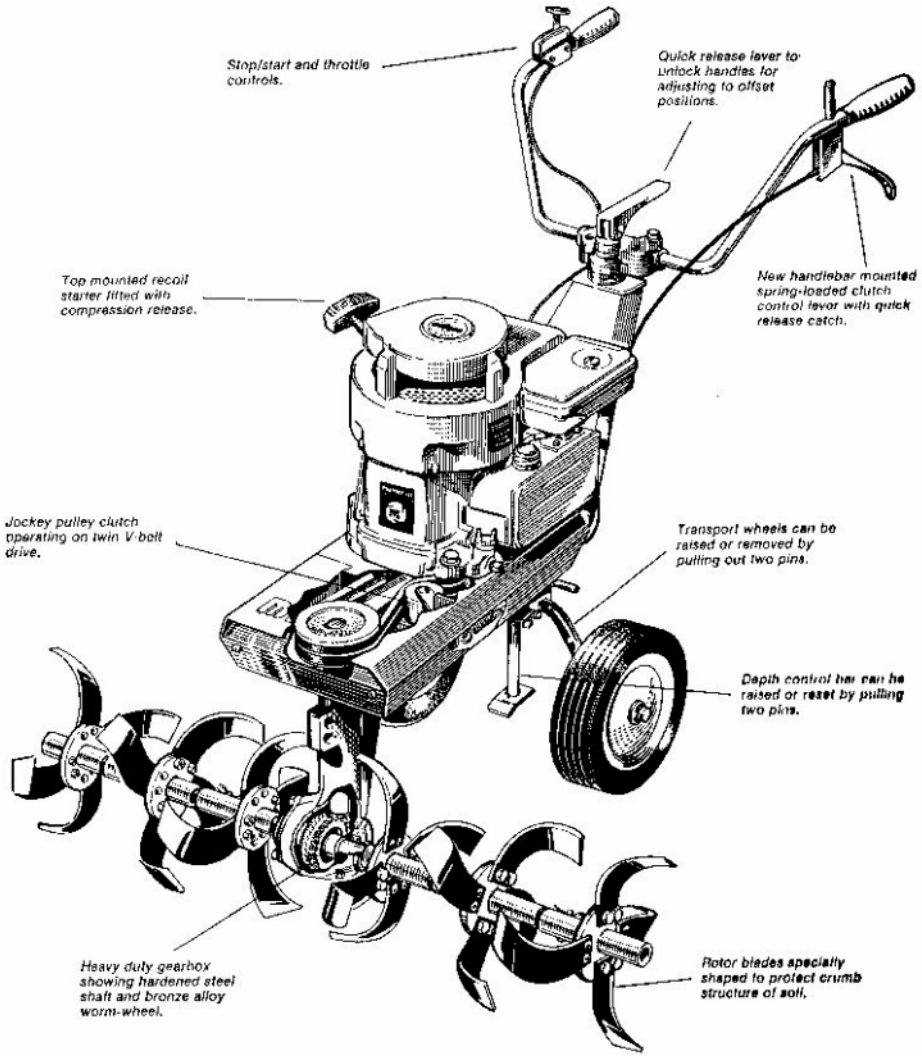
Mountfield M1
Cultivator Tiller Rotavator

Manual –
Operating & Maintenance
Instructions- Spare Parts List



Description

Engine

Your M1 Cultivator may be of 3.5, 4 or 5 h.p., depending on which model you have purchased. All three engines are 4 stroke type, lubricated by a wet sump system and fuelled with neat petrol (not petrol and oil mix).

Gearbox

This unit is a strongly engineered worm and worm-wheel gearbox driven by twin V-belts. The horizontal mainshaft forms the mounting for the pair of basic digging rotors. Lubrication is by a supply of gearoil (specification Castrol 'D' or Castrol Hi-Press) contained in the base, with a square-headed filler plug for access.

Chassis Unit

This may be regarded as a power pack which, when fitted with the gearbox at the front and the axle mounting and wheels at the rear, makes up a cultivator. Alternatively, the power pack may be fitted to the grass cutter attachment. The changeover is simple, as one securing nut is all that has to be loosened and removed. A special spanner is provided to ensure easy tightening of this tie-bar nut, which must be kept fully tightened at all times.

Handles

These are adjustable, both for height to suit the user and for position in line or offset to either side, permitting full control whilst walking to either side of the cultivated strip.

Height adjustment is made by loosening the two bolts on the clamp sufficiently to move the handles for height and re-tightening.

Sideways adjustment is by a central quick-action clamp lever, which when released, allows the handles to turn one or more notches of the 'wave' washers as required. The spring pressure of the clamp is adjustable from below by means of the spanner provided.

Controls

The control on the right hand side of the handle is an engine speed control, also a 'cold start' choke when moved to the position marked CHOKE and STOP control when moved to STOP. In the STOP position the ignition circuit is earthed to stop the engine. The lever, therefore, gives you Choke, Fast Run, Slow Run and Stop as it travels through its arc.

The control on the left hand side is to engage or disengage the belt drive to the gearbox and rotors. Pulling the lever up to the bar tensions the belts and therefore engages the drive. The lever may be locked in the engaged position by pushing in the lever catch. To release the catch, simply pull up on the control, and the catch will disengage.

Wheel Assembly and Axle Mounting

The wheels and axle are a separate assembly fastened by a locking pin and clip to the axle mounting block. The wheels may be completely removed for certain cultivation work, or swung into different positions to provide stability when required, and, of course, for transport, they are fitted in the down position.

Depth Bar

This is fitted at the rear of the axle mounting block and held in place by a locking pin and clip. The purpose of the depth bar is to control the cultivation depth (see under Operation).

Assembly Instructions

Your M1 may be delivered to you completely assembled or it may be supplied partially assembled in a container.

If received completely assembled, be sure to check through lubrication instructions for both engine and gear box before use. Serious damage will result from inadequate lubrication.

If received in a container, remove all items and, studying the illustration, assemble as follows :—

1. Swing the handles and handle clamp on the pivot to the operating position by lifting the locking lever to the free position and re-locking.

2. Connect the throttle cable to the lever on the carburettor, set the control lever on the handle to 2 or 3 mm ($\frac{1}{8}$") from the end of the slide marked CHOKE. Then set the lever on the carburettor against the stop in the choke position, fit the outer cable under the cable clamp and tighten the clamp screw securely.

3. Check that the clutch cable is connected to both lever at the handle and spring eye at the jockey pulley end.

4. Fit the wheels to the axle, first fitting a washer then the wheel, second washer and finally the retaining circlip in its groove.

5. Lifting the V-belts to clear the pulley on top of the gearbox, insert the gearbox tie bar into the square tube at the front of the chassis and push the gearbox home. Raise the rear of the machine and fit the axle mounting block into the square tube at the rear of the chassis. Fit the domed washer, domed side to nut, on to the threaded end of the tie bar and fit special nut. Tighten fully with ring spanner supplied. This nut must be kept tight at all times and should be checked at intervals.

   Fit the axle and wheel unit into the lower slot on the axle mounting, align the holes and secure with locking pin and spring clip. Fit the depth bar to the vertical hole in the axle block and secure in the raised position with pin and clip.

6. Connect the V-belts to the pulley grooves.

7. Slide the basic rotor assemblies on to the rotor shafts, ensuring that the cutting edges are to the front, and secure with pins and spring clips. Fit the extension rotors (if required) to the basics similarly. The extension rotors can be identified by the solid centre pieces welded into the hub.

Lubrication

Engine

With this manual you should also find the engine manufacturer's Operating and Maintenance Instructions, which you should study, especially with regard to lubrication. It is essential to fill the engine with the correct grade oil before use.

Gearbox

The oil filler plug is a square-ended plug located on the lower part of the gearbox. If empty, fill with approximately ¼ pint of oil—specification Castrol 'D' or Castrol EP 90. Check the oil level every 10 hours and if there is any sign of leakage outside the case. The oil level should be up to the rotor shaft.

The cultivator is now ready for use.

Operating Instructions

Engine Starting (Cold)

Check fuel is 'on' if a tap is fitted and that drive to gearbox is not engaged. Move the throttle control fully to CHOKE position and pull the starter cord. When the engine fires, gradually move the throttle from choke to slow run, as the engine warms up. To stop the engine, move the throttle lever to the STOP position. This earths the ignition.

Clutch

When ready to cultivate, engage the drive to the rotors by operating the clutch lever, smoothly and without jerking. Do not, however, engage the clutch when the engine is running fast. This imposes severe loads on the drive belts and will shorten belt life.

Wheel adjustment

The M1 can be used cultivating with the wheels in the down or up position in conjunction with the variable depth bar, or with the wheels removed altogether.

The wheels are adjustable in two positions (down or up). They are secured to the mounting block by a pin and spring clip. After taking out the spring clip the pin should be removed, when the axle and wheels can be raised to their high position and the pin can be reinserted or, alternatively, the wheels can be removed altogether.

Cultivating

The Mountfield M1 is equally versatile on heavy, medium or light soils and its digging efficiency is governed by the ratio of rotor speed and the correct up and down pressure on the handles.

Raising the handles (up) places more weight on the rotors (using the wheels or depth bar as a fulcrum point) creating greater penetration into the soil. The machine will also progress forward at an even rate.

To increase the forward speed with a shallower depth of cultivation, pressure down on the handles lessens the weight on the rotors and the machine will progress forward at a controlled depth.

Heavy Soil

The wheel unit should be removed on heavy clay soil or virgin land which is being cultivated for the first time. By doing this the maximum weight is on the rotors, thus allowing more efficient penetration. The variable depth bar can be adjusted to suit the most comfortable position for handling and also to control the cultivation depth required.

Medium Soil

The M1 can be used with or without the wheel unit fitted and this depends upon soil conditions. If the soil is fairly friable, then the wheels can be left on. This will give greater stability. The cultivated soil should pass quite freely between the wheels. If, however, the soil is sticky and clogs between the wheels and depth bar, then the axle unit should be raised clear of the soil.

General

As with all front rotor cultivators which utilise the maximum power from the engine, a little technique is required by the user to obtain the maximum

performance. During the first period of use it is not unlikely that an uneven or bucking action will take place but this is soon overcome with a little practice and, we would say, at this stage, adopt a relaxed attitude (there is a tendancy to grip the machine too firmly and try to restrict its power). Operation takes very little effort—let the machine do the work. Start off with relatively low throttle settings and gradually progress to higher speeds as necessary. A slight side to side movement on the rotors will assist in obtaining a steady forward speed.

Attachments

The following attachments are available, as optional extras, to extend the versatility of your M1 cultivator and enable you to use it for hoeing, furrowing, inter-row cultivation, grass cutting and trailer hauling :—

18" Rotary Grass Cutter
Grass Box
Extension Rotors
Drive Wheels
Furrower and Stem
Row Cropping Tool Frame with two cross bars and four clasps
Tool Frame Clasps
L Hoe Blades and Stalks
Centre Sweep and Stalk
Cultivating Points and Stalks
Disc Coulters
Depth Control Wheel
Front Weight
Drive Wheel Extension Shafts
Trailer

Use of Attachments

Grass Cutter

1. To fit the grass cutter unit, first remove the gear box and axle mounting block assembly. Remove the V-Belts and fit the shorter belts supplied with the Grasscutter. The engine unit is slid on to the square on the input drive of the grass cutter until the mating faces meet. The hinged plate at the rear of the grass cutter unit is raised until it fits into the rear of the chassis and the locking nut is then tightened securely home. Finally, fit the V-Belts to the pulleys after making sure that the clutch lever is in the disengaged position.

2. When putting the grasscutter to use, first start the engine and set the speed to a fast tickover. Engage the drive to the cutter by raising the clutch lever smoothly and locking in the 'Drive' position. Rapid take-up or excessive engine revs. will put an overload on the driving belts, shortening their service life.

3. If the grasscutter is to cut long grass, the height adjustment levers at each wheel should be set in the highest notch. For lawn work, a lower setting will be required and, if the grassbox is to be used, the height setting at the rear should be one or two notches higher than the front, to give improved grass collection.

4. WARNING—When the engine is running, the cutter will be revolving within the casing if the drive is engaged, and may also be revolving if the drive is **not** engaged, due to the drag of the V-Belts on the revolving engine pulley. The cutter may also be revolving for a time after the engine is switched off, due to inertia. Be warned of the danger of a revolving cutter and take great care that your hands and feet do not approach the cutter.

5. If the casing becomes choked with grass, stop the engine before any attempt is made to clear it. Never attempt to introduce anything like a stick or tool to clear the casing while the engine is running.

6. If a grassbox is not in use, the grass exit must be fitted with the deflector. It is dangerous to use the grasscutter without either grassbox or deflector because hard objects may be ejected

from the machine which might injure the operator or bystanders.

7. **Maintenance**

An oil nipple is fitted on the front of the grass-cutter shaft housing for lubrication of the bearings. A shot of oil or light grease prior to use or at least every 3 hours' running time will minimize shaft wear.

8. **Safety Instructions**

The following should be observed at all times:—

Know your controls. Read the owner's manual carefully. Learn how to stop the engine quickly in an emergency.

Make sure the lawn is clear of sticks, stones, bones, wire and debris. They could be thrown by the blade.

Stop the engine and disconnect spark plug wire before checking or working on the mower.

Before using, always visually inspect to see that the cutter assembly is not worn or damaged. Replace worn or damaged cutter and fixing to preserve balance.

Damaged blades and worn bolts are major hazards. Check all nuts, bolts and screws often.

Always be sure the mower is in safe operating condition. Use only replacement parts made and guaranteed by the original manufacturer of your mower.

Add fuel BEFORE starting the engine. Avoid spilling petrol and do not fill the tank while the engine is running or while you are smoking.

Do not mow whilst people, especially children, or pets are in the mowing area.

Never use the mower unless the grassbox or guards provided by the manufacturer are in position

Do not mow barefoot or in open sandals.

Start the engine carefully with feet well away from the blades.

Do not operate the engine in a confined space where exhaust fumes (carbon monoxide) can collect.

Stop the engine whenever you leave the mower.

Stop the engine before pushing the mower across gravel drives, walks or roads.

Do not allow children or people unfamiliar with these instructions to use the mower.

On slopes or wet grass, be extra careful of your footing.

Never cut grass by pulling the mower towards you.

Do not overspeed the engine or alter governor settings. Excessive speed is dangerous and shortens mower life.

Store fuel in a cool place in a container specifically designed for the purpose. In general, plastic containers are unsuitable.

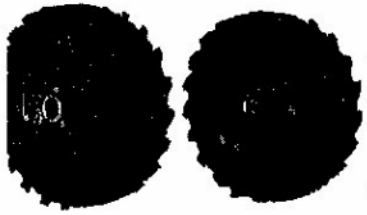
Never pick up or carry a mower when it is operating.

Extension Rotors

The cultivator is normally supplied with a pair of basic digging rotors and one pair of extension rotors. The cultivating width with basic rotors only is approximately 37 cms (15 inches) and with two pairs of rotors the width is increased to 64 cms (25 inches). A further increase in cultivating width to approximately 91 cms (36 inches) is obtained by fitting a third pair of rotors. In very heavy soil conditions the number of rotors may be limited by the overload on the engine.

Drive Wheels

The drive wheels are approximately 25 cms (10 inches) diameter with heavy iron centres to improve traction. They are fitted either directly to the rotor axle, or on drive wheel extension shafts to increase



their distance apart and give more stability.

The drive is taken to a ratchet plate and thence to a plunger ratchet in the wheel centre. The ratchet may be disengaged manually by pulling and rotating the knurled head to the disengaged position.

The ratchets assist turning by allowing the outside wheel to 'over run' on corners.

Note that if hauling a loaded trailer, the tractor/trailer unit does not have any 'engine breaking' on down slopes, which should therefore be approached with care.

The drive wheels can be used for inter-row crop work, where soil conditions permit.

Furrower and Stem

This implement forms furrows for planting out and seed sowing. It is fitted at the rear of the cultivator by removing the depth bar and inserting the furrower stem in its place, with the short pin engaging the slot to maintain alignment. Traction is obtained by using the rotors or drive wheels to provide forward motion. Depth of furrow is controlled by the operator raising or lowering the machine. The wheels must be removed to use the furrower correctly, and more accurate depth control is achieved by fitting the depth control wheel behind the furrower.

Depth Control Wheel

This attachment clamps to the stem of the furrower, or it may be fitted to the tool frame, to give accurate control of the depth at which the furrower is required to operate. Alternatively, it will control depth of the tools fitted to the tool frame, either hoeing or cultivating.

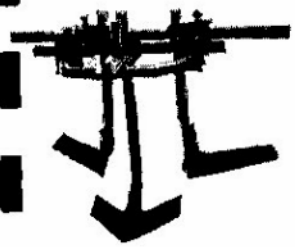
Row Cropping Tool Frame and Cross Bars

This consists of a U-shaped frame fitted with a pivot pin. After removal of the depth bar from the cultivator, the tool frame pivot is inserted in the hole in the rear of the axle mounting block and retained

by a washer and spring clip. The tool frame may be used either free to pivot or it may be prevented from pivotting by inserting the cross-pin in the axle block.

By means of the tool frame clasps, the cross bars are clamped to the frame to provide mounting bars for hoe blades, or cultivating points. Note that the stems of these implements should be clamped on the front side of the cross bar and not behind the cross bar. This reduces the stress on the clamp.

The depth control wheel may also be fitted to a cross bar.

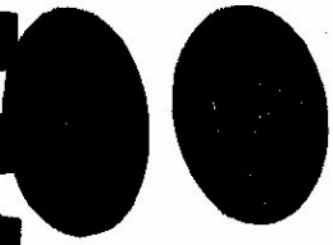


L Hoe Blades, Centre Sweep Hoe and Stalks

By mounting hoe blades in an overlapping pattern, the ground between rows of growing crops may be hoed in one pass, to a width which is adjustable to the width between rows.

Cultivating Points

Mounted on the tool frame cross bars, the cultivating points are used to harrow the ground, loosening and cultivating the top soil as required.



Disc Coulters

These discs are fitted outside the rotors to guard against the projecting rotor tips catching in overhanging crops and pulling them out in passing. Also, if working between small fruit trees or shrubs, protection of the overhanging branches is given by fitting the discs.

Front Weight

The front weight can be fitted to provide additional digging power in tough conditions, such as when rotavating ground which has not been dug before and is very compacted.

With the weight fitted, the rotor blades have greater penetration and 'jumping' is reduced.

To fit the front weight, remove the front guard by uncrewing the side screws, insert the weight bars into the open ends of the chassis tubes and secure with spring clips.

A second advantage from fitting a front weight is to increase the traction force from the drive wheels, as the increased weight reduces wheel slip.

Important reminder to user

The gearbox is secured to the cultivator by the heavy duty tie bar and large hexagon nut, visible at the rear of the chassis. If this nut is not fully tightened, movement of the gearbox during use bends the tie bar, which will eventually break from the bending load. A large ring spanner is supplied for the purpose of tightening and checking the hexagon nut. This important check should be made at regular intervals.

Replacement Parts

Replacement parts should be obtained from the local Mountfield main dealer. The serial number of the machine must be given when ordering parts. The number is shown on the chassis of the machine.

THE MOUNTFIELD Guarantee

G. D. MOUNTFIELD LIMITED guarantee to replace, for the original purchaser, FREE OF CHARGE, within twelve months of purchase any part or parts of Mountfield equipment found defective through faulty materials or workmanship.

The guarantee does not include proprietary items which are not of our manufacture. These items are subject to the appropriate guarantee as laid down by their respective manufacturers.

The guarantee does not apply to faults caused by misuse, wear and tear, hiring out, accident or by any alteration or repair which in the opinion of G. D. Mountfield Limited has caused the fault.

G. D. MOUNTFIELD LIMITED

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