OPERATING INSTRUCTIONS

AND

PARTS LIST

PM

POWER CHAIN SAWS

One-Man Power Chain Saws

Manufactured by

POWER MACHINERY LIMITED

VANCOUVER, CANADA

SALES AND SERVICE

P. M. PRODUCTS LIMITED	POWER MACHINERY INCORPORATED
845 EAST HASTINGS ST. VANCOUVER, B.C.	1990 ALASKAN WAY SEATTLE, WASHINGTON

Read Carefully Before Using Saw

PRINTED IN CANADA

POWER MACHINERY LIMITED

OPERATING INSTRUCTIONS

W A R N I N G

THIS 2-CYCLE ENGINE DEPENDS FOR ITS LUBRICATION UPON OIL THOROUGHLY MIXED WITH THE GASOLINE IN PROPER PROPORTION AND FREE FROM WATER. FOR FILLING OF TANK, A CHAMOIS OR FUNNEL WITH FINE SCREEN SHOULD BE USED. NEVER UNDER ANY CONDITION PUT GASOLINE IN TANK WITHOUT FIRST MIXING IT WITH OIL. MAKE CERTAIN IT IS WELL MIXED AND IN THE PROPER QUANTITY. ONE PINT OF S.A.E. 40 or 50 OIL TO EACH GALLON OF GAS. THIS IS THE ONLY WAY OF LUBRICATING PISTON, RINGS, CYLINDER WALLS, CONNECTING ROD AND BEARINGS.
SEE THAT YOUR RESERVE SUPPLY OF FUEL IS MIXED IN ADVANCE.

Starting a new Machine:

The machine, when it leaves our factory, is properly adjusted for steady running: it is possible, however, that rough handling in transit may result in mal-adjustment. In starting a new machine, therefore:

1. Check the machine over thoroughly making sure nothing has been broken or damaged in transit.

2. Check cutting chain to make sure it is neither too loose nor too tight. It should be slightly slack to prevent burning the rounded part of the guide bar and to reduce friction. It should be possible to lift chain 1/2 inch above centre of cutter bar with the fingers.

3. Fill the chain oiler in forward handle with light CLEAN lubricating oil and put some oil on the chain and in groove of the bar. If pitch is enoountered, mix diesel or coal oil with the regular oil in chain oiler.

4. Adjust high speed jet, (which is fitted with T handle) of carburetor until it is about one full turn open. Idling jet, (which is knurled and slotted) seldom needs adjusting. It should be about 1/2 turn open. Proper adjustment can be made only when motor is warm and when it is working.

5. Check clutch to make sure it is NOT engaged.

6. Make sure gasoline shut-off cock is in open position.

7. Open throttle by moving lever backward toward handle and give a quick pull on the starting rope.

8. Should the motor not start after two or three pulls it may be necessary to choke the carburetor: choke handle is in vertical position when the choke is closed. One or two pulls should be all that is necessary with the choke closed. As soon as motor fires, open the choke slightly, increasing the opening as the motor becomes warm.

Once started, DO NOT RACE THE MOTOR, it is never advisable to run a new machine at top speed until it is well broken in. About four hours

under working conditions should be enough for this. The carburetor can best be adjusted when the machine is actually cutting and under load. Once the carburetor jets are adjusted it should not be necessary to make further changes, but always use the choke when starting a cold motor.

GENERAL INFORMATION

In case of hard starting, it may be corrected by the following:

A. Check spark plug, - gap should be about .025. Make sure points are clean.

B. Check spark from magneto and if necessary, clean points.

C. Check for flooding - it may be necessary to remove plug from bottom of crankcase and drain out accumulation of gas and oil. Do this by pulling starting rope two or three times with plug removed. Be sure carburetor bowl is filling with gas and is not stuck.

D. Be sure when putting a chain on the machine that the points of sprocket locate between connecting links and side cutters of chain.

Clutch Adjustment:

Should it be necessary at any time to make adjustments to the clutch, it can be done by removing the clutch housing cover. (Remove the four screws and pry off the cover gently so as not to damage the bearing surfaces). Adjust the small bronze lever until the fork is loose and not exerting any pressure on the bronze pressure plate. It may also be advisable to tighten the spring by taking up the spring nut a half-turn or so - left hand thread.

Check periodically for grease. Use only a medium weight long fibre grease

Magneto Adjustment:

To remove flywheel from crankshaft unscrew right hand nut part way and tap nut with hammer to jar flywheel loose.

Set points at .018" to .020" gap.

To retard spark, loosen screws holding backplate assembly, turn magneto slightly in counter-clockwise rotation. To advance move in opposite direction.

Check shorting and spark plug wires making sure they are clear of the flywheel.

When replacing magneto make sure spring is between cam and flywheel, also that nut is well tightened.

General Care of Machine:

With proper care machine should give long service with a minimum amount of repairs or replacements. KEEP NUTS, BOLTS, SCREWS TIGHT AT ALL TIMES so that threaded holes etc. do not have a chance to enlarge through vibration. Grease must be added to the roller chain drive from time to time to prevent wear of both the chain and sprockets, this can be put in through the clutch, by removing cover.

KEEP THE MACHINE CLEAN: You will then be able to inspect parts more readily and detect looseness or breakage.

Crankshaft Assembly:

Should it be necessary at any time to remove the connecting-rod from the crankshaft, be careful when replacing it that the cap is put back in its proper position, identification marks are on the connecting-rod and cap for this purpose. Screws must be made as tight as possible. Be sure that lockwashers are securely locked.

Piston rings should have about .013" clearance between ends when fitted to cylinder-block.

Instructions for Felling:

To use the machine for felling, adjust the carburetor swivel collar (No. 129) so that the carburetor will swivel without having to loosen the collar or tighten it each time. At the same time it should be sufficiently tight so that it won't turn of its own accord. The pin screwed into the outside diameter of the collar is merely to facilitate turning it and is NOT a set screw.

Start motor in upright position, grip left hand on choke body of carburetor in preparation to turning it, place right hand on felling handle. With the left wrist stiff, and a good grip on the choke body, lift the motor with the right hand, allowing the grip to slip in the hand. The weight of the motor as it turns will actually swivel it on the carburetor with the result that it is in a felling position. Engage clutch and speed up motor as the chain starts to cut. When the bar is partly buried in cut, shift the right hand from the felling handle to the bucking handle so that more pressure can be put on the bar. Keep bar level to prevent a curved cut, resulting in the chain binding. The most simple way to gain practice in felling is to cut a few rings off the top of a stump. Practice getting the carburetor in the felling position when the motor is not running.

Maintenance of Cutting Chain:

The chain-saw does considerably more work than the hand-saw for the same period of time, and should be filed or ground at more frequent intervals. Whenever it is necessary to exert unusual pressure on the chain to make it cut it is time the chain should be sharpened. A dull chain will wear more quickly and will require more time to sharpen, it will also, through the necessary pressure exerted to make it cut, cause excess wear on the edges of the guide bar and on the motor.

Filing Instructions:

Never, at any time, (unless to correct serious damage to a portion or all of a chain) file a chain from the top, but always from the front of the tooth. Filing from the front extends the life of the chain and maintains adequate space between the teeth to hold sawdust while the chain is in the cut, actually the space increases as the chain is filed back. Should the teeth be filed from the top the space is decreased and the chain life shortened. This is very important.

HOW TO FILE AND JOINT YOUR SAW FOR DIFFERENT TYPES OF WOODS.

You can easily see that a saw which is filed and jointed for softwoods would not give best results in cutting frozen woods or hardwoods, and vice versa. You can also see that all saws leaving the factory must be filed and jointed to one particular standard. As there is more softwood than hardwood being cut with power chain saws at present, all saws are filed and jointed to cut softwoods when they leave the factory UNLESS ORDERED OTHERWISE.

This standard is called "No. 3 Chain" and is sharpened and jointed as follows.

	Cutters	Off-set Rakers	Straight Center Rakers
Top Bevel	35°	20°	None
Front Bevel	5°	20°	None
Hook	15° negative	20° positive	20° positive
Jointing (Clearance between point of cutter & raker)	all same height	.015 lower than cutter	.015 lower than cutter

If you intend to use your saw to cut frozen wood or hardwood it will be necessary for you to re-file and re-joint it, or order special chains.

If you want a chain for frozen woods order Chain No. 3 for frozen wood.

If you want a chain for hardwood such as oak, hickory, etc., order Chain No. 3 for hardwood.

If you wish to re-file and re-joint your own saw or have it done by a professional saw filer in your district, the following instructions should be carefully followed:

GENERAL INSTRUCTIONS

1. - Careful filing will give a fast cutting chain.
2. - The height of the teeth should be uniform.
3. - Angles of teeth and clearance between points of the side cutters and rakers should be as given in specifications.
4. - Keep your saw sharp. A dull saw is inefficient and it increases the wear on the cutter bar and motor.
5. - Study diagram. Make sure you understand it. Note the bevel indicated by heavy black line is on the side of the cutter facing you. The bevel indicated by the dotted line is on the side of the cutter away from you.

HOW TO FILE AND JOINT YOUR SAW FOR DIFFERENT TYPES OF WOODS.

HOW TO SHARPEN AND JOINT YOUR SAW FOR HARDWOOD:

1. - Make certain that all the center and offset raker teeth are uniform in height. (See "Instructions for use of Filing Vise" in Instruction Book.)

2. - Lower the height of center and offset rakers .003 inches from standard jointing. This should bring the center and offset rakers to .018 inches lower than the cutter teeth instead of .015 in standard jointing.

3. - The front bevel of the offset rakers should be changed from 20° bevel (see standard specifications) to 15° bevel.

FILING ANGLES AND CLEARANCES FOR HARDWOOD

	Cutters	Off-set Rakers	Center Rakers
Top Bevel	35°	20°	None
Front Bevel	5°	15°	None
Hook	15° (Neg.)	15°	15°
Jointing (clearance)		.018" Lower than cutter	.018" Lower than cutter

HOW TO SHARPEN AND JOINT YOUR SAW FOR FROZEN WOODS:

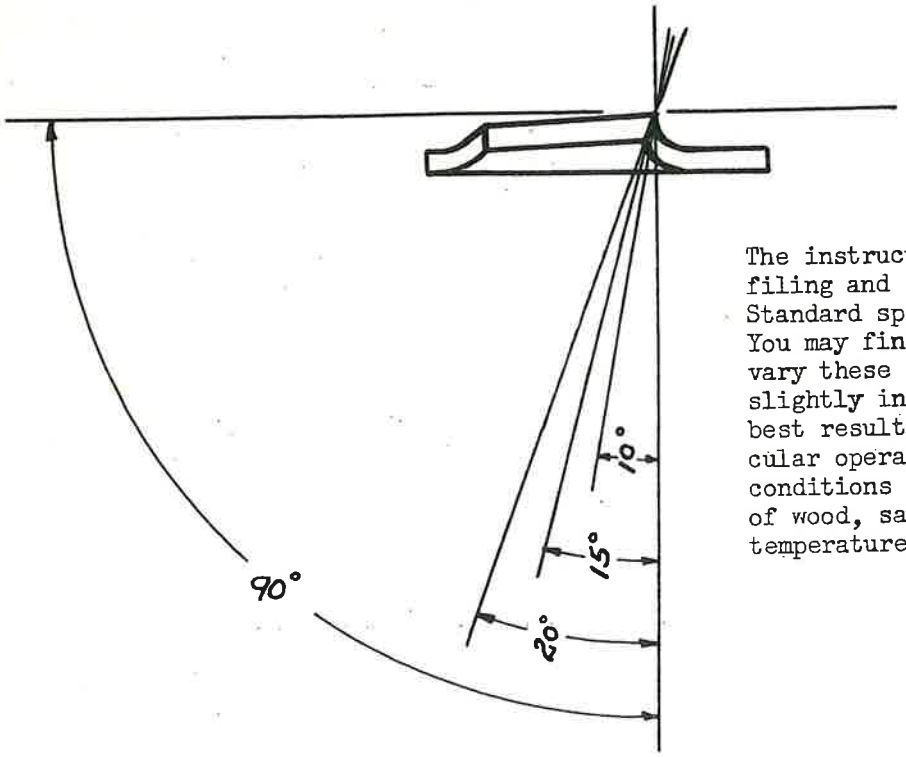
Positive specifications cannot be given for frozen wood because of variations in the degree of freezing and the variation in the natural hardness of the wood.

Generally speaking, however, the specifications for frozen wood are the same as for hardwood - EXCEPT THE JOINTING OF THE OFF-SET RAKERS AND STRAIGHT CENTER RAKERS SHOULD BE .022 inches lower than cutter teeth instead of .018 lower for hardwood and .015 lower for standard. NO FRONT BEVEL on the side cutters is required for frozen hardwood.

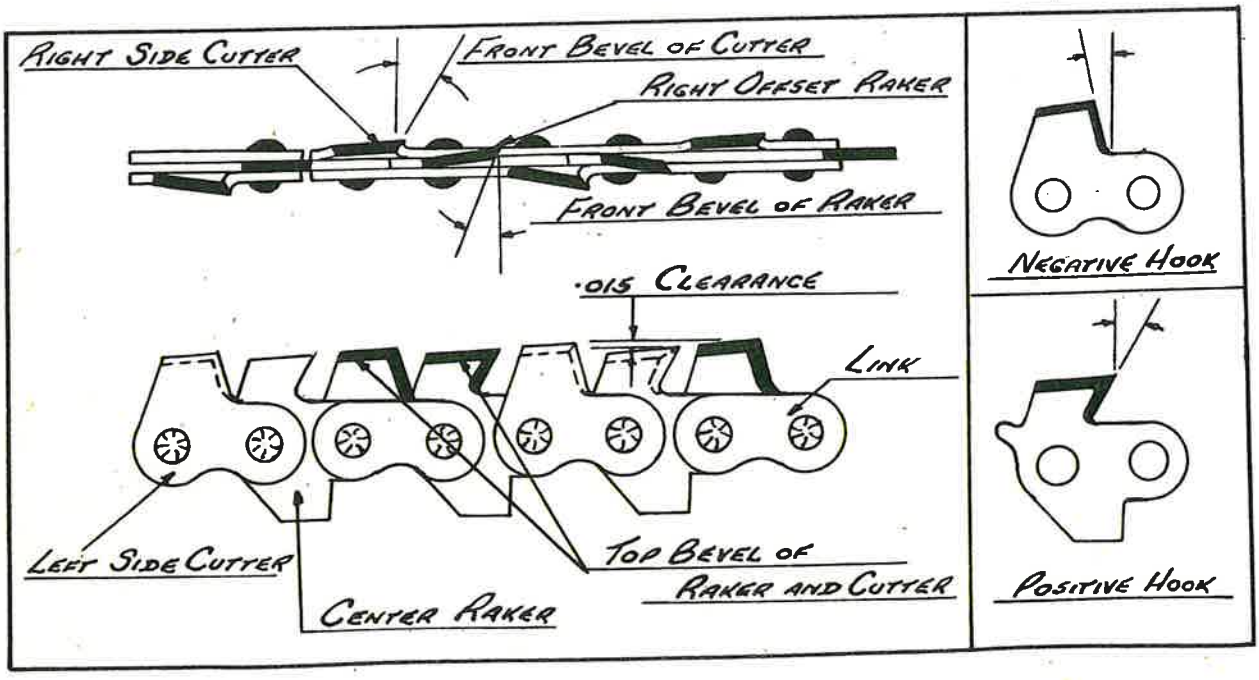
FILING ANGLES AND CLEARANCES FOR FROZEN WOOD.

	Cutters	Off-set Rakers	Center Rakers
Top Bevel	35°	20°	None
Front Bevel	5° (or less)	15°	None
Hook	15° (Neg.)	15°	15°
Jointing (clearance)		.022" Lower than cutter	.022" Lower than cutter

This diagram will give an idea of the angles at which to file to obtain 10, 15 and 20 degree bevels.



The instructions given for filing and jointing are our Standard specifications. You may find it necessary to vary these specifications slightly in order to get best results in your particular operation. Sawing conditions vary with type of wood, sap content, temperatures and localities.



IMPORTANT

READ CAREFULLY

CONNECTING ROD.

When assembling Connecting Rod on the crankshaft, be sure marked ends of the Cap & Rod go together. Be certain screws are perfectly tight, and lockwashers are securely locked. Connecting Rod bearing on crankshaft should have clearance of .0015. Too tight or too loose will cause serious trouble.

CYLINDER HEAD.

Be sure when placing Cylinder Head on Cylinder Block that flow of air from Flywheel Fan will pass between Cooling Fins on Cylinder Head not across Fins.

PITCHY WOOD.

If cutting in "pitchy" wood, add some kerosene or diesel oil to the oil in chain lubricator.

CAUTION.

Do not race your motor at high speed when not actually cutting. Warming it up slowly adds to the life and usefulness of your machine.

ASSEMBLY OF CONNECTING ROD & PISTON

Never hammer a wrist-pin into place while the piston is cold as there is too much danger of the piston being deformed. This also applies to dis-assembling.

If the piston is heated in boiling oil, preferably heavy oil, the wrist-pin bore will expand sufficiently so that the pin will drop in, or with very little tapping go into place.

Be sure lock rings for wrist-pin are firmly in place.

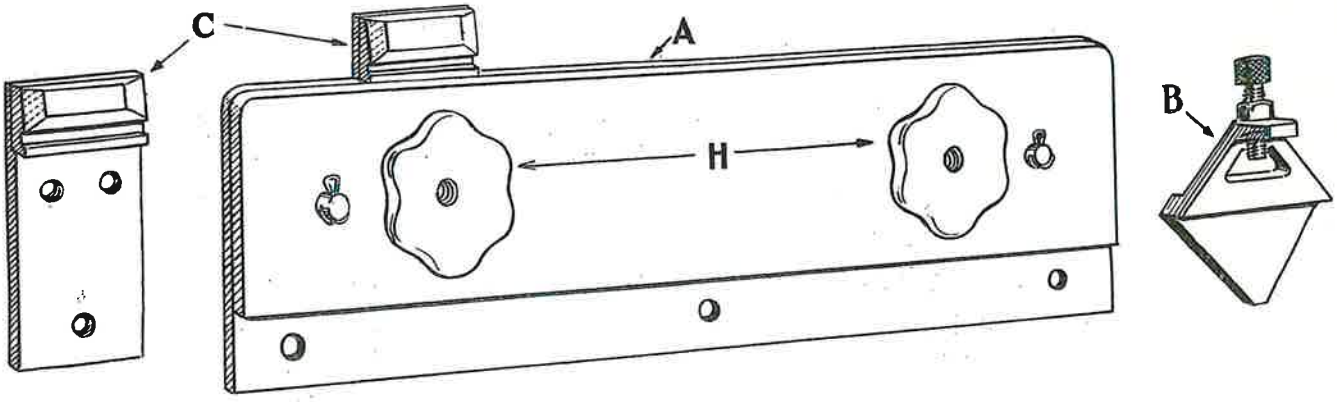
Should the piston be out of round after assembly it can be tapped into shape with a leather or plastic hammer, but care must be taken not to damage the ring grooves.

Be very sure when assembling the rod and piston that the oil hole in the cap of the rod is on the opposite side to the exhaust side of the piston. This will make the oil hole face the intake hole in the crankcase and insure lubrication.

Check connecting rod and piston for alignment and straighten rod if necessary.

INSTRUCTIONS FOR USE OF
Filing Vise
Setting Block
Cutter Gauge
and
Raker Gauge with Feeler.

Order Separately



A - Filing Vise
B - Jointing Gauges - Raker & Cutter
C - Setting Block

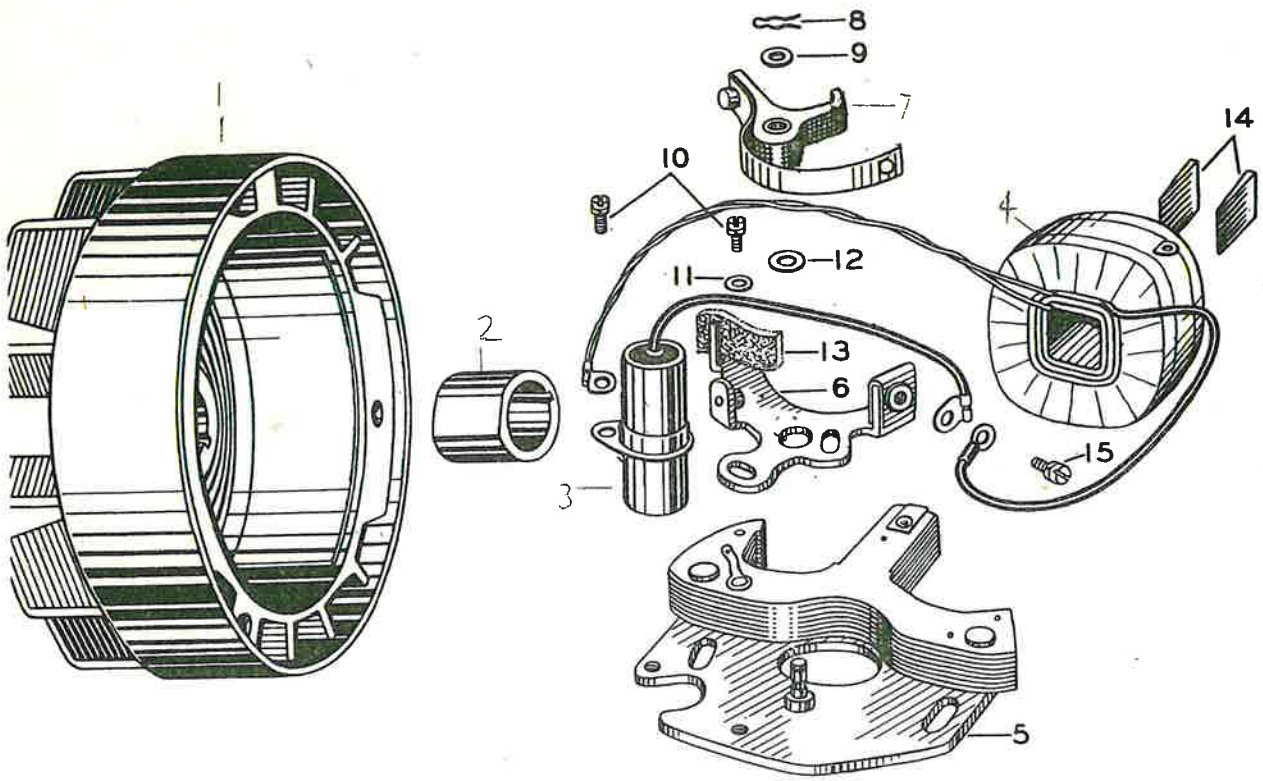
The Vise is made to firmly clamp a chain by the lugs at tightening of the handles "H". Three holes at the bottom of the vise can be used for fastening it to a bench or stand.

There are two jointing gauges and a .015" feeler required for the vise, one gauge stamped "C" is for use on the side-cutters, the other stamped "R" is for use on the rakers. Both slide along the back and top of the vise to gauge the heights of the teeth.

To joint a chain (the process of filing the cutters to equal heights and the rakers to equal heights, but .015" lower than the cutters), set the cutter gauge by adjusting the screw to the lowest side-cutter point, and file all other cutters on the tops until the points are of equal heights, then set the raker gauge so that the set-screw is .015" lower than the set-screw of the side-cutter gauge, file the tops of the rakers to correspond with the original angles making them .015" lower than the side-cutters.

The setting-block attachment is quite often not necessary for chain maintenance, but for some types of timber additional set may be required. When this is done it is necessary to set only the point of the side-cutters. This is accomplished by adjusting the chain in the vise so that the point of the tooth overlaps the beveled edge of the hardened portion of the setting block and striking the point of the tooth firmly with a small hammer. The point of the tooth will then be set out farther than the rest of the tooth. With practice, one strike of the hammer will be sufficient to set the tooth over. Care must be taken not to break the point of the tooth.

HOW TO ORDER. The above 4 parts are priced separately. When ordering please state clearly whether you want the VISE ONLY or the COMPLETE SET of Vise with Gauges and Setting Block.



Model FWS 18 WICO MAGNETO

Ref. No.	Part No.	Part Name	List Price
1	Y 5423 F	Rotor	10.05
2	5429 F	Cam	1.35
3	X 5342 F	Condenser	1.50
4	X 5345 F	Coil	3.95
5	X 5473 F	Stator Plate Assembly	3.95
6 & 7	X 5474 F	Contact Set	1.95
8	4210 F	Breaker Arm Lock	.07
9	3219 F	Breaker Arm Spacing Washer	.07
10	5411 F	Fixed Contact Clamp Screw	.07
10	5411 F	Condenser Clamp Screw	.07
11	IXA-256	Fixed Contact Clamp Screw Washer	.07
12	10407 F	Breaker Arm Spacing Washer	.07
13	5146 F	Cam Wiper Felt	.07
13	5077 F	Cam Wiper Felt	.07
14	10383 F	Coil Wedge	.07
15	5431 F	Breaker Spring Clamp Screw	.07

PRICES SUBJECT TO CHANGE WITHOUT NOTICE.

DIAGRAM
No. 1

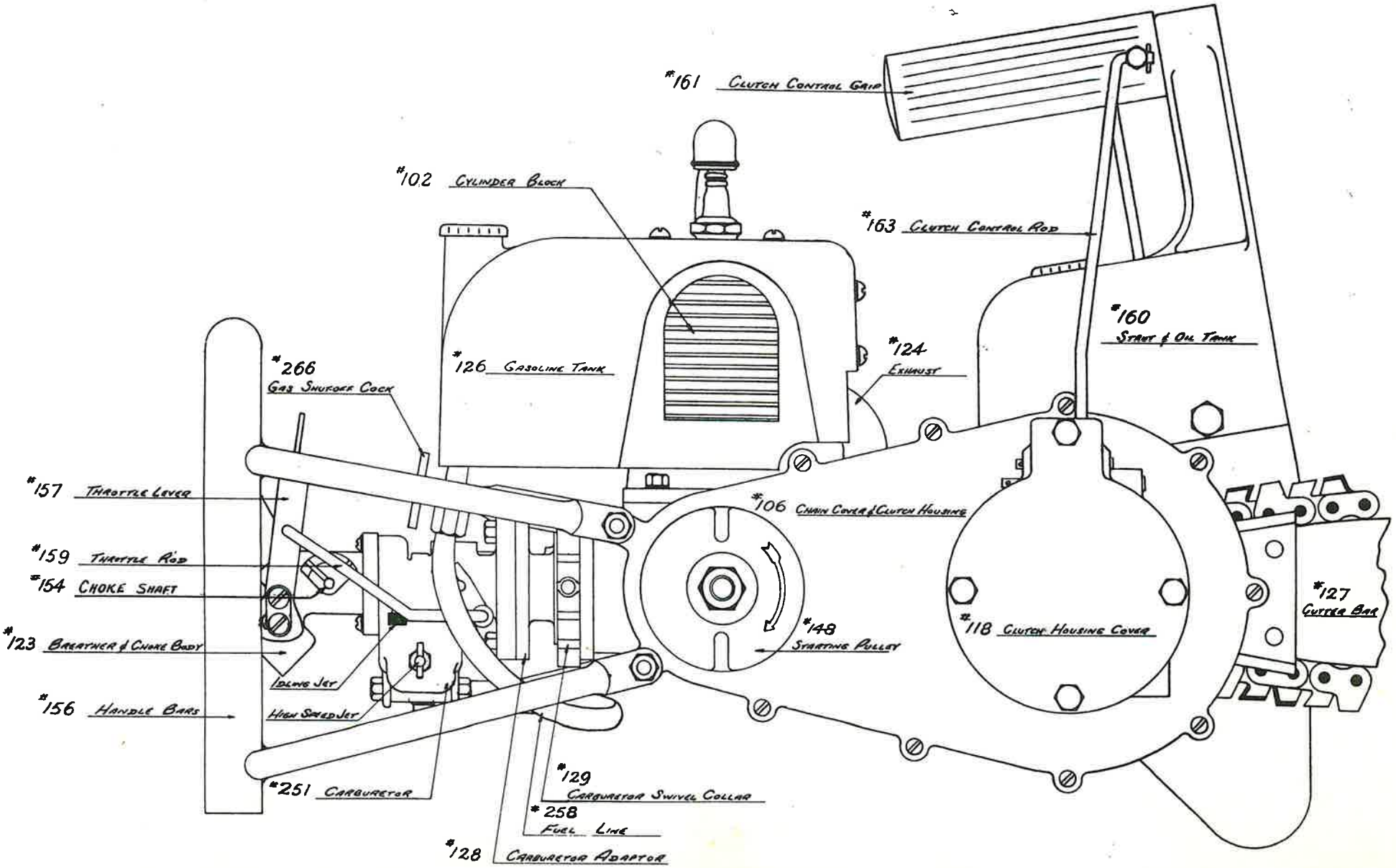

#161 Clutch Control Grip
#102 Cylinder Block
#163 Clutch Control Rod
#160 Start & Oil Tank
#266 Gas Shutoff Cock
#126 Gasoline Tank
#124 Exhaust
#157 Throttle Lever
#106 Chain Cover & Clutch Housing
#159 Throttle Rod
#154 Choke Shaft
#148 Starting Pulley
#118 Clutch Housing Cover
#127 Cutter Bar
#123 Breather & Choke Body
Idling Jet
#156 Handle Bars
High Speed Jet
#251 Carburetor
#129 Carburetor Swivel Collar
#258 Fuel Line
#128 Carburetor Adaptor

DIAGRAM NO. 2

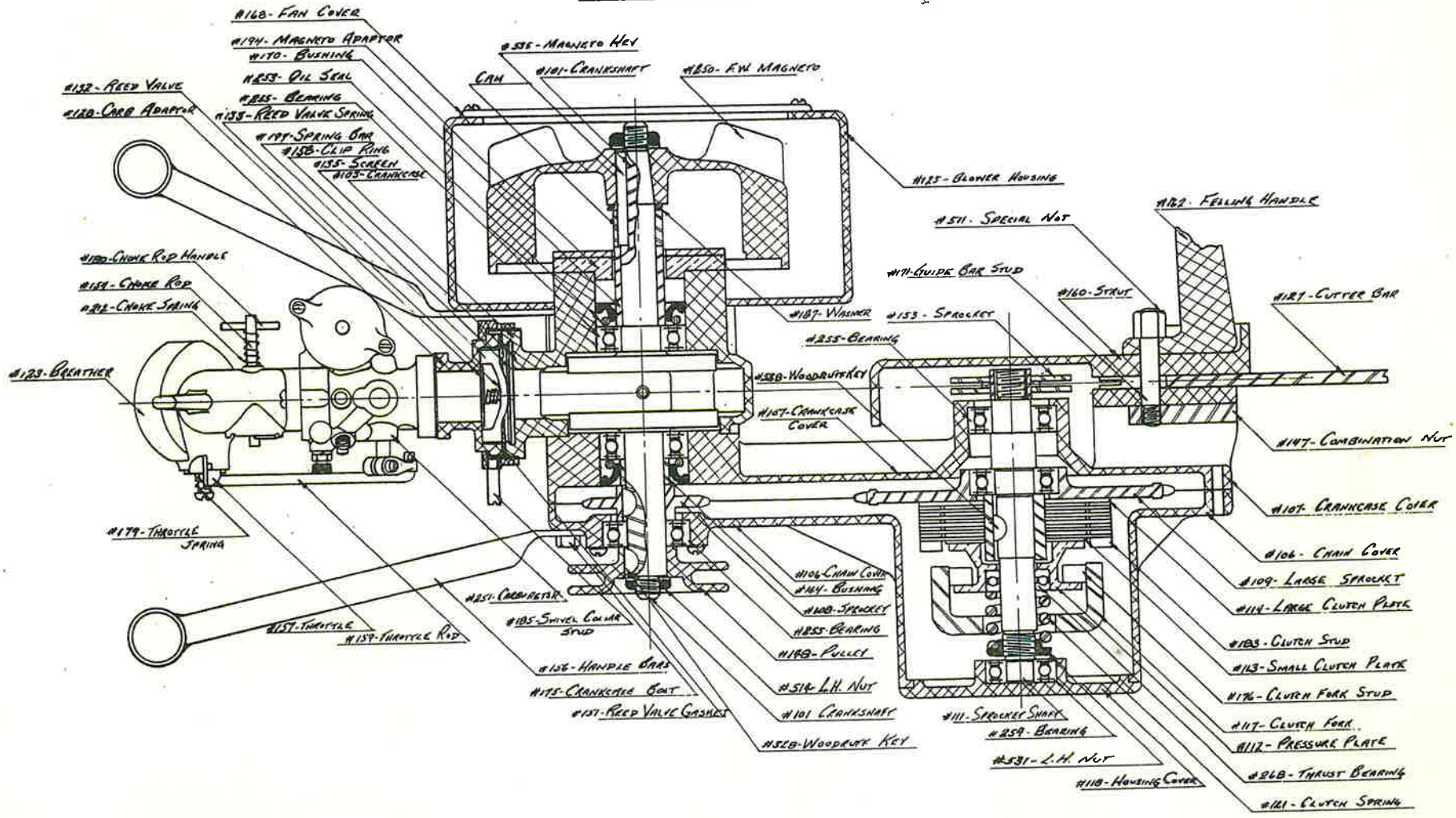

#168 - Fan Cover
#194 - Magneto Adaptor
#170 - Bushing
#253 - Oil Seal
#215 - Bearing
#138 - Reed Valve Spring
#197 - Spring Bar
#158 - Clip Ring
#135 - Screen
#103 - Crankcase
#132 - Reed Valve
#120 - Carb Adaptor
#535 - Magneto Key
#101 - Crankshaft
Cam
#850 - F.W. Magneto
#125 - Blower Housing
#162 - Feeling Handle
#511 - Special Nut
#171 - Guide Bar Stud
#160 - Strut
#187 - Washer
#153 - Sprocket
#255 - Bearing
#147 - Combination Nut
#150 - Choke Rod Handle
#149 - Choke Rod
#82 - Choke Spring
#123 - Breather
#158 - Woodruff Key
#107 - Crankcase Cover
#179 - Throttle Spring
#251 - Carburetor
#185 - Swivel Collar Stud
#157 - Throttle
#159 - Throttle Rod
#156 - Handle Bars
#175 - Crankcase Bolt
#137 - Reed Valve Gasket
#106 Chain Cover
#164 - Bushing
#108 - Sprocket
#255 - Bearing
#189 - Pulley
#514 - L.H. Nut
#101 Crankshaft
#528 - Woodruff Key
#111 - Sprocket Shaft
#259 - Bearing
#531 - L.H. Nut
#118 - Housing Cover
#107 - Crankcase Cover
#106 - Chain Cover
#109 - Large Sprocket
#114 - Large Clutch Plate
#183 - Clutch Stud
#113 - Small Clutch Plate
#176 - Clutch Fork Stud
#117 - Clutch Fork
#112 - Pressure Plate
#268 - Thrust Bearing
#121 - Clutch Spring

DIAGRAM No. 3

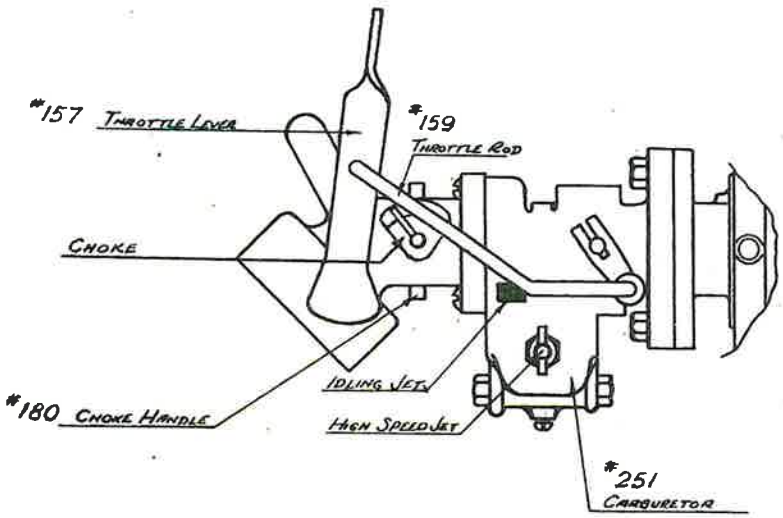
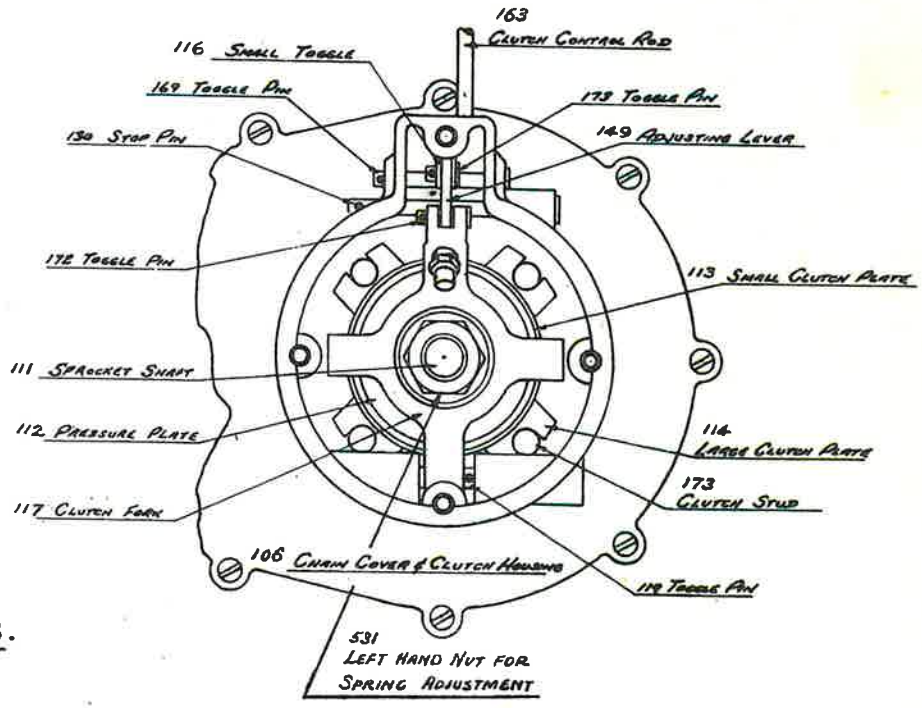


DIAGRAM No. 4



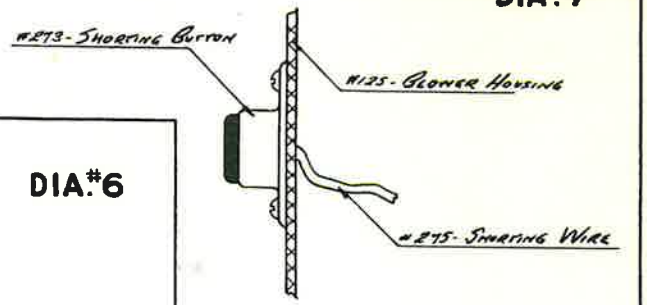
MODELS AJ 13A and AJ 13B
TILLOTSON CARBURETOR PARTS.

PART NO.	PART NAME
07353	Body
02531	Body Welsh Plug
05591	Flange Gasket
04636	Float
05425	Float Retaining Cotter Pin
0164	Float Bowl Drain Plug
0648	Float Bowl Drain Plug Gasket
07216	Float Bowl Cover
07198	Float Bowl Cover Gasket
054	Float Bowl Cover Screw
0992	Float Bowl Cover Screw Lockwasher
06910	Idle Adjustment Screw
06243	Idle Adjustment Screw Locknut
0759	Idle Adjustment Screw Lockwasher
06905	Idle Tube
06569	Idle Tube Gasket

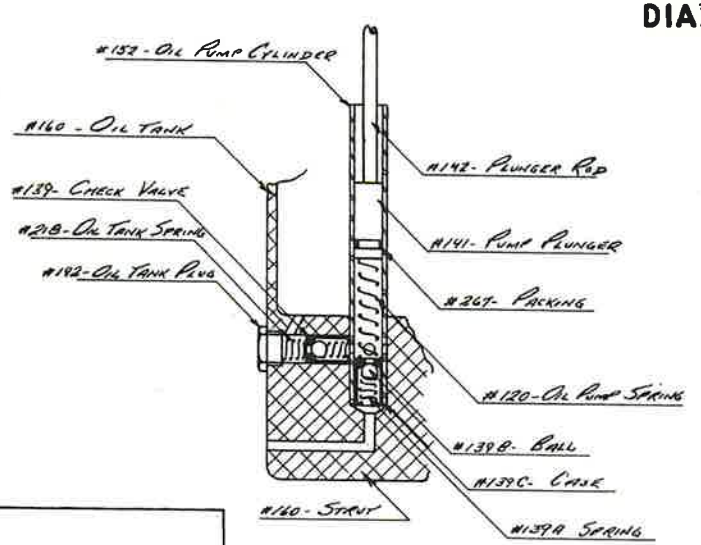
PART NO.	PART NAME
06941	Inlet Valve & Seat
0212	Inlet Valve Seat Gasket
02395	Inlet Valve Channel Plug Screw
04152	Main Adjustment Screw
0702	Main Adjustment Screw Gland
0676	Main Adjustment Screw Gland Gasket
0705	Main Adjustment Screw Packing
0703	Main Adjustment Screw Packing Nut
07385	Throttle Shaft & Lever (Assembled)
07369	Throttle Shutter
01462	Throttle Shutter Screw
01675	Throttle Shutter Screw Lockwasher

PARTIAL ASSEMBLIES 07231 Gasket & Packing Set

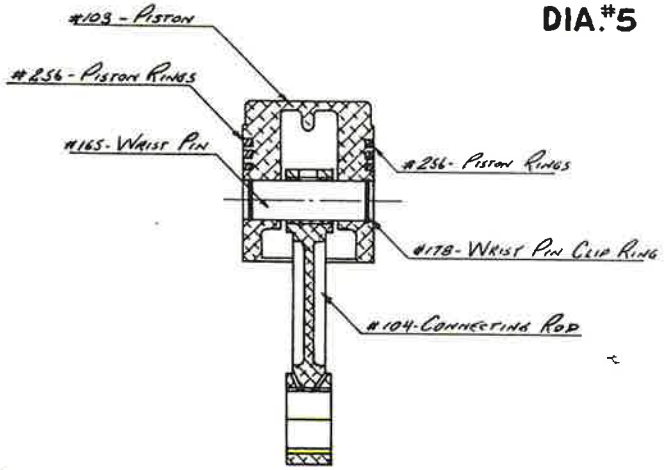
DIA. #7



DIA. #6



DIA. #5



DISMANTLING

There are various procedures to follow to simplify dismantling. We suggest that the following procedure if followed, will prove to be the most satisfactory.

1. STRUT & OILER
Remove the strut and felling handle, guide bar and chain. This is done simply by unscrewing the three nuts (#511) and pulling off the assembly. This will eliminate considerable weight and simplify handling of the remaining unit.

2. GAS TANK
There are six (6) screws (#12-24) securing the gas tank (#126) to the ventilator housing (#125) which must be taken out before removing the tank. To prevent the loss of any gas which might remain in the tank, turn off shut-off cock (#266) and uncouple fuel line (#258).

3. CARBURETOR ASSEMBLY
Unscrew the swivel collar stud (#185) and uncouple swivel collar (#129), noting the gasket (#151) between crankcase (#105) and carburetor adaptor (#128), which must be replaced at re-assembly.

4. FLYWHEEL AND MAGNETO
Remove blower housing cover (#168). Occasionally it is necessary to jar the magneto flywheel free from the crankshaft. This is done by backing off the flywheel nut (R.H. #515) one thread beyond the end of the shaft, so that the sharp blow from a soft hammer (brass hammer) required to free the flywheel will in no way damage the crankshaft end.

The key (#535) holding the cam and flywheel to the shaft must be taken out before removing the magneto backplate. It is important to note position of spring washer (#187) between flywheel and cam. Removal of magneto backplate is done by disconnecting the wire (#275) from the shorting button (#273) and unscrewing and removing the two screws holding the backplate to the crankcase. Pull the high tension wire from the spark plug through the hole in the blower housing (#125) after removing clip, and slip unit over end of crankshaft, taking extreme care not to damage the fibre rubbing block. After ventilator housing has been removed, pry cam free with two screw drivers.

5. VENTILATOR HOUSING & HANDLE BARS
Unscrew remaining three nuts from studs on inside of blower housing. Remove blower housing. From the starting pulley side, pull completely free the two bolts (#175) and remove handlebars (#156).

6. CYLINDER BLOCK & PISTON & CONNECTING ROD ASSEMBLY
To remove cylinder block (#102), simply unscrew the four ($\frac{1}{4}$-28) nuts holding it to the crankcase and lift over piston. Remove exhaust stack (#124) and clean out all carbon before re-assembly.

To remove connecting rod, unscrew the two screws holding the connecting rod cap in place on the crankshaft. After removal, re-assemble parts to prevent losing. Refer to connecting rod replacement instructions for re-assembly with crankshaft.

7. CLUTCH COVER & CLUTCH FORK

Remove clutch cover (#118) by prying off with two screw drivers. Unscrew the 9/16"-18 left hand nut (#531) releasing tension on clutch spring (#121). Pull cotter pin from lower toggle pin (#119) (diagram #4) and remove pin. It is now possible to work clutch fork (#117) over end of sprocket shaft (#111). In order to keep clutch assembly complete so that parts will not be lost, replace pressure plate (#112) and clutch spring (#121) and secure with left hand nut (#531).

8. CHAIN COVER

Remove starting pulley (#148) by unscrewing left hand nut (#514) and take pulley from shaft, making sure not to lose the woodruff key (#528) which forms the drive for the pulley.

Remove the nine #8-32 screws (#501) which hold the crankcase cover (#107) and chain cover (#106) together. It will be noted from diagram #2 all that remains now to free chain cover is the bearing fit on the crankshaft. It is necessary to put screw drivers between crankcase cover and chain cover and pry them apart, at the same time removing the bearing from the shaft. You will note three bearing retainer screws and washers which do not necessarily have to be removed at this point. They should only be removed when necessary to replace bearing.

9. CLUTCH ASSEMBLY, ROLLER CHAIN & SMALL SPROCKET

Locate connecting link in roller chain and remove, to dismantle chain. Re-assemble parts after removal to prevent losing.

Before removing sprocket shaft and clutch assembly from crankcase cover (#100) detach the cutting chain sprocket (#153) from sprocket shaft. This screws on the shaft and has a right hand thread, so that removal will often require a sharp blow on the ends of the teeth with a soft hammer to jar it loose.

Once the sprocket is removed push the whole assembly free by tapping on the sprocket end of the shaft with a soft hammer. Be sure not to damage the threads of the sprocket shaft.

Use a puller to remove small sprocket (#108) taking care not to loose woodruff driving key (#528) that locates it on the shaft.

10. CRANKCASE

Holding crankcase in the left hand and using a soft hammer, tap crankshaft on magneto end to free bearing and shaft from crankcase. Do not hit the crankshaft too hard, otherwise the shaft may be forced out of line, or the threads may be damaged. If the assembly is an extremely tight fit it may be necessary to heat the crankcase in order to dismantle these parts. A blow-torch may be used for this purpose, but it will NOT be necessary to apply a great amount of heat.

11. CRANKSHAFT
Use a soft hammer to drive crankshaft (#101) free from crankcase cover (#107).

12. GREASE SEALS
When removing grease seals (#253) from crankcase (#105) and crankcase cover (#107) use a sleeve or piece of metal close to the outside diameter of the seal to drive them from the castings. Be sure not to damage the fabric of the seal when removing. SHOULD SEALS BE AT ALL DAMAGED THEY MUST BE REPLACED.

13. GREASE SEAL BUSHINGS
Grease seal bushings can be removed from the crankshaft by prying them loose with a screw driver. Bearings can also be removed in this manner, but care must be taken to not damage the shielded portion when doing this.

14. DISMANTLING CARBURETOR ASSEMBLY
It should be necessary to dismantle carburetor (#251) only for cleansing purposes, and then only to remove the air filter screens and packing. Clean thoroughly in gasoline. The rest of the unit can be cleansed thoroughly in gasoline without any further dismantling.

15. DISMANTLING CLUTCH ASSEMBLY
Clean thoroughly in gasoline before preparing to dismantle, then inspect thoroughly, checking freedom of bearings, etc. Should everything appear in order no further dismantling is necessary.

Should it be advisable to replace any parts because of wear, then unscrew left hand nut (#531), remove spring, pressure plate and clutch plates, noting beforehand for re-assembling purposes the correct position of location. Then, using a gear puller, pull bearing and sprocket (#109) loose from shoulder of shaft. At the same time this will pull the spline (#110) loose. It is then necessary to press the sprocket and bearing back into position, leaving a gap between bearing and spline (#110) sufficiently wide to engage gear puller arms to completely remove the spline. Remove woodruff key (#528) from key seat in sprocket shaft before removing the sprocket and the bearing.

RE-ASSEMBLY

In general, the procedure to follow in re-assembling is the reverse of the steps taken in dismantling. While doing this, there are certain points to BEAR IN MIND which are described below.

1. In pressing bearings (#255) on crankshaft (#101) be sure that the shaft is not forced out of alignment.

2. Always use "Permatex" or any other gasket compound on the gasket face of the crankcase when assembling to crankcase cover. If possible, heat crankcase for ease in fitting the crankshaft bearing.

3. Note the position of the grease seals (#253) when pressing into the crankcase and cover. The fabric of the seal must be turned in to hold crankcase compression. The grease seal bushings are inserted AFTER the seals so as not to damage the sealing fabric.

4. After assembling the drive (the small sprocket, the clutch and roller chain) and packing it with grease, put on the chain cover assembly, making sure that "Permatex" is applied on the gasket face, in order to retain grease in the housing. At this time check all the toggles and pins for any sign of wear, and if so replace worn parts immediately.

5. On adjusting the clutch fork for correct clutch setting, apply grease to the clutch fork studs so that wear on the pressure plate is kept at a minimum. REFER TO INSTRUCTIONS ON CLUTCH ADJUSTMENT.

6. When securing starting pulley to crankshaft tighten the left hand nut as much as possible, as doing this centralizes the crankshaft correctly in relation to its housing.

7. When assembling the connecting rod to the crankpin there are 3 points to note;

   (a) The flared part of the piston MUST face the front of the machine (exhaust side.)

   (b) Identification marks on rod and cap must be together for correct alignment.

   (c) Be sure that the connecting rod screws are tight and that the connecting rod washers are securely clamped around the screws. USE A HEAVY SCREW DRIVER FOR TIGHTENING SCREWS.

8. When fitting cylinder block, make sure the piston rings are located correctly by the brass pins in the grooves, and that both block and piston are lubricated for ease in fitting. Fit piston rings to block, leaving .013" gap. Prior to assembly check block to see if free from carbon deposits, and also install a new gasket on the crankcase.

9. When assembling carburetor assembly check the reed valve spring to see that there is tension on the reed valve. This is necessary for maximum performance of the motor. Spring, when in position on spigot of retaining bridge (#197) should be 1/16" to 3/32" above the level of the two flat portions of the bridge.

10. When mounting magneto backplate to the crankcase, the approximately correct setting, places the backplate in a vertical position. If the motor is sluggish and will not pick up speed, advance the spark by rotating the backplate in a clockwise direction. If the motor lacks power at low speeds, retard the spark by rotating in a counter-clockwise direction. When pressing the cam in place, note that the arrow on the cam is on the outside, and that it points in the direction of rotation of crankshaft (counter-clockwise). Check to see that the points are set at .020 gap.

11. Be sure the spring washer (#187) is in place (between cam and flywheel) before securing flywheel in place.

12. Prior to fitting the strut and oil tank, make sure that the cutting chain is correctly located on the cutting chain sprocket. The points of the sprocket MUST fit between the links of the chain.

13. AFTER MOTOR HAS BEEN RE-ASSEMBLED AND PROPERLY RUN-IN, REMOVE GAS TANK AND TIGHTEN CYLINDER HEAD SCREWS AND CYLINDER BLOCK NUTS.

HARDWARE

No.	Description	Location
500	#12-24x5/8" Round Head Machine Screw	Throttle
501	#8-32x1$\frac{1}{4}$" Round Head Machine Screw	Chain Case
502	#12-24x3/8" Round Head Machine Screw	Chain Cover
503	#12-24x1/2" Round Head Machine Screw	Gas Tank & Blower Housing
504	#12-24x7/8" Round Head Machine Screw	Throttle
505	#8-32x1/2" Round Head Machine Screw	Breather & Choke Body
506	1/4"-20x5/8" Flat Head Machine Screw	Combination Nut
507	5/16"-18x1$\frac{3}{4}$" Fillister Head Machine Screw	Chain Tightener
508	Special #12-24 Screw for Connecting Rod	
509	1/4"-20x3/4" Hexagon Head Capscrew	Clutch Housing Cover
510	1/4"-28x3/4" Hexagon Head Capscrew	Cylinder Head
511	Special 5/16"-18 Nuts	Guide Bar Studs
512	#3-48x3/16" Round Head Machine Screw (Brass)	Choke Rod
514	7/16"-20 Left Hand Jam Nut	Crankshaft (Pulley End)
515	7/16"-20 Right Hand Jam Nut	Crankshaft (Magneto End)
516	1/4"-28 Hexagon Nut	Cylinder Block & Crankcase) Studs)
517	#8-32 Hexagon Nut	Chain Case
518	#12-24x1" Round Head Machine Screw	Magneto Backplate
519	5/16" Lockwasher	Chain Tightener
520	5/16" S. A. E. Plain Washers	Guide Bar Stud
521	1/4" Lockwasher	Cylinder Block Stud
522	7/16" S. A. E. Plain Washer	Crankshaft
524	1/4" Exterior Shakeproof Washer	Gas Tank, Blower Housing & Chain Cover
525	#8 Exterior Shakeproof Washer	Chain Case
528	#304 (3/32"x1/2") Woodruff Key	Crankshaft & Sprocket Shaft
529	3/32"x1/2" Cotter Pins	Clutch Toggles
531	9/16"-18 Left Hand Nut	Sprocket Shaft
532	5/16"-24 Hexagon Jam Nuts	Large Sprocket
533	1/4"-28x1$\frac{1}{4}$" Round Head Machine Screw	Adjusting Lever
534	1/4"-28 Elastic Stop Nut	Adjusting Lever
535	Special Magneto Flywheel Key	
536	#10-24x3/8" Round Head Machine Screw	Shorting Button
537	#6-32x1/2" Round Head Machine Screw	Reed Valve

PARTS LIST
For P.M. ONE-MAN POWER CHAIN SAWS
Manufactured by: POWER MACHINERY LIMITED

Part No.	Description
101	Crankshaft
102	Cylinder Block
103	Piston
104	Connecting Rod
105	Crankcase & 2-#174Studs & Drain Screw
106	Chain Cover
107	Crankcase Cover & 2-#174 Studs & 2-#131 Studs
108	Small Sprocket
109	Large Sprocket & 4-#183 Studs & Nuts
110	Clutch Spline
111	Sprocket Shaft
112	Pressure Plate
113	Small Clutch Plate
114	Large Clutch Plate
115	Large Toggle
116	Small Toggle
117	Clutch Fork & 2-#176 Studs
118	Clutch Housing Cover
119	Clutch Toggle Pin
120	Oil Pump Spring
121	Clutch Spring
122	Cylinder Head
123	Breather & Choke Body Assembly
124	Exhaust Stack
125	Blower Housing
126	Gasoline Tank
127-14"	Guide Bar
127-20"	Guide Bar
127-26"	Guide Bar
128	Carburetor Adaptor Assembly Complete
129	Swivel Collar

Part No.	Description
130	Clutch Stop Pin
131	Short Crankcase Stud
132	Reed Valve
133	Reed Valve Spring
134	Choke Butterfly
135	Breather Screen
136	Connecting Link
137	Right Cutter
138	Left Cutter
139	Check Valve
140	Raker
141	Pump Plunger
142	Plunger Rod
143	Cylinder Block Gasket
144	Small Con Rod Bushing
145	Large Con Rod Bushing
146	Carburetor Gasket
147	Combination Nut
148	Starting Pulley
149	Adjusting Lever
150	Reed Valve Pins
151	Reed Valve Gasket
152	Oil Pump Cylinder
153	Cutting Chain Sprocket
154	Choke Rod
155	Chain Tightener
156	Handle Bars
157	Throttle Lever
158	Breather Clip Ring
159	Throttle Rod
160	Strut & Oil Tank Sub. Assembly
161	Upper Control Grip

IMPORTANT: BE SURE AND STATE SERIAL NUMBER OF YOUR MACHINE WHEN ORDERING PARTS.

PARTS LIST (Contd.)

Part No.	Description
162	Felling Handle
163	Clutch Control Rod
164	Short Grease Seal Bushing
165	Wrist Pin
166	Gas & Oil Tank Cap
167	Chain Rivets - per dozen
168	Fan Cover
169	Clutch Toggle Pin
170	Long Grease Seal Bushing
171	Guide Bar Stud
172	Clutch Toggle Pin
173	Clutch Toggle Pin
174	Cylinder Block Stud
175	Long Crankcase Bolt
177	Oil Pump Cap
178	Wrist Pin Clip Rings
179	Throttle Spring
180	Choke Rod Handle
181	Choke Rod Clip
183	Clutch Stud
184	Oil Pump Knob
185	Swivel Collar Stud
186-14"	Cutting Chain
186-20"	Cutting Chain
186-26"	Cutting Chain
187	Spring Washer for Cam
188	Sawdust Raker
190	Lower Control Grip
191	Clutch Connecting Rod
192	Oil Tank Plug
193	Carburetor Stud
196	Throttle Lever Washer
197	Spring Retainer
198	Cylinder Head Gasket
199	Crankcase Gasket

Part No.	Description
200	Filing Vise
205	Raker Gauge
206	Cutter Gauge
209	Feeler Gauge
222	Setting Block
211	Outer End Handle
212	Choke Spring
213	Snow Shoe
218	Oil Tank Spring
219	Connecting Rod Washer
224	Exhaust Stud
225	Timer Complete
250	Magneto
251	Carburetor
252	Spark Plug
253	Oil Seal
254	Bearing (#201 KDD)
255	Bearing (#203 KDD)
256	Piston Rings
257	Roller Chain & Link
258	Fuel Line
259	High Tension Wire & Terminal
260	Copper Mesh
261	Starting Rope & Handle
263	Spark Plug Nipple
266	Shut-off Cock
268	Thrust Bearing
270	Rubber Grommet
271	Roller Chain Connecting Link
272	Clip for High Tension Wire
273	Shorting Button
274	Shorting Wire Terminal
514	Left Hand Nut 7/16"-20
531	Left Hand Nut 9/16"-18

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