

### 1. DESCRIPTION

The Uni-Drill is a narrow row spacing direct drill, suitable for grass, brassicas and cereal crops. It is of robust construction and has an output of up to 5 acres per hour (2 hectares per hour).

The Uni-Drill consists of 9 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 the 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. 2in.	'2790 mm
Overall length	8ft. 9in.	2670 mm
Overall height (transport)	5ft. 2in.	1575 mm
Overall height (working)	4ft. 6in.	1370 mm
Total weight	3,800 lbs.	1725 mm
Sowing width	85½ in.	2170 mm
Number of coulters	18	18
Row width	4¾ in.	120 mm
Seedbox capacity	11 cu. ft.	310 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 slot into which the seed is 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 two hydraulic rams 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.

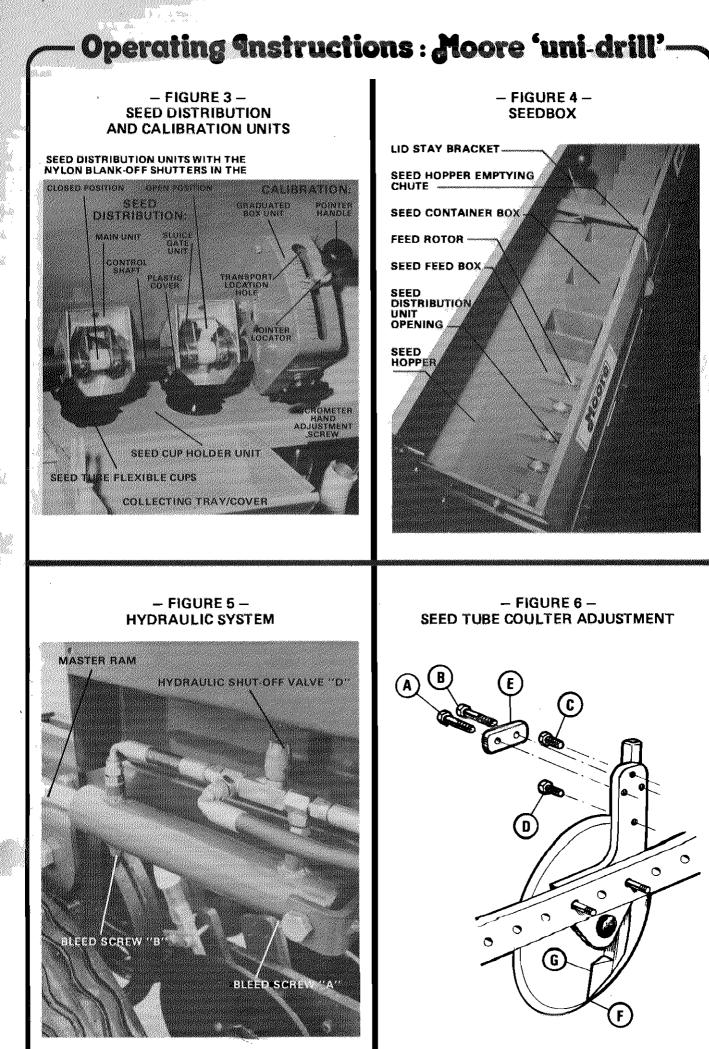
### 5. TRANSPORT

The drill is raised and lowered hydraulically and locking pins are provided for road transport. The hydraulic system consists of a master ram on the right-hand side of the drill, hydraulically coupled to a slave ram on the left-hand side. These are designed so that when the piston rod on the master ram moves a distance then the slave ram piston rod moves the same amount.

The system has been filled and checked before leaving the factory, but it is possible that air may have entered during transportation, the effect of which is usually seen in uneven lifting. *To Correct This (see Fig. 5).* 

Open shut-off valve "D" (turn anti-clockwise) and operate the tractor hydraulic system to the lift position. Then bleed air from the system by opening and closing bleed screws "A", "B" and "C" in turn. Slacken the socket-head bleed screw and allow air to escape. When oil appears then tighten the screw.

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Parallel lifting of the drill should now be achieved: if not, repeat the procedure described at the bottom of Page Three

The road wheel pivot bolt should be kept very tight: check this bolt and lock nut regularly.

It should be remembered that the dril is 9' 2" (2790 mm) 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 in 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.

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 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.

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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 4%'' (12 cms), 9%'' (24 cms), 14%'' (36 cms) and 19'' (48 cms).

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. 7)

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. 7.* Open the seed hopper emptying chute and remove the seed into a tray or bag.

### **10. ACREMETER**

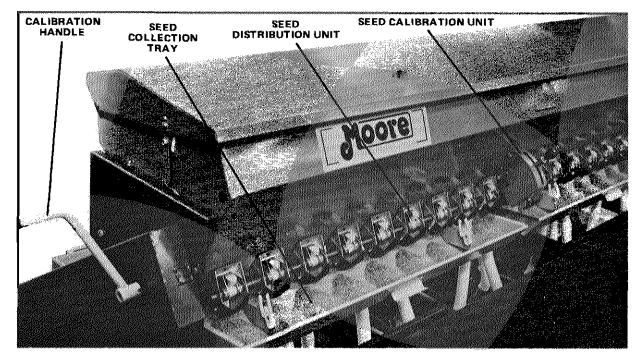
The acremeter is actuated by a spring attached to the end of a cranked metal hub cap. The adjustable arm on the end of the meter should be positioned so that the spring is free when the end of the crank is at the top of its stroke.

The acremeter is calibrated so that it takes 1,000 actuations to read 1 acre, therefore, only the first 2 digits read the acres and the last 3 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.

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### FIGURE 8 : SEED CALIBRATION



### FIGURE 9 : APPROXIMATE SEEDING RATES FOR MOORE UNI-DRILL

O AL UND ATION	SOWING RATE LBS/ACRE			
CALIBRATION SCALE SETTING	ITALIAN RYE GRASS	PERENNIAL R.G. MIXTURE COARSE SEEDS	TIMOTHY (M.F.) MIXTURE (FINE SEEDS)	CEREALS WHEAT BARLEY
7			10	20
8			14	30
9		10	20	50
10	7	14	27	70
11	9	18	35	95
12	12	22	45	120
13	15	28	56	150
14	18	36	62	180
15	22	44	68	210
16	28	52		240
17	31	60		280
18	36	70		320
19	41			
20	48			
21	56			
22	64			

CALIBRATION	SOWING RAT	TE LBS/ACRE	
SCALE	TURNIPS, KALE, RAPE		
	4%" ROWS	91/2" ROWS	
2¼	2%	1%	
2%	4	2	
3	7	3%	
3%	10	5	
4	16	8	
4%	24	12	
5	32	18	

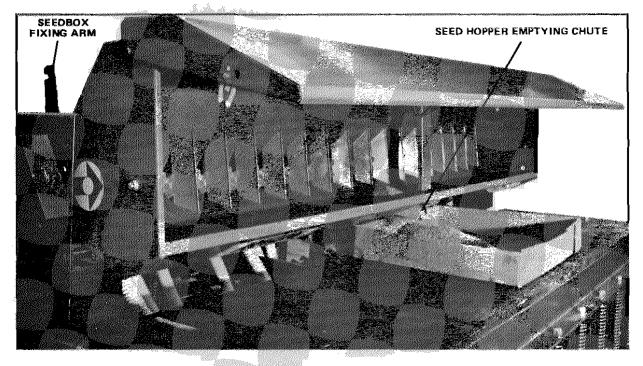
NOTE: These Seed Charts are not a guarantee of the correct amount of seed to be sown --- use them only as a guide for the seed quantities required.

Correct Seed Rates can be obtained by turning the Stalker Wheel 100 times (60 turns of the handle attached to the Seed Rotor Shaft) and weighing the seeds in the Collection Trays provided. The weight of the seed is equivalent to that used to sow 1/10th acre.

By adjusting the Micrometer Control Screw, the Seed Rate can be varied and the desired Seed Rate obtained.

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### FIGURE 7 : EMPTYING SEEDBOX



### 11. CALIBRATION (see Figs. 8 and 9)

The Seed Charts are not a guarantee of the correct amount of seed to be sown — use them only as a guide for the seed quantities required. Compilation of a Seed Rate Chart is not possible due to variations in seed type 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 collection trays are underneath the outlets of the seed distribution units.

Partially fill the seedbox and turn the stalker wheel 100 times (60 turns of the handle attached to the seed rotor shaft), remove the collection trays and weigh the seed: this will represent the seed rate for 1/10th 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.

### 12. SEED TUBE COULTER ADJUSTMENT (see Fig. 6)

The tip, F, of the seed tube coulter should be set so that it is approximately  $\frac{1}{2}$  above the outer edge of the disc.

The leading edge of the seed coulter 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 coulter 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 coulter can be brought in towards the disc by tightening bolt B (rear bolt) more than bolt A.

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 the seed coulter. A certain amount of bedding-in and wear takes place between the disc and the seed coulter and it may become necessary to adjust screws C and D to position the seed coulter 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 coulter 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 (5/8" UNF) upitil it is completely tight, then slacken off so that the bearing can turn freely. The bearings are packed with Shell Alvania

7 Grease.

## **Operating Anstructions : Moore 'uni-drill'—** FIGURE 10 : DISC COULTER STAGGER STAGGER 4'' BETWEEN DISCS æ BOLT HOLE No.1 BOLT HOLE No.2 . 2" BOLT BOLT HOLE No.3 BOLT HOLE No.4

3" BOLT-

2" BOLT

FRONT MOUNTED

DISC UNIT (4 OFF)

R.H. BEARING UNIT

No. 1 CASTING

2" BOLT FRONT HOLE

3" BOLT REAR HOLE

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REAR MOUNTED DISC UNIT (5 OFF) R.H. BEARING UNIT No. 1 CASTING 3" BOLT FRONT HOLE 2" BOLT REAR HOLE

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NOTE: 3" AND 2" BOLTS PLACED IN R.H. CASTING BEFORE ASSEMBLING DISC TO CASTING

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BOLT HOLE No.5

BOLT HOLE No.6

BOLT HOLE No.7

BOLT HOLE No.8

No. 1 R.H. CASTING

### 13. DISC COULTER STAGGER (see Fig. 10)

To achieve a certain pattern of disc stagger, the coulter seeding units can be bolted to the mounting arm through the 8 holes provided.

Best results are obtained when the opposite coulters on the drag arm are staggered 4" and the coulters on each seeding unit are staggered 6". This gives 5 seeding units with staggered coulters mounted to the rear and 4 seeding units with the staggered coulters mounted to the front.

Before assembling the discs to the bearing units, insert into 5 right-hand bearing units (marked '1' on the casting) 2" bolts into the *rear* and 3" bolts into the *front* mounting holes in the castings. These units are then ready for assembly to form the 5 rear-mounted disc seeding units. Similarly for the 4 front mounted disc seeding units, insert to 4 right-hand units 2" bolts into the *front* and 3" bolts into the *rear* mounting holes in the castings. Then assemble the discs to the bearing units using 3 set screws with shakeproof washers.

To assemble the rear mounted disc seeding units, take the rear made-up disc and bearing unit (right-hand No.1) and put the 2" bolt through the last (No.8) hole of the drag arm. The 3" bolt will then go through the No.6 hole — then assemble the left-hand (marked '2' on the casting) disc and bearing unit with the 3" bolt going through the rear hole in the casting and another 2" bolt going through the No.4 hole in the drag arm and the front hole of the casting. Use 3 locknuts and tighten securely.

To assemble the front mounted disc seeding units, take the front made-up disc and bearing unit (right-hand No.1) and put the 2" bolt through the first (No.1) hole in the drag arm. The 3" bolt will then go through the No.3 hole in the arm. Then assemble the left-hand disc and bearing unit with the 3" bolt going through the front hole in the casting and another 2" bolt going through the No.5 hole in the drag arm and rear hole in the casting.

The complete seeding units are mounted alternatively in the Uni-Drill frame, starting with the rear disc mounted units on the outside.

### **14. OPERATION**

Attach the drill to the tractor and raise the drill to its maximum height, remove the radius arm locking 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.

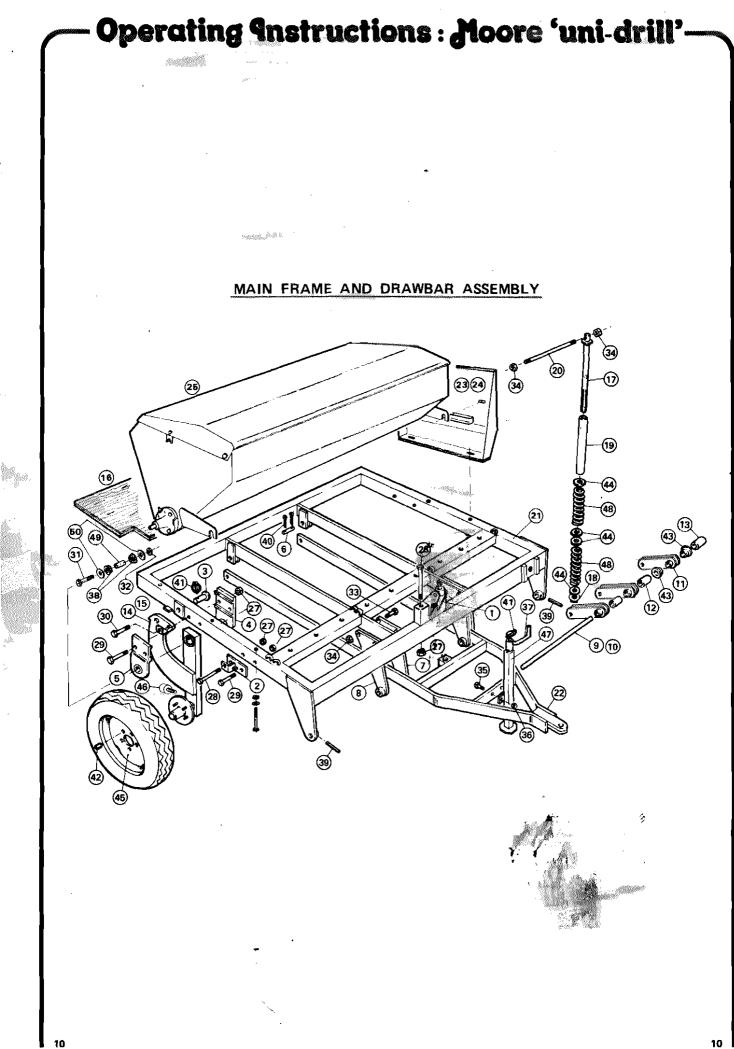
Do not turn sharp corners with the Uni-Drill in operation as this will give wrong disc-to-soil side thrust. When this happens the disc is parted from the seed coulter and trash can then enter between them resulting in blockage of the seed-flow. It is better to lift the machine out and in to work when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

Work rates in the order of up to 5 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 coulter 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 coulters and disc bolts.

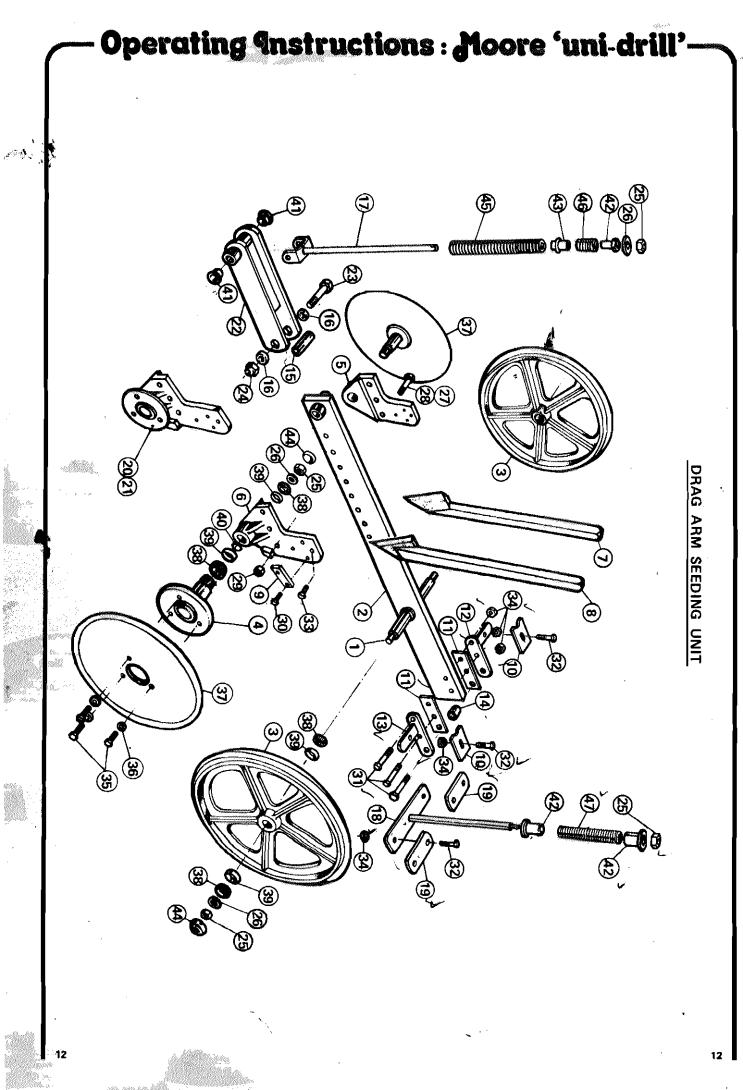
When moving the Uni-Drill between sites, ensure that the radius arm locking pins are fitted.



MAIN FRAME AND DRAWBAR ASSEMBLY - PARTS LIST "A"

ΙΤΕΜ	PART NUMBER	DESCRIPTION	QUANTITY
	and the second secon		
1	1001-11	Depth Control Screw Holder	1
2	1001-12	Ram Housing Holder	2
3	1001-13	Transport Pin	2
4	1001-44	Inner Support Plate Road Wheel	2
5	1001-45	Outer Support Plate Road Wheel	2
6	1001-17	Drawbar Pivot Pin	2
7	1001-19	Front Pivot Bracket – B.H.	2
8	1001-20	Front Pivot Bracket - L.H.	2
9	1001-21	Outer Pivot Bar	2
10	1001-22	Inner Pivot Bar	1
11	1001-22	Pivoting Arm Unit	9
12	1001-24	Spacer Bush — Inner	1. 1. 月間的
12	1001-25	Spacer Bush — Outer	6
	1001-25	• 22** · · ·	2
14 15		Wheel Mounting Arm Unit – R.H.	
15	1001-47	Wheel Mounting Arm Unit - L.H.	
16	1001-4B	Rear Platform	
17	1001-34	Depth Control Screw	
1B	1001-35	Depth Control Nut	
19	1001-36	Depth Control Tube	
20	1001-37	Depth Control Handle	· 00000.
21	1001-40	Main Frame Assembly	
22	1001-41	Drawbar Assembly	
23	1003-50	Seedbox Mounting Bracket - R.H.	
24	1003-51	Seedbox Mounting Bracket — L.H.	1
25	B201	Seedbox Assembly Complete	
26	Bt	Bolt – M20 x 220	2
27	B2	Nut M20	9
2B	В3	Boit M20 x 180	2
29	B5	Bolt – M20 x 100	7
30	B7	Bolt – M20 x 60	2
31	B160	Bolt 1" x 45/8" UNC	2
32	B161	Nut – 1" UNC	2
33	<b>B9</b>	Bolt 5/8" x 3" UNF	4
34	B10	Coneloc Nut – 5/B" UNF	4
35	B14	Bolt – M12 x 50	2
36	815	Coneloc Nut – M12	2
37	B 209	Jack/Calibration Handle	1
38	B175	Timkin 13/8″ Bearing	2
39	B42	Roll Pin – 5/16" x 2"	2
40	B43	Split Pins "4" x 21/2"	4
41	B48	Lynch Pin	3
42	B49	Wheel Nut	10
43	B55	1¼″ x 1½″ x ¾″F Qilite Bush	18
44	B58	3½" x 2½" x 1/8" Oilite Thrust Washer	4
45	B60	Road Wheel	2
46	B61	Rubber Stoppers	2
47	B72	Parking Jack	
48	* 894	Depth Control Spring	1
49	1001-49 💊	Road Wheel — Pivot Bush	1
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DRAG ARM SEEDING UNIT - PARTS LIST "B"

ITEM	PART NUMBER	DESCRIPTION	QUANTITY
4	1000.1		
1	1002-1	Drag Arm Axle	
2	1002-2	Drag Arm Mounting Bar	
3	1002-3	Press Wheel	2
4	1002-4	Disc Hub	2
5	1002-5	Disc Mounting Bracket – R.H.	
6	1002-6	Disc Mounting Bracket – L.H.	
7	1002-7	Seed Tube Coulter – R.H.	
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	1002-11	Nylon Wear Pad	2
12	1002-12	Scraper Support Unit - R.H.	1
13	1002-13	Scraper Support Unit – L.H.	1 1
14	•	Scraper Support Distance Piece	
15	1002-15	Pivot Sleeve	1
16	1002-16	Pivot Sleeve Bush	2
17	1002-17	Front Pivot Spring Arm	1
18 🖉	1002-18	Bear Support Unit	1 1
19	1002-19	Rear Support Unit Link	1 1
20	1002-19	Disc Bearing Replacement Unit – R.H.	
20	1002-20	Disc Bearing Replacement Unit – L.H.	
22	1002-21	Pivot Arm Unit.	
22	B4	Bolt - $\frac{3}{4}$ x 4½" UNC	
24 25	B8	Nyloc Nut – ¾" UNC	
25 26	B10 🖌	Coneloc Nut – 5/8'' UNF Washer – 5/8'' H.D.	6
26	B11		6
27 25	B13	$\frac{Bolt - M12 \times 70}{Bolt - M12 \times 50}$	
28 20	B14	$Bolt - M12 \times 50$	2
29 20	B15	Coneloc Nut – M12	3
30	B22	Bolt – M10 x 65	4
31	B23	Bolt – M10 × 50	3
32	B24	Set Screw – M10 x 25	4
33	B25	Set Screw — M10 x 20	4
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	2
38	B51	Timkin 1" Bearing Cone	
39	B51	Timkin 1" Bearing Cup	8
40	B52	Bearing Circlip	6
41	B55	Pivot Arm Bush	2
42	888	Spring Retaining Bush	3
43	B89	Spring Locating Bush	1
44	B90	Dust Cap x	4
45	B92	Front Spring – Lower	1 1
46		Front Spring – Upper	1
47	B94	Rear Spring	1
	1 007	incer opining	· · ·

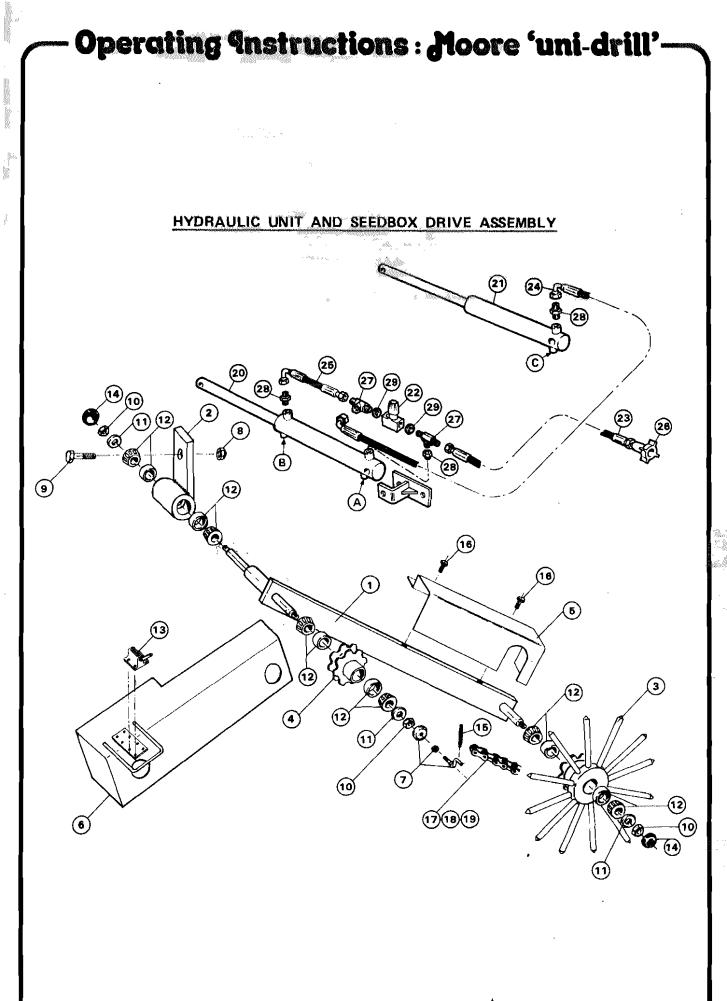
HYDRAULIC UNIT AND SEEDBOX DRIVE ASSEMBLY - PARTS LIST "C"

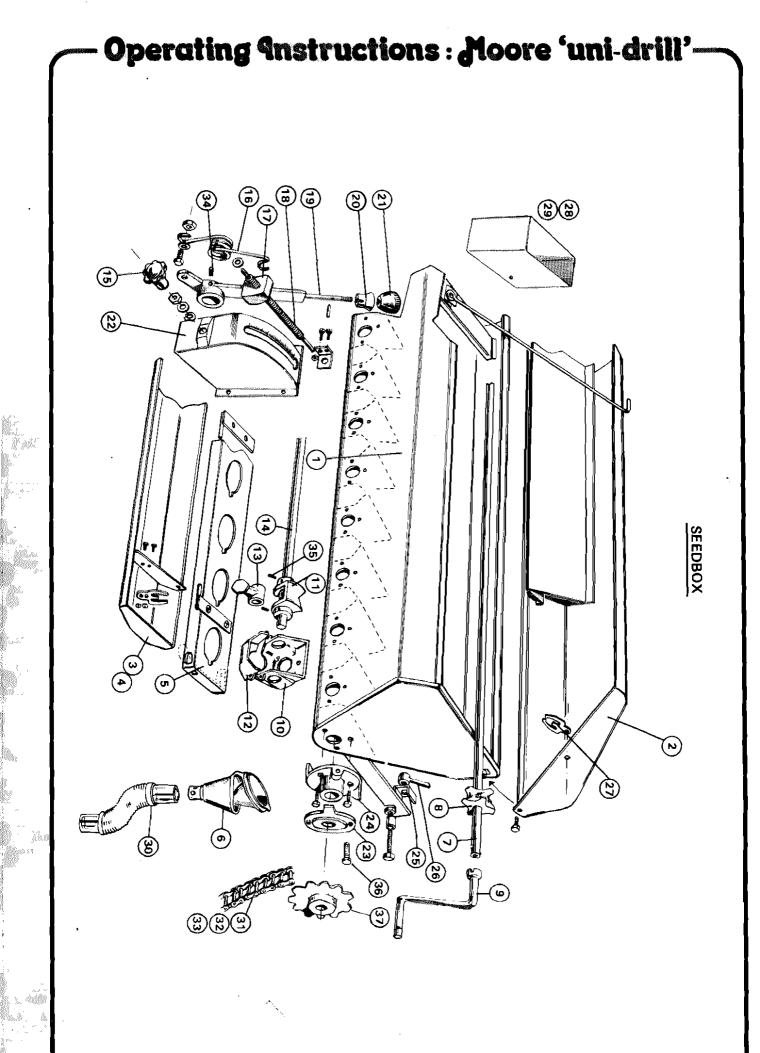
ITEM		DESCRIPTION	QUANTITY
1	1003-52	Stalker Wheel Support Arm Unit	1
2	1003-53	Support Arm — Pivot Housing	1
3	1003-54	Stalker Drive Wheel	1
4	1003-55	Twinsprocket – 8T	1
5	1003-57	Chainguard – Lower	1
6	1003-58	Chainguard Upper	1
7	1003-59	Acremeter Actuator Cap	1
8	в2	Nut - M20	t
9	B5	Bolt - M20 x 100	1
10	B10	Coneloc Nut – 5/B" UNF	· 3
11	B11	Washer — 5/B'' x 1¼'' H.D.	3
12	B51	1" Timkin Bearing (Complete Unit)	6
13	B78	Acremeter	1
14	890	Dustcap	2
15	B96	Acremeter Spring	1
16	В167	Set Screw – M8 x 16	4
17	B172	Drive Chain — Upper	T
18	B173	Drive Chain — Lower	1
19	B 174	Drive Chain - Connecting Link	2
20	<b>862</b>	Master Ram – R.H.	1
21	B63	Slave Ram — L.H.	1
22	B64	Hydraulic Control Valve	1
23	865	Hydraulic Hose: Ram-Tractor	} t
24	B66	Hydraulic Hose: Ram-Ram	t t
25	B67	Hydraulic Hose: Ram-Short	1
26	B68	Dowty Coupling	1
27	B 69	Hydraulic Hose – 3/8″ T-Piece	2
28	B70	Hydraulic Hose – 3/8" Nipple	3
29	871	Hydraulic Hose — 3/8" Sealing Washer	5

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### SEEDBOX - PARTS LIST "D"

ITEM	PART NUMBER	DESCRIPTION	QUANTITY
1	B201	Seedbox Shell	1
2	B202	Seedbox Lid	1
3	B203	Collecting Tray/Cover - R.H.	1
4	B204	Collecting Tray/Cover – L.H.	1
5	B205	Seed Cupholder Unit	1
6	B206	Seed Cupholder	18
7	B207	Rotor Drive Shaft	1
8	B208	Rotor Feed Propelior	18
9	B209	Calibration/Jack Handle	1
10	B210	Distribution - Main Unit	18
11	<del>B</del> 211	" — Sluice Gate Unit	18
12	B212	" – Plastic Cover	18
13	B213		18
14	B214		1
15	B215	Calibration — Hand Adjustment Screw	1
16	B216	" — Spring	1
17	B217	/ Adjustor Nut	1
18	B218	" - Screw Thread	1
19	B219	″ – Pointer Shaft	1
20	B220	" – Pointer Locator	1
21	B221	" — Pointer Handle	1
22	B222	" — Graduated Box Unit	1
23	в223	Seedbox — Pivoting Casting	2
24	B224	" — Bearing Casting	2
25	B225	" – Channel Retaining Bracket	2
26	B226	" — Retaining Screw	2
27	B227	" Nylon Clip	6
28	B228	" — Small Seedbox	8
29	B229	//	1
30	B109	Flexible Seed Tube	18
31	B172	Drive Chain Upper	1
32	B173	Drive Chain Lower	1
33	B174	Drive Chain – Connecting Link	2
34	B177	Socket Head Set Screw - M8 x 16	1
35	B178	Socket Head Set Screw – M5 x 10	36
36	B167	Cat Carpin MO v 16	4
	1003-56	Drive Sprocket – 15 <sup>°</sup>	1