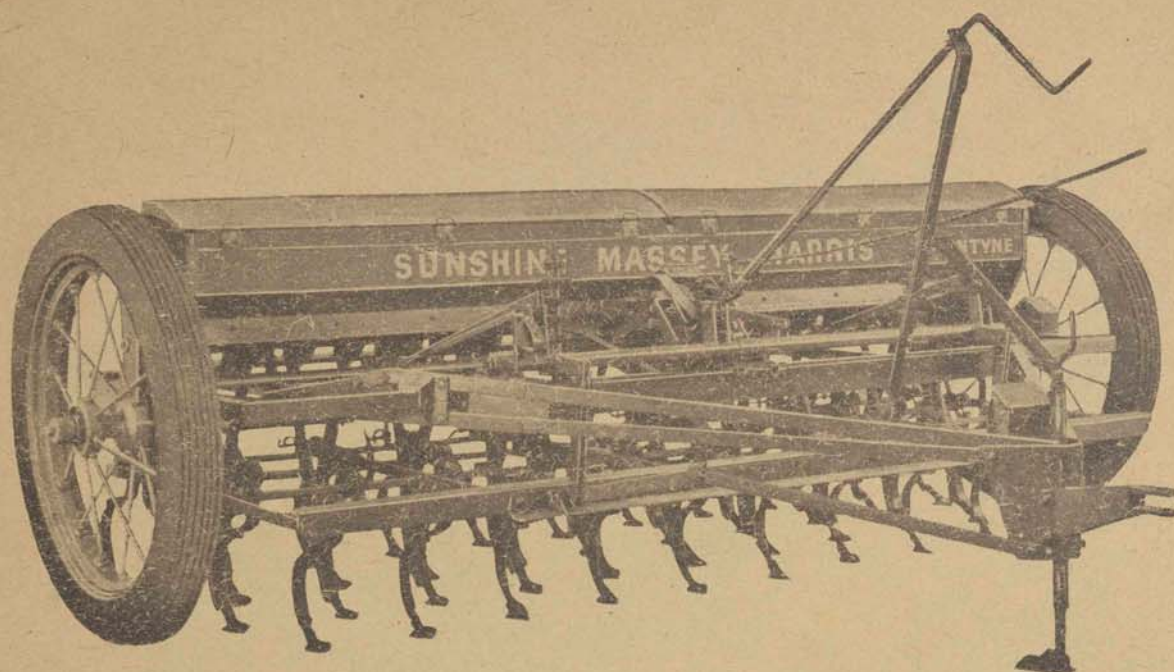


TL 038439



**SUNSHINE MASSEY HARRIS**  
**500 SERIES DRILLS**  
**SERVICE MANUAL**



**MASSEY-FERGUSON (AUSTRALIA) LTD.**  
**H. V. McKAY MASSEY HARRIS PTY. LTD.**

**SUNSHINE, VICTORIA, AUSTRALIA**

307



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In making this machine, Sunshine Massey Harris Engineers, Field Research Men, Factory Workers, Agents, Salesmen and Servicemen have given their best effort to ensure your entire satisfaction from its use.

Behind this effort is the accumulated experience of over seventy-two years in the farm machinery business—over seventy-two years of continual striving for better design, better quality, better performance of Sunshine Massey Harris equipment.

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We appreciate you as a customer.

X644, DRc, 457



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# SPECIFICATIONS

Standard Equipment	Width	Length	Weight	Standard Wheels	Special Wheels
Sunrow or Sundelve:				Steel Concave:	Steel or 6.50 x 40 pneu.
12 row	9ft.4 $\frac{1}{2}$ ins.	9ft.1 $\frac{1}{2}$ ins.	16c.3q.0lb.	3 $\frac{1}{2}$ ins.	4 $\frac{1}{2}$ ins.
16 row	11ft.8 $\frac{1}{2}$ ins.	10ft.10 $\frac{1}{2}$ ins.	1t.0c.2q.0lb.	4 $\frac{1}{2}$ ins.	6ins.
20 row	14ft.3 $\frac{1}{2}$ ins.	11ft.3 $\frac{1}{2}$ ins.	1t.5c.2q.0lb.	6ins.	8ins.
24 row	16ft.7 $\frac{1}{2}$ ins.	12ft.7 $\frac{1}{2}$ ins.	1t.9c.2q.10lb.	6ins.	8ins.
Sundrill:					
12 row	9ft.4 $\frac{1}{2}$ ins.	9ft.1 $\frac{1}{2}$ ins.	16c.0q.0lb.	3 $\frac{1}{2}$ ins.	4 $\frac{1}{2}$ ins.
16 row	11ft.8 $\frac{1}{2}$ ins.	10ft.10 $\frac{1}{2}$ ins.	19c.3q.0lb.	4 $\frac{1}{2}$ ins.	6ins.
20 row	14ft.3 $\frac{1}{2}$ ins.	11ft.3 $\frac{1}{2}$ ins.	1t.3c.3q.14lb.	6ins.	8ins.
24 row	16ft.7 $\frac{1}{2}$ ins.	12ft.7 $\frac{1}{2}$ ins.	1t.7c.0q.17lb.	6ins.	8ins.

Note: Machines may be fitted with either 6.50 x 40, 9 x 36 or 13.50 x 28 pneumatic tyres and wheels.

When the 12 and 16 row machines are fitted with 13.50 x 28 or 9 x 36 tyres special axles and fittings are required.



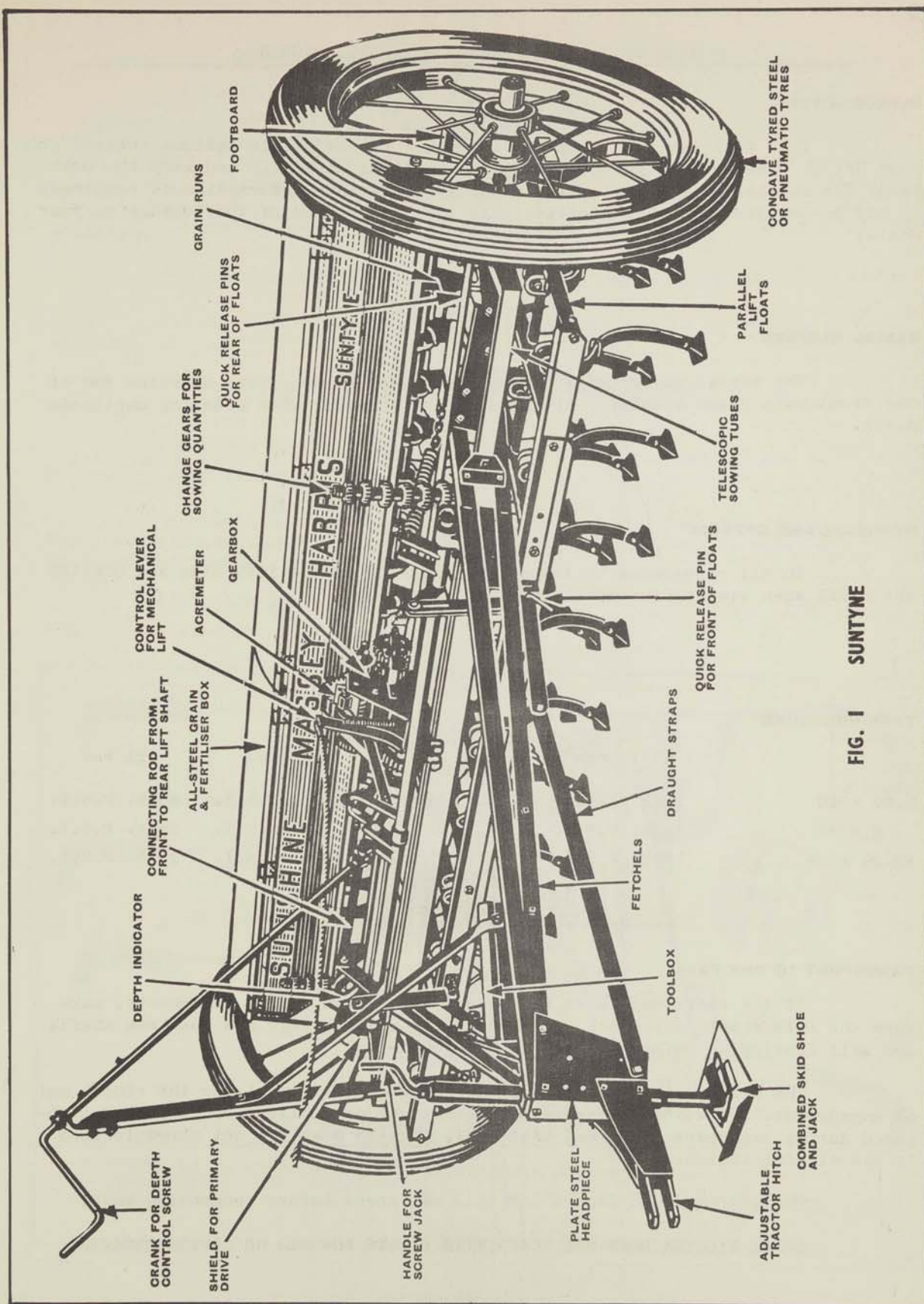


FIG. 1 SUNTYNE

## INTRODUCTION

This book has been compiled to enable you to obtain maximum service from your Drill. We suggest you study the instructions carefully and keep the book handy for further reference. If, at any time, further information is required, it may be obtained from our Representatives or the Office of the Company in your State.

## SERIAL NUMBER

The serial number will be found stamped on top of the nearside end of the front main frame member. Always quote this number when ordering duplicate parts.

## NEARSIDE AND OFFSIDE

In all references to the drill, NEARSIDE is the LEFT side and OFFSIDE the RIGHT when viewing the drill from the rear.

## TYRE PRESSURE

	12 row	16 row	20 row	24 row
6.50 x 40	20lb. P.S.I.	28lb. P.S.I.	36lb. P.S.I.	40lb. P.S.I.
9 x 36	18lb. P.S.I.	18lb. P.S.I.	28lb. P.S.I.	28lb. P.S.I.
13.50 x 28	8lb. P.S.I.	8lb. P.S.I.	10lb. P.S.I.	12lb. P.S.I.

## TRANSPORT TO THE FARM

If the implement is to be hauled to the farm on its own wheels, make sure the main wheel axle boxes, differential shaft bearings and gear box shafts are well lubricated before and during the journey.

The raising of the floats or discs automatically places the clutch out of engagement. However, in order to prevent any possibility of it becoming engaged during transport over long distances, tighten down the set screw located in the sliding clutch.

Do not forget to loosen off this set screw before commencing work.

NEVER TIGHTEN DOWN SET SCREW WITH FLOATS LOWERED OR CLUTCH ENGAGED.



## LUBRICATION

See Figs. 2 to 7.

The implement is fitted with pressure gun nipples at all main points, and should be lubricated every 3 or 4 hours or more frequently in dry and dusty conditions.

The nipples may be turned to a more convenient position if necessary.

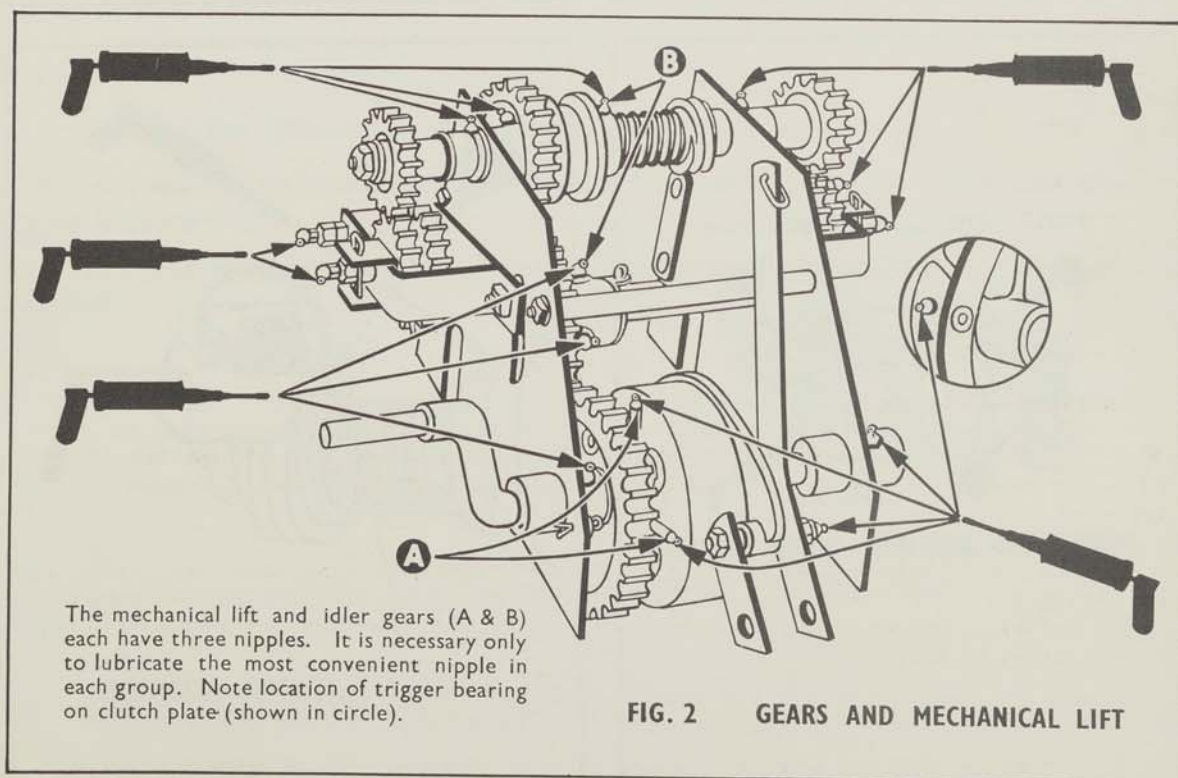
Clean all dirt and old lubricant from the top of the nipple before applying the gun.

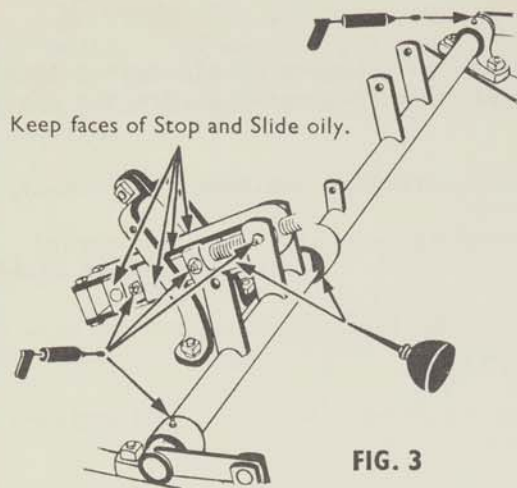
Keep all dirt out of the lubricant. Replace cover on the tin when not in use.

Lubricate the bearings sufficiently to ensure that all old lubricant is forced out from the bearing.

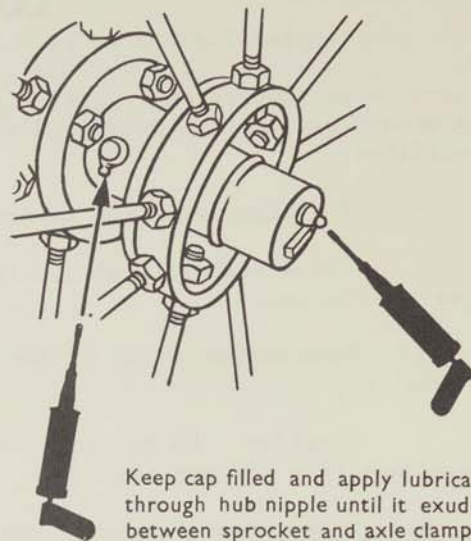
A semi-fluid chassis lubricant is recommended for your implement. Heavy or stiff lubricants are unsuitable as they do not readily penetrate to all parts of the bearing.

For those points which are lubricated by oil-can, use a good quality oil.



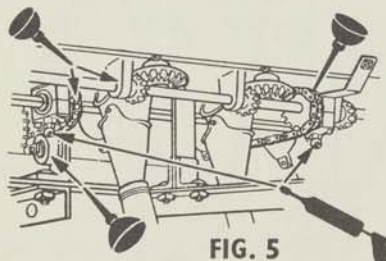


**FIG. 3**  
**ROCKSHAFT BEARINGS AND CONTROL**

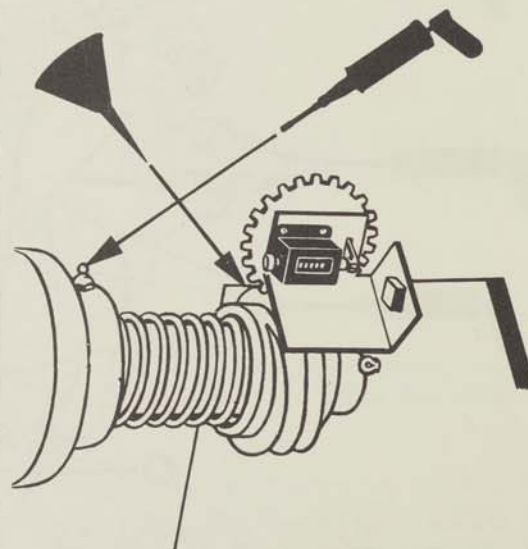


**FIG. 4** **AXLE BOX AND HUB CAP**

NOTE :—OIL, do not GREASE chains.

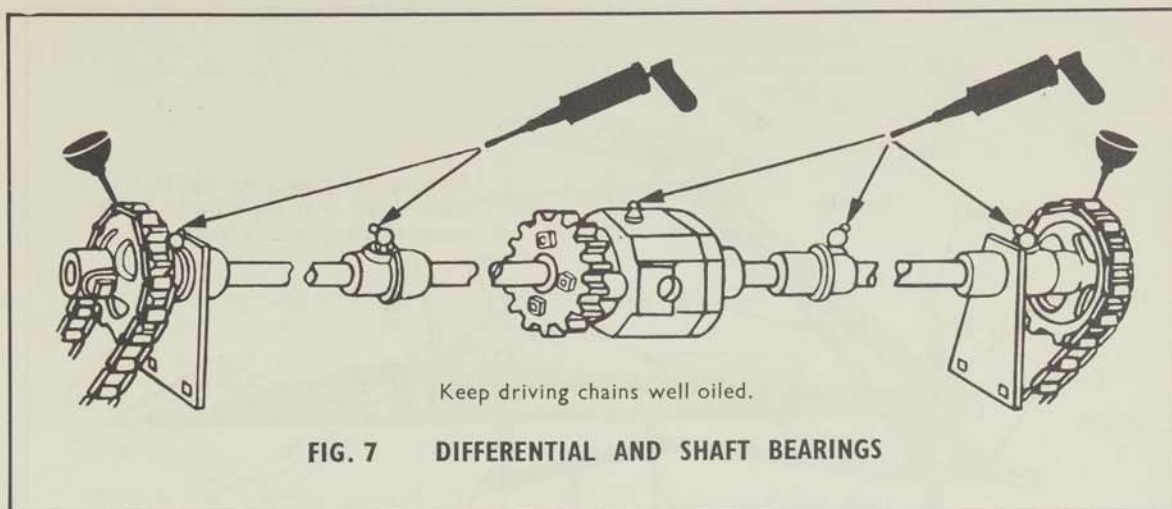


**FIG. 5**  
**CHAINS AND BEARINGS UNDER HOPPER**



**FIG. 6** **CLUTCH ASSEMBLY**





## ASSEMBLING INSTRUCTIONS

Cut all tie wires securing parts wired to the implement, and take out parts packed in the hoppers.

Lay out the parts and identify them.

Lift up the front of the implement until the frame is level and chock it in this position.

Carefully study and then follow the assembly instructions and illustrations.

1. Attach the fetchels, noting that on a 24 row implement only, an additional strengthening stay (not illustrated) is located from the centre of each fetchel towards the centre of the main frame. Do not tighten bolts. See Figs. 8 and 9.
2. Assemble the lifting jack into the headpiece. See Fig. 10.
3. Attach the headpiece to the fetchels, using the correct holes for 12, 20 and 24 row machines as shown in Fig. 10, and 16 row in Fig. 8.

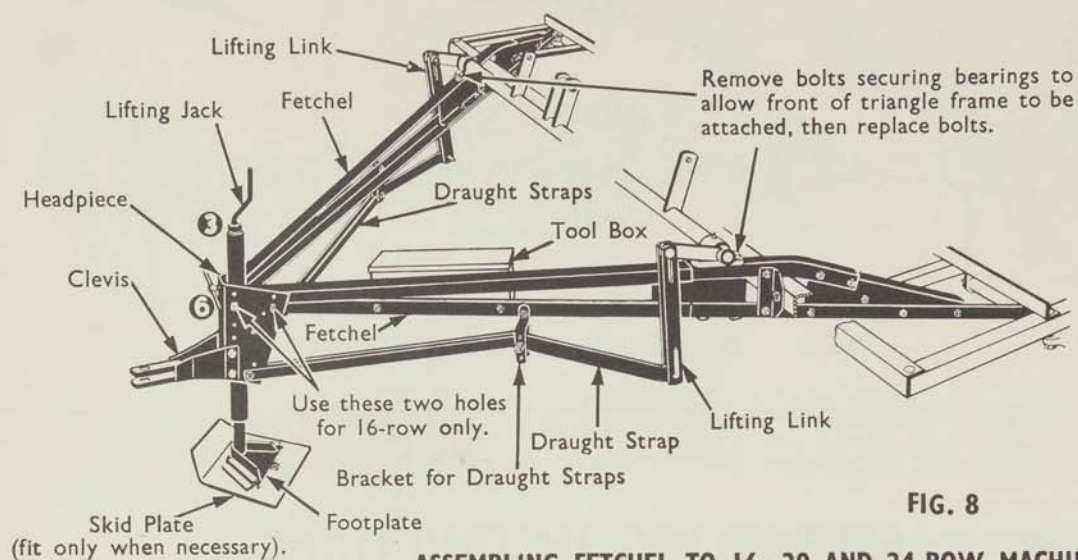


FIG. 8

ASSEMBLING FETCHEL TO 16, 20 AND 24-ROW MACHINES

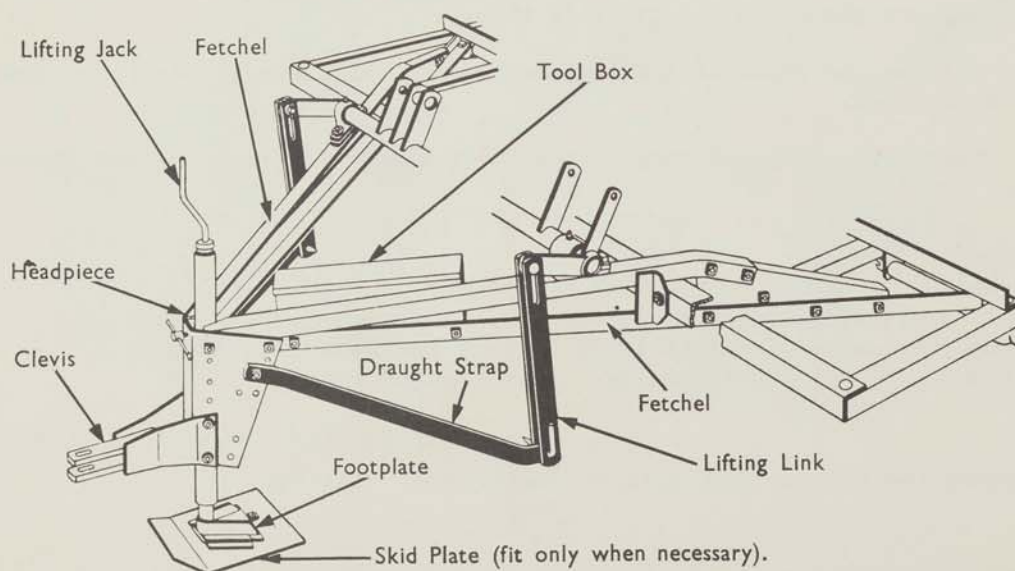
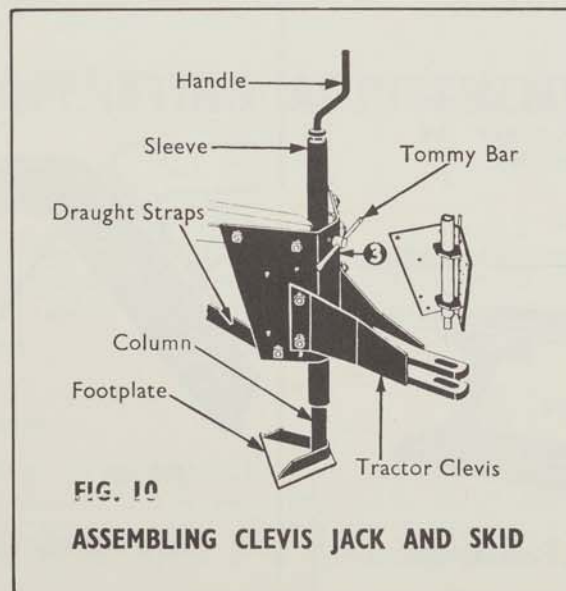


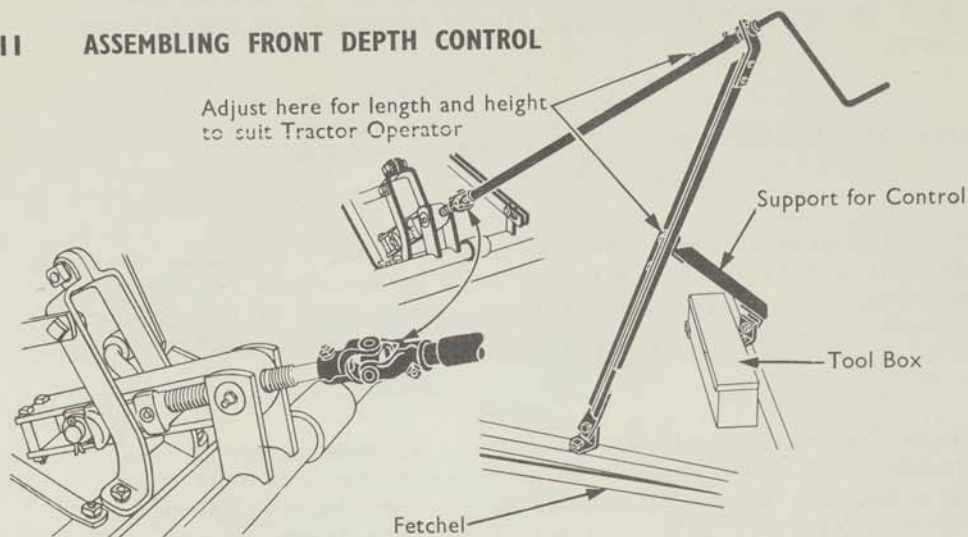
FIG. 9 ASSEMBLING FETCHEL TO 12 ROW MACHINES



4. Tighten the bolts connecting the fetchels to the frame, and take the weight of the front of the implement on the lifting jack.
5. Attach the draught straps. See Figs. 8 and 9.
6. Attach the draught straps to the lifting links. Connect the draught straps and the lifting links to the front float bar. See Figs. 8 and 9. Connect the pressure rods to the floats at the rear.
7. Attach the clevis (which is reversible if necessary) to the headpiece in such a position as to suit the height of the tractor draw bar. The underside of the headpiece should be approximately 10" (11½" for implements equipped with pneumatic tyres) above the ground level when working. See Fig. 10.
8. Fit the front depth control, adjusting its length and height to suit the tractor operator. See Fig. 11.
9. Attach the tool box to the nearside fetchel. See Figs. 8 and 9.



**FIG. 11 ASSEMBLING FRONT DEPTH CONTROL**



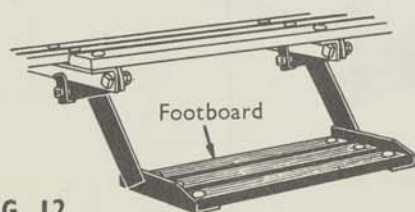
10. Attach the sowing tubes.

NOTE: On the Suntynes, the lower tube of the rear run is 12" long, whilst the lower tube of the front run is 10" long. See Fig. 14.

On the Sundelves, the short ribbon steel tubes are for the front runs. If the implement is fitted with pneumatic tyres, use the shorter steel ribbon tubes for the rear runs.

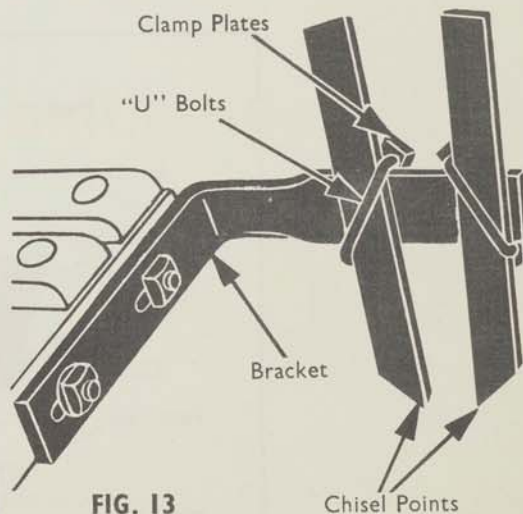
11. Attach hinged footboards.  
See Fig. 12.

12. Attach scrapers and adjust chisel points to clear the sides of spoke heads.  
See Fig. 13.



**FIG. 12**

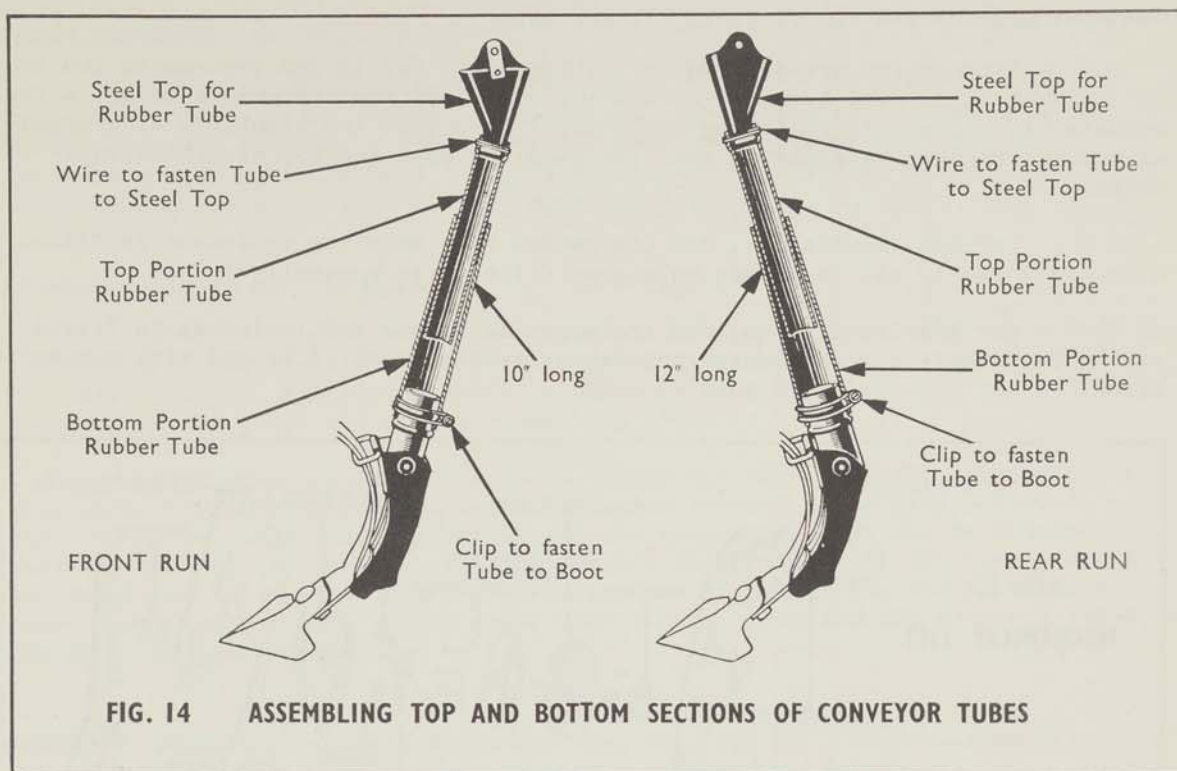
**ASSEMBLING HINGED FOOTBOARDS**



**FIG. 13**

**ASSEMBLING CHISEL SCRAPERS**





## OPERATING ADJUSTMENTS

### MECHANICAL LIFT

The floats are lowered to their working position or raised to the transport position by means of the mechanical lift which is activated by the operator pulling the rope. An exploded view of the mechanical lift is shown in Fig. 15.

### DEPTH ADJUSTING SCREW

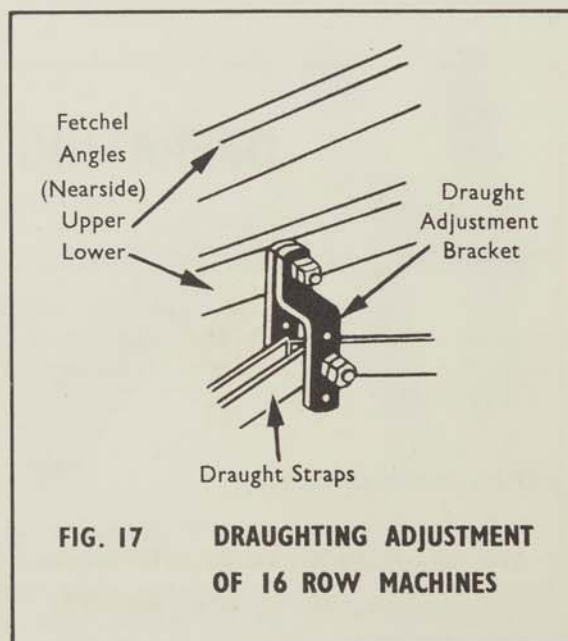
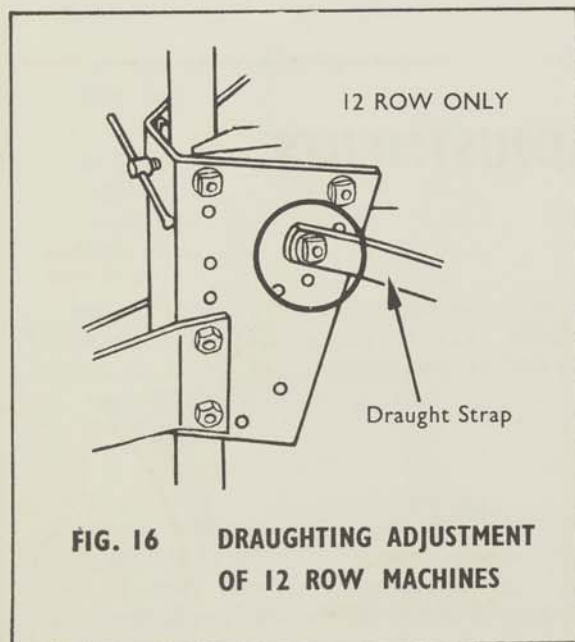
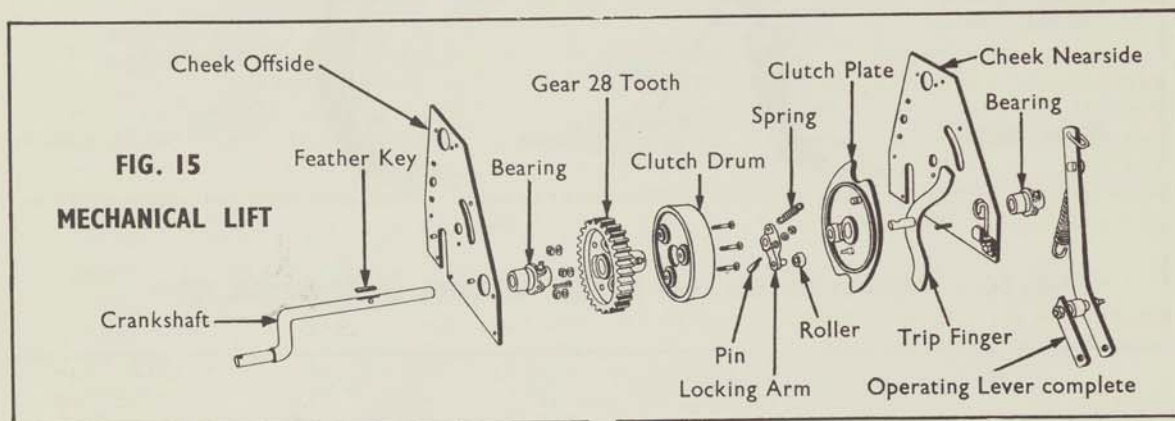
This enables the operator to vary the working depth of the implement from maximum to minimum. To increase the cultivating depth, turn the adjusting screw to the right (clockwise when viewing the implement from the front). To decrease the cultivating depth, turn the adjusting screw to the left (anti-clockwise).

**DRAUGHT ADJUSTMENT** See Figs. 16, 17 and 18.

Three holes are drilled in the headpiece for 12 row implements and in the draught adjustment brackets on the 16, 20 and 24 row implements to allow for adjustment. The bolt fastening the draught straps to the headpiece or draught adjustment bracket is inserted into the required hole and the draught straps moved.

For **HARD** conditions, use the centre hole when the implement is fitted with steel wheels and the lower hole when fitted with pneumatic tyres.

For **SOFT** conditions, use the upper hole when the implement is fitted with steel wheels and the centre hole when the implement is fitted with pneumatic tyres.





**FLOAT PRESSURE** See Fig. 19.

Holes are drilled in the lower part of the spring pressure rods to allow for adjustment of the float pressure. Remove the cotter pin from its hole and insert into the required hole. The upper hole is used for hard conditions and the lower hole for soft conditions, the intermediate holes being used for conditions varying between hard and soft.

**LEVELLING FLOATS OR TINE CARRIERS**

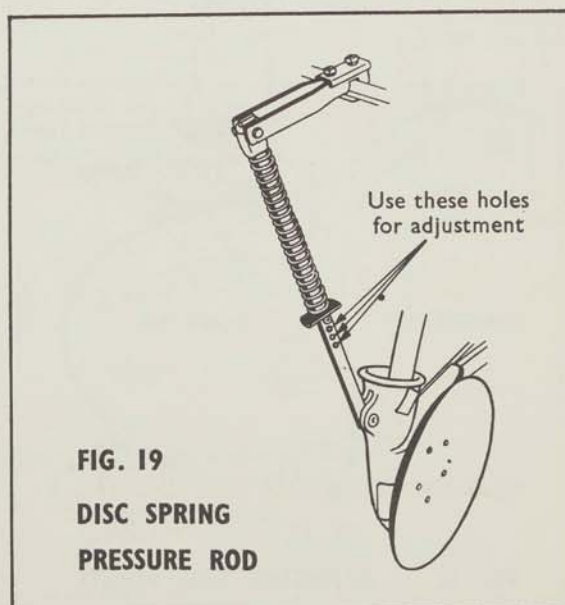
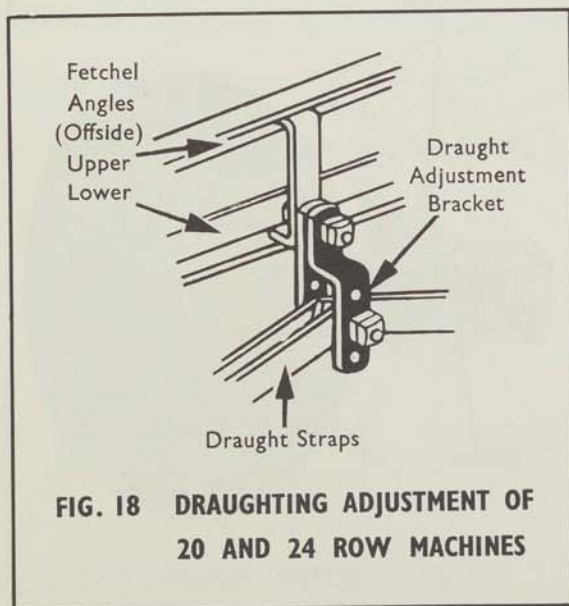
See Fig. 20.

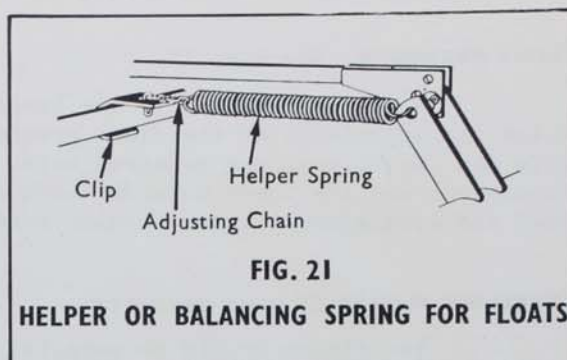
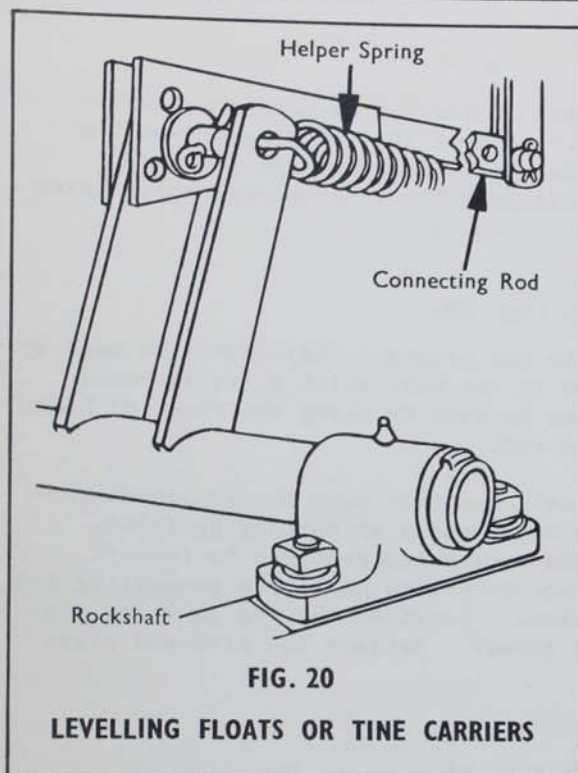
The floats should be parallel with the ground. Adjustment is made by locating the rear end of the connecting rod in the hole which gives the most suitable result. Finer adjustment can then be made by using the range of holes provided at the front end of the connecting rod.

The procedure is to lower the floats and then move the implement forward until the mechanical lift crank is in the forward or working position. Turn the screw control until the pins in the connecting rods can be removed. Continue turning the screw in the appropriate direction until the connecting rod (or rods) can be located in the desired holes. Lengthen the rod to raise the rear tines; shorten the rod to lower rear tines. Replace the pins and reset the depth adjusting screw.

**HELPER OR BALANCING SPRING FOR FLOATS** See Fig. 21.

The purpose of this spring is to assist the operator in raising the floats. The end of the spring is fitted with a chain. The free end of the chain engages with the anchor plate. Make this adjustment only when the floats are up in the transport position.





**SET OF TINE POINTS** See Fig. 22.

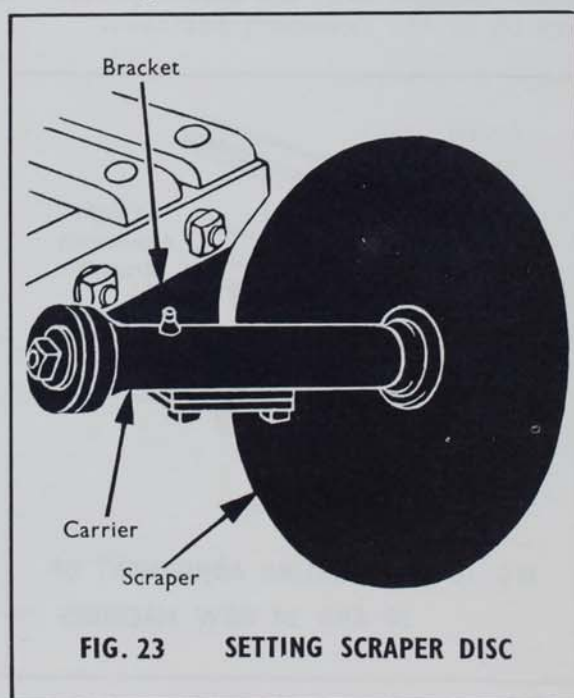
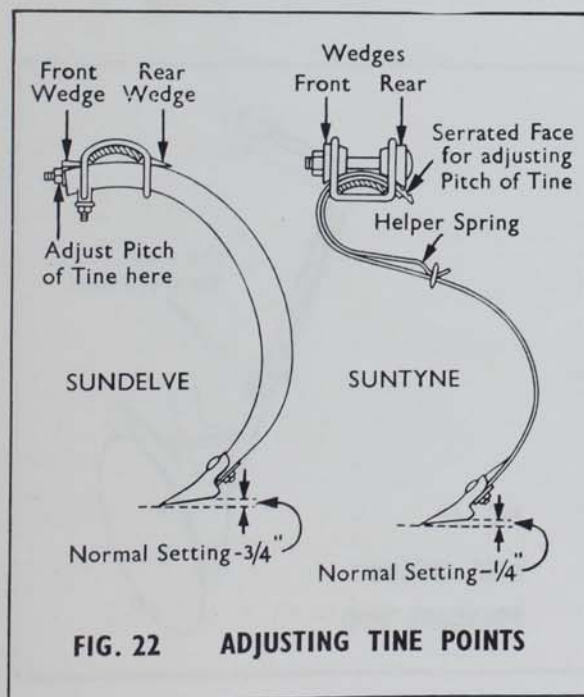
The tine should be adjusted so that the heel of the point is  $\frac{1}{4}$ " higher than the toe on the Suntyne ( $\frac{3}{4}$ " Sundelve) when the implement is on a level surface.

**Suntynes:**

Adjust by loosening the bolt for fastening the spring tine and then moving the tine until the rear wedge engages the serration which gives the correct adjustment of the point. Secure firmly.

**Sundelves:**

Adjust by loosening the bolt securing the tine, tapping the tine to the desired position and then tightening the bolt firmly.





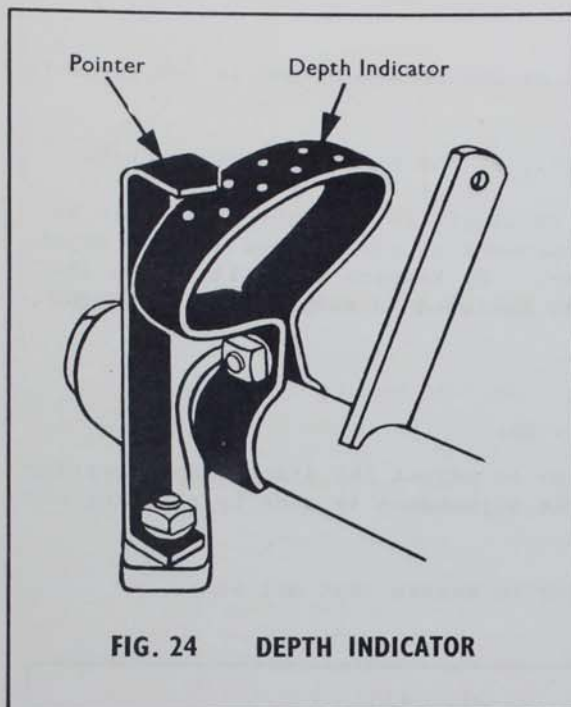


FIG. 24 DEPTH INDICATOR

**CHISEL POINT SCRAPERS** See Fig. 13.

Normally the chisel points should be adjusted close to the rim and to just clear the sides of the spoke heads. When conditions are such as to render unnecessary the use of scrapers, they should be set well clear of the wheel rim and so avoid unnecessary wear.

Always, before commencing work, remove any hard-packed soil from the faces of the tyres. To increase the working life of the points, reverse and interchange them. When fitting the scrapers, make sure that the bracket is located on the outside of the frame as shown in illustration.

**DISC SCRAPERS** See Fig. 23.

Set the disc edge so that it is just clear of the tyre at all times. Adjustment is made by use of the slots provided in the disc bracket.

When fitting the scrapers, make sure that the bracket is placed on the inside of the frame as shown in illustration.

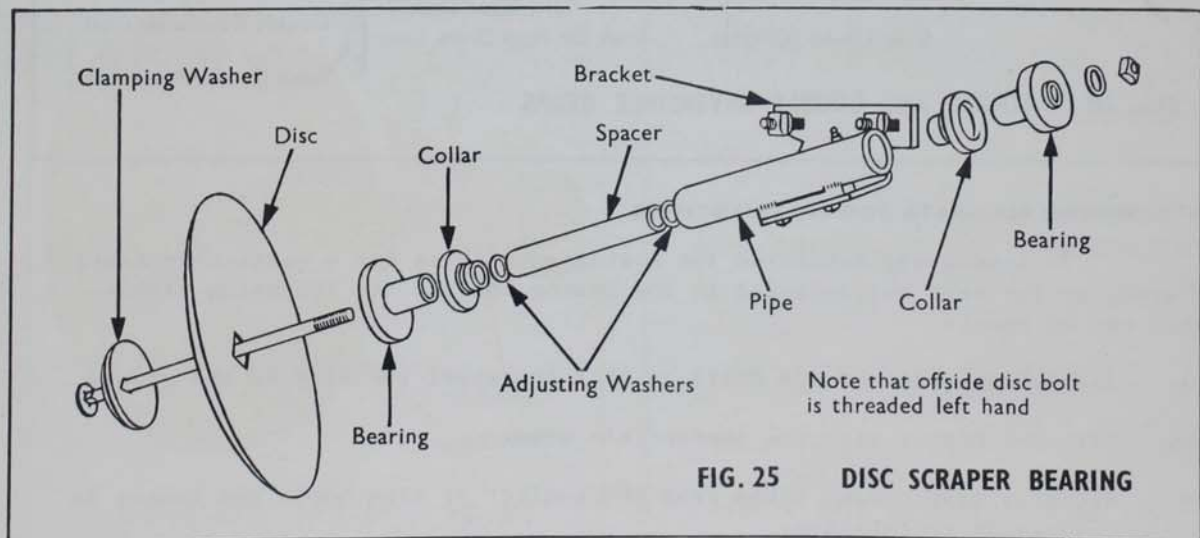


FIG. 25 DISC SCRAPER BEARING

**DEPTH INDICATOR** See Fig. 24.

This is mounted on the offside end of the rockshaft and is set for work as follows:

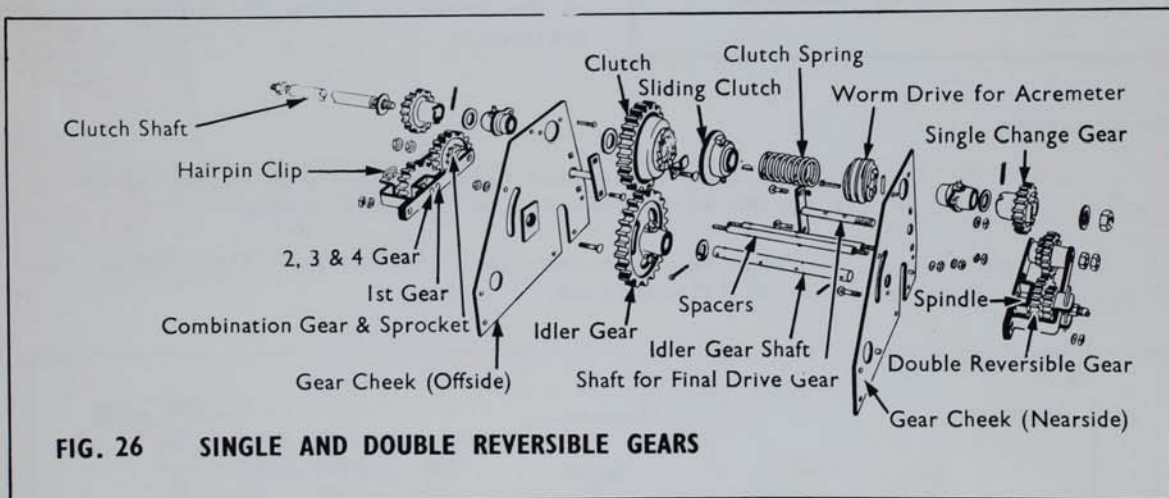
Lower the floats to the ground, i.e., at the minimum working depth.

Rotate the depth indicator on the rockshaft so that the front hole is opposite the pointer. After setting the implement at the desired working depth, place a bolt in the hole opposite the pointer. By keeping the bolt in the indicator opposite the pointer, the operator is assisted in keeping the implement at the desired working depth.

**ADJUSTMENT OF DISC SCRAPER BEARING** See Fig. 25.

It may become necessary after a time to adjust the disc scraper bearing to allow for wear which has taken place. The adjustment is made by removing one or more of the adjusting washers.

Care must be taken when reassembling to ensure that all parts are correctly positioned.



**FIG. 26 SINGLE AND DOUBLE REVERSIBLE GEARS**

**DETERMINING ACCURATE SOWING QUANTITIES**

To accurately determine the sowing quantities for a particular sample of seed, or for seed not included in the sowing charts, the following simple tests can be made:-

1. Jack up one side of the drill so that the wheel is clear of the ground.
2. Fill the hopper with the appropriate seed.
3. Withdraw five sowing tubes from the coulter or tine boots and insert in suitable receptacles.



4. Turn the wheel for the following number of revolutions.

12 row	90 revolutions
16 row	68 revolutions
20 row	54 revolutions
24 row	45 revolutions

5. Weight the seed delivered after the specified number of revolutions have been completed.

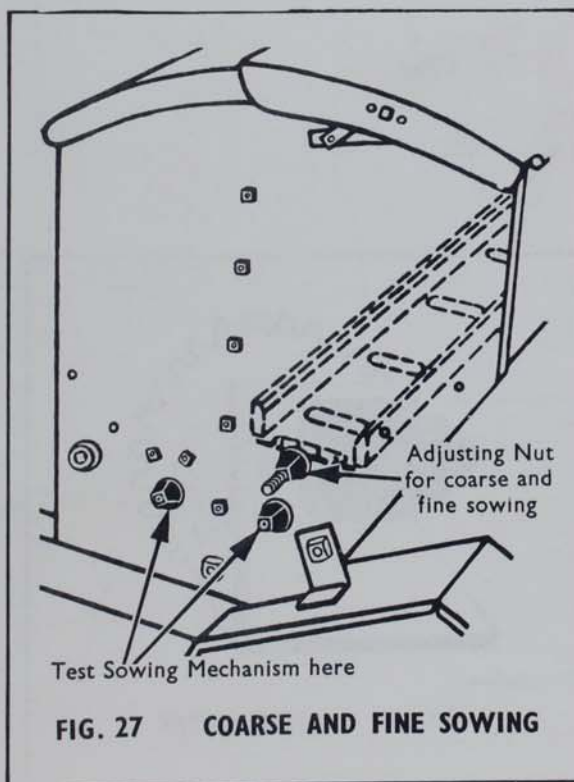
Twice the weight of seed delivered X total number of runs of the machine = quantity per acre for that particular change gear setting.

Example: A 20 row machine delivers a total of 4lb. for 5 runs after 54 revolutions.

$$2 \times 4 \times 20 = 160\text{lb. per acre.}$$

#### GRAIN AND FERTILISER SOWING RATE ADJUSTMENTS See Fig. 26.

At the nearside end of the clutch shaft are the single and double reversible gears of the grain seeder. A similar arrangement at the opposite end of the clutch shaft provides for the fertilizer sower. Alteration to the sowing rate is made by unscrewing the nut on the end of the shaft carrying the change gear, fitting the selected gear on the shaft and then securing the nut.



Reversal of the double gear, when necessary, is made by removing the hairpin clip and shaft, reversing the gear and then replacing the shaft and hairpin clip.

The layout of the gears is clearly illustrated, whilst the range of quantities obtainable is set out on pages 17 and 18.

#### ADJUSTMENTS FOR COARSE AND FINE SOWING See Fig. 27.

The coarse side of the runs is exposed by drawing the adjusting plate covering the grain run openings fully to the nearside.

The machine is set in this manner prior to despatch. For fine sowing, draw the plate fully to the offside. Selection is made by placing the special nut on the threaded end of either the offside (for fine) or nearside (for coarse) end of the plate, as required, and then using the special box spanner provided, turn the nut clockwise until plate is fully drawn through. Use caution when making this adjustment, and take care not to strip the thread by attempting to draw the plate through too far.

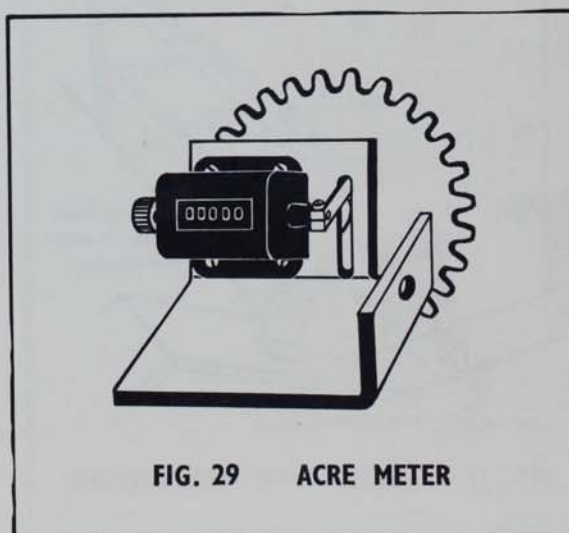
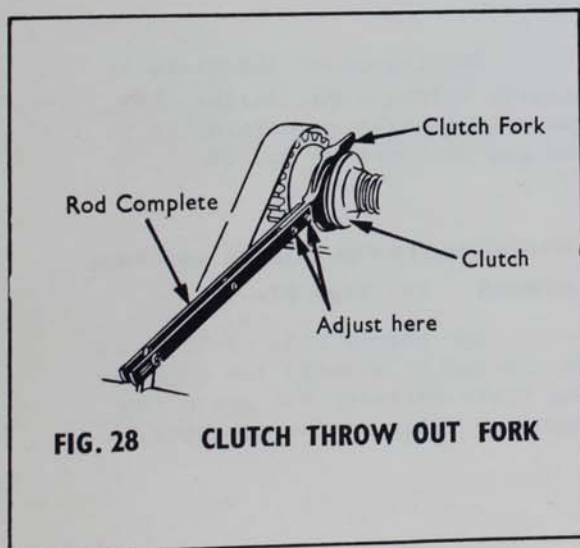
**CLUTCH THROW-OUT FORK** See Fig. 28.

When the implement is raised, the fork moves to cut off the flow of seed at the time the points or discs leave the soil.

In wet conditions, with consequent wheel sinkage, it may be necessary to delay the action of the fork so that no soil is left unsown. Adjustment is made by using the slotted holes provided in the fork to enable the fork arm to be shortened.

**ACEMETER** See Fig. 29.

To zero the acremeter, turn the knob in an anti-clockwise direction. The acres covered are indicated by the white figures on the dial; the red figures indicate the tenths of an acre covered.





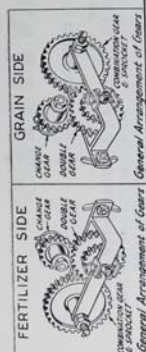
# TABLE OF QUANTITIES

FOR IMPLEMENTS WITH 319 DSX GRAIN DISTRIBUTORS

The quantities shown are in pounds per acre.  
**THESE QUANTITIES ARE APPROXIMATE AND ARE TO BE TAKEN AS A GUIDE ONLY**  
 Type of seed, picking agent, vibration, weight variation and tyre equipment will all have an effect on the actual quantities sown per acre.

FERTILISER

GRAIN



General Arrangement of Gears										GRAIN										Star 113 DSC Standard									
CHANGE GEAR										Wheat & Mail Barley		Oats		Rice		Cape Barley		Lined		Sorghum		Orange Feet		Eye Corn		With Star		With Star	
										Fine Side	Coarse Side	Coarse Side	Coarse Side	Fine Side	Fine Side	Coarse Side	Coarse Side	Coarse Side	Fine Side	Coarse Side	Coarse Side	Coarse Side	Fine Side	Coarse Side	Fine Side	Coarse Side	Fine Side	Coarse Side	
FIRST GEAR										13	47	30	40	10	39	13	44	15	23	14	57	52	60	40	108				
FIRST GEAR										16	55	35	47	12	45	17	53	17	27	16	60	40	125						
FIRST GEAR										18	70	40	55	14	58	17	65	20	31	18	68	47	143						
FIRST GEAR										20	77	45	60	16	65	19	66	22	34	21	71	53	162						
FIRST GEAR										22	85	50	66	18	72	21	73	25	38	23	79	60	180						
FIRST GEAR										24	93	55	72	20	78	24	80	27	43	25	85	65	197						
FIRST GEAR										27	105	60	88	21	88	26	86	30	48	27	95	73	215						
FIRST GEAR										31	121	75	101	26	101	34	113	33	52	32	107	83	242						
FIRST GEAR										35	138	85	113	28	113	38	125	37	60	37	123	95	278						
SECOND GEAR										22	75	48	63	17	62	21	70	24	37	22	75	83	172						
SECOND GEAR										25	85	54	73	19	72	24	81	27	43	26	88	97	200						
SECOND GEAR										28	99	64	84	22	83	27	93	31	49	30	102	110	227						
SECOND GEAR										33	111	71	94	25	93	30	104	35	55	37	124	133	257						
SECOND GEAR										36	123	78	105	28	104	37	107	38	68	41	139	152	285						
SECOND GEAR										40	137	86	116	32	111	40	117	43	79	45	152	166	314						
SECOND GEAR										43	150	95	126	34	125	40	125	47	84	45	166	180	341						
SECOND GEAR										49	166	106	142	38	141	45	139	53	96	51	187	209	384						
SECOND GEAR										56	190	122	163	44	162	52	157	61	107	59	215	235	442						
THIRD GEAR										48	164	105	140	38	139	45	154		82	50	169	185	380						
THIRD GEAR										53	180	115	153	42	152	49	169		90	55	185	203	418						
THIRD GEAR										58	196	125	167	45	166	53	184		98	60	202	222	461						
THIRD GEAR										66	221	141	188	52	187	60	207		110	68	228	250	512						
THIRD GEAR										75	254	162	216	60	215	69	238		127	78	261	287	588						
FOURTH GEAR										64	216	138	184	50	183	59			108	66	222	243	500						
FOURTH GEAR										70	235	150	201	55	200	64			117	72	242	266	545						
FOURTH GEAR										79	265	175	226	62	225	72			132	81	273	300	614						
FOURTH GEAR										91	304	194	260	72	259	88			151	93	313	344	704						
																				NOTES:—Double Gear 24 & 18 Teeth. Change Gear. Double Gear 24 & 18 Teeth. Change Gear. Double Gear 24 & 18 Teeth. Change Gear. Double Gear 24 & 18 Teeth. Change Gear.									





## MAINTENANCE

### CHANGING TINE POINTS See Fig. 30.

This is simply and easily accomplished in the following manner:-

Drop the floats to the ground by pulling the control rope.

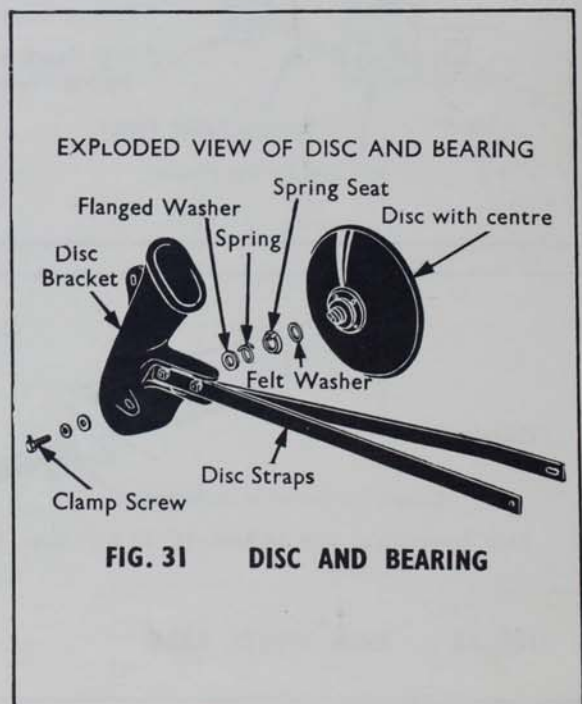
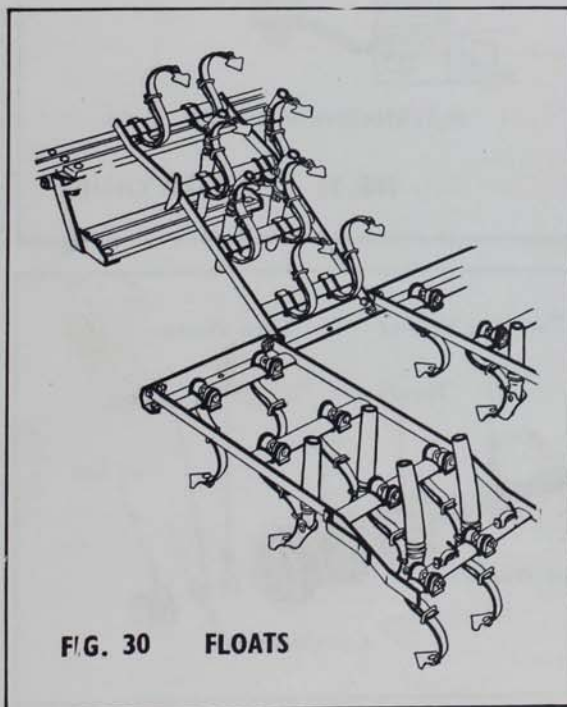
Draw the implement forward and adjust the floats by means of the screw control to rest on the ground.

Pull out the quick release pins which secure the rear end of the draught straps, lifting links and float angles. Pull the lifting links, suspended from the rockshaft, forward, and to prevent loss, replace the quick release pins in the draught straps and lifting links.

Pull the sowing tubes out of the tine boots. Pull out the quick release pins securing the pressure rods at the rear of the floats.

Raise the hinged footboards. Draw the implement clear of the floats. Raise up each float in turn and either rest it on the implement footboard or prop at a suitable height, then change the points.

When the job is completed, back the implement over the floats and couple up. The float restrainers at each side of the implement can be loosened and swung out of the way to enable the implement to be backed more easily over the floats or tine carriers. Reset restrainers and secure.



**DISC AND BEARING** See Fig.31.

Check periodically to ensure that the felt washer is in good condition. Renew when necessary.

The nipple in the clamp screw should point rearward and upward to prevent damage from stones, etc. Take care not to damage the nipple by using an ill-fitting spanner.

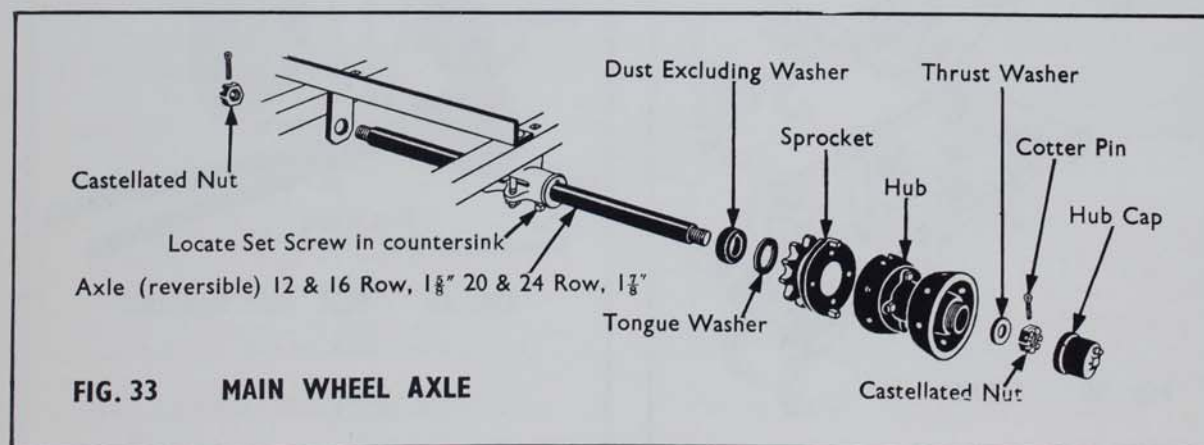
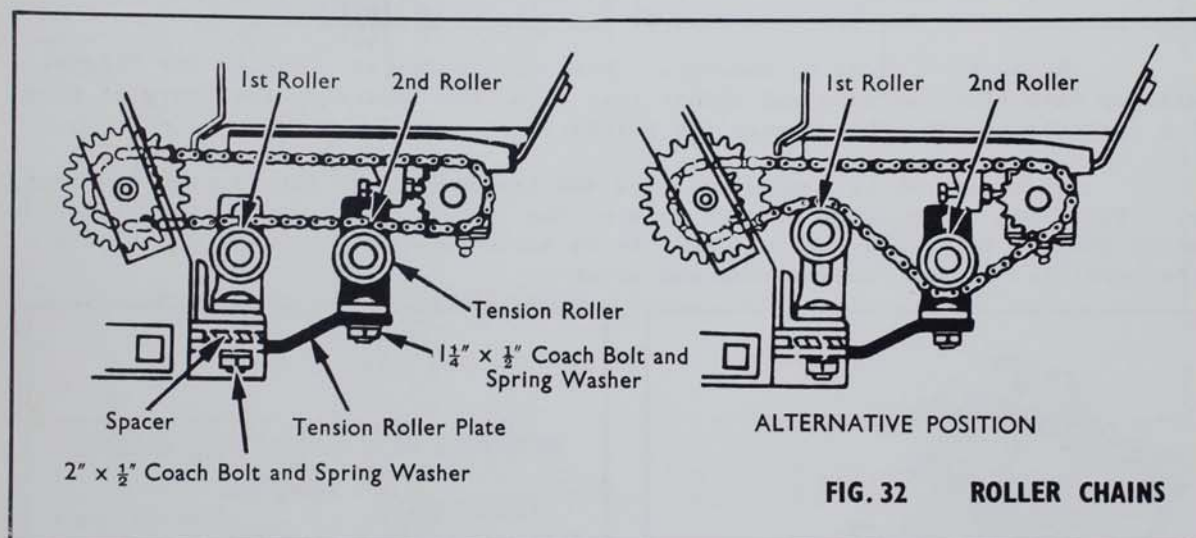
**ROLLER CHAINS** See Fig. 32.

Two roller chains are used; one drives the grain shaft and one the fertiliser shaft.

The tension adjustment for the grain drive chain is by means of a single roller moving vertically in a slotted bracket.

The tension adjustment for the fertiliser drive chain is by means of two rollers moving vertically in slotted brackets.

The alternative adjustment can be obtained by placing the front roller below and the rear above the chain.



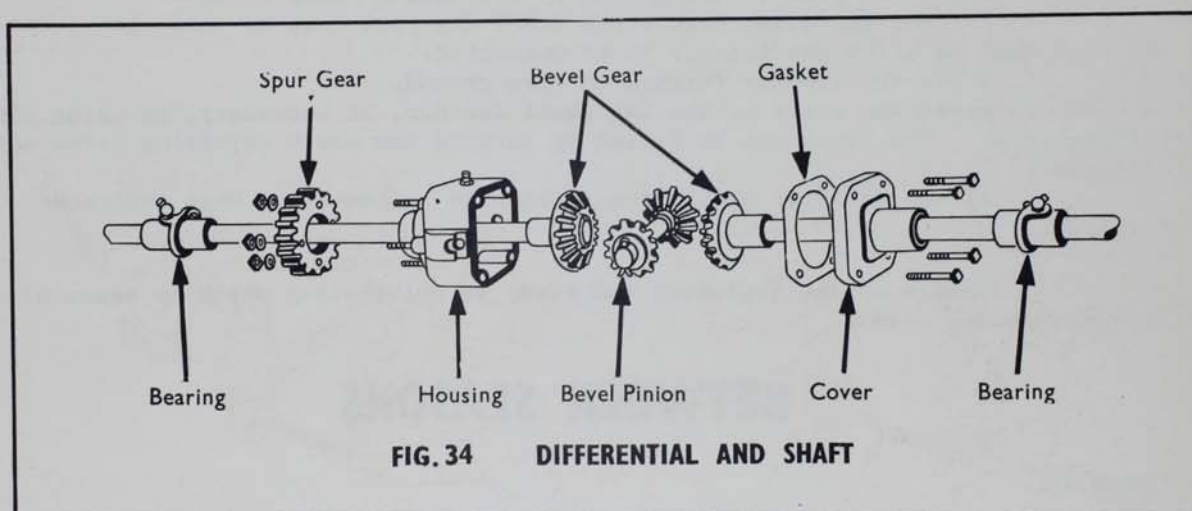


**MAIN WHEEL AXLE** See Fig. 33.

The main wheel axles are reversible to give double life. However, it should be borne in mind that, if the hubs are badly worn, they should not be used with a new or reversed axle, otherwise unduly rapid wear will occur. Use the castellated nut to eliminate excessive end play.

**DIFFERENTIAL** See Fig. 34.

If, at any time, it should become necessary to dismantle the differential, care must be taken to ensure that it is reassembled as shown in illustration.



## HINTS TO THE OPERATOR

**NEVER TURN THE IMPLEMENT SHARPLY WITH THE TINES IN THE GROUND.** This is particularly important with rigid tine machines. It may cause breakage of the tines and, in addition, strain the whole framework of the implement.

When using the implement as a cultivator it is advisable to remove the conveyor tubes to prevent wear and to keep the sowing mechanism out of gear. By using the set screw provided, lock the sliding half of the clutch at the dis-engaged position.

**DO NOT LEAVE FERTILISER IN THE BOX** when not being used or when being transported. Most fertilisers set hard and, if a quantity has caked in the hopper, corrosion and wear will occur and damage will probably result when the implement is again started.

Remove all caked fertiliser from the plates and stars and clean out the grain runs. Coat the stars, plates, runs and cut-off plate with a mixture of kerosene and oil. Before again using the implement, flush out the hoppers with kerosene.

DO NOT LEAVE GRAIN IN THE BOX WHEN NOT BEING USED. It is liable to germinate in the hopper and cause damage, also blocking of the runs.

When using dry pickled grain, it is advisable to clean out the hopper each evening. In the morning, turn the mechanism over by hand before starting work. If the grain runs are not kept clean, damage to the driving mechanism may result.

If the runs become blocked, or very hard to turn, wash out the excess powder with kerosene - not oil.

#### GETTING OUT OF A BOG

Attach the skid plate to the lifting jack (if not already fitted) and wind jack up fully.

Lower the jack to the ground by slackening clamp handle.

Tighten the clamp handle and screw the jack down to raise the front of the implement to allow the tractor to be uncoupled.

Move the tractor forward to firm ground.

Raise the front of the implement further, if necessary, by using the lifting jack. The tines can be raised by turning the depth adjusting screw anti-clockwise.

Attach cable or chain from tractor to implement. Draw implement forward.

Couple up the implement and reset to cultivating depth by means of the depth adjusting screw.

## BETWEEN SEASONS

#### STORAGE

The previous sections of the operating instructions have dealt with the care and attention to be given to the implement in order to maintain it in an efficient operating condition during the working season.

It is also important that some attention be paid to the implement at the close of the season in preparing it for storage. Such care will ensure a trouble free start and contribute towards further satisfactory service during the following season.

1. Clean the implement and check for damaged parts.
2. Ensure that no fertilizer or grain is left in the implement. Coat the stars, plates, runs and cut-off plate with a mixture of kerosene and oil or creosote.
3. Order any parts required and fit in the offseason so that the drill will be ready for work when required.
4. Lubricate all parts - refer Lubrication.
5. House the implement in a shed.



## EXTRA EQUIPMENT

### ROTARY DISC SCRAPERS See Fig. 23.

These scrapers are available for all implements, except 12-row and 16-row fitted with 6" steel concave wheels or 20-row and 24-row fitted with 8" steel concave wheels. The method of attaching the rotary disc scraper is shown on page 12.

### SUNTRAIL HARROWS See Fig. 35.

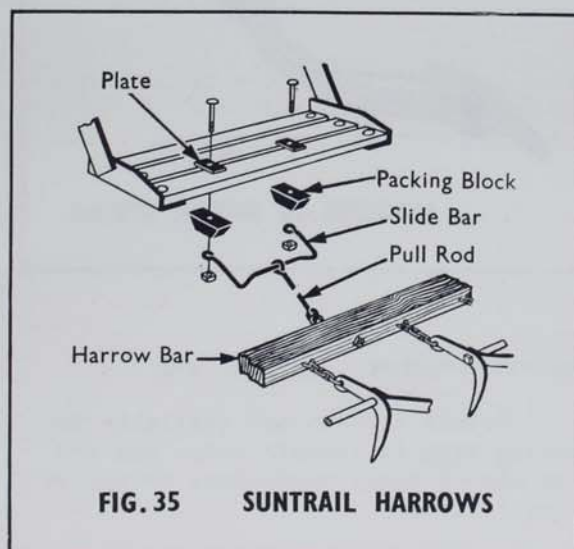
These harrows are suitable for all 12, 16 and 20-row implements and are attached to the footboard of the implement with fittings supplied. The Suntrail is designed for levelling off and leaving an even surface behind the drill. The stump jump feature adds to its utility in rough paddocks.

### SUNTOW HARROWS See Fig. 36.

These harrows are suitable for all sizes of implements including the 24-row. The Suntow is made on the same principle as the Suntrail, but is designed for rougher country. Chains are supplied with the Suntow Harrows to attach them to the rear end of the frame member of the implement instead of to the footboard.

### SUNDRAG HARROWS See Fig. 37.

These harrows are suitable for all sizes of Sundrills only. The chain consists of four specially shaped links. One set is attached to each disc bracket for the purpose of filling in the furrow and covering the seed. It is valuable for light cultivation.

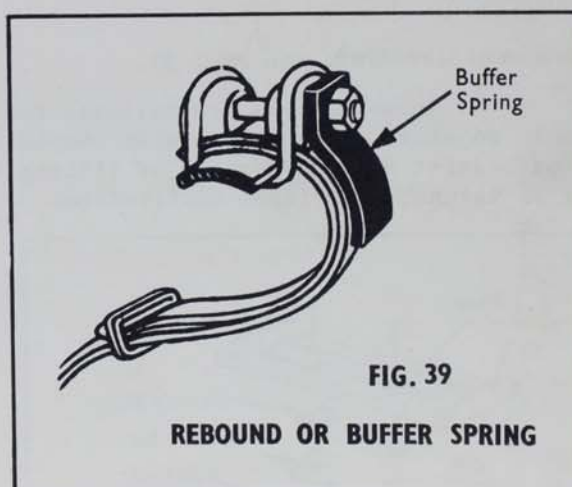
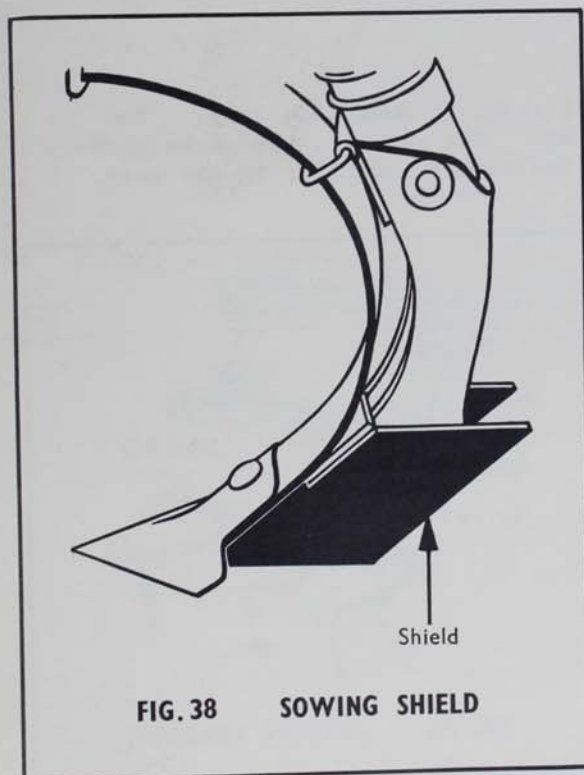
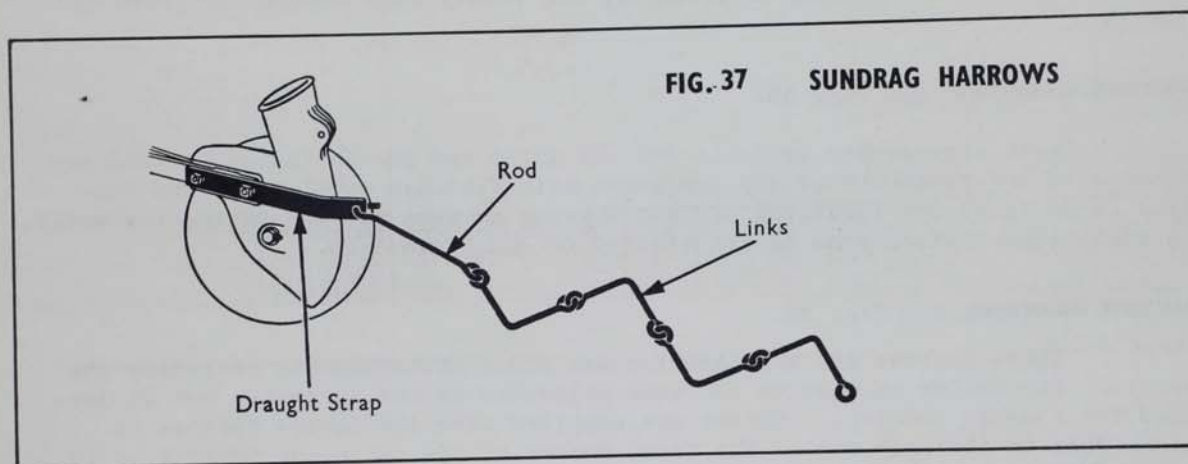


**SOWING SHIELDS** See Fig. 38.

Sowing shields are available for all implements except Sundrills.

**REBOUND OR BUFFER SPRINGS** See Fig. 39.

These springs are available for spring tine implements only and are useful in very stony conditions to prevent excessive rebound of the tines.



**HELPER SPRINGS** See Fig. 40.

Helper springs are available for spring tine implements only, and are for use in heavy conditions to assist penetration.

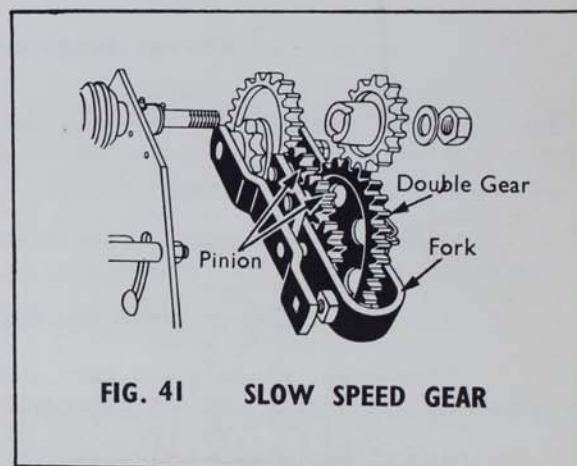
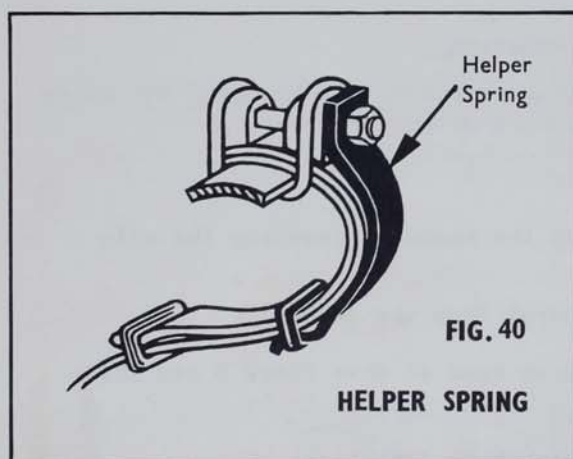


**SPECIAL SLOW SPEED GEAR** See Fig. 41.

The special slow speed gear enables lesser quantities than usual to be sown and is available for all implements. It reduces 1st gear quantities to approximately half normal. With this gear, the following seeds can be sown through the main hopper:—

	Change Pinion	Red Clover	Sub. Clover	Millet	Rape	Lucerne
1st Gear	12	8½	7	4½	6½	9
" "	14	9½	8	5½	7½	10½
" "	16	10½	9	6	8½	11½
" "	18	12	10½	6½	9½	13
" "	20	13	11½	7½	10½	14½

Quantities are in lbs. per acre and are approximate only.

**TINE POINTS**

The standard points fitted to the Suntyne and Sundelve are N853, 4" wide, which make a compact sub-surface on which seed and manure are dropped.

Other points as listed below can be supplied:—

- N513      1½" wide, for rigid tines only, used for renovating lucerne.      Kills the surface weeds but invigorates the lucerne.
- N852      3/8" wide special "Tickler" point for lucerne, used when the surface is hard to penetrate.
- N535      1½" wide, single ended, widely used in orchards and vineyards.

## SUN, SUNTYNE AND SUNDELVE DRILLS—500 SERIES

- N533 2½" wide, single ended, fits flush on the tine and does not carry weeds.
- N842 2½" wide, reversible (narrow waisted), gives double wear. It is largely used in general farm work, particularly for stirring fallow.
- N853 4" wide, of a Dutch hoe type, which presents a 4" cutting edge and is very efficient for weed cutting.
- N3623 4½" wide, for Suntyne Drill, makes a compact sub-surface on which seed and manure are dropped.
- N536 5" wide, similar to N853 and N3623, but gives more overlap cultivation.
- N848 6" wide, similar to N536, N853 and N3623, but giving still more overlap.
- N851 8" wide scarifier point for rigid tines only.
- N517 Bolt for point N513.
- N870 Bolts for points N532, N533, N535, N536, N842, N848, N851, N852, N853, N3623.

### FITTING HYDRAULIC LIFT CONTROL

Trip the mechanical life to the working position, and by using the screw depth control, adjust the tines so that they rest on the ground.

### DISMANTLING DEPTH CONTROL See Fig. 42.

Disconnect the depth screw handle from the screw by removing the universal joint.

Remove the supports for the depth control from the fetchels.

Disconnect Block A and turn the crank by hand so that Block B can slide backwards out of the connecting rod.

Remove the screw by turning it in a clockwise direction.

Remove the trunnion, connecting rod and stop.

### ASSEMBLING HYDRAULIC LIFT CONTROL

Fit the cross angle and hose support. See Figs. 43, 44 and 45.

Assemble bracket A for cylinder to cross angle. See Fig. 46.

NOTE: Nearside bolt head must be to the front to allow fitting of the tool box on 16 and 20 row implements.

Fit the two tie straps to the lift shaft and bracket A.

NOTE: Lift shaft must move freely in tie straps.



Assemble tool box to plates on cross angle. See Figs. 43 and 44.

Fit tongue between the two arms on lift shaft, then Bracket B in position previously occupied by the stop, making sure that the hole for the stay on top is on the offside.

Fit the stay from bracket B to the member supporting the gear box.

**NOTE:** Bolt the stay to the lower face of the bridge portion of Bracket B.

Fit slave cylinder between the two tongues, noting that the fork on the end of the piston is attached to the lift shaft tongue.

#### TRANSPORT STOP

A transport stop is provided to hold the implement in the transport position when the slave cylinder is removed for use on other implements.

The stop consists of a locking pin, which is used to hold the implement in the fully raised position.

To fit the locking pin, raise the implement by means of the cylinder and insert the pin in the top hole of Bracket B and side plate of tongue.

**IMPORTANT!** Remove the locking pin and place in the lower hole of bracket B when the implement is working.

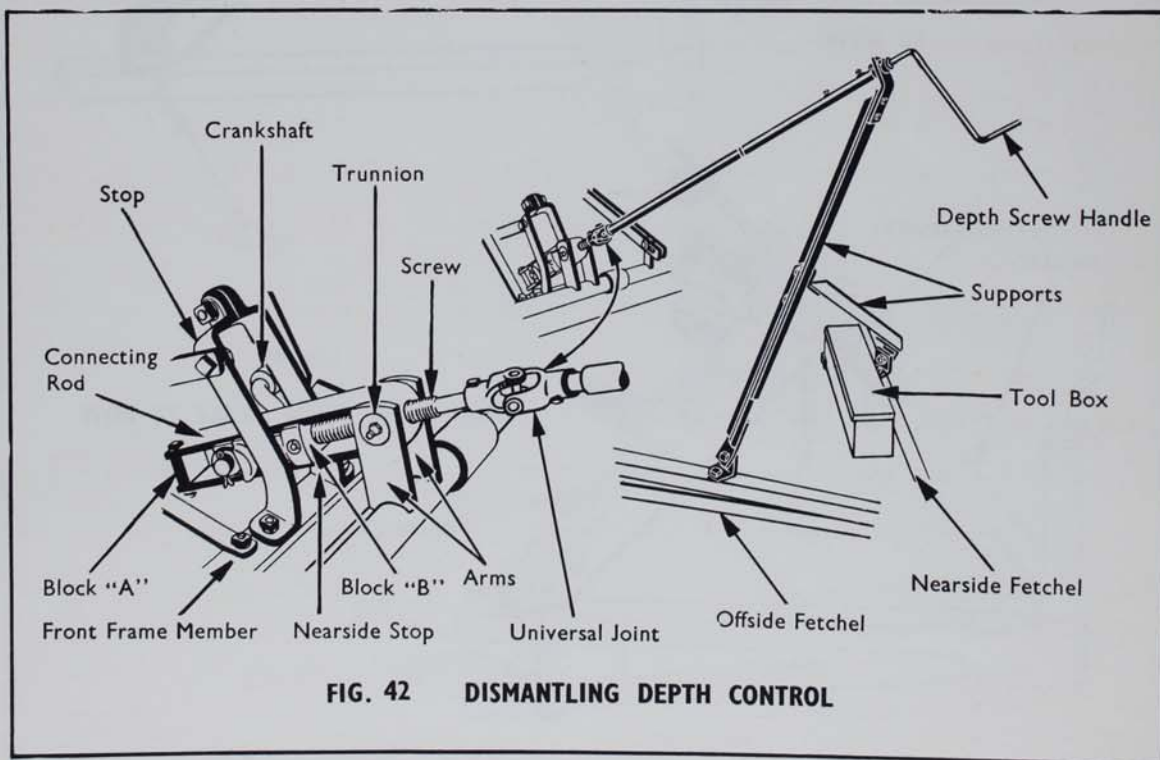
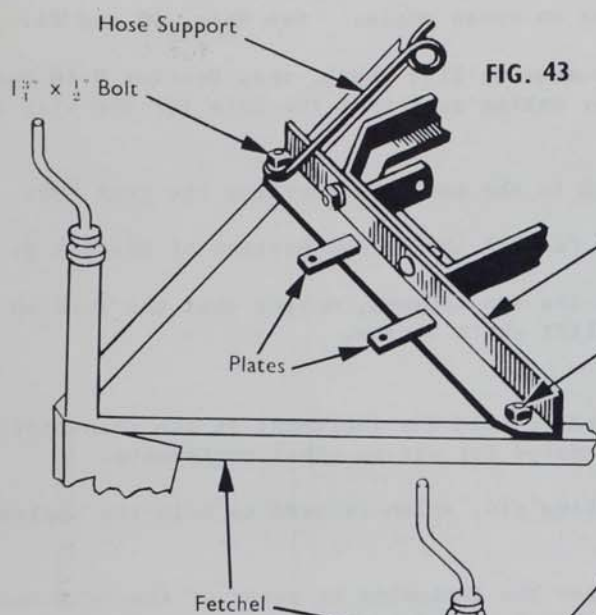
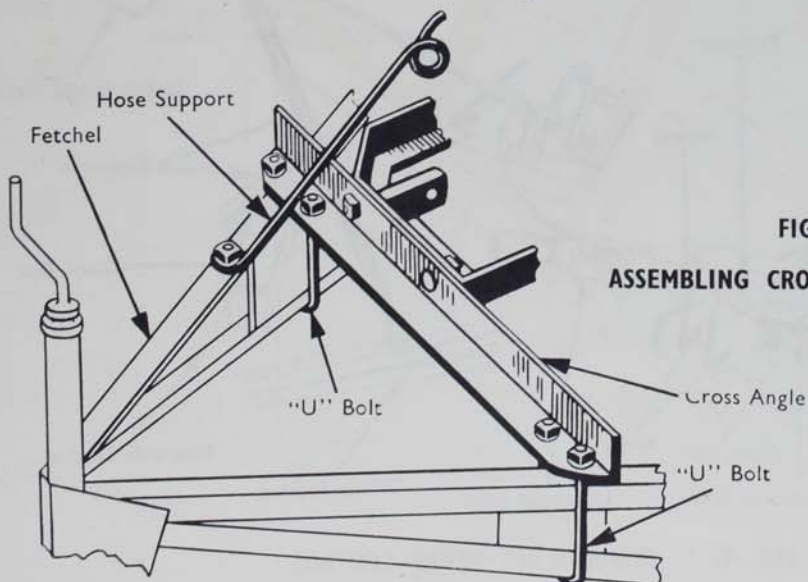
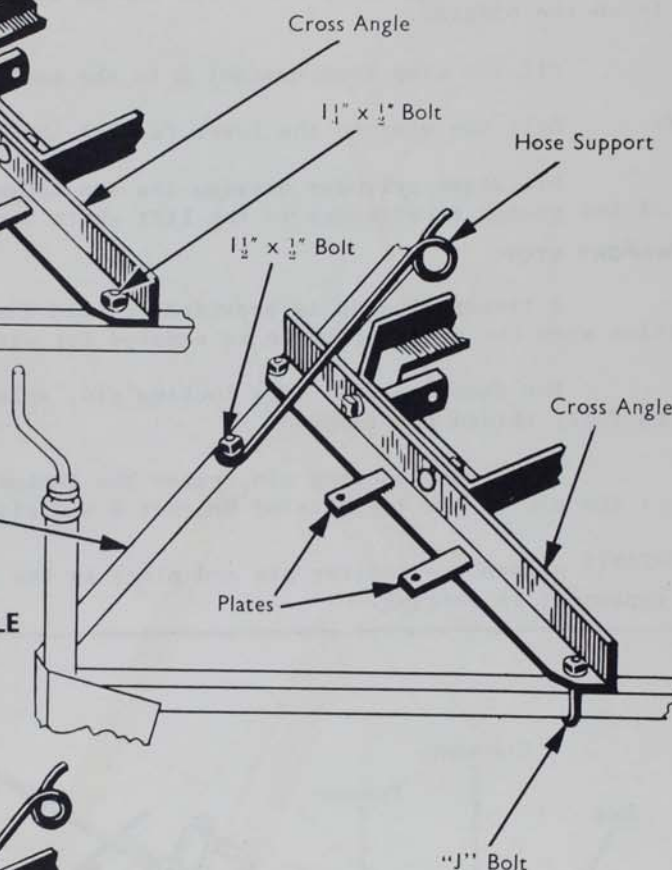


FIG. 42 DISMANTLING DEPTH CONTROL



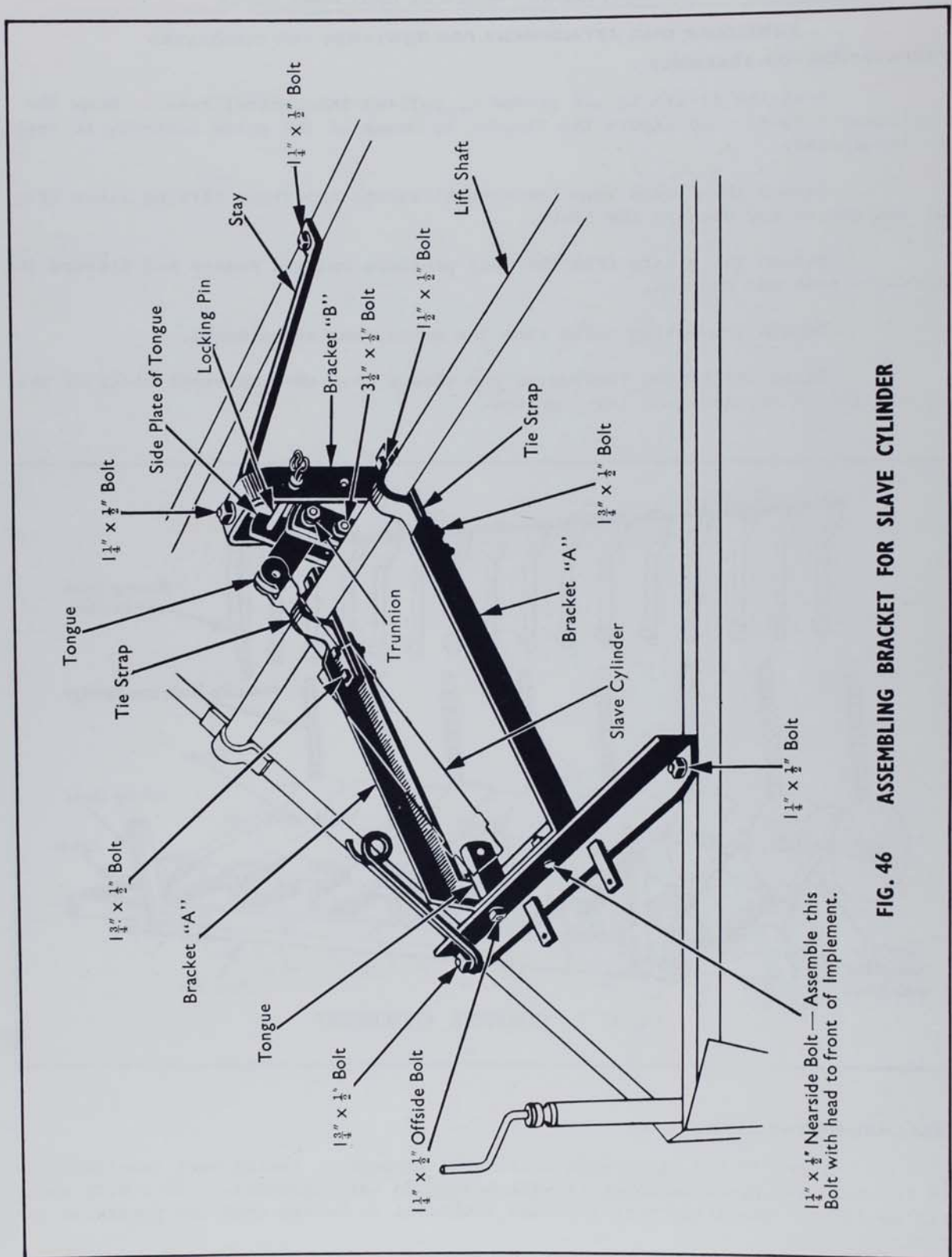
**FIG. 43 ASSEMBLING CROSS ANGLE 16 ROW**

**FIG. 44 ASSEMBLING CROSS ANGLE 20 ROW**



**FIG. 45 ASSEMBLING CROSS ANGLE 24 ROW**





# **SUNDISCER DISC ATTACHMENT FOR SUNTYNES AND SUNDELVES**

## **PREPARATION FOR ASSEMBLY**

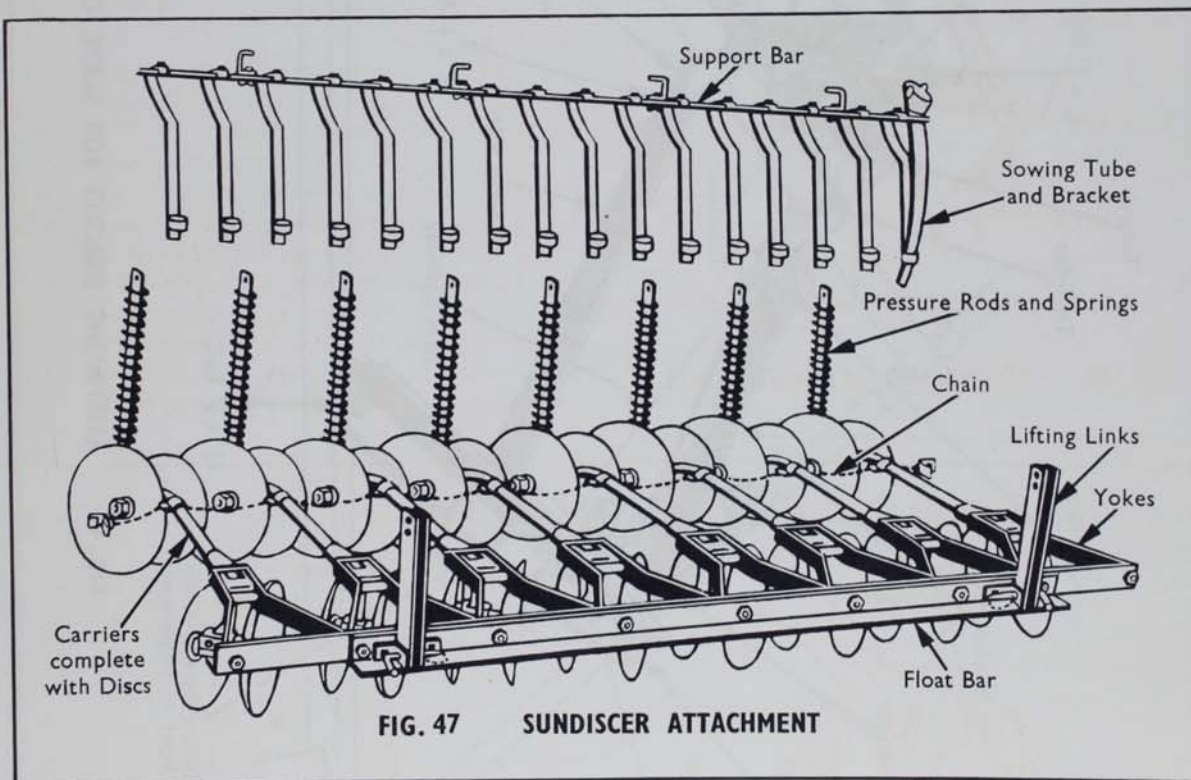
Drop the floats to the ground by pulling the control rope. Draw the implement forward and adjust the floats, by means of the screw control, to rest on the ground.

Detach the floats from the draught straps and front lifting links (Fig. 9) and remove and discard the links.

Detach the floats from the rear pressure rod and remove and discard the pressure rods and springs.

Detach the sowing tubes from the grain runs and discard.

Raise the hinged footboards and slowly draw the implement clear of the floats and on to clean and level ground.



**FIG. 47 SUNDISCER ATTACHMENT**

## **ASSEMBLING THE ATTACHMENT**

Assemble the attachment behind the implement, laying each completed part in the relative position which it will occupy on the implement. This will save having to move the attachment when the implement is backed over the Sundiscer for final fitting.



Assemble the draught yokes to the carriers as shown. Fig. 48.

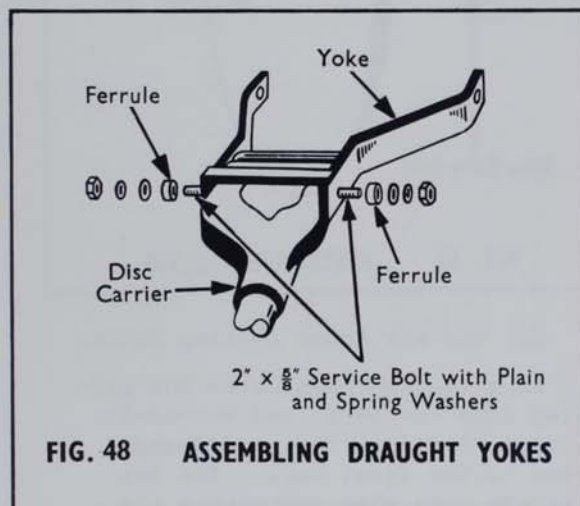
Assemble the front and rear disc bearings to the disc carriers.

The grease nipples in the front bearings point to the front and in the rear bearings to the rear. Fig. 49.

Assemble the disc to the disc bearings as shown in Fig. 50.

Make sure all components are fitted as received and that the feltwasher is properly fitted and not distorted or misplaced.

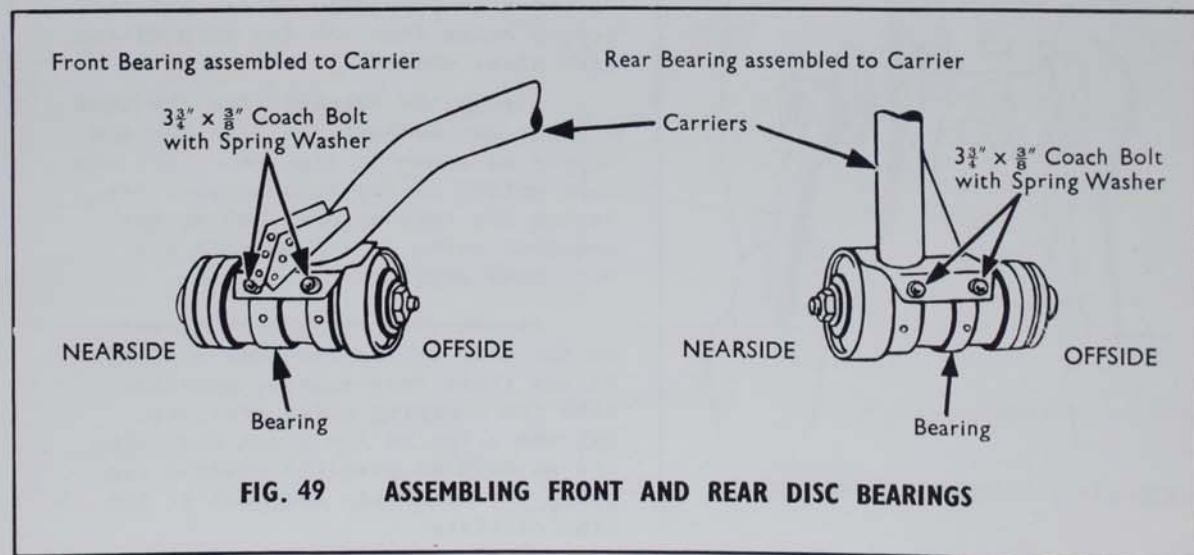
Ensure that the square hole washer against the 17" disc is properly on the square of the bolt before tightening up. Figs. 50 and 51.



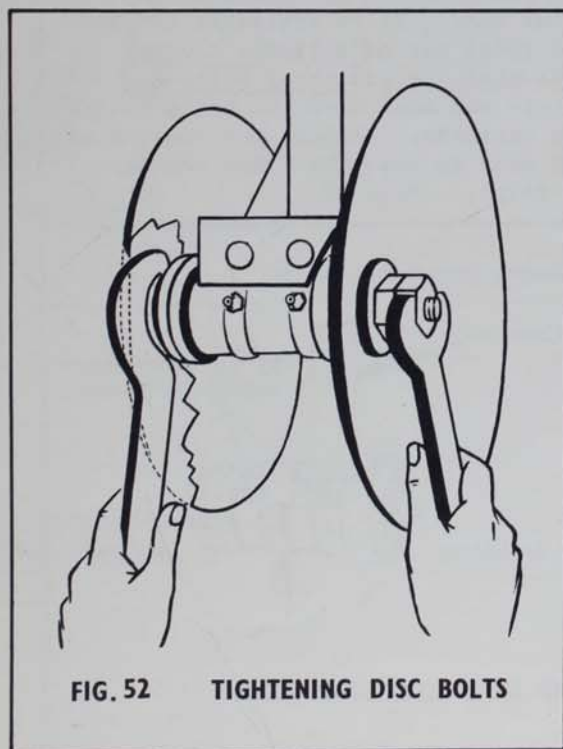
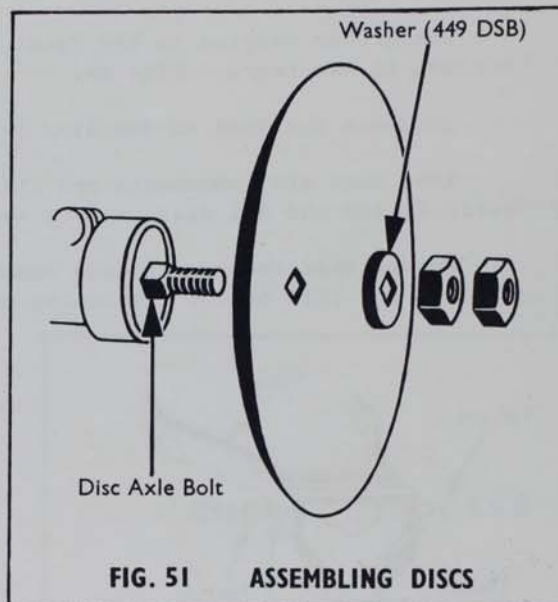
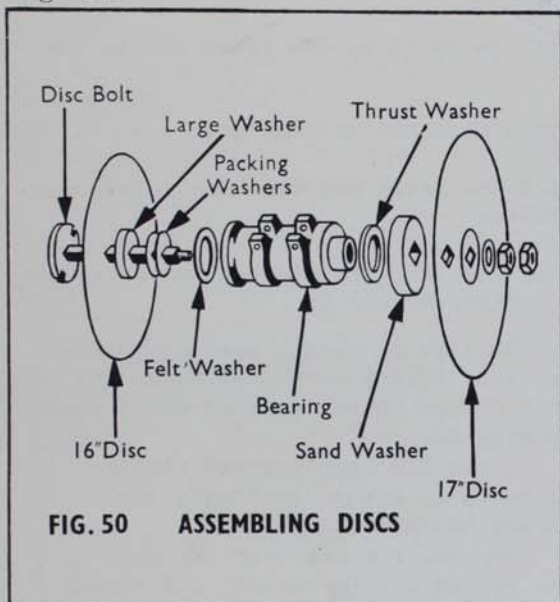
To tighten bolts, use 'C' spanner supplied, taking care that hands are clear of the sharp edges of the discs. See Fig. 52.

After one hour's work, tighten all bolts to ensure that nuts and washers bed down on discs.

Lay out the disc carrier side by side behind the implement, and attach the yokes to the eye bolts in the float bar. It is advisable to rest the float bar on suitable blocks. Note that the attaching bolts at either end must have the heads pointing outwards. Adjust the tension of all nuts so that the yokes are free to pivot. Fig. 53.



Attach the spreader chains between the carriers, taking note that the chain at the nearside end has 8 links and at the offside end only 6 links.  
Fig. 54.



Fit the new front lifting links.

Back the implement over the assembled disc carriers, and reconnect new front lifting links and draught straps to the float bar. The top holes are used when implements are fitted with pneumatic tyres, and the second holes from the top when fitted with steel wheels.

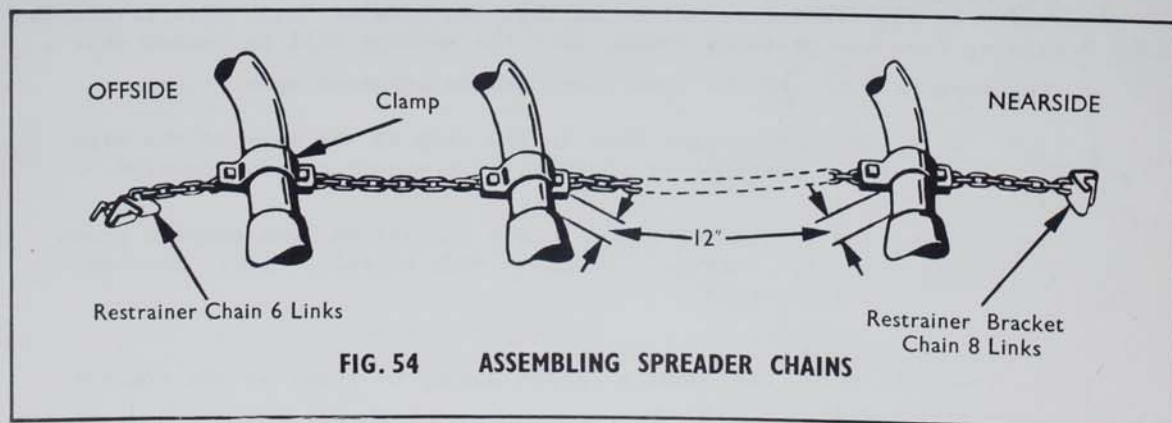
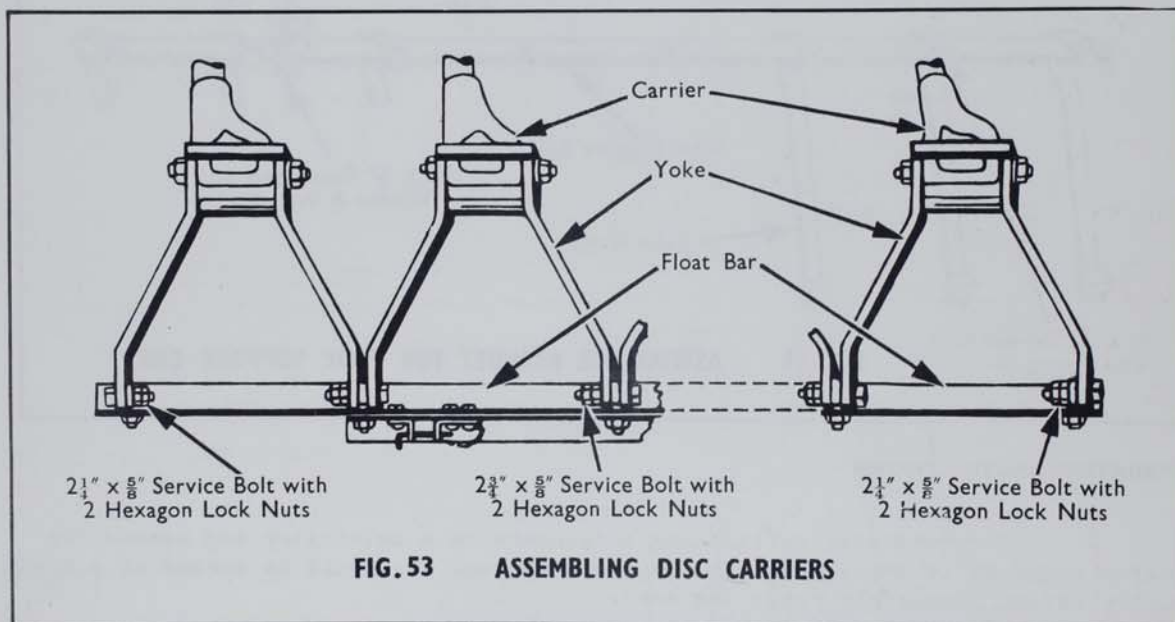
Attach the brackets for the tube support bar beneath the feet for the hopper as shown in fig. 55. Fit the tube guides to the tube support bar. Attach the tube support bar to the brackets using the bolts with the wing nuts supplied. Fig. 56.

Attach the restrainer brackets on the ends of the spreader chains, to the float restrainers, securing with the clamping screw provided. Set the clips on the float restrainers as high as possible without limiting the allowable movement of the disc carriers.

Attach the new arms for the pressure rods to the rear lift shaft by means of the U bolt and plates supplied. Do not tighten the U bolt. Insert the new pressure rod and spring assemblies in the lift arms and attach the base of the rods to the rear of the disc carriers.

Attach the new arms for the pressure rods to the rear lift shaft by means of the U bolt and plates supplied. Do not tighten the U bolt. Insert the new pressure rod and spring assemblies in the lift arms and attach the base of the rods to the rear of the disc carriers. Use the top square holes in the pressure rod for pneumatic tyres and the lower square holes for steel wheels.

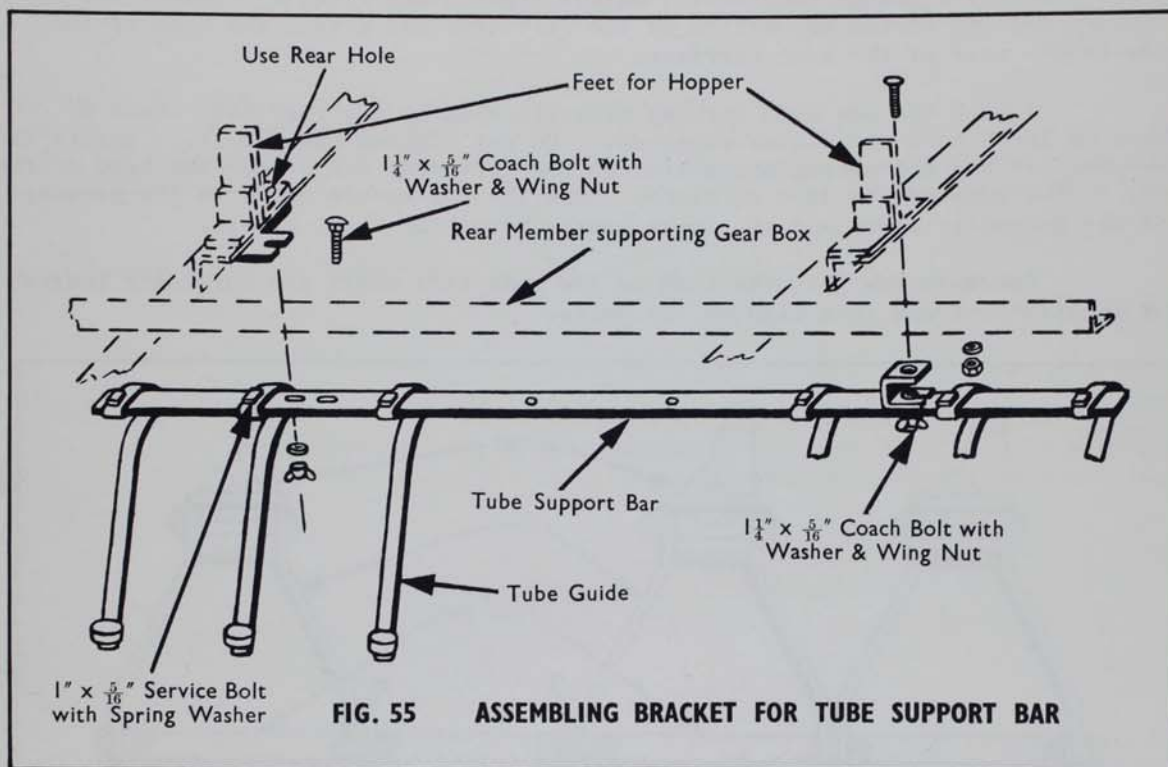
Check to see that the arms on the rear lift shaft are correctly located and in alignment and then tighten 'U' bolts.





# SUN, SUNTYNE AND SUNDELVE DRILLS—500 SERIES

Attach the sowing tubes to the runs and insert the free ends in the clips provided at the base of the tube guides. Adjust the tube guides so that the tube drops the seed, etc. in the furrow.



## OPERATING INSTRUCTIONS

The Sundiscer cultivating attachment is a cultivator and seeder for sowing crops in land covered with trash and as such it should be worked at a depth sufficient to adequately cover the seed.

The attachment is best worked in an anti-clockwise direction around the paddock. If the tractor is driven so that the offside front disc covers the ridge remaining from the previous round, then the working will be evened out.

The working depth of the rear discs can be adjusted by:-

- Using the appropriate hole in the clip at the rear of the disc carrier to lengthen or shorten the pressure rod as required.
- Using the adjustment holes in the connecting rods between front and rear lift shafts. Lengthen rods to raise rear; shorten rods to lower rear.
- Hitching the implement a little higher or lower at the tractor hitch point.

Should it be found that the strain on the nearside of the spreader chain becomes unduly heavy, then either set the rear disc a little deeper or the front discs a little more shallow.

The speed of working is controlled by the type of country being worked and it also determines the quality of the work. Fast speeds tend to flatten the surface. Most stumps, stones, etc., can be worked over at a reasonable speed, but it is wise to work over very stumpy or stony country with greater care and at a slower speed.

Always raise the discs before making sharp turns to avoid unnecessary strain on the implement.

#### LUBRICATION

The only points requiring lubrication on the attachment are the disc bearings which are fitted with nipples. Use a good quality semi-fluid lubricant every four hours, or more frequently in dry dusty conditions.

#### FITTING 270 SMALL SEEDS BOX

Unpack all parts from the crate and then take out all parts packed in the Small Seeds Box. Lay out the parts and identify them.

NOTE: Before commencing to fit the Small Seeds Box, make sure that all paint has been removed from bearing surfaces. Use of kerosene in these bearings will aid in freeing of parts.

**DRIVE SUPPORT BRACKETS** See Fig. 57.

Fit nearside and offside brackets to the front of the Small Seeds Box. Fit nearside and offside plates to the nearside and offside brackets.

NOTE: The shorter bracket and the plate with the two slots are fitted on the offside.

**DRIVE SPROCKETS** See Fig. 58.

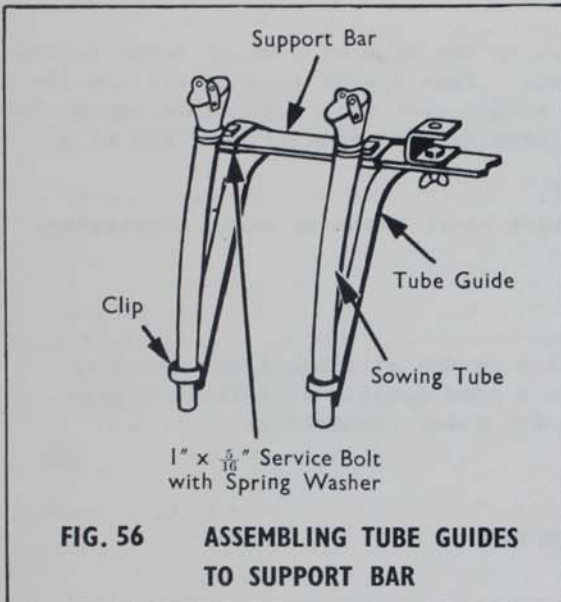
Refer to Small Seeds Box Sowing Chart before assembling the double sprocket, noting that the 6-tooth sprocket is assembled on the nearside for the fast drive and on the offside for the slow drive.

Fit the double sprocket, 12 and 6 tooth with ferrule, to the nearside and offside plates. Do not tighten nut.

Fit tension sprocket and ferrule to the inside of the offside plate. Do not tighten nut.

**END SUPPORTS** See Fig. 59.

Fit end support assemblies at each end of the box as shown in illustration - two assemblies for all size boxes.



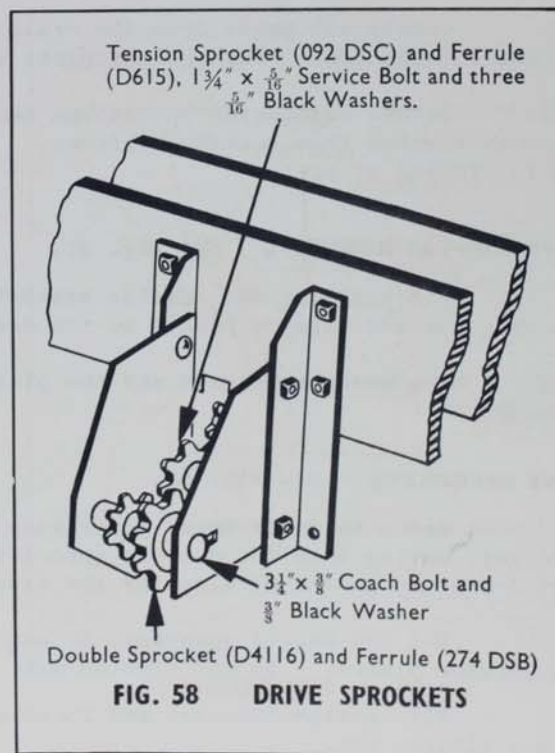
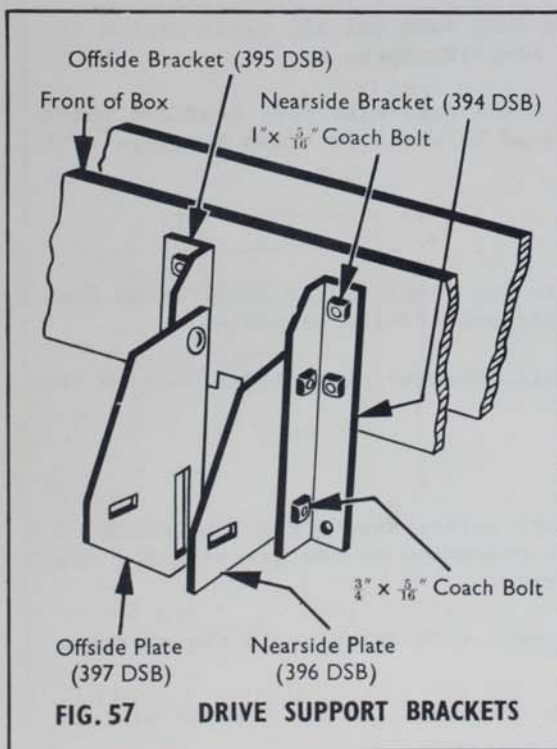
**INTERMEDIATE SUPPORT** See Fig. 60.

Fit intermediate support assemblies as shown in illustration:-

- 3 assemblies for a 12 row box
- 4 assemblies for a 16 row box
- 5 assemblies for a 20 row box
- 6 assemblies for a 24 row box

Attach stays, front and rear, at each end of the box, to the adjacent front and rear brackets.

Remove the three main footboards and the bolts in each end of the two long footboards.





**INTERMEDIATE DRIVE SHAFT** See Fig. 61.

Bolt the pedestal bearing, double sprocket assembly and the rack through the existing holes to the longitudinal member under the main hopper.

NOTE: The 7-tooth sprocket is on the nearside of the bearing.

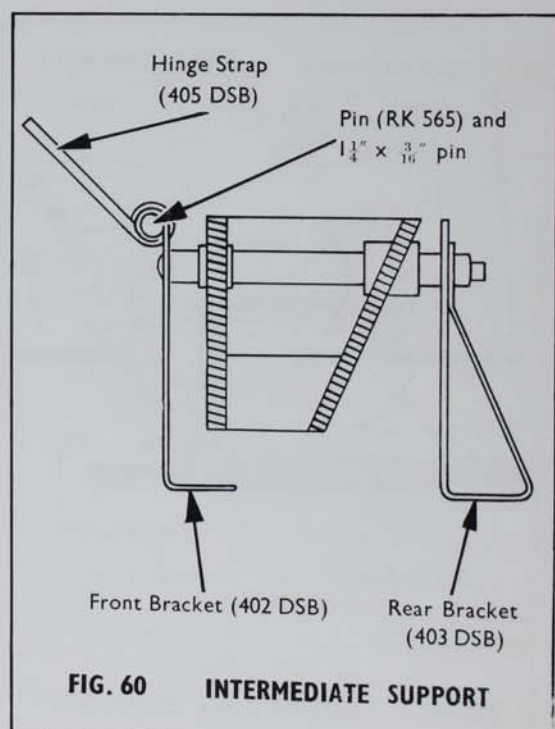
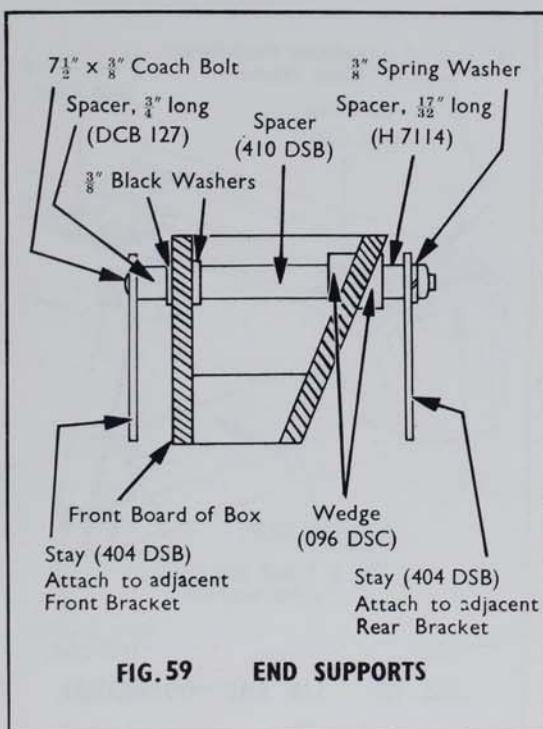
**FITTING SMALL SEEDS BOX**

If necessary, slacken off the bolts securing the feet of main hopper to frame members to align the frame members with the front and rear brackets on the Small Seeds Box.

Lay hinge straps on the top of the box and then place the Small Seeds Box on the frame members (in the position previously occupied by the footboards). See Fig. 62.

Locate the 1" x 3/8" coach bolts in the feet of the front and rear brackets in the slots in the frame members.

NOTE: The bar is fitted to the rear bracket, so that it is immediately behind the final drive sprocket. See Fig. 63.



**SECURING LID AND FOOTBOARDS TO SMALL SEEDS BOX** See Fig. 62.

Swing the hinge strap up against the main hopper and then place the lid in position on the Small Seeds Box.

Place tie straps on each end of lid, swing the hinge straps down and then place the two long footboards on the tie straps and hinge straps.

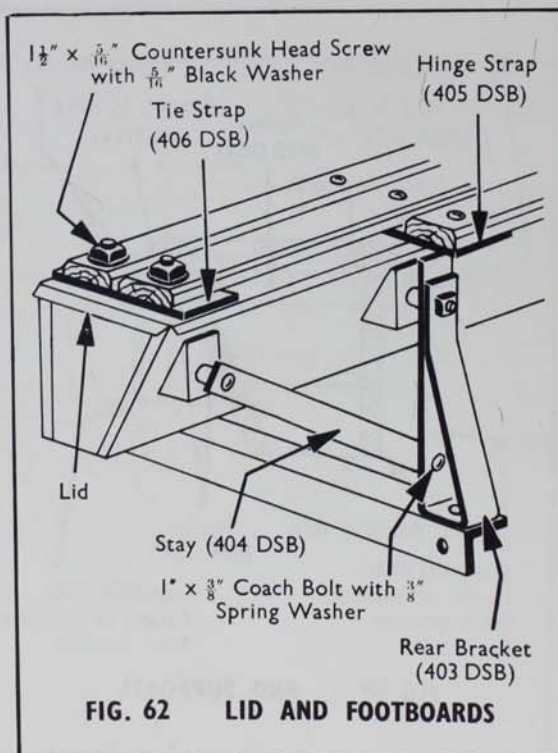
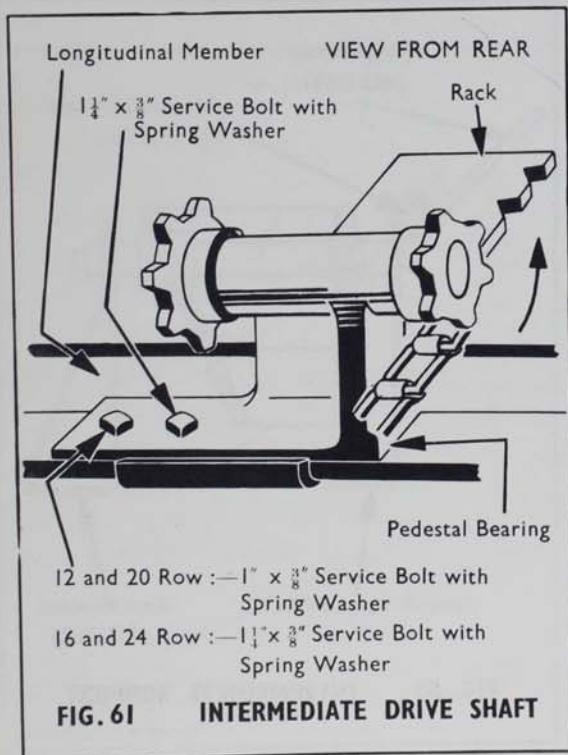
Secure the ends of the long boards to the tie straps and lid. Place the short footboard on hinge straps and secure the three footboards to the hinge straps and lid with the bolts previously used for bolting the footboards to the frame members.

**ALIGNING SMALL SEEDS BOX**

Pull the Small Seeds Box to the rear (as far back as the bolt hole clearances allow) and check to ensure that the Small Seeds Box is parallel with the main hopper. Adjust if necessary, and then secure Small Seeds Box to frame members.

**FITTING INTERMEDIATE DRIVE CHAIN** See Fig. 61.

Fit the intermediate drive chain, 52 links, to the 6 tooth sprocket on the pedestal bearing and the nearside sprocket of the double sprocket. Fit the chain so that the curl of the link leads in the direction of travel of the chain.



SUN, SUNTYNE AND SUNDELVE DRILLS—500 SERIES

Adjust the chain tension and secure the double sprocket in position.

Check alignment of the sprocket (D4116) which should run parallel with the Small Seeds Box.

**FITTING FINAL DRIVE CHAIN** See Fig. 63.

Fit the final drive chain, 19 links over the 9 tooth sprocket on the seed run shaft, around the offside sprocket of the double sprocket, under the tension sprocket, and couple up.

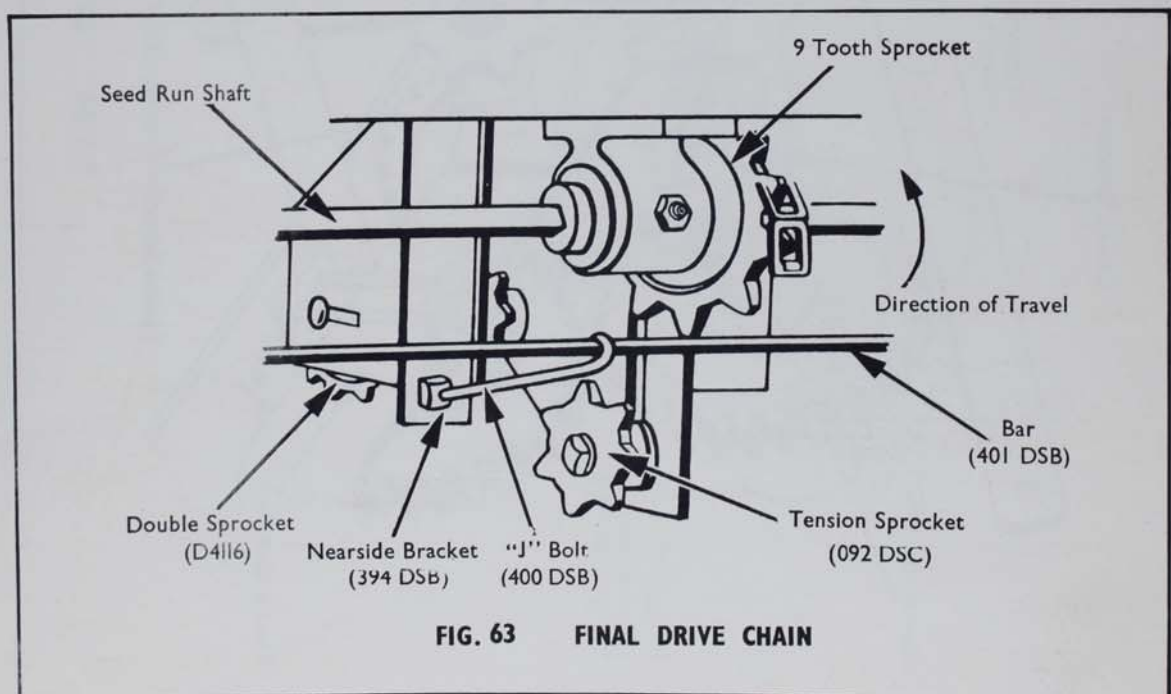
Fit the chain so that the curl of the link leads in the direction of travel of the chain.

Adjust chain tension and secure tension sprocket in position.

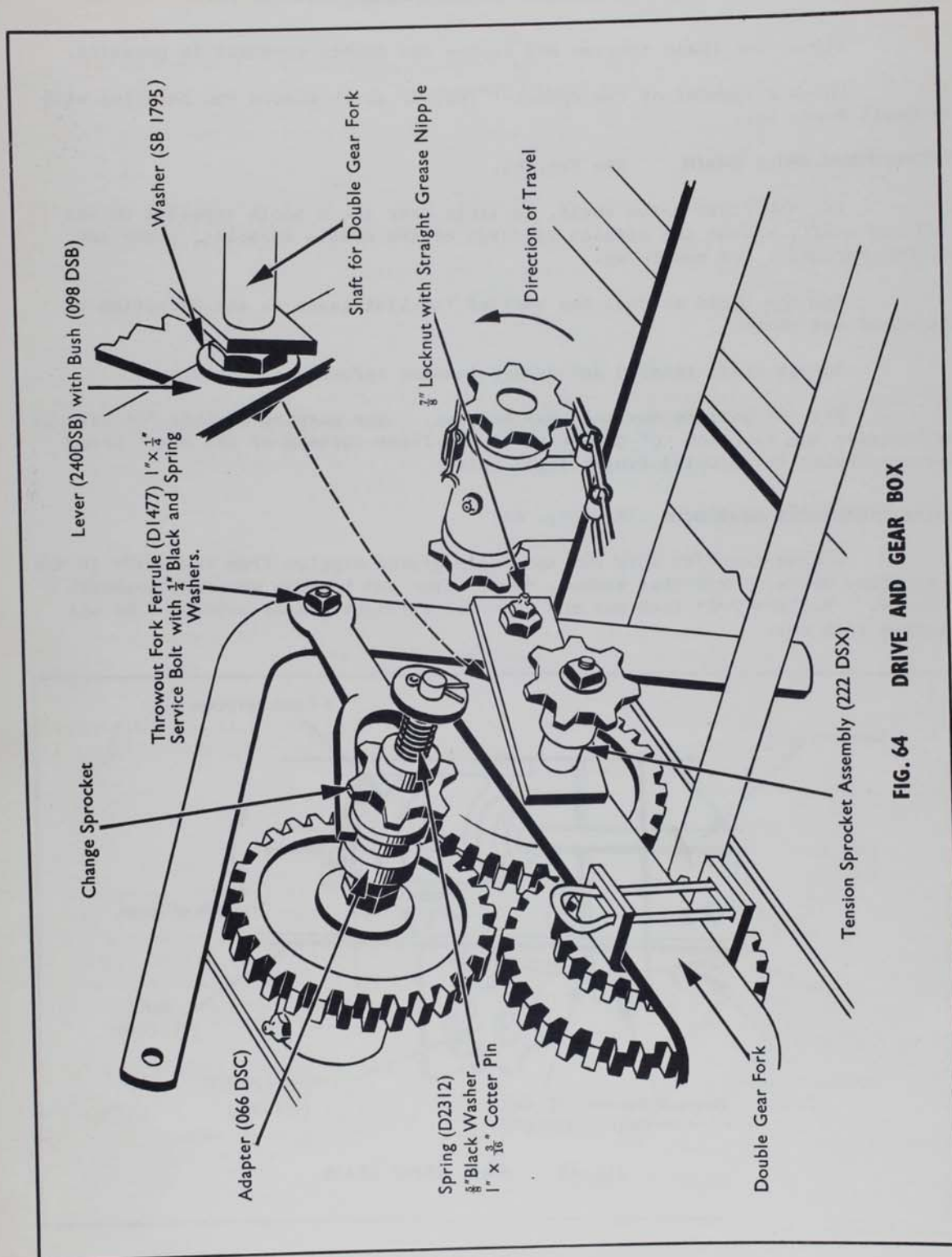
Fit 'J' bolt to bar and rear bracket. The purpose of this 'J' bolt is to transfer the reaction of the drive to the frame instead of the Small Seeds Box and should be adjusted finger tight only.

**DRIVE FROM DRILL GEAR BOX** See Fig. 64.

Remove the 7/8" lock nut and angle grease nipples from the shaft in the fertilizer drive. Fit flat washer, bush, lever and tension sprocket assembly - 7 tooth. Replace 7/8" lock nut and then fit straight grease nipple. Do not tighten lock nut.







**FIG. 64 DRIVE AND GEAR BOX**

Screw the adaptor to the change gear shaft and fit the appropriate change sprocket to the adaptor (refer Sowing Chart).

Assemble the spring, black washer and cottage pin on the shaft to retain change sprocket on adaptor.

If necessary, adjust the length of the primary chain to suit the change sprocket being used. Fit the chain to change sprocket, tension sprocket and the 7-tooth sprocket on the pedestal bearing. Fit the chain so that the curl of the link leads in the direction of travel of the chain.

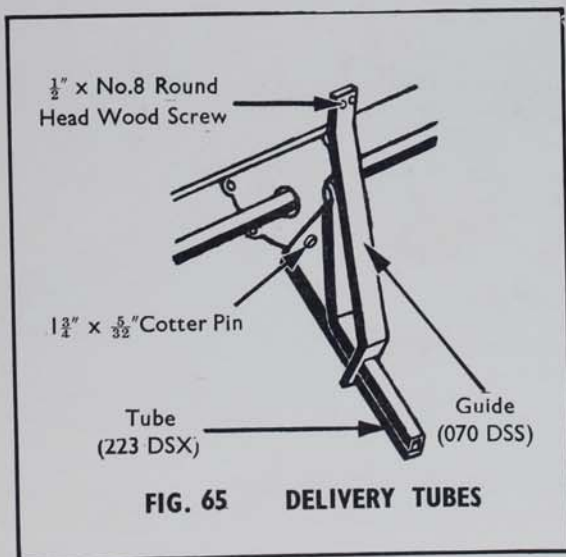
Adjust the chain tension and then secure tension sprocket by tightening the lock nut.

Fit the throw-out fork to the lever. Check freedom of all parts by turning the mechanism with the box spanner supplied for rotating the fertilizer and grain shaft, or by pulling the underside of the intermediate chain by hand from the rear.

#### DELIVERY TUBES See Fig. 65.

Attach the delivery tubes to the grain runs. In order to obtain the desired lay of the tubes, assemble the guides to the tubes and secure the guides to the rear board of the Small Seeds Box.

- NOTE:
1. Disengage fertilizer and grain drives if not required to be operated in conjunction with Small Seeds Box.
  2. Disconnect the primary drive chain when not using the Small Seeds Box for lengthy periods, rather than subject the clutch faces to unnecessary wear.



#### GENERAL HINTS

1. Check at frequent intervals to ensure that the runs turn freely. If they become hard to turn, due to foreign matter inside the runs, wash the runs with kerosene. Do not use oil.
2. Do not leave seed in the box when not in use. Seed is liable to mould in the hopper and cause damage to, and blocking of the runs.

#### ADJUSTMENTS FOR COARSE AND FINE SOWING

The seed is directed through either the coarse or fine side of the run by turning over the metal flap above each run. The coarse side is on the off-side of the run and the fine side on the nearside. The flap covers the side of the run not being used.



The spring wire agitators operate on the coarse side only and then only when the seed does not feed freely through the runs.

When in use, make sure that the ends of the agitator contacts the bottom of a scallop in the roller when the scallop is approximately central in the mouth of the run.

When not being used, place the end of the agitator in the countersunk dimple in the flap.

- NOTE:
1. When turning the two metal flaps, situated immediately behind the brackets (394DSB and 395DSB), it will be necessary to first lift flap and then turn it to clear the heads of the coach bolts securing the brackets to the box.
  2. Make sure the flaps seat correctly on the wooden dividers, otherwise grain will escape through the side of the run not being used, thus affecting the sowing quantities.



SMALL SEEDS BOX TABLE OF QUANTITIES						
	SPURGEON CHANGES	RYE GRASS Use Coarse Side of Run	LUCERNE Use Fine Side of Run	SUB CLOVER Use Fine Side of Run	RAPE Use Fine Side of Run	MILLET Use Coarse Side of Run
	SLOW DRIVE	Sows per acre	Sows per acre	Sows per acre	Sows per acre	Sows per acre
	with 6 Tooth Change Sprocket	3 1/2 lb.	1 lb.	2 lb.	1 1/2 lb.	3 lb.
	" 8 "	4 "	2 "	3 "	2 "	4 1/2 "
	" 10 "	5 "	4 "	4 "	3 "	6 "
	" 12 "	6 "	4 1/2 "	5 1/2 "	4 "	7 "
	" 14 "	7 "	5 "	7 "	4 1/2 "	8 "
	" 16 "	8 "	6 "	8 "	5 "	9 "
	FAST DRIVE	Sows per acre	Sows per acre	Sows per acre	Sows per acre	Sows per acre
	with 6 Tooth Change Sprocket	12 lb.	9 lb.	11 lb.	7 1/2 lb.	13 lb.
	" 8 "	16 "	11 "	14 "	10 "	17 "
	" 10 "	19 "	13 "	17 "	13 "	23 "
	" 12 "	22 1/2 "	16 "	20 "	15 "	28 "
	" 14 "	26 "	20 "	24 "	16 "	34 "
	" 16 "	28 "	23 "	28 "	17 "	44 "
<p>The above quantities are approximate only.</p> <p>A special double sprocket (D 4117 - 6 x 22 Tooth) is available as an extra. When used in place of the 6 x 12 Tooth Sprocket on the slow drive, approximately half the quantities shown on the chart are sown.</p> <p>D 3255 - Assembly of additional chain links is necessary when this sprocket is fitted.</p>						

ACRES PER HOUR CUT BY A MACHINE WITH THE SPEEDS AND WORKING WIDTHS AS INDICATED														
WORKING WIDTH (FT.) -														
M.P.H.	FT./MIN.	1	4	4½	5	5½	6	6½	7	7½	8	8½	9	9½
1/4	22	.03	.12	.135	.15	.165	.18	.195	.21	.225	.24	.255	.27	.285
1/2	44	.06	.24	.27	.30	.33	.36	.39	.42	.45	.48	.51	.54	.57
3/4	66	.09	.36	.405	.45	.495	.54	.595	.63	.675	.72	.765	.81	.855
1	88	.12	.48	.54	.60	.66	.72	.78	.84	.90	.96	1.02	1.08	1.14
2	176	.24	.96	1.08	1.20	1.32	1.44	1.56	1.68	1.80	1.92	2.04	2.16	2.28
3	264	.36	1.44	1.52	1.80	1.98	2.16	2.34	2.52	2.70	2.88	3.06	3.24	3.42
4	352	.48	1.92	2.16	2.20	2.44	2.88	3.12	3.36	3.60	3.84	4.08	4.32	4.56
5	440	.60	2.40	2.70	3.00	3.30	3.6	3.9	4.2	4.5	4.8	5.1	5.4	5.7
6	528	.72	2.88	3.24	3.60	3.96	4.32	4.68	5.04	5.40	5.76	6.12	6.48	6.84
7	616	.84	3.36	3.78	4.20	4.62	5.04	5.46	5.88	6.30	6.72	7.14	7.56	7.98
8	704	.96	3.84	4.32	4.80	5.28	5.76	6.24	6.72	7.20	7.68	8.16	8.64	9.12
9	792	1.08	4.32	4.86	5.40	5.94	6.48	7.02	7.56	8.10	8.64	9.18	9.72	10.26
10	880	1.2	4.8	5.4	6.00	6.6	7.2	7.8	8.4	9.00	9.6	10.02	10.08	11.4
11	968	1.32	5.28	5.94	6.60	7.26	7.92	8.58	9.24	9.90	10.56	11.22	11.88	12.54
12	1056	1.44	5.76	6.48	7.20	7.92	8.64	9.63	10.08	10.8	11.52	12.24	12.96	13.68

M.P.H.	FT./MIN.	10	10½	11	11½	12	12½	13	13½	14	14½	15	15½	16
1/4	22	.30	.315	.33	.345	.36	.375	.39	.405	.42	.435	.45	.465	.48
1/2	44	.60	.63	.66	.69	.72	.75	.78	.81	.84	.87	.90	.93	.96
3/4	66	.90	.945	.99	1.035	1.08	1.25	1.17	1.215	1.26	1.305	1.35	1.395	1.44
1	88	1.2	1.26	1.32	1.38	1.44	1.50	1.56	1.62	1.68	1.74	1.80	1.86	1.92
2	176	2.4	2.52	2.64	2.76	2.88	3.00	3.12	3.24	3.36	3.48	3.6	3.72	3.84
3	264	3.6	3.78	3.96	4.14	4.32	4.50	4.68	4.86	5.04	5.22	5.4	5.58	5.76
4	352	4.8	5.04	5.28	5.52	5.76	6.00	6.24	6.48	6.72	6.96	7.20	7.44	7.68
5	440	6.0	6.3	6.6	6.9	7.2	7.5	7.8	8.1	8.4	8.7	9.0	9.3	9.6
6	528	7.2	7.56	7.92	8.28	8.64	9.00	9.36	9.72	10.08	10.44	10.8	11.16	11.52
7	616	8.4	8.82	9.24	9.66	10.08	10.5	10.92	11.34	11.76	12.18	12.60	13.02	13.44
8	704	9.6	10.08	10.56	11.04	11.52	12.00	12.48	12.96	13.44	13.92	14.40	14.84	15.36
9	792	10.8	11.34	11.88	12.42	12.98	13.50	14.04	14.58	15.12	15.66	16.2	16.74	17.28
10	880	12.00	12.6	13.2	13.8	14.4	15.0	15.6	16.2	16.8	17.4	18.0	18.6	19.2
11	968	13.2	13.86	14.52	15.18	15.84	16.50	17.16	17.82	18.48	19.14	19.80	20.46	21.12
12	1056	14.4	15.12	15.84	16.56	17.28	18.00	18.72	19.44	20.16	20.88	21.60	22.32	23.04

NOTE:- THESE FIGURES ARE BASED ON CONTINUOUS WORKING AND TAKING FULL WIDTH CUT  
NO ALLOWANCE IS MADE FOR STOPS, STARTS AND CORNERS

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NO ALLOWANCE IS MADE FOR STOPS, STARTS AND CORNERS



D 3

D 838



# SUNFLOW FERTILIZER DROPPER

This Chart is provided as a guide only, and must not be taken as an accurate quantity table. With the information in fertilizers and their different free-running qualities, it is impossible to provide a chart to care for all varieties of fertilizer and sowing conditions.

The best means to follow to ascertain the quantity of fertilizer that is being sown is to weigh a bag of fertilizer, set the indicator to the nearest quantity required, then check the acreage covered.

- (1) Remove the two sprockets bolted to sprocket plate on left-hand side of hopper.
  - (2) Remove three links from chain (leaving 25 links); place chain over driving sprocket (the sprocket that is fastened to the ground wheel) and couple; then place around driven sprocket and slip this sprocket on to shaft driving the stars; then adjust locating set screws in gear.
  - (3) Adjust chain tightener to required position to take slack out of chain.
- NOTE!** The direct drive should only be used when 1203 lbs. or more of Lime is required. In no case should it be used when smaller quantities are being sown of either Lime or Fertilizer. Stars for Lime can be supplied as extras when required.

## General Directions.

Do **NOT** leave fertilizer in hopper overnight. Run the machine until the hopper is completely emptied. **THIS IS IMPORTANT!** Most fertilizers set hard if left for any time, and if a quantity has caked in the hopper, undue wear if not actual breakage to parts may occur when the machine is started again.

Before starting, turn the stars with handle provided for the purpose, and see that they are revolving freely. Should there be a stoppage in any of the feed runs when the machine is at work, this stoppage may be caused by some foreign matter in the fertilizer blocking the opening. This can generally be overcome by moving regulating lever to full opening for a yard or two, then closing back to correct position. If this does not overcome the trouble, examine the safety pin in the star, as this may be sheared off; it is there for the purpose of providing against breakage if any foreign matter should get into the feed runs.

All wearing parts should be kept properly oiled and free from corroding fertilizer and lime. A simple and effective way to attend to bearings under hopper is to turn the machine upside down by lifting the shafts.

Do not run chains dry—a little oil prevents joints of links wearing.

Lime Star, D 838 M, must not be used when dropping superphosphate—use Stars D 950 M or Stars D 942 M as shown on the Quantity Table.

SUPERPHOSPHATE				LIME			
COMPOUND DRIVE STAR D 950M.		COMPOUND DRIVE STAR D 942M.		COMPOUND DRIVE STAR D 838M.		DIRECT DRIVE STAR D 838M.	
16-tooth Sprocket D 945M.	12-tooth Sprocket D 927M.	16-tooth Sprocket D 945M.	12-tooth Sprocket D 927M.	8-tooth Sprocket D 940M.	12-tooth Sprocket D 927M.	Opening	12-tooth Sprocket D 927M.
Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.		Lbs.
54	—	135	179	4	120	10	1203
75	—	—	203	5	240	11	1393
78	—	—	—	6	380	12	1525
86	109	—	—	7	500	13	1600
93	122	159	220	8	670		
100	133	168	224	9	850		
Open to full width of indicator		Open to full width of indicator		10	1000		
				11	1100		
				12	1200		

H. V. McKay Massey Harris Pty. Ltd.



# TABLE OF QUANTITIES

## SUN — SUNTYNE — SUNDELVE — 500 Series DRILLS

FOR IMPLEMENTS WITH SERIAL NO. 5 E 1 AND ONWARDS

The Quantities shown below are in Pounds per Acre and are approx. only, but it should be noted that soil conditions, seed type and weight variations and tyre equipment will all have an effect on the actual quantity sown per acre.

### FERTILIZER

### GRAIN

	FERTILIZER SIDE		GRAIN SIDE		Wheat & Malt Barley	Oats	Rice	Cape Barley		Linseed		Sorghum		Green Feat		Rye Corn		Star 113 DSC Standard	
	CHANGE GEAR	DOUBLE GEAR	CHANGE GEAR	DOUBLE GEAR	Fine Side	Coarse Side	Coarse Side	Fine Side	Coarse Side	Fine Side	Coarse Side	Fine Side	Coarse Side	Coarse Side	Coarse Side	Fine Side	Coarse Side	With Star 113 DSC	With Star 115 DSC
FERTILIZER SIDE	Using 12 Tooth Gear	" 14 "	Using 12 Tooth Gear	" 14 "	13	47	30	40	10	39	13	44	15	37	47	14	47	52	34
	" 16 "	" 18 "	" 16 "	" 18 "	16	55	35	47	12	45	15	51	17	44	55	16	55	60	40
	" 18 "	" 20 "	" 18 "	" 20 "	18	63	40	53	14	52	17	58	20	50	63	18	63	68	47
	" 20 "	" 22 "	" 20 "	" 22 "	20	70	45	60	16	58	19	66	22	56	71	21	71	77	53
	" 22 "	" 24 "	" 22 "	" 24 "	23	77	50	66	18	65	21	73	25	62	79	23	79	86	60
GRAIN SIDE	Using 12 Tooth Gear	" 14 "	Using 12 Tooth Gear	" 14 "	25	85	55	72	19	72	24	80	27	68	87	25	87	95	66
	" 16 "	" 18 "	" 16 "	" 18 "	27	93	60	78	21	78	26	87	29	74	95	28	95	104	73
	Using 12 Tooth Gear	" 14 "	Using 12 Tooth Gear	" 14 "	22	75	48	63	17	62	21	70	24	60	75	22	75	83	57
	" 16 "	" 18 "	" 16 "	" 18 "	25	86	56	73	19	72	24	81	27	69	88	26	88	97	67
	" 18 "	" 20 "	" 18 "	" 20 "	29	99	64	84	22	83	27	93	31	79	102	30	102	110	78
FERTILIZER SIDE	" 20 "	" 22 "	" 20 "	" 22 "	33	111	71	94	25	93	30	104	35	89	114	33	114	124	88
	" 22 "	" 24 "	" 22 "	" 24 "	36	123	78	105	28	104	34	116	39	99	126	37	126	138	99
	" 24 "	" 26 "	" 24 "	" 26 "	40	135	86	116	31	114	37	127	43	109	139	41	139	152	109
	" 26 "	" 28 "	" 26 "	" 28 "	43	147	94	126	34	125	40	139	47	119	152	45	152	166	120
	Using 20 Tooth Gear	" 22 "	Using 20 Tooth Gear	" 22 "	48	164	105	140	38	139	45	154	50	132	169	50	169	185	133
GRAIN SIDE	" 24 "	" 26 "	" 24 "	" 26 "	53	180	115	153	42	152	49	169	55	145	185	55	185	203	147
	" 26 "	" 28 "	" 26 "	" 28 "	58	196	125	167	46	166	53	184	60	158	202	60	202	222	161
	Using 22 Tooth Gear	" 24 "	Using 22 Tooth Gear	" 24 "	64	216	138	184	50	183	59		66	173	222	66	222	243	178
	" 28 "	" 30 "	" 28 "	" 30 "	70	235	150	201	55	200	64		72	189	242	72	242	266	195
	" 30 "	" 32 "	" 30 "	" 32 "															

**GEAR CHANGING**—Determine, from the above chart, the necessary gear and change gear required to give the desired rate of sowing. The four trains of gears available, which are similar for both grain and fertilizer, are clearly shown above and the selected gear, in conjunction with the appropriate change gear will give the required rate. Two double gears, which are reversible in the bracket, are provided:—D4162, 24-and 15-tooth is suitable for 1st, 2nd and 4th gears and D4163, 24-and 18-tooth is suitable for 2nd and 3rd gear. To reverse the double gear, remove the locking pin and withdraw the shaft, reverse the gear and replace shaft and locking pin. Note that two holes are provided in the gear bracket for the double change gear. Use the rear hole for 1st gear and the front hole for remaining gears. Seven change gears are provided. These are reversible and are removed from the shaft by simply unscrewing the securing nut. The gear bracket is adjustable up or down to allow for the variation in size of the change gears.

**IMPORTANT!** When setting the gears, push the gear bracket hard up and then slacken off sufficiently for a running clearance.

FOR FINE SOWING DRAW OUT-OFF PLATE TO OFFSIDE.

FOR COARSE SOWING DRAW OUT-OFF PLATE TO NEAR SIDE.