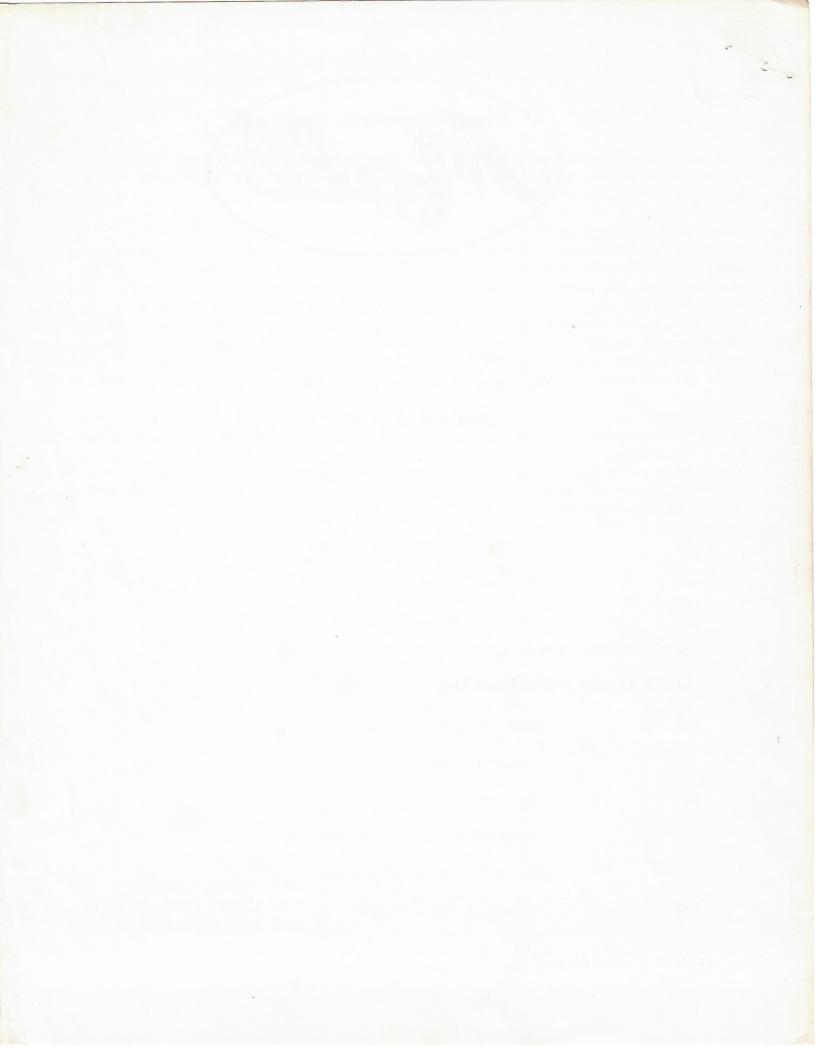


MODEL 8 GASOLINE ENGINE ASSEMBLY No. 41050

INSTRUCTIONS FOR
MAINTENANCE AND OPERATION

MALL TOOL COMPANY 7740 SOUTH CHICAGO AVE. CHICAGO 19, ILLINOIS



MANUFACTURER'S WARRANTY

It is expressly agreed that there are no warranties, expressed or implied, made either by the Dealer or the Manufacturer on Mall Tools except the Manufacturer's warranty against defective materials or workmanship as follows:

The Mall Tool Company warrants each new tool manufactured by it to be free from defects in material and workmanship under normal use and service, its obligation under warranty being limited to making good at its factory or at any district factory service store, any part or parts thereof which shall, within 30 days after delivery of such tool to the original purchaser, be returned to it with transportation charges prepaid and which as its examination shall disclose to its satisfaction to have been thus defective: this warranty being expressly in lieu of all other warranties, expressed or implied and any other obligations or liabilities on its part, and it neither assumes nor authorizes any other person to assume for it any other liability in connection with the sale of the tools.

This warranty shall not apply to any tool which shall have been repaired or altered nor to expendable parts nor to tools which have been subject to misuse, negligence or accident:

Any part or parts covered by this Warranty should be returned to the nearest Branch Office. No parts are to be returned to the Branch or Factory without a letter of explanation preceding the shipment. In all cases state:

Name and address of sender

Name of Tool

Part Number of Tool

Model of Tool

Serial Number of Tool

Date when Purchased

Where Purchased

How the Tool was used

Your explanation of the reason

the tool is being sent in for

repair or replacement

This is to be addressed to the SERVICE MANAGER of your nearest Branch Office or to the Factory at 7740 South Chicago Avenue, Chicago 19, Illinois

THE MODEL 8 GASOLINE ENGINE

Receiving Shipment

When Receiving a new shipment, inspect packages carefully when delivered by the carrier. If serious damage has occured during shipment, refuse to accept the delivery. If any slight damage has occured or if there are any shortages, make full note of irregularities on the receipt and have it signed by the carrier. When unpacking a new shipment, first check the items received with the packing list. If any items are missing, search the packing material before destroying. Report the shortages at once in detail.

Specifications

Bore: 2.38

Stroke: 2.75

Displacement: 12.19 CU-IN

Operating Speed: 4500 RPM

Cycle: Two

Valve: Third Port

Times, Degrees B.T.D.C. 30°

Point Setting: .018 to .020

Sparkplug Gap: .025

Carburetor Type: Bracke Float

Magneto Type: Crankshaft Scintilla

Cooling: Air

Sparkplug Type: Champion C7

Governor Type: Wind Vane

Clutch Type: Centrifugal

Connecting Rod Bearing Roller Bearing

Shaft Bearing: Ball Bearing

Cylinder Wall: Porous Chrome

Gas Tank Capacity: 8 Pints

Specifications (Cont.)

Oil Tank Capacity:

2.75 Pints

SIZE and WEIGHT

	Weight	OA-LG	OA-Width	OA-Height
Engine	51.75	28.50	22.00	17.50

Before Using

How To Assemble Handle Bars To Engine

Remove the engine from shipping case with the wooden base bolted to the engine. With the engine placed in the same position in which it was packed, remove four clamps 27219 and 27247 from sides of fan housing. When removing these clamps keep them in order so they may be replaced in original positions after handle bars are assembled.

Place both feet on the wooden base on which the engine is mounted and slide handle bars into position between studs on fan housing.

Attaching The Throttle Wire

Loosen and remove air cleaner 25425A. Loosen the throttle assembly on handle bar and remove the screw trunnion from the carburetor lever. Move the throttle wire conduit into position up to the small hole in the carburetor casting. Remove the throttle wire from the conduit. Bend back the wire about 1/4" from the end. Thread all the wire back through the trunnion screw hole and into the conduit and up to the throttle (thumb) lever.

The hook bent into the wire previously should be bent around the trunnion screw. Tighten the trunnion screw on the carburetor to fasten the throttle assembly on the handle bar so the carburetor is closed when the throttle lever is in a forward position. Fasten the wire to the throttle with the screw on the throttle assembly. Bend any excess wire around the screw. To check the proper assembly of this unit, press down the throttle lever as far as it will go. If directions have been followed properly, the lever will snap back into a forward position. The ground wire threaded through the top clamp of the handle bar assembly should be fastened to the nut at the bottom of the throttle lever. Make sure that this ground wire does not come into contact with the handle bars at any time.

How to Attach Shorting Wire

The "ground wire" is for the purpose of stopping the engine with finger tip control.

The ground wire comes out of the right side of the engine crankcase at the grommet.

- 1. Thread the ground wire 27220 through the upper handle bar clamp 27219.
- 2. Lay wire loosely along handle bar and fasten securely to throttle wire conduit.
- 3. Connect wire to screw under stop button.

CONTROLS

- 1. THROTTLE LEVER The throttle lever is located on the right hand handle bar. The full throttle position is with the throttle lever pushed all the way down. The closed throttle lever position is with the throttle lever projecting up.
- 2. IDLE MIXTURE ADJUSTING SCREW This adjustment screw is located on top of the carburetor and on the transmission side of the air cleaner. The normal operating position for this adjustment screw is 5/8 of a turn open.
- 3. IDLE SPEED ADJUSTING SCREW The idle speed adjusting screw is on the transmission side of the carburetor and projects horizontal to the ground.
- 4. HIGH SPEED ADJUSTING SCREW This adjustment screw is located on the underneath side of the carburetor and projects downward. The normal operating position for this adjustment screw is about 1-1/4 turns open.
- 5. CHOKE LEVER The choke lever is the flat lever that is located on the carburetor and is on the transmission side of the air cleaner. The "choke" position is with the lever pushed DOWN.
- 6. TICKLER The tickler is located on the carburetor on the operator's side of the air cleaner. It is the metal button that projects up and can be easily operated by the thumb. Its purpose is to assure that the carburetor is full of gasoline.
- 7. STOP BUTTON The stop button is located on the right hand handle bar and is in front of the throttle lever. It is the small metal button that projects up. To stop the chainsaw, it is only necessary to depress the button until the engine stops firing. When the engine is very warm it may be necessary to depress the stop button for a longer period of time.
- 8. INDEXING LEVER The index lever handle is located on the right hand side of the engine and below the muffler assembly. Release the index locking device.
- 9. REWIND STARTER HANDLE The Model 8 Gas Engine saw is equipped with an efficient, easy to operate rewind starter. This rewind starter assures the chainsaw operator of a prompt start with a minimum of effort and time. There is no rope to bother with as it automatically rewinds. The handle is located on the front of the engine and just to the left of the center. The rewind starter handle should not be released until the rope is completely rewound.
- 10. FUEL SHUT OFF VALVE The fuel shut off valve is located on the right hand side of the engine, where the gasoline line from the fuel tank to the carburetor joins the fuel tank. To turn the flow of fuel off, simply screw in the valve handle clockwise.

Fuel Mixture

With each gallon of regular gasoline, mix 3/4 pint of Mall engine oil 22715 or a non-detergent SAE 30 oil. Hi-test or ethyl gasoline is not required. Do not guess in mixing fuel. Accurately measure out the proper quantities and place them in a clean open container.

IMPORTANT - mix the oil and gasoline in a clean, open container. Stir thoroughly with a paddle, being positive that the mixture is kept free from all foreign matter. Do not put the oil and the gasoline in the fuel tank separately. Throughout the engine, bearings are lubricated by the oil that is mixed with the gasoline. Use of the wrong type of oil, or failure to properly mix the fuel mixture may result in damaged bearings.

Before refueling the engine, wipe the gas cap and the gas cap area free from all dirt and saw dust. The fuel should be carried in a closed container, preferably with a flexible spout or a funnel spout.

When mixing fuel or fueling the engine apply the conventional fire precautions at all times.

Fuel Bulk Mixture Table

MALL 48412 OR

Oil SAE 30 Non-Detergent	Gasoline 73-85 Octane
3/4 pint	1 gallon
1- 1/2 pints	2 gallons
1- 1/2 quarts	4 gallons
3 quarts	8 gallons

Starting Procedure

If the fuel and lubrication instructions have been carefully followed, the engine is ready to start.

To start the engine.

- 1. Place the engine so it is resting on a solid foundation.
- 2. Inspect to see that the carburetor adjustments are in the normal operating positions.
- 3. Set the choke lever to the "choke" position.
- 4. Open the fuel shut off valve.
- 5. Hold down the carburetor tickler until the gasoline comes out of the opening on the float bowl cover.

- 6. "Rock" or turn the engine over several times with the stop button depressed to prevent kicking. This will prime the engine.
- 7. Hold the throttle lever in the open position.
- 8. Give the engine a quick vigorous spin with the rewind starter.
- 9. Release the throttle lever from the open position so the engine will run at a normal speed.
- 10. As the engine warms up move the choke lever to the normal operating position.
- 11. To stop the engine, depress the stop button located on the right hand handle bar. Hold the stop button down until engine is perfectly still.

CAUTION: When not under load, the motor MUST NOT be run at high speed, just as you do not race an automobile engine when the gears are not engaged. Under normal conditions, do not leave the choke lever up for over 3 or 4 pulls. When the engine is hot do not choke at all. A cold engine in sub-zero temperature requires a little more choking. Additional priming may be had by tipping the engine over about 45 degrees toward the carburetor and squirting gasoline in the small hole on top of the upper exhaust pipe near the cylinder. Turn the flywheel back and forth a few times with the engine in this tipped position to allow the gasoline to get into the cylinder. Then start the engine as usual.

MAINTENANCE

Engine

Remove all dirt and other material from between the cylinder fins. For best results use a compressed air hose. Failure to remove this material will result in impairing the cooling qualities of the cylinder. When cleaning the engine be positive that all fuel lines, gas caps, grease plugs, spark plugs are securely in their place.

In addition to cleaning the cylinder fins, remove all dirt, saw dust and other foreign matter from the fan screen, the fan, the muffler and the air cleaner. When inspecting the air cleaner, determine if the filter should be cleaned by brushing or if the filter should be cleaned in gasoline.

If carbon deposits are allowed to accumulate at the exhaust ports, it will interfere with the performance of the engine. Experience will indicate how often the carbon must be removed from the ports.

To remove excess carbon, remove the two mufflers which will expose the exhaust ports. Carefully scrape away the carbon deposit at this point and blow away the remaining dust before replacing the mufflers.

Proper lubrication can be assured by accurately following the gas and oil mixture recommended for the break-in period and for normal operation. Also follow the recommended carburetor adjustment which will be noted by a bluish exhaust color.

You should be constantly aware of any new or strange noises or vibrations not characteristic to the engine. Check the tightness of screws and adjustments.

Carburetor Adjustment

This adjustment should be made while the engine is operating under load. Turn the High Speed Adjustment Screw counter-clockwise until the engine begins to miss fire. This is noted by a blubbering sound. Then turn the High Speed Adjusting Screw clockwise until smooth operation is obtained. This will give you the safest operating condition for your engine.

Always be certain the exhaust has a bluish color and frequently clean or replace your air filter.

The idle mixture is adjusted on the upper adjusting screw. The normal opening for this is 5/8 of a turn. The idle speed of the engine is adjusted at the knurled screw on the side of the body of the carburetor.

If the carburetor is out of adjustment, set the adjustment screws to the before mentioned settings. Get the engine warmed up and readjust as follows: The idle speed is obtained by idling the engine with throttle closed and adjusting idle mixture screw until the engine idles at its highest speed which should be about 1200 RPM. If idle speed screw is completely out of contact with throttle plate, increase idle speed to 1500 or 1600 RPM by turning the idle adjustment screw in against the throttle plate and then readjusting idle mixture screw for best idle. By idling the engine at 1500 to 1600 RPM, the tendency to flood the crankcase is eliminated.

Ignition System

Smooth operation with maximum horse power output is dependent upon a good hot spark delivered at the proper time. The ignition system is made up of the magneto assembly, ignition wire, sparkplug and ground wire.

The sparkplug should be regularly checked for proper gap clearance and cleanliness. Occasionally remove the sparkplug and clean up the terminals with a wire brush and check the gap. This gap should be maintained at .025 inches. Visually inspect the porcelain for cracks.

The ignition wire, which connects to the sparkplug, should be kept clean and dry and occasionally inspected for cracks in the insulation.

The magneto is the heart of the ignition system and should be kept in proper adjustment at all times to assure smooth operation and proper function of the engine.

Ordinarily these magnetos will operate over extremly long periods of time without the need for adjustment or repair. However, if engine operating difficulties are experienced which appear to be caused by the ignition system, the magneto output can be checked to determine whether or not this unit is functioning properly.

Disengage the high-tension cable from the sparkplug. Hold the cable by its insulation in such a position that the metal terminal is about 3/16 inch from some grounded part

of the engine. While holding the wire in this position, spin the engine over at a normal cranking speed. If the magneto sparks this gap the trouble is not in the magneto. Should the magneto fail to spark, inspect the contact breaker. If the contact points are dirty they can be cleaned with a little clear gasoline. Make sure no particles of lint are left between the point surfaces if a brush or cloth is used. If the points are severely burned install a complete new contact breaker assembly. DISASSEMBLY OR REPLACEMENT OF INDIVIDUAL PARTS OF THE BREAKER IS NOT RECOMMENDED.

See that the contacts are properly adjusted. When fully open, there should be eighteen thousandths (.018°) of an inch between the point surfaces. This can be checked with a feeler gauge. If the contacts do not open the proper distance, loosen the screws which hold the contact breaker, and shift the assembly slightly so as to obtain the correct clearance of .018'' between the point surfaces.

LUBRICATION OF MAGNETO

After each 100 hours of operation apply four (4) drops of a good grade SAE No. 60 oil to the cam oiler felt. Blot off any excess oil with a clean cloth. The felt should contact the cam. If it is found that an excess of grease has accumulated around the cam this should be wiped off with a cloth before applying the new lubricant. Keep oil and grease away from the contact point surfaces.

Timing the Magneto

If the magneto has been removed from the engine for any reason, it must be properly timed to the engine to produce the best results for starting and power operation when it is replaced on the engine. To properly time the magneto, proceed as follows:

- 1. Install the magneto in the same position as it was before its removal with the coil horizontal and the spark plug lead in place.
- 2. Set the point gap on the magneto breaker points to .018" to .022", preferably toward the larger dimension, being sure that the points are smooth, clean and squarely meet each other.
- 3. Locate top dead center of the piston by removing the spark plug and rotating the engine fan until the piston reaches the top of its travel. Measure the distance from the top of the piston to the edge of the sparkplug hole.
- 4. Rotate the engine counterclockwise (backwards) until the distance from the top of the piston to the edge of the spark plug hole is increased 1/4". This will set the piston approximately 30° before top dead center at which point the ignition should occur.

Rewind Starter

Improper use of the rewind starter will cause undue wear and malfunction of parts. The proper method of using the rewind starter is to pull the rope out a few inches repeat if necessary - until the piston feels as though it is against compression. Then, with previous adjustments as to carburetor setting, etc., made, pull sharply to arms length. Never let the handle loose to fly back against the rope stop on the starter cover. This is the most common fault which damages the engine mechanism.

Instead, allow the rope to return slowly until the handle rests against the housing cover.

If it is necessary to replace the starter spring follow this procedure:

- 1. Pull the rope out about 18 inches and tie a knot at this point so the rope will not return into the housing.
- 2. Remove the 37367 Handle, until the knot holding the rope from returning into the housing and permit the rope to enter the housing.
- 3. Remove the 20544 cover assembly.
- 4. Remove the 20818 Retainer Ring.
- 5. Remove the 118314 Nut and the 20549 Washer.
- 6. Lift the rope pulley 20543 off of the spring, being careful not to dislodge the spring which is coiled under this pulley.
- 7. Before removing the spring slip a thin piece of wire under the coil and wrap it around the spring to prevent the coil from flying apart when it is removed. Do this three or four places.
- 8. Carefully lift the spring out of its recess and replace with new spring.
- 9. Be sure to rewind rope onto pulley clockwise as viewed from the engine side.
- 10. Reassemble parts in reverse order of disassembly.

To replace the rewind rope, follow the first three steps of the preceding instructions, remove the rope and replace with a new one. Be sure to rewind the rope clockwise as viewed from the operator's position.

Clutch Assembly

To remove the clutch assembly proceed as follows:

- 1. Remove the 118349 Nut and the 103253 Lockwasher.
- 2. Pull clutch assembly straight out off of shaft.

To replace the clutch shoes:

1. Remove the 28743 Springs, by lifting them off of the shoe assembly with the aid of a screwdriver. Shoes and plate assembly are now accessible.

<u>CAUTION</u>: When replacing the shoe assembly, the hub on the plate assembly must be toward the engine and the shoe assembly must be installed with the words THIS SIDE OUT showing.

TROUBLE SHOOTING CHART

TROUBLE

PROBABLE CAUSE

REMEDY

No fuel.

Fuel Shut off valve closed. Gas Cap air vent screw closed. Water or dirt in fuel.

Fuel strainer dirty.

Spark plug defective or wet.

Refill fuel tank with correct mixture.
Open valve.
Open air vent screw.
Drain and clean fuel tank, lines and carburetor.
Remove spark plug for inspection, dry and clean and replace.

Engine fails to start

Engine Flooded.

Foreign material in reed plate Defective ignition system

Shut off fuel valve. Crank engine several times
Open fuel valve and start.
Remove plate and clean.
Inspect ignition wiring for loose or damaged wires and connections and replace or adjust points.

Defective or fouled spark plugs.

Excessive carbon deposits in exhaust ports.
Carburetor or linkage out of

repair.

Remove and inspect. Replace or clean as required. Inspect exhaust ports for carbon and remove. Readjust carburetor and repair linkage.

Engine lacks power

Incorrect fuel mix. Excess oil

Improper timing.

Worn or sticking piston rings. Muffler clogged. Air filter clogged Drain and replace with correct fuel mix
Retime - see timing adjustments.
Remove and replace.
Remove and clean.

Remove and clean

Spark plug defective or fouled Carburetor out of adjustment Improper mixture of fuel.

Defective ignition system

Replace or clean spark plug.
Readjust carburetor.
Drain fuel tank, fuel lines & carburetor
Replace with correct fuel mix.
Inspect ignition system for loose connections or worn wires.

Excessive carbon deposits in engine
Fuel lines obstructed.

Clean out exhaust ports

Engine hard to start

Close fuel shut off valve. Disconnect fuel line at shut off valve and observe if fuel runs out freely. If not, remove fuel line and clean.

TROUBLE

PROBABLE CAUSE

REMEDY

Engine hard to start

Air cleaner clogged.
Poor compression

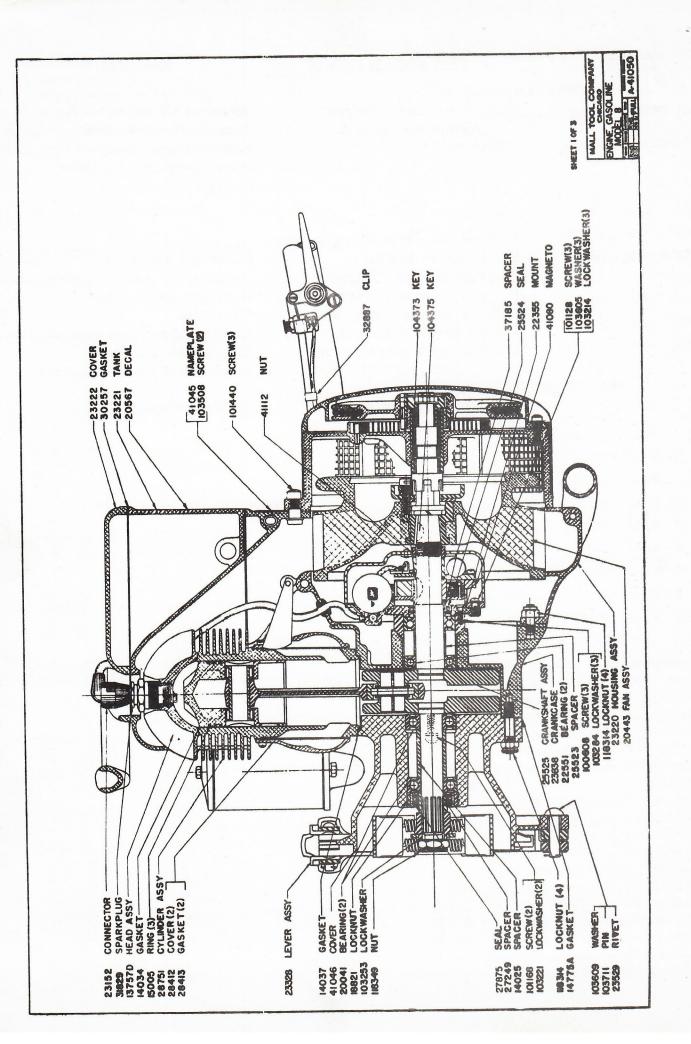
Remove all material from screen. Inspect for defective or sticking piston rings. Loose spark plug, worn or scored cylinder.

Engine overheats

Cylinder fins clogged with sawdust and dirt.
Fan screen clogged
Carburetor set too lean.
Air flow obstructed
Incorrect fuel mix.
Improper lubrication
Cylinder ports or muffler clogged.
Improper timing

Clean all surfaces.
Remove all material from screen
Readjust carburetor
Clean fan
Drain and replace with correct
fuel or lubrication
Inspect and clean if needed.

Re-time engine.



MODEL 8 GUIDES AND CHAINS

All Guides .080—All Chains .077

Available Guides

ROUND NOSE GUIDE			OPEN GUIDES		
		Use Chain			Use Chain
Guide	Cap.	Length	Guide	Cap.	Length
40531	18	49.50	22435	24	76.00
22432	30	76.00	40535	36	99.00
40532	42	99.00	40536	48	126.00
40533	54	126.00	37305	60	148.00
37195	66	148.00	40537	72	171.00
40534	78	171.00	40538	85	193.50

SIDE PLANER CHAIN

Part No.	Pitch	Length	Part No.	Pitch	Length
48710	9/16	49.50	48741	3/4	64.50
48711	9/16	63.00	48742	3/4	76.5
48712	9/16	76.50	48743	3/4	84.0
48713	9/16	99.00	48745	3/4	100.5
48714	9/16	126.00	48746	3/4	124.5
48715	9/16	148.50	48748	3/4	148.5
48716	9/16	171.00	48751	3/4	172.5
48717	9/16	193.50			

Transmission. The transmission is the intermediate unit between the engine and the attachment. It provides a means of transmitting the power delivered by the engine to the attachment at the most desirable speed in a convenient position for operation. The chain saw assembly using the straight guides requires the 41650 die cast transmission with automatic oiler.

This new development in chain oiling permits continuous cutting operation, eliminating the danger of the chain running without lubrication. The amount of oil delivered by the automatic oiler can be regulated. The adjustment screw is located on the left side of the transmission. By turning the screw inward the rate of oil flow is increased. Turning the screw outward decreases the oil flow. Although proper adjustment is made at the factory, the oiler should be carefully watched to see that it is operating properly and to prevent clogging. The

oil reservoir and fuel tank usually requires refilling at the same time. Care should be taken to use clean oil. In the event the oiler should become clogged, due to foreign matter in the oil, it must be disassembled and cleaned. Follow these steps:

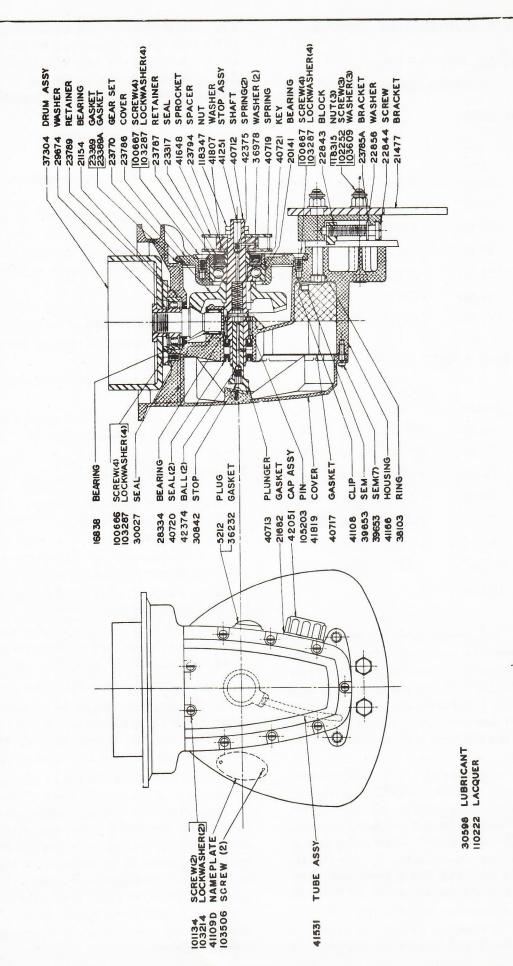
- 1. Drain the oil from reservoir.
- 2. Remove the cover 41819.
- 3. Remove the plunger 40713.
- 4. Blow compressed air through the center of the plunger.
- 5. Remove the sprocket 41648 by removing nut 118346.
- 6. Blow compressed air through the outlet hole between the sprocket teeth or gently ream with wire.
- 7. Remove the stop assembly 41251 (spring and ball) from the center of the shaft.
- 8. Blow compressed air through the center of the shaft.
- 9. Remove ring gear by removing screws (4) 100667.
- 10. Lift out the gear exposing oil passages. Blow these out with compressed air.

To re-assemble:

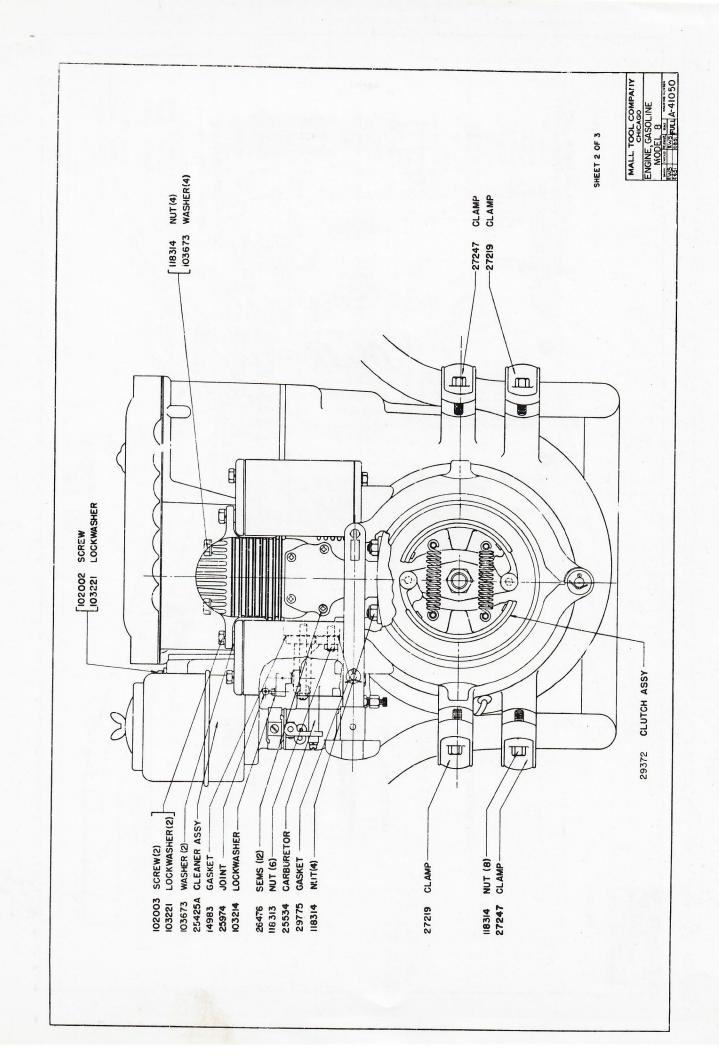
- 1. Replace gear, carefully placing gasket in proper position to avoid damaging. Turn shaft while setting place.
- 2. Replace stop assembly. Adjust screw to protrude about 1/16-inch beyond the surface of the bracket.
- 3. Replace washer, sprocket, washer, small washer, lockwasher and nut.
- 4. Locate oil hole in the inside of the shaft and insert the plunger so the hole in the plunger lines up with the hole in the shaft.
- 5. Replace cover without damaging gasket.

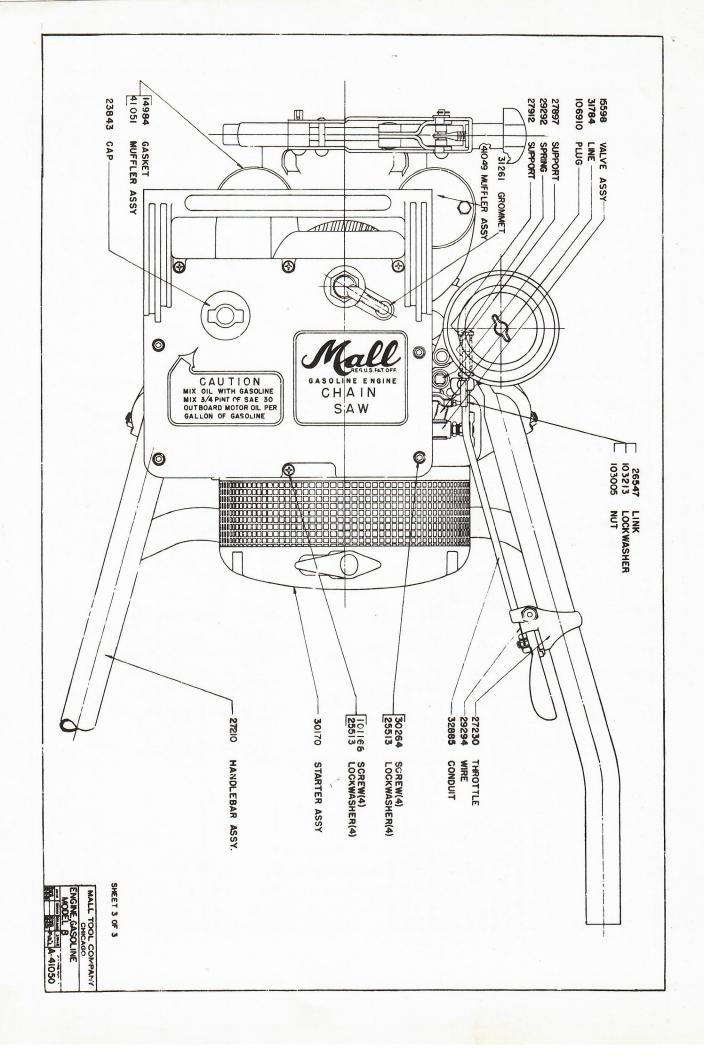
The transmission should be checked for grease about every 50 operating hours. The 5212 grease plug is vented and if too much grease is placed into the housing it may bleed out at this point.

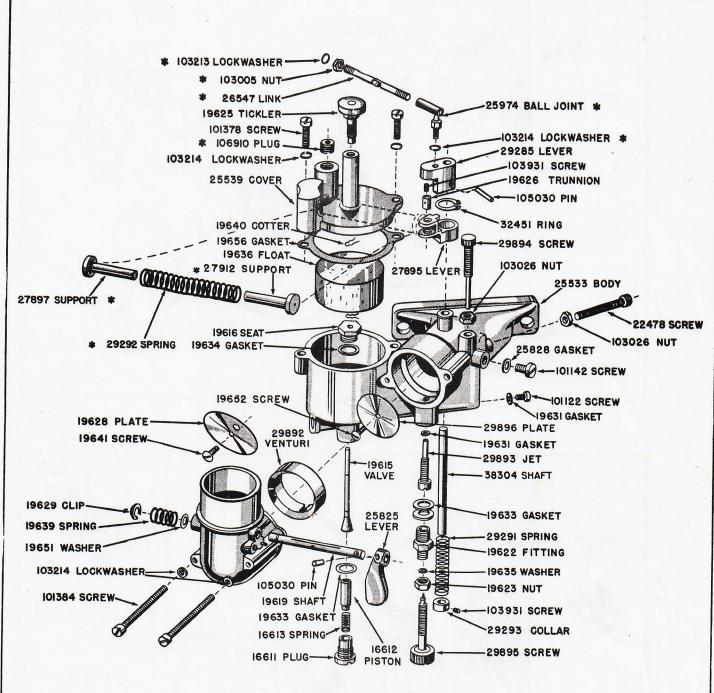
To mount the transmission to the engine, first it is necessary to remove the screw at the bottom of the ring. Place the transmission in operating position against the clutch cover, and allow the indexing clamp ring to snap to a closed position. Test the holding power of the index clamp ring by trying to turn the transmission by hand. If it can be turned the clamp ring will need adjustment. There is an adjustment screw at the bottom of the ring which permits the ring to be tightened. Turn inward to tighten.



4/650 TRANS, ASSK.





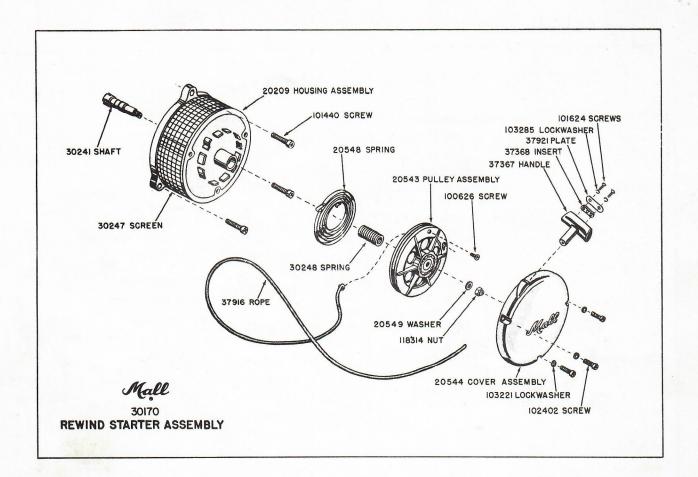


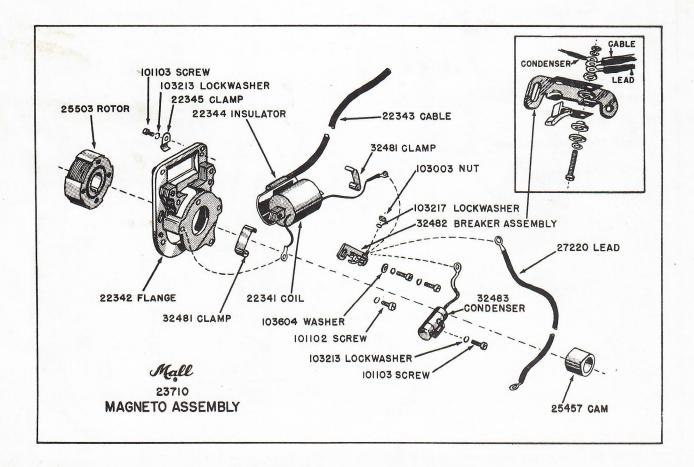


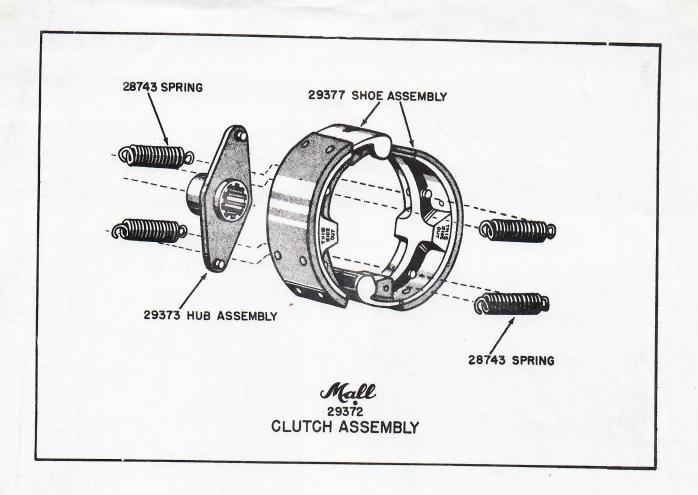
25534 MODEL 8

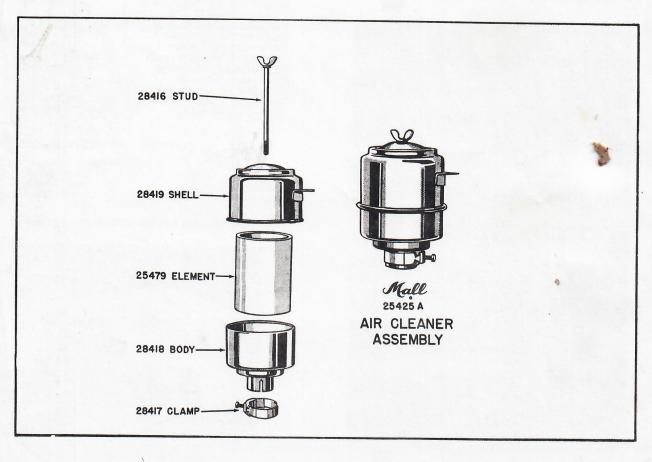
CARBURETOR

*PARTS NOT INCLUDED WITH 25534 CARBURETOR, AND MUST BE PURCHASED INDIVIDUALLY









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