

DP1 Heavy Duty

INTRODUCTION

The provision of this information is a requirement of the Health and Safety at Work Act 1974.

The handbook has been designed to help the operator use the machine safely and efficiently.

The presentation and content of the book complies with British Standard 5401 – “Guide for the presentation of operator manuals and technical publications dealing with tractors and machinery for agriculture and forestry”.

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SAFETY NOTES

The following symbols and wording are used throughout the handbook:-

!	<i>WARNING! This calls attention to instructions which must be followed precisely to avoid injury or death.</i>
CAUTION	<i>This calls attention to instructions which must be followed precisely to avoid damage to the machine.</i>
NOTE	<i>This is used for supplementary information.</i>

! SAFETY PRECAUTIONS !

- 1) Read and familiarise yourself with the operating instruction book.
- 2) Take all possible precautions when leaving the tractor unattended, such as lowering the attachment(s), shifting into neutral, setting the parking brake, stopping the tractor engine and removing the key.
- 3) Keep all nuts, bolts and screws tight and be sure that the equipment is regularly lubricated to keep in safe working condition.
- 4) Ensure all guards and covers are in working order and in position before starting work.
- 5) Only use the machine for the tasks mentioned in this book.
- 6) Never operate the machine with persons on or near it.
- 7) Consult the Tractor Manufacturer's Manual for instructions on mounting implements and safe working methods.
- 8) Observe all safe driving procedures such as reducing speed on slopes and sharp turns.
- 9) Avoid working on ground where there is a risk of the tractor overturning.
- 10) Do not cultivate across the face of slopes.
- 11) Always wear substantial or safety footwear.
- 12) Always avoid loose clothing which may be caught in moving parts.
- 13) Always wear gloves when handling machines or parts with sharp edges.
- 14) Never allow children or untrained persons to operate the machine.
- 15) Never carry out repairs or adjustments to a mounted machine unless the tractor engine is stopped and the machine firmly supported or lowered to the ground.

SPECIFICATIONS

The Dowdeswell DP1 Heavy Duty is a fully mounted reversible plough for crawler tractors only, designed to withstand hard work under difficult conditions.

It features a pneumatic depth control wheel which can be used for transporting the plough on the road with a wheeled tractor.

The DP1 Heavy Duty is available in 5 or 6 furrow basic forms, each one being extendable by one furrow.

Tractor Mounting	Cat. 2, Cat. 3, Wide Cat. 3
Turnover	4" bore double-acting ram with cross-line relief value
Construction	150 x 150 Main Beam
Transport	Locked in the central 'butterfly' position, heavy duty pneumatic wheel to take the weight off the tractors.
Suitability	Tractors up to 160 h.p.
Dimensions	12" or 14" furrow width at 34" Interbody Clearance 12", 14" or 16" furrow width at 39" Interbody Clearance 25 ½" or 27" Underbeam Clearance.

OPERATING INFORMATION

Connecting to the Tractor

!Warning!

Never position yourself between a tractor and an implement.

Never put your fingers into bolt holes or linkage holes.

Never position yourself beneath components or machines that are not properly secured and supported.

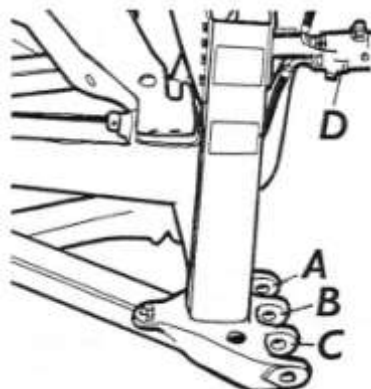
The tractor must have a 3-point linkage, preferably of the swinging type, and a spare double-acting hydraulic service.

- 1) Ensure that the plough is on a firm, level surface.
- 2) Check that the tractor lift arm ball ends are of equal height from the ground.
- 3) Reverse the tractor up to the plough and engage the ball ends or quick couplers in the required position:-

Position 'A' :	Category 2
Position 'B' :	Category 3
Position 'C' :	Category 3 wide

4) Adjust the tractor top link as necessary and connect it to either the Category 2 or 3 position on the plough as required.

5) Fit the necessary hydraulic couplings for your tractor to the two hoses leading from the valve block 'D' and connect them to a spare double-acting service.



Preparing for Work

When you receive your plough it will be locked in the central ‘butterfly’ position. The plough is put into the working position as follows:-

1) Raise the plough into the fully mounted position with the wheel off the ground.

CAUTION Take care that the plough does not strike the tractor cab or fuel tank as the top link may be shorter than when it has been adjusted for work.

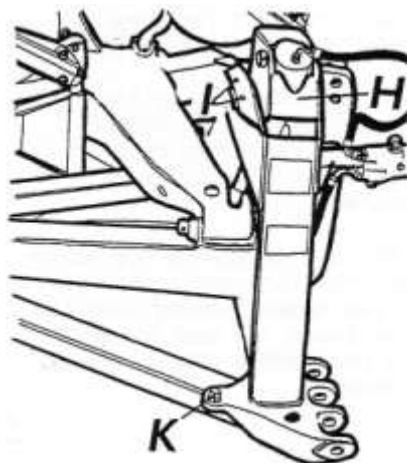
2) Remove one of the two transport locking pins ‘I’.

3) Operate the hydraulics to slowly extend the ram and lower the plough into the working position.

NOTE It may be necessary to give the plough a slight push to release it from the central position.

4) Continue to operate the hydraulics until the plough beam has seated on stud ‘K’ and the rocker ‘H’ has moved across to the opposite side.

5) Release the spool valve as soon the rocker stops moving. There should be a gap of approximately 25mm (1”) between the rocker and the side of the ‘A’ Frame; in this position the plough is locked.



Turning at the Headland

It is recommended that the reverse turn method is used as this minimizes the headland width. The sequence of operations is as follows:-

- 1) At the end of the bout lift the plough out of work and turn towards the ploughing.
- 2) Reverse towards the un-ploughed land.
- 3) Operate the spool valve to contract the turnover ram, this lifts the plough into the central position.
- 4) As the plough passes over, centre reverse the spool valve to extend the ram; this pushes the plough down on the opposite side. With practice, a very smooth turnover can be obtained.
- 5) Continue to operate the hydraulics until the plough beam has seated on the stud 'K' and the rocker 'H' has moved to the opposite side.
- 6) The plough is locked in position when the rocker stops moving and the spool valve is released.

NOTE The plough will not turn over with the rocker on the same side as the beam.

ADJUSTMENTS

Ploughing Depth

The depth of the front of the plough is set by the tractor linkage; i.e. the height of the lift arms and the length of the top link. The linkage must be set in the float position.

The depth of the rear of the plough is controlled by the plough wheel. This is adjusted by turning the handle 'M' on the wheel beam. Always return the handle to its parking latch to avoid damaging it.

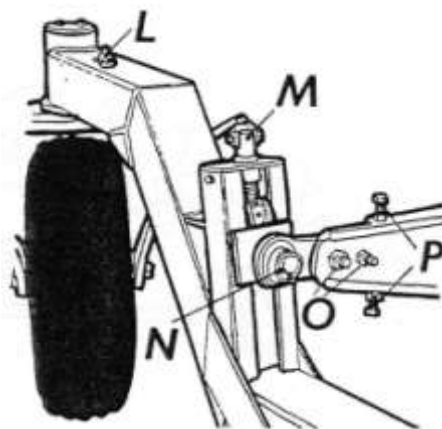
NOTE Depending on which sort of 3 point linkage you have, the best way of reducing depth is to lengthen the hydraulic top link or shorten the hydraulic drop arms.

Any discrepancy between left and right hand ploughing depth can be corrected by adjusting the wheel arm ball joint.

1) Slacken the two bolts 'O'.

2) Adjust studs 'P' in the appropriate direction to offset the ball 'N'. Note that any movement has double the effect when the plough is turned over.

3) Re-tighten all bolts when the adjustment is satisfactory.



Verticality

Studs 'K' are used to set the plough legs upright when working and are individually adjustable left and right hand.

This adjustment can also be used to compensate for wear in the tractor linkage.

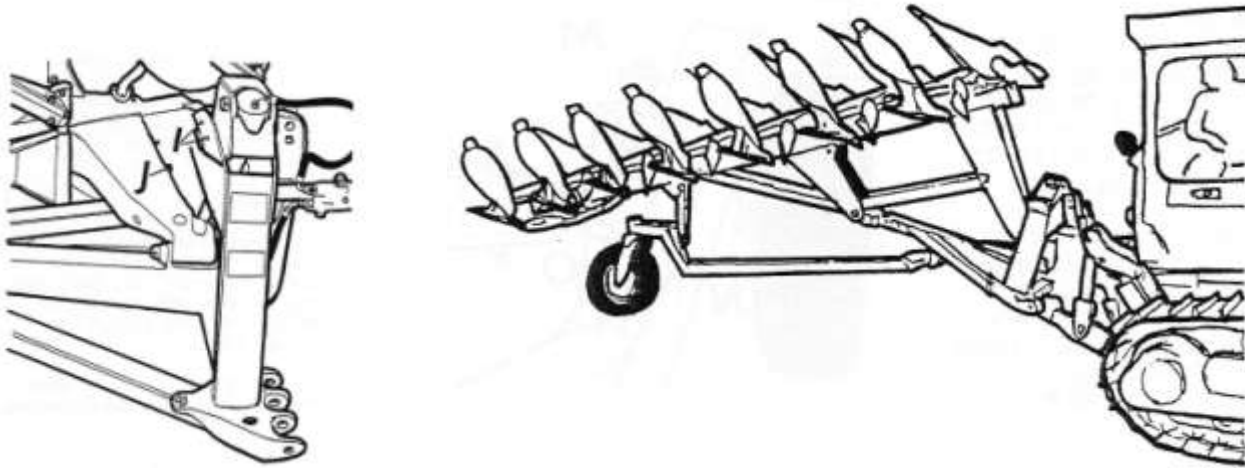
Wheel Slew Pin

The wheel slew pin 'L' is used to limit the movement of the wheel and has two positions. Normally the position should be used as this allows the wheel to castor into line with the plough.

In very sticky conditions it may be helpful to move the slew pin into the rear hole as this restricts the wheel movement more, causing it to crab a little and so help keep it clean.

TRANSPORT

For transporting the plough either by road or land, set it as shown below:-



- 1) Raise the plough clear of the ground in the working position.
- 2) Place one of the two pegs in the hole 'I' that is furthest from the plough beam.
- 3) Operate the turnover gently to raise the plough into the central position. The stop 'J' on the turnover arm will strike against the peg.
- 4) Insert the second peg in the second hole. The plough is now mechanically locked.
- 5) Remove the slew pin from the wheel beam to allow the wheel to castor fully.

CAUTION Always remove the top link when transporting the plough in this position.

SKIMS AND DISCS

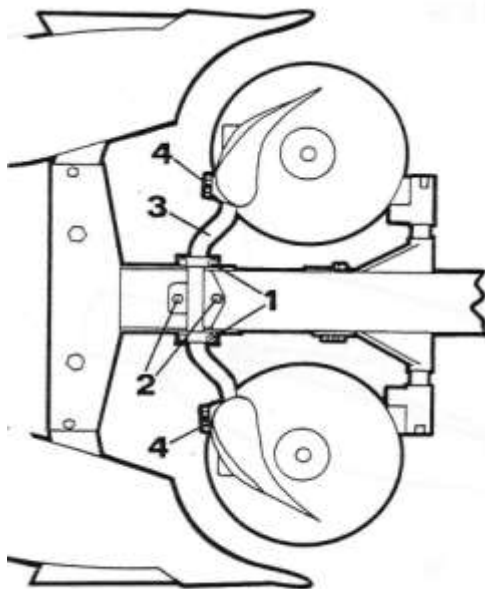


Fig. 9

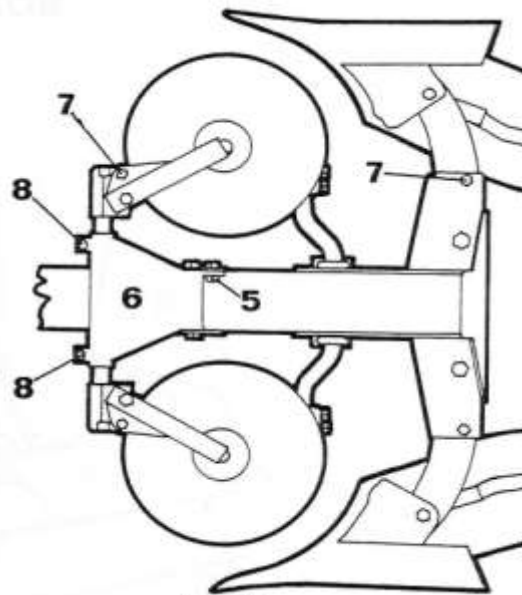


Fig. 10

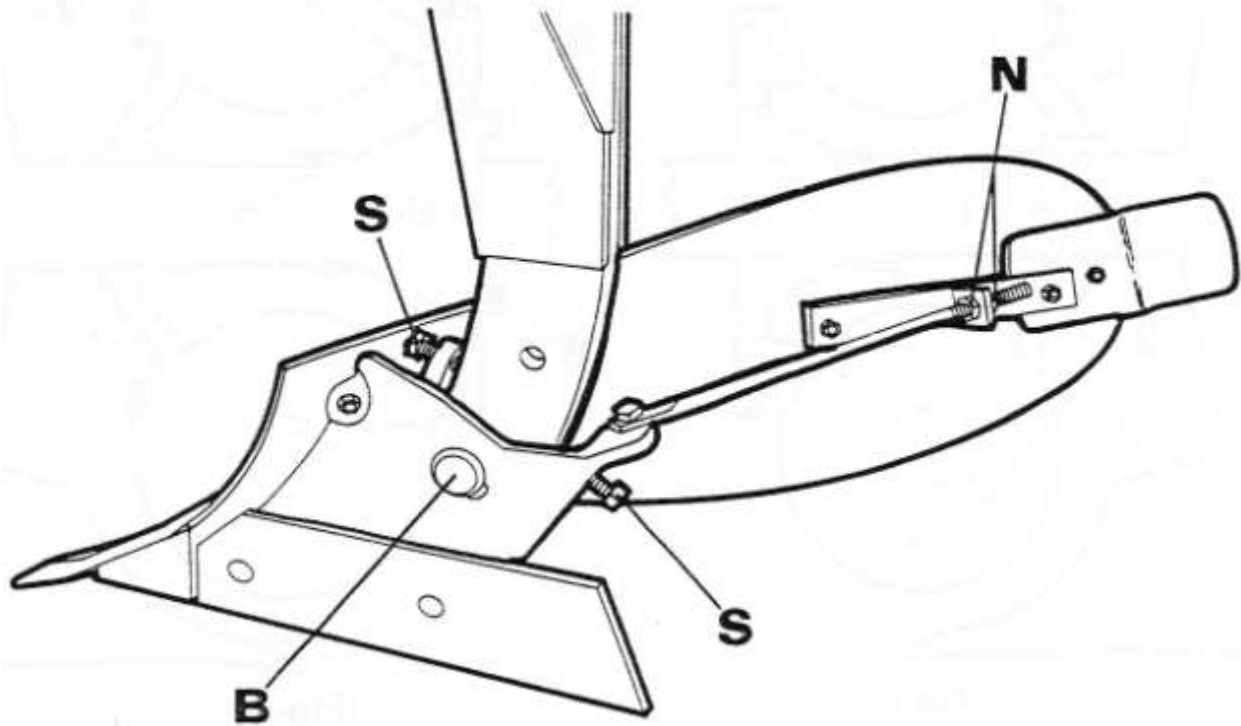
Disc adjustment is best carried out with the skim assemblies removed, this is done by slackening nuts '1', Fig. 9 and unhooking the 'U' bolts. The discs are mounted in pairs on bracket '6', Fig. 10 and the width of cut is adjusted by slackening the bolt '5', Fig. 10 and swinging the bracket to give the correct disc position. Once the width of cut is correct the bolts must be well tightened.

This adjustment sets both left and right hand discs. The disc depth adjustment is set individually by sliding the disc shank into bracket '6', Fig. 10 and clamping them with nut and bolt '8'. The skims should be set up with the plough in the ground as this guarantees that the disc is in its correct working position. The position of both left and right hand skims are set at the same time by twisting shank '3', Fig. 9. This is done by screwing the studs '2', Fig. 9 in the appropriate direction. The skims should be set so that the point is just clear of the disc but the rest of the skim should be clear of the disc to stop trash building up between the skim blade and the disc. The depth and angle of the skim itself is controlled by setting its position on shank '3', Fig. 9 and locking with studs '4'. Do not over tighten stud '4'.

There are two positions for the skim assembly on the beam, chose which position gives the best results in the field, the main advantage of the rear position is that it increases the clearance between the skim and the leg in front, which is a big advantage when ploughing in straw and other trash.

Bolts shown '7', are shear bolts and are there to protect the plough frame, disc assemblies and bodies. These must always be replaced with genuine shear bolts as ordinary bolts will damage the holes and will not shear at the correct loading.

BODIES



PITCH ADJUSTMENT

The pitch of the bodies is adjusted by slackening the nut on the mushroom-headed bolt 'B', turning setscrews 'S' in the required direction and re-tightening the nut.

Ensure that the pitch is equal on all bodies by measuring the underbeam clearance to the points.

MOULDBOARD STAYS

Adjustment is carried out simply by the movement of nuts 'N'. To get all the bodies the same, set a pair of right and left hand bodies at the same angle by measuring from the tip of the mouldboard to the shear bolt of the next leg back on the plough. Now set the remaining mould-boards on each side so there is an equal clearance between the end of each one (equal to the point to point clearance).

MAINTENANCE INSTRUCTIONS

- 1) Grease disc bearings daily and twice daily in wet conditions.
- 2) Grease all other nipples every two days.
- 3) Check all nuts and bolts for tightness daily.
- 4) Check hydraulic hoses daily for chaffing or splitting and replace if necessary.
- 5) Replace wearing parts as necessary to prevent damage to non-wearing parts.
- 6) Check bushes and bearings weekly for wear and replace as necessary to prevent damage to housings.

CAUTION Always use genuine **DOWDESWELL** shear bolts or damage will occur to holes.

- STORAGE**
- 1) Clean the machine thoroughly.
 - 2) Lubricate all grease points.
 - 3) Replace any wearing parts as necessary.
 - 4) Cover wearing surfaces with a rust preventative.
 - 5) Touch up the paintwork as necessary.

!Warning!

When the plough is removed from the tractor ensure that it is securely positioned on firm, level ground with parking stand(s) in position.

!Warning!

If an extra furrow attachment is removed from the plough it should either be laid down horizontally or carefully secured vertically to prevent it from falling or being pulled over.