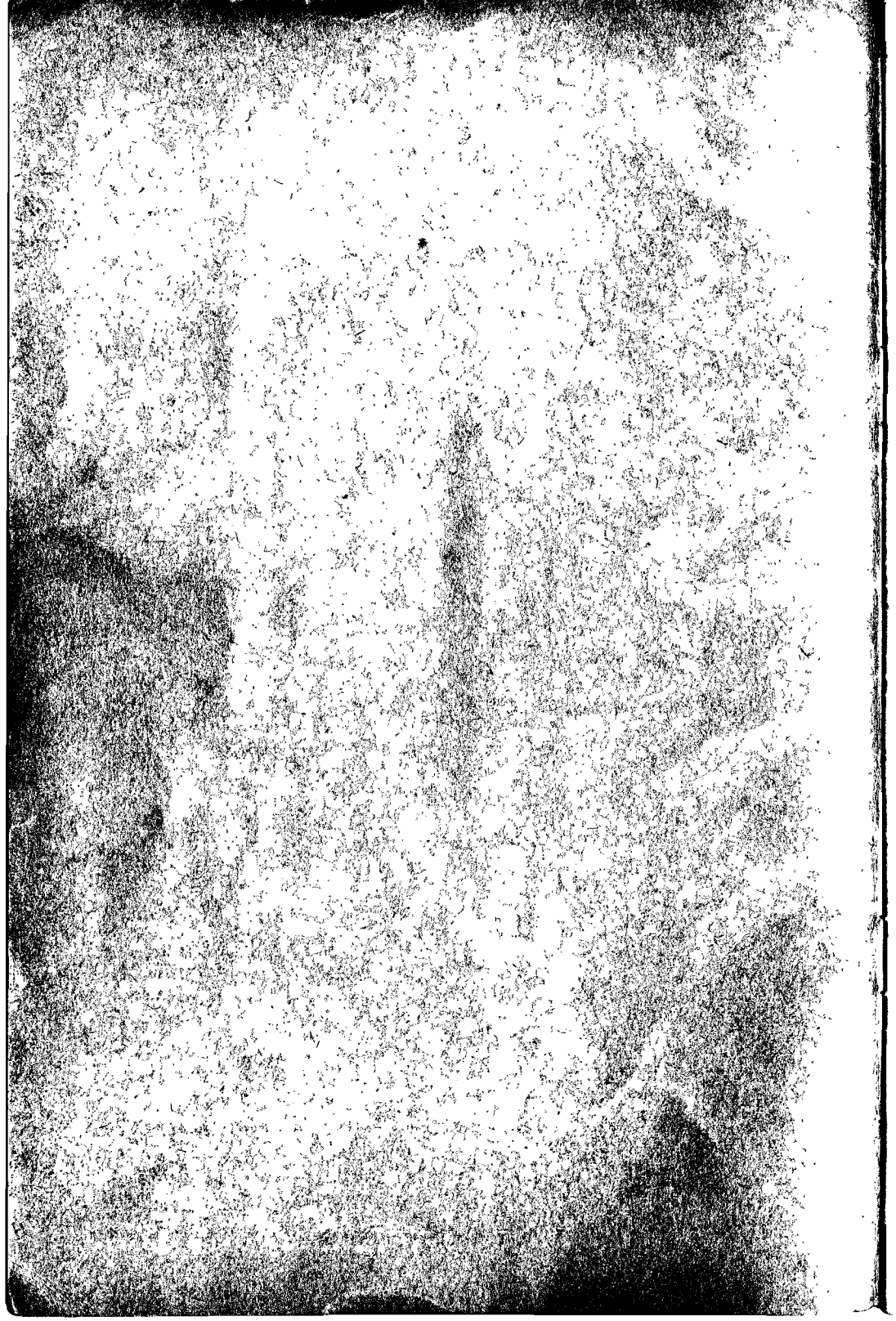
THE

ROTARY HOE

'Gem'

INSTRUCTION BOOK & SPARE PARTS LIST

ROTARY HOES LTD., EAST HORNDON, ESSEX, ENGLAND
Tel: Herongate 222



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INTRODUCTION

This instruction book has been written with the object of providing in the simplest possible manner a complete guide for the owner in the operation of the "Gem" machine.

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 "Gem" Distributor or Dealer.

ROTARY HOES LIMITED
STATION ROAD, EAST HORNDON, ESSEX, ENGLAND
Telephone: Herongate 222 (6 lines). **Cables: Rotovate, Brentwood**

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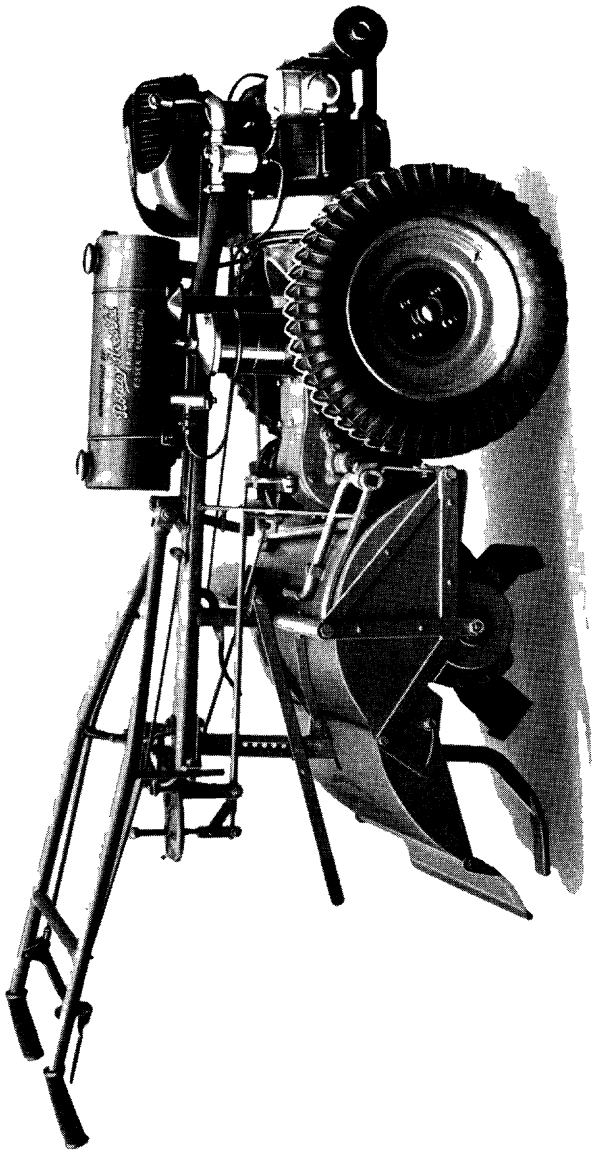


THE "GEM"

SPECIFICATION

ENGINE

Single cylinder side valve (600 cc.)

BORE AND STROKE

$3\frac{3}{8}$″ diam. × 4″ (85.7 mm. × 104 mm.)

ENGINE SPEED

1,800 r.p.m.

FUEL TANK

Fuel and oil tank built as one unit with separate compartments. Fuel capacity $1\frac{1}{2}$ gallons. Oil capacity 3 pints.

CLUTCH

High duty single dry plate.

GEAR-BOX

Three speed and reverse transmission by hardened gears running in oil. All shafts mounted on ball bearings. Differential gear for easy turning automatically locked when rotor is engaged.

SPEEDS

1st gear—.78 m.p.h. 2nd gear—1.17 m.p.h.
3rd gear 1.65 m.p.h. Reverse gear—1.40 m.p.h.

ROTOR

Speed 155 r.p.m. 18″ diam.

POWER TAKE-OFF PULLEY

10″ diam. 4″ face. 450 r.p.m. 1,178 ft. per min.

OVERALL DIMENSIONS OF MACHINE

Length 6′ 6″ Width 2′ 1″

WEIGHT

$5\frac{1}{4}$ cwt. approximately.

Above particulars are for Standard 20″ Machine.

CONTROLS

THROTTLE

The throttle control lever is fitted under the right handlebar grip. By raising it the engine speed is increased; by pressing it down the engine speed is reduced.

CLUTCH

Control lever is mounted on left handlebar. Normal operation for forward travel, pull up lever to disengage drive, release to re-engage. To reverse machine, operate as follows: pull up clutch lever, move gear lever to reverse (which operates safety interlock), release clutch lever. No movement takes place until clutch lever is pushed down. Removal of pressure automatically stops machine. To disengage reverse gear, pull up clutch lever, move gear lever to neutral.

HANDLEBAR POSITIONING LEVER

This is mounted on the main frame and is situated between the gear levers. To swing the handlebars to either side, press the handlebar positioning lever down to its full extent and swing the handlebar to whichever side it is desired.

HEIGHT OF HANDLEBARS

To adjust the height to suit the operator, remove the bolt at each end of the handlebar slide and select another hole in the lugs attached to the handlebars.

ROTOR GEAR CONTROL LEVER

The lever on the quadrant engages with either of two notches. Pushing the lever forward disengages the rotor whilst pulling it back engages the rotor.

TRAVEL GEAR CONTROL LEVER

Operates in a 4-star quadrant, marked 1, 2, 3, R to indicate forward travel and reverse positions. Neutral position is central. Move lever to required position. Note safety feature, clutch interlock with reverse gear, see instructions under "Clutch".

ROTOR DEPTH CONTROL LEVER

This is linked with the depth control skid, or wheel, and situated above the rotor shield. To lower the rotor for deeper work, the lever is raised, to decrease the depth the lever is pushed down.

EXHAUST VALVE LIFTING LEVER

This is placed under the main frame over the centre of the rotor shield and lifting up decompresses the engine for easy starting.

THE ENGINE STARTING HANDLE

When this is not in use it is folded back on the rotor shield. When starting the engine, lift it out of the bracket and swing it forward until the recessed square on the handle will engage with the protruding square end of the starting dog on the gear-box. *Both travel gear and rotor must be out of gear when starting.*

PREPARING FOR WORK

Before starting the engine, be sure that the petrol and oil taps under the tank are both turned on, and make certain that all the oiling points listed on the chart have received attention. See that no nuts or bolts are loose, particular attention being paid to the rotor blade bolts.

Standing on the right-hand side of the machine looking forward, flood the carburettor, and see that *both the rotor and the travel gears are in neutral.* Ensure that the throttle control lever is only just open. With the left hand lift the exhaust valve lifter. Place the starting handle into position. Briskly crank the engine and release the exhaust valve lifter after the first turn or two. When the engine starts replace the starting handle.

When the engine is running adjust throttle control to a brisk idling speed, remove the oil filler cap (the front one on the petrol and oil tank), and ascertain that the engine oil is circulating through the engine. The oil will be seen returning to the tank in spurts if working satisfactorily. See that the depth control handle is set so that the rotor is clear of the ground. Next, lift the clutch hand lever and engage the desired gear, release the clutch at the same time gently accelerating the engine.

COMMENCING CULTIVATION

Adjust the depth control lever to give the required depth of work, select the appropriate travel gear to give the required fineness of tilth, put the rotor gear in mesh and commence work keeping the engine running at a constant speed whatever type of work is being done. Do not race the engine if the work is light nor labour the engine if the work is heavy. After a little practice, no difficulty will be found in maintaining the best engine speed.

Rear shield

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.

To stop the engine

Put both gears in neutral and then lift the exhaust valve lifter.

NOTES ON CULTIVATION

Since the scope of operation is so extensive, and as soil tillage methods differ so greatly with various crops, climates and soil conditions, it is only possible to deal briefly with this aspect. However, the following hints should enable the user to obtain the best results from the machine.

Virgin soil or land tightly bound together with grass or roots is best cultivated by first working shallow to break up the surface. The required depth may then be reached on successive runs over the ground.

The low gear must be used when cultivating ground that is very hard or covered with heavy growths. Second gear is used for all ordinary cultivation, and top gear for light cultivation. Always work on the highest gear that will produce the quality of tilth required. Always use top gear for running the machine between work. A depth control skid, or wheel, is fitted and by moving this up and down the depth of work is controlled in $\frac{3}{4}$″ stages from $\frac{3}{4}$″ to about 8″ in depth.

When cultivating a ploughed field, the " Gem " should be run across the furrows—not along them. This will ensure complete cultivation.

On hilly ground always run the machine around the contour, working from top to the bottom of the hill. After the first cut, one road wheel can be run in the soil just cut up and any tendency to slip will be obviated by the wheel coming against a wall of uncut soil.

If the land is exceptionally light special extension rims may be supplied to prevent the machine sinking in.

Do not overtax the power of the machine—far better results will be obtained from working in easy stages rather than by forcing the machine to do work in excess of its horsepower.

NOTES FOR OPERATOR

1. The importance of regular and correct lubrication cannot be over-emphasized and particular attention must be paid to the Lubrication Chart on page 11.

Before starting up ensure that the oil tap fitted under the oil compartment of the petrol and oil tank is turned on. *This tap should only be turned off if the machine is laid up for a lengthy period to prevent the crankcase from being flooded with oil.*

2. *Air cleaner and oil filter maintenance is of paramount importance. (See page 13.)*

3. The throttle must always be shut to idling position when lifting the clutch lever for engaging or disengaging gears.

4. The engine must not be allowed to idle at slow speeds for long periods.

5. Do not hold the handles firmly down if the machine jumps on striking a stump or similar obstacle, but just lightly resist the movement and let the machine right itself. This particularly applies when working on hillsides in badly cleared land.

6. When taking sharp corners, put the rotor out of gear, if necessary lifting the machine at the handles to help in turning.

7. Never run the " Gem " with the engine labouring. By selecting the right gear and the correct depth of work a reserve of engine power is always in hand.

8. When operating the " Gem," use the clutch in the same way as in a car; that is, for changing gear only. Do not "slip the clutch" to obtain extra engine speed.

9. For the first 12 hours after delivery, only light work should be done in order that the working parts are allowed to bed down properly.

LUBRICATION

ENGINE The oil compartment (front) [point "A" on chart] of the fuel tank has a capacity of approximately 3 pints but care should be taken to fill it only to within $\frac{1}{2}$" of the oil return pipe located inside the tank under the filler cap. Oil is fed to the oil feed pump and forced under pressure into the big end bearing, being returned to the tank via the filter by the scavenge end of oil pump. Oil must be renewed completely after every 24 hours work. The oil may require topping up from time to time and the oil level should never be allowed to fall below one-third full.

Recommended oil:—**Engine oil** (see chart page 11).

ROTOR DRIVE DOG GEAR-BOX Remove the square-headed plug [point "B" on chart], and give half a dozen spurts of oil from the oil-can. This should be done every 24 hours and particularly before starting up after any prolonged period of rest.

Recommended oil:—**Engine oil.**

ROTORDRIVE CHAIN BOX Remove the square-headed plug [point "C" on chart] on top of the chain cover and using the dipstick from the gear-box, fill the case up to the lower mark. A quarter of a pint is sufficient. Do not overfill as this may result in oil being forced on to the rotor friction clutch causing it to slip unnecessarily. This should be checked after every 24 hours of work.

Recommended oil:—**Gear oil.**

ROTOR STUB AXLE [Point "D" on chart.] Remove the round-headed screw and with an oil-can, fill the oil space inside the rotor tube, every 24 hours work.

Recommended oil:—**Engine oil.**

DEPTH CONTROL WHEEL Remove round-headed screw and with oil-can fill space inside the axle, every 24 hours.

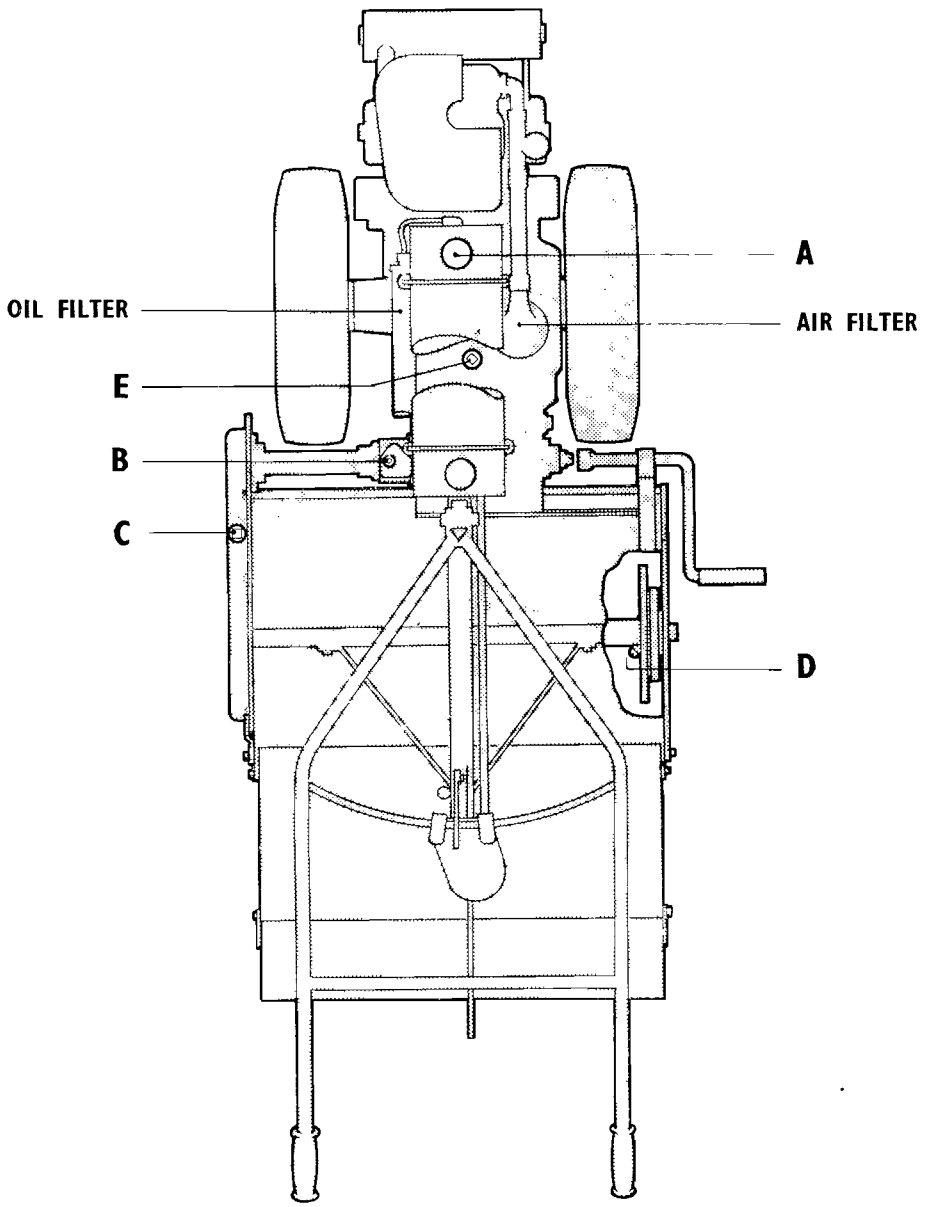
Recommended oil:—**Engine oil.**

GEAR-BOX Every 24 hours check the level as indicated on the uppermost mark of the dipstick, which is attached to the square-headed plug [point "E" on chart], screwed into the top of the gear-box. Normally, it should only be necessary to drain and renew the oil in the gear-box after every four hundred hours of work. Drainage is best carried out when the oil is warm and it is a good practice to remove the drain plug at the end of a day's work leaving the plug out all night. Capacity of the gear-box is approximately $\frac{3}{4}$ gallon.

Recommended oil:—**Gear oil** (see chart).

In addition to these lubrication directions, points such as the slide bar of the swinging handlebars, and the fulcrum levers of the throttle and the clutch controls should be oiled to ensure free movement, using engine oil.

LUBRICATION CHART



ENGINE TROUBLE CHART

Engine fails to start

Fuel System:

Fuel supply turned off.
Fuel pipe choked or air lock.
Water or dirt in fuel.
Throttle too wide open.

Ignition System:

Magneto contact breaker point gaps need adjustment.
Spark plug dirty or faulty
Spark plug point gaps need adjustment. Should be .020″—.025″ gap.
Water or moisture in magneto.
Magneto contact breaker points stuck or dirty.
High-tension lead cracked or perished.

Engine lacks power or runs irregularly

Fuel System:

Fuel pipe partially blocked.
Jets partially blocked, or not correctly adjusted.

Ignition System:

Spark plug dirty.
Spark plug point gaps need adjustment.
Magneto contact points dirty or need adjustment.

Mechanical Faults:

Valve springs weak or broken.
Cylinder head gaskets leaking.
Valve stuck open. Valves badly burnt.
Valve clearance incorrect. Broken piston rings.
Badly worn piston rings and/or cylinder bore.
Badly worn valve guides.

Engine stops suddenly

Fuel System:

Fuel tank empty. Water in fuel.
Overheating owing to lack of oil.
Jet blocked by foreign matter.

Ignition System:

Magneto contact breaker points stuck.

Engine overheats

Ignition retarded too far.
Spark plug dirty.
Spark plug point gaps need adjustment.
Insufficient or poor grade of oil.
Engine requires decarbonising.
Valves not seating properly.
Engine cowling blocked with grass or weeds.
Flywheel fan blocked with grass or weeds.

GENERAL MAINTENANCE

ENGINE CLUTCH The clutch is of a single fibre disc type, simple in operation and efficient in work. It should be adjusted with a little play on the lever (about $\frac{1}{4}$″ at the end) so that the thrust bearing is free except when the Hand lever is lifted. Adjustment can be made by means of the wing nut.

ROTOR FRICTION DRIVE The rotor to which the blades are bolted is driven direct from the main gear-box through a friction clutch. This clutch is not intended to operate except when the rotor blades strike an obstacle, and, when leaving the factory, is adjusted so that no slip takes place under ordinary working conditions. If it is suspected that the clutch slips too freely, it should be adjusted by means of the four nuts; tighten up, then slack back half a turn.

ROAD WHEELS The road wheels are mounted on hubs, driven by friction clutches. These are adjusted so that the wheels have sufficient grip to pull the machine but will slip if they become jammed with an obstruction between the wheels and the frame. Adjustment as for rotor clutch.

AIR CLEANER *Regular attention to this is most important.* The oil level must be checked after every 8 hours running and after every 24 hours it must be dismantled and thoroughly cleaned out. To remove the cleaner, loosen the clamping screw and, leaving the cover still connected to the hose connection, take the air cleaner from its platform. Separate the top from the bottom half of the cleaner, and pour the dirty oil from the reservoir. Thoroughly wash out all sediment in the bottom with petrol. Remove the serrated spring clip in the filter container, take out the wire gauze filters and wash them in petrol. Refill the oil reservoir to the correct level with *clean* engine oil. Put the wire gauze filter back into the container then replace the perforated plates and the serrated spring clip. Now put the two halves together with the felt washer between and replace. Fit the cover taking care that the cover felt washer is intact and clamp back into position.

If working under exceptionally dusty conditions the air cleaner requires cleaning every 6 hours.

OIL FILTER When changing the engine oil, *make it a routine job to clean the filter at the same time.* To extract the filter element from the tube remove the large brass cap at the rear end of filter body and withdraw the filter and centre tube. Wash thoroughly in petrol and if the bag is damaged it should be removed.

When replacing the filter element, make sure that the brass caps are securely tightened up.

MAINTENANCE OF HOE BLADES *It is essential that only the cutting edge should rub in the soil and that the back should have clearance.*

The Blades are designed so that use in average soil tends to sharpen them, but if the machine is used on stony ground it is suggested that two sets of hoe blades should be used alternately in order that one set may be kept sharpened.

The efficiency of the machine depends largely on the condition of the hoe blades. If bent through striking solid obstacles in the ground and not straightened, they will require twice the power to drive, the quality of work will be poor and the blades will wear out quickly. Trouble will also be experienced with clogging under the shield. Blades should therefore be straightened up as soon as noticed with the blade setting bar which is provided for the purpose, the hooked end of which is intended to fit over the blade.

ROTOR FLANGE WEEDCUTTERS Two weedcutter blades are provided to prevent long grass or weeds from binding round the end rotor flanges. To adjust, slack the two setscrews securing the weedcutter blade and tap the blade until it is within 1/32″ of the rotor flange, revolve the rotor by hand to make sure the blade does not foul and retighten the setscrews.

OIL PUMP The engine is of the dry sump type with a gear driven plunger pump. The right-hand end of the plunger forces the oil into the big end bearing while the left-hand end scavenges the used oil from the engine sump and returns it through the filter back to the tank. The pump is simple and positive in action and normally requires no attention and any failure of oil to return to the tank need not necessarily be caused by a faulty pump. If the oil is not being returned first check all oil pipe connections for air leaks. Not only union nuts but joints of nipples and pipes should be closely inspected. *More failures in oil circulation are attributable to air leaks than to any other cause.* Bent or flattened pipes which may impose restrictions in oil flow also are common causes of faulty circulation. Particular attention should be paid to the crankcase oil suction pipe, where it is connected to the crankcase. When satisfied that no air leaks exist, inspect breather to see that spring holds valve ball firmly on its seat. Next inspect the oil pump fulcrum screw (Part No. 12073) located on the pump body. This screw has a plain unthreaded end which locates in a helically cut groove in the pump plunger and its function is to give the necessary reciprocating action to the pump while the latter is rotating. If this screw becomes loose or lost the pump ceases to function. See that it is always kept tightly screwed home. If these adjustments fail to correct the faults in the oil system, the Service Agent should be consulted.

ENGINE CARBURETTOR Before the engine leaves the works, the carburettor is tested and the variable jet adjusted to give the best all-round performance. If, at any time, the setting is disturbed it will be found that one and a half turns open is the most satisfactory position.

To clean the carburettor jet it is necessary to take out the main jet body (Part No. B.J.9106) through which the main jet adjusting screw operates the idling jet is a very small hole drilled in the groove halfway up the jet bolt.

If black smoke (not blue) is emitted from the silencer when the engine is running under normal load the jet should be slowly screwed in until this stops.

If black smoke is seen when the engine is idling, the idling jet adjusting screw (Part No. B.J.9104) requires to be unscrewed slowly until this ceases.

DECARBONISING THE ENGINE This will only be necessary after at least 400 hours running, and should preferably be left to the service agent who has the facilities to do the work and check the extent of cylinder, piston and valve wear.

If, however, it is essential for this work to be done on the site the following method should be followed.

Remove the cylinder cowling, disconnect the petrol pipe at the carburettor and air cleaner hose. Remove all the cylinder head bolts and studs and the sparking plug (it is advisable that they should be replaced in their respective holes when reassembling).* The cylinder head and valve chamber will now lift off. Turn the engine until the piston is at the top of its stroke and remove the carbon deposit with a blunt knife, do not scratch the piston but thoroughly clean off any carbon. Leave a ring of carbon about $\frac{1}{8}$″ wide around the edge of the piston as this assists in maintaining an oil seal.

Next remove the valves. Carefully mark the valve heads to ensure that they are replaced in the correct positions. Place the valve chamber upside down on a bench and with two screwdrivers, compress the spring so that the split taper cotters can be removed.* The valves will then withdraw through the top. The valve heads should be cleaned with sandpaper and any carbon deposit removed from the valve pockets. Smear a small amount of *fine* grinding paste on the bevelled face of the valve and placing a broad-headed screwdriver in the slot in the head, rub the valve on its seating with an oscillating rotary action. Do not rotate the valve continually in one direction. The valve should show a continuous bright ring all round. If any breaks or thin places show, repeat the operation. Only the minimum grinding must be given to produce this condition: a deep recessed groove in the face will impair the seating of

* B. J. Engine only.

the valve. Any burnt or deeply pitted valves should be replaced by new ones. The valve seating should show a similar continuous bright ring of uniform width. If the seat width is much over 1/16″ it is necessary to have it refaced, and this should be attended to by the Service Agent at the first opportunity.

Remove all trace of grinding paste from the valve and seating by washing in petrol. Reassemble the valves, smearing a little clean oil on the valve stems.

Clean the face of the cylinder head, valve chamber and cylinder and replace the gaskets which, if at all damaged, should be renewed. When tightening up the cylinder head bolts, tighten each an equal amount until they are all dead tight, and check the tappet clearance as previously described. Replace the carburettor, petrol pipe and air cleaner hose; run the engine for two or three minutes on closed throttle and re-tighten the cylinder head studs before replacing the cylinder cowling. Take care that the engine does not overheat.

ATTACHMENTS AND EQUIPMENT

Various attachments may be used with the "GEM" Machine :—

For Mobile Work

Furrowing Attachment.	Depth Control Wheel.
Furrow Covering Attachment.	Roller Attachment.
Picktyne Rotor.	Extension Rims.

Leaf Guards.

For Stationary Work

Power Take-off Pulley.	Soil Shredder.

Waterproof Cover.

FITTING THE ATTACHMENTS

THE FURROWING ATTACHMENT is fitted on to the depth control skid. First remove the depth control skid by pivoting the depth control lever clip; pull the depth control lever sideways until the pin engaging in the skid is withdrawn and the skid may then be pulled out of the depth control socket from under the rotor shield.

Assemble the furrowing attachment on to the depth control skid leaving the bottom of the attachment approximately $\frac{1}{2}$″ above the foot of the skid, or as required for the crop to be planted, and tighten locking nut. Fit the assembly in the depth control socket and connect to depth control lever. For machines where a depth control wheel has been fitted in place of a skid, the skid must also be ordered in addition to the furrowing attachment. When using the furrower, the rotor is put in gear so that the combined operations of cultivating and furrowing are carried out simultaneously.

THE FURROW COVERING ATTACHMENT is fitted into the depth control socket is the same way as the furrower, except that it is supplied with its own pedestal. When is use, the rotor should be out of gear and allowed to roll over the ground like a wheel.

THE ROLLER ATTACHMENT is used in place of the depth control wheel or skid, and is intended to consolidate the land. The roller may be loaded with sand to increase its weight and will leave a smooth surface ready for drilling or planting. This attachment is used in conjunction with the rotor.

Depth for the above operations is controlled in the same way as for ordinary cultivation.

ROAD WHEEL EXTENSION RIMS can be supplied when the machine has a tendency to sink in very light lands, and to prevent side slip when working on steep contours. They are bolted by five bolts to holes provided in the existing road wheels (cleated type only). The road wheel extension flange can be supplied with or without serrations (the illustration in the Parts List shows the serrated type). Alternatively, the flange may be removed to leave a plain extension rim only. An extended starting handle is required with these rims and is supplied with all orders for rims.

THE PICKTYNE ROTOR which is used for special work such as dealing with very hard soil conditions or for pasture renovation is fitted as follows: —

Remove all nuts and bolts holding the support bracket carrying the stub axle, staytube and rotor shield. Remove the four rotor friction drive adjusting nuts and springs. Slide the rotor sideways and withdraw. The picktyne rotor is fitted by reversing the operations above. Unless otherwise stated, the picktyne rotor is supplied complete with picktynes, bolts and nuts and stub axle assembly.

To fit the **POWER TAKE-OFF**:—Remove the hinge bolt for the starting handle, remove the four set screws holding the starting dog bearing cover in place on the gear-box side-plate and remove the cover and loose dog. Assemble power take-off casting in place of the bearing cover, and ensure that the dogs in the bearing and power take-off mesh before replacing the four set screws. Next insert a long bolt in the hole provided in the power take-off casting and tighten. After oiling the power take-off bearing behind the pulley it is ready for use.

To fit the **SOIL SHREDDER**:— Remove depth control skid or wheel and one end rotor blade on the right-hand flange and replace by feeder blade. Lift the machine sufficiently high to pass the shredder into position under the rotor, lower the machine ensuring that the lugs on the shredder locate the staytube and chain case and tighten the clamping bolts.

A **WATERPROOF CANVAS COVER** can be supplied for covering the " Gem " when not in use.

SPARE PARTS LIST

AND

DIAGRAMS

ORDERING SPARE PARTS

IMPORTANT. When ordering spare parts always give part number and name and quote the serial number of your machine which is stamped on the main frame member at the rear of the fuel tank. In the case of engine parts the number of the engine should be also quoted. This information will ensure correct parts being sent.

All reference to left and right hand are to be read as from rear of machine looking forward.

When ordering a new part it should be located from the Parts Diagrams, on following pages and the part number noted. Refer to the Parts Lists, and obtain the correct name of the part.

The following parts are supplied assembled:—

25021 Bull wheel supplied complete with differential pinion studs 25024.

25028 Differential plate supplied complete with differential pinion studs 25024.

J.9509 Fly wheel supplied complete with driving pins B.J.8007.

Crank cases only in pairs.

It is also recommended that:—

Crown wheel and pinion be paired.

Road wheel shaft be supplied assembled with fixed hub gear.

AIR CLEANER AND CARBURETTOR

Plate No. 1

Illust. No.	*Part No.*	*Description*	*No. off*
		AIR CLEANER ASSEMBLY	
201	G.178	Inlet pipe cap	1
202	G.180	Gauze container	1
203	G.181	Tank cover	1
204	G.182	Gauze container clip	1
205	G.185	Tank	1
206	G.268	Extension tube hose connection	1
207	G.269	Extension tube	1
208	G.270	Tank gasket	1
209	G.271	Cover gasket	1
210	G.272	Perforated plate	2
211	G.273	Perforated base cone	1
212	G.274A	Gauze filter	2
213	9530	Hose connection to carburettor	1
214	G.276	Hose clips	2
		CARBURETTOR	
—	BJ.8098	Carburettor, complete assembly	1
218	BJ.9100	Carburettor body	1
219	BJ.9101	Throttle lever, spindle and stop	1
220	BJ.9102	Throttle stop screw	1
221	BJ.9104	Air adjusting screw	1
222	BJ.9103	Screw setting springs	2
— *OR*	BJ.9135	Locknuts (alternative to above springs) ...	2
223	BJ.9105	Throttle valve	1
224	BJ.9106	Adjustable main jet body	1
225	BJ.9107	Needle for main jet	1
226	BJ.9109	Needle setting spring	1
— *OR*	BJ.9134	Locknut (alternative to above spring)	1
227	BJ.9108	Washer for float chamber union	2
228	BJ.9110	Plug screws for mixing chamber	2
229	BJ.9111	Gland washer	1
230	BJ.9112	Cork gland	1
231	BJ.9113	Gland adjusting screw	1
232	BJ.9114	Outlet pipe clip	1
233	BJ.9115	Outlet pipe clip pin	1
234	BJ.9116	Throttle valve screw	2
235	BJ.9117	Locking washers	2
—	BJ.9118	Float chamber complete assembly	1
236	BJ.9119	Float chamber only	1
237	BJ.9120	Float chamber cover	1
238	BJ.9121	Cover lock screw	1
239	BJ.9122	Float	1
240	BJ.9123	Needle	1
241	BJ.9124	Tickler	1
242	BJ.9136	Tickler stop	1
243	BJ.9126	Tickler spring	1
244	BJ.9127	Tickler cotter pin	1
245	BJ.9128	Plug screw	1
246	BJ.9129	Plug screw washer	1
247	BJ.9130	Needle seat lock nut	1
249	G.229	*Petrol pipe union nut	1
250	G.227	*Petrol pipe union nipple	1

*Part of petrol pipe assembly, see Plate 2.

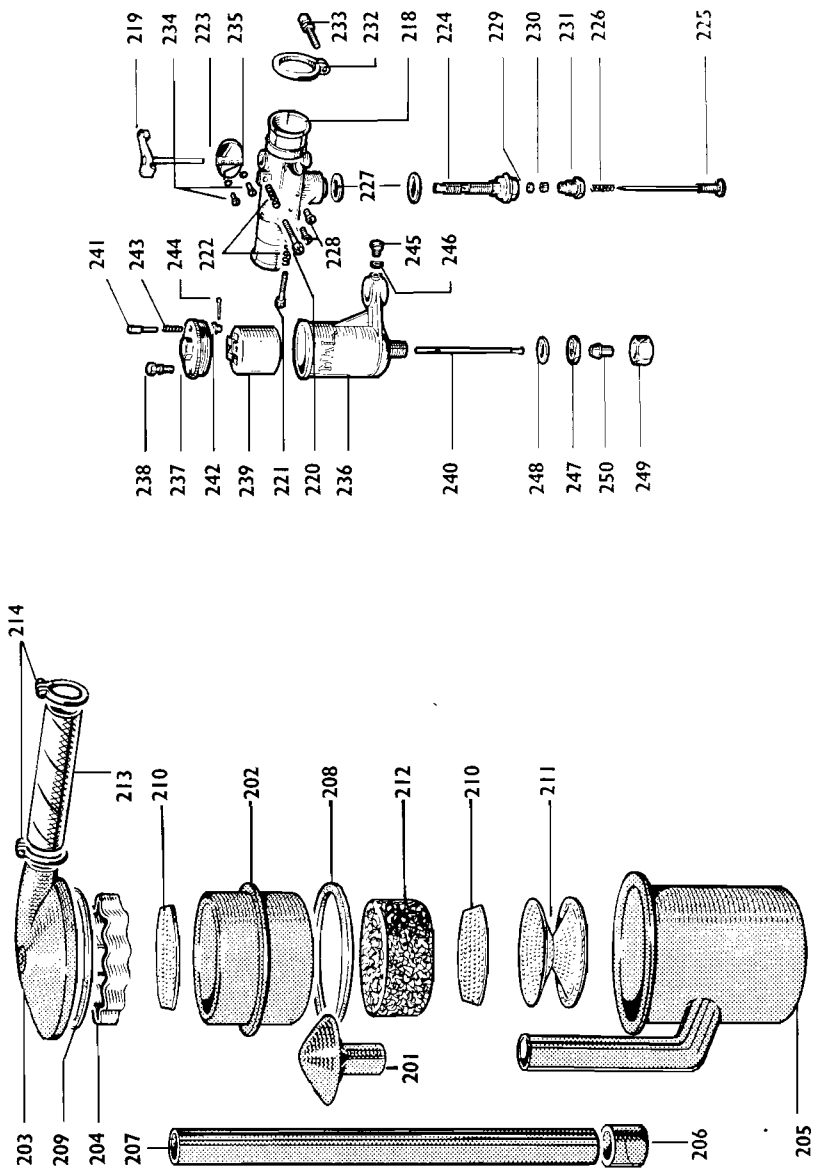


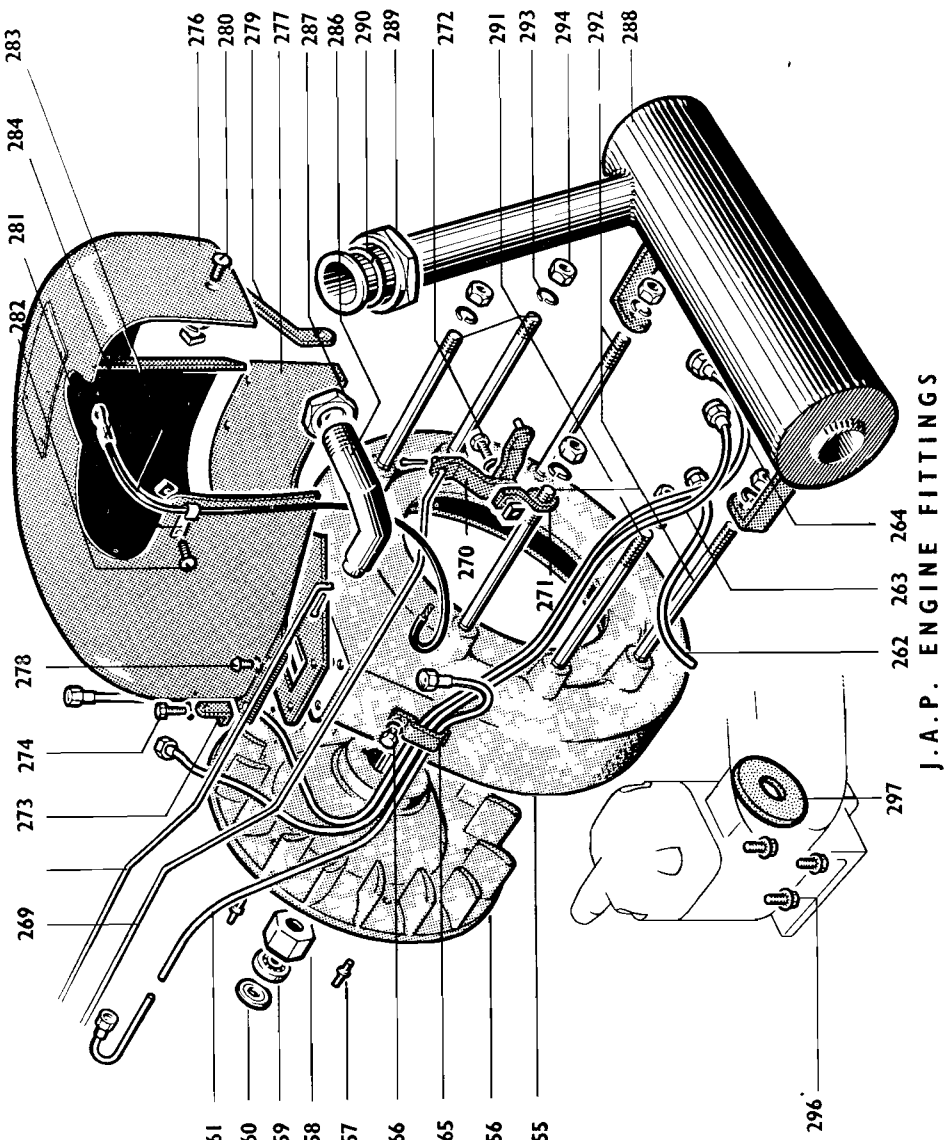
PLATE I

AIR CLEANER and CARBURETTOR

J.A.P. ENGINE FITTINGS

Plate No. 2

Illust. No.	*Part No.*	*Description*	*No. off*
255	9512	Flywheel housing	1
256	9509	Flywheel	1
257	8002	Flywheel driving pins	6
258	9511	Flywheel nut	1
259	B.R.L.½	Spigot bearing	1
260	8007	Spigot bearing retaining washer	1
261	G.5376	Petrol pipe, tank to carburettor	1
262	G.5373	Oil breather pipe	1
263	G.5375	Oil pipe, tank to engine	1
264	G.5377	Oil pipe, engine to filter	1
265	9522	Pipe retaining clip	1
266	3/2/4	Pipe retaining clip setscrew	1
—	S/122/2	Spring washer	1
268	9533	Throttle control rod, frame arm to carb	1
—	S/130/4	Split pin	1
269	9531	Exhaust valve lifting control rod	1
—	S/130/4	Split pin	1
270	9518	Exhaust valve lifting crank	1
271	9517	Exhaust valve lifting crank bracket	1
272	S/2/7	Exhaust valve lifting crank fulcrum bolt	1
—	S/132/2	Thackray washer	1
—	S/120/2	Flat washer	1
—	S/100/2	Nut	1
273	9532	Guide bracket	1
274	S/2/4	Guide bracket setscrew	1
—	S/122/2	Spring washer	1
276	9520	Cooling blast shroud	1
277	9519	Cooling blast shroud base plate	1
278	S/13/2	Cooling blast shroud attachment screw	6
—	S/122/2	Spring washers	6
—	S/100/2	Nuts	2
279	9526	Clip between shroud and tappet cover	1
280	S/13/2	Clip to shroud attachment screw	1
—	S/122/2	Spring washer	1
—	S/100/2	Nut	1
281	G.5384	Magneto lead clip	1
282	G.5385	Magneto lead clip screw	1
—	G.5386	Nut	1
283	8983	Magneto lead	1
284	8984	Magneto lead terminal	1
286	9527	Fuel induction pipe	1
287	G.5387	Fuel induction pipe lock nut	1
288	G.5367	Exhaust muffler	1
289	G.5382	Exhaust pipe attachment nut	1
290	G.5383	Exhaust pipe spring ring	1
291	9513	Flywheel housing stud, short	3
292	9514	Flywheel housing stud, long	3
293	S/122/4	Spring washers	6
294	S/100/4	Nuts	6
296	S/4/4	Setscrews	3
—	S/127/1	Shakeproof washers	3
297	9534	Felt sealing washer	1



GEAR-BOX

Plate No. 3

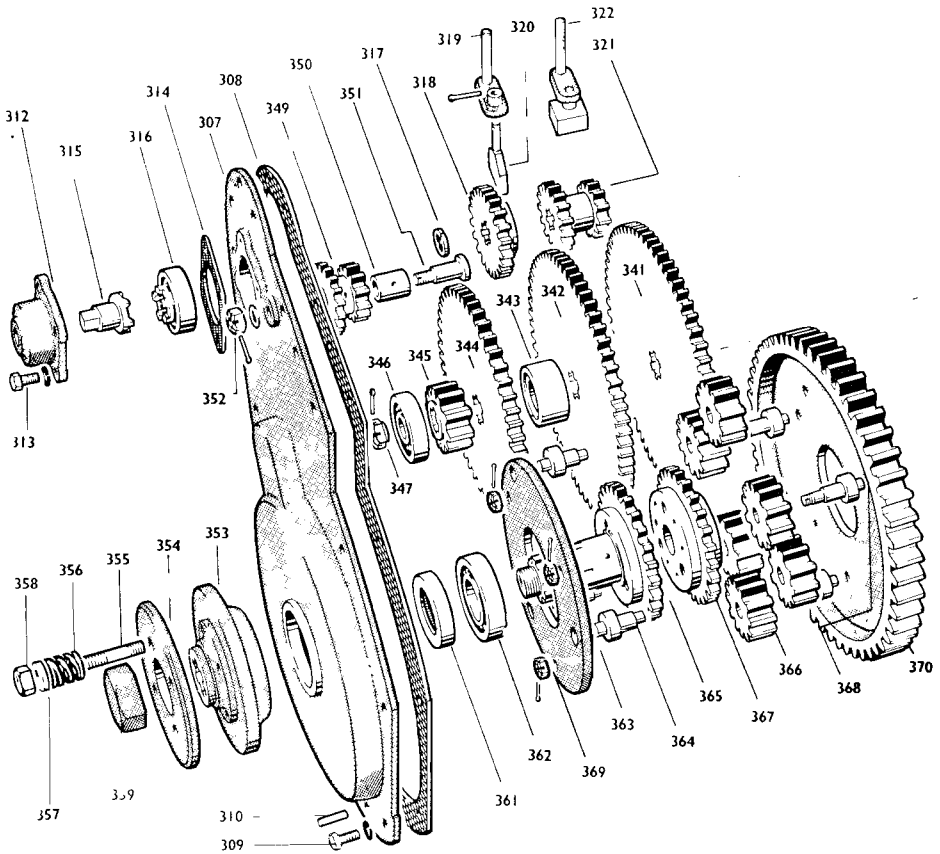
Illust. No.	*Part No.*	*Description*	*No. off*
300	G.5048	Gear-box casing	1
301	G.476	Gear-box dipstick	1
302	G.5121	Gear-box inspection cover	1
303	G.5185	Gear-box inspection cover gasket	1
304	S 13 3	Gear-box inspection cover setscrew	4
—	S 122 2	Spring washer	4
305	S/2/6	Flywheel housing attachment bolt	8
—	S/122 2	Spring washer	8
306	G.479	Gear-box drain plug	1
307	G.5049	Gear-box cover	1
308	G.5050	Gear-box gasket	1
309	3/3 6	Gear-box cover setscrews	15
—	3/122 3	Spring washers	15
310	G.5059	Mills pin	2
312	G.374	Starting dog bearing housing	1
313	S/4/6	Starting dog bearing housing setscrew	4
—	S/122/4	Spring washer	4
314	G.402	Starting dog bearing housing gasket	1
315	G.373	Starting dog	1
316	G.437	Starting dog bearing	1
317	G.436	Jackshaft circlip	1
318	G.5006	Single pinion	1
319	G.5074	Reverse selector	1
320	G.5072	Reverse selector block	1
—	S/130/6	Split pin	1
321	G.5005	Double pinion	1
322	G.5115	Speed change selector assembly	1
323	G.481	Selector bush	2
325	G.5029	Jackshaft	1
326	G.5008	Spiral bevel gear	1
327	S/162/6	Rivets	6
328	G.451	Ball bearing	1
329	G.461	Jackshaft shim	As req.
330	G.5065	Spring lubricating belt	1
331	G.5063	Spring lubricating belt wheel	1
332	G.5064	Pin	1
333	S/105/3	Slotted nut	1
—	S/130/8	Split pin	1
335	G.354	Layshaft bearing stop	1
336	G.355	Layshaft bearing stop gasket	1
337	S/3/5	Layshaft bearing stop setscrew	3
—	S/122/3	Spring washer	3
338	G.5054	Layshaft shim	As req.
339	G.353	Ball bearing	1
340	G.5037	Layshaft	1
341	G.5011	Layshaft gear, large	1
342	G.5012	Layshaft gear, medium	1
343	G.5015	Layshaft spacer	1
344	G.5013	Layshaft gear, small	1
345	G.5025	Bull pinion	1
346	S/220/BLRI.	Ball bearing	1
347	G.5038	Special nut	1
—	S/135/13	Split pin	1
349	G.5027	Reverse idler gears	1
350	G.5034	Reverse idler gears bush	1
351	G.5026	Reverse idler gears pin	1
—	S/120/6	Washer	1
352	S/102/6	Slotted nut	1
—	S/132/10	Split pin	1

GEAR-BOX (contd.)

Plate No. 3

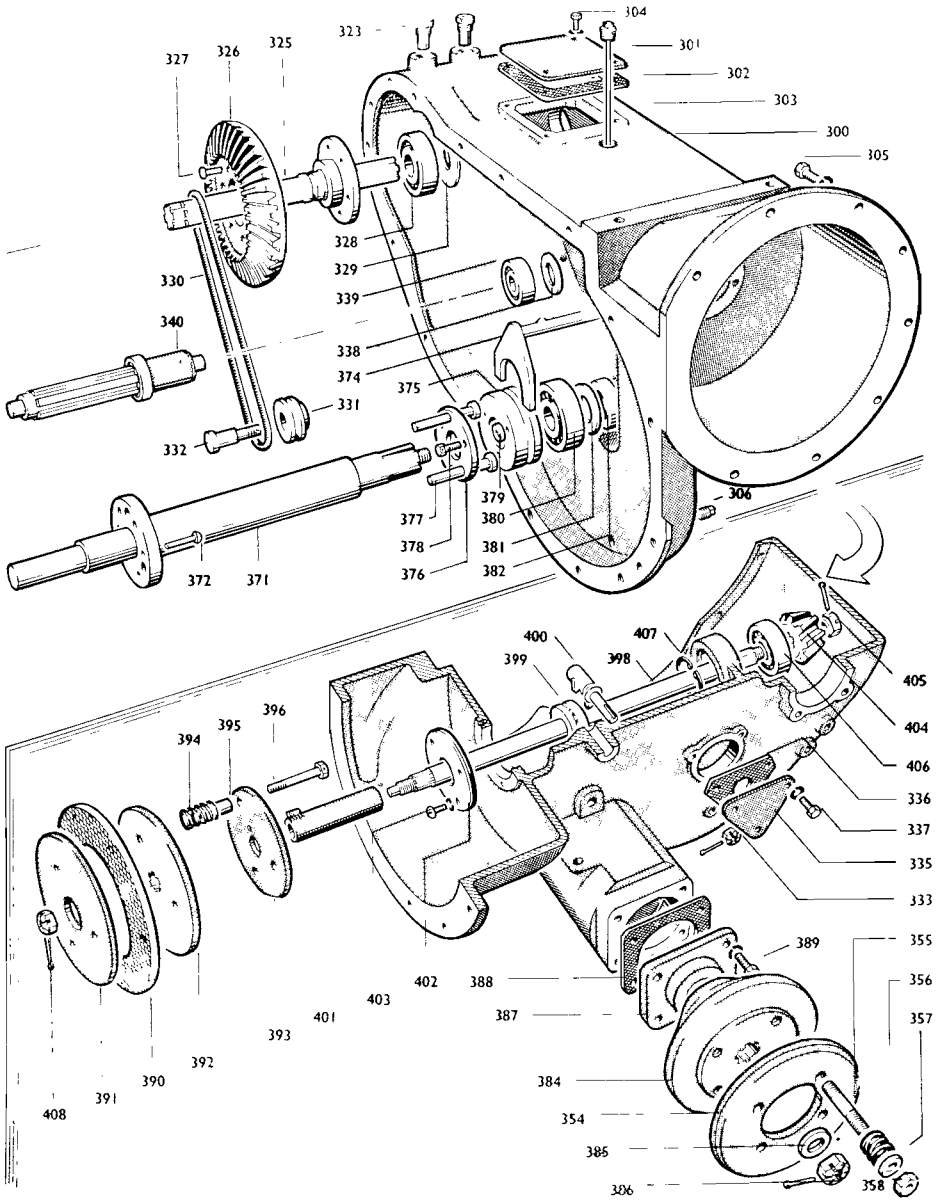
Illust. No.	*Part No.*	*Description*	*No. off*
353	G.5052	Wheel hub, right	1
354	G.162	Wheel hub disc (both wheels)	2
355	G.141	Wheel hub studs (both wheels)	8
356	G.142	Wheel hub springs (both wheels)	8
357	S 120 6	Wheel hub stud washers (both wheels)	8
358	S 100 6	Wheel hub stud nuts (both wheels)	8
359	G.5351	Hub nut, right	1
361	G.305	Oil seal	1
362	299	Ball bearing	1
363	G.5028	Differential plate	1
364	G.5023	Differential pinion pins	3
365	G.5020	Loose link gear	1
366	G.5022	Differential pinions	6
367	G.5019	Differential fixed hub gear	1
368	G.5021	Differential pinion studs	3
369	G.5042	Special nut	3
—	S/132 10	Split pin	3
370	G.5021	Bull wheel	1
371	G.5046	Road wheel axle	1
372	S/161/12	Rivet	6
374	G.5359	Differential lock selector	1
375	G.313	Differential lock	1
376	G.314	Differential lock ring	1
377	G.5056	Differential lock pin	3
378	G.317	Differential lock setscrew	3
379	G.316	Differential lock setscrew spacer	3
380	S/220/BRL.1¼	Ball bearing	1
381	G.5058	Oil seal disc	1
382	S/225/20012550	Oil seal	1
384	G.5051	Wheel hub, left	1
385	S/120/9	Wheel hub washer, left	1
386	G.5047	Wheel hub nut, left	1
—	S/135/13	Split pin	1
387	G.5053	Road wheel axle bearing stop	1
388	G.5057	Road wheel axle bearing stop gasket	1
389	S/4/7	Setscrew	4
—	S/122/4	Spring washer	4
390	G.220	Clutch friction disc	1
391	G.230	Clutch plate, loose	1
392	G.5071	Clutch plate, fixed	1
393	G.290	Clutch thrust plate with driving pin	1
—	G.234	Clutch thrust plate driving pin only	1
394	G.260	Clutch spring	3
395	G.255	Clutch distance piece	3
396	G.250	Clutch bolt	3
398	G.5009	Clutch shaft	1
399	G.262	Clutch thrust race	1
400	G.291	Clutch operating pawl	1
401	G.288	Clutch thrust sleeve	1
402	G.5069	Clutch shaft oil seal	1
403	S/13/6	Setscrew	3
—	S 122 2	Spring washer	3
404	G.5007	Spiral bevel pinion	1
405	G.5061	Special nut	1
—	S/132 10	Split pin	1
406	G.295	Ball race	1
407	S 325 2	Circlip	1
408	G.5062	Special nut	1
—	S/132/10	Split pin	1

PLATE 3



GEAR BOX

PLATE 3



GEAR BOX

JACKSHAFT EXTENSION, CHAIN CASE & ROTOR *Plate No. 4*

Illust. No.	*Part No.*	*Description*	*No. off*
410	G.5469	Jackshaft extension housing (18″ machine) ...	1
,,	G.453	Jackshaft extension housing (20″ machine) ...	1
,,	G.5470	Jackshaft extension housing (24″ machine) ...	1
411	G.454	Jackshaft extension housing studs	2
—	S 122 4	Spring washers	2
412	S 100 4	Nuts	2
413	S 4 8	Jackshaft extension housing setscrews	2
—	S 122 4	Spring washers	2
414	G.402	Jackshaft extension housing gasket	1
415	G.439	Rotor drive sliding dog	1
416	G.156	Rotor drive selector block	1
417	G.157	Rotor drive selector cotter pin	1
418	G.153	Rotor drive selector	1
419	G.456	Rotor dog clutch housing cover	1
420	G.458	Rotor dog clutch housing oil plug	1
421	S 3 6	Rotor dog clutch housing cover setscrews ...	2
—	S 122 3	Spring washers	2
422	S 161 5	Rivets	8
423	G.530	Chain box back plate	1
424	S 13 4	Setscrew, back plate to shield	1
—	S 122 2	Spring washer	1
—	S 100 2	Nut	1
425	591	Frame setscrew, countersink head	1
427	G.452 2	Jackshaft extension fixed dog	1
428	G.452 3	Jackshaft extension fixed dog rivet	1
429	G.5467	Jackshaft extension (18″ machine)	1
,,	G.452 1	Jackshaft extension (20″ machine)	1
,,	G.5468	Jackshaft extension (24″ machine)	1
430	G.459	Jackshaft extension ball bearing	1
431	G.462	Jackshaft extension sprocket shim	As req.
432	G.460	Jackshaft extension sprocket	1
433	G.5101	Rotor drive chain complete	1
—	G.5101 2	Chain connecting link (quote make of chain) ...	
434	G.455	Jackshaft extension sprocket nut	1
—	S 134 11	Split pin	1
435	G.523	Chain box gasket	1
436	G.520	Chain box cover	1
437	G.522	Chain box oil filler plug	1
438	G.519	Chain box wearing shoe	1
440A	S 13 3	Chain box cover setscrew	6
440B	S 13 4	Chain box cover setscrew	2
440C	S 13 5	Chain box cover setscrew	7
440D	S 13 6	Chain box cover setscrew	1
440E	S 2 6	Chain box cover setscrew	17
—	S 122 2	Spring washers	10
—	S 100 2	Nuts, on 440C, D & E	1
441	G.590	Setscrew, chain box to stay tube	1
442	G.585	Chain skid	1
443	S 3 6	Chain skid locking setscrew	1
—	S 120 3	Chain skid locking setscrew washer	1
—	S 100 3	Chain skid locking setscrew nut	1
444	S 33 10	Chain skid hinge bolt	1
—	S 120 3	Chain skid hinge bolt washer	1
—	S 100 3	Chain skid hinge bolt nut	1
446	G.560	Rotor drive sprocket	1
447	G.550	Rotor drive shaft	1
448	S 154 5	Rotor drive sprocket rivets	6
449	G.554	Rotor drive sprocket shim	As req.
450	G.553	Rotor drive shaft ball bearing	1

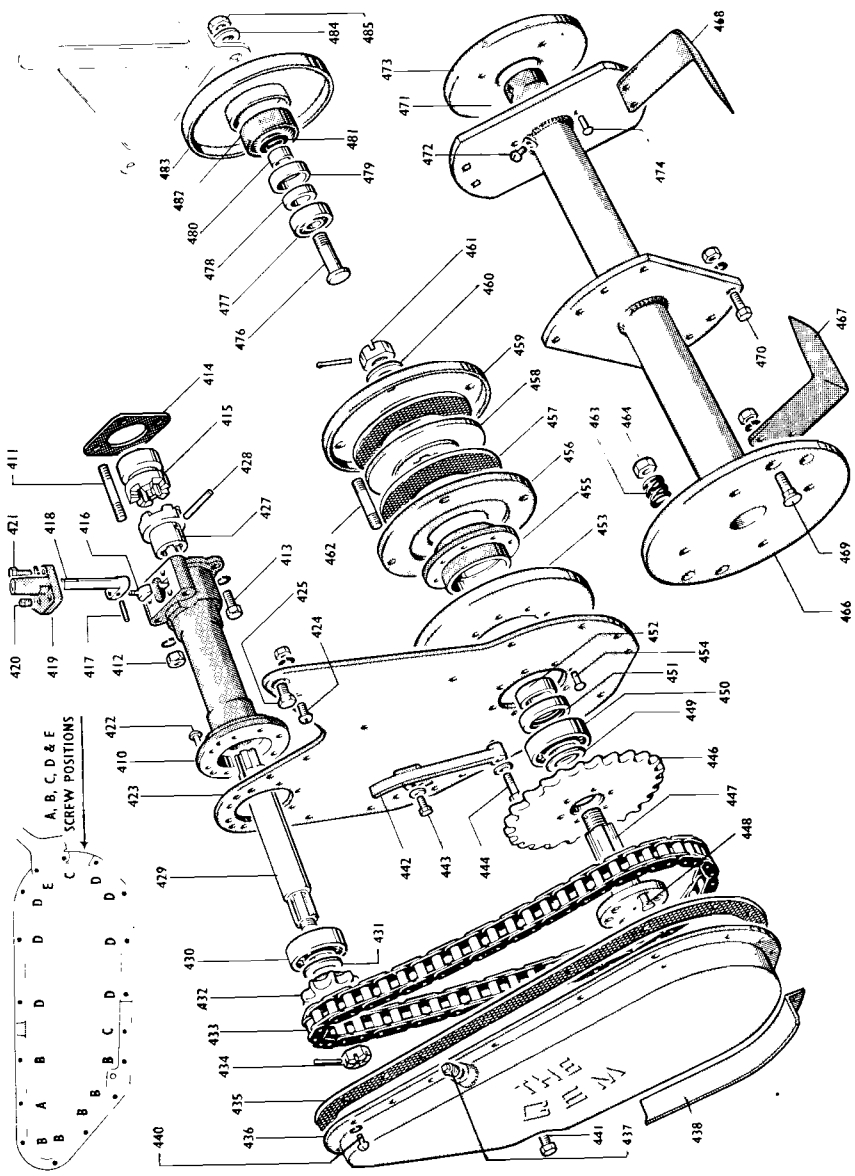


PLATE 4

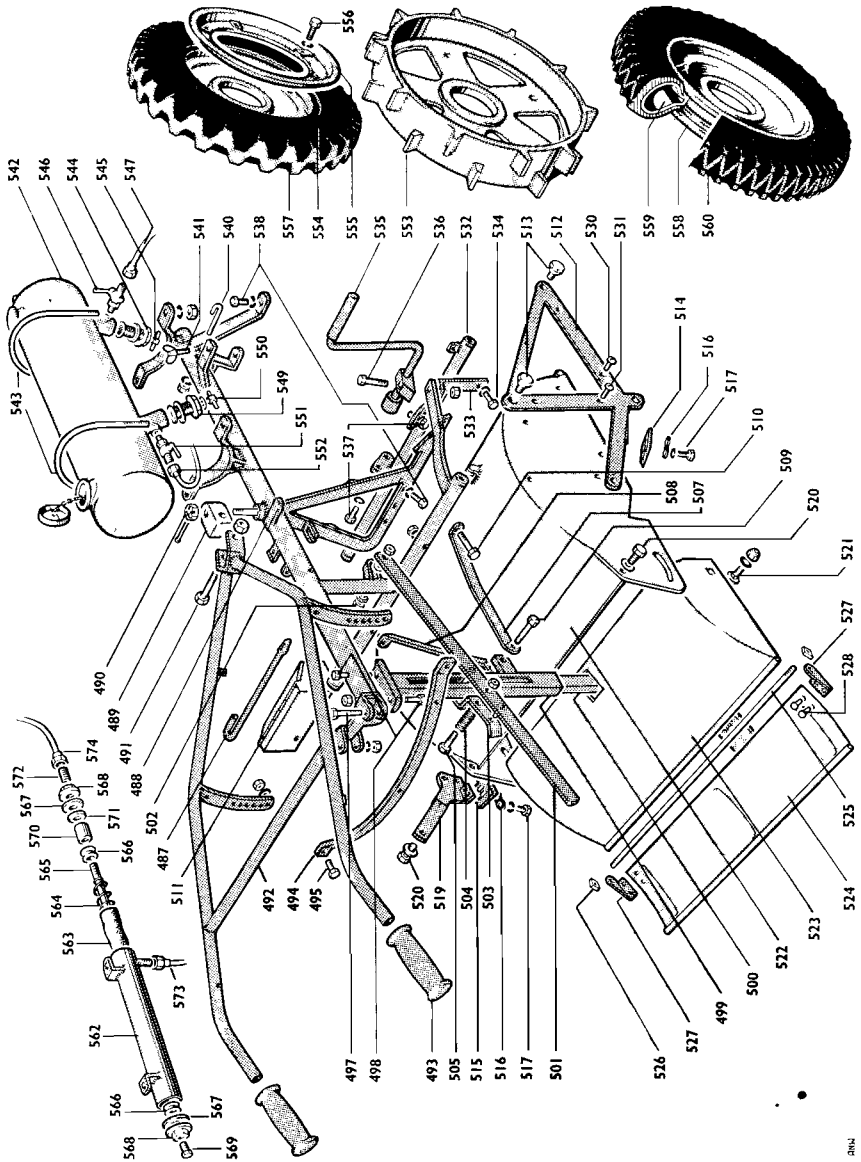
JACKSHAFT EXTENSION, CHAIN CASE and ROTOR

JACKSHAFT EXTENSION, CHAIN CASE & ROTOR *Plate No. 4*

Illust. No.	*Part No.*	*Description*	*No. off*
451	G.615	Rotor drive shaft oil seal	1
452	G.552	Rotor drive shaft spacing sleeve	1
453	G.545	Rotor drive dust cover	1
454	S.161.6	Rotor drive bearing housing rivets	8
455	G.540	Rotor drive shaft bearing housing	1
456	G.605	Rotor friction drive plate	1
457	G.607	Rotor drive friction Ferodo fibre rings	2
458	G.606	Rotor friction drive disc	1
459	G.544	Rotor friction drive wearing plate	1
460	G.1369A	Rotor drive shaft washer	1
461	S/105/9	Rotor drive shaft nut	1
—	S/134/11	Split pin	1
462	G.603	Rotor friction drive studs	4
463	G.602	Rotor friction drive springs	4
464	S/100/6	Rotor friction drive nuts	4
466	G.5461	Rotor — 13″ flange, 18″ machine	1
	G.600A	Rotor — 3″ flange, 20″ machine	
	G.5462	Rotor — 4″ flange, 24″ machine	
467	G.900R	Rotor hoe blade, right	6 or 7
468	G.900L	Rotor hoe blade, left	4 or 6
469	G.919	Rotor hoe blade bolts (end flanges)	8
470	G.918	Rotor hoe blade (intermediate flange)	8 or 16
—	G.920	Rotor hoe blade spring washers	16 or 26
—	S/103/5	Rotor hoe blade nuts	16 or 24
471	G.635	Rotor stub axle back plug	1
472	G/113/3	Rotor stub axle oiling screw	1
473	G.639	Rotor stub axle inner dust cover	1
474	G/160/4	Rotor stub axle inner dust rivets	3
476	G.630	Rotor stub axle	1
477	G.631	Rotor stub axle ball bearing	1
478	G.636	Rotor stub axle oil seal	1
479	G.637	Rotor stub axle oil seal holder	1
480	G.634	Rotor stub axle spacing sleeve	1
481	G.629	Rotor stub axle felt dust seal	1
482	G.632	Rotor stub axle bearing cap	1
483	G.640	Rotor stub axle outer dust cover	1
484	G.648	Rotor stub axle washer	1
485	S/104/8	Rotor stub axle nut	1

FRAME, FITTINGS, SHIELDS and WHEELS *Plate No. 5*

Illust. No.	*Part No.*	*Description*	*No. off*
487	G.993	Rotor blade setting, bar	1
488	G.5330	Main frames — 18″ machine	1
	G.5105	Main frames — 20″ machine	
	G.5329	Main frames — 24″ machine	
489	G.104	Handlebar pivot block	1
490	S.105.8	Slotted nut	1
—	S.134.10	Split pin	1
491	S.36.14	Handlebar pivot bolt	1
—	S/101/6	Nut	1
492	G.122	Handlebars	1
493	G.121	Handlebar grips	2
494	G.123	Handlebar slide	1

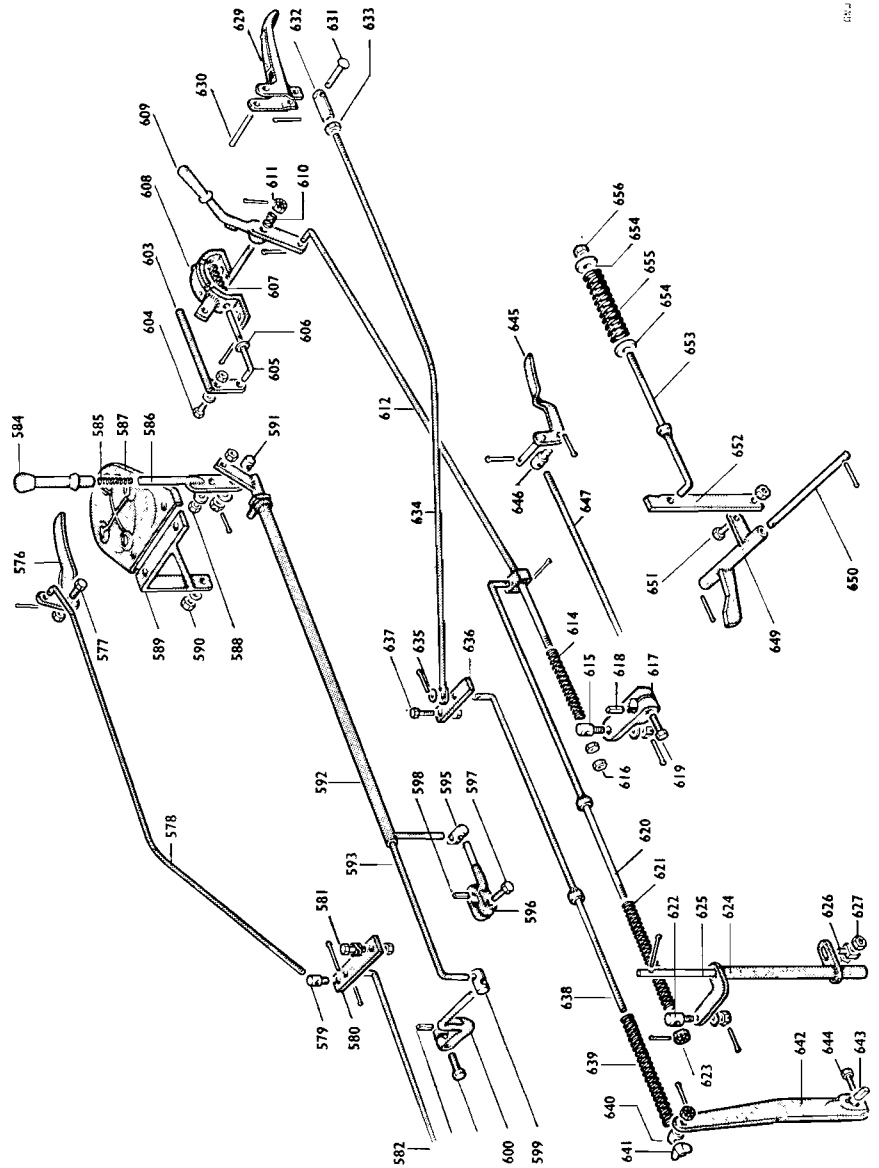


Illust. No.	*Part No.*	*Description*	*No. off*
495	S/34/10	Handlebars bolts	2
—	S/122/4	Spring washers	2
—	S/100/4	Nuts	2
496(spare)			
497	G.5392	Handlebar slide clamp bolts	2
—	S/122/4	Spring washers	2
—	S/100/4	Nuts	2
498	S/34/15	Depth control attachment bolts	2
—	S/100/4	Nuts	2
499	G.5219	Depth control socket	1
500	G.950	Depth control skid	1
501	G.671	Depth control arm	1
502	S/34/12	Depth control pivot bolts	1
—	S/120/4	Thackray washer	1
—	S/120/4	Washer	1
—	S/100/4	Nut	1
503	G.674	Depth control arm clip	1
504	G.675	Depth control arm clip spring	1
505	S/32/11	Depth control arm clip bolt	1
—	S/100/2	Nut	1
507	G.667	Frame support stay, right	1
508	G.668	Frame support stay, left	1
509	S/32/8	Bolt, support stay to socket	1
—	S/122/2	Spring washers	1
—	S/100/2	Nut	1
510	S/2/12	Bolts through frame cross member	3
—	S/122/2	Spring washers	2
—	S/100/2	Nuts	3
511	G.790	Tool box	1
512	G.650	Side frame	1
513	G.591	Frame setscrew countersink head	2
514	G.821	Weed cutter blade, right	1
515	G.820	Weed cutter blade, left	1
516	G.830	Weed cutter blade keeper plate	2
517	S/2/4	Weed cutter blade setscrew	4
—	S/122/2	Spring washers	4
519	G.825	Weed cutter bracket	1
520	S/4/8	Rear shield hinge bolts	2
—	S/122/4	Springs washers	2
521	G.644	Rear shield champing bolts	2
—	S/120/4	Washers	2
—	S/107/4	Simmonds nut	2
522	G.5435 / G.641 / G.5436	Front shield — 18″ machine / 20″ machine / 24″ machine	1
523	G.5439 / G.642 / G.5443	Rear shield — 18″ machine / 20″ machine / 24″ machine	1
524	G.5451 / G.645 / G.5454	Trailing board — 18″ machine / 20″ machine / 24″ machine	1
525	G.5453 / G.646 / G.5479	Trailing board, hinge bar — 18″ machine / 20″ machine / 24″ machine	1
526	S/101/3	Trailing board hinge bar lock nuts	2
527	G.647	Trailing board hinge bar bracket	2
528	S/160/4	Trailing board hinge bracket rivets	4
530	S/13/5	Setscrews, side frame front members to shield	3
531	S/13/6	Setscrews, side frame upright members to shield	2

FRAME, FITTINGS, SHIELDS and WHEELS *Plate No. 5*

Illust. No.	*Part No.*	*Description*	*No. off*
—	S/122/2	Spring washers	5
—	S/100/2	Nuts	5
532	G.5424 / G.589 / G.5428	Staytube — 18″ machine / 20″ machine / 24″ machine	1
533	G.381	Starting handle support lug	1
534	S/4/6	Setscrew handle support lug to staytube	1
—	S/122/4	Spring washer	1
535	G.5465 / G.380 / G.5466	Starting handle and block — 18″ machine / 20″ machine / 24″ machine	1
		(*See also* Road wheel extn., *page 40.*)	
536	G.382	Bolt, starting handle block to frame	1
—	S/100/5	Nut	1
537	S/4/8	Setscrews, stay tube to gear-box	4
—	S/122/4	Spring washers	4
538	S/4/6	Setscrews, main frame to gear-box	5
—	S/122/4	Spring washers	5
540	G.708	Throttle rod hook bolt	1
—	S/122/2	Spring washer	1
—	S/100/2	Nut	1
541	G.183	Air cleaner clamp screw	1
542	G.165	Tank assembly complete with caps	1
543	G.175	Tank straps	2
—	S/122/2	Spring washers	4
—	S/100/2	Nuts	4
544	G.168	Tank oil filter core	1
545	G.458	Tank oil filter drain plug	1
—	S/340/1	Tank oil filter cock (alternative)	1
540	G.167	Oil supply cock	1
547	—	Oil pipe (see engine fittings illustration, *p. 25*)	1
549	G.171	Petrol filter core	1
550	G.5413	Petrol filter drain plug	1
—	S/254/4	Petrol filter drain fibre washer	1
551	G.166	Petrol supply cock	1
552	—	Petrol pipe (see engine fittings illustration, *p. 25*)	1
553	G.130	Land wheel	2
554	G.5084	Cushion tyred land wheel hub	2
555	G.5085	Cushion tyred land wheel rim	2
556	S/4/7	Cushion tyred land wheel setscrews	12
—	S/122/4	Spring washers	12
557	G.5086	Cushion rubber tyre	2
558	G.131	Pneumatic tyred wheel hub, left	1
558	G.131	Pneumatic tyred wheel hub, right	1
559	G.133	Pneumatic tyred wheel inner tube	2
560	G.134	Pneumatic tyred wheel outer cover	2
562	G.880	Oil filter outer tube	1
563	G.890	Oil filter bag	1
564	G.891	Oil filter bag support spring	1
565	G.882	Oil filter centre tube	1
566	G.889	Oil filter bag securing discs	2
567	G.883	Oil filter fibre discs	2
568	G.881	Oil filter tube end caps	2
569	G.1233	Oil filter end cap sealing screw	1
570	G.886	Oil filter connecting union	1
571	G.887	Oil filter end washer	1
572	G.885	Oil filter tube nipple	1
573	—	Oil pipe (see engine fittings illustration, *p. 25*)	1
574	G.5378	Oil pipe filter to tank	1

Illust. No.	*Part No.*	*Description*	*No. off*
576	797	Throttle control hand lever	1
577	S 32 6	Throttle control hand lever fulcrum bolt ...	1
—	S 100 2	Locknut	1
578	G.795	Throttle control rod hand lever to frame arm	1
—	S 130 4	Split pin	1
579	G 789	Trunnion	1
—	S 130 4	Splitpin	1
580	G.799	Throttle control frame arm	1
581	S 2 7	Throttle control frame arm pivot bolt	1
—	S 123 2	Thackray washer	1
—	S 100 2	Locknut	1
582	—	Throttle control rod (see eng. fitt. illust., *p. 25*)	1
—	S/130/4	Split pin	1
584	G.5154	Gear lever handle	1
585	G.5161	Gear lever spring	1
586	G.5158	Gear lever	1
587	G.5173	Gear lever gate	1
588	S/2/6	Gear lever fulcrum bolt	1
—	S/120/2	Washer	1
—	S 100/2	Locknut	1
589	G.5136	Rear support bracket	1
590	S/100/3	Nut	1
—	S/120/3	Washer	1
591	G.5415	Trunnion	1
—	S/120/3	Washer	1
—	S 102/3	Slotted nut	1
—	S 132/6	Split pin	1
592	G.5139	Control tube (to 2nd & 3rd gears)	1
593	G.5165	Control rod (to 1st & rev. gears)	1
595	G.5172	Universal joint (2nd & 3rd gears)	1
596	G.5332	Control arm (2nd & 3rd gears)	1
597	S/3/8	Control arm clamping bolt	2
598	G.155	Control arm key	2
599	G.5166	Universal joint (1st & rev. gears)	1
600	G.5331	Control arm (1st & rev. gears)	1
603	G.5320	Handlebar positioning arm	1
604	S/32/6	Handlebar positioning arm fulcrum bolt ...	1
—	S/120/2	Washer	1
—	S/100/2	Locknut	1
605	G.465	Handlebar positioning pin...	1
606	S/120/3	Handlebar positioning pin washer	1
—	S/132/6	Handlebar positioning pin split pin	1
607	G.466	Handlebar positioning pin spring	1
608	G.5222	Rotor and diff. lock control quadrant	1
609	G.781	Rotor and diff. lock control hand lever	1
610	G.792	Hand lever spring	1
611	S/102/3	Nut	1
—	S/132/6	Split pin	1
612	G.793	Rotor control rod	1
—	S/132/6	Split pin	1
614	G.794	Rotor control rod spring	1
615	G.773	Trunnion	1
—	S/120/3	Washer	1
—	S/102/3	Slotted nut	1
—	S/132/6	Split pin	1
616	S/101/3	Locknuts	2
617	G.152	Rotor control arm	1
618	G.155	Rotor control arm key	1
619	S/3/8	Rotor control arm clamping bolt	1
620	G.321	Diff. lock control rod	1



CONTROLS (contd.)

Plate No. 6

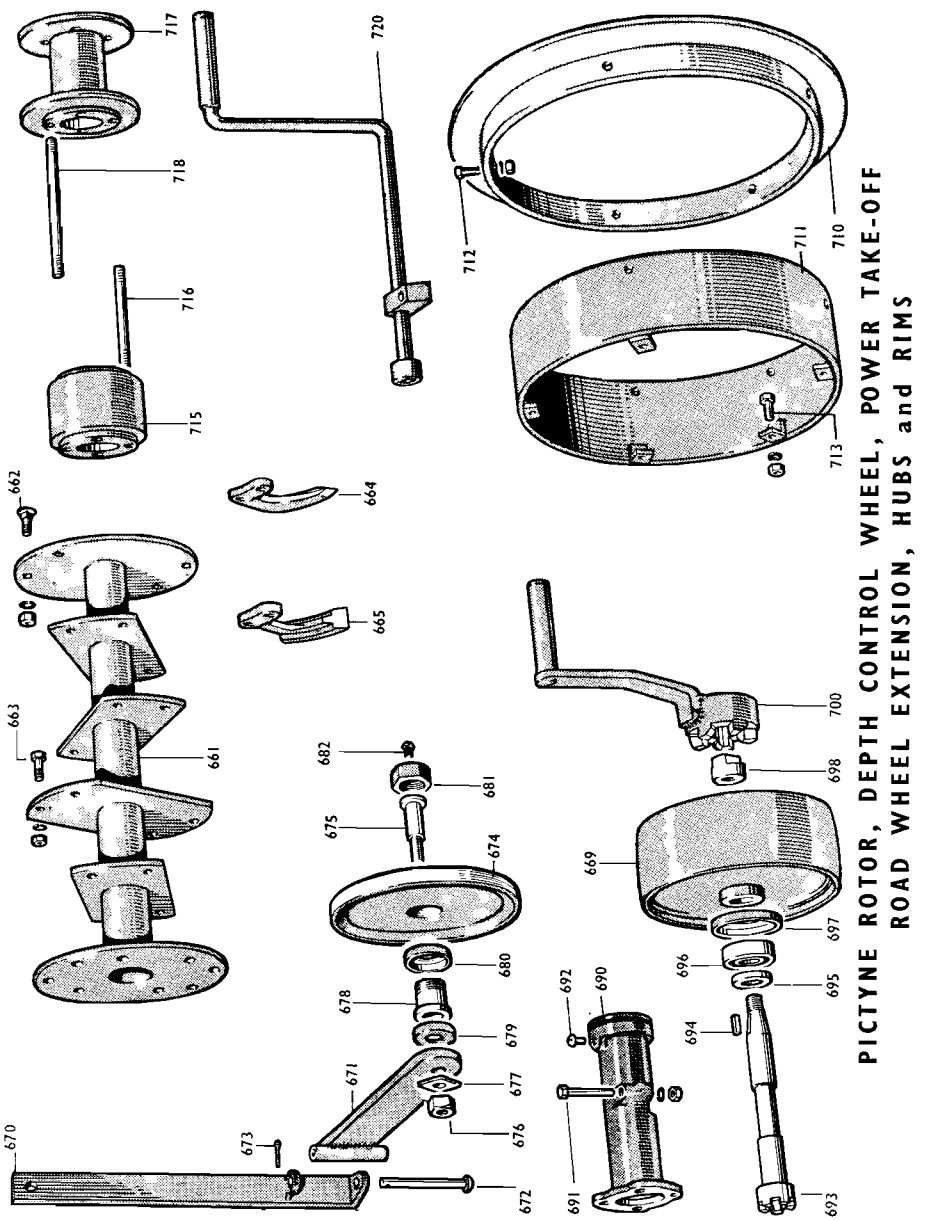
Illust. No.	*Part No.*	*Description*	*No. off*
—	S/132/6	Split pin	1
621	G.324	Diff. lock control rod spring	1
622	G.773	Trunnion	1
—	S/120/3	Washer	1
—	S/102/3	Slotted nut	1
—	S/132/6	Split pin	1
623	S/102/3	Slotted nut	1
—	S/132/6	Split pin	1
624	G.5356	Diff. lock selector quadrant	1
625	G.5352	Diff. lock selector quadrant pin	1
—	S/130/4	Split pin	1
626	G.319	Trunnion	1
627	S/101/6	Locknuts	2
629	G.5145	Clutch control hand lever	1
630	G.699	Clutch control hand lever fulcrum rivet	1
631	G.5149	Clutch control hand lever pivot pin	1
—	S/130/4	Split pin	1
632	G.5150	Clutch control rod adjusting link	1
633	S/101/3	Locknut	1
634	G.5170	Clutch control rod, hand lever to frame arm	1
635	S/120/2	Washer	1
636	G.5144	Clutch control frame arm	1
637	S/32/8	Clutch control frame arm pivot bolt	1
—	S/100/2	Locknut	1
638	G.5446	Clutch control rod, frame arm to control arm	1
—	S/132/6	Split pin	1
639	G.5412	Clutch control rod spring	1
640	G.5410	Trunnion	1
—	S/102/3	Slotted nut	1
—	S/132/6	Split pin	1
641	G.5411	Wing nut	1
642	G.710	Clutch control arm	1
643	G.711	Clutch control arm key	1
644	S/3/8	Clutch control arm clamping bolt	1
645	G.188	Exhaust valve lifting control hand lever	1
—	S/132/6	Split pin	1
646	G.789	Trunnion	1
—	S/130/4	Split pin	1
647	—	Exhaust valve lifting control rod (see engine fittings illustration, *p. 25*)	1
649	G.5132	Reverse interlock rocker	1
650	G.5153	Reverse interlock rocker pin	1
—	S/130/8	Split pins	2
651	S/2/6	Linking setscrew	1
—	S/100/2	Locknut	1
652	G.5152	Reverse interlock, vertical link	1
653	G.5181	Reverse interlock rod	1
654	G.5178	Special washers	2
655	G.5130	Reverse interlock spring	1
656	S/100/3	Tensioning nut	1

PICKTYNE ROTOR, DEPTH CONTROL WHEEL, POWER TAKE-OFF, ROAD WHEEL EXTENSION HUBS and RIMS

Plate No. 7

Illust. No.	*Part No.*	*Description*	*No. off*
		PICKTYNE ROTOR ASSEMBLY *Note*—Picktyne Rotor will be supplied complete with Stub Axle Assembly to facilitate fitting.	
661	G.5471	Picktyne rotor (6 flanges, 18″ machine)	1
,,	G.5472	Picktyne rotor (6 flanges, 20″ machine)	1
,,	G.5473	Picktyne rotor (7 flanges, 24″ machine)	1
662	G.922	End flange bolts	8
663	G.921	Intermediate flange bolts	16 or 20
—	S/122/5	Spring washers	24 or 28
—	S/108/5	Nut	24 or 28
664	991	Picktyne, Lucerne	12 or 14
665	992	Picktyne chisel	12 or 14
		ROTOR DEPTH CONTROL WHEEL ASSEMBLY	
670	G.664	Pedestal	1
671	G.663	Arm	1
672	G.666	Arm swivel pin	1
673	S/134/8	Split pin	1
674	G.660	Wheel	1
675	G.661	Axle	1
676	S/101/8	Axle nut	1
677	G.665	Locking washer	1
678	G.659	Wheel bush	1
679	G.657	Inner dust cover	1
680	G.658	Outer dust cover	1
681	G.662	Wheel cap	1
682	S/13/3	Oiling screw	1
		POWER TAKE-OFF ASSEMBLY	
690	G.5404	Housing (18″ machine)	1
,,	G.5402	Housing (20″ machine)	1
,,	G.5475	Housing (24″ machine)	1
691	S/34/15	Housing bolt	1
—	S/122/4	Spring washer	1
—	S/100/4	Nut	1
692	S/93/4	Oiling screw	1
693	G.5406	Shaft (18″ machine)	1
,,	G.5400	Shaft (20″ machine)	1
,,	G.5477	Shaft (24″ machine)	1
694	G.939	Shaft key	1
695	G.932	Thrust collar	1
696	G.936	Ball bearing	1
697	G.935	Bearing dust cover	1
698	G.938	Shaft nut	1
699	G.940	Pulley wheel	1
700	G.941	Starting handle	1

PLATE 7



PICTYNE ROTOR, DEPTH CONTROL WHEEL, POWER TAKE-OFF
ROAD WHEEL EXTENSION, HUBS and RIMS

ROAD WHEEL EXTENSION HUBS and RIMS

Plate No. 7

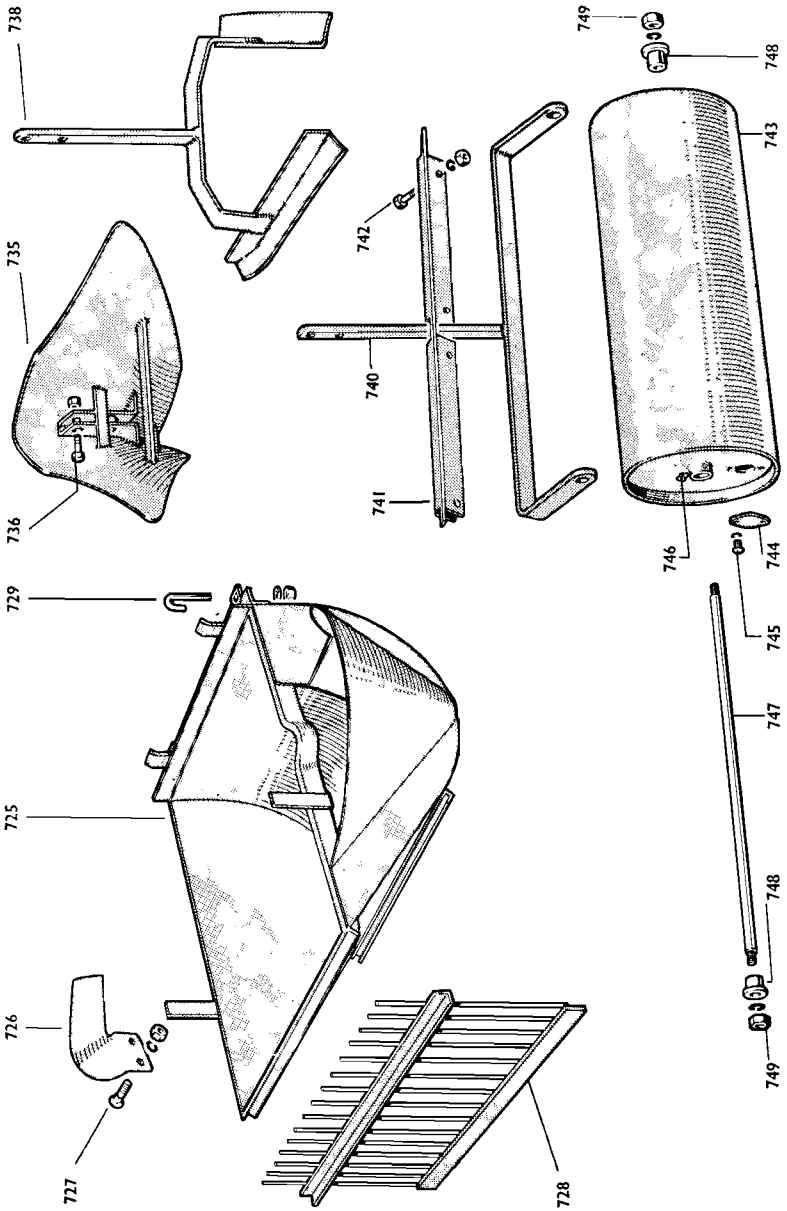
Illust. No.	*Part No.*	*Description*	*No. off*
		EXTENSION RIMS FOR CLEATED LAND WHEELS	
710	G.135/1	Land wheel extension flange	2
711	20G.135/3	Land wheel extension rim (18″ & 20″ machine)	2
,,	24G.135/3	Land wheel extension rim (24″ machine) ...	2
712	S/34/8	Flange bolt	10
713	S/34/10	Rim attachment bolt	10
—	S/122/4	Spring washer	20
—	S/100/4	Nut	20
		EXTENSION HUBS FOR CUSHION & PNEUMATIC TYRED WHEELS	
715	G.144	Extension hub for twin wheels, narrow setting	2
716	G.145	Studs for use with G.144	8
717	G.5396	Extension hub for twin wheels, wide setting, RH.	1
,,	G.5397	Extension hub for twin wheels, wide setting, LH.	1
718	G.5393	Studs for use with 25396	4
,,	G.5394	Studs for use with 25397	4
		Cushioned or pneumatic tyres and their wheels will be supplied as required, see Plate 5.	
		N.B.—The pneumatic wheels required are both right hand—Pt. No. G.132.	
		STARTING HANDLES FOR USE WITH EXTENSION RIMS & HUBS	
720	G.5466	For 18″ and 20″ machine fitted with extension rims or narrow setting twin tyres	1
,,	G.5561	For 24″ machine fitted with extension rims or narrow setting twin tyres	1
,,	G.5395	For 18″, 20″ and 24″ machine fitted with wide setting twin tyres	1
		N.B.—The appropriate handle will be supplied whichever wheel extensions are ordered.	

SOIL SHREDDER

Plate No. 8

Illust. No.	*Part No.*	*Description*	*No. off*
725	18G.1000	Trough (18″ machine)	1
,,	20G.1000	Trough (20″ machine)	1
,,	24G.1000	Trough (24″ machine)	1
726	G.1001	Feeder blade	2
727	G.919	Feeder blade bolt	4
—	S/122/5	Spring washer	4
—	S/108/5	Nut	4
728	18G.1002	Soil screen, coarse (18″ machine)	1
,,	20G.1002	Soil screen, coarse (20″ machine)	1
,,	24G.1002	Soil screen, coarse (24″ machine)	1
,,	18G.1004	Soil screen, fine (18″ machine)	1
,,	20G.1004	Soil screen, fine (20″ machine)	1
,,	24G.1004	Soil screen, fine (24″ machine)	1
729	G.1003	Hook bolt	2
—	S/122/4	Spring washer	2
—	S/100/4	Nut	2

PLATE 8



SOIL SHREDDER, FURROWING ATTACHMENT
FURROW COVERING ATTACHMENT, ROLLER

FURROWING ATTACHMENT.
FURROW COVERING ATTACHMENT.
ROLLER ASSEMBLY.

Plate No. 8

Illust. No.	*Part No.*	*Description*	*No. off*
		FURROWING ATTACHMENT	
735	G.952	Mould board	1
736	S 32/8	Skid bracket clamping bolt	1
—	S 100/3	Nut	1
		FURROW COVERING ATTACHMENT	
738	G.951	Furrow covering attachment complete	1
		ROLLER ASSEMBLY	
740	18G.1007	Roller fork (18″ machine)	1
,,	20G.1007	Roller fork (20″ machine)	1
,,	24G.1007	Roller fork (24″ machine)	1
741	18G.1017	Roller scraper (18″ machine)	1
,,	20G.1017	Roller scraper (20″ machine)	1
,,	24G.1017	Roller scraper (24″ machine)	1
742	S/32/8	Scraper clamping bolt	2
—	S/120/2	Flat washer	2
—	S/122/2	Spring washer	2
—	S/100/2	Nut	2
743	18G.1005	Roller drum (18″ machine)	1
,,	20G.1005	Roller drum (20″ machine)	1
,,	24G.1005	Roller drum (24″ machine)	1
744	G.1011	Roller filler plate	1
745	S/13/3	Setscrew	2
—	S/122/2	Spring washer	2
746	G.1012	Grease nipple	2
747	18G.1006	Axle (18″ machine)	1
,,	20G.1006	Axle (20″ machine)	1
,,	24G.1006	Axle (24″ machine)	1
748	G.1008	Axle bush	2
749	3/101/8	Axle nut	2
—	S/122/8	Axle spring washer	2

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