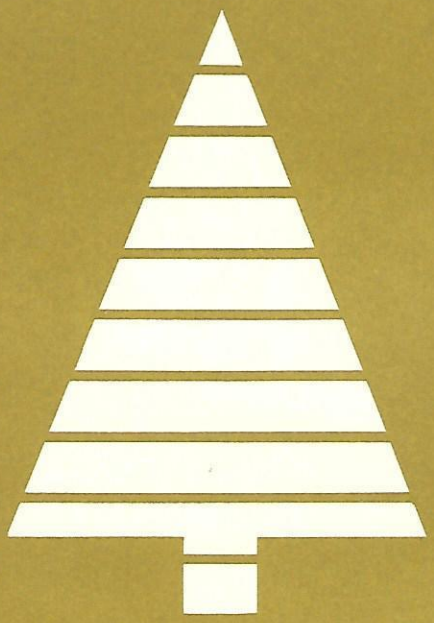
# PIONEER CHAIN SAWS

## Operators' Manual



PIONEER

## model 15-60 chain saw

PIONEER CHAIN SAWS, PETERBOROUGH, ONTARIO, CANADA • GALESBURG, ILLINOIS, U.S.A.

## 15-60 SPECIFICATIONS

| | | | |
|---|---|---|---|
| Engine Type: | Single cylinder - two cycle - loop scavenging. | Carburetor: | 33/64 venturi (Tillotson), all position diaphragm type. |
| Bore: | 2" | Primer Pump: | Manual. |
| Stroke: | 1.5 | Air Cleaner: | Nylon flock screen, |
| Displacement: | 4.7 cubic inches | Reed Valve: | Single Flat Reed. |
| Rotation: | Clockwise facing P.T.O. end. | Muffler: | Baffle type, noise reduction design. |
| Cylinder: | Diecast aluminum block with integral head; bore chrome plated and honed. | Starter: | Pioneer, automatic rewind. |
| | | Compression Ratio: | 6.75:1 P.S.M.A. effective. |
| Cylinder Angle: | Horizontal | Fuel Filtering: | Screened dangler fuel pickup, felt filter in bowl in airbox. |
| Crankcase: | One piece magnesium diecasting with gearcase bearing carrier at P.T.O. end. | Fuel Capacity: | 1 quart Imperial; 1.2 quarts U.S. |
| Piston: | Aluminum alloy | Chain Oil Pump: | Automatic |
| Piston Rings: | Two compression rings pegged to prevent rotation. | Chain Oil Capacity: | .53 pints Imperial; .63 pints U.S. |
| Ring Gap: | .092/.098 | Type of Drive: | 2.5:1 gear reduction. |
| Main Bearings: | Ball bearings. | Gears: | Forged alloy steel, heat treated. |
| Seals: | Closure type. | Gear Lubrication: | Oil Bath. |
| Connecting Rod: | Forged alloy steel. | Clutch: | Wet centrifugal action, garter spring design. |
| Connecting Rod Bearings: | Wristpin end: caged needles. Crankshaft end: caged needles; | Sprocket: | 7/16 and 1/2 pitch, self aligning spline drive. |
| Crankshaft: | Forged alloy steel. | Guide Bar: | Pioneer Durarail, stellite tipped, induction hardened rails, copper brazed. |
| Ignition: | Flywheel magneto (Wico) | | |
| Timing: | 30° advanced (fixed) | | |
| Point Gap: | .015 | Chain: | Pioneer 7/16" pitch. |
| Spark Plug: | CJ6 (Champion) | Chain speed @ 7,500 RPM: | 1,520 F.P.M. with 7/16" pitch<br>1,750 F.P.M. with 1/2" pitch |
| Spark Plug Gap: | .030 | | |
| Fuel Mixture: | 1/2 pint Pioneer Chain Saw Oil SAE 30 service MS motor oil to each gallon regular gasoline. NO LEAK safety gas cap. | Gear Oil: | S.A.E. 90 E.P. Gear Oil. |

CHAIN OILER CONT'D.

Where PIONEER CHAIN OIL is not available use only clean oil of a good SAE 10 variety. We also recommend that you obtain this chain oil in a penetrating type with tacky qualities in order that it will not be thrown off the end of the chain before accomplishing its full lubrication.

## STARTING INSTRUCTIONS

1. Fill fuel tank with properly mixed fuel as previously explained.

2. Fill your chain oil reservoir with the recommended oil.

3. To start the motor, place the chain saw in a convenient position where it will sit firmly when you pull the starter handle.

4. Slide your ignition switch on the control panel forward to the ON position.

5. This model is equipped with a Primer Pump. The standard manual choke system has been eliminated.

6. On a new saw, or with a completely dry system, several strokes of the primer button will be necessary to load the primer pump.

7. For initial or cold starting, two strokes of the primer button is all that is necessary once restriction is noted.

8. Set throttle lock. Hold front handle firmly. Grip the starter handle.

9. Pull the starter handle slightly until you feel the starter engage, then give the starter handle sharp, firm, long pulls until the motor starts.

10. When the motor starts, allow the starter handle to recoil to its correct position.

11. Until you are completely familiar with this new system, the primer may be used and treated as a manual choke; in other words, if your motor fires then falters, give one extra prime, more if required, until your motor is drawing its correct fuel mixture through the carburetor.

12. Once engine is started and requires no further priming, release the throttle lock to ensure a slow idle.

13. A hot motor should restart without priming. Hold the throttle fully open or reset throttle lock and give starter long sharp pulls.

14. Should your motor, when hot, fail to restart and is not flooded, after several trial pulls a single prime may facilitate starting.

15. Avoid flooding. Do not prime a hot motor without first trying to start with only the throttle open. A fuel flooded motor may take 6 to 8 pulls to clear itself and restart.

16. After warm-up, for peak cutting performance it may be necessary to slightly vary the carburetor adjustments. The high speed adjustment should be made under load, or while cutting, with full throttle until, by a knowledge of your saw, you feel the motor is giving you maximum power and cutting speed.

## CARBURETOR ADJUSTMENTS

All carburetors on chain saws are tested and adjusted at the factory. Little adjustment, if any, is required. Before making any adjustments, note the present position and move only slightly.

### INJECT-AIRE

1. This model has a new IDLE SPEED ADJUSTMENT SYSTEM. The new IDLE SPEED ADJUSTMENT SCREW is located at the top of the reed valve body, in front of the carburetor.

2. To set, seat the idle adjustment screw by turning it to the right all the way down. (Do not overtighten). Now BACK OUT TWO TURNS ONLY. Start the engine and readjust slightly to obtain the desired idle speed. Turning to the right speeds up the idle. Turning to the left slows down the idle. The correct idle speed is 2600 r.p.m., or just below chain creep speed.

3. The low speed adjustment needle, marked 'L' and the high speed adjustment needle, marked 'H', are both on the right hand side of the motor. The low speed adjustment needle controls the fuel mixture at idle speed. The high speed adjustment needle controls the fuel mixture when the throttle is fully open.

4. Before running a new saw, set both high and low speed needles by turning until they stop. Do not damage the needle seat. Then open high speed 7/8 of a turn and low speed 1-1/4 turns.

5. **WITH THE ENGINE AT OPERATING TEMPERATURE—**
   (a) set the low speed needle, checking for acceleration, to approximately 1-1/4 turns.
   (b) set high speed needle, checking high speed cutting, to approximately 7/8 turn.
   (c) readjust idle speed, if necessary, as per step 2 above.

## BREAKING IN YOUR NEW CHAIN

1. Run the chain at low speed for almost five minutes giving plenty of oil during this period.

2. Switch off your engine and readjust chain tension. A loose chain may jump the bar or damage your sprocket assembly. Never adjust chain with motor running.

3. Recheck this tension often until your chain is fully broken in.

4. Keep your chain well lubricated during cutting periods.

5. If possible, leave your chain in an oil bath overnight. This ensures internal lubrication which is very important to the inner bearing surfaces of the chain.

6. Keep your chain sharp. A light touch-up with a round file will prevent damage caused to cutters and side links while operating dull. A very dull chain takes an extra amount of filing life from the chain.

WARNING: - Do not use reclaimed crankcase oil for chain and bar lubrication.

## OPERATING INSTRUCTIONS

Excessive smoking, lack of power and rough exhaust sound indicates that the carburetor fuel mixture adjustments are set too rich. No power and stalling under load or cutting conditions indicates that the carburetor fuel mixture adjustments are set too lean.

If you have never operated a chain saw, carefully prepare the unit as previously suggested, then cut a few lengths from a small log to get the feel of the saw in operation. When starting the cut, do not race the engine and ram the saw into the wood. Secure the tips of the pivot grip in the log and raise the rear handle as you slowly increase the throttle to engage the chain.

This unit will not require you to exert pressure to force the saw through the cut. You will realize, after a few cuts, that a firm, even pressure will cut more wood with less effort. Be prepared to release the throttle immediately the cut is finished. This will prevent the engine racing with no load.

Be generous with the chain oil. Check the reservoir supply frequently. In cutting pitchy wood or in cold weather it may be necessary to thin your chain oil with kerosene. Kerosene helps the oil to flow more freely and keeps wood resins from fouling your chain.

## PREVENTIVE MAINTENANCE

Preventive maintenance is the elimination of potential causes of trouble before they occur. To realize the full value of your investment and prevent unnecessary repair bills together with loss of use, MAKE PREVENTIVE MAINTENANCE A MUST. Check your chain saw daily and set up a system of regular inspections and tune-ups.

1. AIR CLEANER: Your air cleaner is the specially processed filter element which fits securely on top of the airbox and immediately under the top cover. To service, turn the centrally located knob to the left which releases the cover. Remove the screen and wash in clean gasoline or solvent then tap lightly to remove all moisture. While the filter element is off, wipe all accumulated dust away from the carburetor. This will prevent many carburetor problems at a later date. Fig. 4.

2. CYLINDER HEAD AND FINS: The cylinder fins must be kept thoroughly clean. Blocked cylinder fins will cause the unit to overheat. With a thin tool remove any accumulated sawdust from between the fins. This increases the cooling effect of forced air from the fan on the flywheel. Fig. 5.

3. EXHAUST PORTS: Remove the screws securing the muffler. Turn the engine over to a position where the piston is clear of exhaust ports. With a blunt edged tool, carefully remove any accumulated carbon and wipe away small particles before reinstalling the muffler. Replace the exhaust gasket if required.

4. IGNITION: Check your spark plug wire for possible wear or break. During reassembly be careful that no part of this wire is permitted to rub against the flywheel. CAUTION - excessive oil on the cam wiper itself may damage your points. Replace felt or wash in clean gasoline, squeeze dry and add one drop only of clean oil.

5. SPARK PLUG: As in the case of all 2-cycle motors your spark plug should be checked and kept clean of carbon and readjusted to a gap of .030 inches. Below zero temperatures or winter use, we recommend a C-J-11 spark plug.

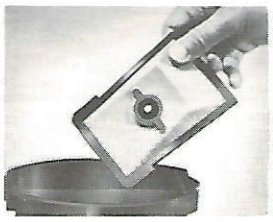


FIG. 4

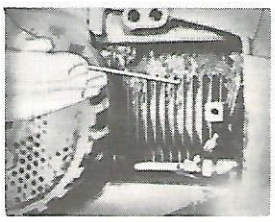


FIG. 5

PREVENTIVE MAINTENANCE CONT'D.

6. MAGNETO: Do not inspect, remove or adjust the magneto unless absolutely necessary. To check the breaker point gap which should be maintained at .015 inches, remove the cover and slowly turn the engine over until the points are open by the cam, then with a feeler gauge, check to .015. It is recommended that all magneto service work be carried out by your chain saw dealer.

7. CARBURETOR: As mentioned, do not change the carburetor needle settings unnecessarily. Should the carburetor, for any reason, need servicing, this should be performed by your servicing dealer.

8. CLUTCH: The clutch assembly of your chain saw is of a centrifugal type and fully automatic. The clutch engages when the throttle is opened to a point where the engine revolutions cause the clutch shoes to engage. Do not slip your clutch through overloading as it will wear out the shoes. Practice immediately releasing the throttle if the chain is pinched as well as at the end of a cut.

9. GUIDE BAR: Make sure the guide bar is clean at all times to assure sufficient chain lubrication. The lubricating oil enters the guide bar groove when your manual oil pump is operated, the chain oil is then picked up by the moving chain and lubrication carried out throughout the length of the bar. Check the guide bar for wear at regular intervals and make sure that any wear encountered is evenly distributed. Should a wire edge be noted along the rail of the bar this should be removed with a flat file. The recommended tool for the servicing of guide bars and the checking of chain is Bar Guage No. 426235 obtainable through your service dealer.

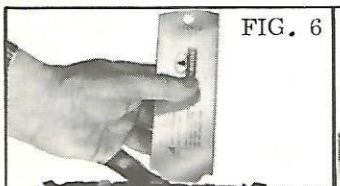


FIG. 6

FIG. 7

FIG. 8

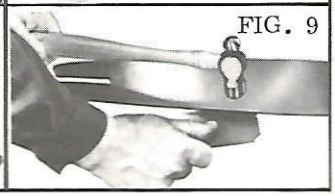


FIG. 9

10. PRIMER PUMP: The primer pump requires very little servicing. However, if dirt enters the inlet valve, or exit valve, it must be removed and carefully cleaned. Dirt particles in the inlet valve will be indicated by a lack of resistance when pressing the primer button. Dirt present in the exit valve will be indicated by a noticeably rich idle and a smoking condition caused by fuel leaking past the exit valve and entering the crankcase. A preventive measure would be to ensure a thoroughly clean fuel mix and careful refuelling procedure.

## SPECIAL NOTE:—

Clutch: The clutch is automatic-designed to engage at a specific engine speed. It has a "wet" type clutch lining and must be run in oil. Do not slip and wear the clutch by overloading. Release the throttle immediately if the chain becomes pinched.

Gearing: The straight cut spur gear design does not require servicing under normal circumstances. Keep the gear oil clean and free of foreign particles. Check the gear oil level and top up if necessary. Should the gearing require servicing, it is recommended that a Pioneer service dealer undertake the repair and replacement necessary.

## PIONEER DURACUT CHAIN SHARPENING AND JOINTING

### SHARPENING

Tighten chain firmly on the guide bar to hold secure. When sharpening take a firm grip on the file and use it with a steady thrust. Don't swing the file during the stroke. Keep consistent cutting angles (minimum 35°) on all teeth. Make certain the file is also bearing against the top cutting face.

Keeping one fifth of the diameter of the file above the top cutting edge of the tooth will give a nice hollow ground cutting edge which will cut fast and dull slowly. Don't file off any more metal than necessary to give a sharp cutting edge.

Make sure your file is really sharp because the chain teeth are made of a heat treated steel alloy. Also, a dull file can surface harden the cutter edges and make them extremely hard to sharpen.

Use only a sharp 1/4" full round file. Be careful to keep the cutting teeth the same length. If the teeth are not uniform, the longer ones will take a deeper bite and cause the saw to cut in an arc.

When you have finished sharpening the chain, slack off the chain slightly and run it free while oiling it heavily to make sure that all filings are flushed from the cutter bar groove. Be sure to retension chain correctly.

### CHAIN TENSION

The importance of correct chain tension cannot be overstressed. Tighten chain, using adjusting screw until the chain can be pulled out of the bar about 1/2". When released it should snap back about 1/8" clearance between the top of the side straps and the bar rail on the lower side.

Correct chain tension is especially important to prevent the chain jumping the bar and causing damage to the equipment and loss of time to the operator.

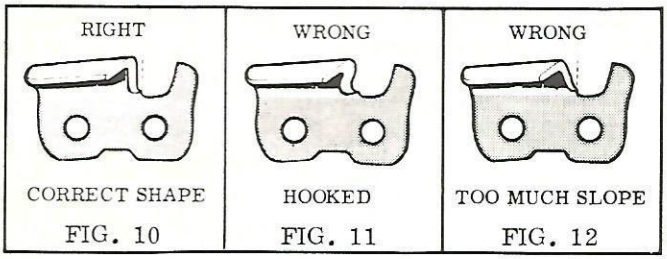


FIG. 10 FIG. 11 FIG. 12

When the chain is correctly filed, properly lubricated, correctly jointed and proper chain tension maintained, it will cut smoothly and be easier on the motor, bar, chain and the operator.

## KEEP YOUR CHAIN PROPERLY MAINTAINED

1. Maintain top angle basic 35 degrees.
2. File with straight even strokes.
3. Keep all cutters the same length.
4. Use 1/4" full round file.

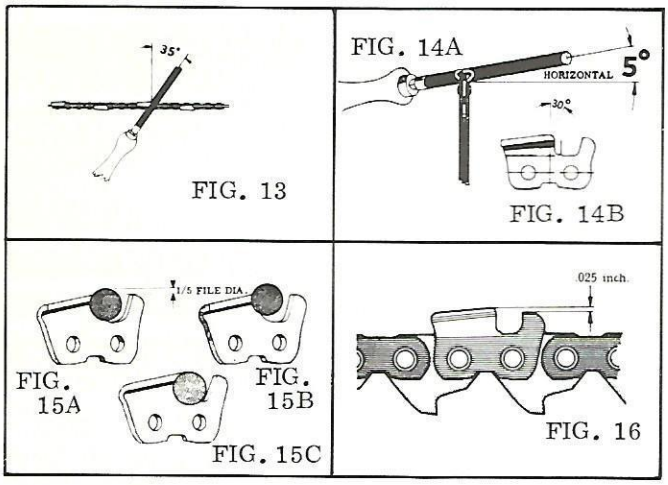


FIG. 13 FIG. 14B

FIG. 15A FIG. 15B FIG. 15C FIG. 16

Hold the file approximately 5 degrees from horizontal, the handle low. As in the case of jointing: Factory recommendation for general purpose calls for the 5 degrees from the horizontal when filing. Various types of wood and cutting conditions may necessitate the operator lowering the file handle an additional 5 degrees. This should only be changed after testing or on recommendation from your Pioneer dealer.

1. Keep 1/5 of file diameter above top edge of cutter. This produces the correct undercut.
2. File held too high results in blunt slow cutting edge.
3. File held too low results in thin, quick dulling edge with hook.

## JOINTING

The chain is precision ground and has a standard joint of .025 inch. Experience has shown that .025 inch is best for average conditions. However, to suit particular cutting conditions the joint can be changed as long as the joint heights are kept uniform. If you change the joint use Gauge Part No. 471135, available at your servicing dealer, and proceed with caution since the chain can be easily damaged by over filing. In filing the runners, maintain the rounded corners. Improperly filed runners will make some teeth cut more than others and the saw action will be rough and tend to cut off line.

## CORRECT JOINT AND CUTTING ACTION

Maintain recommended depth of .025 inch on the depth gauge.

Check your joint regularly. Make a practice of jointing your chain after every second filing. This will result in a fast cutting, smooth operating chain with less effort on your part. Visualize your cutters as a properly adjusted planer blade with ALL depth gauges jointed evenly. Fig. 17

## EXCESSIVE JOINT

Lack of care in jointing may result in excessive or uneven joint. This will cause the cutters to bite in, chain will grab, resulting in overloading of attachments, poor performance and damage to both chain and bar will result. Fig. 18

## INSUFFICIENT JOINT

FAILING TO CHECK OR JOINT REGULARLY. Cutters cannot bite into the wood, chain will not cut efficiently or to capacity. This will require extra pressure on your part resulting in excessive wear to the bottom of the cutters and links plus rapid wear to the guide bar rails. Fig. 19

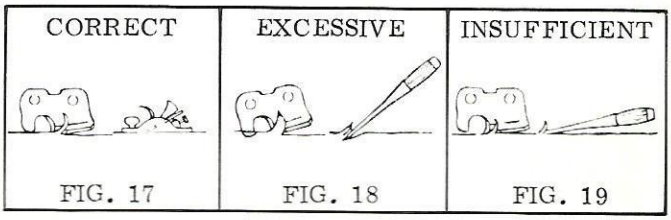


FIG. 17 FIG. 18 FIG. 19

JOINTING (Two Methods In General Use)

1. Using Jointing Gauge No. 471135 is simple and accurate. First preset the adjustable plate, using the feeler gauge supplied, to the recommended joint. Next place jointing tool on top of the chain with the depth gauge protruding through the slot in the jointing plate and resting on the two cutters near the centre of the bar. Using a flat file, file the depth gauge to the level of the jointing tool plate. WARNING: Always work near the centre of the bar and move the chain each time, NOT the tool. This is necessary due to the contour of all guide bars. To operate your jointing tool at various positions could give an uneven joint and a rough cutting chain. Fig. 20

2. If the above mentioned Jointing Tool is not available place a straight edge, long enough to cover

JOINTING (CONT'D.)

at least six cutters, on top of the chain. Next check the existing joint with a standard .025 feeler gauge. If you cannot insert the feeler give one stroke of a flat file and recheck. When correctly jointed you should just feel the drag between the straight edge and the top of the depth gauge. Repeat this step for each depth gauge throughout the entire chain. This method of jointing chains is much slower and less accurate than with a proper jointing tool.

3. When filing the jointer runners, be sure and maintain the rounded corners. Not rounding the corners will cause rough cutting and tendency to cut out of line.

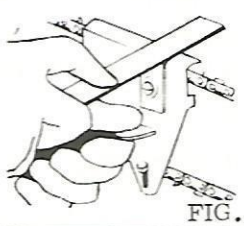


FIG. 20

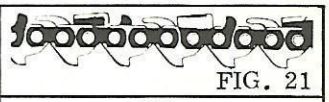


FIG. 21

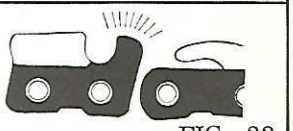


FIG. 22

## SAFETY PRECAUTIONS

Refuel your saw with the use of funnel on an area that has been cleared down to bare ground.

If gas is spilled on the saw, wipe if off or let it evaporate before starting the motor.

Move the saw 10 feet at least from the fueling spot before starting the motor.

Never ask anyone to hold the saw while starting the motor.

During operation keep inquisitive bystanders clear at all times.

Clear inflammable material away before cutting.

Let a hot saw cool before refueling.

Never start cutting until you have a clear place to work, a secure place to stand and a safe exit from a falling tree.

Before starting motor examine carefully the lean of the tree, look up for loose limbs or bark and intertwined branches.

Wherever possible place the pivot grip against the tree or log before starting the cut.

When undercutting, wherever possible have chain in an inverted position.

Never operate a chain saw in a closed room as the exhaust fumes can be deadly.

Never touch or try to stop a moving chain.

Before you start the motor make sure the saw is not touching anything.

When removing saw from cut, shut the motor off before the chain leaves the tree.

### PIONEER GUIDE BARS AND CHAINS

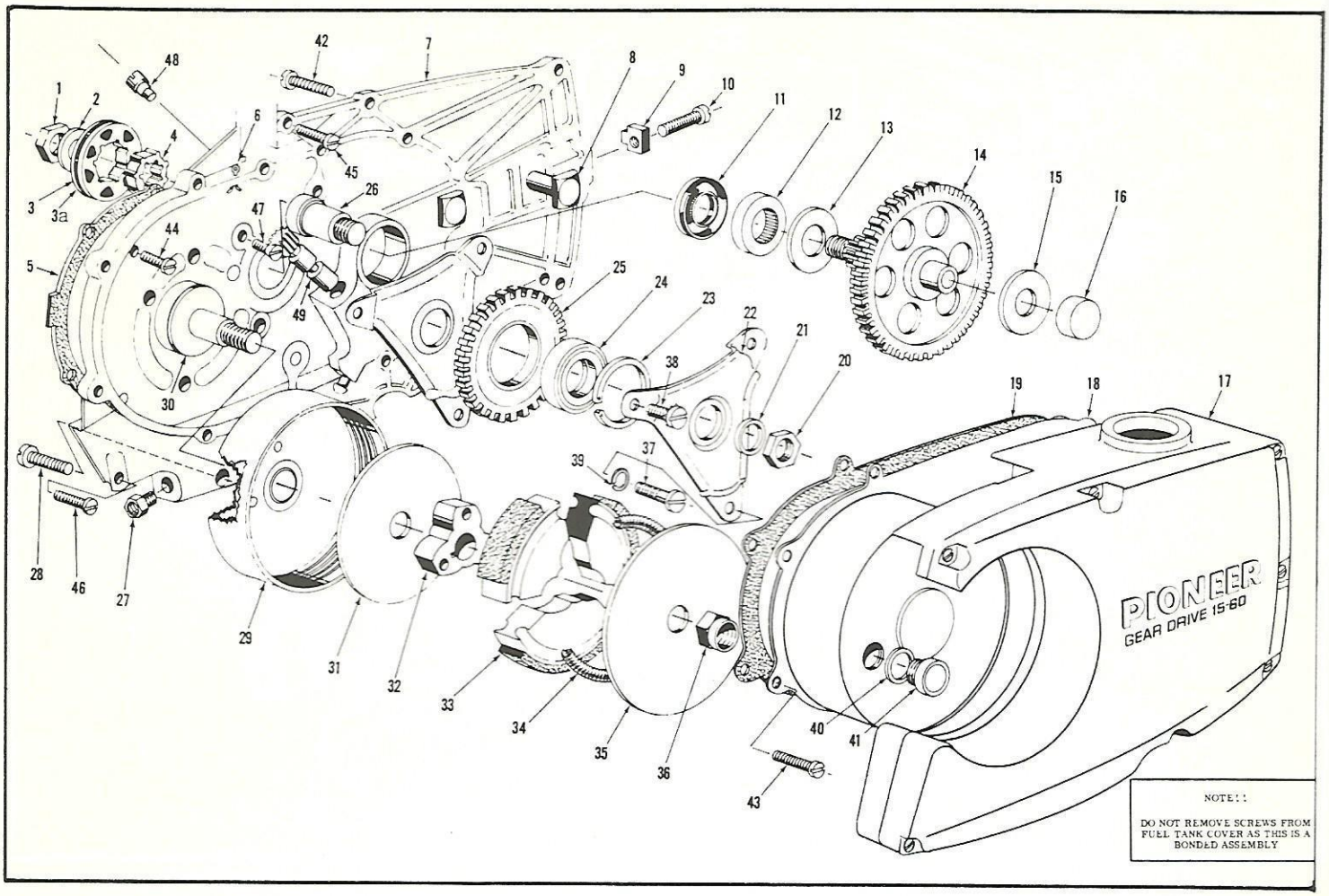
| LENGTH | GUIDE BARS Standard | GUIDE BARS Roller - Nose | CHAIN D6EH .058 | CHAIN D6EJ .063 |
|---|---|---|---|---|
| 20" | 471800 | 471808 | 471073 | 471062 |
| 24" | 471801 | 471809 | 471074 | 471063 |
| 28" | 471802 | 471810 | 471075 | 471064 |
| 32" | 471803 | 471811 | 471076 | 471065 |
| 36" | 471804 | 471812 | 471077 | 471066 |
| 42" | 471805 | 471813 | 471078 | 471067 |
| * 36" | 471806 | | | |
| * 42" | 471807 | | | |

Roller-nose Assembly Kit - 470849 * Use with helper's handle.

NOTE: - Part No. 428015 - Plug for guide bar - available on request.

### MAINTENANCE TOOLS

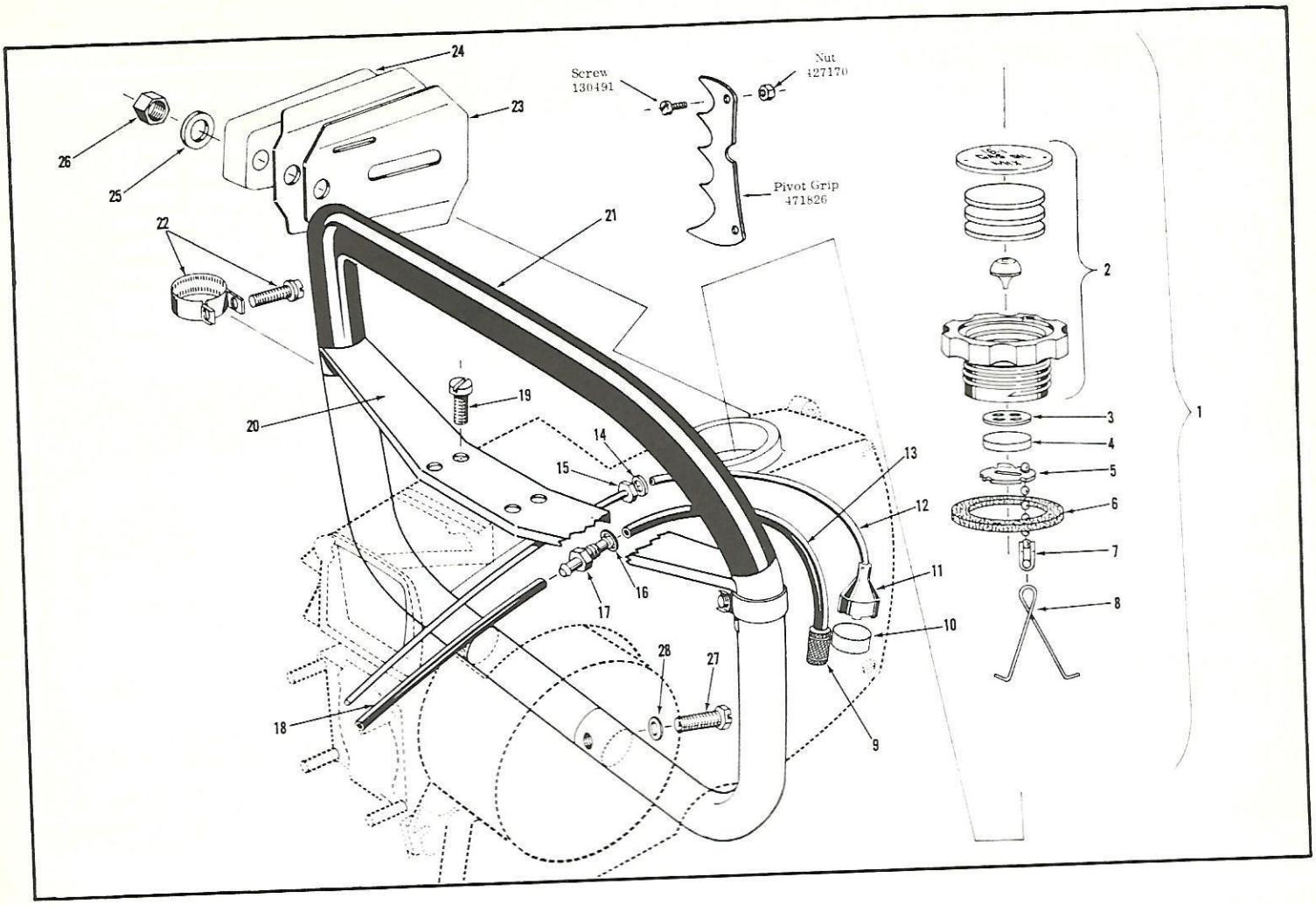
425580 - Strut Nut Wrench
427973 - Spark Plug Wrench
428442 - Sprocket Wrench
426235 - Guide Bar Tool
471135 - Jointing Gauge




## GEARCASE AND TRANSMISSION

| Item No. | Part No. | Description | Qty. Req'd. |
|---|---|---|---|
| 1 | 427181 | Nut - Output Shaft | 1 |
| 2 | 428511 | Washer - Output Shaft | 1 |
| 3 | 428568 | 1/2" Pitch Sprocket - 7 Tooth | 1 |
| 3A | 427387 | 7/16" Pitch Sprocket - 7 Tooth | 1 |
| 4 | 428509 | Sprocket Adaptor | 1 |
| 5 | 428319 | Gasket - Gearcase to Crankcase | 1 |
| 6 | 306370 | Cotter Pin | 1 |
| 7 | 472222 | Gearcase and Bar Pad Assembly | 1 |
| 8 | 428306 | Bolt - Guide Bar | 2 |
| 9 | 425672 | Chain Adj. Pin | 1 |
| 10 | 202190 | Chain Adj. Screw | 1 |
| 11 | 425076 | Seal | 1 |
| 12 | 428324 | Bearing - Large - Output Shaft | 1 |
| 13 | 428305 | Washer - Large | 1 |
| 14 | 472226 | Output Shaft | 1 |
| 15 | 428304 | Washer - Small | 1 |
| 16 | 428300 | Roller Bearing - Small | 1 |
| 17 | 471683 | Fuel Tank Assembly | 1 |
| 18 | 471679 | Gearcase Cover | 1 |
| 19 | 428913 | Gasket Gearcase Cover | 1 |
| 20 | 428391 | Nut - Idler Spindle | 1 |
| 21 | 428411 | Washer - Idler Spindle | 1 |
| 22 | 428387 | Plate - Gear Ret. | 2 |
| 23 | 428390 | Retaining Ring | 1 |
| 24 | 428389 | Bearing | 1 |

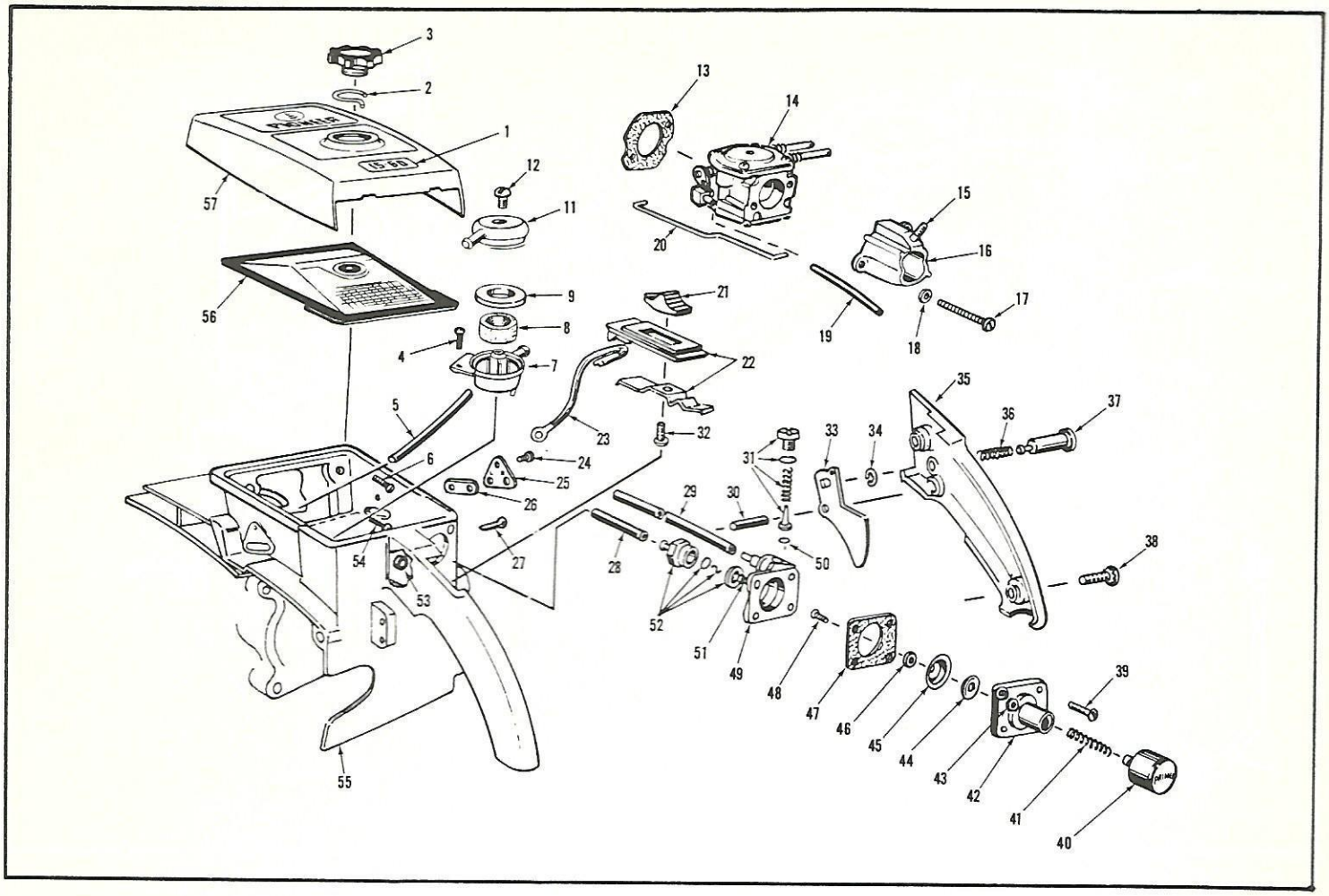
| Item No. | Part No. | Description | Qty. Req'd |
|---|---|---|---|
| 25 | 428392 | Gear | 1 |
| 26 | 428388 | Idler Spindle | 1 |
| 27 | 428001 | Fitting | 1 |
| 28 | 307152 | Screw - Fuel Tank to Gearcase | 1 |
| 29 | 471680 | Clutch Drum Assembly c/w Bearing | 1 |
| 30 | 428291 | Washer - Clutch Thrust | 1 |
| 31 | 427491 | Ret. Plate - Inside Clutch | 1 |
| 32 | 427175 | Clutch Driver | 1 |
| 33 | 471681 | Clutch Shoe Assembly | 3 |
| 34 | 426964 | Garter Spring | 2 |
| 35 | 427486 | Ret. Plate | 1 |
| 36 | 427181 | Nut - Clutch | 1 |
| 37 | 428412 | Screw - Idler Assy. to Gearcase | 1 |
| 38 | 309330 | Screw - Idler Assy. to Gearcase | 2 |
| 39 | 306396 | Washer - Idler Assy. to Gearcase | 3 |
| 40 | 428314 | Gasket - Oil Plug | 1 |
| 41 | 428322 | Oil Plug - Gearcase Cover | 1 |
| 42 | 303699 | Screw - Fuel Tank to Gearcase | 2 |
| 43 | 510397 | Screw - Cover to Gearcase | 12 |
| 44 | 302948 | Screw - Gearcase to Crankcase | 4 |
| 45 | 510397 | Screw - Gearcase to Ignition Carrier | 1 |
| 46 | 307196 | Screw - Gearcase to Ignition Carrier | 1 |
| 47 | 307163 | Screw - Gearcase to Crankcase | 2 |
| 48 | 428897 | Pin - Auto Oiler | 1 |
| 49 | 428896 | Pump Plunger - Auto Oiler | 1 |




## FRONT HANDLE AND GAS TANK ASSEMBLIES

| Item No. | Part No. | Description | Qty. Req'd. |
|---|---|---|---|
| 1 | 471820 | Gas Cap Assembly (includes parts marked *) | 1 |
| 2 | 471821 | * Gas Cap Body Assembly | 1 |
| 3 | 428600 | * Filter - Cover | 1 |
| 4 | 427994 | * Filter Disc | 1 |
| 5 | 427278 | * Cover | 1 |
| 6 | 425087 | * Gasket | 1 |
| 7 | 427277 | * Bead Chain | 1 |
| 8 | 427213 | * Lock Spring | 1 |
| 9 | 427214 | Pick-up Head | 1 |
| 10 | 426826 | Fuel Filter Felt | 1 |
| 11 | 426823 | Primer - Filter Body | 1 |
| 12 | 428401 | Fuel Pick-up Line | 1 |
| 13 | 428399 | Hose - Fuel Pick-up | 1 |
| 14 | 202612 | "O" Ring | 1 |

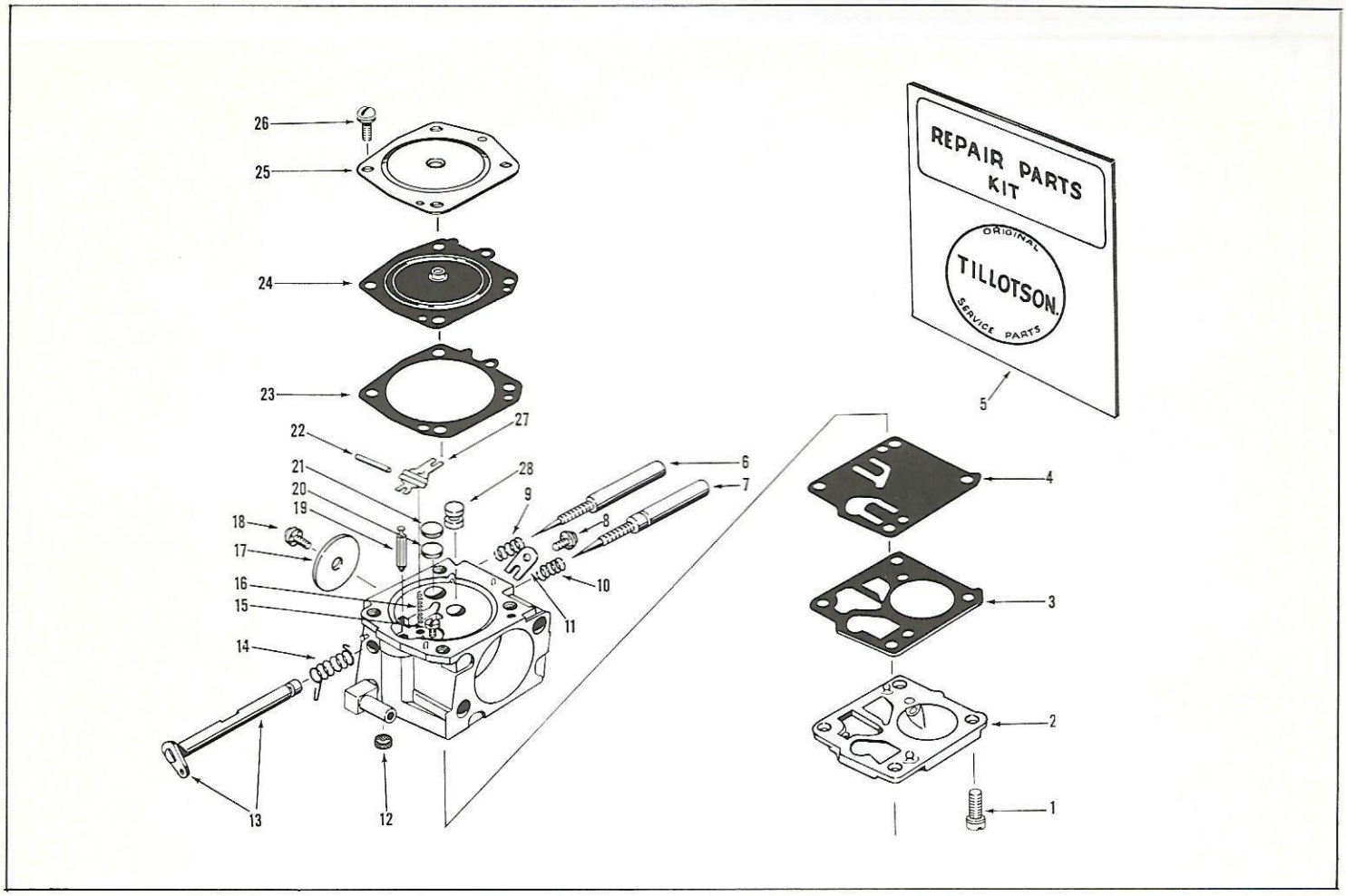
| Item No. | Part No. | Description | Qty. Req'd. |
|---|---|---|---|
| 15 | 428002 | Nut - Primer Tube | 1 |
| 16 | 427855 | Gasket - Fitting - Tank | 1 |
| 17 | 427856 | Fitting - Fuel Pick-up | 1 |
| 18 | 428400 | Hose - Tank to Filter | 1 |
| 19 | 303311 | Screw Brkt. to G'case | 4 |
| 20 | 471734 | Front Hdle. Brkt. Assembly | 1 |
| 21 | 471682 | Front Handle Assembly | 1 |
| 22 | 471762 | Clamp - Handle to Bracket | 2 |
| 23 | 428323 | Guide Plate | 2 |
| 24 | 428301 | Bar Clamp Pad | 1 |
| 25 | 425116 | Washer - Strut Bolt | 2 |
| 26 | 425031 | Nut - Strut Bolt | 2 |
| 27 | 303459 | Screw - Front Hdle. | 2 |
| 28 | 306396 | Lockwasher | 2 |



## REAR HANDLE AND AIR BOX ASSEMBLIES

| Item No. | Part No. | Description | Qty. Req'd. |
|---|---|---|---|
| 1 | 428830 | Decal - 15-60 | 1 |
| 2 | 304614 | "O" Ring | 1 |
| 3 | 471357 | Knob Assembly | 1 |
| 4 | 305230 | Screw (Bowl to Air Box) | 1 |
| 5 | 428400 | Fuel Hose (Tank to Filter) | 1 |
| 6 | 304606 | Screw ( Rear Handle to C'case) | 3 |
| 7 | 471917 | Fuel Filter Bowl Assembly | 1 |
| 8 | 428010 | Filter Felt | 1 |
| 9 | 427369 | Gasket | 1 |
| 11 | 472358 | Cover | 1 |
| 12 | 307506 | Screw | 1 |
| 13 | 427888 | Gasket | 1 |
| 14 | 471710 | Carburetor Assembly | 1 |
| 15 | 428081 | ● Stud (Blowback Tube) | 1 |
| 16 | 471638 | Blowback Tube Assembly (includes parts marked ●) | 1 |
| 17 | 427785 | Screw (Carburetor to Reed Body) | 2 |
| 18 | 120052 | Washer | 2 |
| 19 | 428350 | Fuel Hose (Filter to Carburetor) | 1 |
| 20 | 428351 | Throttle Link | 1 |
| 21 | 427128 | * Switch Button | 1 |
| 22 | 471699 | Switch Assembly (includes parts marked *) | 1 |
| 23 | 471422 | Switch Wire Assembly | 1 |
| 24 | 312811 | Screw - Carburetor Grommet | 1 |
| 25 | 428344 | Grommet Retainer | 1 |
| 26 | 428204 | Grommet | 1 |
| 27 | 306370 | Cotter Pin | 1 |
| 28 | 427863 | Fuel Hose - Primer Intake | 1 |

| Item No. | Part No. | Description | Qty. Req'd. |
|---|---|---|---|
| 29 | 428013 | Fuel Hose - Primer to C'case | 1 |
| 30 | 308016 | Roll Pin - Rear Handle | 1 |
| 31 | 470729 | Exit Valve Assembly (includes parts marked ▲) | 1 |
| 32 | 426662 | * Screw | 1 |
| 33 | 427696 | Throttle Trigger | 1 |
| 34 | 309623 | Retainer Clip | 1 |
| 35 | 427865 | Rear Handle Cover | 1 |
| 36 | 428171 | Spring - Throttle Lock | 1 |
| 37 | 427815 | Pin - Throttle Lock | 1 |
| 38 | 307613 | Screw - Cover to Rear Handle | 1 |
| 39 | 311835 | Screw - Primer to Rear Handle | 2 |
| 40 | 427712 | Button - Primer | 1 |
| 41 | 427800 | Spring | 1 |
| 42 | 427860 | Cover - Primer | 1 |
| 43 | 302437 | Nut | 2 |
| 44 | 426818 | Cup | 1 |
| 45 | 426815 | Washer | 1 |
| 46 | 426926 | Cup Washer | 1 |
| 47 | 427715 | Gasket | 1 |
| 48 | 426821 | Screw | 1 |
| 49 | 471352 | Primer Body and Fitting Assembly | 1 |
| 50 | 308528 | ▲ "O" Ring - Exit Valve | 1 |
| 51 | 312475 | Screw - Body to Cover | 2 |
| 52 | 471503 | Inlet Valve Housing Assembly | 1 |
| 53 | 428352 | Grommet | 1 |
| 54 | 304852 | Screw (Rear Handle to C'case) | 1 |
| 55 | 428345 | Rear Handle and Air Box | 1 |
| 56 | 428728 | Air Filter Element | 1 |
| 57 | 428490 | Air Filter Cover | 1 |



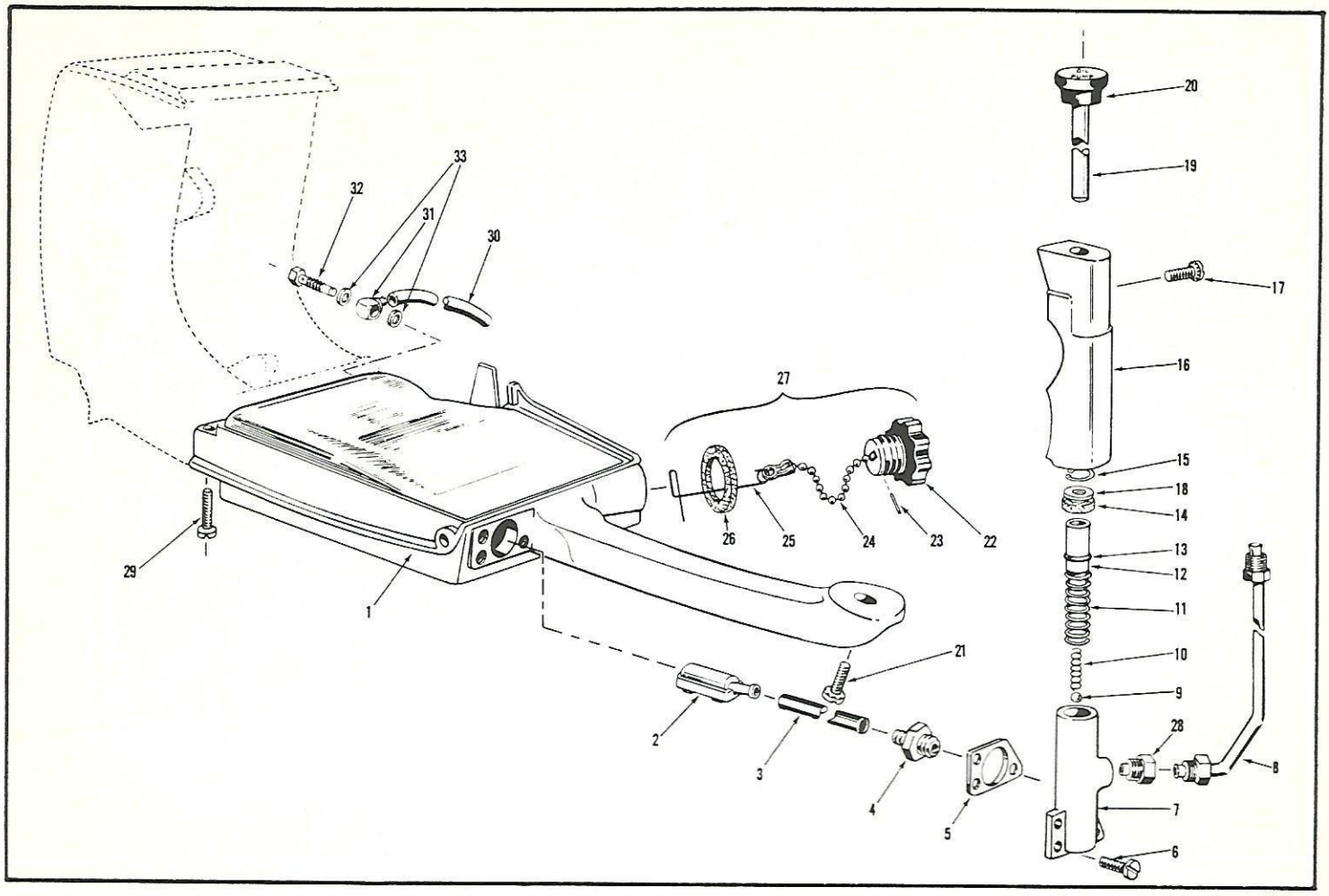

**CARBURETOR PARTS LIST**

| Item No. | Ref. No. | Description | Qty. Req'd. |
|---|---|---|---|
| 1 | 427955 | Screw & Lockwasher | 4 |
| 2 | 427939 | Cover - Pump | 1 |
| 3 | *427940 | Gasket | 1 |
| 4 | *427941 | Diaphragm | 1 |
| 5 | 471771 | Repair Parts Kit (incl. pts. mkd *) | 1 |
| 6 | *428419 | Idle Adj. Screw | 1 |
| 7 | *428414 | Main Adj. Screw | 1 |
| 8 | *427947 | Screw & Lockwasher | 1 |
| 9 | *425449 | Idle Adj. Spring | 1 |
| 10 | *425449 | Main Adj. Spring | 1 |
| 11 | 427957 | Throttle Shaft Clip | 1 |
| 12 | *427951 | Inlet Screen | 1 |
| 13 | 471739 | Throttle Shaft & Lever | 1 |
| 14 | *428417 | Throttle Shaft & Return Spring | 1 |

| Item No. | Ref. No. | Description | Qty. Req'd. |
|---|---|---|---|
| 15 | * 427962 | Inlet Pinion Pin Ret. Screw | 1 |
| 16 | * 426922 | Inlet Tension Spring | 1 |
| 17 | 425966 | Throttle Shutter | 1 |
| 18 | * 427947 | Screw & Lockwasher | 4 |
| 19 | * 427952 | Inlet Needle | 1 |
| 20 | * 428149 | Reducer | 1 |
| 21 | * 427948 | Welch Plug | 1 |
| 22 | * 427954 | Inlet Pinion Pin | 1 |
| 23 | * 427950 | Gasket | 1 |
| 24 | * 471374 | Diaphragm Assy. | 1 |
| 25 | 427956 | Cover - Diaphragm | 1 |
| 26 | 426145 | Screw & Lockwasher | 1 |
| 27 | * 427953 | Inlet Control Lever | 1 |
| 28 | 471618 | Check Valve Assy. | 1 |

Carburetor Assy. Complete 471710

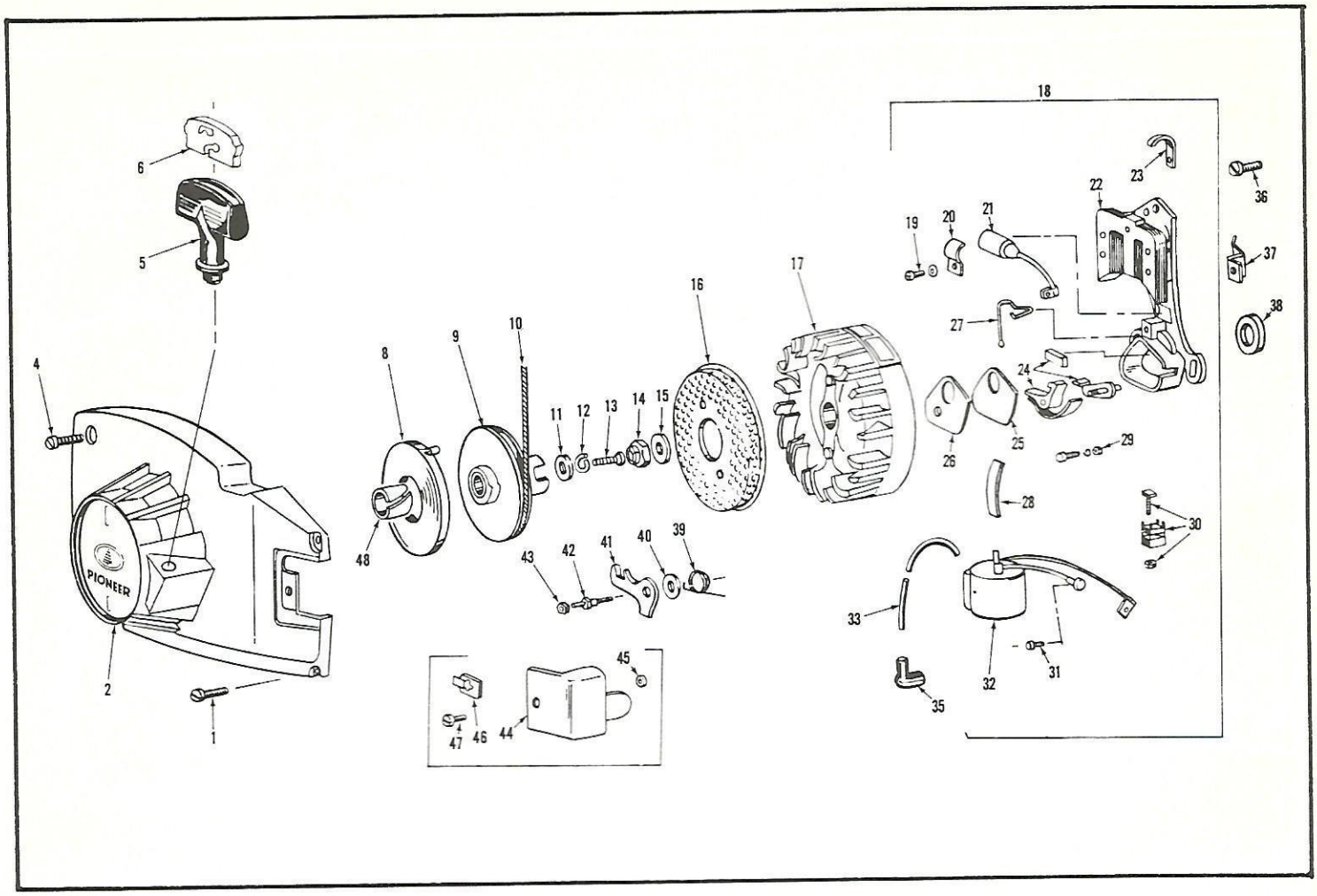
* Indicates contents of Repair Parts Kit




## PICK-UP ASSEMBLIES

| Item No. | Part No. | Description | Qty. Req'd |
|---|---|---|---|
| 1 | 472225 | Oil Tank & Rear Handle Assy. | 1 |
| 2 | 471709 | Oiler Pick-up Assembly | 1 |
| 3 | 428337 | Hose - Oil Pick-up | 1 |
| 4 | 428624 | Body - Inlet Valve | 1 |
| 5 | 427861 | Gasket | 1 |
| 6 | 307613 | Screw - Oil Pump to Tank | 3 |
| 7 | 427876 | Oil Pump Body | 1 |
| 8 | 471529 | Oil Line - Pump to Bar | 1 |
| 9 | 428341 | Ball - Inlet Valve | 1 |
| 10 | 428342 | Spring - Ball | 1 |
| 11 | 428357 | Spring - Oil Pump | 1 |
| 12 | 428343 | Plunger - Oil Pump | 1 |
| 13 | 428906 | "O" Ring - Oil Pump | 1 |
| 14 | 427367 | Felt | 1 |
| 15 | 202755 | Clip - Plunger Rod | 1 |
| 16 | 471479 | Oil Pump Cover Assembly | 1 |
| 17 | 307193 | Screw | 2 |

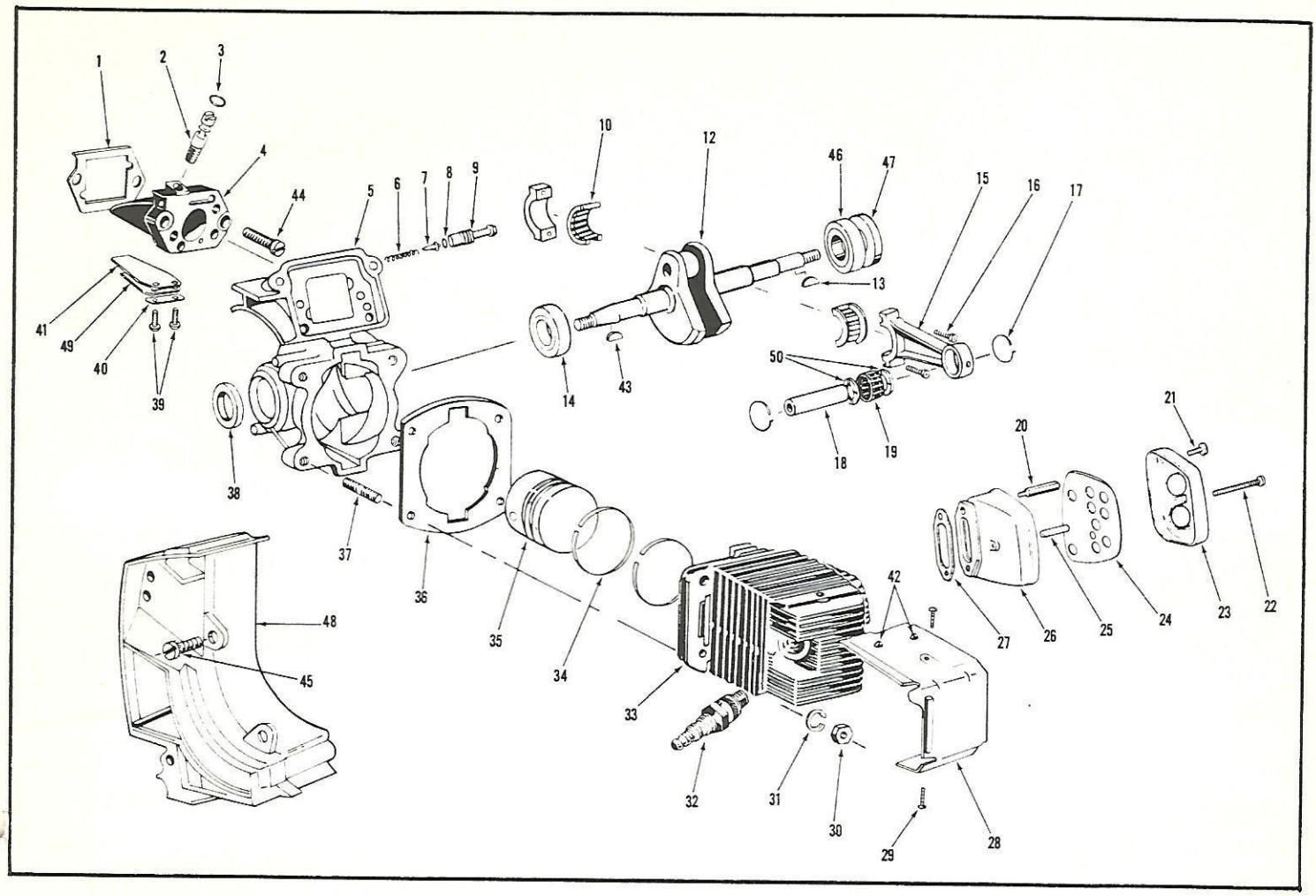
| Item No. | Part No. | Description | Qty. Req'd |
|---|---|---|---|
| 18 | 428647 | Washer | 1 |
| 19 | 428346 | Push Rod | 1 |
| 20 | 427704 | Button - Push Rod | 1 |
| 21 | 302948 | Screw - Oil Tank to Rear Handle | 1 |
| 22 | 427688 | * Cap - Oil Filter | 1 |
| 23 | 427289 | * Pin | 1 |
| 24 | 427690 | * Bead Chain | 1 |
| 25 | 427976 | * Retaining Hook | 1 |
| 26 | 427689 | * Gasket | 1 |
| 27 | 471511 | Oil Filler Cap Assembly (includes parts marked *) | 1 |
| 28 | 471478 | Outlet Valve Assembly | 1 |
| 29 | 302948 | Screw - Oil Tank to Gearcase | 2 |
| 30 | 427893 | Hose - 3 5/8" | 1 |
| 31 | 472224 | Banjo Fitting | 1 |
| 32 | 471606 | Oil Pick-up Head Assembly | 1 |
| 33 | 307554 | Gasket | 2 |




## STARTER & MAGNETO

| Item No. | Part No. | Description | Qty. Req'd. |
|---|---|---|---|
| 1 | 510397 | Screw - Blower Cover | 3 |
| 2 | 471915 | Blower Cover Assembly (includes parts marked *) | 1 |
| 4 | 311834 | Screw - Blower Cover to Ign. Carrier | 1 |
| 5 | 427370 | Starter Handle | 1 |
| 6 | 427492 | Anchor | 1 |
| 8 | 471588 | Starter Spring | 1 |
| 9 | 471371 | Starter Pulley Assembly | 1 |
| 10 | 426752 | Starter Cord | 1 |
| 11 | 428105 | Washer | 1 |
| 12 | 306398 | Washer | 1 |
| 13 | 551725 | Screw - Pulley to Shaft | 1 |
| 14 | 427826 | Locknut (L. H. Flywheel) | 1 |
| 15 | 306405 | Washer | 1 |
| 16 | 428092 | Rotating Screen | 1 |
| 17 | 471362 | Flywheel Assembly | 1 |
| 18 | 471590 | Stator Assembly (includes parts marked x) | 1 |
| 19 | 425948 | x Clamp Screw Assembly | 1 |
| 20 | 427754 | x Condenser Clamp | 1 |
| 21 | 471354 | x Condenser Assembly | 1 |
| 22 | 427752 | x Stator Plate & Core | 1 |
| 23 | 428106 | x Clip | 1 |

| Item No. | Part No. | Description | Qty. Req'd. |
|---|---|---|---|
| 24 | 471500 | x Breaker Point Set with Felt | 1 |
| 25 | 429076 | x Gasket - Breaker Box | 1 |
| 26 | 427756 | x Cover - Breaker Box | 1 |
| 27 | 425698 | x Spring - Breaker Box | 1 |
| 28 | 427748 | x Coil Wedge Spring | 1 |
| 29 | 471366 | x Fixed Contact Screw Assembly | 1 |
| 30 | 471364 | x Terminal Connection Unit | 1 |
| 31 | 427749 | x Coil Ground Screw | 1 |
| 32 | 471365 | x Coil Assembly | 1 |
| 33 | 427926 | x High Tension Wire | 1 |
| 35 | 580339 | Sparky Assembly | 1 |
| 36 | 304605 | Screw - Stator to Ign. Carrier | 3 |
| 37 | 427867 | Clip - High Tension Lead | 1 |
| 38 | 427917 | Magneto Felt | 1 |
| 39 | 427764 | Spring - Starter Pawl | 2 |
| 40 | 202150 | Washer - Pivot to Flywheel | 2 |
| 41 | 427765 | Starter Pawl | 2 |
| 42 | 427763 | Pivot | 2 |
| 43 | 427914 | Nut - Screen to Pivot | 2 |
| 44 | 471425 | Inspection Cover Assembly (includes parts marked ●) | 1 |
| 45 | 427968 | ● Washer - inspect. cover | 1 |
| 46 | 428445 | ● Speed Nut | 1 |
| 47 | 427965 | ● Screw | 1 |
| 48 | 428444 | Bearing Liner - nylon | 1 |



## ENGINE ASSEMBLIES

| Item No. | Part No. | Description | Qty. Req'd. |
|---|---|---|---|
| 1 | 427885 | * Gasket - Reed Valve to C'case | 1 |
| 2 | 428338 | * Needle - Idle Speed | 1 |
| 3 | 304598 | * "O" Ring | 1 |
| 4 | 471708 | Reed Valve Assembly (includes parts marked *) | 1 |
| 5 | 471635 | Crankcase Assembly (includes parts marked x) | 1 |
| 6 | 426837 | Spring - Check Valve Body | 1 |
| 7 | 426835 | Stem - Check Valve Body | 1 |
| 8 | 308528 | "O" Ring - Check Valve Body | 1 |
| 9 | 427981 | Check Valve Body | 1 |
| 10 | 472365 | Bearing Cage Assembly | 1 |
| 12 | 428313 | Crankshaft | 1 |
| 13 | 428407 | Key - Driving Side | 1 |
| 14 | 427849 | Main Bearing | 2 |
| 15 | 471443 | Con. Rod Assembly (includes parts marked ) | 1 |
| 16 | 321688 | Cap Screw - Con. Rod | 2 |
| 17 | 428781 | Retainer - Wristpin | 2 |
| 18 | 428780 | Wristpin Bearing | 1 |
| 19 | 428367 | Wristpin | 1 |
| 20 | 428169 | Stud - Muffler to Cylinder | 1 |
| 21 | 305230 | Screw - Muffler to Cover | 2 |
| 22 | 313217 | Screw - Muffler Cover to Body | 1 |
| 23 | 471612 | Muffler Cover Assembly | 1 |
| 24 | 428573 | Baffle Plate | 1 |

| Item No. | Part No. | Description | Qty. Req'd. |
|---|---|---|---|
| 25 | 428279 | Spacer | 1 |
| 26 | 471641 | Muffler Body Assembly | 1 |
| 27 | 428189 | Gasket | 1 |
| 28 | 471577 | Inner Shroud Assembly (includes parts marked ) | 1 |
| 29 | 510278 | Screw (Inner Shroud) | 2 |
| 30 | 306397 | Nut | 4 |
| 31 | 306396 | Lockwasher | 4 |
| 32 | 428006 | Spark Plug | 1 |
| 33 | 471424 | Cylinder Assembly | 1 |
| 34 | 471656 | Piston Ring Set | 1 |
| 35 | 471657 | Piston Assembly | 1 |
| 36 | 428872 | Gasket | 1 |
| 37 | 426642 | x Stud - Crankcase to Cylinder | 4 |
| 38 | 427656 | Seal - Crankshaft | 2 |
| 39 | 428335 | * Screw (Reed to Body) | 2 |
| 40 | 428127 | * Retainer (Reed Valve) | 1 |
| 41 | 428336 | * Reed | 1 |
| 42 | 426746 | Bumper - Inner Shroud | 2 |
| 43 | 428409 | Flywheel Key | 1 |
| 44 | 309483 | Screw - Reed Valve to Crankcase | 2 |
| 45 | 551706 | Screw - Ignition Carrier to Crankcase | 2 |
| 46 | 425066 | Bearing - Crankshaft | 1 |
| 47 | 425076 | Seal - Crankshaft | 1 |
| 48 | 428283 | Ign. Carrier & Bridge Piece | 1 |
| 49 | 428246 | Reed Stiffener | 1 |
| 50 | 428800 | Thrust Washers | 2 |

## WARRANTY

WE WARRANT EACH NEW PIONEER ENGINE TO BE FREE OF DEFECTS IN MATERIAL AND WORKMANSHIP UNDER NORMAL USE AND SERVICE. OUR OBLIGATION UNDER THIS WARRANTY BEING LIMITED TO MAKING GOOD ANY PART OR PARTS THEREOF WHICH SHALL, UPON EXAMINATION, DISCLOSE TO OUR SATISFACTION TO HAVE BEEN THUS DEFECTIVE.

THE BARS AND CHAIN ARE WARRANTED SEPARATELY FOR A PERIOD OF THIRTY DAYS AGAINST DEFECTS IN MATERIAL AND WORKMANSHIP UNDER THE SAME CONDITIONS HERETOFORE MENTIONED.

THIS WARRANTY BEING EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES AND REPRESENTATIONS EXPRESSED OR IMPLIED AND OF ALL OTHER LIABILITIES IN CONNECTION WITH THE SALE OR USE OF ANY PIONEER SAWS.

TO MAKE A CLAIM UNDER THIS WARRANTY, CONTACT THE DEALER FROM WHOM THE SAW WAS PURCHASED, OR THE NEAREST AUTHORIZED PIONEER SAW DEALER. ALL CLAIMS MUST BE ACCOMPANIED WITH THE MODEL AND SERIAL NUMBER OF THE SAW.

THIS WARRANTY IS EXTENDED IN THE U.S.A. BY PIONEER SAWS, OUTBOARD MARINE CORPORATION, GALESBURG, ILLINOIS; IN CANADA BY PIONEER SAWS LTD., PETERBOROUGH, ONTARIO. MOTORS SOLD ELSEWHERE ARE WARRANTED BY OUTBOARD MARINE INTERNATIONAL, NASSAU, BAHAMAS; OUTBOARD MARINE BELGIUM S.A., BRUGES, BELGIUM, AND OUTBOARD MARINE AUSTRALIA PTY. LIMITED, BANKSTOWN, N.S.W., AUSTRALIA.

To assure you of your warranty, fill out the Warranty Cards and immediately forward them as directed.

When a service problem arises do not hesitate to consult your local Pioneer Chain Saw Dealer. Your dealer was appointed after careful consideration of his ability in providing prompt and effective service. Only he can offer the complete technical knowledge and skill to maintain your chain saw in tip-top condition.

Your dealer also stocks a complete line of genuine factory replacement parts. Therefore, when you require replacement parts, order them from your local dealer: DO NOT RETURN MOTOR TO FACTORY.

When ordering, specify:

1. Model and Serial Number of your chain saw.
2. Quantity, part number and description of part in full.
3. Complete shipping instructions.

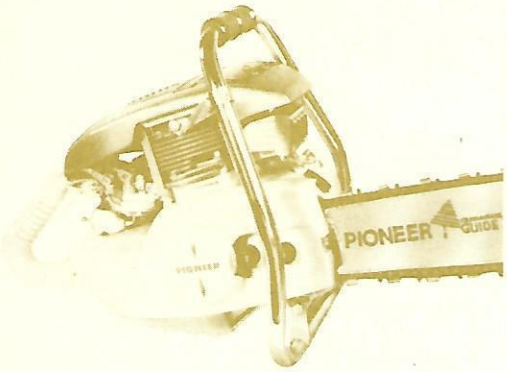
REGISTER YOUR MODEL AND SERIAL NUMBER IN THE SPACES PROVIDED BELOW.

Model Number .....

Serial Number .....

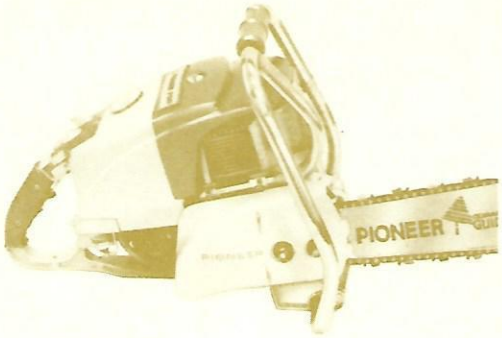
CHAIN - CAN. PAT. 1950 - 1955; U.S. PATENT 24, 129; 2,508, 784; 2,622, 636

# A full power-range of lightweight chain saws



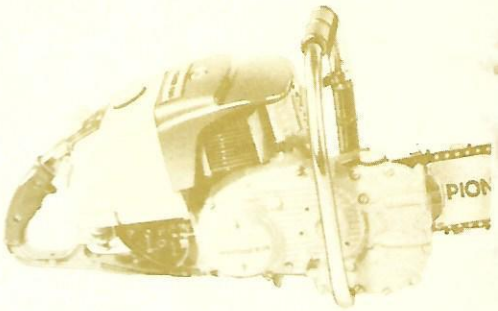

## PIONEER 650

The proven performance chain saw for pulpwood and general logging.



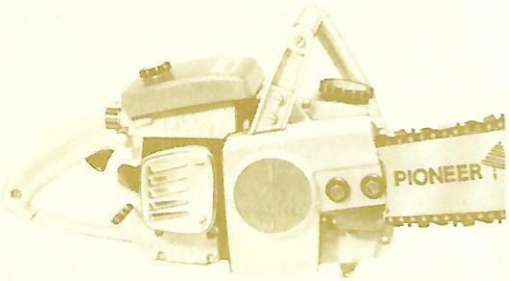

## PIONEER 750

Most powerful direct drive chain saw, designed for big job cutting.



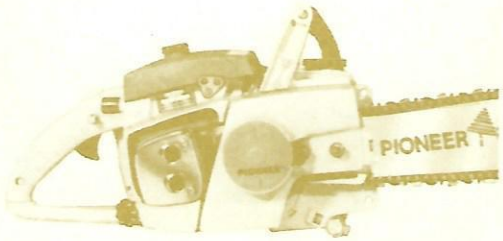
## PIONEER 850

The big power gear drive chain saw, fills all heavy cutting requirements.



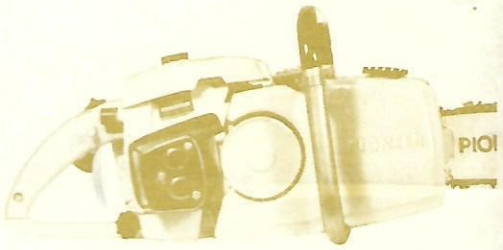

## 1100 SERIES

The super-powered lightweights for any cutting job. Also available with automatic oiling.




## 1400 SERIES

The powerful lightweights designed for professionals available with or without automatic oiling.



## 1500 SERIES

High powered lightweight gear saw.

PART NO. 428899

## by the makers of Johnson and Evinrude Outboards

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