

B60-600 Series OFFSET DISC HARROW
B60-700 Series

**OPERATORS MANUAL
PARTS CATALOGUE**

SERIAL N°

BONEL BROTHERS PTY. LTD.

49-51 Hanbury Street, Bundaberg, Qld. 4670. P.O. Box 917 Bundaberg 4670 AUSTRALIA. Telephone (071) 72 9555. Telex 49772.

TYPES OF DISC BLADE FIELD FAILURES MOST OFTEN ENCOUNTERED

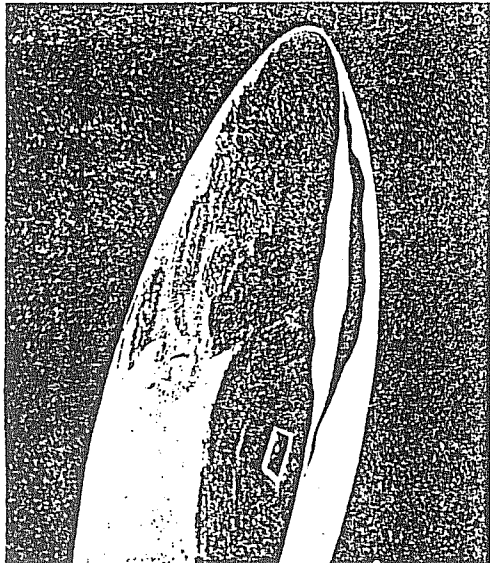


FIG. 1 Laminated or split discs. A result of defective material from the steel mill. **FULL CREDIT**

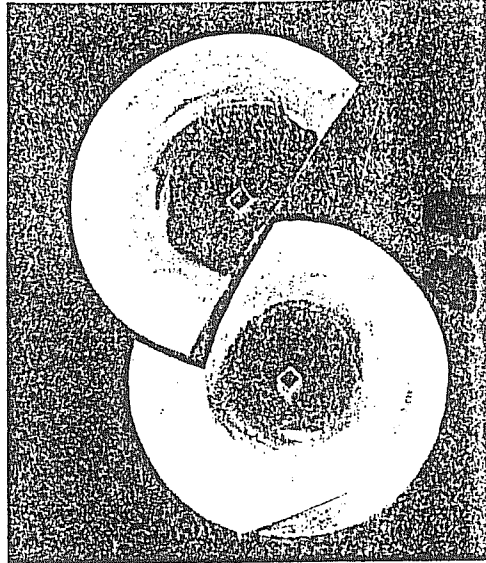


FIG. 2 Clean straight break, substantially at right angles to the surface, and greater than 4" long. --Caused by defective material. **FULL CREDIT**

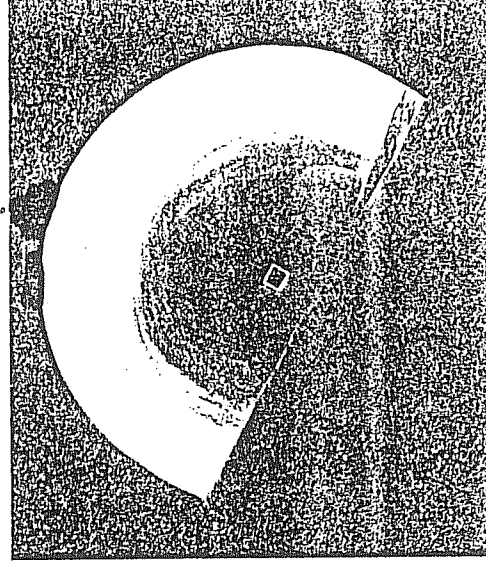


FIG. 3 Segregation fault--Caused by defective material. **FULL CREDIT**

Important read this notice!

Warranty will not be extended to any disc which has been subjected to abnormally severe working conditions. Credit will not be allowed where the dish shape of the disc is deformed, except in the case of LAMINATION. In the event of any disc failures for which credit is claimed, the claimant must submit each disc to his supplier.

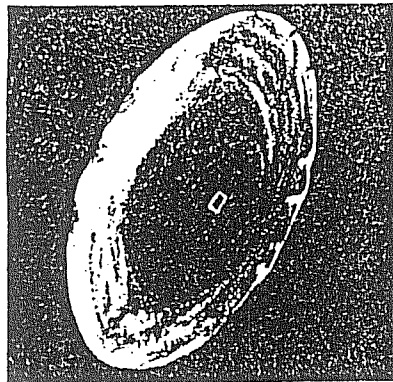


FIG. 4 Worn and buckled edge or edges due to the disc wearing thin. **NO CREDIT**

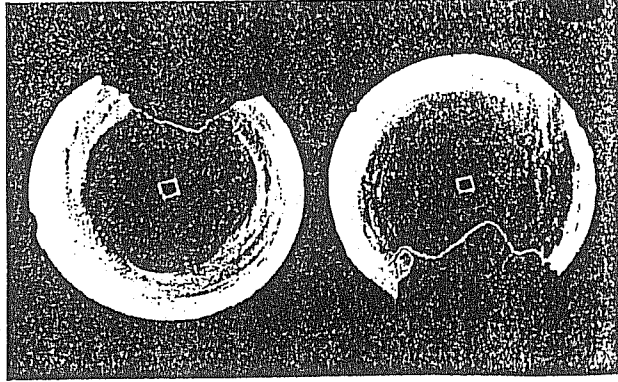


FIG. 5 Irregular breaks or fractures, resulting from overloading in rock or stump conditions. **NO CREDIT**

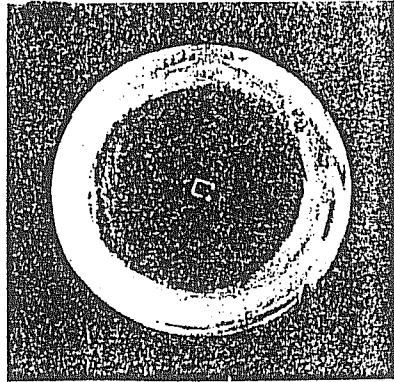


FIG. 6 Chipped or broken edges due to overloading in rock or stump conditions. **NO CREDIT**

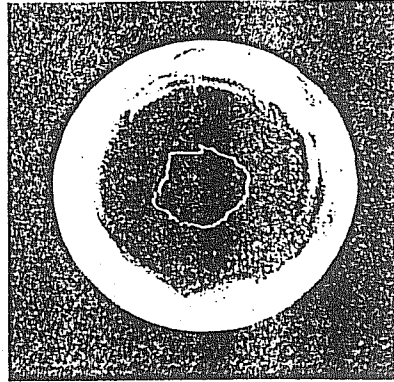


FIG. 7 Centre broken out caused by either implement design fault, excessive draft, excessive flexing of disc or loose gang bolts in rock or stump conditions. **NO CREDIT**

BONEL B60-600 SERIES OFFSET DISC HARROW

Assembly from Export Pack

When the offset is removed from the case, the following assembly will be necessary.

- A. Main Frame (Including Hitch, Levelling Screw & Wheels)
- B. Drawbar & Telescopic Arm
- C. Gangs & Trashbars
- D. Hose Stand (Wired to Drawbar)
- E. Hoses

Hardware

All bolts, nuts, washers & pins for attaching the above items will be in place. There will be no loose hardware. Where parts or components have been removed for packing purposes the surface revealed will be undercoat painted only to assist in location identification.

Assembly Procedure

(Refer to Parts Illustration No. 06086A to assist in Assembly)

- Step 1. Remove all wire ties and arrange all the parts conveniently on the floor.
- Step 2. Arrange the front and rear gangs into position shown on Illustration 06086B and support upright on stands.
- Step 3. With suitable lifting tackle raise the main frame (by lifting lugs on machine) and carefully lower over the gangs. Secure pivot bolts first before selecting angle and securing clamp plate and bolts.
(Refer to Illustration No. 06086B)
- Step 4. Attach drawbar to Hitch, using the middle pivot hole and secure the telescopic arm in its corresponding position
(Refer to Page 4 of manual)
- Page 5. Bolt Hose Stand to Drawbar.
- Page 6. Connect up hoses and secure to machine with hose clamps.

NOTE: After completion of assembly refer to manual for setting up and operating instructions.

ASSEMBLY INSTRUCTIONS

Remove all wire ties and arrange parts conveniently:

Lubricate all moving parts as you proceed, and see that they work freely.

Bolts must be used in the holes in which they are found, or in the parts to which they are attached.

When fitting, tighten all bolts and nuts to tension.

We reserve the right to make changes or improvements in the design or construction of any part without incurring the obligation to install such changes on any machine previously delivered.

IMPORTANT: Extreme caution must be exercised when assembling this machine. The frames are heavy and the discs are sharp.

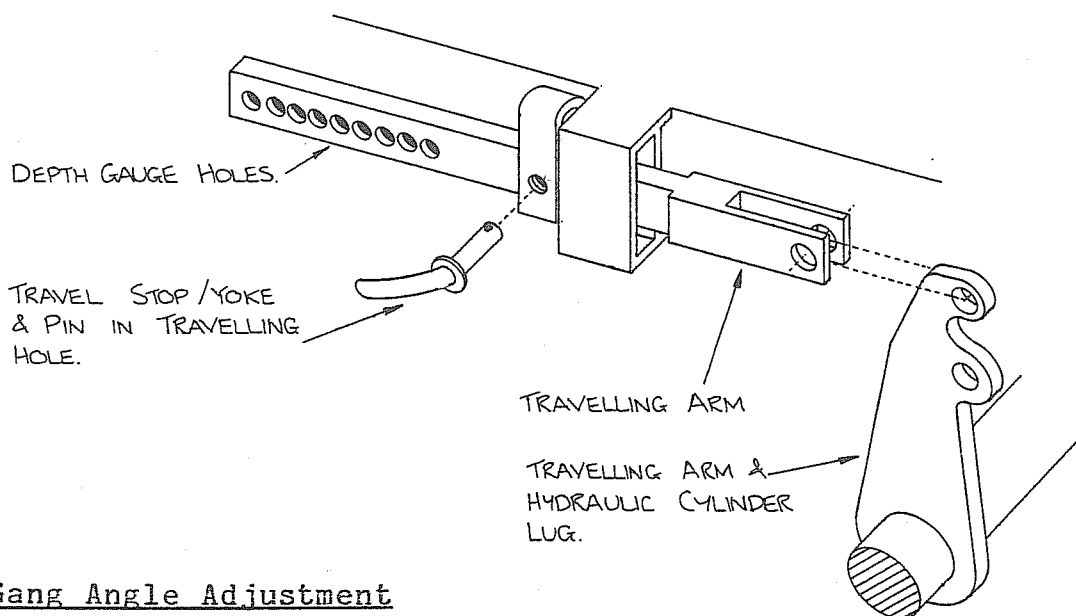
MAINTENANCE

- * Before proceeding to work the harrow, always ensure that all bolts and nuts are tight.
- * In particular for a new machine ensure the nuts on the disc gang bolts are tightened and check after 1 hour of work. Re-check after every 2 hours of work until each assembly is completely bedded in.
- * The gang bearings are pre-packed with grease and sealed, requiring no further attention.
- * The wheel bearings and hubs are of the standard automotive type and require re-greasing only on seasonal inspection under normal conditions. It is advisable to check them after the first 8 hours of operation.
- * Three lubrication points marked on Illustration No. 06086A require greasing after each 8 hours of operation.

OPERATING INSTRUCTIONS

Transport

To transport the harrow fully extend the hydraulic lift cylinder and insert the stop provided. Re tract the cylinder until all of the weight is carried on the stop. (Refer to Illustration No. 06086 B)



Gang Angle Adjustment

Front and rear gang angles can be adjusted by means of a simple clamp adjustment. The angles being 16, 19 & 22 degrees on the front gang and 16, 19, 22 & 25 degrees on the rear gang. Penetration is increased when the gang angles are increased.

Adjusting Gang Angles

For normal operation, the front and rear gangs should be set as follows;

On assembling the harrow it is advisable to set the front gang at the 19 degree hole and the rear gang at the 22 degree hole.

In hard ground the harrow may tend to jump and in this case the angle should be decreased. Observe the operation of the disc, checking to see if the main frame is running straight in line with the tractor. Adjust by opening and closing the rear gang. Opening the rear gang makes the rear of the harrow run more to the left and vice versa. It is not necessary that the frame run absolutely straight. However, a fine adjustment can be made with the weight transfer spring on the front of the harrow.

NOTE: After proper adjustment of gang angles, it is sometimes necessary to readjust the hitch and the rear gang laterally to achieve correct furrow filling.

It is normal to have between 2 degrees and 6 degrees more angle on the rear gang than the front gang in difficult conditions.

Weight Transfer and Levelling Spring

The weight distribution between front and rear gangs is controlled by means of the weight transfer hitch. Generally if the weight transfer spring A is adjusted so that the machine is approximately level in the transport position when hitched to the tractor, no adjustment of the spring will be necessary.

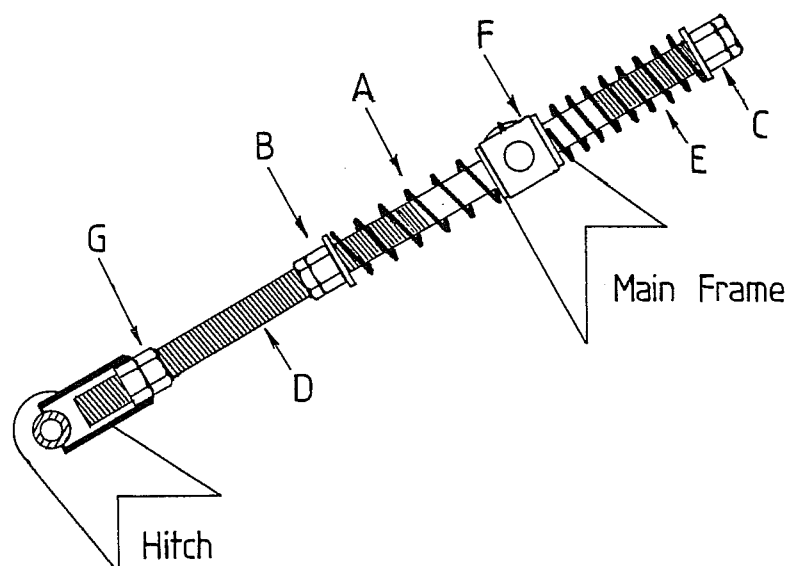
If a fine adjustment is needed to make the frame run straight with the line of travel, this can be accomplished very effectively with the weight transfer nuts "E" & "C" (Spanner provided).

Increasing the compressive force in the spring A tends to make the rear gang run more to the left. Decreasing it has the opposite effect.

NOTE: It is important that the weight transfer spring never be compressed solid.

When the harrow is in the operating position, it is normal to have approx. 1.1/2" between nut "C" and the end of the cushion spring "E". If more weight transfer is desired, unlock nut "G" and lengthen threaded rod "D" by turning clockwise. When adjustments are completed ensure that the unthreaded section of rod "D" is evenly spaced through trunnion "F".

NOTE: Grease the trunnion after each 8 hours of operation.



SIDE DRAFT (CAUSE)

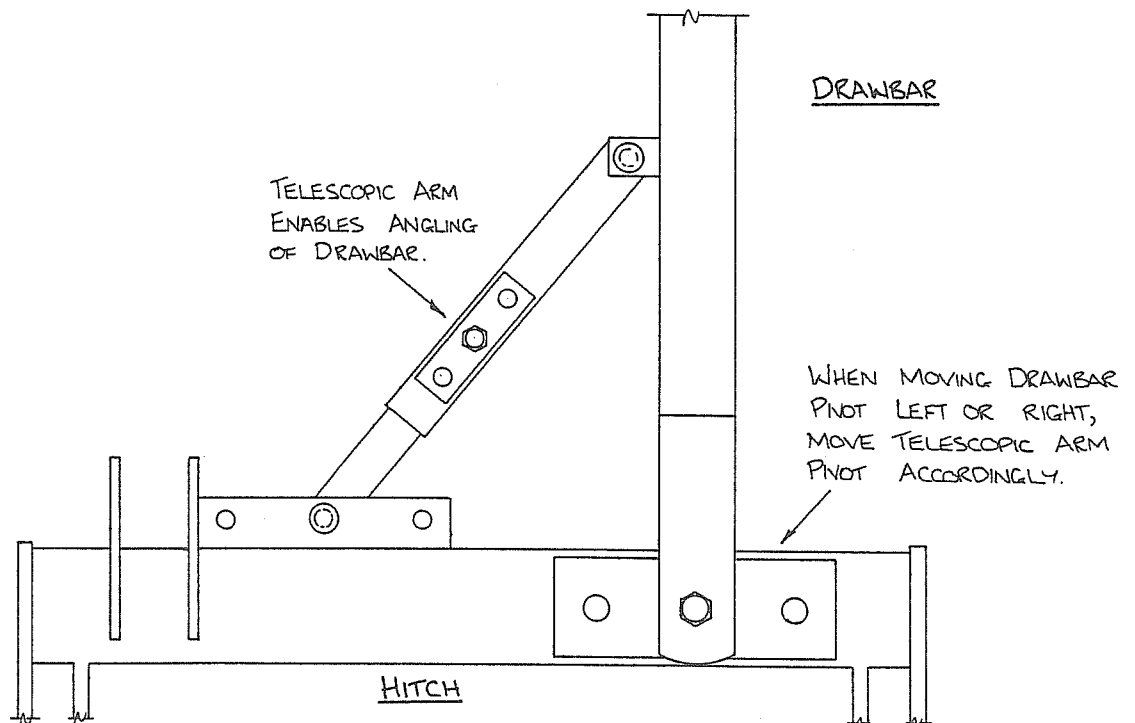
One of the more common problems encountered in operating offset disc harrows is that of side draft. The tractor drawbar is left free to swing and will commonly swing off to one side rather than pulling straight in the centre of the drawbar guide. This is natural for offset disc harrows because the centre of resistance is right of the centre of the machine.

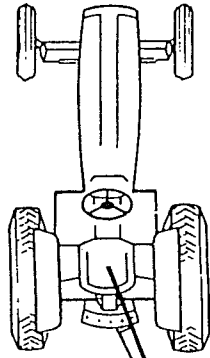
SIDE DRAFT - CONTROL (GENERAL)

The swinging drawbar on a tractor is usually built so that it pulls from the centre of the tractor so there is no effect on the steering as long as the tractor drawbar is not pulled against a stop. Side draft can be controlled by balancing the forces of the ground resistance of the front and rear gangs against each other.

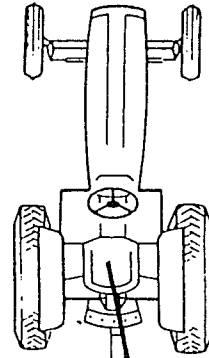
SIDE DRAFT - CONTROL (CUTTING ANGLE)

The most effective control of side draft is by changing the cutting angles. Moving the implement hitch point to the right (by angling the drawbar or moving the drawbar pivot to the holes provided) will cause the tractor to pull a little harder on the right side of the disc and less on the left. This will reduce the cutting angle of the front gang and increase the rear thereby reducing side forces to the right. When the front gang works in harder soil than the rear it is necessary for the rear gang to have a greater cutting angle than the front in order that the side forces will be balanced. Generally, the cutting angle of the rear gang is 2 to 6 degrees more than that of the front. The extra angle of the rear gang also assists in moving the soil in to fill the furrow properly.

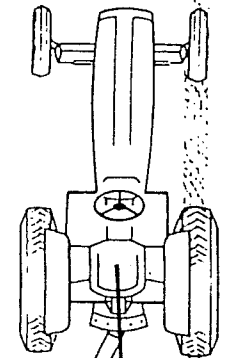




NOTE:- IMPLEMENT MUST BE LIFTED CLEAR OF GROUND FOR L.H. TURNS TO AVOID EXCESSIVE LOADS ON END DISCS AND GANG BOLTS.



VARIOUS IMPLEMENT SETTINGS



INCREASE ANGLE

DECREASE ANGLE

DECREASE ANGLE

INCREASE ANGLE

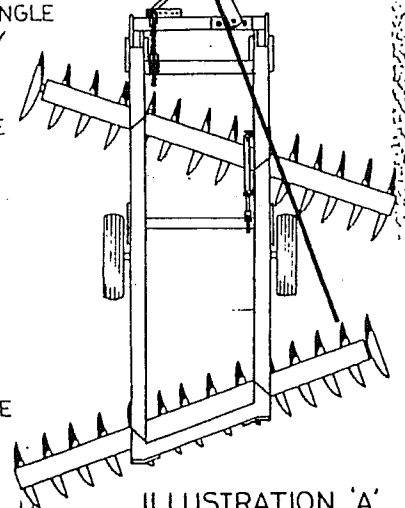


ILLUSTRATION 'A'
NOT RECOMMENDED

LINE OF DRAUGHT

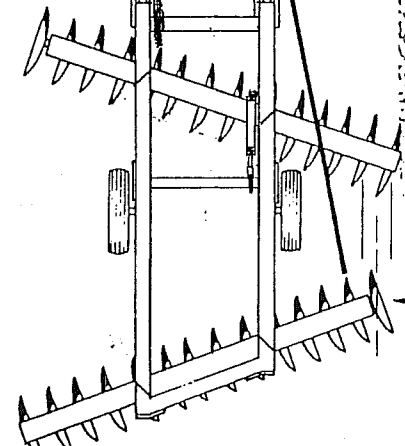


ILLUSTRATION 'B'
RECOMMENDED SET UP
NORMAL WORK

REAR DISCS CUT OUT RIDGES LEFT BY FRONT DISCS

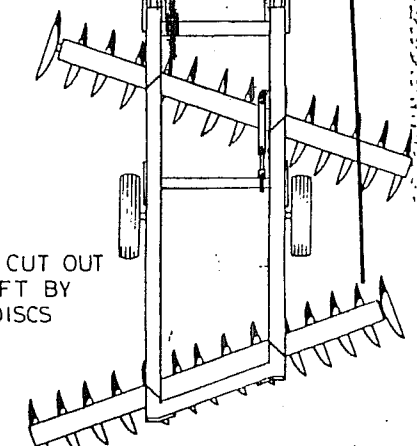


ILLUSTRATION 'C'
RECOMMENDED SET UP
TOUGH, FIRST WORKING CONDITIONS

EFFICIENCY OF WORK INCREASES

- DRAFT LOAD REDUCES.
- PENETRATION IMPROVES.
- CUT OUT IMPROVES.

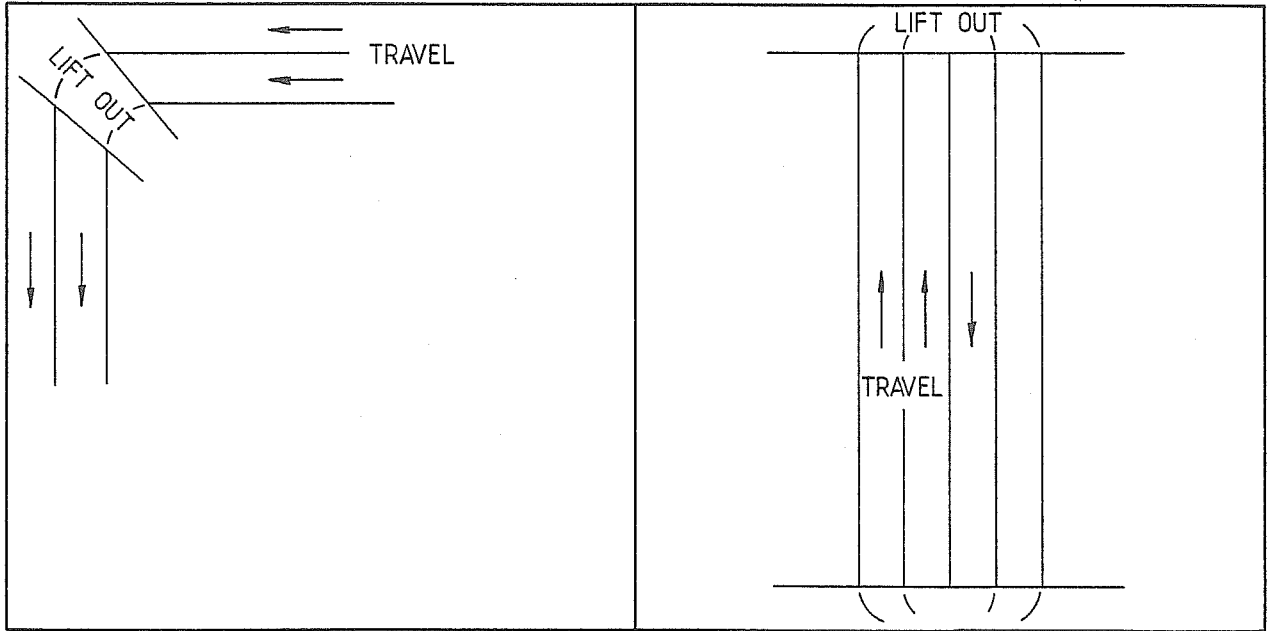


BONEL B60-600 OFFSET DISC HARROW

SIDE DRAFT - CONTROL (CUTTING DEPTH)

Cutting depth also affects the ground resistance on the gangs. Raising the hitch level on the implement tends to pull the front gang down more, thereby increasing the force to the right. Adding weight to the rear gang will generally increase the side force to the left. In softer, more easily penetrated ground there will be less response to changes in cutting depth because the ground supports the back side of the blades more positively when they are working deeper.

OPENING A Paddock



Working in Rounds

The following instructions are prepared to give a step by step procedure for setting up your disc harrow to achieve the best results.

Opening a Paddock

If the paddock is to be worked in rounds, strike out the opening round travelling in an anti-clockwise direction. Ensure that, on this round, the furrow left on the left hand side of the machine, is at the desired depth. Always raise the harrow when turning. This prevents the front left hand disc from bulldozing, and lessens the strain on this disc and the drawbar. FAILURE TO DO SO COULD CAUSE THE DRAWBAR TO BEND.

Working in Lands

With the above methods of working, subsequent passes will always be on left side of the worked ground and will assist in filling the furrow.

Start the next round with the right front disc blade running just inside the furrow left by the first pass.

Independent Wheel Levelling

Three settings are provided on each side of the lifting rockshaft for independent wheel levelling.

As an offset disc harrow has a natural tendency to cut at a shallower depth on the side at which the gangs form a "Vee" the above adjustment can be used to help minimize this effect. The use of the lowest possible drawbar height on the tractor and additional weight on this side of the machine will also assist in maintaining a level field. It is normal to set the left hand wheel lower than the right hand wheel.

Setting the wheels to maintain level cut.

Lower the harrow with the hydraulic cylinder until the disc is cutting at the desired depth. Setting the level of the wheels helps overcome the natural tendency present in all offset disc harrows of cutting deeper on the left side than on the right. This corrective measure can be varied within reason by means of the independant wheel level adjustment.

At least one full round of the paddock will be necessary before a true indication of the cut can be determined and adjustments be carried out.

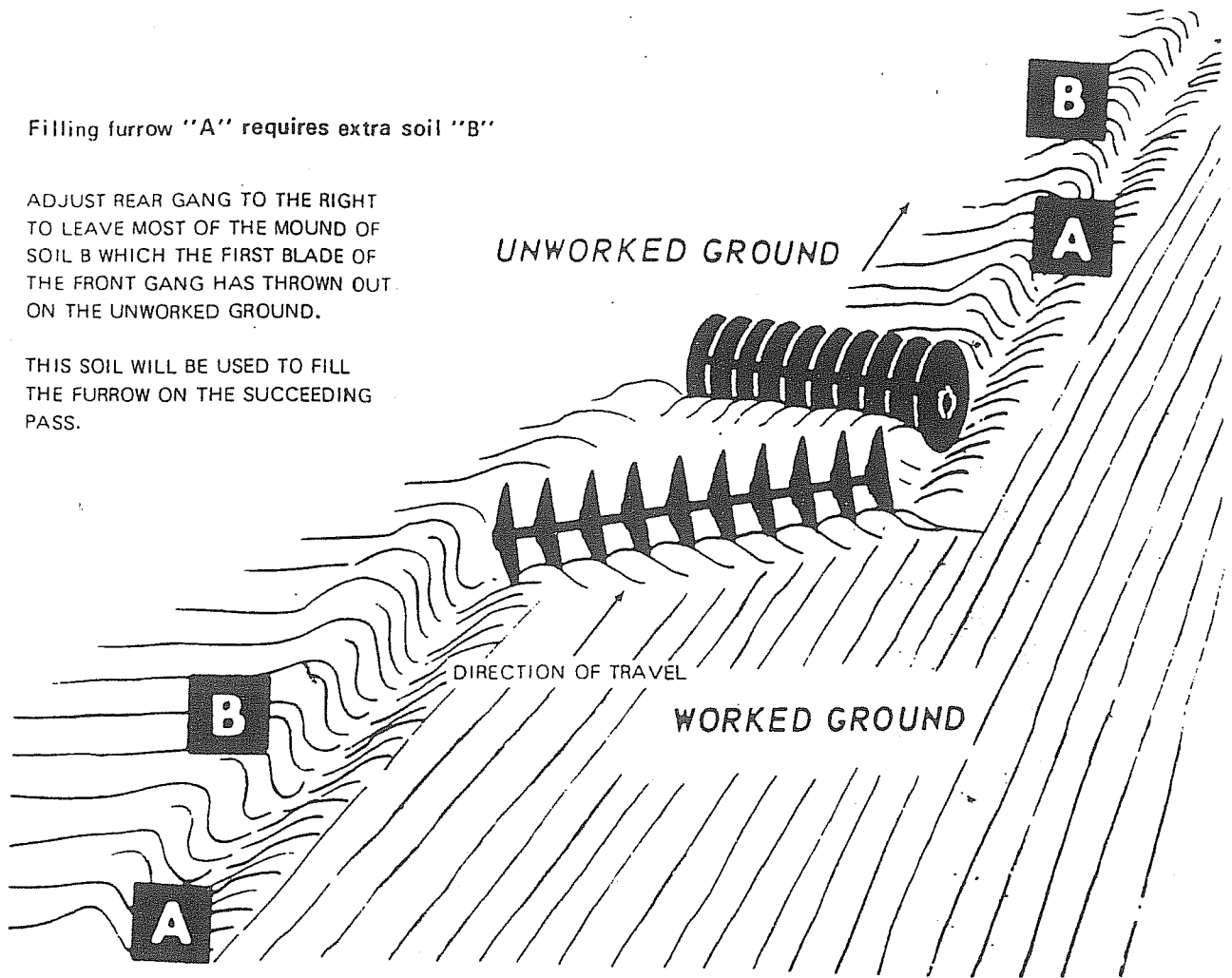
To adjust loosen the pivot bolt, remove the setting bolt and rotate the wheel hub plate to the next hole required.

OPERATION

Filling furrow "A" requires extra soil "B"

ADJUST REAR GANG TO THE RIGHT TO LEAVE MOST OF THE MOUND OF SOIL B WHICH THE FIRST BLADE OF THE FRONT GANG HAS THROWN OUT ON THE UNWORKED GROUND.

THIS SOIL WILL BE USED TO FILL THE FURROW ON THE SUCCEEDING PASS.



FILLING THE FURROW

In open field operation, an offset disc harrow is generally used in such a way that each pass fills the furrow left by the preceding pass. Each pass is made on the left hand side of the previous pass as shown.

The harrow should be worked with the right end disc of the front gang running in the furrow. This practice is recommended to eliminate overlap and to use the full width of the harrow to thoroughly till all the ground.

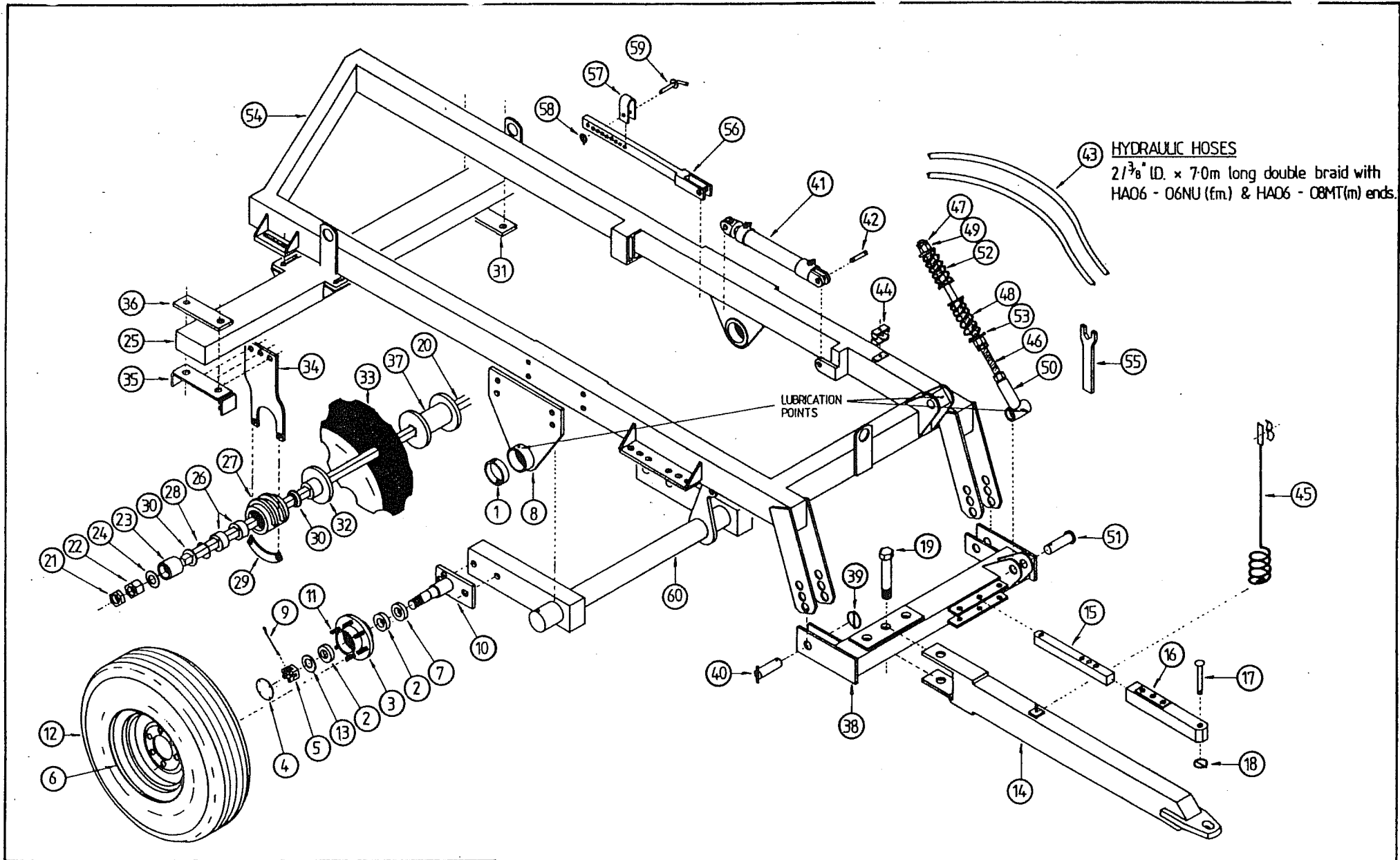
In order to achieve a level field, it is necessary to fill the furrow "A" properly. This can be achieved if sufficient soil is left at "B", which will be the case if the rear gang is adjusted to the right in relation to the front gang until the mound of soil that the first blade of the front gang throws out on the unworked soil, is left until the subsequent round.

NOTE: It should be remembered that whenever any adjustment is made to achieve correct furrow filling it will take two passes with the machine to be able to see the effect of the change.

B60-600 SERIES OFFSET DISC HARROW

Ref No.	Part No.	Description
1	5350	Depth Wheel Axle Collar
2	5404	Depth Wheel Bearing
3	5403	Depth Wheel Hub
	5603	Depth Wheel Hub Complete
4	5402	Depth Wheel Hub Cover
5	5407	Depth Wheel Nut
6	5351	Depth Wheel Rim
7	5409	Depth Wheel Seal
8	5352	Depth Wheel Side Plate
9	5412	Depth Wheel Split Pin
10	5026	Depth Wheel Stub Axle & Plate
11	5413	Depth Wheel Stud & Nut
12	5353	Depth Wheel Tyre & Tube
13	5414	Depth Wheel Washer
14	5330	Drawbar
15	5254	Drawbar Adjusting Arm-Inner Sleeve
16	5255	Drawbar Adjusting Arm-Outer Sleeve
17	5331	Drawbar Adjusting Arm - Pivot Pin
18	5332	Drawbar Adjusting Arm - Pivot Linch Pin
19	5333	Drawbar Pivot Bolt & Nut
20	5334	Gang Assembly Axle - 5 Discs Long
	5335	Gang Assembly Axle - 5 Discs Short
	5336	Gang Assembly Axle - 6 Discs Long
	5337	Gang Assembly Axle - 6 Discs Short
	5338	Gang Assembly Axle - 8 Discs Long
	5339	Gang Assembly Axle - 8 Discs Short
21	5071	Gang Assembly Axle Half Nut
22	5070	Gang Assembly Axle Nut
23	5068	Gang Assembly Axle Spacer
24	5069	Gang Assembly Axle Washer
25	5259	Gang Assembly Beam - 20 Plate
	5260	Gang Assembly Beam - 24 Plate
	5261	Gang Assembly Beam - 28 Plate
	5262	Gang Assembly Beam - 32 Plate
26	5074	Gang Assembly Bearing
27	5072	Gang Assembly Bearing Housing
28	5075	Gang Assembly Bearing Housing Circlip
29	5048	Gang Assembly Bearing Housing Clamp
	5063	Gang Assembly Bearing Housing Complete
30	5073	Gang Assembly Bearing Housing Shield
31	5263	Gang Assembly Clamp Plate
	5061	Gang Assembly Concave End Plate
	5064	Gang Assembly Concave Half Spool

Ref No.	Part No.	Description
	5067	Gang Assembly Convex End Plate
32	5062	Gang Assembly Convex Half Spool
33	5264	Gang Assembly Disc-610mmX6mm (24")
	5265	Gang Assembly Disc-660mmX6mm (26")
	5266	Gang Assembly Disc-710mmX6mm (28")
34	5044	Gang Assembly Hanger Plate - 610mm (24") Disc
	5045	Gang Assembly Hanger Plate - 660mm (26") Disc
	5046	Gang Assembly Hanger Plate - 710mm (28") Disc
35	5267	Gang Assembly Hanger Plate Bracket - Bottom
36	5268	Gang Assembly Hanger Plate Bracket - Top
37	5065	Gang Assembly Spool 254mm (10") Disc Spacing
	5066	Gang Assembly Spool 280mm (11") Disc Spacing
38	5340	Hitch
39	5010	Hitch Linch Pin
40	5271	Hitch Pin
41	5019	Hydraulic Cylinder
42	5017	Hydraulic Cylinder Pin
	5341	Hydraulic Cylinder Seal Kit
43	5342	Hydraulic Hose & Fittings
44	5459	Hydraulic Hose Clamp
45	3664	Hydraulic Hose Stand
46	5460	Levelling Rod
47	5464	Levelling Rod Half Nut
48	5634	Levelling Rod Lower Spring
49	5465	Levelling Rod Nut
50	5358	Levelling Rod Pivot
	5611	Levelling Rod Pivot Linch Pin
51	5359	Levelling Rod Pivot Pin
52	5637	Levelling Rod Upper Spring
53	5467	Levelling Rod Washer
54	5343	Main Frame
	5078	Scraper Bar - 5 Discs
	5077	Scraper Bar - 6 Discs
	5076	Scraper Bar - 8 Discs
	5079	Scraper Blade
	5277	Scraper Bolt & Nut
55	5777	Spanner
	5055	Trashbar - 5 Discs
	5054	Trashbar - 6 Discs
	5053	Trashbar - 8 Discs
	5278	Trashbar Bolt & Nut
56	5344	Travelling Arm
57	5660	Travelling Yoke
58	5345	Travelling Yoke Linch Pin
59	5661	Travelling Yoke Pin
60	5346	Undercarriage



BONEL BROTHERS PTY. LTD.

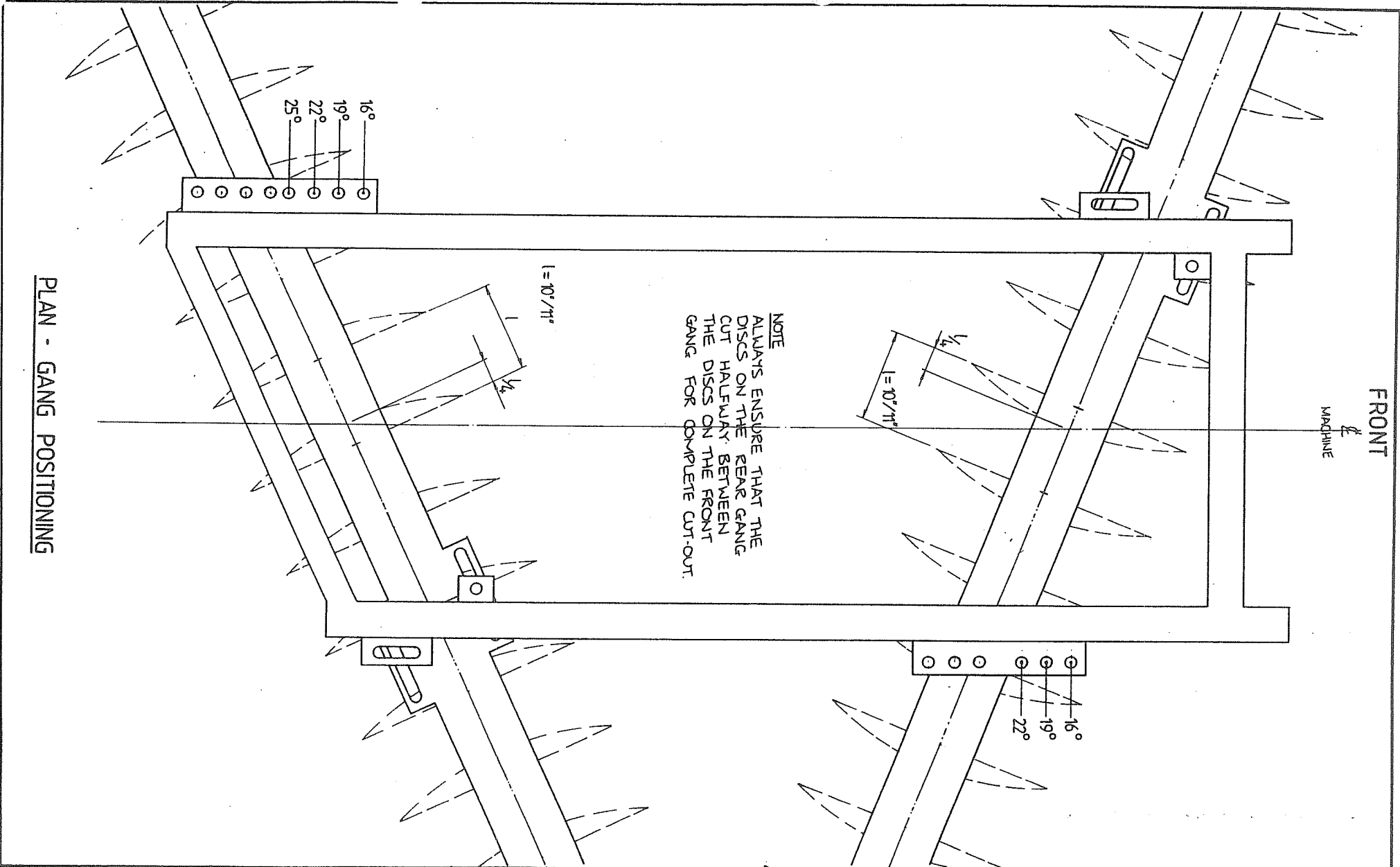
B60-600 series Offset Disc Harrow

COPYRIGHT: THIS PROPERTY AND DESIGN SHOWN HEREON IS THE PROPERTY OF BONEL BROTHERS PTY. LTD. AND MUST NOT BE SOLD, LENT, GIVEN AWAY, COPIED, REPRODUCED, OR OTHERWISE DIVULGED TO 3RD PARTIES OR USED FOR MANUFACTURING OR OTHER PURPOSES WITHOUT WRITTEN PERMISSION OF BONEL BROTHERS PTY. LTD.
 © BONEL BROTHERS PTY. LTD. 1986

ILLUSTRATION N° 06086 A

S.W.L

23-10-86



BONEL BROTHERS PTY. LTD.

B60-600 series Offset Disc Harrow

COPYRIGHT: THIS PROPERTY AND DESIGN SHOWN HEREON IS THE PROPERTY OF BONEL BROTHERS PTY. LTD. AND MUST NOT BE SOLD, LENT, GIVEN AWAY, COPIED, REPRODUCED, OR OTHERWISE DIVULGED TO 3RD PARTIES OR USED FOR MANUFACTURING OR OTHER PURPOSES WITHOUT WRITTEN PERMISSION OF BONEL BROTHERS PTY. LTD.

© BONEL BROTHERS PTY. LTD. 1986

Drawn
S.W.I
Checked

Date
12.11.86

Drg. No.
06086 B.

Revision

--	--	--	--	--

B60-700 SERIES OFFSET DISC HARROW.

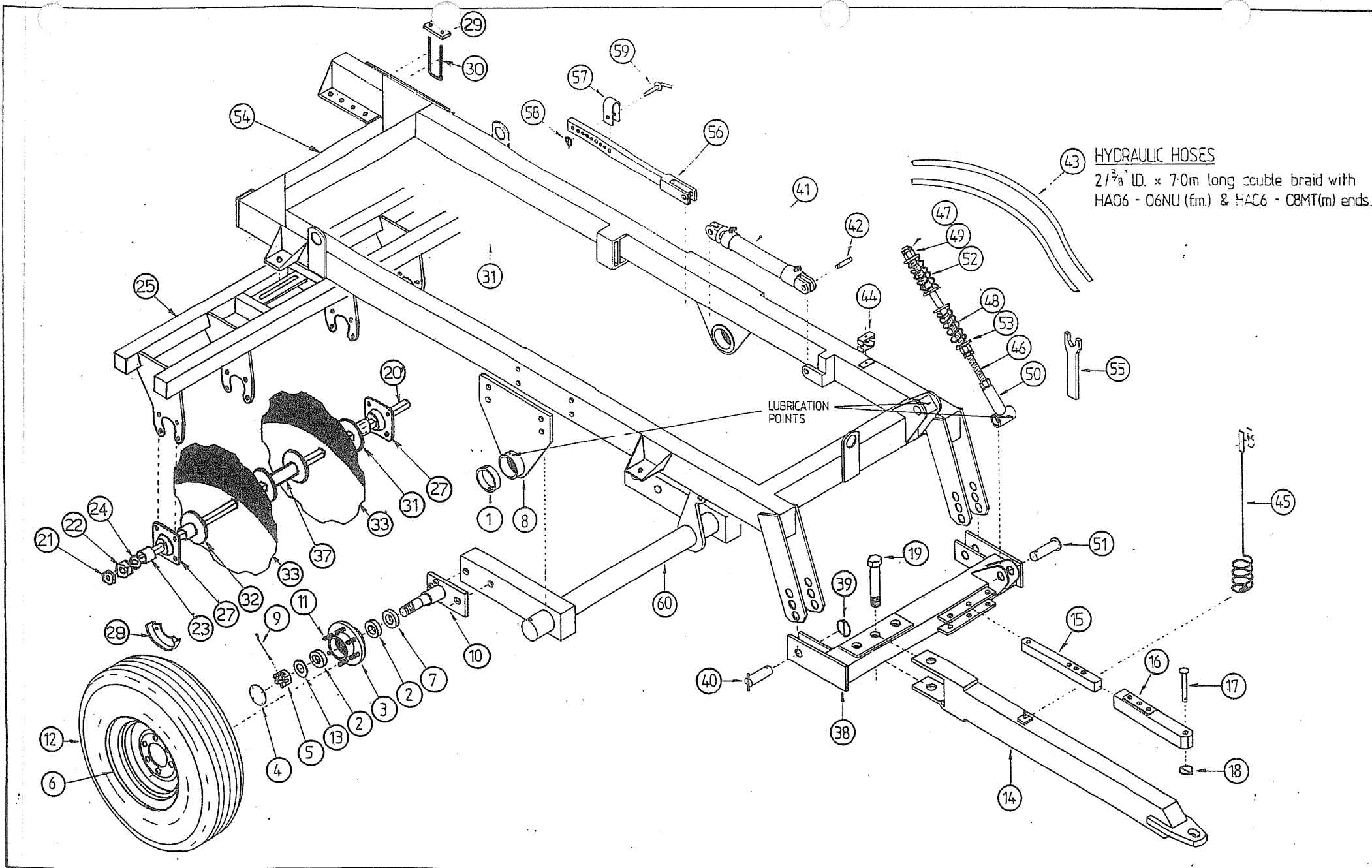
AMENDMENT TO PARTS LIST.

SUPERCEDED PARTS.

Ref No:	Part No:	Description:
25	5259-5262	Gang Assembly Beam.
26	5074	} Refer to New Part No: 61
27	5072	
28	5075	
30	5073	
31	5263	Gang Assembly Clamp Plate.
34	5044-5046	} Hanger Plate Assembly.
35	5267	
36	5268	

NEW PARTS.

Ref No:	Part No:	Description:
25	#	5359 Gang Assembly Frame-20 Plate Back
		5360 Gang Assembly Frame-20 Plate Front
		5361 Gang Assembly Frame-24 Plate Back
		5362 Gang Assembly Frame-24 Plate Front
		5363 Gang Assembly Frame-28 Plate Back
		5364 Gang Assembly Frame-28 Plate Front
		5365 Gang Assembly Frame-32 Plate Back
		5366 Gang Assembly Frame-32 Plate Front
61		5367 Gang Assembly Regreasable Bearing
62		5368 Gang Assembly U-Bolt
63		5369 Gang Assembly U-Bolt Clamp Plate



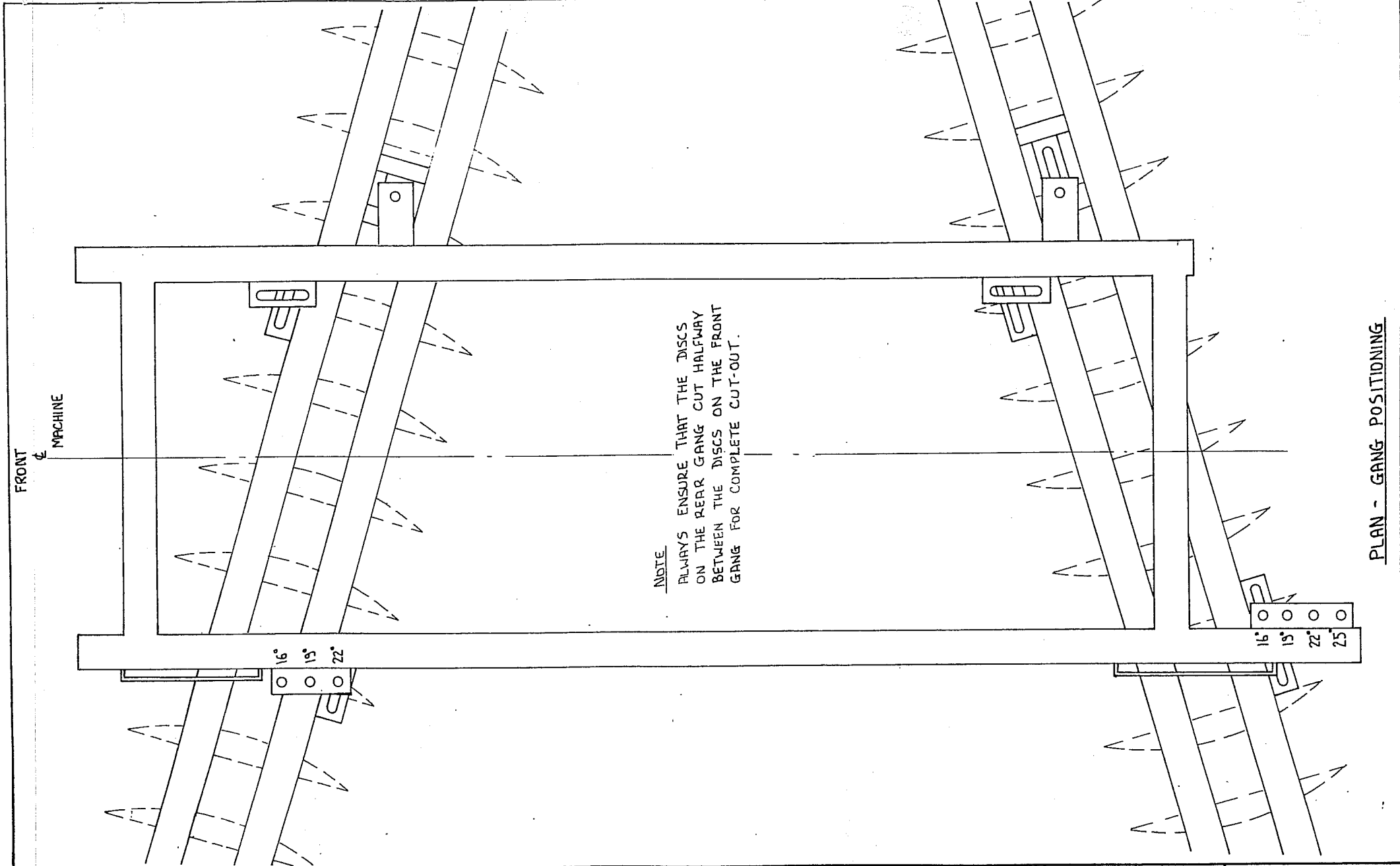
BONEL BROTHERS PTY. LTD.

B60-700 series Offset Disc Harrow

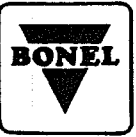
COPYRIGHT: THIS PROPERTY AND DESIGN SHOWN HEREON IS THE PROPERTY OF BONEL BROTHERS PTY. LTD. AND MUST NOT BE SOLD, LENT, GIVEN AWAY, COPIED, REPRODUCED, OR OTHERWISE DIVULGED TO 3RD PARTIES OR USED FOR MANUFACTURING OR OTHER PURPOSES WITHOUT WRITTEN PERMISSION OF BONEL BROTHERS PTY. LTD.
 © BONEL BROTHERS PTY. LTD. 1986

ILLUSTRATION N° 06081 C

T.R.G. 24-10-87



PLAN - GANG POSITIONING



BONEL LIMITED

B60-700 SERIES OFFSET DISC HARROW

COPYRIGHT: THIS PROPERTY AND DESIGN SHOWN HEREON IS THE PROPERTY OF BONEL LIMITED AND MUST NOT BE SOLD, LENT, GIVEN AWAY, COPIED, REPRODUCED, OR OTHERWISE DIVULGED TO 3RD PARTIES OR USED FOR MANUFACTURING OR OTHER PURPOSES WITHOUT WRITTEN PERMISSION OF BONEL LIMITED.

© BONEL LIMITED

Drawn T.R.G.	Date 22-6-89	Drw. No. 06089 D
Checked		Revision