

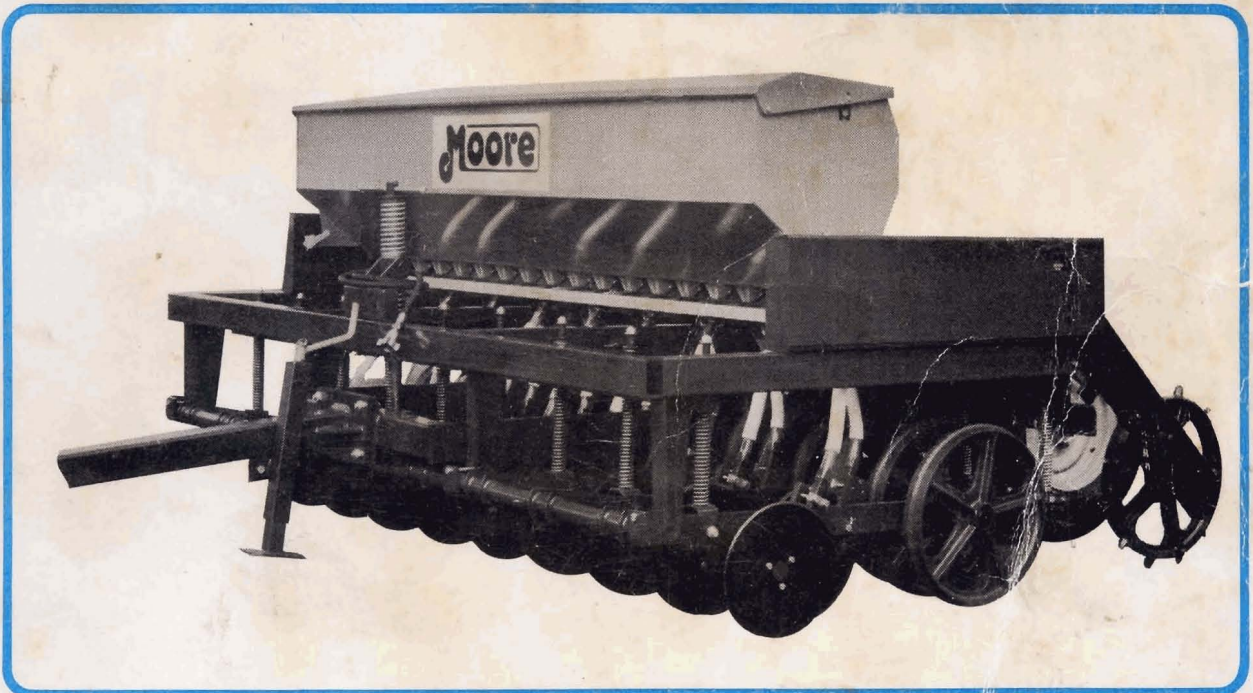
3M SERIAL NOS: 7001-7145

Moore

All-till Uni-drill

BRITISH PATENT No. 1,218,785 U.S.A. PATENT No. 3,611,956 OTHER PATENTS PENDING

Instruction Manual and Parts List

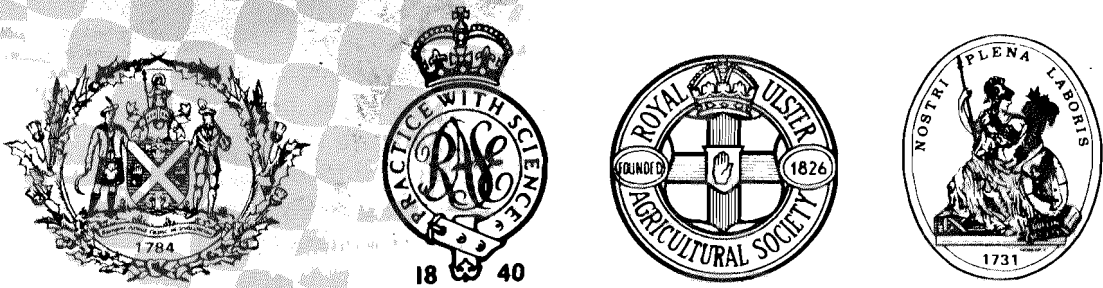
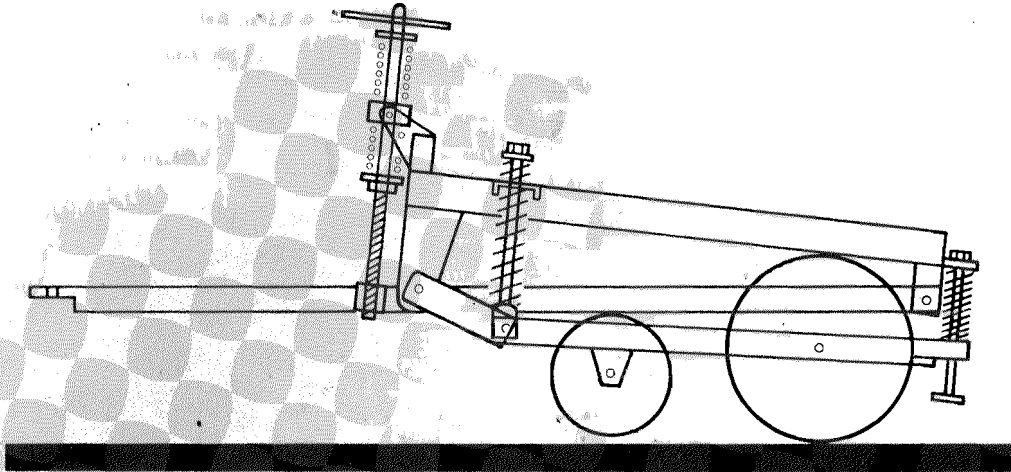


Moore Uni-drill Ltd.

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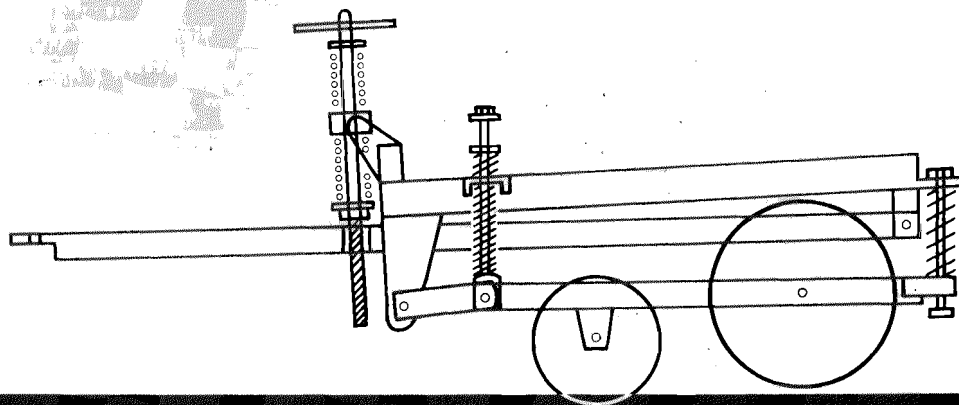
Operating Instructions : Moore 'uni-drill'

FIGURE A: MINIMUM PENETRATION
Uni-Drill with all the weight on the press
wheel rollers —
Disc seed coulters not touching ground



ALSO WINNER OF THE BURKE TROPHY FOR THE MACHINE OF
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FIGURE B: MAXIMUM PENETRATION
Uni-Drill with all the weight on the disc
seed coulters —
Press wheel rollers not touching ground



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FIGURE 1 THE MOORE ALL-TILL UNI-DRILL

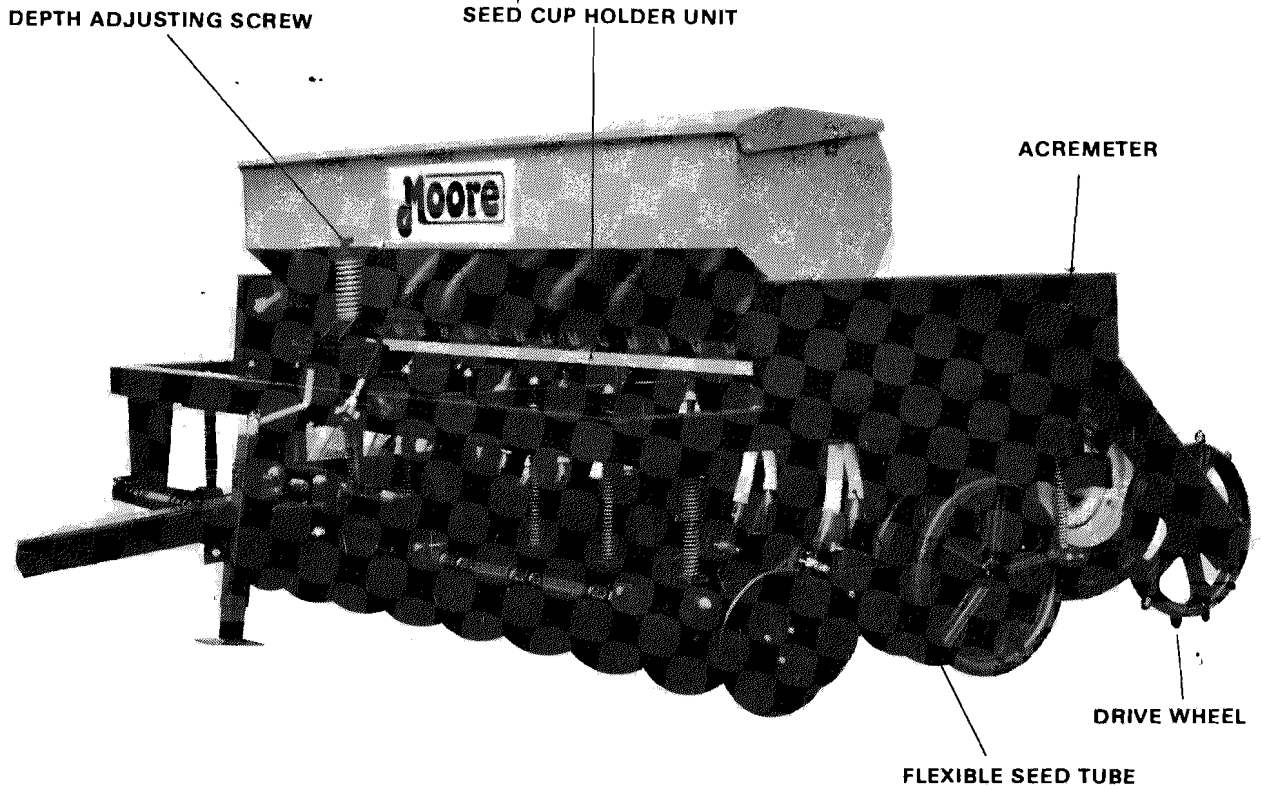
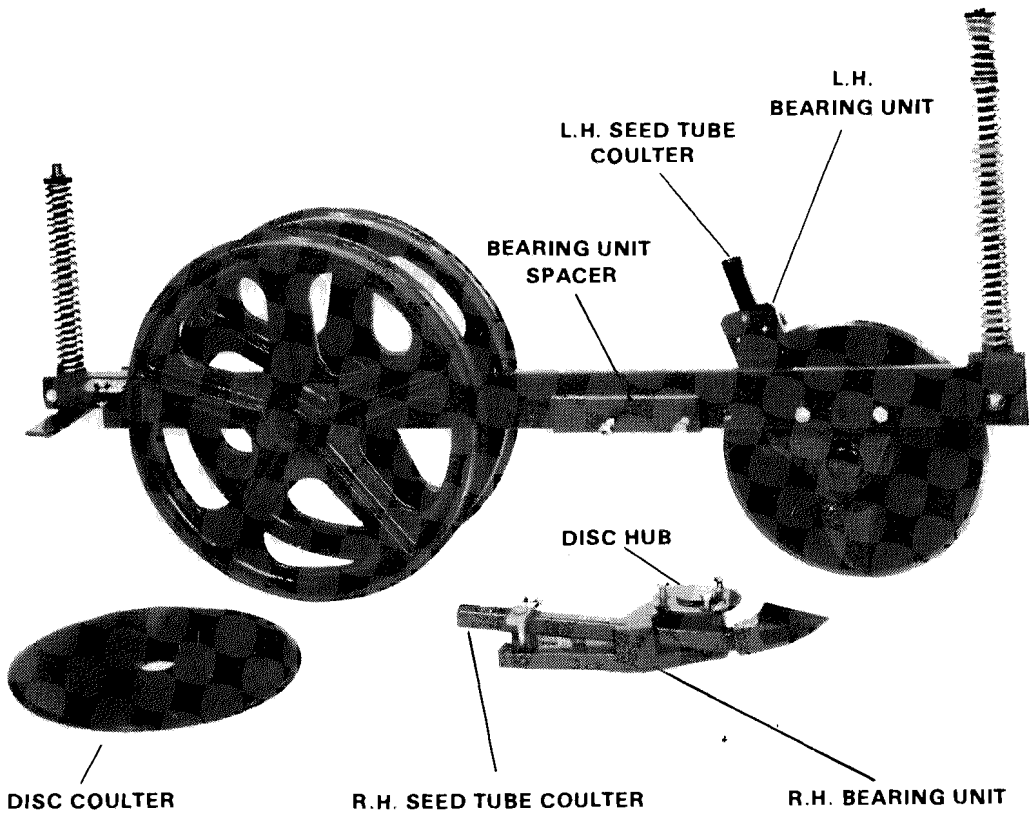


FIGURE 2 DRAG ARM SEEDING UNIT



Operating Instructions : Moore 'uni-drill'

1 DESCRIPTION

The All-Till Uni-Drill will sow almost any seed into a variety of seed beds. It can be used for direct drilling or no-till application right through 'scratch' cultivations, minimum tillage to conventional seed beds. It is of robust construction and has an output of up to seven acres per hour (3 Hectares per hour).

The All-Till Uni-Drill consists of nine independent drag arm seeding units which are spring mounted to the main frame. Each unit consists of 2 discs and 2 press wheel rollers, - the discs are mounted each side of the drag arm at opposite angles. A seed tube coulter is mounted on the inside of each disc, in a position which enables the seed to be placed in a slit cut by the disc.

The press wheel rollers are mounted to the rear of the drag arms behind the discs, rolling directly over the slits.

2. SPECIFICATION

Overall Width	9ft.8½in.	2960mm
Overall Length	12ft.0in.	3650mm
Overall Height (Transport)	5ft. 10in.	1790mm
Overall Height (Working)	5ft.1in.	1550mm
Total Weight	4,500 lbs.	2050 Kg.
Sowing Width	9ft.10½in.	3000mm
Number of Coulters	18	18
Row Width	6½in.	166mm
Seedbox Capacity	21 cu. ft.	600 litres

3. WORKING PRINCIPLE

When the drill is in the raised position, the weight of the machine is carried on the two land wheels and the tractor drawbar. As the machine is lowered, the disc coulters and press wheels touch the ground, meet resistance from the soil, and begin to compress the springs attached to each end of the drag arm seeding units - the frame can be lowered until all the available weight of the machine is supported on the springs.

The penetration of the discs and hence the seed depth can be controlled by the depth adjusting screw. This alters the relationship between the discs and the roller press wheels; weight can be transferred from the rollers to the discs or vice-versa (*See Figs A and B*). As each drag arm is separately sprung both front and back, each unit is able to follow ground contours independently. As the drill is drawn forward, the inclined disc opens a slit and the seed tube coulter acts like a tine to prepare a tilth into which the seeds are dropped. The roller press wheels then consolidate to ensure good seed/soil contact and moisture retention.

4. PREPARATION FOR WORK

Tractor Size - The tractor should be 50 horse power or more and fitted with an external hydraulic supply to raise and lower the machine in and out of work.

Hydraulic System - Single-acting system using a single hydraulic ram connected to the tractor by a 'Dowty' coupling.

Drawbar - The drill should be connected to a fixed clevis type drawbar with a good condition drawbar pin secured with a linch pin.

5. TRANSPORT

The drill is raised and lowered hydraulically and locking pins are provided for road transport. When the drill is in work the tractor hydraulic control valve should be in the fully floating position so that the road wheels may ride freely over undulating ground conditions.

It should be remembered that the drill is 9ft.8½in., (2960mm) wide overall and care is needed when travelling on public roads. An advised maximum speed of 20 m.p.h., should be observed in absence of a drill braking system.

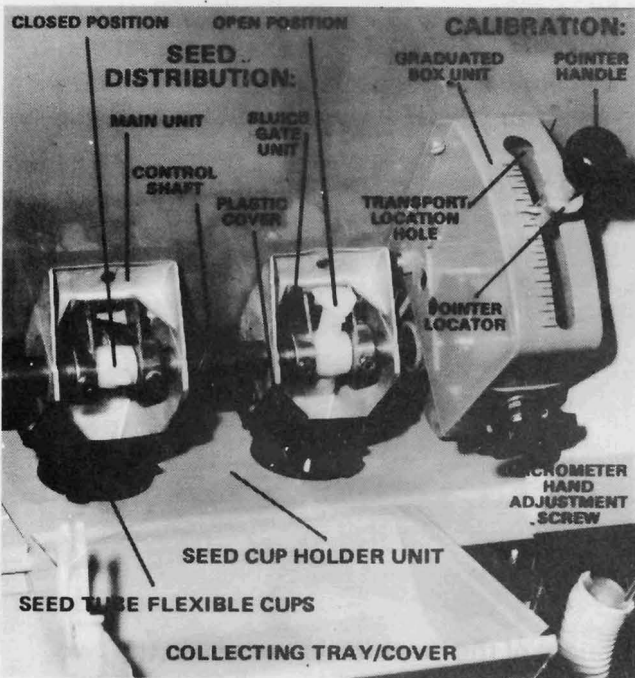
6. DEPTH CONTROL

This is achieved by turning the depth adjusting screw to raise or lower the discs to the required depth in different field conditions and seed requirements; turning the screw clockwise increases depth, while turning the screw anti-clockwise reduces the depth. Care must be taken with this setting to achieve correct seed depth and effective pressing with the rear press wheels. The tractor drawbar height may need to be altered to achieve the necessary result.

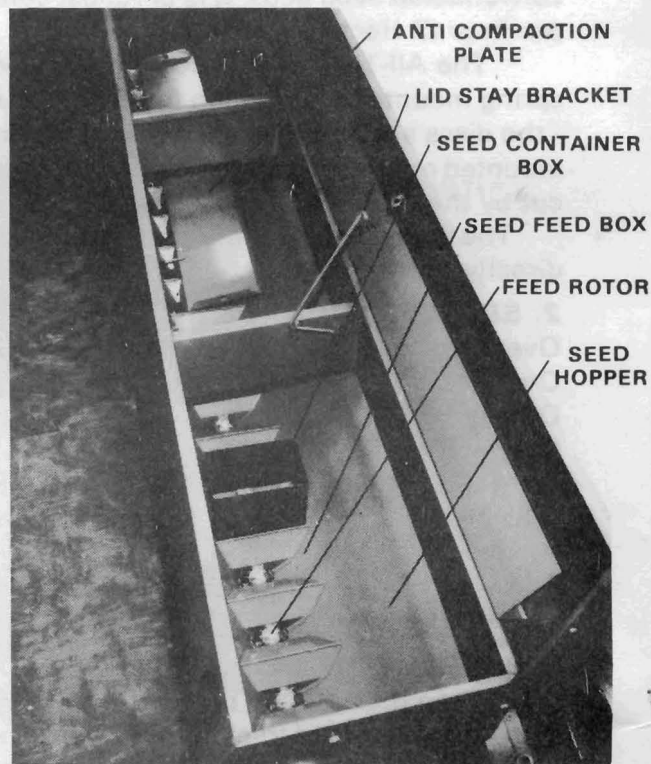
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— FIGURE 3 —
SEED DISTRIBUTION
AND CALIBRATION UNITS

SEED DISTRIBUTION UNITS WITH THE NYLON BLANK-OFF SHUTTERS IN THE



— FIGURE 4 —
SEEDBOX



—FIGURE 5 SEED CALIBRATION—



Operating Instructions : Moore 'uni-drill'

In soft field conditions it is essential to set the discs deep enough to cut through all the matt or surface trash. Seed will germinate and grow better when in contact with the soil. In wet, soft conditions the discs may be set to penetrate deeper than required. As the drill moves forward the seed is trapped by the sides of the slit and do not necessarily fall to the bottom of the slit.

7. SEEDBOX (See Figs. 3 and 4)

Each seed distribution unit of the Moore All-Till Uni-Drill is supplied with seed from the hopper by means of a seed feed box. The variable opening of the distribution unit regulates the seed rate. At the lowest part of the feeding box, a plastic feed rotor, operated by the stalker drive wheel, supplies the distribution unit with seed at a high degree of uniformity. Made of flexible plastic (Lucolen) the feed rotor is adapted to, and fits the shape of all kinds of seed: large or small, heavy or light, round or long. An anti-compaction plate can be fitted over the seed feed boxes to give less damage to the larger, more easily damaged seeds such as soya beans or peas.

A micrometer hand control screw is used to adjust the openings of the seed distribution units for precise seed rate settings.

8. SEEDING AT DIFFERENT ROW WIDTHS

It is possible to sow seeds at row widths of 6½in. (16.5cms.), 13in. (33cms.), 19½ins. (49.5cms.), and 26ins. (66cms.).

Blank off the seeding units not required by turning the nylon blank off shutters to close the openings of the seed distribution units, as shown in *Fig. 3*.

For small seeds, such as kale, rape, turnips etc., seed container boxes can be securely mounted over the required seed feed boxes as shown in *Fig. 4*.

For transportation or moving the drill from field to field, all the distribution units can be closed by pushing the pointer handle to the top of the graduation scale. It can be locked in this position by dropping the locator into the transport location hole.

9. EMPTYING SEEDBOX (See Fig. 6)

To empty the seedbox, remove the collection tray/covers. Release the seed cup holder unit and slide it fully forward. Slacken the screw and channel retaining bracket so that the seedbox fixing arm is free. Open the seedbox lid and secure with the stay bracket. Pivot the seedbox backwards as shown in *Fig. 6*. Open the seed hopper emptying chute and remove the seed into a tray or bag.

10. ACREMETER

The acremeter is actuated by a linkarm attached to the end of the double drive sprocket. The adjustable arm on the end of the meter should be positioned so that the linkarm is free when the end of the crank is at the top of its stroke.

The acremeter is calibrated so that it takes 1000 actuations to read 1 acre, therefore, only the first 3 digits read the acres and the last 2 digits the decimal fraction of an acre.

The acremeter can be set to Zero by turning the ribbed knob on the end of the meter.

11. CALIBRATION (See Figs. 5 and 7)

The Seed Charts are not a guarantee of the correct amount of seed to be sown - use them only as a guide to the seed quantities required. Compilation of a Seed Rate Chart is not possible due to variations in seed types and seed mixtures.

To check the Seed Rate, set the calibration pointer to the reading as given in the Seeding Tables: open the covers protecting the distribution units and hinge them down to form collection trays for the seeds. Release the spring loaded locating pins at each end of seed cup holder unit and slide it forward so that the seed collection trays are underneath the outlets of the the seed distribution units.

Partially fill the seedbox and actuate the acremeter 100 times (60 turns of the handle when attached to the 15-tooth seedbox drive sprocket; or 43 turns of the handle when attached to the 21-tooth seedbox drive sprocket), remove the collection trays and weigh the seed: this will represent the seed rate for one-tenth of an acre. Multiply by 10 to obtain the Seed Rate Per Acre. By adjusting the micrometer control screw the rate can be varied and the desired Seed Rate obtained.

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FIGURE 6 : EMPTYING SEEDBOX

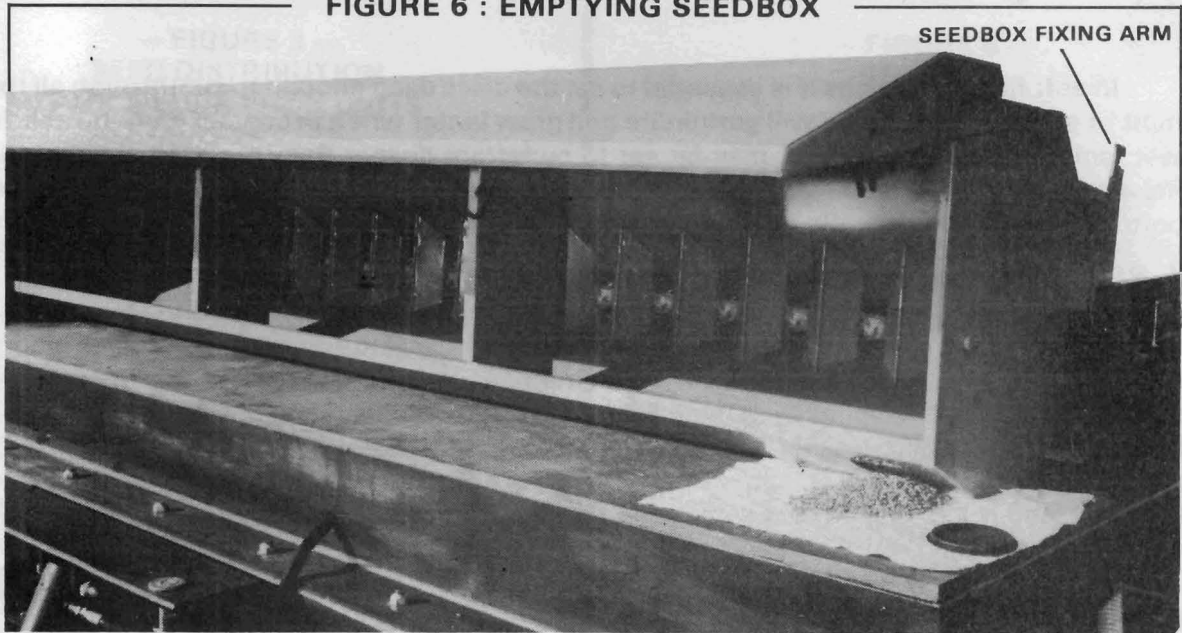


FIGURE 7 : APPROXIMATE SEEDING RATES FOR MOORE ALL-TILL UNI-DRILL.

CALIBRATION SCALE READING	SOWING RATE Lbs/Acre				
	ITALIAN RYEGRASS (COARSE)	GRASS SEEDS MIXTURE (FINE)	CEREALS WHEAT, BARLEY, OATS, RYE.	LARGE SEEDS PEAS, SOYA BEANS	SMALL SEEDS TURNIPS, KALE, RAPE, ALFAFA.
1					2
1½					4
2					8
3					16
4					26
5					40
6		10	30		
7		15	40		
8		20	55		
9		25	70		
10	7	32	90		
11	9	40	110	75	
12	12	50	130	90	
13	15	60	160	110	
14	18	72	190	140	
15	22	85	220	170	
16	26		250	200	
17	31		300	240	
18	36				
19	41				
20	48				
21	56				
22	65				

NOTE : This Seed Chart is not a guarantee of the correct amount of seed to be sown - use it only as a guide for the seed quantities required.

Correct seed rates can be obtained by actuating the Acremeter 100 times (43 turns of the handle when attached to the 21-tooth seed box drive sprocket) and weighing the seeds in the Collection Trays provided. The weight of the seed is equivalent to that used to sow one tenth of an acre. By adjusting the Micrometer Control Screw, the Seed Rate can be varied and the desired Seed Rate obtained.

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12. THE SEED TUBE COULTER ADJUSTMENT (See Fig. 8)

The tip F, of the seed tube coultter should be set so that it is approximately $\frac{1}{2}$ " above the outer edge of the disc. The leading edge of the seed coultter should be set parallel to the disc and just touching it. This can be achieved by means of the retaining bolts A and B and the adjusting screws C and D. If the tip, F, of the seed coultter is out from the disc, this can be corrected by tightening bolt A (front bolt) more than bolt B, while the top, G of the seed coultter can be brought in towards the disc by tightening bolt B (rear bolt) more than bolt A.

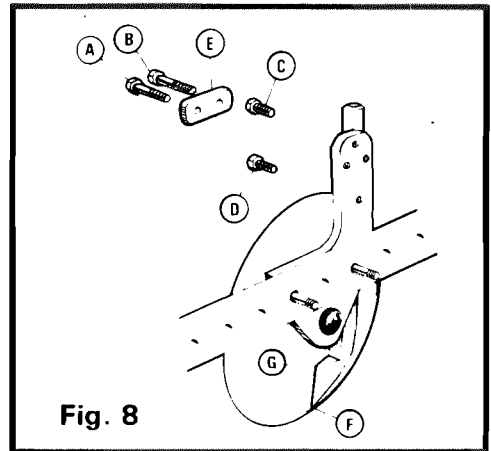


Fig. 8

Some discs, may be slightly distorted, but when in work the side force of the soil on the disc will keep it in contact with seed coultter. A certain amount of bedding in and wear takes place between the disc and the seed coultter and it may become necessary to adjust screws C and D to position the seed coultter closer to the disc.

To obtain better depth control for small seeds, e.g. oilseed, rape, turnips etc., in loose or cultivated soil it may be necessary to lower the tip of the seed tube coultter almost to the edge of the disc.

NOTE: Taper Roller Bearing Adjustment

Timkin Duo-Seal Taper Roller Bearings are fitted to both the discs and the press wheel rollers. If the bearings become slack due to wear etc., it may be necessary to re-adjust them - remove the dust cover and tighten up the coneloc nut ($\frac{5}{8}$ " UNF) until it is completely tight, then slacken off so that the bearing can turn freely. The bearings are packed with Shell Alvania Grease.

13. OPERATION

Attach the drill to the tractor and raise the drill to its maximum height, remove the road transport pins.

Calibrate the seeding mechanism. Set the drilling depth and drill the headlands; it is wise to drill in an anti-clockwise direction to avoid the risk of damage to the stalker wheel. Check seeding depth once operating into the field as the headlands tend to be more compacted than the remainder of the field.

Do not turn sharp corners with The All-Till Uni-Drill in operation as this will give wrong disc-to-soil side thrust. When this happens the disc is parted from the seed coultter and trash can then enter between them resulting in blockage to the seed flow. It is better to lift the machine out of and into work when turning corners.

Work rates of up to 7 acres per hour can be obtained. The operating speed and the quality of work which results is controlled by field conditions but wherever possible a steady speed should be maintained. As field conditions vary, it may be necessary to adjust the coultter settings to maintain seed depth and cover.

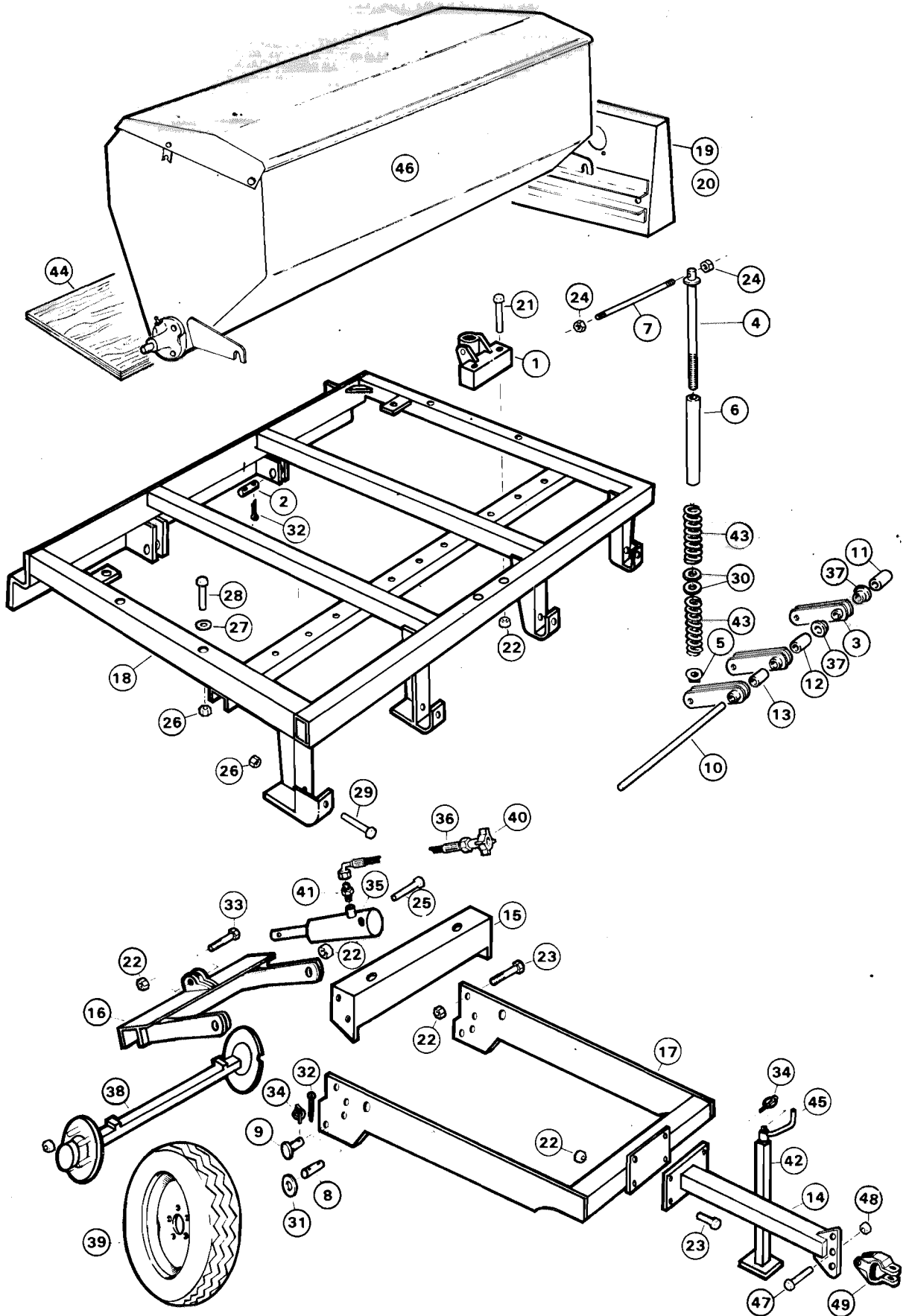
The drill will work equally well in cultivated soil - here most of the drill weight is carried on the press wheel rollers and tractor drawbar. Seed depth can be obtained by adjusting the depth control screw in the usual manner. A higher drawbar hitch point may be required. The soil is usually tracked to the depth required by the disc seeding units and compacted by the press wheel rollers - this gives ideal conditions for seed germination. In some fields it may be necessary to roll first, especially if there are loose stones on the surface; this helps to prevent blockages.

All nuts and bolts should be checked regularly. When working in stony or trashy conditions it will be necessary to check all nuts and bolts daily, particularly the seed coultters and disc bolts.

When moving the All-Till Uni-Drill between sites ensure that the road transport pins are fitted

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MAIN FRAME AND DRAWBAR ASSEMBLY

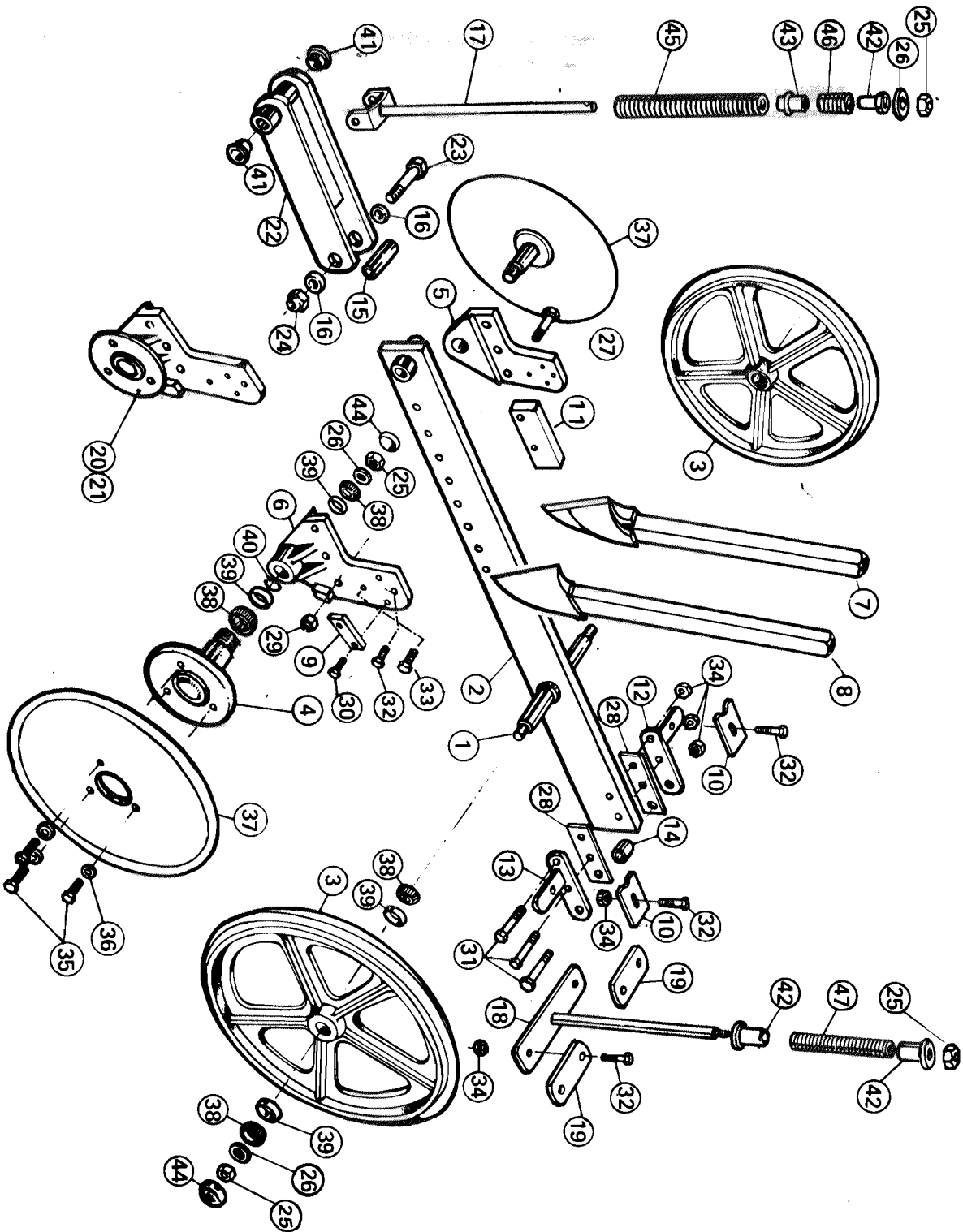


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ITEM	PART NUMBER	DESCRIPTION	QUANTITY
1	1001-11	Depth Control Screw Holder	1
2	1001-17	Drawbar Pivot Pin	2
3	1001-23	Pivoting Arm Unit	9
4	1001-34	Depth Control Screw	1
5	1001-35	Depth Control Nut	1
6	1001-36	Depth Control Tube	1
7	1001-37	Depth Control Handle	1
8	1001-62	Axle Unit - Pivot Pin	2
9	1001-63	Transport Pin - All-Till	2
10	1001-64	Pivot Bar - Front	1
11	1001-65	Spacer Bush - End	2
12	1001-66	Spacer Bush - Inner Bushed	2
13	1001-67	Spacer Bush - Inner	6
14	1001-70	Draw Bar - Towing Arm	1
15	1001-71	Draw Bar - Rearcross Member	1
16	1001-72	Draw Bar - Axle Mounting Unit	1
17	1001-73	Drawbar Assembly	1
18	1001-75	Main Frame Assembly	1
19	1003-70	Seedbox Mounting Bracket - R.H.	1
20	1003-71	Seedbox Mounting Bracket - L.H.	1
21	B1	M20 x 220 Bolt	2
22	B2	M20 Nut Coneloc	12
23	B7	M20 x 65 Bolt	8
24	B10	5/8 UNF Nut Conloc	2
25	B12	M20 x 180 Bolt Special H.T.	1
26	B15	M12 Nut Coneloc	8
27	B16	M13 x 32 Wahser H.D.	4
28	B17	M12 x 140 Bolt	4
29	B19	M12 x 100 Bolt	4
30	B58	2" Timken Thrust Bearing	2
31	B40	M32 x 60 Washer H.D.	4
32	B43	M6 x 50 Split Pin	6
33	B47	M20 x 100 Bolt Special H.T.	1
34	B48	M6 x 50 Lynch Pin	5
35	B53	3" Diameter Hydraulic Cylinder All-Till	1
36	B54	Hydraulic Hose - All-Till	1
37	B55	1 1/2 x 1 1/4 x 1 3/4 F. Oilite Bush	24
38	B56	Road Wheel Axle - All-Till	1
39	B60	Road Wheel 750 x 16 x 10 Ply	2
40	B68	Dowty Coupling	1
41	B70	3/8" B.S.P. Nipple	1
42	B72	Parking Jack	1
43	B91	Depth Control Spring	2
44	B105	Rear Platform - All-Till	1
45	B209	Calibration/ Jack Handle	1
46	B250	Seed Box Complete - All-Till	1
47	B38	1" x 4" UNC Bolt	1
48	B44	1" UNC Nut Nyloc	1
49	B185	Clevis Hitch	1

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DRAG ARM SEEDING UNIT

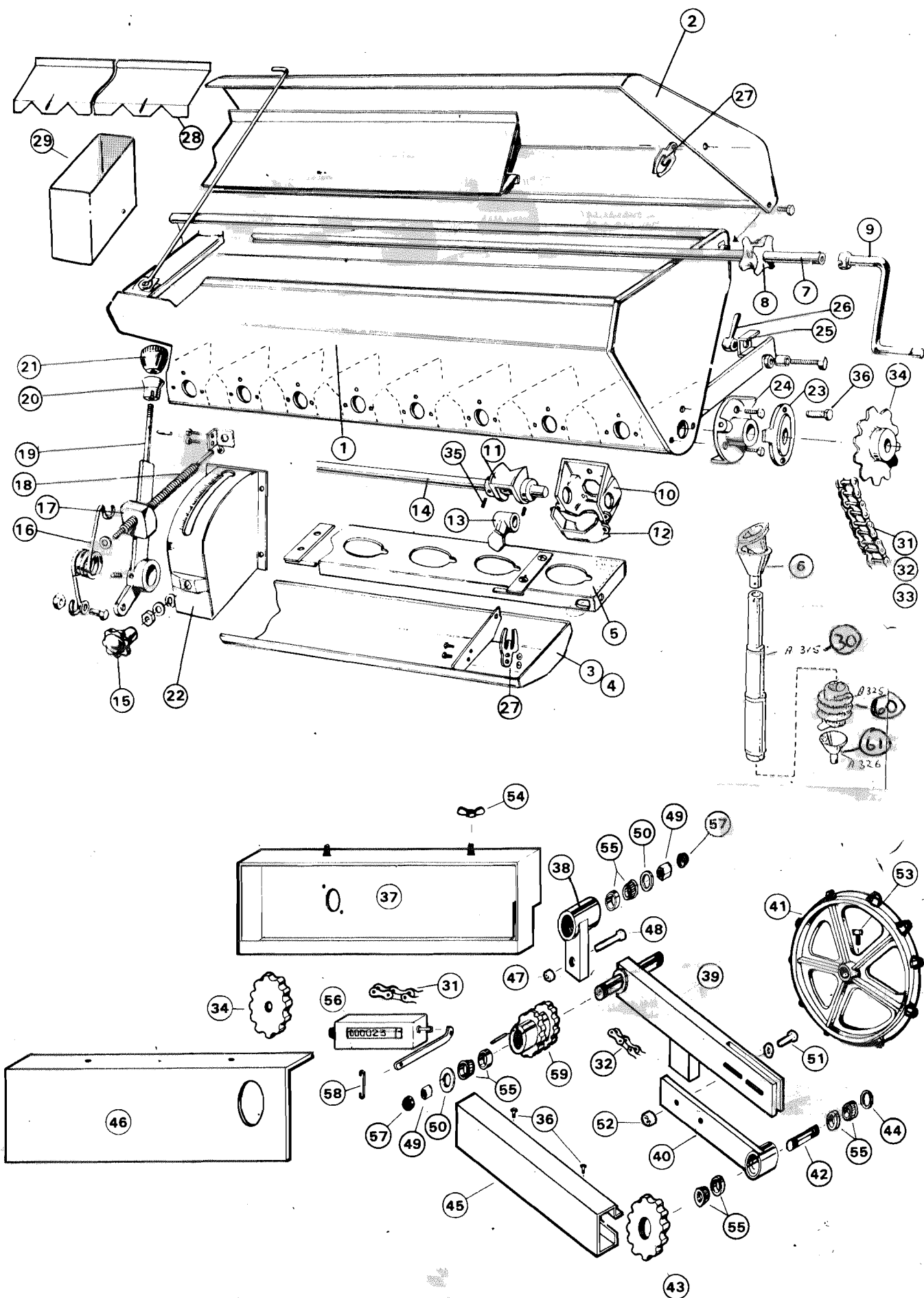


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DRAGARM ARM SEEDING UNIT

ITEM	PART NUMBER	DESCRIPTION	QUANTITY
1	1002-50	Drag Arm Axle -All Till	1
2	1002-51	Drag Arm Mounting Bar -AllTill	1
3	1002-3	Press Wheel	2
4	1002-4	Disc Hub	2
5	1002-31	Disc Mounting Bracket - R.H.	1
6	1002-32	Disc Mounting Bracket - L.H.	1
7	1002-7	Seed Tube Coulter - R.H.	1
8	1002-8	Seed Tube Coulter - L.H.	1
9	1002-9	Seed Coulter Retaining Plate	2
10	1002-10	Press Wheel Scraper	2
11	1002-53	Disc Mounting Bracket-Spacer- All Till	18
12	1002-54	Scraper Support Unit - R.H. -All Till	1
13	1002-55	Scraper Support Unit - L.H. -All Till	1
14	1002-14	Scraper Support Distance Piece	1
15	1002-15	Pivot Sleeve	1
16	1002-16	Pivot Sleeve Bush	2
17	1002-17	Front Pivot Spring Arm	1
18	1002-18	Rear Support Unit	1
19	1002-52	Rear Support Unit Link -All Till	1
20	1002-28	Disc Bearing Replacement Unit - R.H.	1
21	1002-29	Disc Bearing Replacement Unit - L.H.	1
22	1001-23	Pivot Arm Unit	1
23	B4	Bolt - 3/4" x 4 1/2" UNC	1
24	B8	Nyloc Nut - 3/4" UNC	1
25	B10	Coneloc Nut - 5/8" UNF	6
26	B11	Washer - 5/8" H.D.	6
27	B14	Bolt - M12 x 55	4
28	B-103	Nylon Wear Pad	2
29	B15	Coneloc Nut - M12	4
30	B22	Bolt - M10 x 65	4
31	B23	Bolt - M10 x 55	3
32	B24	Set Screw - M10 x 30	6
33	B25	Set Screw - M10 x 20	2
34	B27	Coneloc Nut - M10	7
35	B32	Set Screw - 3/8" x 5/8" UNF	3
36	B33	Shakeproof Washer - 3/8"	3
37	B50	Seed Disc Coulter 1 1/2" Dia.	2
38	B51	Timkin 1" Bearing Cone	} Complete Unit
39	B51	Timkin 1" Bearing Cup	
40	B52	Bearing Circlip	6
41	B55	Pivot Arm Bush	2
42	B88	Spring Retaining Bush	3
43	B89	Spring Locating Bush	1
44	B90	Dust Cap	4
45	B92	Front Spring - Lower	1
46	B93	Front Spring - Upper	1
47	B95	Rear Spring H.D. All Till	1

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ITEM	PART NUMBER	DESCRIPTION	QUANTITY
1	B251	Seedbox Shell	1
2	B252	Seed Box Lid	1
3	B253	Collecting Tray/Cover - R.H.	1
4	B254	Collecting Tray/Cover - L.H.	1
5	B255	Seed Cup Holder Unit	1
6	B206	Seed Cup Holder	18
7	B257	Rotor Drive Shaft	1
8	B208	Rotor Feed Propellor	18
9	B209	Callibration/Jack Handle	1
10	B210	Distribution - Main Unit	18
11	B211	Distribution - Sluice Gate Unit	18
12	B212	Distribution - Plactic Cover	18
13	B213	Distribution - Nylon Shutter	18
14	B256	Distribution - Shaft	1
15	B215	Callibration - Hand Adjustment Screw	1
16	B216	Callibration - Spring	1
17	B217	Callibration Adjuster Nut	1
18	B218	Callibration - Screw Thread	1
19	B219	Callibration - Pointer Shaft	1
20	B220	Callibration - Pointer Locator	1
21	B221	Callibration - Pointer Handle	1
22	B222	Callibration - Graduated Box Unit	1
23	B223	Seedbox - Pivot Casting	2
24	B224	Seedbox - Bearing Casting	2
25	B225	Seedbox - Channel Retaining Bracket	2
26	B226	Seedbox - Retaining Screw	2
27	B227	Seedbox - Nylon Clip	6
28	B258	Seedbox - Anti-Campaction Plate	2
29	B229	Seedbox - Large Seed Box	9
30	B100 A315	Flexible Seed Tube - 3 T	18
31	B175	Drive Chain - Upper All-Till	1
32	B176	Drive Chain - Lower All-Till	1
33	B174	Drive Chain - Connecting Link	2
34	1003-79	Drive Sprocket - 21T	1
35	B41	Socket Head Screw - M6 x 10	36
36	B34	M8 x 16 Set Screw	6
37	1003-71	Seedbox Mounting Bracket - L.H.	1
38	1003-72	Support Arm Pivot Housing	1
39	1003-73	Drive Wheel Support Arm - Upper	1
40	1003-74	Drive Wheel Support Arm - Lower	1
41	1003-75	Drive Wheel	1
42	1003-76	Drive Wheel Axle	1
43	1003-77	Lower Drive Sprocket - 12T	1
44	1003-78	Drive Wheel Spacer	1
45	1003-80	Chain Guard - Lower	1
46	1003-81	Chain Guard - Upper	1
47	B2	M20 Nut-Coneloc	2
48	B7	M20 x 65 Bolt	2
49	B10	5/8 UNF Nut-Coneloc	2
50	B11	M16 x 32 Washer - H.D.	2
51	B14	M12 x 55 Bolt	2
52	B15	M12 Nut-Coneloc	2
53	B24	M10 x 30 Set Screw	1
54	B28	M10 Wing Nut	2
55	B51	1" Timken Taper Roller Bearing	4
56	B78	Acrometer	1
57	B90	Dust Cap	2
58	B98	Acrometer Linkarm - All-Till	1
59	1003-55	Twin Sprocket - 9T	1
60	A325	SEEDTUBE - BELLOWS	18
61	A326	SEEDTUBE - JOINT 25MM	18