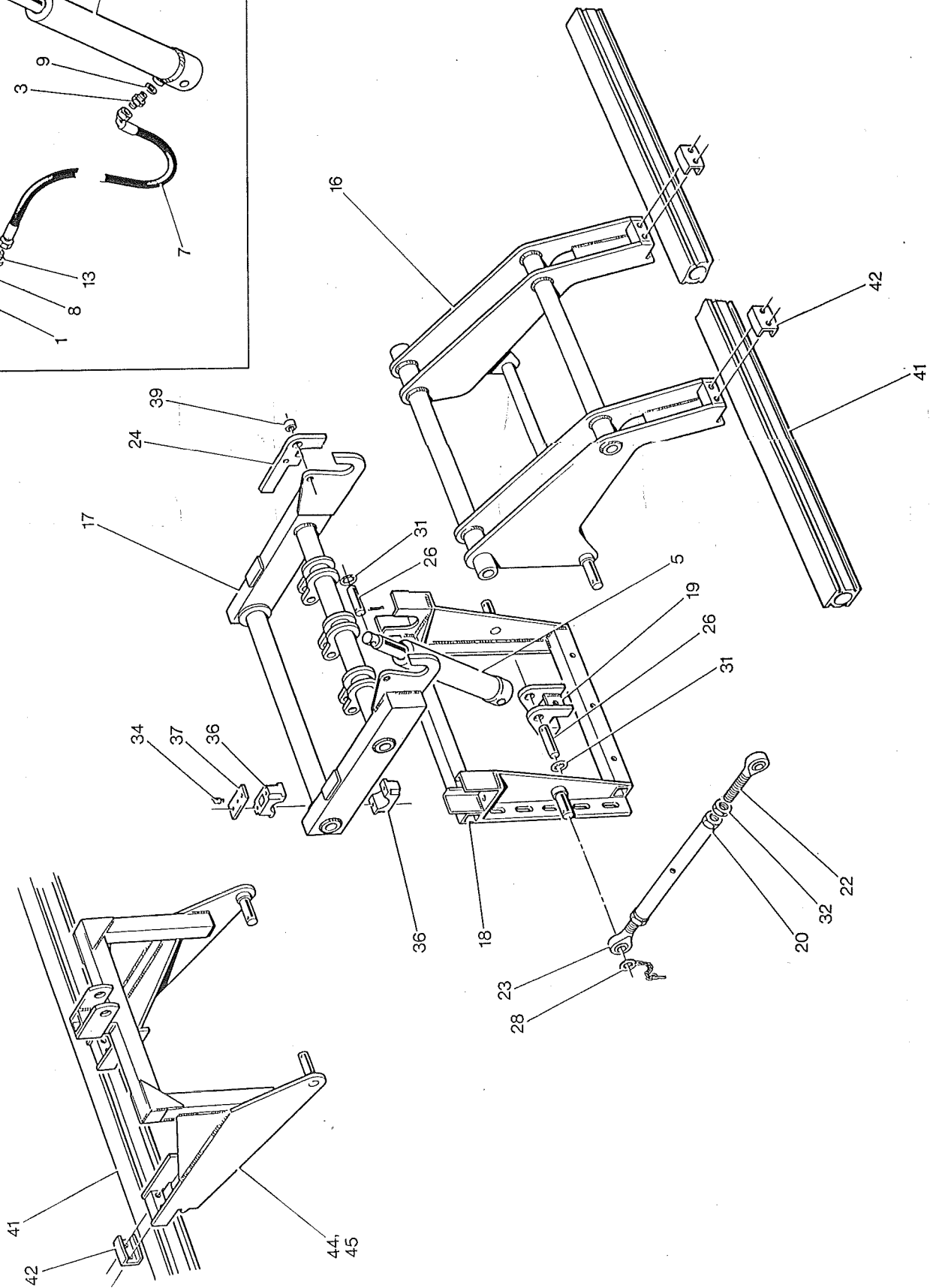
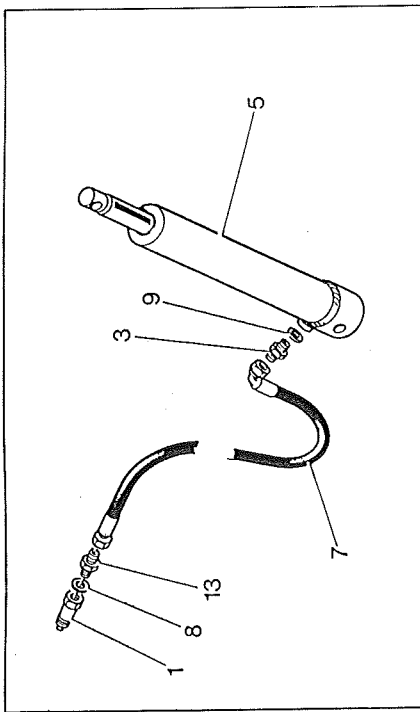
Items 10257 and 10258 FRONT support legs are fitted to obtain the widest settings using either 'L' blades or 'A' blades.

Item 10324 REAR support legs are fitted to obtain the widest setting using either 'L' OR 'A' blades.

6 Row 'Multivator 90'

Assy NO - Front 10439

Assy NO - Rear 10445



6 ROW 'MULTIVATOR 90'

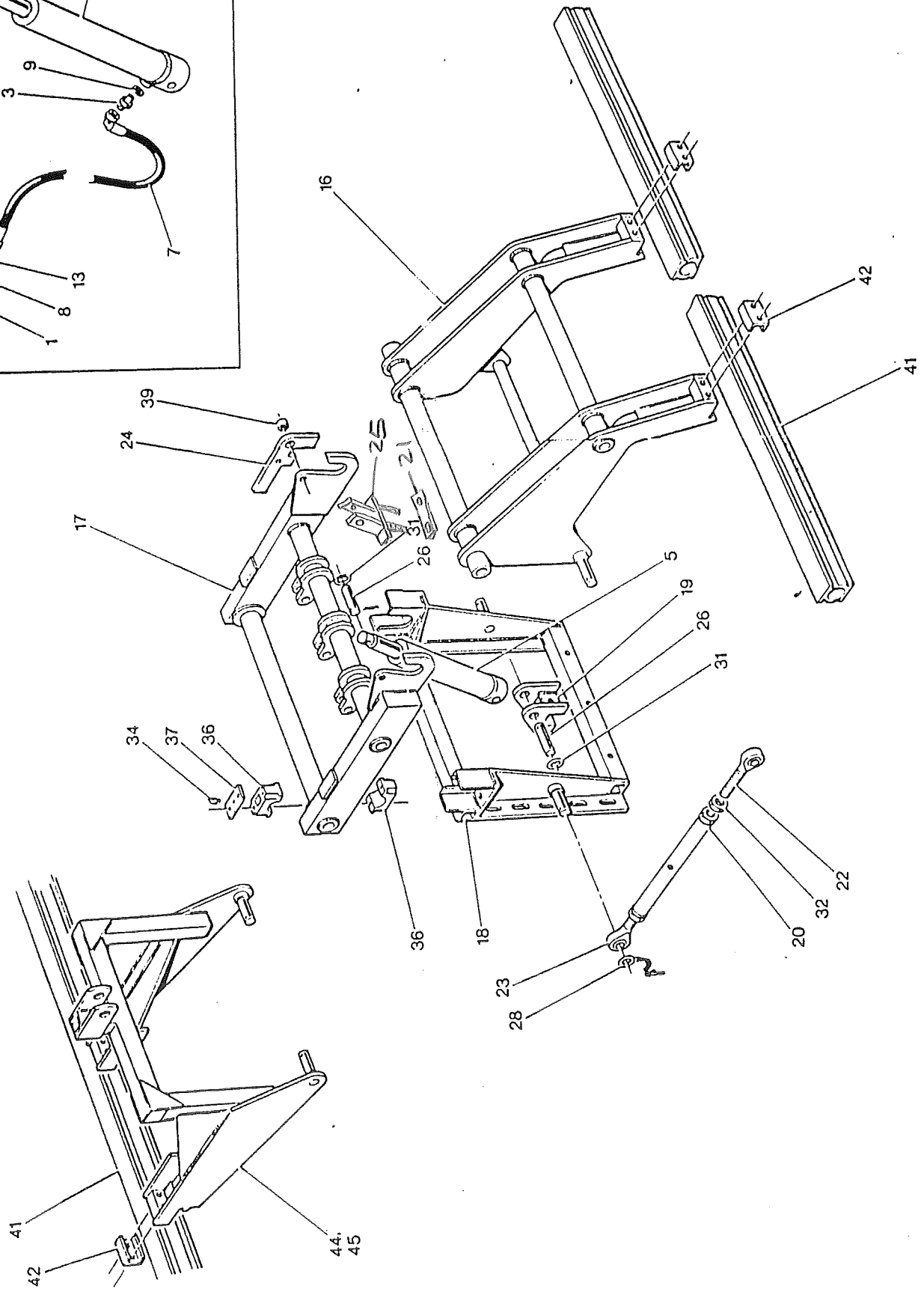
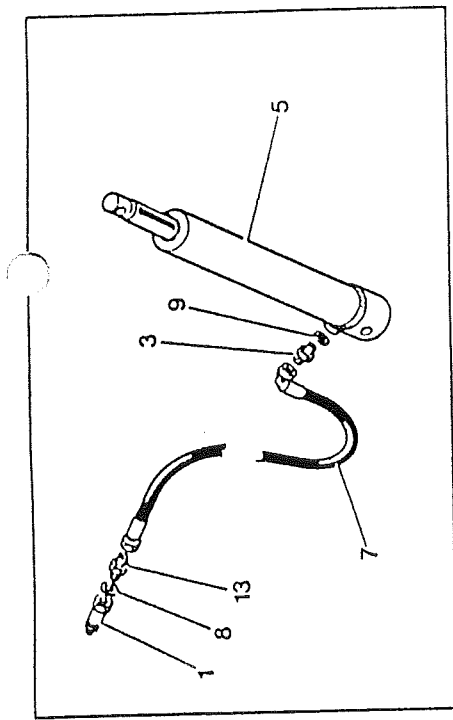
(ASSY. No. FRONT 10439,
REAR 10445)

ITEM No.	PART No.	DESCRIPTION	QTY	REMARKS
		HYDRAULIC COMPONENTS		
1	10140	QUICK RELEASE COUPLING	1	
2				
3	10291	¾" M/M RESTRICTOR	1	
4				
5	10379	HYDRAULIC RAM	1	
6				
7	11104	¾" HOSE ASSEMBLY (4750)	1	
8	11124	½" DOWTY SEAL	1	
9	11125	¾" DOWTY SEAL	1	
10				
11				
12				
13	UC 25	½" x ¾" M/M ADAPTOR	1	
14				
15				
		LIFT UNIT		
16	10433	PICK-UP FRAME	1	
17	10434	LIFT ARM	1	
18	10435	MOUNTING FRAME	1	
19	10438	RAM MOUNTING BRACKET	1	
20	10443	STAY BODY	2	
21				
22	11718	ROD END R.H.	2	
23	11719	ROD END L.H.	2	
24	11734	LATCH	2	
25				
26	11816	RAM PIN	2	
27				
28	13337	STAY PIN	4	
29				
30				
31	22058075	STARLOCK WASHER	2	
32	22068112	1½" UNC R.H. LOCKNUT	2	
33				
34	GS 412	GREASE NIPPLE	2	
35				
36	SPCT 132	BEARING BLOCK	4	
37	SPCT 143	CLAMP PLATE	2	
38				
39	SS016013/014	STEEL SPACER	2	
40				
		MODULE MOUNTING BEAM		
41	10254	TOOL BAR	1	
42	10260	CLAMP WASHER	2	
43				
		REAR MOUNTING		
44	10308	MOUNTING FRAME	1	1 STEERAGE WHEEL
45	10336	MOUNTING FRAME	1	2 STEERAGE WHEELS

6 Row 'Multivator 90'

Assy N^o - Front 10439

Assy N^o - Rear 10445



(ASSY. No. FRONT 10439,
REAR 10445)

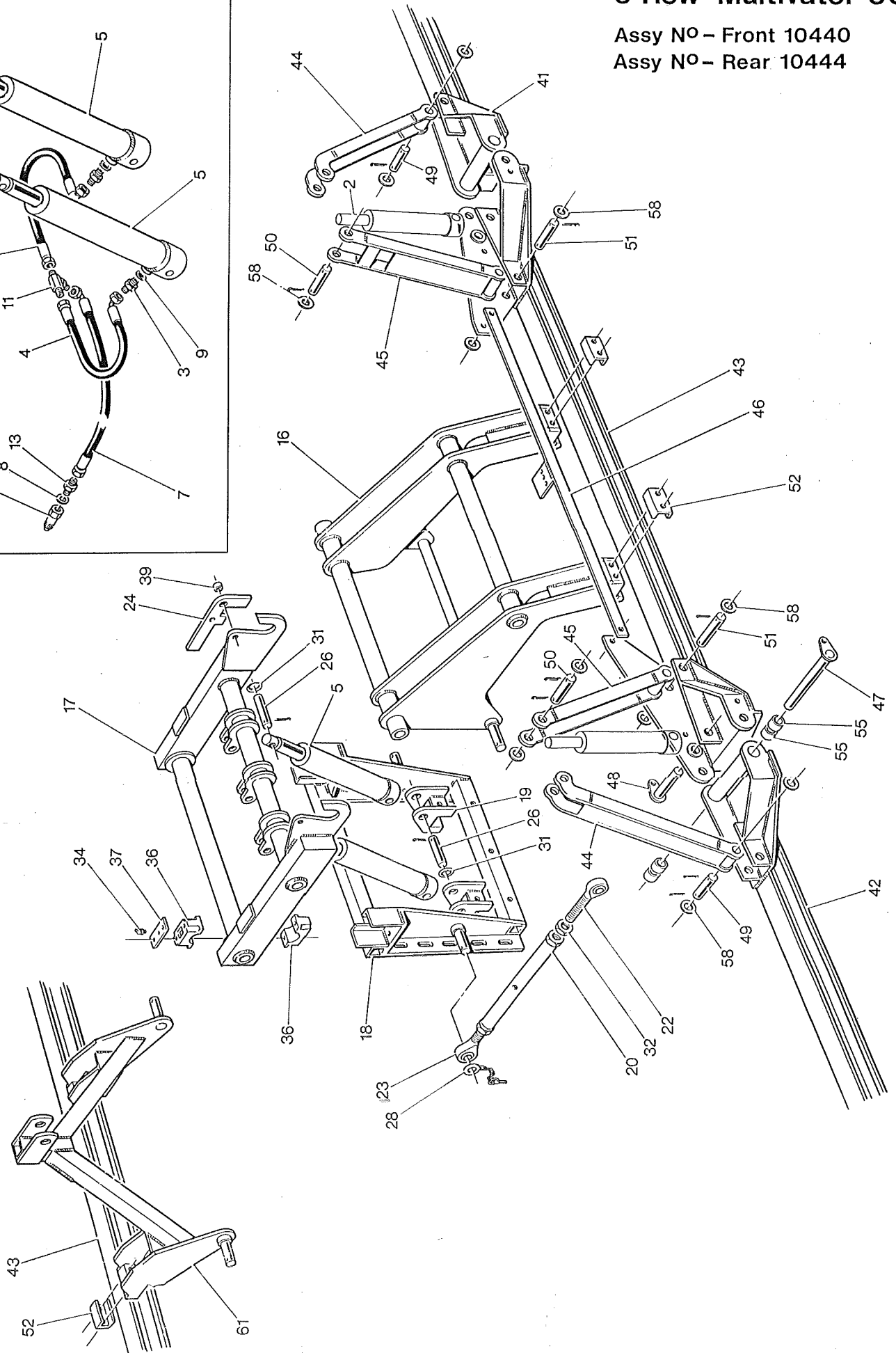
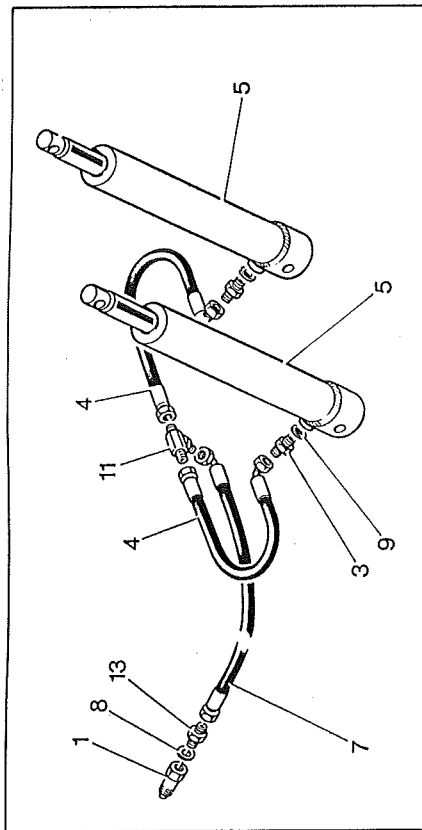
ELEVATOR 90'

ITEM No.	PART No.	DESCRIPTION	QTY	REMARKS
		HYDRAULIC COMPONENTS		
1	10140	QUICK RELEASE COUPLING	1	
2				
3	10291	1/2" M/M RESTRICTOR	1	
4				
5	10379	HYDRAULIC RAM	1	
6				
7	11104	1/2" HOSE ASSEMBLY (4750)	1	
8	11124	1/2" DOWTY SEAL	1	
9	11125	1/2" DOWTY SEAL	1	
10				
11				
12				
13	UC 25	1/2" x 1/2" M/M ADAPTOR	1	
14				
15				
		LIFT UNIT		
16	10433	PICK-UP FRAME	1	
17	10434	LIFT ARM	1	
18	10435	MOUNTING FRAME	1	
19	10438	RAM MOUNTING BRACKET	1	
20	10443	STAY BODY	2	
21	11673	STOP PLATE	1	
22	11718	ROD END R.H.	2	
23	11719	ROD END L.H.	2	
24	11734	LATCH	2	
25	11733	STOP BRACKET	1	
26	11816	RAM PIN	2	
27				
28	13337	STAY PIN	4	
29				
30				
31	22058075	STARLOCK WASHER	2	
32	22068112	1 1/2" UNC R.H. LOCKNUT	2	
33				
34	GS 412	GREASE NIPPLE	2	
35				
36	SPCT 132	BEARING BLOCK	4	
37	SPCT 143	CLAMP PLATE	2	
38				
39	SS016013/014	STEEL SPACER	2	
40				
		MODULE MOUNTING BEAM		
41	10254	TOOL BAR	1	
42	10260	CLAMP WASHER	2	
43				
		REAR MOUNTING		
44	10308	MOUNTING FRAME	1	1 STEERAGE WHEEL
45	10336	MOUNTING FRAME	1	2 STEERAGE WHEELS

9 Row 'Multivator 90'

Assy N^o - Front 10440

Assy N^o - Rear 10444



ITEM No.	PART No.	DESCRIPTION	QTY	REMARKS
		HYDRAULIC COMPONENTS		
1	10140	QUICK RELEASE COUPLING	1	REF. ONLY
2	10192	HYDRAULIC RAM	2	
3	10291	¾" M/M RESTRICTOR	2	
4	10303	¾" HOSE ASSEMBLY (250)	2	
5	10379	HYDRAULIC RAM	2	
6				
7	11104	¾" HOSE ASSEMBLY (4750)	1	
8	11124	½" DOWTY SEAL	1	
9	11125	¾" DOWTY SEAL	2	
10				
11	SPCL 597	¾" MALE TEE	1	
12				
13	UC 25	½" x ¾" M/M ADAPTOR	1	
14				
15				
		LIFT UNIT		
16	10433	PICK-UP FRAME	1	
17	10434	LIFT ARM	1	
18	10435	MOUNTING FRAME	1	
19	10438	RAM MOUNTING BRACKET	2	
20	10443	STAY BODY	2	
21				
22	11718	ROD END R.H.	2	
23	11719	ROD END L.H.	2	
24	11734	LATCH	2	
25				
26	11816	RAM PIN	2	
27				
28	13337	STAY PIN	4	
29				
30				
31	22058075	STARLOCK WASHER	2	
32	22068112	1½" UNC R.H. LOCKNUT	2	
33				
34	GS 412	GREASE NIPPLE	2	
35				
36	SPCT 132	BEARING BLOCK	4	
37	SPCT 143	CLAMP PLATE	2	
38				
39	SS016013/014	STEEL SPACER	2	
40				
		MODULE MOUNTING BEAM		
41	10234	L.H. BEAM	1	
42	10235	R.H. BEAM	1	
43	10239	CENTRE FRAME	1	
44	10241	RAM ARM - OUTER	2	
45	10242	RAM ARM - INNER	2	
46	10244	TIE STRIP	1	

9 ROW 'MULTIVATOR 90'

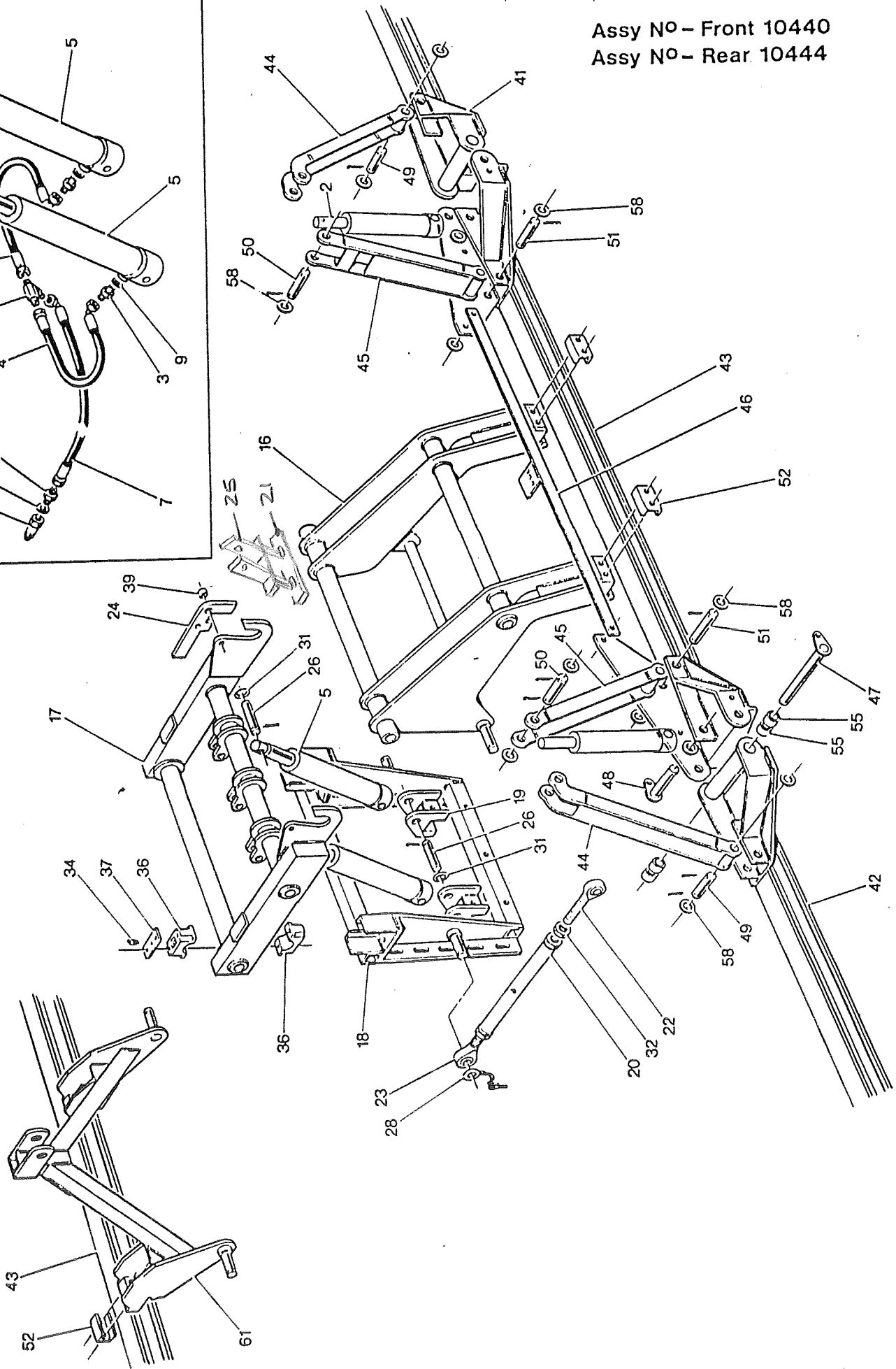
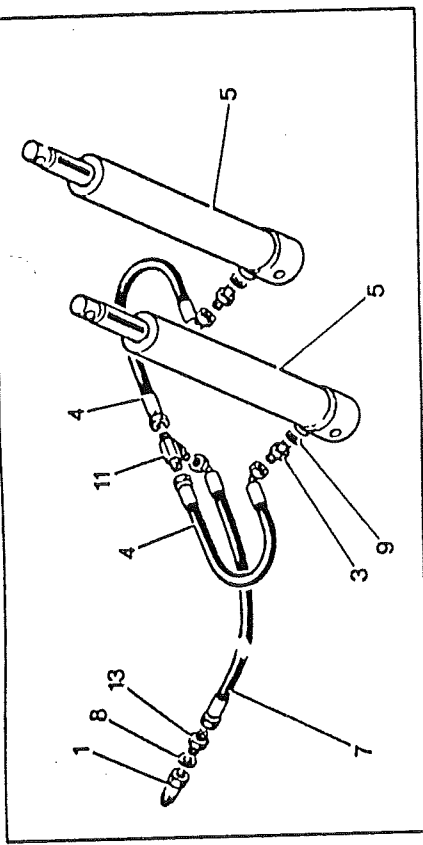
(ASSY. No. FRONT 10110,
REAR 10111)

ITEM No.	PART No.	DESCRIPTION	QTY	REMARKS
47	10245	PIVOT PIN	2	
48	10246	PIVOT PIN	2	
49	10251	PIN	2	
50	10252	PIN	2	
51	10253	PIN	2	
52	10260	CLAMP WASHER	2	
53				
54				
55	12121	BUSH	8	
56				
57				
58	SS045026/002	WASHER (JOINT PINS)	12	
59				
60				
61	10233	REAR MOUNTING MOUNTING FRAME	1	REPLACES LIFT UNIT
62				
63				

9 Row 'Multivator 90'

Assy N^o - Front 10440

Assy N^o - Rear 10444



ITEM No.	PART No.	DESCRIPTION	QTY	REMARKS
		HYDRAULIC COMPONENTS		
1	10140	QUICK RELEASE COUPLING	1	REF. ONLY
2	10192	HYDRAULIC RAM	2	
3	10291	3/4" M/M RESTRICTOR	2	
4	10303	3/4" HOSE ASSEMBLY (250)	2	
5	10379	HYDRAULIC RAM	2	
6				
7	11104	3/4" HOSE ASSEMBLY (4750)	1	
8	11124	1/2" DOWTY SEAL	1	
9	11125	3/4" DOWTY SEAL	2	
10				
11	SPCL 597	3/4" MALE TEE	1	
12				
13	UC 25	1/2" x 3/4" M/M ADAPTOR	1	
14				
15				
		LIFT UNIT		
16	10433	PICK-UP FRAME	1	
17	10434	LIFT ARM	1	
18	10435	MOUNTING FRAME	1	
19	10438	RAM MOUNTING BRACKET	2	
20	10443	STAY BODY	2	
21	11673	STOP PLATE	2	
22	11718	ROD END R.H.	2	
23	11719	ROD END L.H.	2	
24	11734	LATCH	2	
25	11733	RAM STOP BRACKET	2	
26	11816	RAM PIN	2	
27				
28	13337	STAY PIN	4	
29				
30				
31	22058075	STARLOCK WASHER	2	
32	22068112	1 1/2" UNC R.H. LOCKNUT	2	
33				
34	GS 412	GREASE NIPPLE	2	
35				
36	SPCT 132	BEARING BLOCK	4	
37	SPCT 143	CLAMP PLATE	2	
38				
39	SS016013/014	STEEL SPACER	2	
40				
		MODULE MOUNTING BEAM		
41	10234	L.H. BEAM	1	
42	10235	R.H. BEAM	1	
43	10239	CENTRE FRAME	1	
44	10241	RAM ARM - OUTER	2	
45	10242	RAM ARM - INNER	2	
46	10244	TIE STRIP	1	

9 ROW 'MULTIVATOR 90'

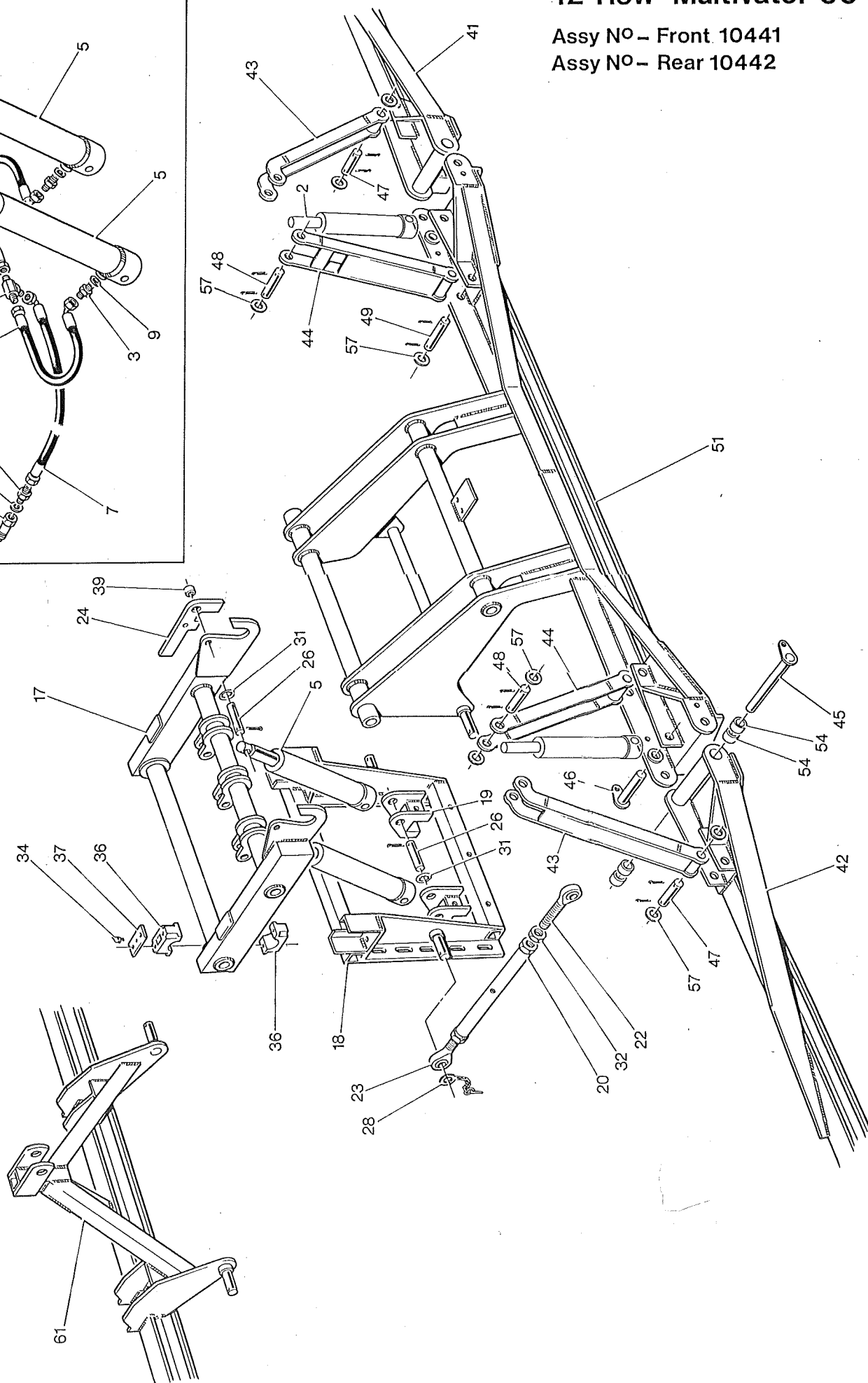
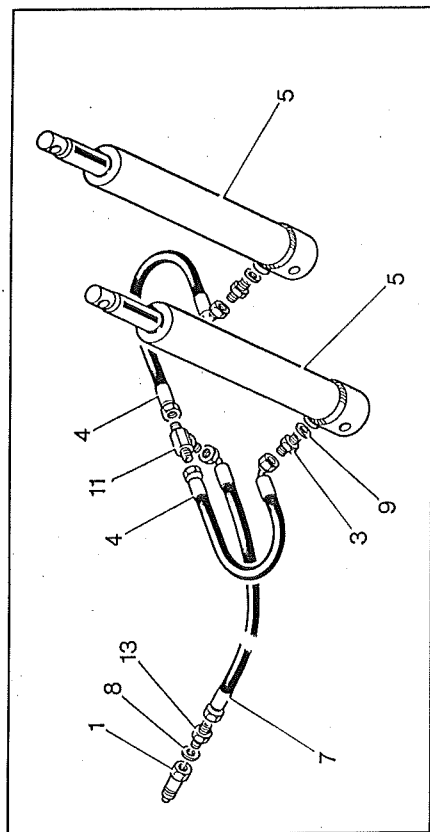
(ASSY. No. FRONT 10110,
REAR 10111)

ITEM No.	PART No.	DESCRIPTION	QTY	REMARKS
47	10245	PIVOT PIN	2	
48	10246	PIVOT PIN	2	
49	10251	PIN	2	
50	10252	PIN	2	
51	10253	PIN	2	
52	10260	CLAMP WASHER	2	
53				
54				
55	12121	BUSH	8	
56				
57				REPLACES LIFT UNIT
58	SS045026/002	WASHER (JOINT PINS)	12	
59				
60				
61	10233	REAR MOUNTING MOUNTING FRAME	1	
62				
63				

12 Row 'Multivator 90'

Assy N^o - Front 10441

Assy N^o - Rear 10442



12 ROW 'MULTIVATOR 90'

(ASSY. No. FRONT 10441,
REAR 10442)

ITEM No.	PART No.	DESCRIPTION	QTY	REMARKS
		HYDRAULIC COMPONENTS		
1	10140	QUICK RELEASE COUPLING	1	REF. ONLY
2	10192	HYDRAULIC RAM	2	
3	10291	3/8" M/M RESTRICTOR	2	
4	10303	3/8" HOSE ASSEMBLY (250)	2	
5	10379	HYDRAULIC RAM	2	
6				
7	11104	3/8" HOSE ASSEMBLY (4750)	1	
8	11124	1/2" DOWTY SEAL	1	
9	11125	3/8" DOWTY SEAL	2	
10				
11	SPCL 597	3/8" MALE TEE	1	
12				
13	UC 25	1/2" x 3/8" M/M ADAPTOR	1	
14				
15				
		LIFT UNIT		
16				
17	10434	LIFT ARM	1	
18	10435	MOUNTING FRAME	1	
19	10438	RAM MOUNTING BRACKET	2	
20	10443	STAY BODY	2	
21				
22	11718	ROD END R.H.	2	
23	11719	ROD END L.H.	2	
24	11734	LATCH	2	
25				
26	11816	RAM PIN	2	
27				
28	13337	STAY PIN	4	
29				
30				
31	22058075	STARLOCK WASHER	2	
32	22068112	1 1/8" UNC R.H. LOCKNUT	2	
33				
34	GS 412	GREASE NIPPLE	2	
35				
36	SPCT 132	BEARING BLOCK	4	
37	SPCT 143	CLAMP PLATE	2	
38				
39	SS016013/014	STEEL SPACER	2	
40				
		MODULE MOUNTING BEAM		
41	10237	L.H. BEAM	1	
42	10238	R.H. BEAM	1	
43	10241	RAM ARM - OUTER	2	
44	10242	RAM ARM - INNER	2	
45	10245	PIVOT PIN	2	
46	10246	PIVOT PIN	2	

12 ROW 'MULTIVATOR 90'

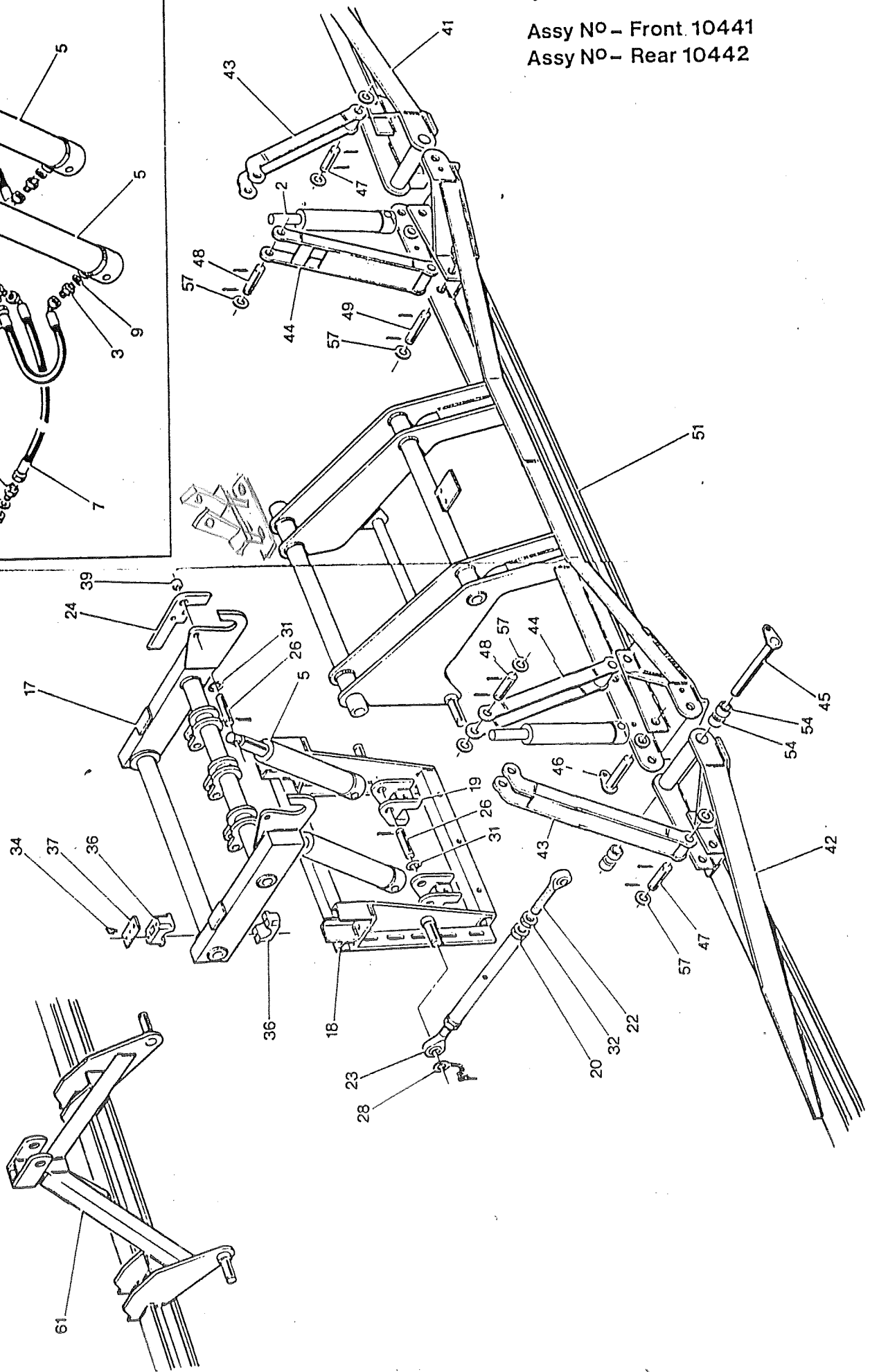
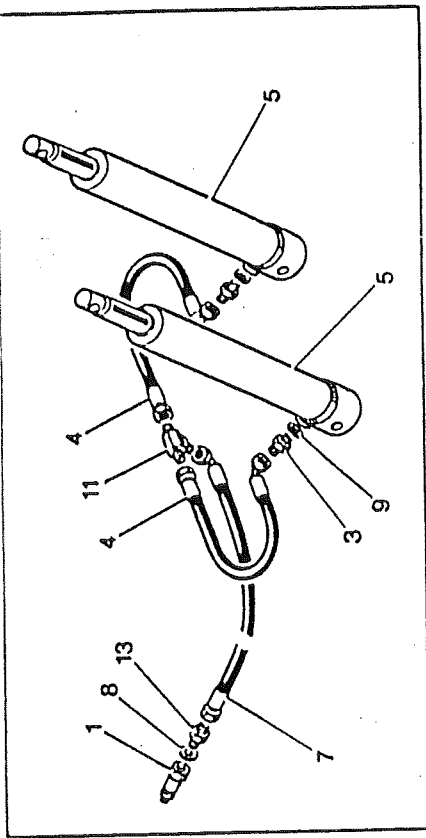
(ASSY. No. FRONT 10441,
REAR 10442)

ITEM No.	PART No.	DESCRIPTION	QTY	REMARKS
47	10251	PIN	2	
48	10252	PIN	2	
49	10253	PIN	2	
50				
51	10436	CENTRE FRAME	1	
52				
53				
54	12121	BUSH	8	
55				
56				
57	SS045026/002	WASHER (JOINT PINS)	12	
58				
59				
60				
61	10437	REAR MOUNTING CENTRE FRAME	1	REPLACES LIFT UNIT AND 10436
62				
63				
64				

12 Row 'Multivator 90'

Assy NO - Front 10441

Assy NO - Rear 10442



(ASSY. No. FRONT 10449
REAR 0142

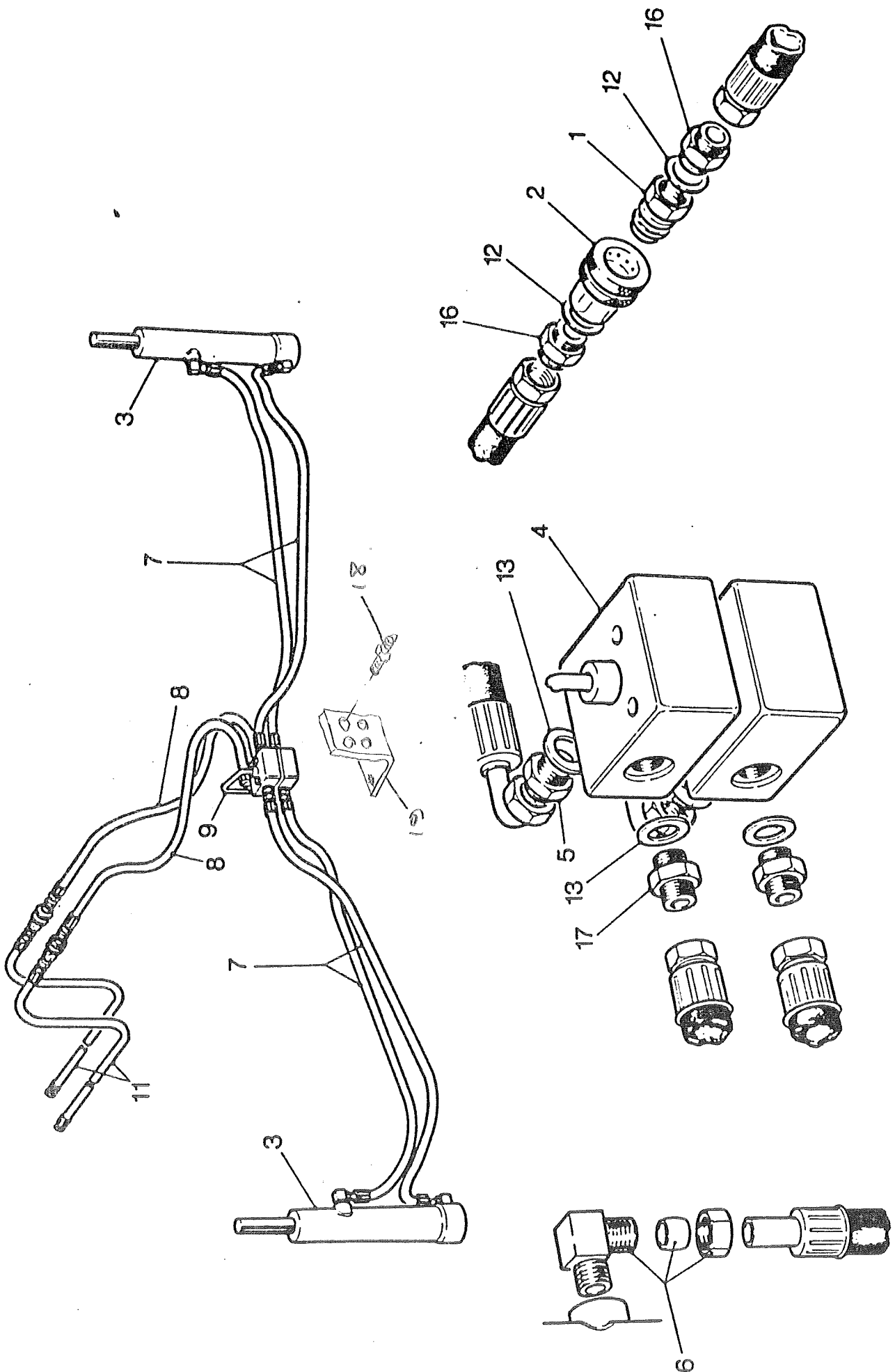
ADAPTOR 90°

ITEM No.	PART No.	DESCRIPTION	QTY	REMARKS
		HYDRAULIC COMPONENTS		
1	10140	QUICK RELEASE COUPLING	1	REF. ONLY
2	10192	HYDRAULIC RAM	2	
3	10291	1/2" M/M RESTRICTOR	2	
4	10303	1/2" HOSE ASSEMBLY (250)	2	
5	10379	HYDRAULIC RAM	2	
6				
7	11104	1/2" HOSE ASSEMBLY (4750)	1	
8	11124	1/2" DOWTY SEAL	1	
9	11125	1/2" DOWTY SEAL	2	
10				
11	SPCL 597	1/2" MALE TEE	1	
12				
13	UC 25	1/2" x 1/2" M/M ADAPTOR	1	
14				
15				
		LIFT UNIT		
16				
17	10434	LIFT ARM	1	
18	10435	MOUNTING FRAME	1	
19	10438	RAM MOUNTING BRACKET	2	
20	10443	STAY BODY	2	
21	11673	STOP PLATE	2	
22	11718	ROD END R.H.	2	
23	11719	ROD END L.H.	2	
24	11734	LATCH	2	
25	11733	STOP BRACKET	2	
26	11816	RAM PIN	2	
27				
28	13337	STAY PIN	4	
29				
30				
31	22058075	STARLOCK WASHER	2	
32	22068112	1 1/2" UNC R.H. LOCKNUT	2	
33				
34	GS 412	GREASE NIPPLE	2	
35				
36	SPCT 132	BEARING BLOCK	4	
37	SPCT 143	CLAMP PLATE	2	
38				
39	SS016013/014	STEEL SPACER	2	
40				
		MODULE MOUNTING BEAM		
41	10237	L.H. BEAM	1	
42	10238	R.H. BEAM	1	
43	10241	RAM ARM - OUTER	2	
44	10242	RAM ARM - INNER	2	
45	10245	PIVOT PIN	2	
46	10246	PIVOT PIN	2	

12 ROW 'MULTIVATOR 90'

(ASSY. No. FRONT 10441,
REAR 10442)

ITEM No.	PART No.	DESCRIPTION	QTY	REMARKS
47	10251	PIN	2	
48	10252	PIN	2	
49	10253	PIN	2	
50				
51	10436	CENTRE FRAME	1	
52				
53				
54	12121	BUSH	8	
55				
56				
57	SS045026/002	WASHER (JOINT PINS)	12	
58				REPLACES LIFT UNIT AND 10436
59				
60				
61	10437	REAR MOUNTING CENTRE FRAME	1	
62				
63				
64				

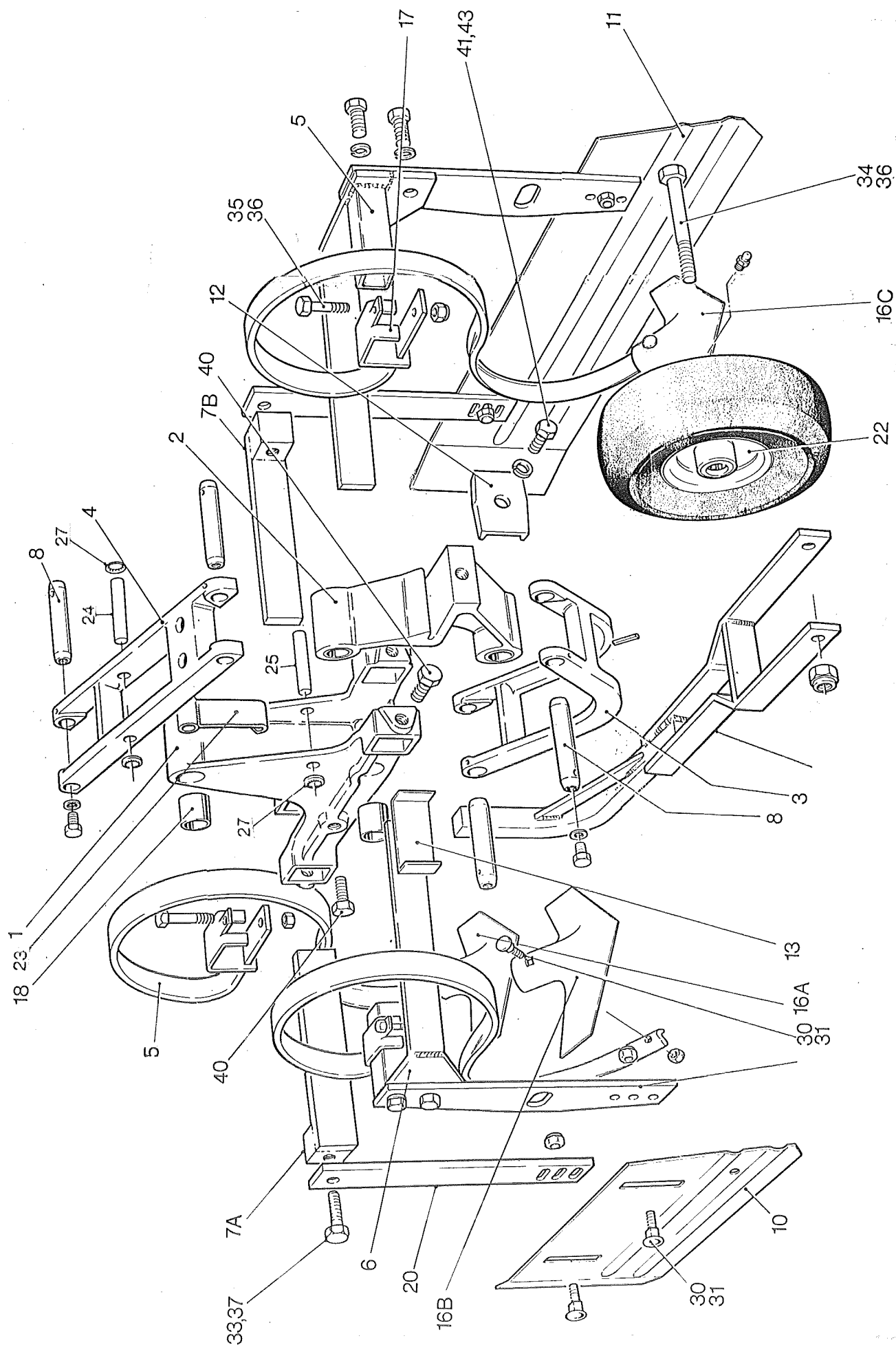


HYDRAULICS

(ASSY. No. FRONT 10118)
(ASSY. No. REAR 10119)

ITEM No.	PART No.	DESCRIPTION	QTY	REMARKS
	10118	FRONT MOUNTED		
1	10140	QUICK RELEASE COUPLING	2	
2	10141	QUICK RELEASE COUPLING	2	
3	10192	RAM	2	
4	10275	VALVE ASSEMBLY	2	
5	10291	RESTRICTOR	2	
6	10304	FITTING	4	
7	10305	HOSE ASSEMBLY	4	
8	10306	HOSE ASSEMBLY	2	
9	10315	VALVE HANDLE	1	
10				
11	11104	HOSE ASSEMBLY	2	
12	11124	DOWTY SEAL	4	
13	11125	DOWTY SEAL	6	
14				
15				
16	UC 25	ADAPTOR	4	
17	UC 31A	ADAPTOR	6	
18	10466	BULKHEAD ADAPTOR	4	
19	10467	BULKHEAD PLATE	1	
	10119	REAR MOUNTED		
1				
2				
3	10192	RAM	2	
4	10275	VALVE ASSEMBLY	2	
5	10291	RESTRICTOR	2	
6	10304	FITTING	4	
7	10305	HOSE ASSEMBLY	4	
8	10306	HOSE ASSEMBLY	2	
9	10315	VALVE HANDLE	1	
10				
11				
12				
13	11125	DOWTY SEAL	6	
14				
15				
16				
17	UC 31A	ADAPTOR	6	
18	10466	BULKHEAD ADAPTOR	4	
19	10467	BULKHEAD PLATE	1	

Module Breakdown



HOE MODULE DETAILS

(ASSY. No. 10328)
(ASSY. No. 10329)
(ASSY. No. 10330)

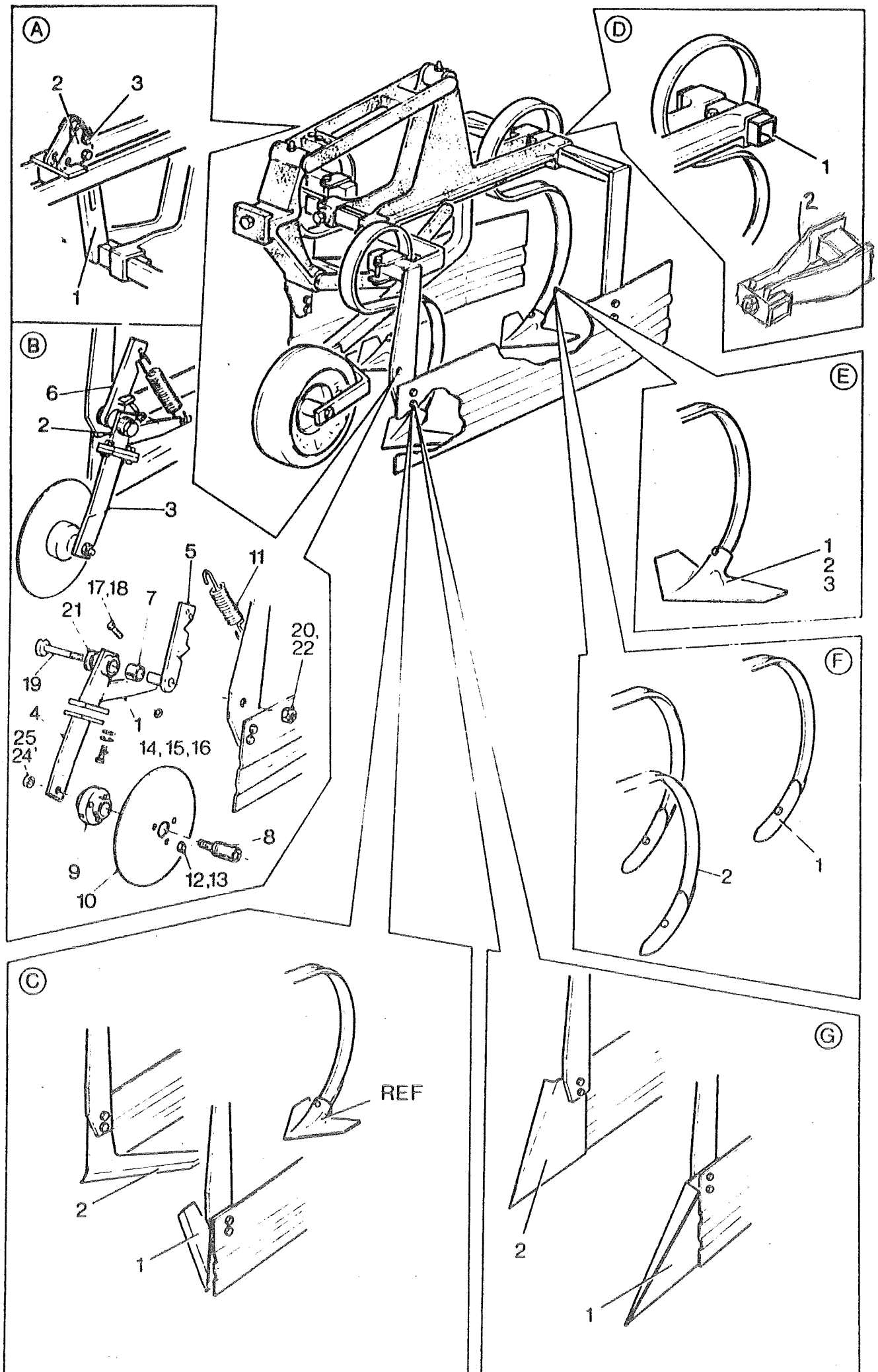
ITEM No.	PART No.	DESCRIPTION	QTY	REMARKS
	ASSY 10329	RH END UNIT 16" TO 20" ROW CENTRES		
1	10384	BODY	1	
2	10201	MOUNTING	1	
3	10387	ARM (LOWER)	1	
4	10388	ARM (UPPER)	1	
5	10257	SHIELD ARM LH	1	
6	10256	SHIELD ARM RH	1	
7A	10323	SHIELD ARM REAR	1	
7B	10324	SHIELD ARM REAR	1	
8	10386	ARM PIVOT PIN	4	
9	10385	DEPTH WHEEL MOUNTING ARM	1	
10	10326	PANEL RH	1	
11	10325	PANEL LH	1	
12	10211	CLAMP PLATE	1	
13	10212	PACKING STRIP	2	
14	10283	SHIELD MOUNTING	2	
15	10316	SPRING TINE	2	
16A	10320	7" 'A' BLADE	1	
16B	10319	6" 'A' BLADE RH	1	
17	10269	SPRING TINE CLAMP	2	
18	12120	OILITE BUSH	8	
19				
20	10327	SHIELD REAR SUPPORT	2	
21				
22	10190	WHEEL	1	
23	10430	SUPPORT HOOK	1	
24	10431	PIVOT PIN	1	
25	10432	SUPPORT PIN	1	
26				
27	22059010	STARLOCK WASHER	4	
	ASSY 10330	LH END UNIT 16" TO 20" ROW CENTRES		
1	10384	BODY	1	
2	10201	MOUNTING	1	
3	10387	ARM (LOWER)	1	
4	10388	ARM (UPPER)	1	
5	10255	SHIELD ARM LH	1	
6	10258	SHIELD ARM RH	1	
7A	10324	SHIELD ARM REAR	1	
7B	10323	SHIELD ARM REAR	1	
8	10386	ARM PIVOT PIN	4	
9	10385	DEPTH WHEEL MOUNTING ARM	1	
10	10326	PANEL RH	1	
11	10325	PANEL LH	1	
12	10211	CLAMP PLATE	1	
13	10212	PACKING STRIP	2	
14	10283	SHIELD MOUNTING	2	

HOE MODULE DETAILS

(ASSY. No. 10328)
(ASSY. No. 10329)
(ASSY. No. 10330)

ITEM No.	PART No.	DESCRIPTION	QTY	REMARKS
15	10316	SPRING TINE	2	
16A	10320	7" 'A' BLADE	1	
16C	10318	6" 'A' BLADE LH	1	
17	10269	SPRING TINE CLAMP	2	
18	12120	OILITE BUSH	8	
19				
20	10327	SHIELD REAR SUPPORT	2	
21				
22	10190	WHEEL	1	
23	10430	SUPPORT HOOK	1	
24	10431	PIVOT PIN	1	
25	10432	SUPPORT PIN	1	
26				
27	22059010	STARLOCK WASHER	4	
	ASSY 10328	MODULE 16" TO 20" ROW CENTRES		
1	10384	BODY	1	
2	10201	MOUNTING	1	
3	10387	ARM (LOWER)	1	
4	10388	ARM (UPPER)	1	
5	10257	SHIELD ARM LH	1	
6	10258	SHIELD ARM RH	1	
7B	10324	SHIELD ARM REAR	2	
8	10386	ARM PIVOT PIN	4	
9	10385	DEPTH WHEEL MOUNTING ARM	1	
10	10326	PANEL RH	1	
11	10325	PANEL LH	1	
12	10211	CLAMP PLATE	1	
13	10212	PACKING STRIP	2	
14	10283	SHIELD MOUNTING	2	
15	10316	SPRING TINE	3	
16A	10320	7" 'A' BLADE	1	
16B	10319	'A' BLADE RH	1	
16C	10318	'A' BLADE LH	1	
17	10269	SPRING TINE CLAMP	3	
18	12120	OILITE BUSH	8	
19				
20	10327	SHIELD REAR SUPPORT	2	
21				
22	10190	WHEEL	1	
23	10430	SUPPORT HOOK	1	
24	10431	PIVOT PIN	1	
25	10432	SUPPORT PIN	1	
26				
27	22059010	STARLOCK WASHER	4	

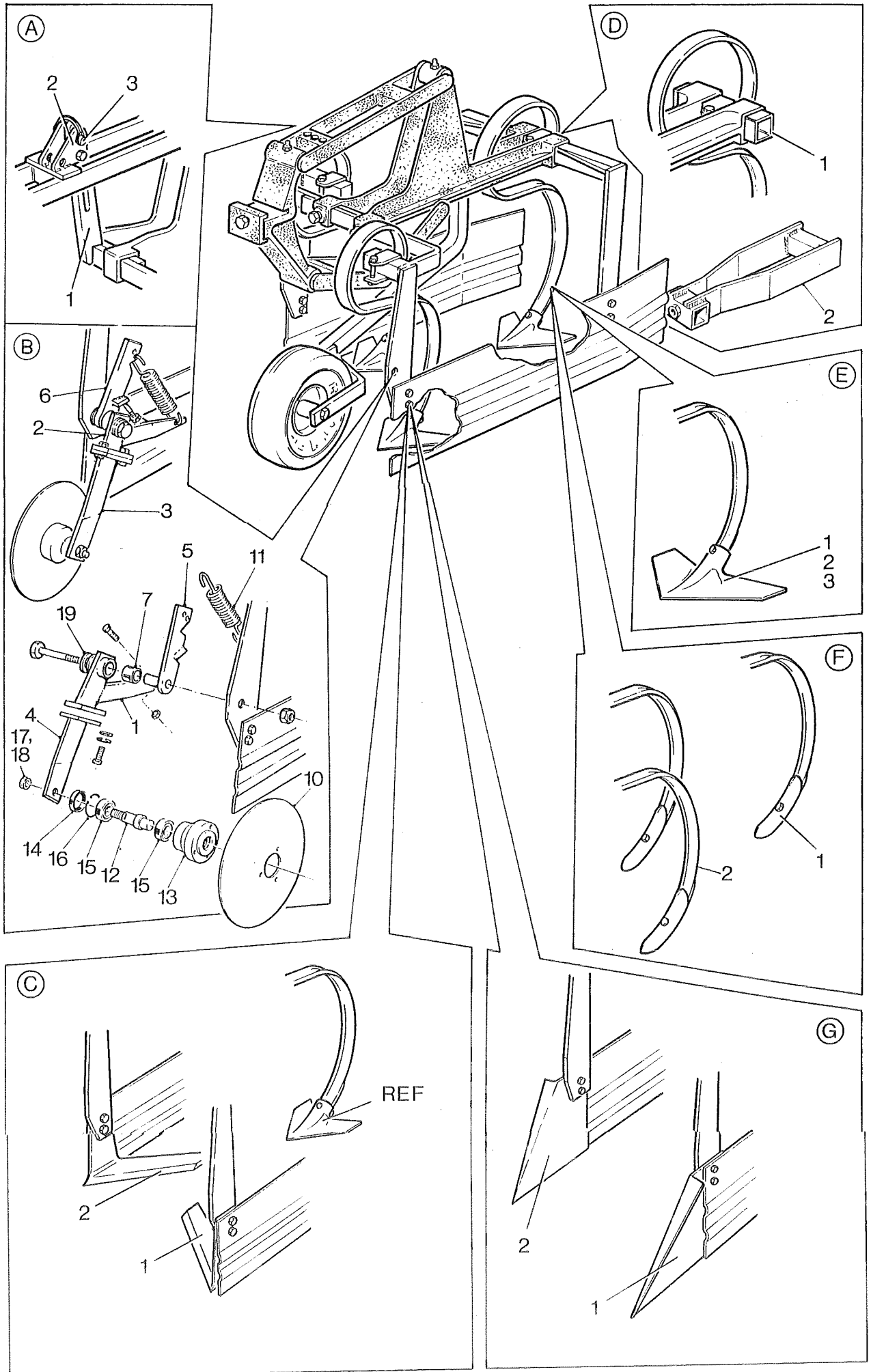
Module Options



MODULE OPTIONS

ITEM No.	PART No.	DESCRIPTION	QTY	REMARKS
		OPTION A		
1	10280	SUPPORT LEG	1	{FOR STRIPVATOR No IS 10413
2	10281	SUPPORT LEG BRACKET	1	
3	10282	QUICK RELEASE PIN	1	
	10343	OPTION B		
1	10352	L.H.DISC COULTER LEG TOP	1	
2	10353	R.H.DISC COULTER LEG TOP	1	
3	10354	R.H. DISC COULTER LEG BOTTOM	1	
4	10355	L.H. DISC COULTER LEG BOTTOM	1	
5	10356	L.H. SPRING ANCHOR	1	
6	10357	R.H. SPRING ANCHOR	1	
7	12286	BUSH	2	
8	FPS 118	BEARING	2	
9	H 141 A	HUB	2	
10	H 142	DISC	2	
11	RH 80	SPRING	2	
12				
13				
14				
15				
		OPTION C		
1	10222	SHORT NOSE 'L' BLADE - LEFT HAND	1	
	10295	LONG NOSE 'L' BLADE - LEFT HAND	1	
2	10223	SHORT NOSE 'L' BLADE - RIGHT HAND	1	
	10296	LONG NOSE 'L' BLADE - RIGHT HAND	1	
		OPTION D		
1	10292	TINE SUPPORT BAR	1	
2	10412	TINE BRACKET (315 REARWARDS)	1	PER MODULE
		OPTION E		
1	10321	10" 'A' BLADE	1	
2	10320	7" 'A' BLADE	1	
3	10317	4" 'A' BLADE	1	
		OPTION F		
1	10240	CULTIVATOR POINT	3	
2	10217	SPRING TINE	3	
		OPTION G		
1	10289	LEAF LIFTER - LEFT HAND	1	
2	10290	LEAF LIFTER - RIGHT HAND	1	

Module Options

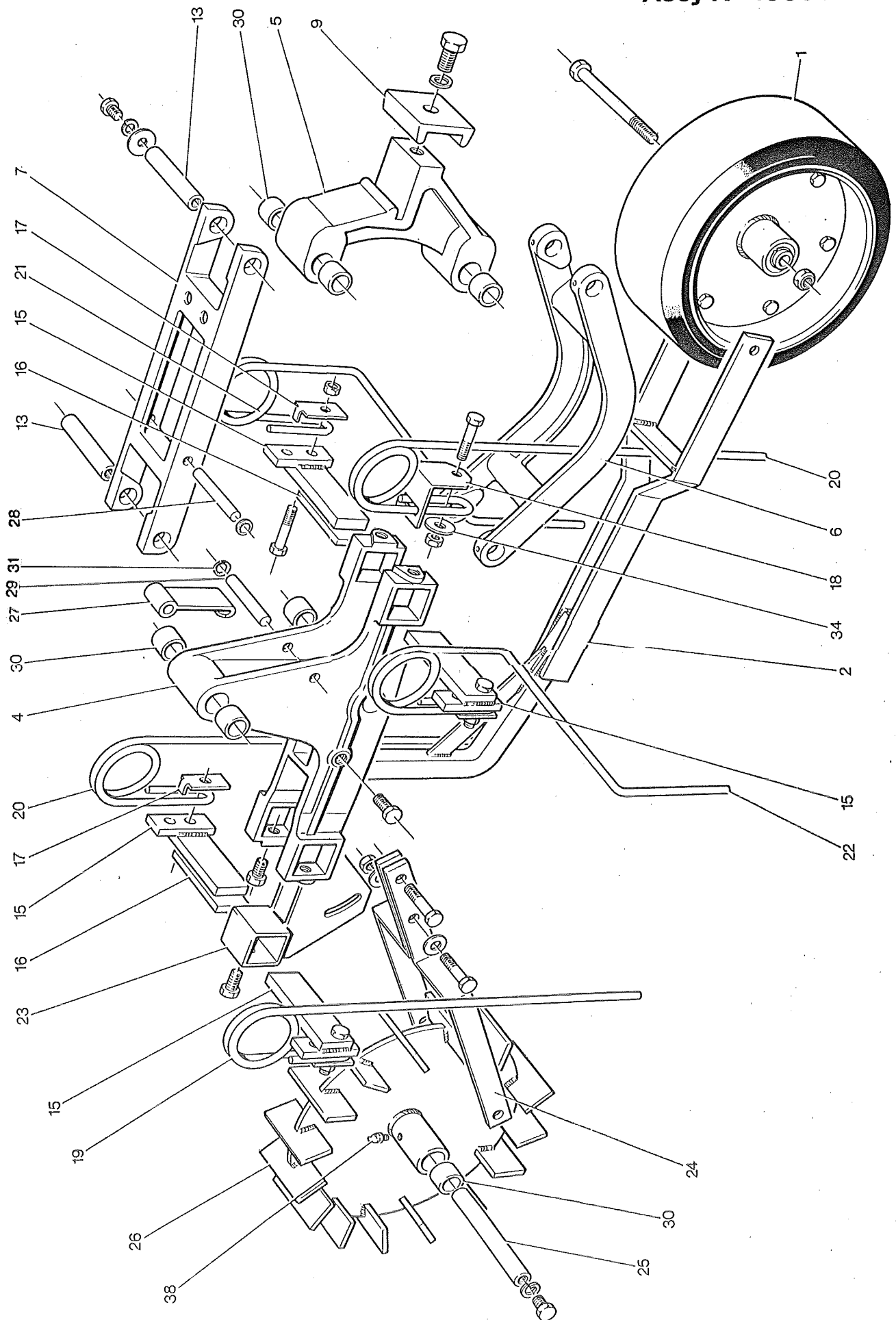


MODULE OPTIONS

ITEM No.	PART No.	DESCRIPTION	QTY	REMARKS
		OPTION A		
1	10280	SUPPORT LEG	1	{FOR STRIPVATOR No IS 10413
2	10281	SUPPORT LEG BRACKET	1	
3	10282	QUICK RELEASE PIN	1	
	10343	OPTION B		
1	10352	L.H.DISC COULTER LEG TOP	1	
2	10353	R.H.DISC COULTER LEG TOP	1	
3	10354	R.H. DISC COULTER LEG BOTTOM	1	
4	10355	L.H. DISC COULTER LEG BOTTOM	1	
5	10356	L.H. SPRING ANCHOR	1	
6	10357	R.H. SPRING ANCHOR	1	
7	12286	BUSH	2	
8				
9				
10	H 142	DISC	2	
11	RH 80	SPRING	2	
12	10470	SPINDLE	2	
13	10469	HUB	2	
14	10474	OIL SEAL	2	
15	6002 2RS	BEARING	4	
16	10480	CIRCLIP	2	
17		½"BSW NUT	2	
18		½" SPRING WASHER	2	
19		25mmI/D PLAIN WASHER	8	
		OPTION C		
1	10222	SHORT NOSE 'L' BLADE - LEFT HAND	1	
	10295	LONG NOSE 'L' BLADE - LEFT HAND	1	
2	10223	SHORT NOSE 'L' BLADE - RIGHT HAND	1	
	10296	LONG NOSE 'L' BLADE - RIGHT HAND	1	
		OPTION D		
1	10292	TINE SUPPORT BAR	1	
		OPTION E		
1	10321	10" 'A' BLADE	1	
2	10320	7" 'A' BLADE	1	
3	10317	4" 'A' BLADE	1	
		OPTION F		
1	10240	CULTIVATOR POINT	3	
2	10217	SPRING TINE	3	
		OPTION G		
1	10289	LEAF LIFTER - LEFT HAND	1	
2	10290	LEAF LIFTER - RIGHT HAND	1	

Stripvator Module Assembly

Assy N° 10399

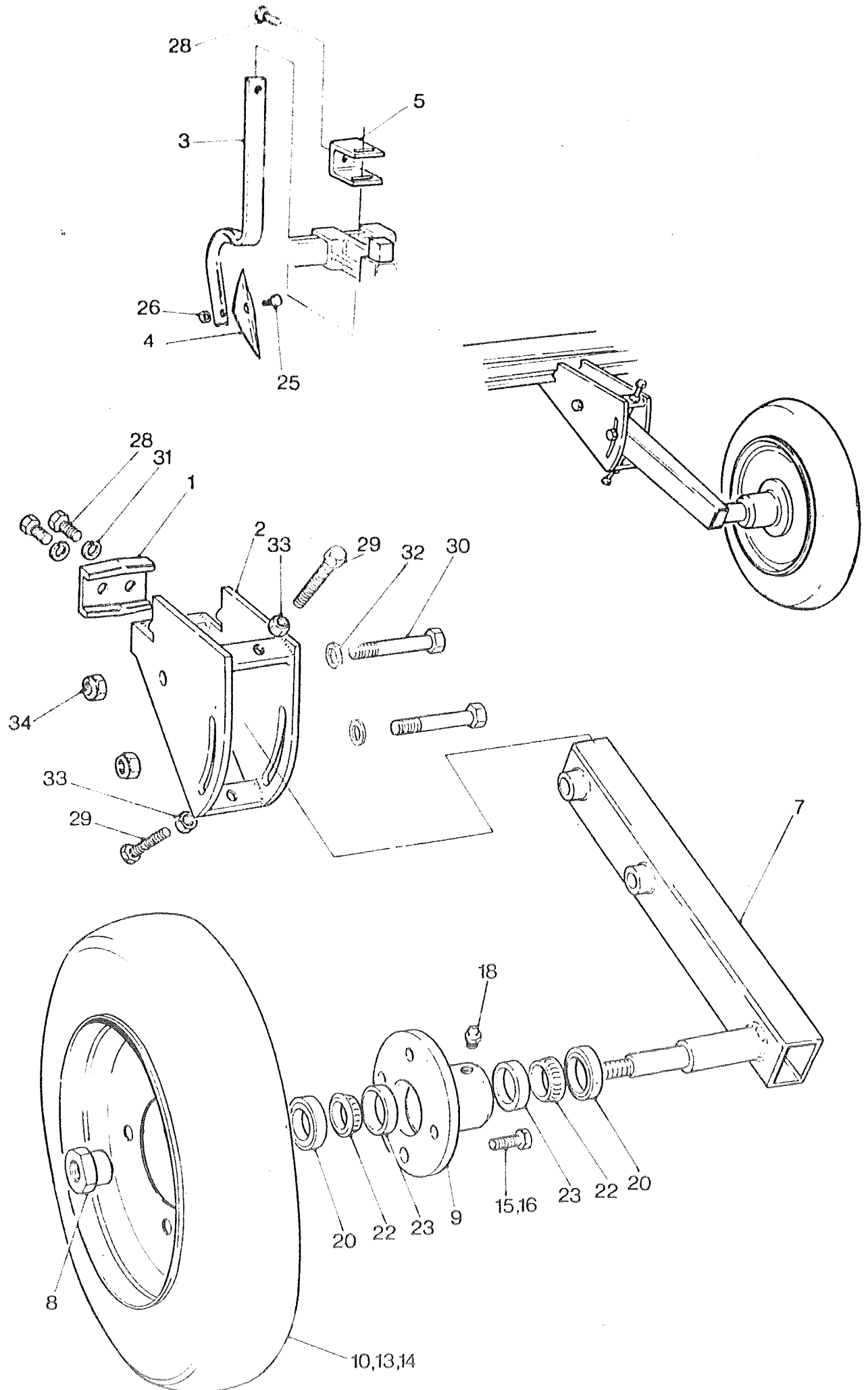


STRIPVATOR MODULE ASSEMBLY

(ASSY. No. 10399)

ITEM No.	PART No.	DESCRIPTION	QTY	REMARKS
1	10190	RUN FLAT WHEEL	1	
2	10385	DEPTH WHEEL ARM	1	
3				
4	10200	BODY	1	
5	10201	MOUNTING	1	
6	10202	LOWER ARM	1	
7	10203	UPPER ARM	1	
8				
9	10211	CLAMP PLATE	1	
10				
11				
12				
13	10386	ARM PIVOT PIN	4	
14				
15	10400	SPRING MOUNT ARM	4	
16	10401	SPACER	2	
17	10402	SPRING CLAMP	4	
18	10403	SPRING CLAMP - CENTRE	1	
19	10404	STRAIGHT SPRING R.H.	1	
20	10405	STRAIGHT SPRING L.H.	2	
21	10406	OFFSET SPRING R.H.	1	
22	10407	OFFSET SPRING L.H.	1	
23	10408	CRUMBLER WHEEL BRACKET	1	
24	10409	CRUMBLER WHEEL ARM	2	
25	10410	CRUMBLER WHEEL SHAFT	1	
26	10411	CRUMBLER WHEEL	1	
27	10430	SUPPORT HOOK	1	
28	10431	PIVOT PIN	1	
29	10432	SUPPORT PIN	1	
30	12120	BUSH	10	
31	22059010	STARLOCK WASHER	4	
32				
33				
34	22048012	M12 WASHER (35 O/D)	1	
35				
36				
37				
38	GS 412	GREASE NIPPLE	1	
39				
40				

Steerage System, for 6 Rows or Less

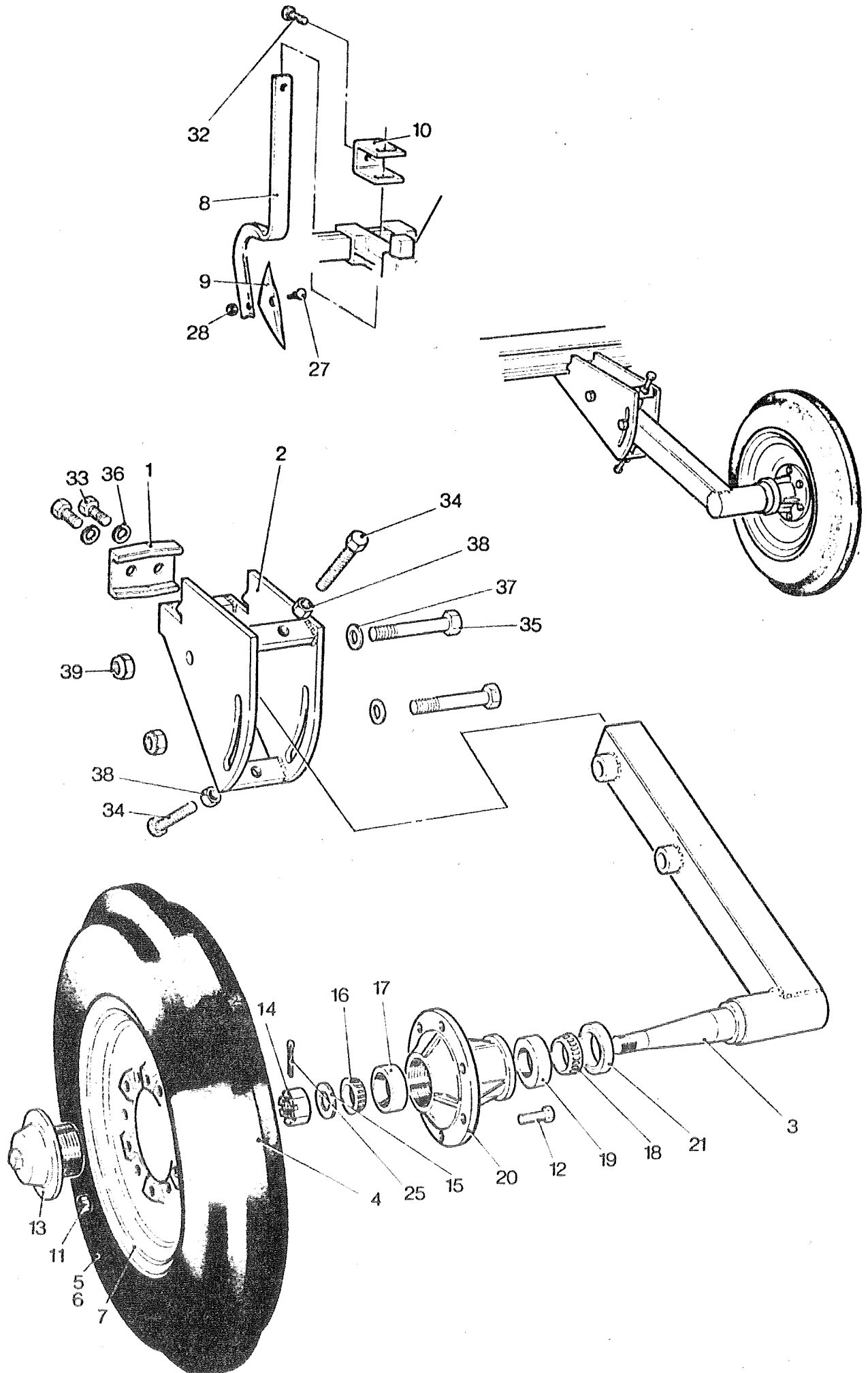


STEERING SYSTEM FOR 6 ROWS OR LESS

(ASSY. No. 10360)

ITEM No.	PART No.	DESCRIPTION	QTY	REMARKS
1	10260	CLAMP WASHER	2	
2	10261	WHEEL CLAMP	2	
3	10286	MARKER TINE	2	
4	10287	MARKER BLADE	2	
5	10288	MARKER MOUNTING BRACKET	2	
6				
7	10310	WHEEL LEG	2	
8	10311	WHEEL NUT	2	
9	10312	WHEEL HUB	2	
10	10313	TYRE 5.20 x 10	2	
11				
12				
13	17199	TUBE 5.20 x 10	2	
14	17200	WHEEL RIM	2	
15	17201	WHEEL STUD	8	
16	17202	WHEEL NUT	8	
17				
18	GS 412	GREASE NIPPLE	2	
19				
20	PS 788/1	OIL SEAL	4	
21				
22	SP 336/A	BEARING INNER	4	
23	SP 336/B	BEARING OUTER	4	
24				
25				

Steerage System for 7 to 12 Row

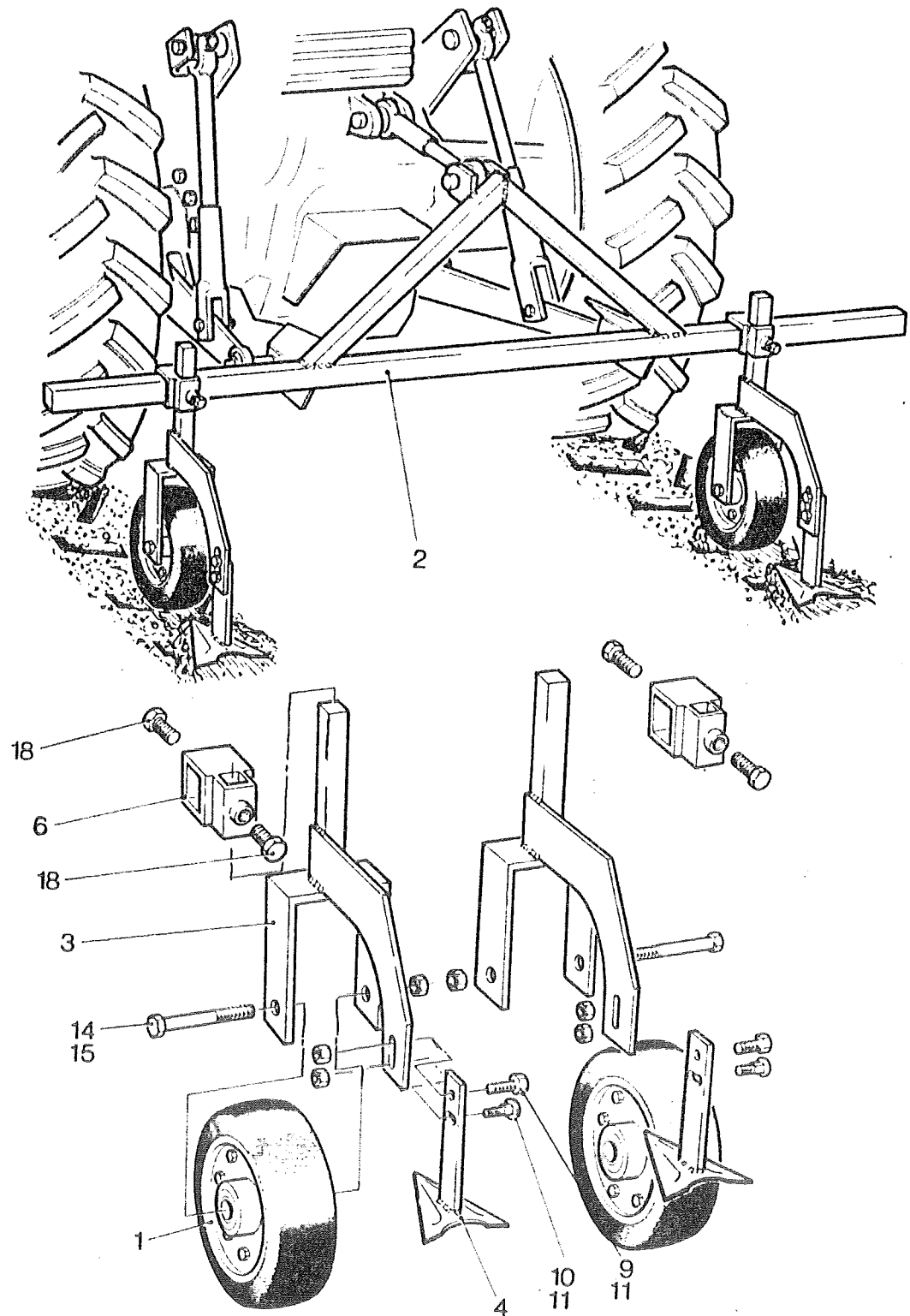


STEERAGE SYSTEM FOR 7 TO 12 ROWS

(ASSY. No. 10361)

ITEM No.	PART No.	DESCRIPTION	QTY	REMARKS
1	10260	CLAMP WASHER	2	
2	10261	WHEEL CLAMP	2	
3	10262	WHEEL MOUNTING	2	
4	10277	WHEEL ASSEMBLY	2	
5	10278	TYRE	2	
6	SP 321/B	TUBE	2	
7	SP 321/C	RIM	2	
8	10286	MARKER TINE	2	
9	10287	MARKER BLADE	2	
10	10288	MARKER MOUNTING BRACKET	2	
11	SP 330	WHEEL NUT	12	
12	SP 331/1	WHEEL STUD	12	
13	SP 332	CAP	2	
14	SP 333	NUT	2	
15	SP 334	WASHER	2	
16	SP 336A	BEARING INNER	2	
17	SP 336B	BEARING OUTER	2	
18	SP 337A	BEARING INNER	2	
19	SP 337B	BEARING OUTER	2	
20	SP 339	HUB	2	
21	SP 342	OIL SEAL	2	
22				
23				
24				
25		3/16 DIA. x 1 1/8 LONG COTTER PIN	2	
26				
27		M10 x 40mm CSK HD SETSCREW (SPECIAL)	2	
28		M10 LOCKNUT	2	
29				
30				

Track Indicator, With Depth Wheel

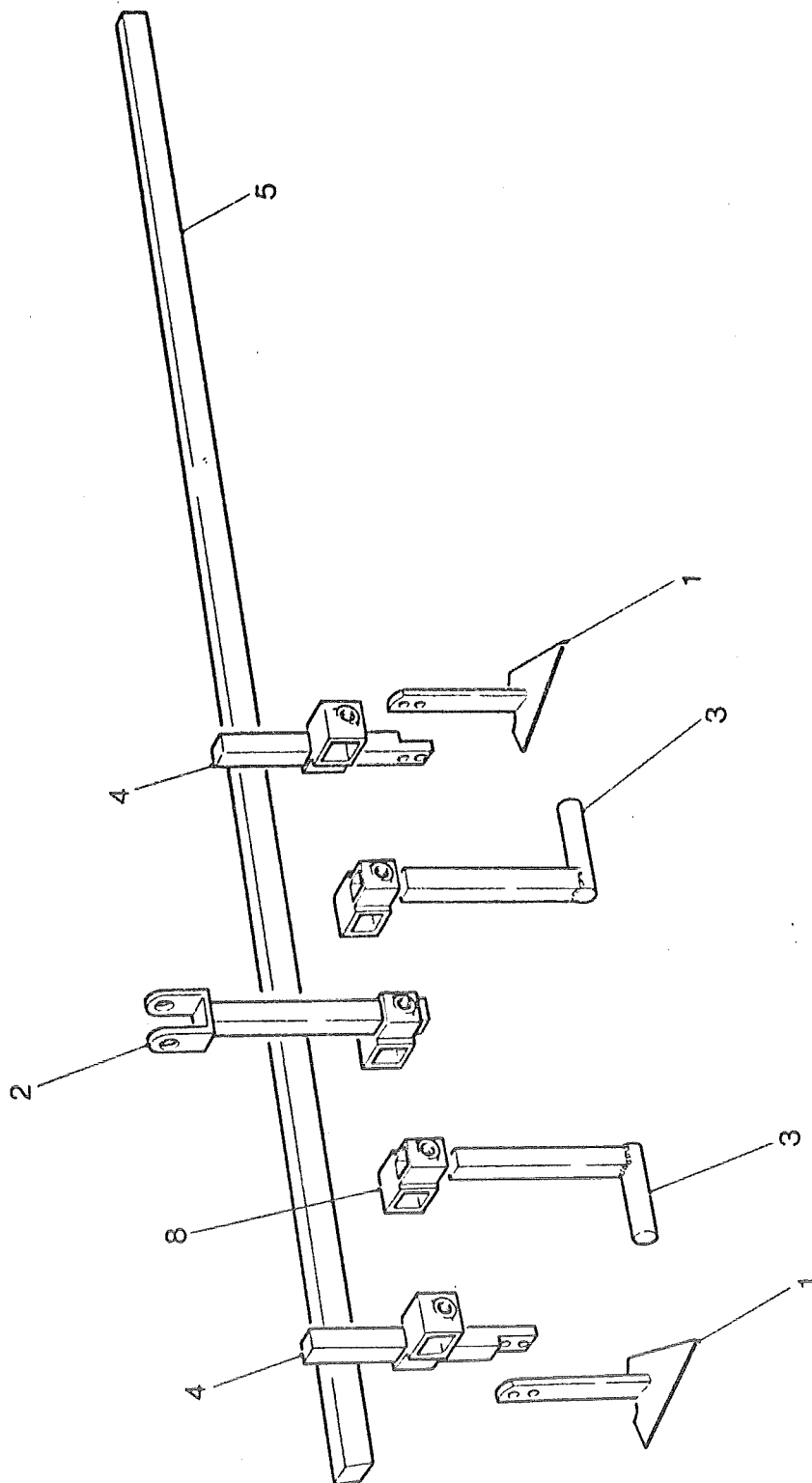


TRACK ERADICATOR WITH DEPTH WHEEL

(ASSY. No. 10362)

ITEM No.	PART No.	DESCRIPTION	QTY	REMARKS
1	10190	WHEEL	2	
2	10284	TRACK ERADICATOR 'A' FRAME	1	
3	10285	WHEEL/BLADE SUPPORT	2	
4	H 37	'A' BLADE 8"	2	
5				
6	PS 11	CLAMP BRACKET	2	
7				
8				

Track Iradicator, Without Depth Wheel



TRACK IRADICATOR WITHOUT DEPTH WHEEL

ITEM No.	PART No.	DESCRIPTION	QTY	REMARKS
1	H 37	HOE BLADE	2	
2	H 126/1	LIFT YOKE	1	
3	H 128	LINKAGE ARM AND PIN	2	
4	H 234	'A' BLADE STALK	2	
5	H 238	TRACK BAR	1	
6				
7				
8	PS 11	MOUNTING BRACKET	5	
9				
10				