THE

ROTARY HOE

'Bantam'

INSTRUCTION BOOK & SPARE PARTS LIST

Publication No. RBBO/1/50

FOREWORD

This Owner's Handbook has been written with the object of providing in the simplest possible manner a complete guide for the owner in the operation of the Rotary Hoe "Bantam."

Detailed instructions for the larger maintenance operations, especially those which may become necessary after long service, are not included in this publication, as such work should be entrusted to the Rotary Hoe Distributor or Dealer.

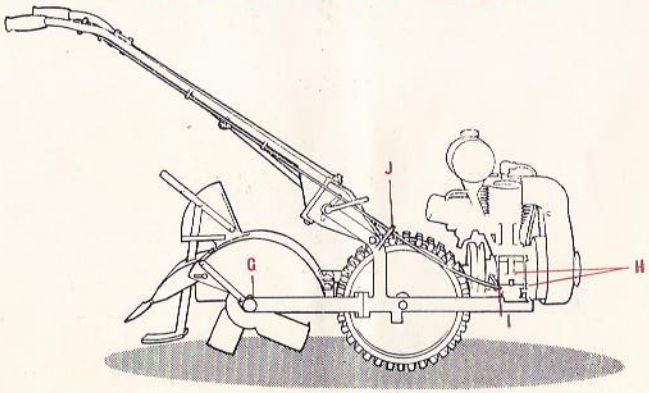
ROTARY HOES LTD.

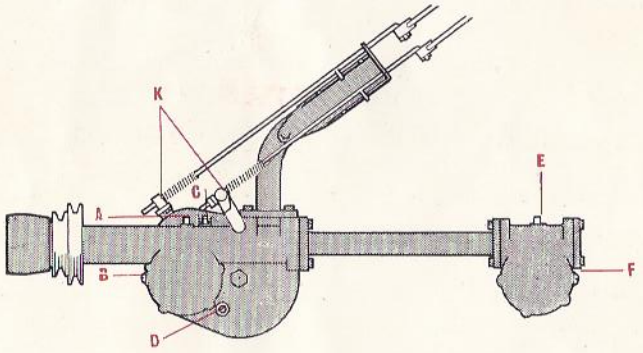
STATION ROAD, EAST HORNDON, ESSEX, ENGLAND

Tel. No.: Herongate 222 (6 lines) Cables: Rotovate, Brentwood

SERVICE DISTRIBUTORS IN EVERY COUNTY OF GREAT BRITAIN
AGENTS THROUGHOUT THE WORLD

LUBRICATION CHART





FILLING AND OILING POINTS

A Filler for Worm Drive Gear-box.

B Oil level screw for Worm Drive Gear-box.

C Filler for Change Speed Gear-box.

D Oil level screw for Change Speed Gear-box.

E Filler for Rotor Drive Worm Gear-box.

F Oil level screw for Rotor Drive Worm Gear-box.

G Rotor Axle Cap.

H Engine Mounting Oil Cups (two on offside and two on near side).

I Clutch Lever in Fulcrum Bracket and associated moving parts.

J Clutch control rod at Brackets.

K Drive Gear and Rotor Clutch Levers and Control Rods.

All other moving parts as required.

FOR ENGINE SEE ENGINE INSTRUCTION BOOK

THE

ROTARY HOE

"Bantam"

GENERAL INFORMATION

ENGINE: A separate Engine Instruction Book is provided with each machine.

GEAR-BOX (*see Diagram* 2): The primary drive from the engine is by V belt to high- and low-ratio pulleys. The forward belt pulley gives high ratio, i.e. the fast speed, and the rear pulley gives the low ratio, i.e. the slower speed. The drive is then by worm shaft to the two-speed gear-box. Four travel speeds are thus provided.

ROTOR (*see Diagram* 3): The drive to the rotor is by worm gear with its separate control. The rotor has a cultivating width of 10″ with flanges carrying eight specially shaped hoe blades, four of which are right-hand and four left-hand.

DIMENSIONS: Overall length 5′ 2″; overall width 1′ 3″; Weight including Rotor unit 135 lb. Working depth 4″ on lay ground; 6″ to 7″ on worked garden soil. This is easily adjustable in ½″ stages.

LUBRICATION

(*See Chart opposite.*) Use gear oil *SAE* 140. There are eight filling and oiling points:—

1. MAIN GEAR-BOX A square headed plug A will be found on top of the worm gear-box and another C on top of the change-speed gear-box. Fill and maintain both boxes up to the level plugs provided B and D. Replace plug.

2. ROTOR Remove square headed filler plug E on top of the rotor worm drive box and fill and maintain up to level plug provided F. Replace plug.

3. ROTOR AXLE CAP Remove screw plug G and fill with oil. Replace plug.

4. ENGINE MOUNTING OIL CUPS Maintain with oil the four engine mounting oil cups : two of each are on the main frame at either side of the engine. These are marked H on the Lubrication Chart.

NOTE—Check all filling and oiling points after every eight hours work. IT IS ESSENTIAL THAT THE OIL IN THE GEAR-BOX AND IN THE ROTOR (plugs A C and E) SHOULD BE TOPPED UP AFTER EACH EIGHT HOURS WORK.

Oiling of points I, J, K as shown on the Lubrication Chart, and all other moving points, should be carried out periodically.

ADJUSTMENTS

ENGINE DRIVE BELT—(Part No. B.47). A simple wing nut has been fitted to enable the tension of the engine drive belt to be adjusted. This is located on the right-hand side of the engine and is spring loaded, which means that tension is applied by tightening it.

PULLEY ASSEMBLY—(Part No. B.48). To counteract the tendency of the pulley to creep when the engine is idling a fibre block (Part No. B.44) maintains a slight pressure against the side of the driving pulley wheel. After gradual wear has taken place the block should be moved nearer to the pulley and elongated holes have been provided to permit this.

CLUTCH—The clutch control rod (Part No. B.11) is mounted between the handle bars. To engage pull upwards and to disengage push sharply downwards.

GEAR CONTROL—(*See Diagram* 2). The upper gear control rod (Part No. B.98) operates the travel-speed gear-box while the lower (Part No. B.99) operates the rotor gear. The neutral position of the travel-speed box is in the centre of the gear control gate. To select top gear push the gear control rod downwards and engage the pin in the appropriate slot in the gate. To select low gear pull the gear control rod upwards and engage the pin in the upper gate slot.

To engage the rotor drive gear push the lower control rod downwards until the selector pin engages in its appropriate slot in the gate. To adjust either of these gear control rods, the lower half is provided with a threaded end which enables the rods to be lengthened or shortened. These adjustments should really only be necessary if the rods become bent or distorted.

OPERATING INSTRUCTIONS

Ensure that the two gear-levers are both in the neutral position. Start the engine as explained in the separate Engine Instruction Handbook.

To commence work—having started the engine select the travel speed required for the particular job to be undertaken and then engage the rotor gear (see directions above) and engage the clutch by pulling the control rod upwards.

During the first twenty-four hours of work, the Bantam engine should be used only for light cultivation so that the engine may be properly run in on a light load. For this light work the low-ratio gear, i.e. the rear pulley, should be used.

Generally speaking, when operating on cultivated land the high-ratio pulley can be used, but the low-ratio pulley, i.e. the rear one, should always be used for working virgin ground or when operating on particularly heavy soil. Never overload the engine by using high-ratio when the load is too heavy for the engine to carry with ease.

The high-ratio pulley should be used when the Bantam is being used as a grass mower, hedge clipper and for its other ancillary jobs.

If the operator wishes to work the machine from the side in order to avoid walking on the cultivated land, all that is necessary is to pull the handle to the side where he wishes to work, at the same time holding the machine steady with the other hand. This swings the handle bars to the side.

ADVICE ON HANDLING

It will be found that the best results will be obtained by the user putting the machine into work in easy stages. At the first cutting of virgin ground 2″ depth only should be attempted and then the required depth obtained by putting the rotavator blades in progressively deeper on each occasion.

To avoid an accumulation of soil choking the rotor and causing the use of unnecessary power, always keep the rear shield well raised so that the blades will throw the soil clear.

On lumpy ground the operator should not try to counteract the jumping of the machine, but should merely hold the handle bars lightly. Until the operator is fully accustomed to using the machine the rotor should be put out of gear at the end of each row before the machine is turned round, but with experience users will be able to lift the machine and turn it round while the rotor is still revolving.

Examine the hoe blades daily. If any are bent out of line so that the back of the blade is rubbing hard on the soil, straighten them with the hooked bar provided with tool kit.

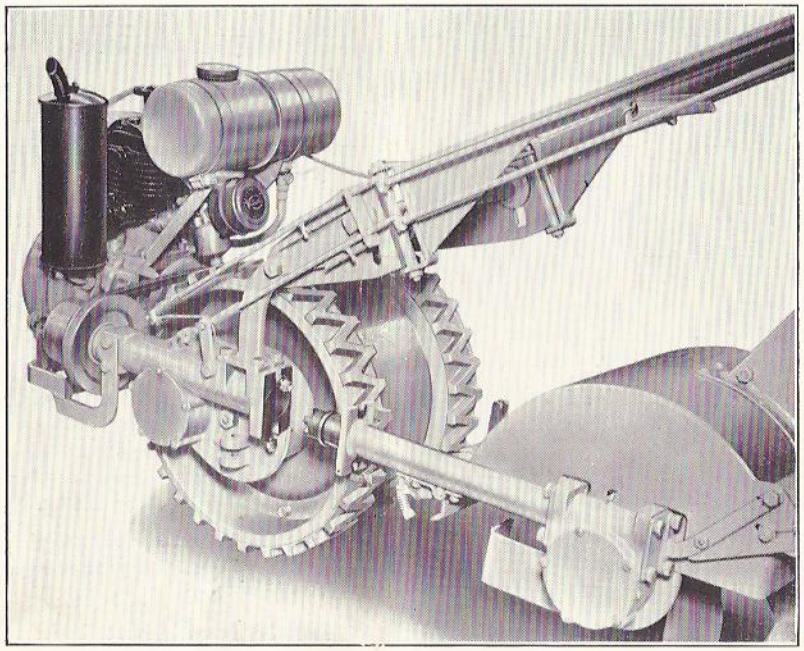
It is essential that the cutting edge only should touch the soil and the back have clearance. If the edge of the blade should wear thin, and tend to turn inwards, leaving a heavy shoulder rubbing on the ground, this can be rectified by placing the end of the setting bar behind the blade and tapping the edge into position with a hammer. The efficiency of the machine depends largely on the condition of the hoes. If the blades become bent through striking solid obstacles in the ground and are not straightened, they will take more power to drive, the quality of the work will be poor and the blades will wear quickly.

A keen look-out, therefore, should be kept for bent blades, which should be straightened as soon as they are noticed.

It sometimes happens that a stone is trapped between the blades and the shield. When this occurs, the rotor will automatically stop. The operator should then put the rotor out of gear, lift the machine by its handle bars and turn the rotor in reverse by pushing sharply on one of the blades with the foot.

PREPARING THE MACHINE FOR USES OTHER THAN CULTIVATING

TO REMOVE ROTOR—The rotor unit may be quickly detached by undoing the two swivel bolts (Part No. B.50) on the drive shaft housing at the rear of the gear-box on the left-hand side of the machine and also the two swivel bolts (Part No. B.27) on the main frame on the right-hand side of the machine (in both cases looking from the rear).

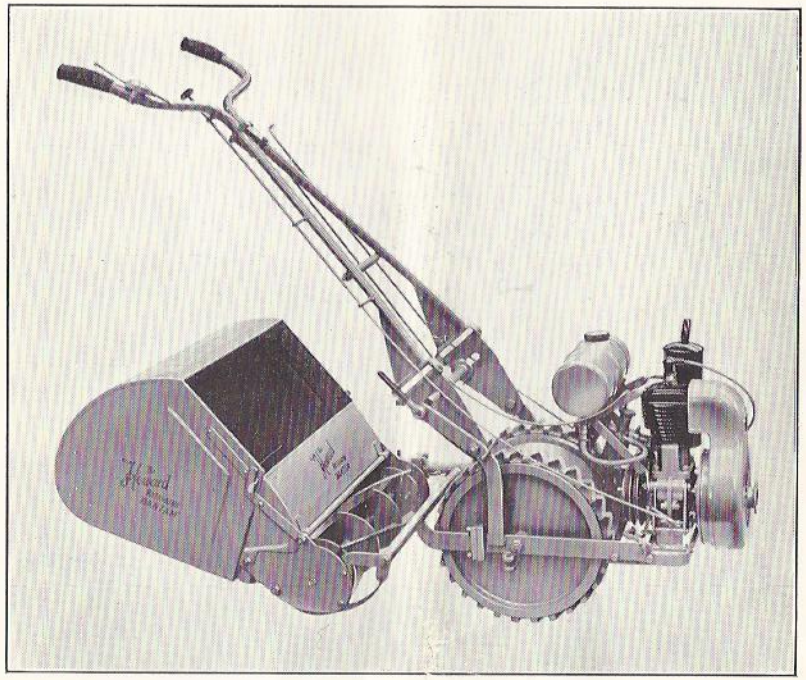


Removing the Rotor

Care should be taken when removing the rotor unit that oil from the dog clutch chamber is not allowed to escape. This may be almost completely avoided if the machine is tilted upwards and the engine mounting allowed to rest on the ground.

FITTING THE ROTARY GRASS CUTTER

This attachment is fitted in place of the rotor. The drive shaft is located in the same position as that of the rotor unit. Similarly the support arm on the right-hand side of the mower fits up to the main frame. When both sides are in position they should be clamped securely by the swivel bolts. The gear-box housing the drive on the mower cylinder is provided with an oil filler plug and this box should be kept topped up with oil as required.



The 'Bantam' fitted as a Rotary Grass Cutter

FITTING THE HEDGE CLIPPER

Insert the spring inside the power-take-off pulley at the front of the machine making certain that it fits snugly over the boss on the inside face. Insert the clutch disc and fibre disc and the loose plate in that order and at the same time compress the spring. Fit the circlip into the machined groove in the bore of the pulley.

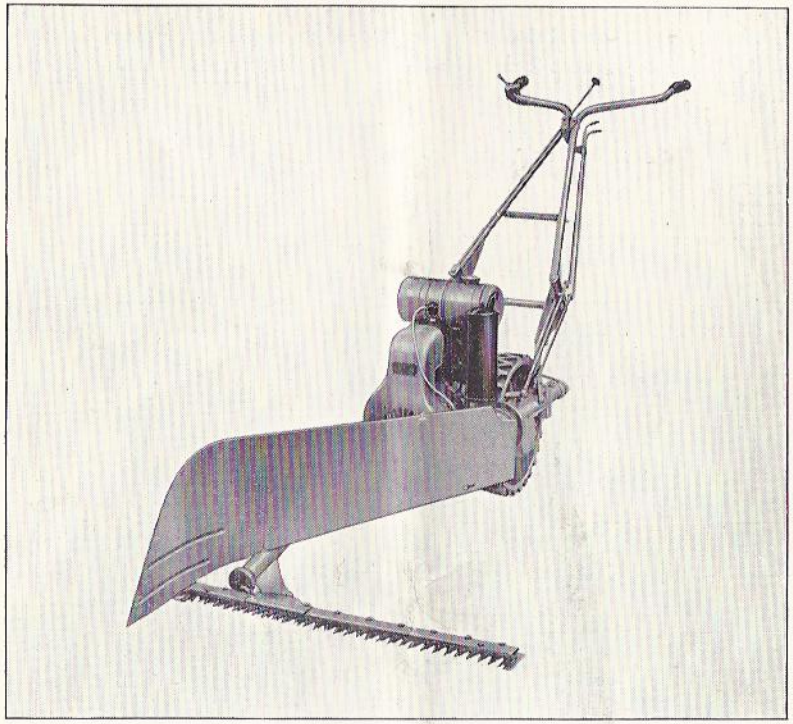
Fit the flexible cable bearing bracket by bolting it to the two holes drilled in the engine mounting, making sure that the bore of the bearing bracket is in line with the triangular hole in the friction clutch disc. Insert the three-cornered end of the flexible shaft through the bracket and right home into the friction disc. Screw the nut on the outer casing on to the thread on the bearing bracket.

Note—After the hedge clipper has been fitted for the first time it may be very simply removed and re-attached, as it is not necessary to dissemble completely all the fitments. All that should be done is to unscrew the nut on the outer casing and pull out the flexible cable.

Using the Hedge Clipper

When using the hedge clipper the road gear should not be engaged. To cut the top of a hedge hold the handle on the cable with the right hand, the cable hanging down, and turn the left-hand handle up to clear the hedge. To cut the side of a hedge turn both handles towards you, and holding the blade level, work in vertical strokes down the side of the hedge, progressing to the left.

FITTING THE RECIPROCATING CUTTER BAR



The 'Bantam' with Cutter Bar fitted

The final drive to the cutter bar is by pulley belt and when it is mounted the cutter bar is in front of the machine. This attachment is fitted in exactly the same way as the lawn mower.

In addition to the two main left and right connecting points there is a steadying strap on the cutter drive shaft housing which should be securely bolted to the front of the main frame.

FITTING THE FURROWING ATTACHMENT

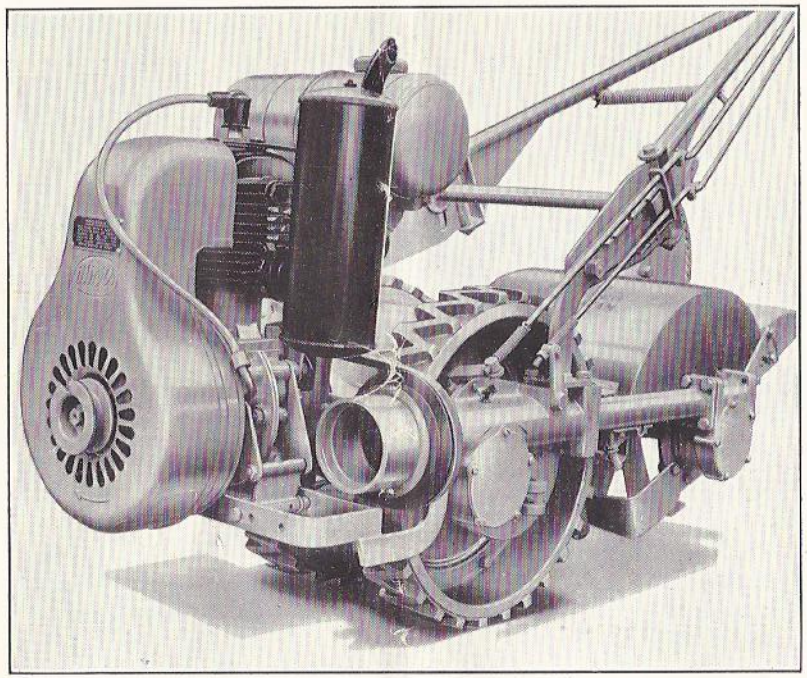
To fit the furrowing attachment, remove the depth control skid (Part No. B.156) slide the skid through the guide inside the furrower ensuring that the shoe of the skid points to the rear, and secure it in position with the clamping bolt provided.

It is important that the point of the furrowing attachment should be not less than $\frac{1}{2}$" above the level of the skid shoe. Re-insert the skid pedestal into its socket and secure it by putting the spring-loaded retaining clamp (Part No. B.161) back into its normal position.

FITTING THE DEPTH CONTROL WHEEL

Remove depth control skid (Part No. 156) and replace it with the depth control wheel. Depth adjustment is carried out in exactly the same way as with the depth control skid.

THE POWER-TAKE-OFF PULLEY

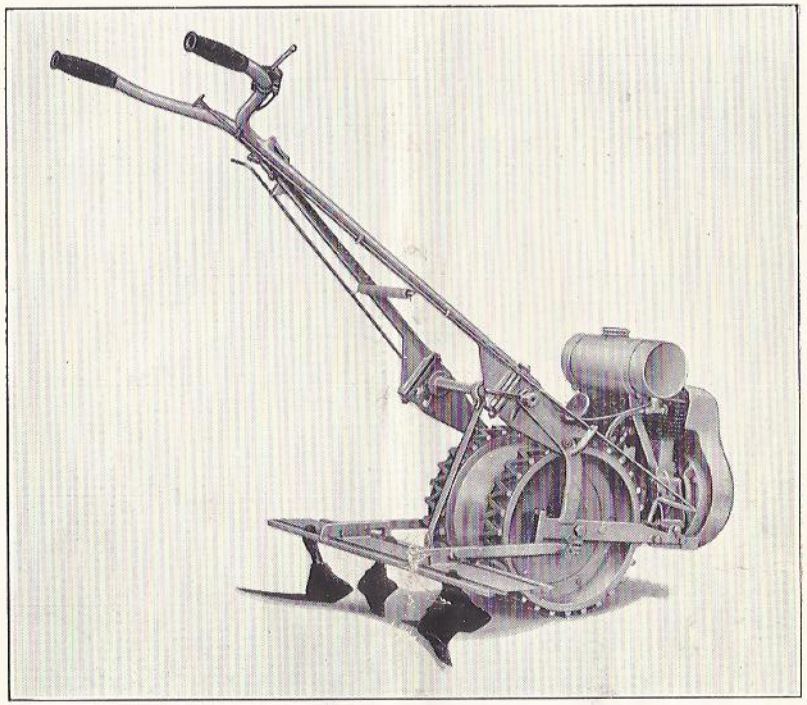


This feature enables the "The Bantam" to be used as a portable or stationary power unit, employing the power of the engine with the travel gear in neutral.

The Power-Take-Off Pulley is situated immediately in front of the Pulley Drive from the engine, and will provide a belt drive for working small Spraying Machines. Pumps, Saw Benches, Lathes, etc.

The speed of the Belt Pulley can be governed by altering the gear ratio as already indicated for changing speed of the machine, and will depend upon the type of apparatus with which the Power-Take-Off is being used.

FITTING THE TOOL BAR



The 'Bantam' Tool Bar fitted for inter-row weeding

This simple Tool Bar is fitted to the front or rear of the frame as required and can be used in conjunction with the Hoes for inter-row cultivation, and also certain other tools, such as small cultivator tines, discs, seeder, etc.

DIAGRAM 1

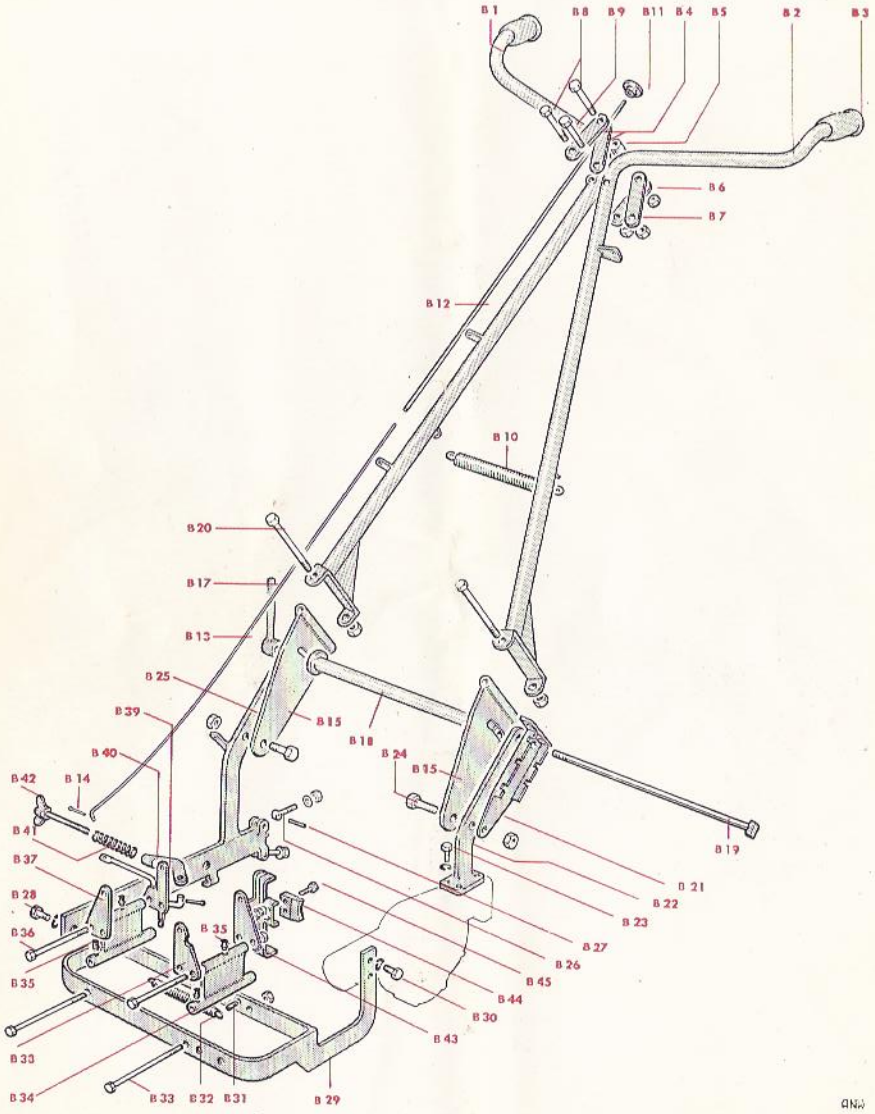


DIAGRAM 2

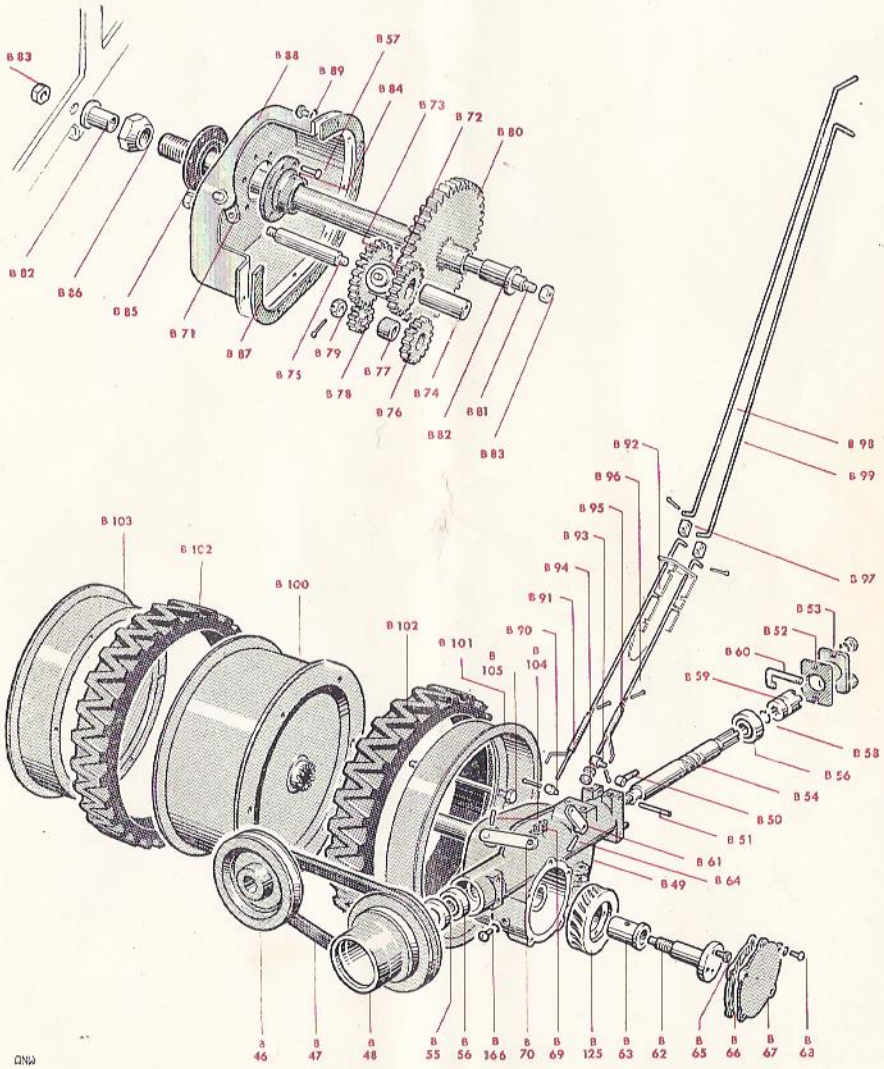
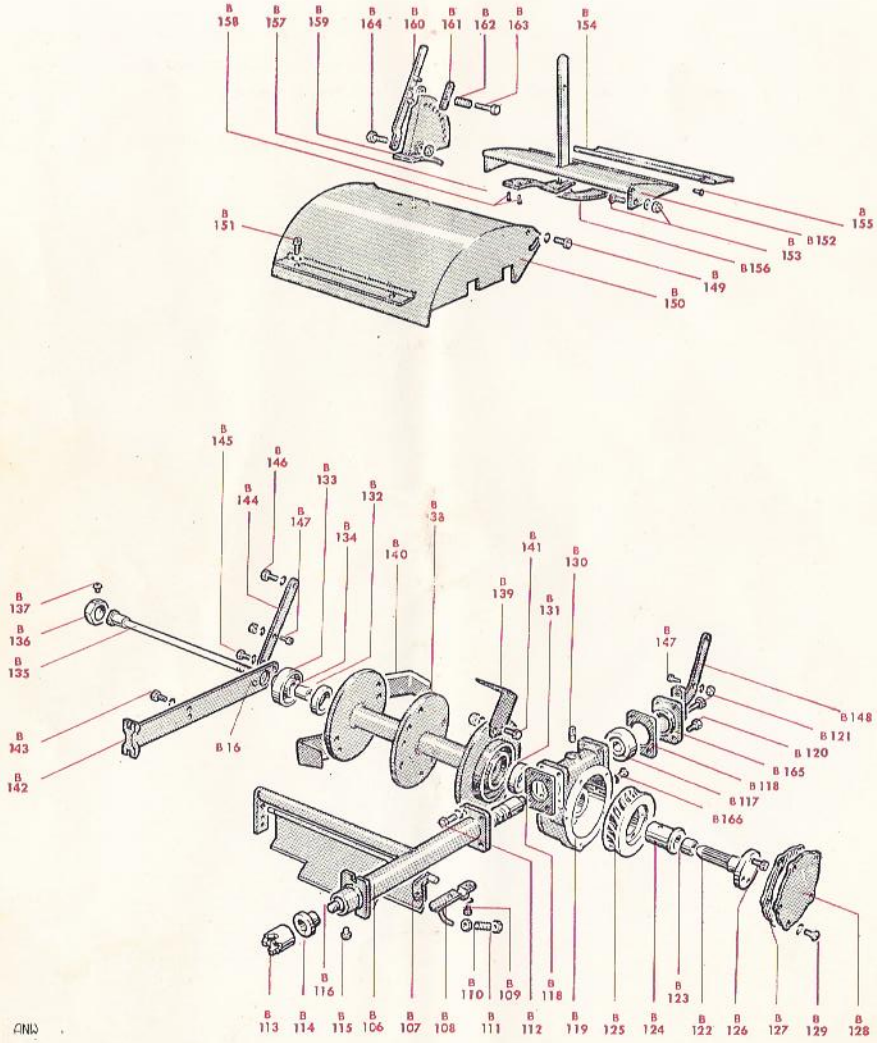


DIAGRAM 3



LIST OF PARTS

for the Rotary Hoe "Bantam"

When ordering parts it is necessary to quote the number of the machine. This number is to be found at the base of the left-hand handlebar support. We cannot guarantee that correct replacements will be supplied unless this number is quoted.

All directions are given from left or right looking to the back of the cultivator.

PART No.	DESCRIPTION
B. 1.	Handle bar, right-hand
B. 2.	,, ,, left-hand
B. 3.	,, ,, grip
B. 4.	,, ,, upper toggle link
B. 5.	,, ,, ,, ,, spacer
B. 6.	,, ,, lower ,, link
B. 7.	,, ,, centre toggle link
B. 8.	,, ,, toggle bolt long
B. 9.	,, ,, ,, ,, short
B. 10.	,, ,, spring
B. 11.	Clutch push rod knob
B. 12.	,, ,, ,, upper
B. 13.	,, ,, ,, lower
B. 14.	Split pin
B. 15.	Handle bar height adjusting plate
B. 16.	Gritseal housing securing pin
B. 17.	Handle bar clamping lever
B. 18.	Handle bar spacing tube
B. 19.	,, ,, adjusting clamp bolt
B. 20.	,, ,, hinge bolt and nut
B. 21.	Rotor and travel selector quadrant
B. 22.	,, support
B. 23.	,, ,, bolts and washer
B. 24.	,, pivot bolt and nut
B. 25.	Front side frame
B. 26.	Captive bolt, nut and washer
B. 27.	,, ,, pin, short
B. 28.	Bolt and washer
B. 29.	Engine cradle
B. 30.	Bolt and washer
B. 31.	Engine cradle tension spring pin
B. 32.	,, ,, ,, spring
B. 33.	Bolt and nut

PART No.	DESCRIPTION
B. 34.	Engine pivot hinge
B. 35.	Cycle flip-flap oiler
B. 36.	Bolt and nut
B. 37.	Engine clamping plate, right-hand
B. 38.	,, ,, ,, left-hand
B. 39.	Clutch fulcrum bracket
B. 40.	Engine clutch positioning lever
B. 41.	Engine clutch positioning lever spring
B. 42.	Clutch lever tension bolt
B. 43.	Brake bracket
B. 44.	,, block
B. 45.	,, ,, fixing screw, nut and washer
B. 46.	Engine pulley
B. 47.	Vee belt
B. 48.	Worm shaft pulley
B. 49.	,, drive gear-box
B. 50.	Captive bolt
B. 51.	,, ,, hingepin (long)
B. 52.	Worm drive housing gasket
B. 53.	Worm drive box spare end cover
B. 54.	,, ,, shaft front
B. 55.	,, ,, ,, gritseal
B. 56.	Bearing L.S.7
B. 57.	Gear-box gritseal rivet
B. 58.	Worm drive shaft circlip
B. 59.	Sliding dog
B. 60.	Rotor dog selector
B. 61.	Rotor selector lever
B. 62.	Gear-box drive shaft
B. 63.	Gear-box drive shaft bush
B. 64.	Rotor selector arm pin
B. 65.	Setscrew
B. 66.	Worm drive gear-box gasket
B. 67.	,, ,, ,, ,, cover
B. 68.	Setscrews and washers
B. 69.	Oil plug
B. 70.	Travel gear lever
B. 71.	,, ,, selector
B. 72.	,, ,, ,, roller
B. 73.	Cluster gear
B. 74.	,, ,, bush
B. 75.	,, ,, shaft
B. 76.	Drive shaft high gear
B. 77.	,, ,, gear spacer
B. 78.	,, ,, low gear
B. 79.	,, ,, nut

PART No.	DESCRIPTION
B. 80.	Bullwheel assembly
B. 81.	Road wheel axle
B. 82.	,, ,, ,, bushes
B. 83.	Axle nut
B. 84.	Bull wheel bearing
B. 85.	Gear-box oilseal
B. 86.	Roadwheel clamping nut
B. 87.	Gear-box gasket
B. 88.	Gear-box
B. 89.	,, ,, fixing screws and washers
B. 90.	Travel selector eyebolt
B. 91.	,, ,, spring
B. 92.	,, ,, rod
B. 93.	Rotor selector eyebolt
B. 94.	Locknuts
B. 95.	Rotor selector spring
B. 96.	,, ,, rod
B. 97.	,, and travel trunnion nut
B. 98.	Travel hand connecting rod
B. 99.	Rotor hand connecting rod
B. 100.	Roadwheel drum
B. 101.	,, loose rim
B. 102.	Tyre
B. 103.	Roadwheel iron rim
B. 104.	Travel selector arm pin
B. 105.	Roadwheel clamping bolts
B. 106.	Rotor drive shaft housing
B. 107.	Wheel scraper assembly
B. 108.	Pivot bracket
B. 109.	Setscrew and washer
B. 110.	Pivot bracket spring
B. 111.	Locknut
B. 112.	Setscrew and washer
B. 113.	Fixed dog
B. 114.	Rear drive shaft bush
B. 115.	Set screw
B. 116.	Worm drive shaft gear
B. 117.	Bearing L.S.7 A.C.F.
B. 118.	Drive shaft housing gasket
B. 119.	Rotor worm housing
B. 120.	Setscrew
B. 121.	Setscrew
B. 122.	Rotor drive shaft
B. 123.	,, ,, ,, sleeve
B. 124.	,, worm housing bush
B. 125.	Worm wheel

PART No.	DESCRIPTION
B. 126.	Setscrew
B. 127.	Rotor worm drive housing gasket
B. 128.	Worm drive gear-box housing cover
B. 129.	Setscrew and washer
B. 130.	Oiling plug
B. 131.	Drive shaft gritseal
B. 132.	Rotor stub axle gritseal
B. 133.	Rotor stub axle gritseal housing
B. 134.	Rotor stub axle bearing
B. 135.	,, ,, ,, and rotor drawbar
B. 136.	,, ,, ,, nut
B. 137.	,, ,, ,, oiling screw
B. 138.	,, assembly
B. 139.	Blade, right-hand
B. 140.	,, left-hand
B. 141.	,, bolts, nuts and washers
B. 142.	Rear side frame
B. 143.	Setscrew and washer
B. 144.	Shield side support, right-hand
B. 145.	Setscrews and washer
B. 146.	,, ,, ,,
B. 147.	,, nuts and washers
B. 148.	Shield side support, left-hand
B. 149.	Setscrew and washer
B. 150.	Front shield
B. 151.	,, ,, setscrew, nut and washer
B. 152.	Rear shield
B. 153.	,, ,, clamping bolt, nut and washer
B. 154.	Trailing shield
B. 155.	,, ,, hinge pin
B. 156.	Depth control skid
B. 157.	,, ,, ,, support
B. 158.	Rivets
B. 159.	Depth control quadrant
B. 160.	,, ,, lever
B. 161.	,, ,, spring clip
B. 162.	,, ,, spring
B. 163.	,, ,, spring clip bolt
B. 164.	,, ,, lever fulcrum bolt
B. 165.	Rotor worm housing end cover
B. 166.	Oil level plug and washer (3)

Publication No. RBBO/1/50.

Produced by Larder & Stevens Ltd. Printed in England by Ernest J. Day & Co. Ltd.