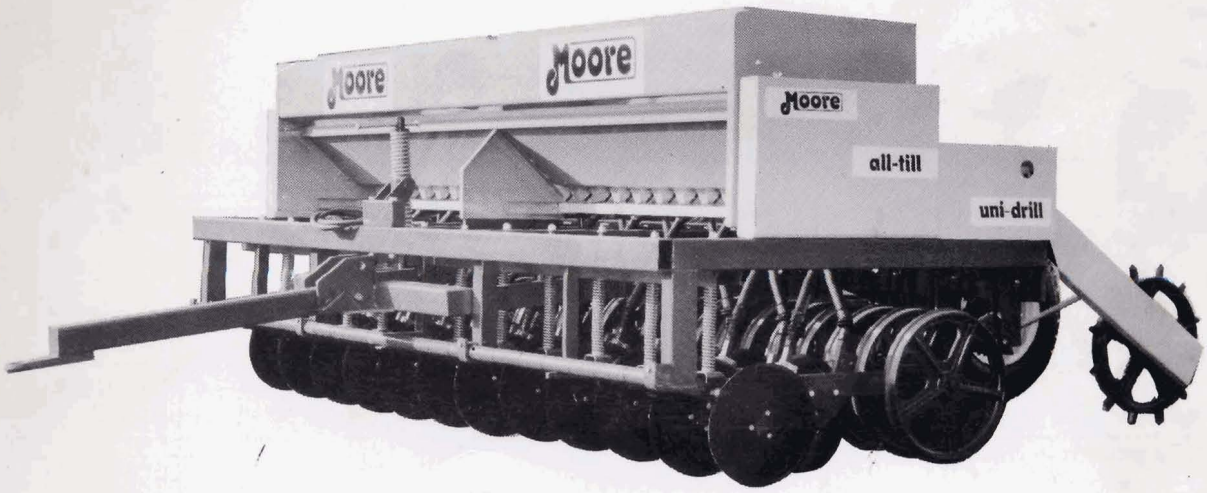
Moore

4 METRE ALL TILL SEED BED DRILL

BRITISH PATENT Nos. 1,218,785 1,591,607 2,040,656.
U.S.A. PATENT Nos. 3,611,956 4,196,679. AUSTRALIA PATENT No. 518,030.
CANADA PATENT No. 1,082,530, 1,121,660. NEW ZEALAND PATENT No. 192,436.
SOUTH AFRICA PATENT No. 79/6679. OTHER PATENTS PENDING.

Instruction Manual & Parts List.



Moore Uni-drill Ltd.

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APPROXIMATE SEEDING RATES FOR MOORE ALL TILL SEED BED DRILL

4 M

CALIBRATION SCALE READING	SOWING RATES 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	
	21T	34T	21T	34T	21T	34T	21T	34T	21T	34T
2									3	2
3									6	4
4									13	8
5									26	16
6										32
7			11	7						
8			16	10	30	20				
9			23	14	50	30				
10			32	20	70	45				
11			44	27	95	60				
12	12	7	56	35	120	75				
13	15	9	72	45	150	90	110	70		
14	18	11	90	56	180	110	145	90		
15	22	13			210	130	180	110		
16	26	16			250	155	220	135		
17	31	19			290	185	260	160		
18	36	22			335	225	310	190		
19	41	25			380	270	385	240		
20	48	30								
21	56	35								
22	64	40								

NOTE: This Seed Chart is not a guarantee of the correct ammount 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 as follows:

AREA	NO OF TEETH ON SEEDBOX SPROCKET	ACTUATIONS OF ACREMETER	TURNS OF HANDLE ON SEEDBOX
One tenth acre	21 tooth	100	43
	34 tooth	100	26
one twentieth hectare	21 tooth	125	53
	34 tooth	125	33

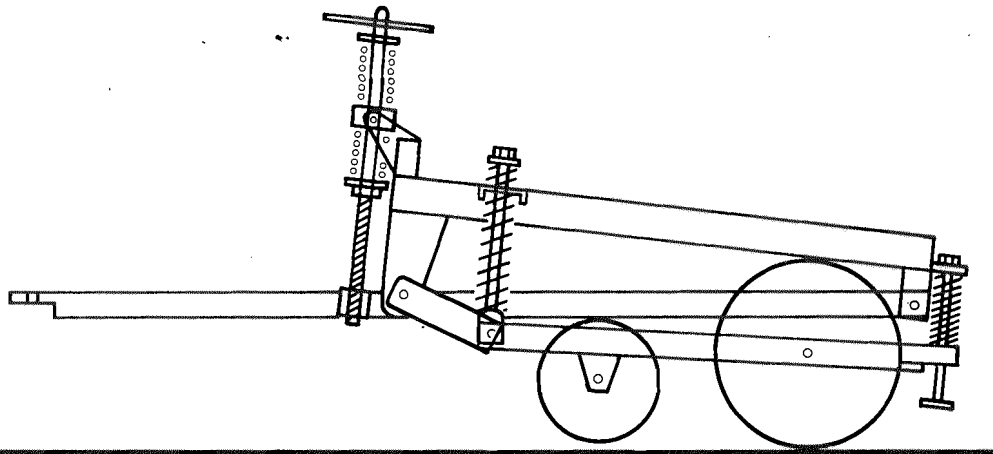
Weigh the seeds in the collection trays provided. The weight of the seed is equivalent to that used to sow one tenth of an acre.

By adjusting the Micrometer Control Screw, the rate can be varied and the desired seed rate obtained.

The 34 tooth sprocket should be used when sowing small seeds such as turnips, kale, rape etc., especially when mixed with slug pellets, also for larger seeds such as peas, beans, etc., where less power is required to turn the rotor.

FIGURE A: MINIMUM PENETRATION

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 OUTSTANDING MERIT AT
THE ROYAL AGRICULTURAL SOCIETY OF ENGLAND SHOW 1976

FIGURE B: MAXIMUM PENETRATION

Drill with all the weight on the disc seed coulters —
Press wheel rollers not touching ground

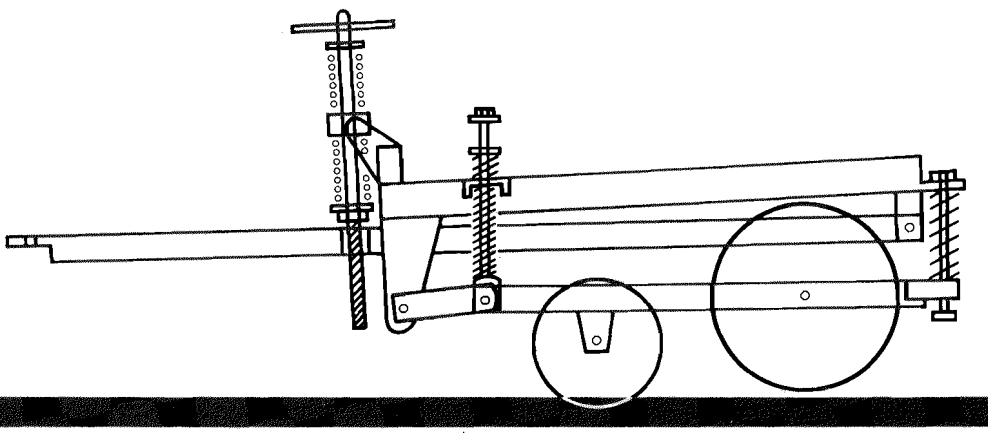


FIGURE 1 DRAG ARM SEEDING UNIT

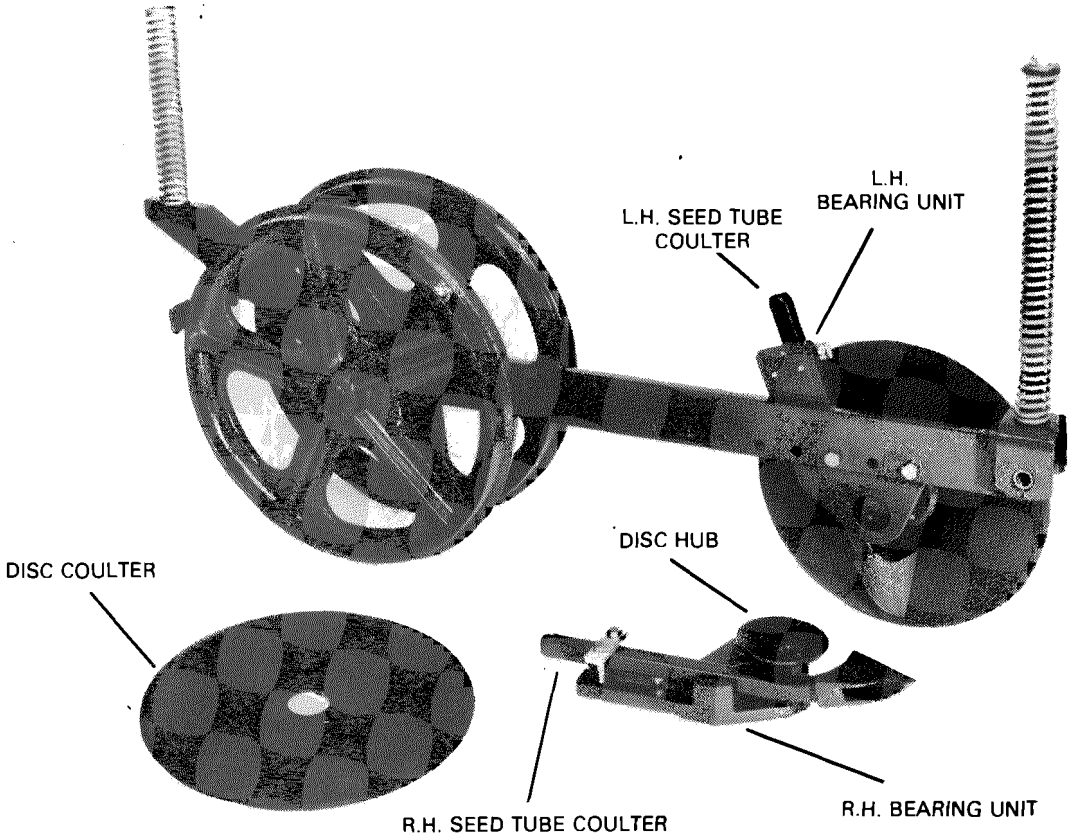
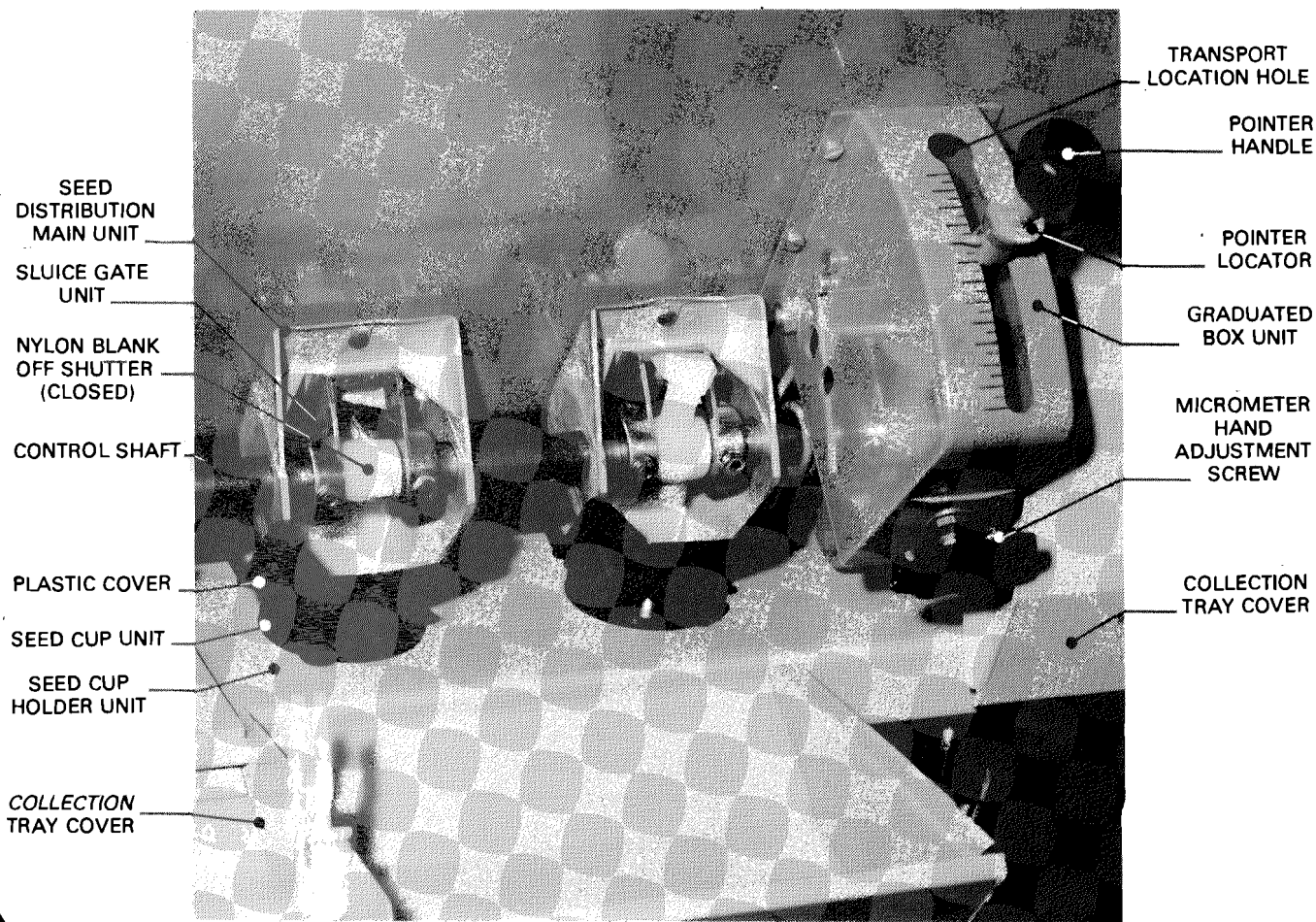


FIGURE 2 SEED DISTRIBUTION AND CALIBRATION UNITS



1. DESCRIPTION

The All-Till seedbed drills will sow most seeds into a variety of seedbeds. They can be used for conventional seedbeds with remarkable accuracy of depth of seed placement, also they can be used in minimum tillage, scratch tillage, direct drilling or no-till situations. The unique high inertia coulter system, with press wheel, maintains constant depth of seed placement under such a variety of conditions, including trashy and straw incorporated soils, at higher speeds than most drills can accomodate.

The All-Till seedbed drills consists of a row of 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

Sowing Width	9ft.10½in.	3000mm
Overall Width	9ft.9in.	2960mm
Total Weight	4,500lbs.	2050Kg.
No. of Coulters	18	18
Row Width	6½in.	166mm
Seedbox Capacity	21cu.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 is 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. 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.

A double acting hydraulic ram is fitted to the drill. To raise the road wheels completely from the ground when the drill is in work, a second hydraulic hose can be fitted. Both hydraulic hoses should be connected to the spool valve on the tractor. Always keep the road wheels fully raised while the drill is in work, so as not to affect the depth control of the drill in undulating fields.

For transportation or moving the drill from field to field always ensure that the road transport pins are fitted. Also, the seed 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.

5. 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.

6. SEEDBOX (See Figs. 2 and 3)

Each seed distribution unit of the Moore All-Till Seedbed Drills 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.

FIGURE 3 SEEDBOX

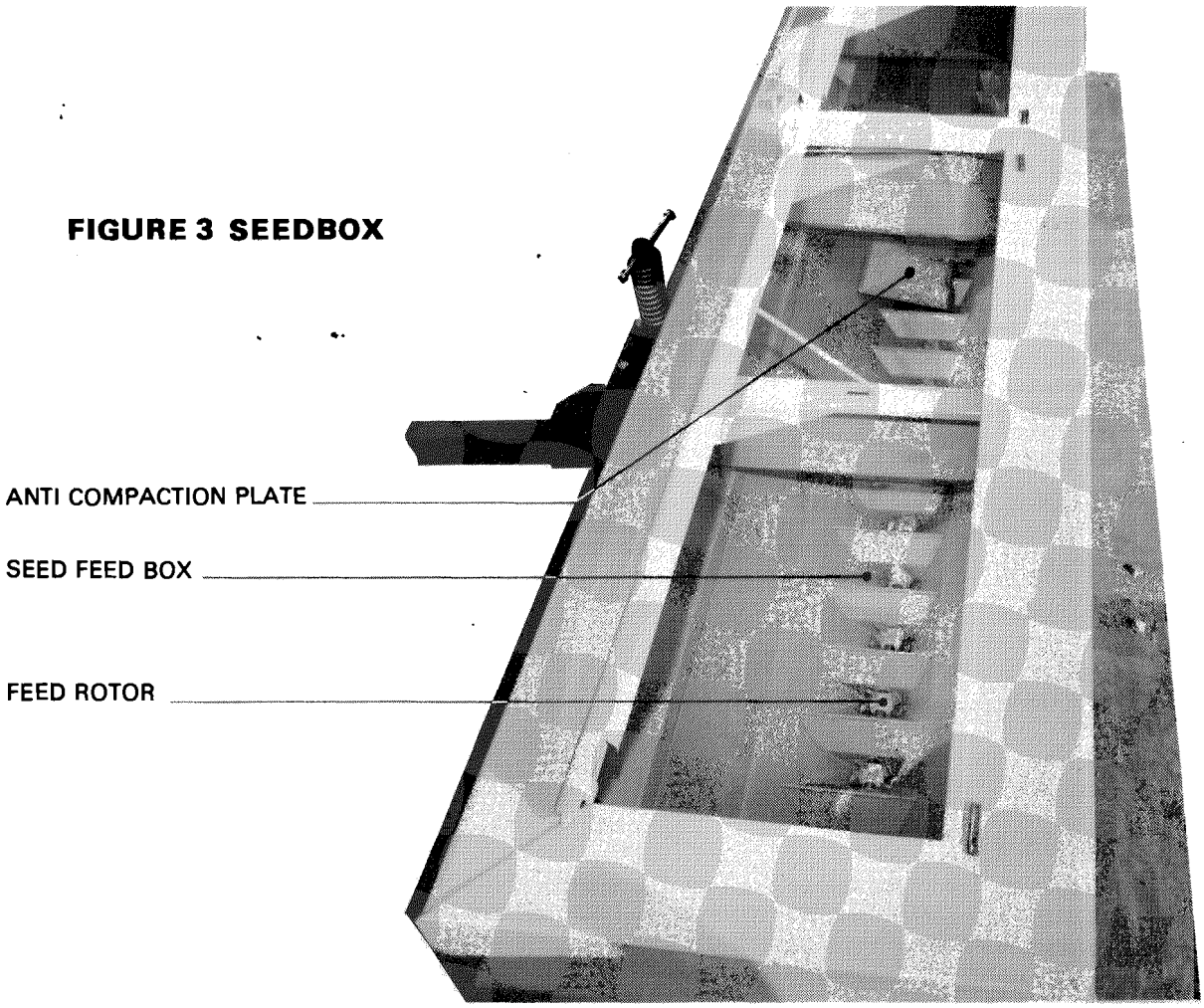
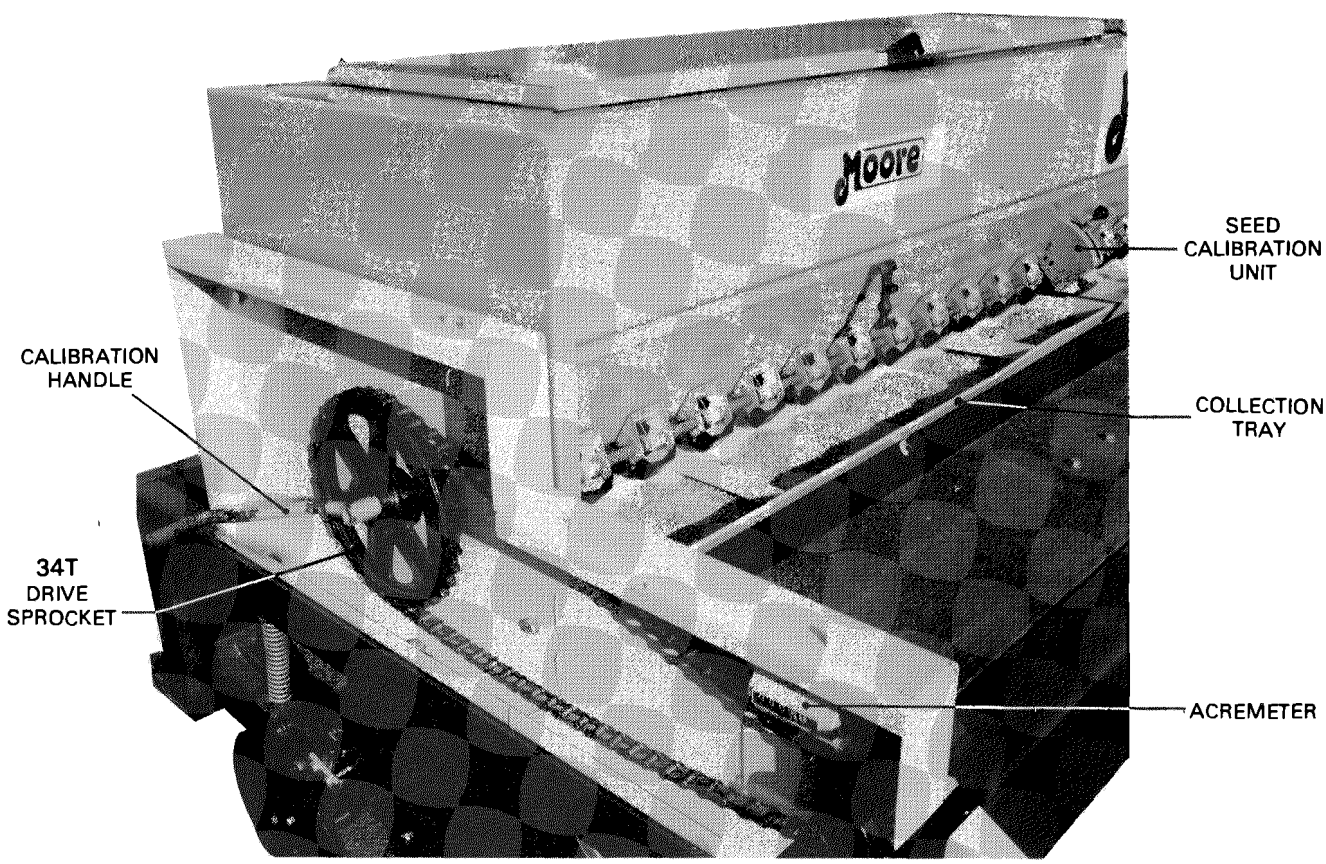


FIGURE 4 CALIBRATION



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

7. CALIBRATION (See Fig 4)

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. Also the type and quantity of seed dressings used .

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 the seed cup holder unit and slide it forward so that the seed collection trays are underneath the outlets of the seed distribution units.

Ensure that the handle is turned so that the drive wheel turns in the normal direction of travel.

Partially fill the seedbox and actuate the acremeter 100 times. 43 turns of the handle when attached to the 21 tooth seedbox 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.

8. SEEDING AT DIFFERENT ROW WIDTHS

It is possible to sow seeds at row widths of 5¼ in. (13.3cms.), 10½ in., (26.6 cms.), 15¾ ins., (40 cms.), and 21 ins., (53.3cms.)

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.2.

9. 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.

10. MAINTENANCE

A. NUTS AND BOLTS

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 tube coulters and disc bolts.

B. BEARINGS

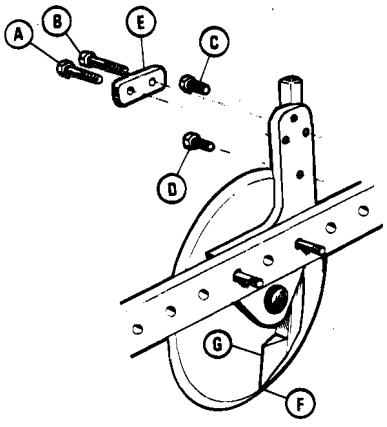
Check disc and press wheel bearings for correct adjustment.

1" Dia. Timken Duo Seal Taper Roller Bearings are fitted to the press wheels and disc hubs on the drill.

Remove the dust cover and use a socket on the lock nut to tighten up the two taper roller bearings so that they can just turn freely. When the bearings are slack the rubber seals will wear thus allowing in dust, ending up with a dry bearing. The bearings are packed with Shell Alvania Grease.

C. SEED TUBE COULTER ADJUSTMENT

Check the position of the seed tube coulters in relation to the disc coulters daily.



For most seeding conditions and as a general rule the tip F of the seed tube coulter should be set so that it is approximately ½ " 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 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.

11. OPERATION OF ALL-TILL SEEDBED DRILLS

A. PREPARATION AND CALIBRATION

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

Calibrate the seeding mechanism for seeds to be sown.

B. RUNNING IN

If the drill is new and is to be used in cultivated soil, it is better to 'run-in' the drill in hard ground, such as a grass field. It is easier to work off the paint and rough edges from the seed tube and disc coulters when working in firm ground where there is more friction to turn the discs. This only requires a few runs across a field, without seed. The depth control of the All-Till seedbed drill can be tried out by turning the depth control screw up or down to increase or decrease the depth of disc penetration. Check that all the discs turn relatively freely; it may be necessary to slacken off seed tubes that are rubbing tight against the discs.

C. FIELD OPERATION

Do not turn sharp corners with the All-Till seedbed drills, especially in direct drilling operations 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 to the seed flow. It is better to lift the machine out of and into work when turning corners.

D. WORK RATE

As there is no disc bounce, due to the high inertia coulter system with press wheels, relatively high ground speeds can be tolerated giving high work rates. 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.

E. SEEDBED PREPARATION

It is not necessary to prepare a fine seedbed as for other drills. The All-Till seedbed drill prepares its own mini seedbed by using angled disc and seed tube coulter tine. In most fields it is only necessary to plough and perhaps level and roll. If the soils are loose, puffy, soft or have loose stones on the surface, it will generally be advantageous to roll the field first. This will reduce blockages and help maintain even depth control.

F. DRILLING IN CONVENTIONAL SEEDBED

When working in cultivated soil, 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. 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.

It is recommended that the centre of the field should be drilled first and the headlands last. If the headlands are planted first, then the tractor and drill will travel and turn on planted ground, thus disturbing, compacting and moving seeds that have been placed at a constant depth. Check seeding depth in the field and on headlands, remember the headlands tend to be more compacted than the remainder of the field.

On rough type seedbeds the drill itself tends to be self levelling. The seed tube and disc coulter units tend to move the soil from humps to hollows. It is not necessary to harrow and roll after sowing.

Harrowing will move seeds either shallower or deeper thus giving uneven germination. Remember seeds that are planted two to three inches deep take about two weeks longer to germinate and appear as weak plants, that are susceptible to disease.

G. DRILLING IN WET CONDITIONS

The All-Till seedbed drills are now fitted with adjustable scrapers for the press wheels. Wet soil will usually build up to about one inch on any wheel. Adjust the scrapers so as to knock off the excess soil that would build up over the normal amount of soil that sticks to the press wheels.

Never reverse the drill with the seed tube coulters in the ground as this would block the seed outlets with soil.

Where there are very wet pockets of soil in some fields, the road wheels can be used to slightly raise the drill out of the ground thus assisting the drill through the difficult areas. Be careful not to raise the drill too high; always keep the seed drive wheel in contact with the ground.

H. DRILLING INTO STRAW INCORPORATED SOIL AND TRASHY CONDITIONS

In heavy trash conditions it may be necessary to raise the tip of the seed tube coulters, so that the disc will cut through the trash before the coulter opens the slit. In heavy maize trash, especially in the direct drill or no-till situation, it may be necessary to raise the tip of the seed tube coulter 1" to 1½" above the edge of the disc.

The discs cut through the trash very positively. The weight of the press wheels keep the discs anchored and do not allow the discs to ride out of the soil, even when there is a lot of trash present.

Bulldozing normally occurs when a disc meets trash, tries to ride up over the trash, then pushes it in front of the disc, thus causing bulldozing and blockages.

The trash itself, on decaying, produces acids, toxins, etc., which tend to damage or kill the germinating seed. If the trash is mixed with the soil and compacted tightly to give good straw/soil contact then the soil will absorb the toxins as they are formed, before they can harm the germinating seedlings. The press wheels on the All-Till seedbed drills compacts the trash/soil/seed exactly right to give very healthy plant stands even in very trashy conditions.

If straw is incorporated into the soil to leave a loose fluffy seedbed then it is better to compact this first using either a roller, crumbler bar, flexicol, etc., before drilling.

I. MINIMUM TILLAGE AND DIRECT DRILLING

In certain soils, especially if they contain stone or brash, it is recommended that the top 1 " or 2 " should be cultivated or scratch tilled. This will encourage the germination of volunteer cereals and weed seeds. It will also help to level out the tramline and wheeled tracks . Also if stones are left undisturbed in the top layer, they become embeded and the disc will ride from stone to stone without getting good penetration.

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.

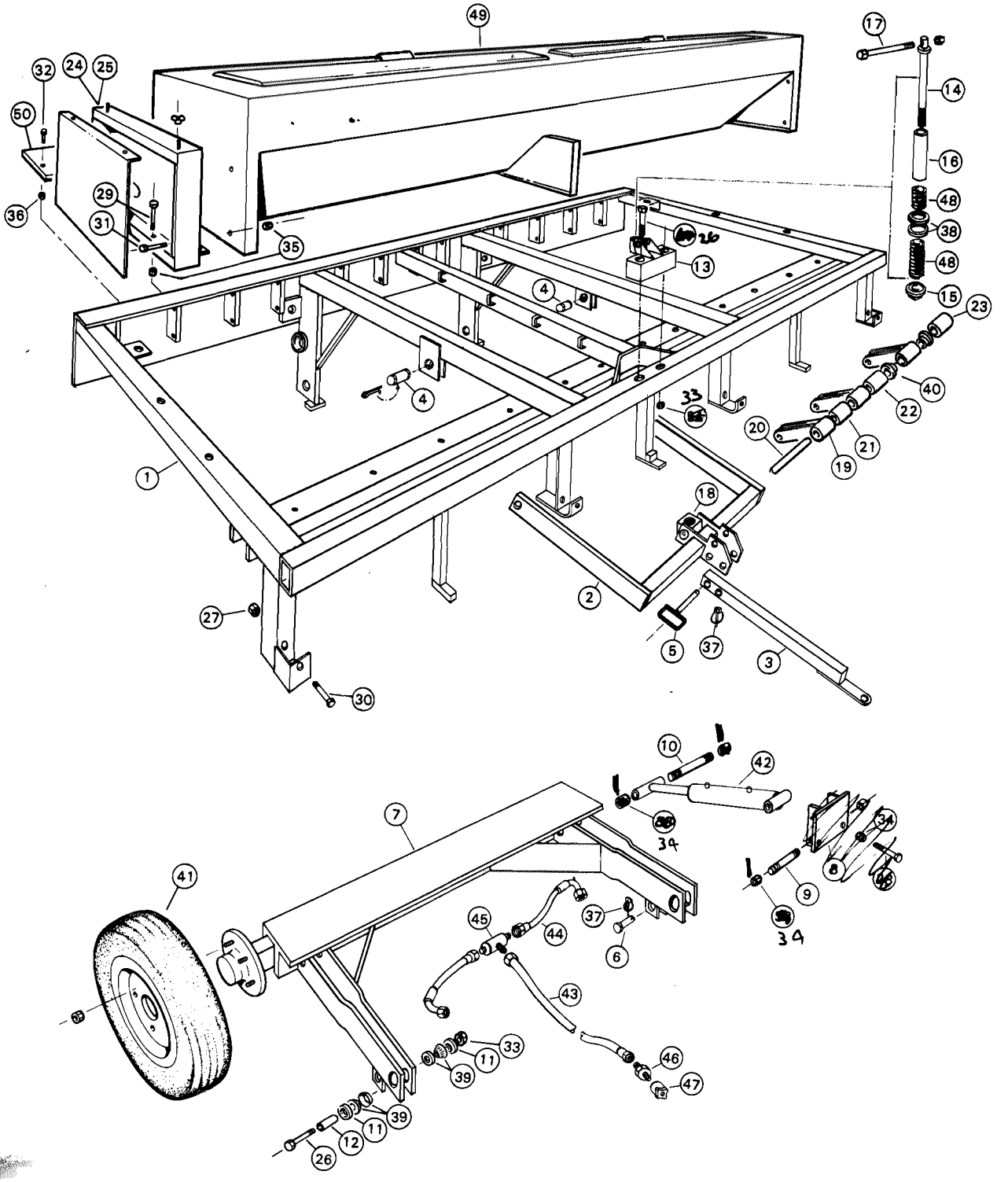
J. OTHER SUGGESTIONS

If no air line or vacuum is available to assist in the cleaning out of the seedbox, paper tissues can be used. Fully open the seed distribution units, wrap up a large paper tissue and place it between the rotor and seed feed box. Turn the rotor so that it will take the tissue around the bottom of the seed feed box wiping it clean.

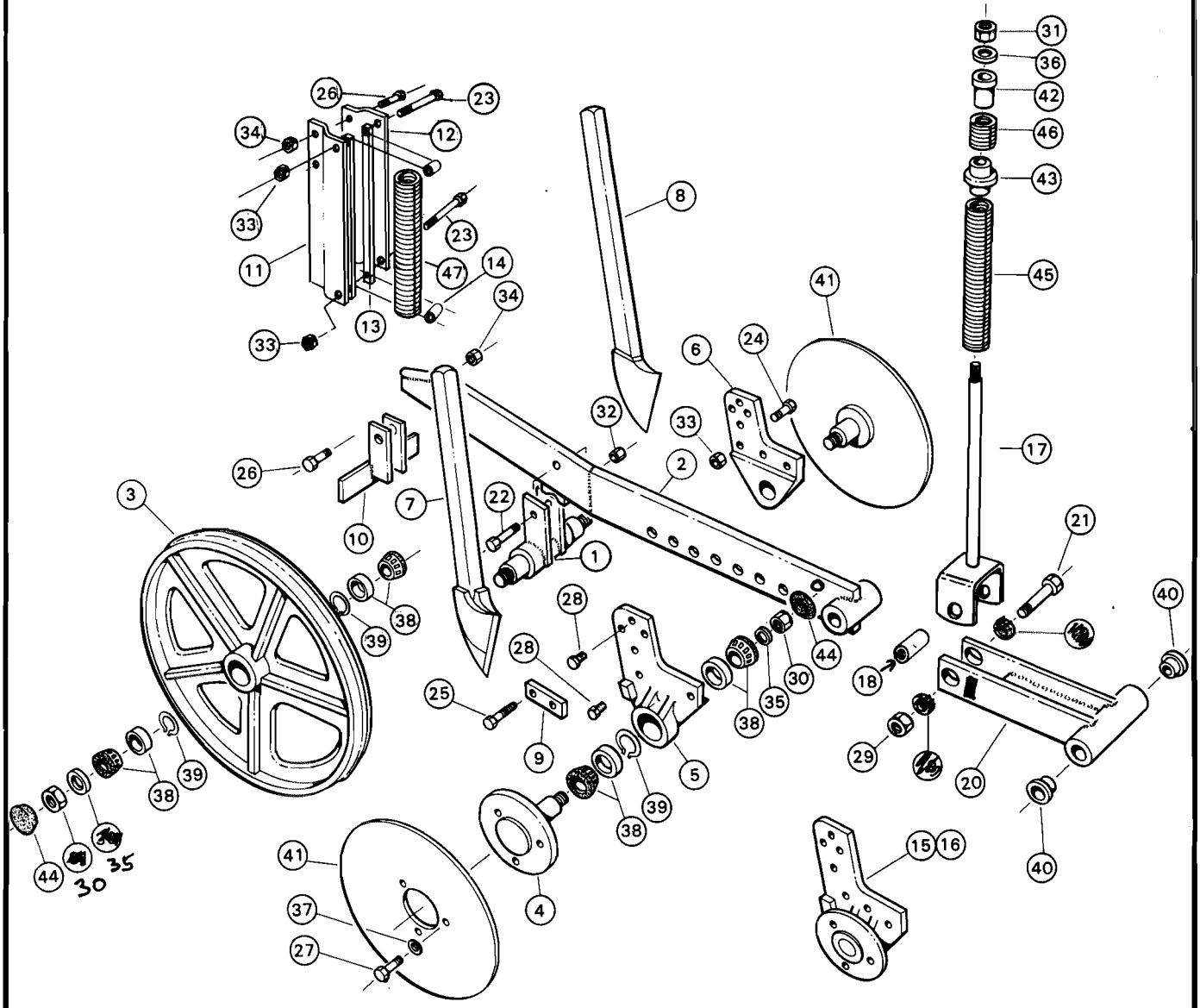
With certain types of peas, beans, etc., the large seeds tend to catch between the rotor and bottom of the seed feed box, thus splitting and damaging the seeds. Some users keep and use a second set of rotors from which about ¼ " has been cut off the end of the plastic rotors. With the shorter rotors, the large seeds will not jam between the rotor ends and the bottom of the seed feed box. Less power will be required to turn the drive wheel and less damage to the seeds will occur.

With small seeds such as oilseed rape, especially if they are covered with seed dressings, it is important to check the flow of seeds from the distribution units. The dressings, especially when damp, tend to build up around the openings like cement, reducing the size of the opening and thus the seed rate. A small nail as a length of wire can be used to clear the build up of the dressings.

MAIN FRAME & DRAWBAR UNIT



ITEM	PART NO.	DESCRIPTION	QTY.
1	110-0004	Main Frame	1
2	110-0004	Drawbar Assembly	1
3	121-0034	Drawbar Towing Arm	1
4	122-0034	Drawbar Connecting Pin	2
5	~~124-0034~~ A159	Drawbar Arm Pin	2
6	125-1034	Transport Pin	2
7	126-0004	Axle Mounting Unit	1
8	~~127-1034~~	~~Top Bracket - Ram~~	1
9	128-1034	Ram - Top ~~Bolt~~ P/N	1
10	129-1034	Ram - Bottom ~~Bolt~~ P/N.	1
11	130-1034	Pivot Collar - Axle Unit	4
12	131-1034	Pivot Bush - Axle Unit	2
13	~~133~~-0034	Depth Control Screw Holder	1
14	134-1234	Depth Control Screw	1
15	135-1234	Depth Control Screw - Handle	1
16	136-1234	Depth Control Screw - Tube	1
17	137-1234	Depth Control Screw - Handle	1
18	138-1234	Depth Control Screw - Trunnion	1
19	140-1234	Pivoting Arm Unit	12
20	141-0004	Front Pivot Bar	1
21	142-0234	Spacer Bush - Inner	9
22	143-0234	Spacer Bush - Inner Bushed	2
23	144-0004	Spacer Bush - End	2
24	310-0004	Seedbox Mounting Bracket - R.H.	1
25	311-0004	Seedbox Mounting Bracket - L.H.	1
26	A101	1" x 6" UNC Bolt	2
27	~~A104~~	~~M20 x 220 Bolt~~	2
28	A106	M20 x 70 Bolt	6
29	A108	M12 x 120	4
30	A109	M12 x 100 Bolt	4
31	A111	M12 x 55 Bolt	6
32	A114	M10 x 50 Bolt	4
33	A130	1" UNC Locknut	10
34	~~A135~~ A153	~~M20 Locknut~~ M8 x 40 SPROL PIN.	8
35	A138	M12 Locknut	14
36	A139	M10 Locknut	4
37	A152	Lynch Pin	4
38	A155	2" Timken Thrust Bearing	2
39	A156	1⅜ " Timken Taper Roller Bearing	4
40	A159	Oilite Bush	30
41	A164	Road Wheel	2
42	~~A170~~ A169	2½" 3" Dia. Hydraulic Cylinder	2
43	A171	Hydraulic Hose Ram Tractor	1
44	~~A172~~ A179	Hydraulic Hose - Ram ~~Short~~ RAM.	2
45	A173	⅜ " B.S.P. Tee	1
46	A174	⅜ B.S.P. Nipple	3
47	A176	Dowty Coupling	1
48	A185	Depth Control Spring	2
49	A204	Seed Box Complete	1
50	A294	Rear Platform	1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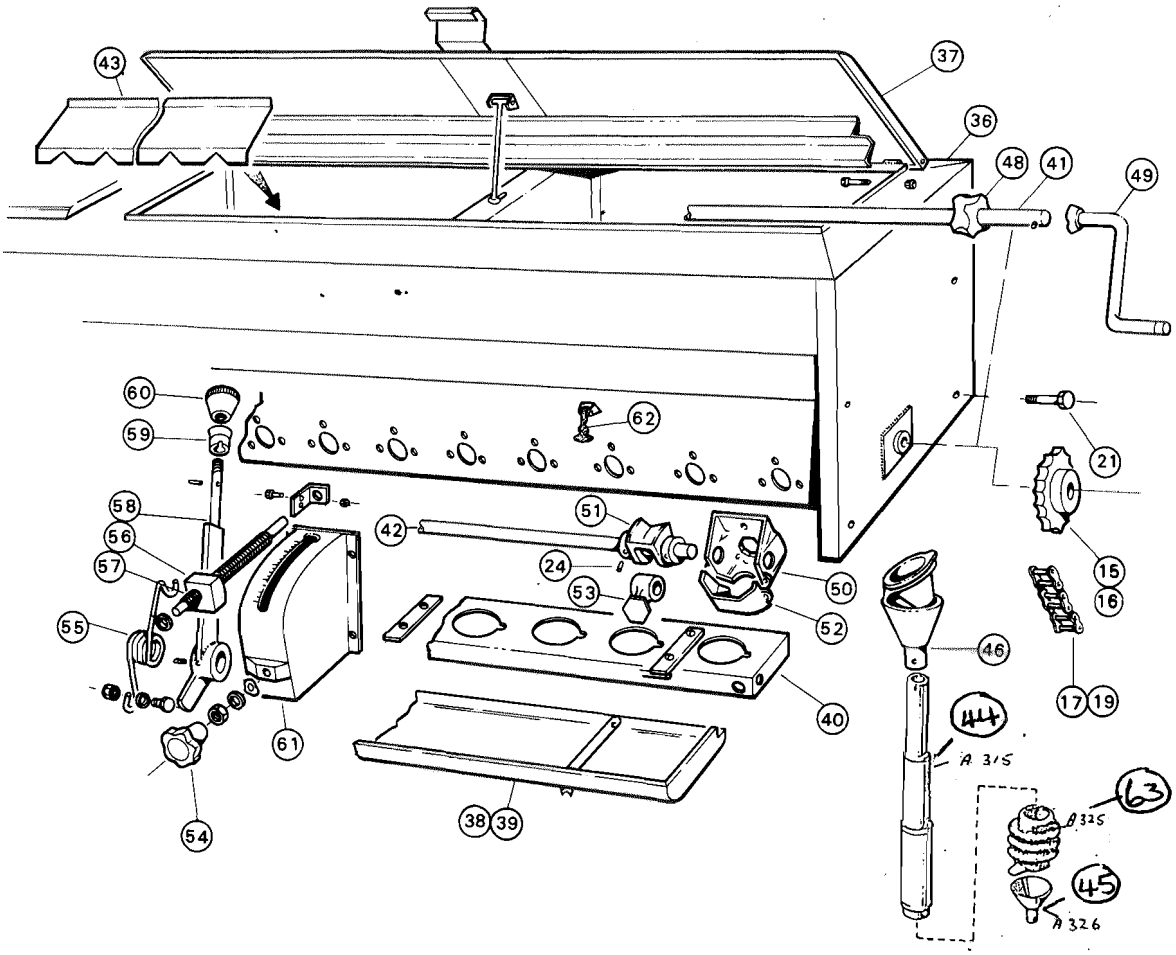
ITEM	PART NO.	DESCRIPTION	QTY
1	201-0234	Dragarm Axle Unit	12
2	220 ~~202~~-1234	Dragarm Mounting Bar	12
3	203-1234	Press Wheel	24
4	204-1234	Disc Hub	24
5	205-0234	Disc Mounting Bracket - R.H.	12
6	206-0234	Disc Mounting Bracket - L.H.	12
7	207-1234	Seed Tube Coulter - R.H.	12
8	208-1234	Seed Tube Coulter - L.H.	12
9	209-1234	Seed Tube Retaining Plate	24
10	210-0234	Press Wheel Scraper	12
11	211-1234	Dragarm Guide Plate - R.H.	12
12	212-1234	Dragarm Guide Plate - L.H.	12
13	213-1234	Guide Plate Bar	24
14	214-1234	Guide Plate Distance Piece	24
15	215-0234	Disc Bearing Replacement Unit - R.H.	12
16	216-0234	Disc Bearing Replacement Unit - L.H.	12
17	221 ~~217~~-1234	Front Spring Arm	12
18	~~218-1234~~ A149	~~Front Pivot Sleeve~~ ½ x 1¾ SPIROC PINS.	12
19	~~218-1234~~	~~Front Pivot Bush~~	24
20	~~140-1234~~ ✓	Pivot Arm Unit	12
21	~~A102~~ A103	1" x 4¾ ~~1" x 4½~~" UNC. Bolt	12
22	A107	M 16 x 55 Bolt	12
23	A110	M 12 x 75 Bolt	24
24	A111	M 12 x 55 Bolt	24
25	A113	M 10 x 65 Bolt	48
26	A114	M 10 x 50 Bolt	36
27	A120	⅜ x ⅝ UNF. Setscrew	72
28	A122	M 10 x 20 Setscrew	48
29	~~A131~~ A130	1" UNC. Locknut	12
30	A132	¾ UNF. Locknut	24
31	A133	⅝ UNF. Locknut X	24
32	A137	M 16 Locknut	12
33	A138	M 12 Locknut	48
34	A139	M 10 Locknut	36
35	A145	M 20 x 35 H.D. Washer	24
36	A146	M 16 x 32 H.D. Washer	24
37	A148	M 10 Shake Proof Washer	72
38	A157	1" Timken Taper Roller Bearing	96
39	A158	1" Timken Circlip	72
40	A159	Oilite Bush	30
41	A160	Seed Disc Coulter. 16" Dia.	24
42	A180	Spring Retaining Bush	12
43	A181	Spring Locating Bush	12
44	A182	Dust Cap - Small	48
45	A186	Front Spring - Lower	12
46	A187	Front Spring - Upper	12
47	A189	Rear Spring - H.D.	12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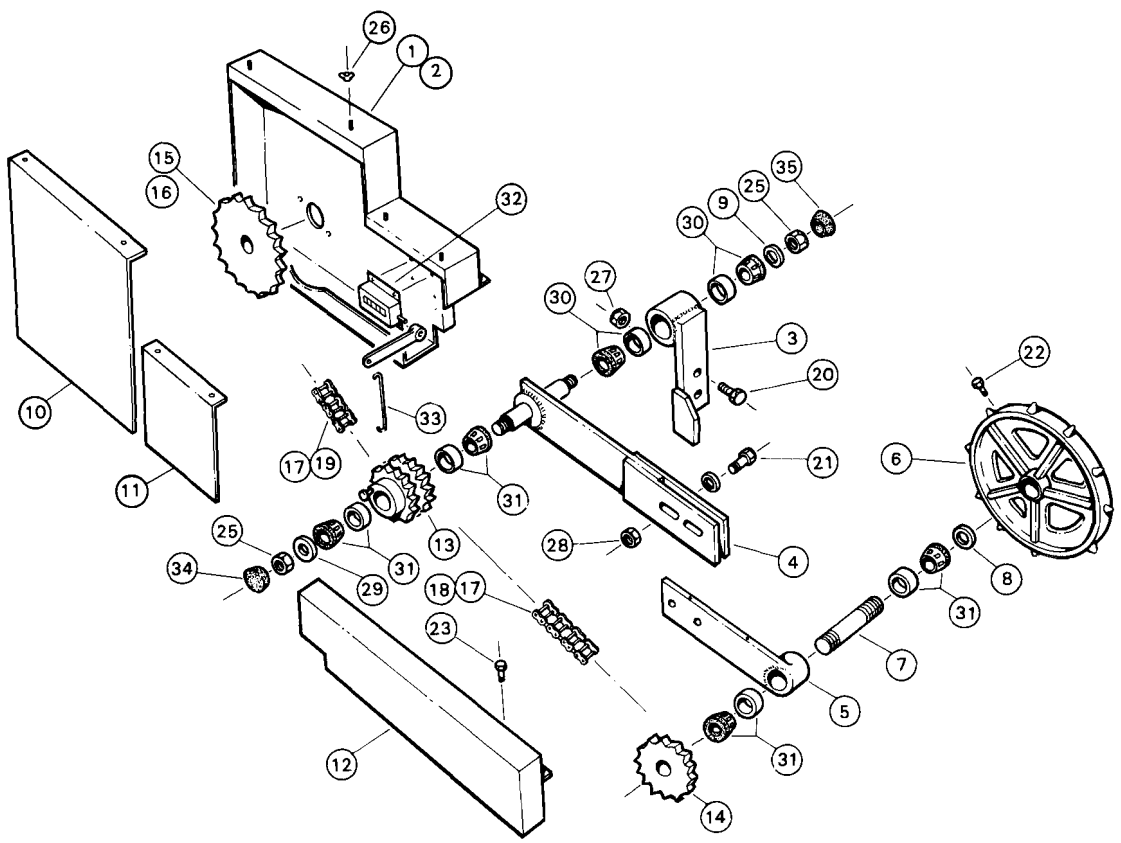
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ITEM	PART NO.	DESCRIPTION	QTY.
1	310-0004	Seed Box Mounting Bracket RH	1
2	311-0004	Seed Box Mounting Bracket LH	1
3	313-0034	Support Arm Pivot Bracket	1
4	314-1034	Drive Wheel Support Arm - Upper	1
5	315-1034	Drive Wheel Support Arm - Lower	1
6	316-1034	Drive Wheel	1
7	317-1034	Drive Wheel Axle	1
8	318-1034	Drive Wheel Spacer	1
9	319-1034	Pivot Bracket Bearing Washer	1
10	320-0004	Chain Guard Cover	1
11	321-0004	Chain Guard Upper	1
12	322-0004	Chain Guard Lower	1
13	323-1234	9T Double Drive Sprocket	1
14	324-0004	16T Drive Sprocket Lower	1
15	325-1034	21T Drive Sprocket Upper	1
16	327-0034	34T Drive Sprocket Upper	1
17	329-1234	Chain Connecting Link	3
18	331-0004	76L Drive Chain - Lower	1
19	332-0004	76L Drive Chain - Upper	1
20	A106	M20 x 70 Bolt	2
21	A111	M12 x 55 Bolt	8
22	A121	M10 x 60 Setscrew	1
23	A123	M8 x 16 Setscrew	2
24	A126	M6 x 10 Socket Head	48
25	A133	⅝ UNF Lock Nut 2	2
26	A134	M10 Wing Nut	4
27	A135	M20 Lock Nut	2
28	A138	M12 Lock Nut	8
29	A146	M16 x 32 Washer - HD	2
30	A156	1 ⅜ " Timken Taper Roller Bearing	8
31	A157	1" Timken Taper Roller Bearing	4
32	A162	Acremeter	1
33	A163	Acremeter Link Arm	1
34	A182	Dust Cap - Small	1
35	A183	Dust Cap - Large	1
36	A214	Seed Box Shell	1
37	A224	Seed Box Lid	1
38	A234	Collection Tray/Cover RH	1
39	A244	Collection Tray/Cover LH	1
40	A254	Seedcup Holder Unit	2
41	A264	Rotor Drive Shaft	1
42	A274	Distribution Shaft	1
43	A284	Anti Compaction Plate	2
44	~~A310~~ A315	Flexible Seed Tube 3T	20
45	~~A320~~ A326	Seed Tube Joint	24
46	A330	Seed Cup Holder	24
48	A350	Feed Rotor	24
49	A360	Calibration Handle	1
50	A370	Distribution - Main Unit	24
51	A380	Distribution - Sluicegate Unit	24
52	A390	Distribution - Plastic Cover	24
53	A400	Distribution - Nylon Shutter	24
54	A410	Calibration - Hand Adjustment Screw	1
55	A420	Calibration - Spring	1
56	A430	Calibration - Adjustment Nut	1
57	A440	Calibration - Screw Thread	1
58	A450	Calibration - Pointer Shaft	1
59	A460	Calibration - Pointer Locator	1
60	A470	Calibration - Pointer Handle	1
61	A480	Calibration - Graduated Box	1
62	A540	Rubber Strap	2
63	A325	SEEDTUBE BELLOWS	24