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TM 5-4016

WAR DEPARTMENT TECHNICAL MANUAL

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SAW, CIRCULAR, WOOD, TILTING TABLE, SKID MOUNTED, GASOLINE ENGINE DRIVEN, MODEL "POWER SAWYER," TYPE AC WITH WISCONSIN ENGINE MODEL AC-4

This is a reprint of TM 5-4016, Maintenance Manual and Parts Catalogue, Saw, Circular, Wood, Tilting Table, Skid Mounted, Gasoline Engine Driven, Model "Power Sawyer", Type AC with Wisconsin Engine Model AC-4. No distribution will be made to personnel possessing the original publication.

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SAW, CIRCULAR, WOOD,
TILTING TABLE, SKID MOUNTED,
GASOLINE ENGINE DRIVEN,
MODEL "POWER SAWYER,"
TYPE AC WITH WISCONSIN
ENGINE MODEL AC-4



WAR DEPARTMENT • 7 JUNE 1943

WAR DEPARTMENT,
WASHINGTON 25, D. C., 7 June 1943.

TM 5-4016, Saw, Circular, Wood, Tilting Table, Skid Mounted, Gasoline Engine Driven, Model "Power Sawyer", Type AC with Wisconsin Engine Model AC-4, is published for the information and guidance of all concerned.

[A.G. 300.7 (14 June 43).]

BY ORDER OF THE SECRETARY OF WAR:

G. C. MARSHALL,
Chief of Staff.

OFFICIAL:

J. A. ULIO,
Major General,
The Adjutant General.

DISTRIBUTION:

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MAINTENANCE

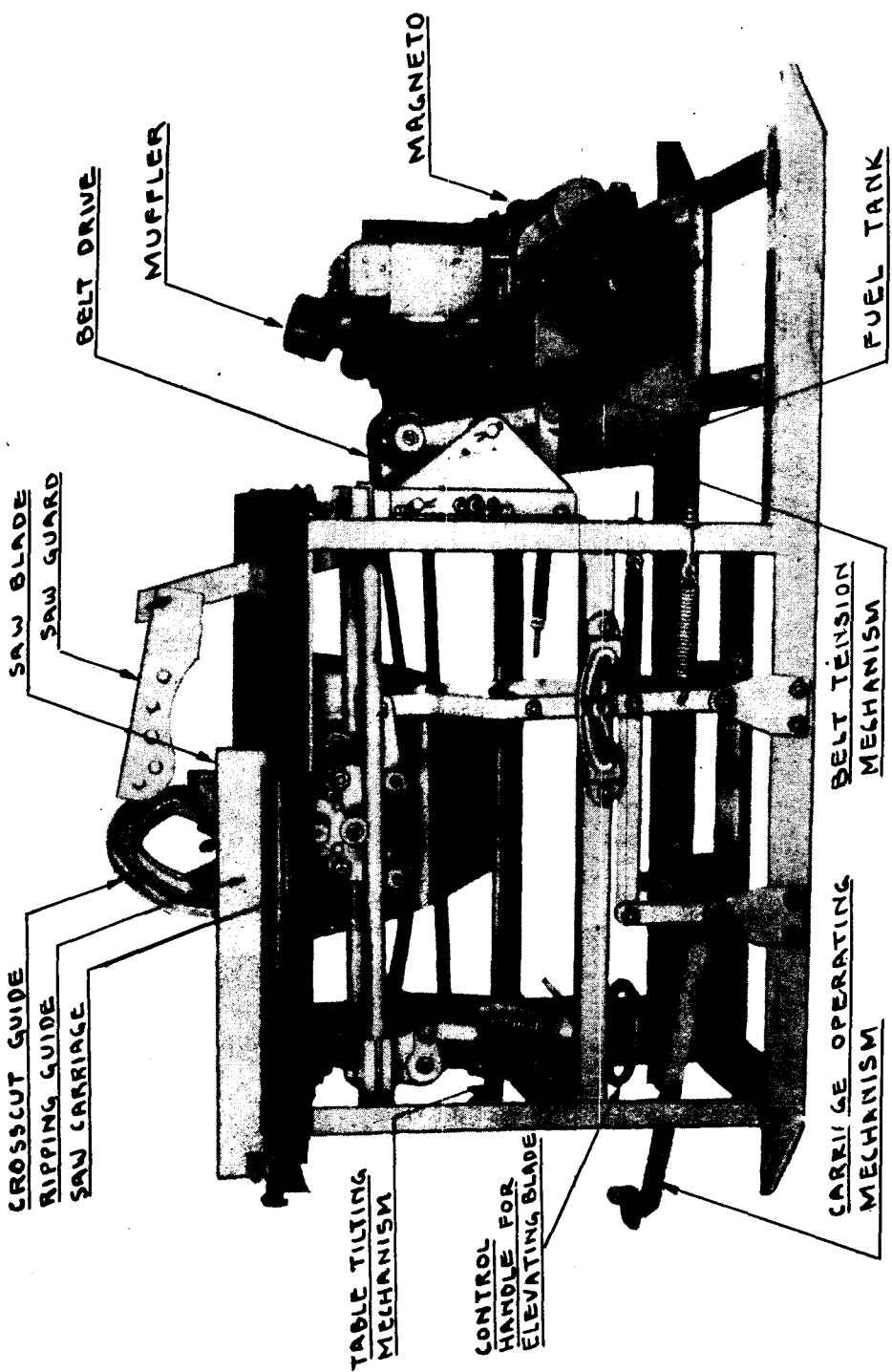
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CMC POWER SAWYER



OPERATING INSTRUCTIONS SAW SECTION
CMC POWER SAWYER

DESCRIPTION OF EQUIPMENT

The CMC Power Sawyer is a heavy duty, portable, contractor's saw rig. This complete saw rig consists of a combination cross cut and rip blade on a traveling arbor mounted on a common skid base with, and driven by a suitable power unit. The power is transmitted in this unit by means of a 4", high quality, extra flexible flat belt.

The round steel arbor guide rods are easily adjusted for shallow or deep cuts, by means of a control handle on the operator's end of the rig. Maximum depths of cuts are 4-1/2" with 16" blade; 5-1/2" with an 18" blade; and 6-1/2" with 20" blade.

The traveling type arbor facilitates cut-off work. The material may be held stationary against the cross cut guide and the saw moved through the material, by applying pressure to the foot pedal. For ripping, the saw arbor may be set stationary by means of a convenient thumb screw and the material moved through the saw.

The saw table may be adjusted to tilt from zero to forty-five degrees by a crank located at the operator's end of the rig.

Table extension support angles are conveniently located on sides of the saw table, so that extension tables for handling longer lengths of lumber may be easily constructed.

INSTALLATION

The saw rig is mounted on a skid base for easy movement from one location to another. The rig should be set as level as possible, and also at a location such that the lumber source is readily accessible, allowing room for cutting material from, and to, desired lengths. When a gasoline engine is used in confined quarters, exhaust gases must be piped out. Use pipe size at least a size larger than on the engine.

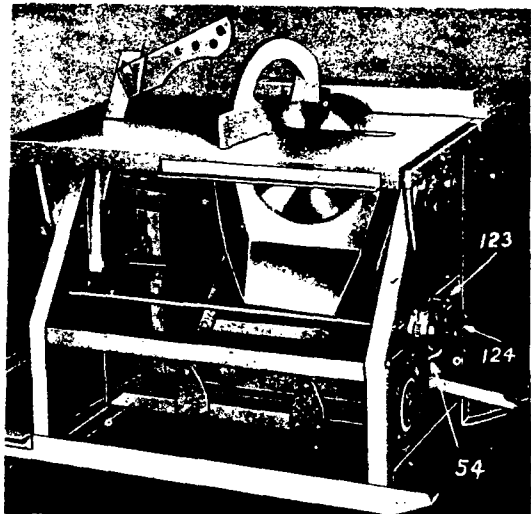
OPERATION

Do not crowd the saw. Do not bind the blade with the material being cut. Feed lumber into saw only as fast as it can be easily handled, depending on the sharpness of blade and the type of material to be cut.

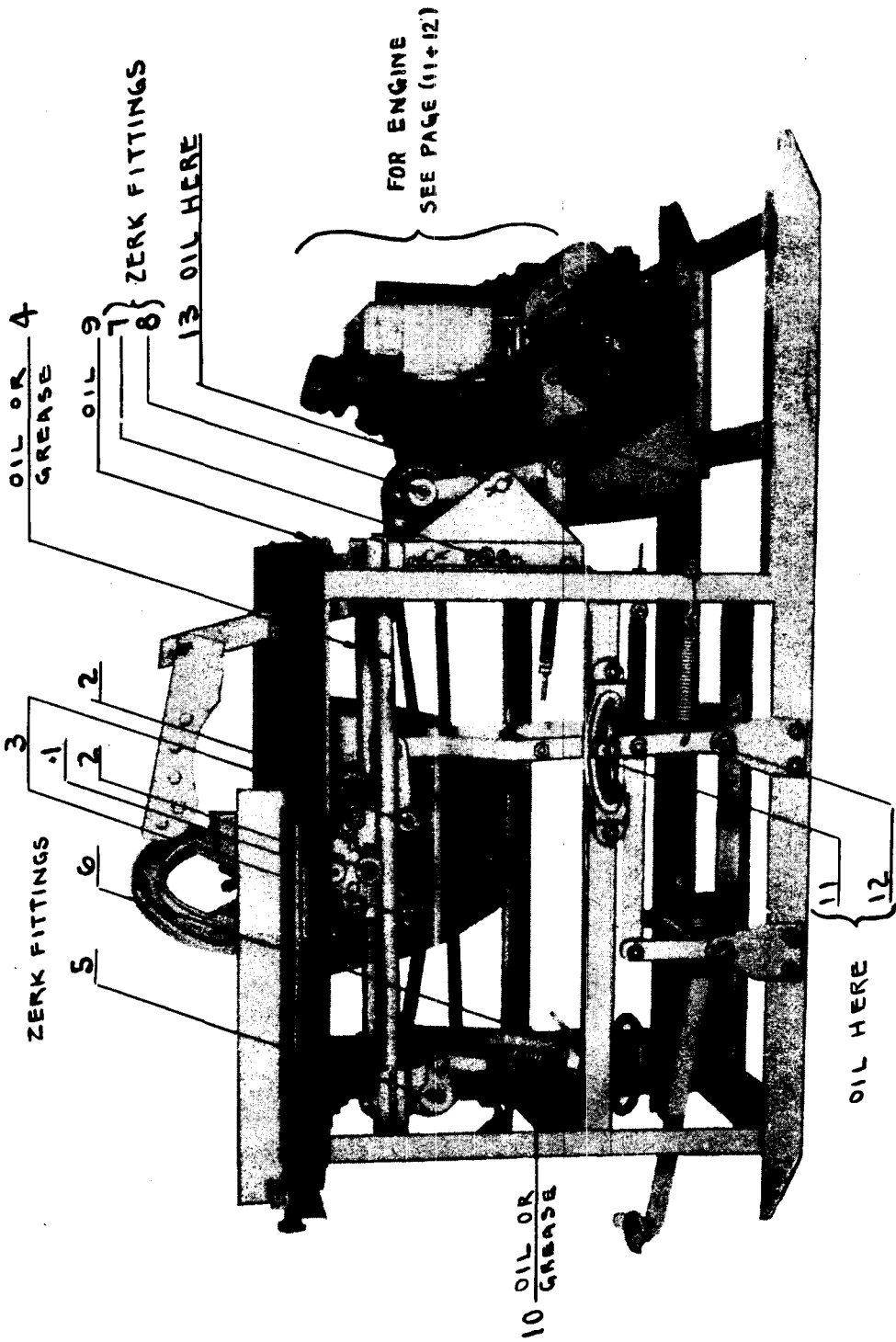
The saw blade will give best results when it is allowed to protrude between 1/8" to 1/4" above the material.

To tilt table, loosen wing nut, 124, and turn crank, 123, until table is at desired angle with blade. Use template, protractor or sliding T-bevel to determine desired angle.

To adjust blade height, turn adjusting wheel, 54, so as to lower or elevate guide rods as desired.



LUBRICATION POINTS



LUBRICATION

To lubricate the saw rig, a pressure gun with U. S. Army specification grease, CG-1 in winter, CG-1 in summer, should be used. Parts equipped with zerk fittings should be lubricated once every six (6) hours of operation, except arbor Timken bearings which should be lubricated only once every twenty-five (25) hours of operation.

PARTS TO BE LUBRICATED

With CG-P in winter, CG-1 in summer, every twenty-five (25) hours of operation:

1. Timken bearings, through Zerk fittings on side of bearing housing.

Every six (6) hours of operation:

1. Three grooved rollers, through Zerk fittings on roller pins.
2. Two idler pulleys, through Zerk fittings on end of idler pulley shaft.
3. The guide rods should be greased lightly to prevent rust and to insure easy travel of arbor over rods.
4. Idler pulley, through Zerk fitting on end of idler pulley shaft.
5. Handwheel bearing, through Zerk fitting on bearing side.
6. Idler pulley, through Zerk fitting on end of idler pulley shaft.
7. Idler yoke pulley, through Zerk fitting on end of idler yoke pulley shaft.

With OE-30 engine oil, every twenty-four (24) hours of operation:

1. Trunnions, with engine oil.
2. Elevating screw, with engine oil.
3. Saw carriage locking quadrant, with engine oil.
4. Saw carriage lever quadrant, with engine oil.
5. Idler pulley lock plate, with engine oil.

HINTS AND SUGGESTIONS FOR OPERATION

Don't use the saw table as a work bench. It is not constructed or braced for this purpose. A bent or damaged table will not permit the best saw operation.

Be sure ripping guide is in proper alignment. This can easily be checked with a piece of board or material having parallel sides, to see that the saw blade and guide are parallel. Adjusting screws are provided for this purpose. Improper alignment will cause binding of material ripped, or inaccuracy or variation of ripping width.

Be sure that blade is at right angles to saw table, when table is in horizontal position. To check, use tri-square or some material having adjacent sides at right angles. To adjust, turn capscrew on top of table frame underneath table top. Be sure lock nuts are tight after adjustment is made.

Saw blade should only project slightly above material being ripped, for best results. If saw blade projects several inches above material being ripped, this will cause undue friction of the saw, heating, and consequent dulling and warping of the blade.

Long pieces of lumber can be handled easily by extending the top of the CMC Power Sawyer. Bolt or screw 2" planks on angles provided on table top for that purpose.

POSSIBLE CAUSES OF TROUBLE

DULL SAW BLADE. Caused by excessive use after sharpening, cutting nails or metal. Symptoms: Overloading or slowing down of engine, slow cutting speed. Remedy: Use sharp blade.

OPERATING SAW AT IMPROPER SPEED. Symptom: Overloading engine, slow cutting speed. Excessive noise, if running too fast. Remedy: Check speed. Arbor speed should be about 2600 RPM. If incorrect, adjust engine governor to give proper speed.

FEEDING MATERIAL TOO FAST. Symptom: Overloading or slowing down on engine. Remedy: Feed material slower.

NOT FEEDING MATERIAL IN STRAIGHT LINE WITH SAW BLADE. Caused by ripping gauge not set right, or warped lumber or by improper operation. Symptom: Overloading saw or slowing down or stopping engine. Remedy: Adjust ripping gauge properly. Feed lumber into saw so that no binding will occur.

SAW NOT SET AT PROPER HEIGHT ABOVE MATERIAL. Symptom: Blade not extending through lumber, or saw blade heating if it extends too far through material being ripped. Remedy: Let saw extend about 1/4" through material being ripped.

USING TOO HEAVY OR TOO LIGHT A LUBRICANT. Symptom: Improper lubrication, accelerated wear or corrosion, difficult operation. Remedy: Follow lubrication recommendations.

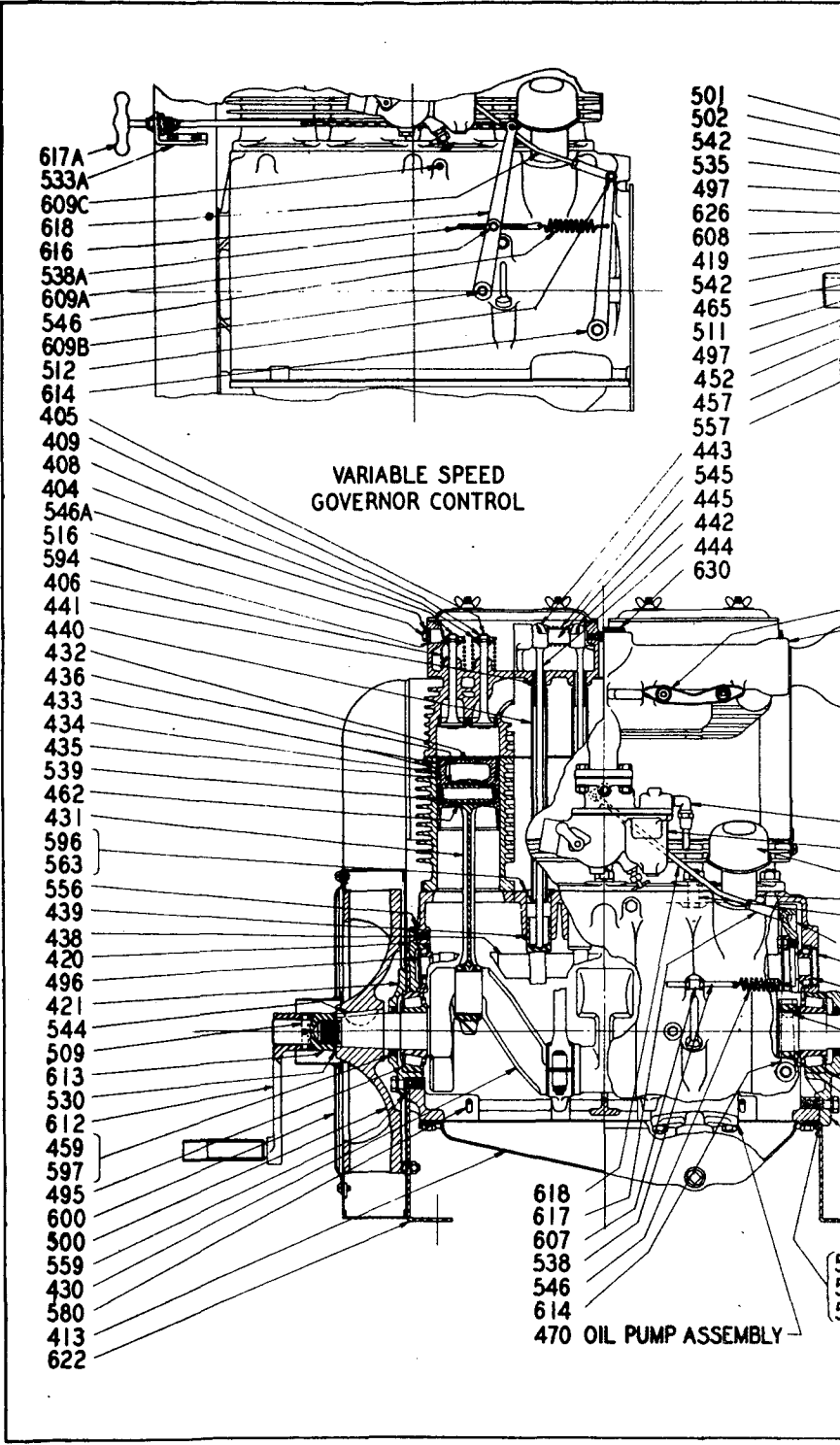
INSUFFICIENT LUBRICATION. Symptom: Accelerated wear or corrosion, difficult operation. Remedy: Follow lubrication instructions.

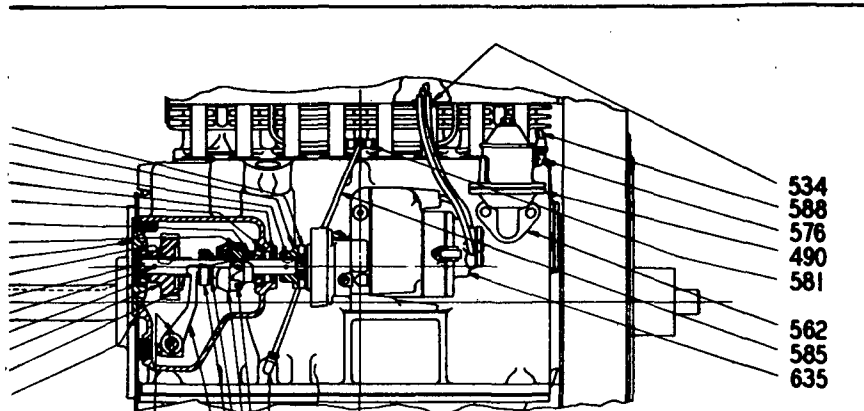
BELT SLIPPING. Symptom: Saw blade slowing down or stopping; belt burning or scorching. Remedy: Shorten belt or move engine further from saw.

SAFETY FIRST IS THE BEST POLICY

When operating the saw rig, REMEMBER --

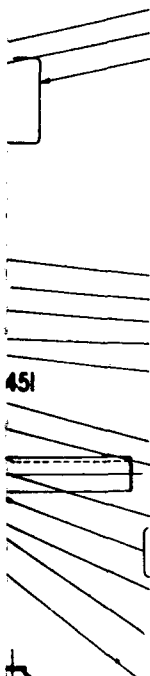
1. Do not wear loose clothing.
2. Do not saw with a dull blade.
3. Keep saw rig a safe distance from any open fire.
4. Keep fuel tank cap in place.
5. Beware of exhaust fumes from engine, when operating in close quarters.
6. The saw guard and guides have a purpose. Use them.
7. When ripping, keep the saw blade protruding approximately 1/4" above material, when possible.



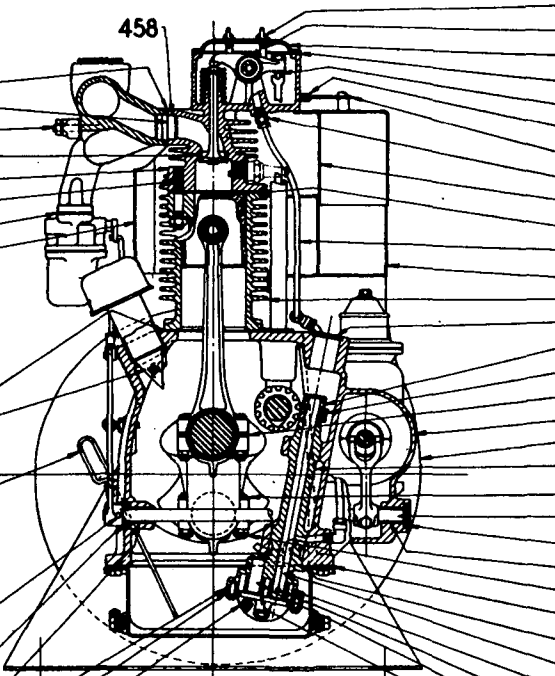


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TYPE "AC4" 2-5/8 X 3-1/4
 4CYL. AIR COOLED ENGINE
 WISCONSIN MOTOR CORPORATION
 MILWAUKEE WISCONSIN

68
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OIL RECOMMENDATIONS:

For Summer, Spring, or Autumn
(15° F. to 120° F.)

O. E. - 30

For Winter
(15° F. to -20° F.)

O. E. - 10

NOTE: Follow summer recommendation in winter if engine is housed in warm building.

The standard oil reservoir holds approximately 2-1/2 quarts of oil.

THE OIL SHOULD BE DRAINED AND FRESH OIL ADDED AFTER EVERY 50 HOURS OF OPERATION.

Next fill the gasoline tank with a good quality of gasoline free from dirt and water.

Next close the choke on the carburetor. The choke is semi automatic; it must be closed by hand but it opens automatically when the engine starts. The choke lever is pushed down to close the choke and it should be in its upper position when the engine is running.

The carburetors are fitted with fixed jets and require no adjustment.

Next, be sure the magneto switch is in the on or running position. The knurled button type of switch on the Wico magneto is in the on position when turned clockwise as far as it will go, and it is in the off position when turned counterclockwise. Some magnetos have push button type switches which are always in the on or running position except when depressed for stopping. The magnetos are timed to give a spark advance of 32 degrees of crankshaft rotation.

The engine is now ready to be cranked. Insert the starting crank at the flywheel and turn engine over in right hand direction. The cranking should always be done by engaging starting crank in such position that the engine may be turned over by pulling up on crank. It is not necessary to spin the engine in starting. Simply pull up on starting crank briskly, carrying the starting crank over top center, giving the crankshaft a half revolution each time. This operation may have to be repeated a few times as it is necessary to have the fuel mixture drawn into the cylinder before the engine will start.

Do not try to start the engine by pressing down on the starting crank. In the first place it is impossible to turn the engine over as briskly in this manner, and secondly in case of a possible back fire of the engine, the starting crank might injure the operator.

The centrifugal flyball governor, which is built into the crankcase, automatically controls the engine after it is started, varying the throttle opening through suitable linkage, to suit the load. The governor is provided with an arrangement whereby a simple pull on a lever increases the tension on the governor spring, thus also increasing the governed engine speed.

The linkage between the governor and the carburetor must be properly connected. The governor lever has just sufficient travel to give the full movement of the carburetor throttle lever, from open to closed position. When the engine is at rest the governor lever position corresponds to the wide open position of the carburetor throttle lever.

The air cleaners must be cleaned periodically, depending on the type of service.

The oil in the cup together with the collected dust should be emptied and the cup then refilled with oil to the level indicated on the cup.

Never operate the engine with any part of the air shroud removed as this will allow the engine to over-heat and score. The air shroud is absolutely necessary to direct the air flow so the engine may be properly cooled.

The magnetos are properly lubricated when they leave the factory and should not require further lubrication for a years operation. Thereafter the lubrication in the Wico magnetos should be replenished once a year by adding either "Wico oil" or "O.E.-10" oil, through the filler hole in the base of the magneto to the level of this hole.

The breaker point opening on the Wico magnetos should be .015 to .018 of an inch and these points should be kept smooth and clean.
(See Magneto Maintenance)

GENERAL CONSTRUCTION

The CRANKSHAFT is carried on two Timken bearings. The cones are a tight fit on the crankshaft. The outer race or cup of the Timken bearing, at the power take off end of the engine is carried in a plate bolted to the crankcase. Under this plate several shims are fitted for adjusting the bearings. The bearings are properly fitted at the factory with no end play when the engine is cold. It is very seldom necessary to change this adjustment for wear, and then it should be done only by an experienced man.

The CONNECTING ROD big ends are direct Babbitted and fitted with laminated shims. The upper ends of the rods are fitted with hard bronze bushings. The oil streams from the nozzles strike the fins on the connecting rod caps about 3/16" from the end. If these oil streams strike the fins or connecting rods higher up, the cylinders will receive too much oil.

In case a connecting rod bearing is burned out, the rod may be replaced on an exchange basis at small cost, if the old rod is returned to our factory in otherwise good condition.

The PISTON PIN is a light press fit in the piston and steel wire snap rings in the piston bosses prevent end movement of the pin.

The CAMSHAFT is made of a special metal known as Gunite, which wears exceptionally well. The cams, fuel pump eccentric, and oil pump drive gear are formed integral with the shafts. The driving gear is bolted to a flange by three bolts and the camshaft is carried by two Timken bearings. Shims are provided at the flywheel end of the engine for adjusting the end play in the camshaft bearings. The bearings are fitted up with no end play when the engine is cold.

The VALVES are carried in the cylinder heads. The exhaust valves are type XB silchrome steel and the inlets- chrome nickel steel. Special alloy iron valve seat insert rings are pressed into the heads. The valves are operated through mushroom type tappers, rocker levers and push rods. The rocker levers operate on hollow shafts to which oil leads are connected from the oil pump. The rockers levers are drilled and the oil is forced to the cups in the upper ends of the push rods. The excess oil returns to the crankcase through the push rod tubes. The outer ends of the levers are of fitted with adjusting screws which are adjusted to give a clearance of five thousandths (.005") of an inch between the valve stems and levers, when the engine is cold.

The OIL PUMP is of the gear type, located in the crankcase and extending down into the oil pan. The pump is driven by helical gears from the camshaft. The governor is built into the magneto drive shaft inside the crankcase. The suction opening in the oil pump is protected by an oil screen.

The SPARK PLUGS are located in the side of the cylinder heads, inside of the air shroud, so they are well cooled. A section of the air shroud, alongside the cylinder heads, is made easily removable so the spark plugs may be reached. A special socket wrench is provided for removing the spark plugs. The spark plug gap should be held at .025 of an inch.

The CRANKCASE and OIL PAN are made of cast iron. The cylinders are cast in one block of a special alloy iron. Two cylinders heads are fitted. The heads are also made of an alloy iron, especially suited to this kind of service. Both heads and cylinders are provided with ample cooling fins, so the engines will not over-heat when operated at full load in the hottest weather. They have been operated for hours at a time at full load and high speed in the laboratory where the room temperature was held at 140° F.

WARRANTY

We guarantee each new engine manufactured by us to be free from defects in material and workmanship under normal use and service, our obligation under this warranty being limited to the furnishing at our factory of any part thereof, which shall within ninety (90) days after delivery to the original purchaser, be returned to us with transportation charges prepaid, and which our examination shall disclose to our satisfaction to have been thus defective.

This warranty shall not apply to any engine which shall have been repaired or altered outside of our factory in any way so as, in our judgment to effect its stability or reliability, nor which has been subject to misuse, negligence or accident, nor to any engine made by us which shall have been operated at a speed exceeding the factory rated speed.

This warranty is void unless proper care and storage of engines and parts is provided from date of shipment to date placed in service.

Warranty on accessories such as magnetos, carburetors, etc., is limited to the warranty of the accessory manufacturer.

No bills for service, labor, or other expenses that have not been previously approved and authorized will be allowed.

New material must not be returned until authorized by us, and where the return of new material is authorized, it shall be f.o.b. cars Milwaukee, Wisconsin, subject to our inspection.

INSTRUCTIONS FOR CHANGING SAW BLADE

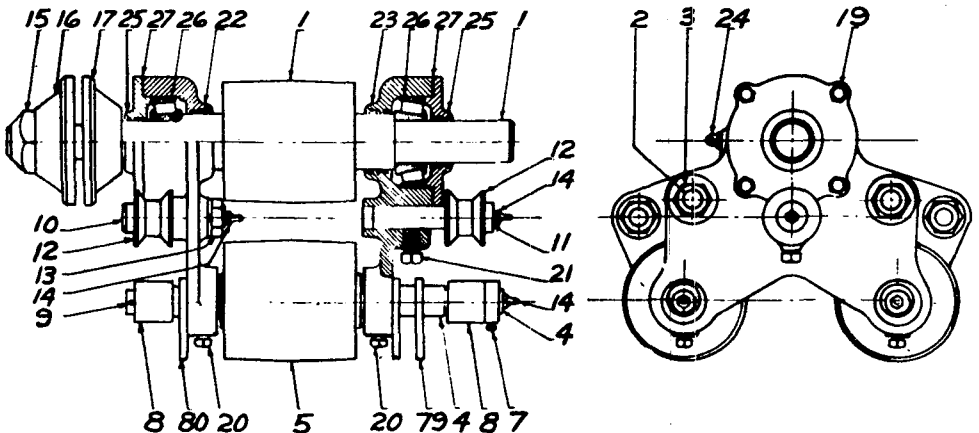
1. Remove wood throat, 135, by knocking up from bottom side.
2. Lower saw blade, 139.
3. Remove left hand nut, 15, on saw arbor.
4. Remove arbor collar, 16.
5. Slide off saw blade, 139.
6. Replace saw. Be sure that blade is clean and that saw teeth point toward operator's end of saw.
7. Replace arbor collar and tighten nut.
8. Replace wood throat.

INSTRUCTIONS FOR TAKING UP END PLAY IN ARBOR

1. Remove cap screws, 19, and bearing cap, 25, at opposite end of arbor from saw blade.
2. Take out bearing shim, 27.
3. Replace bearing cap and cap screws.

INSTRUCTIONS FOR DISASSEMBLING SAW CARRIAGE

1. Remove saw blade, 139.
2. Tilt table top to 45° angle.
3. Remove cotter key, 9, and loosen set screws, 20, holding idler pulley shafts.
4. Pull idler pulley shafts, 4.
5. Remove arbor from saw rig.
6. Remove saw collar, 17. Collar is keyed.
7. Remove nuts, 3, on spacer bolts.
8. Pull side frames and bearings, 22, 23, apart.
9. Remove bearing cap capscrews, 19, and bearing caps, 25.
10. Remove bearings, 26, by knocking outside face of frame and housing against wood or lead block.



SAW CARRIAGE REPAIR CHART

INSTRUCTIONS FOR ADJUSTING ARBOR ROLLER FIT ON GUIDE RODS

1. Loosen set screws, 20, holding idler pulley shaft, 4, with eccentric ends.
2. Turn shaft until proper roller fit between rollers, 8, and guide rod, 38, is obtained.
3. Tighten set screws, 20.

INSTRUCTIONS FOR REMOVING IDLER PULLEYS

1. Loosen set screws holding pulley shaft.
2. Pull pulley shaft.
3. Clean pulley bearings.
4. Re-assemble.

INSTRUCTIONS FOR REPLACING IDLER PULLEY BUSHINGS

1. Idler Pulley bushings are removed and replaced by means of an arbor press.
2. New bushings must be reamed to fit the shaft with a clearance of .001" to .002" between bushing I.D. and idler pulley shaft O.D.

A new pulley may be ordered with bushings already reamed to fit shaft.

INSTRUCTIONS FOR TIGHTENING BELT

1. When belt tension mechanism no longer keeps the belt tight stop motor and remove belt from engine drive pulley.
2. Pull gut out of belt lacing.
3. Cut approximately one inch off of belt end.
4. Put new lacing on belt end.
5. Fasten belt together.
6. Run shortened belt on pulleys by turning engine over slowly and running belt over drive pulley end at same time.

INSTRUCTIONS FOR ADJUSTMENT OF RIPPING GUIDE

1. For parallel adjustment of ripping guide, 134, with saw blade, 139, tighten one and loosen other capscrew, 133, in guide bracket.

ADDITIONAL INSTRUCTIONS FOR MAINTENANCE INSTRUCTIONS IN 1483A MANUAL FOR U. S. ENGINEERS

INSTRUCTIONS FOR REPLACING GUIDE RODS

1. Tilt table top to 45° angle.
2. Jack up arbor assembly. This can be done by placing a board across the top of the frame and fastening the assembly to it in a secure manner.
3. Loosen set screws, 20 & 7.
4. Turn shafts, 4, until arbor is free.
5. Remove bolts, 35, holding guide rods, 38, in front carriage frame casting, 30, and rear frame casting, 39.
6. Remove guide rods.
7. To replace guide rods, reverse above procedure.

INSTRUCTIONS FOR ELEVATING ARBOR

1. Loosen wing nut, 47.
2. Turn handwheel, 54, until arbor is elevated to proper position.
3. Tighten wing nut, 47.
4. To lower, reverse above procedure.

INSTRUCTIONS FOR LEVELING TABLE

1. Tilt table to 45° angle.
2. Loosen and turn cap screw (148) to correct adjustment of table top. Cap screw is located in the center of main frame on side from which saw table top opens.
3. When correct adjustment is made, tighten cap screw lock nut and lower table top.

INSTRUCTIONS FOR TILTING TABLE

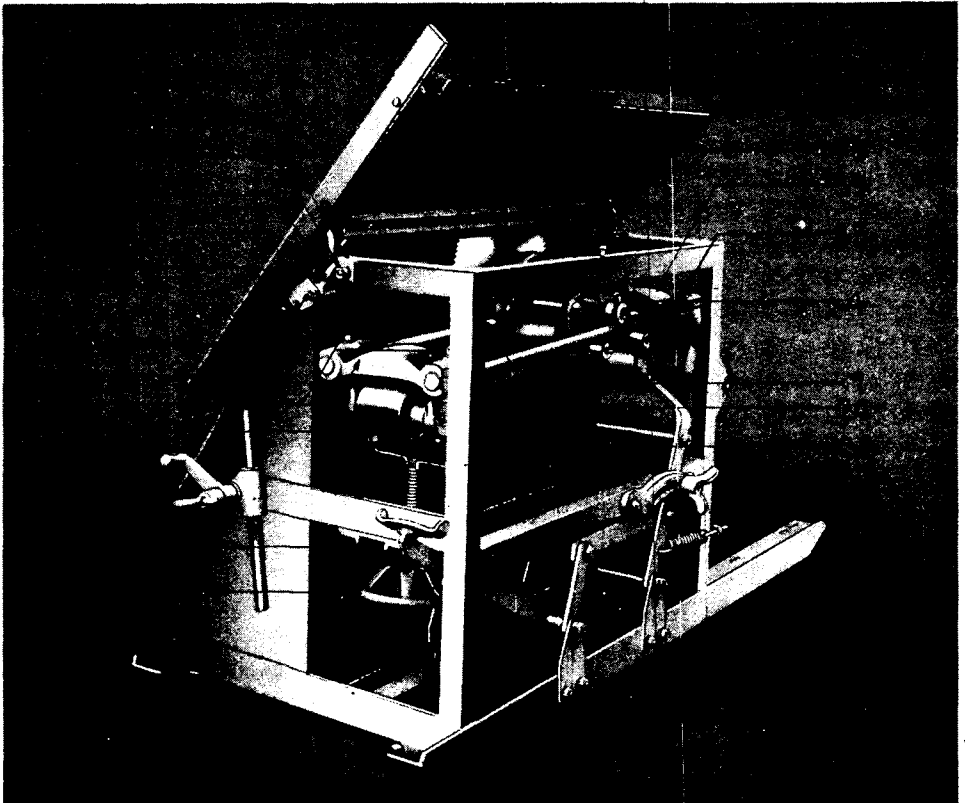
1. Loosen wing nut, 124.
2. Turn crank, 123, until table is tilted at desired angle.
3. Tighten wing nut, 124.

INSTRUCTIONS FOR REMOVING TABLE TOP AND PIVOT BRACKETS

1. Remove cap screws, 111, fastening table pivot clamp, 108, and table pivot casting, 110.
2. Remove table pivot clamp, 108.
3. Loosen and remove rack pins, 114, holding table top tilting rack to table top.
4. Remove table top.
5. Remove pivot bracket (109) by removing bolts, 112.
6. To reassemble, reverse the above procedure.

INSTRUCTIONS FOR LUBRICATION

See Pages 8 and 9.



MAINTENANCE INSTRUCTIONS FOR MODEL C-150-C WICO MAGNETO WISCONSIN Y-20-D

LUBRICATION

The magneto is provided with two oilers, one on each side of the main housing, so that whichever way the magneto faces the engine, one oiler will always be convenient. Once every two hundred (200) hours of operation, these oilers should be filled to overflowing with WICO or S.A.E. #20 oil. After every 1000 hours of service it is necessary to re-lubricate the cam oil pad. This is done by removing the pad and squeezing and working into it some stringy grease. A summer grade of automobile transmission grease will very closely resemble that used at the factory. Do not use ordinary grease.

BREAKER COVER AND DISTRIBUTOR ARM

On single cylinder models neither distributor cap or distributor arm are used as the high tension current is taken directly from the secondary terminal of the coil through the outlet in the cover of the magneto. The breaker compartment is covered by breaker cover, 68, which is held in place by breaker cover hold down spring, 22. The breaker cover hold down spring can be easily removed from the cover by wedging the spring away from the pins in the cover which hold it in place.

BREAKER POINTS

The breaker points should be adjusted to .015" when fully opened. Adjustment is made by shifting the fixed contact, 52, by means of the small eccentric screw. After adjustment, tighten the fixed contact screw.

The points should be free from foreign matter. Lacquer thinner is an ideal cleaner for this purpose. Use Wico tool X5449 to adjust the alignment so that both surfaces of both contacts meet squarely.

To remove breaker arm, 64, take out the breaker arm clamp screw, 67, lock washer, 66, clamp washer, 65, and breaker arm spring terminal screw and lock washer. Next pull the breaker arm and the breaker arm spacer, 58, off the pivot. When replacing make certain that the leads from the coil and stop device are in place under the breaker arm spring terminal screw.

To remove the fixed contact the breaker arm must first be removed as outlined above. Then take off the spacing washer, 56, remove the clamp screw, lockwasher and washer after which the fixed contact may be pulled off the breaker arm pivot.

If the points need replacing it is recommended that both the fixed contact and the breaker arm be replaced at the same time. After reassembling the points should be adjusted as described in the beginning of this section.

CONDENSER

The condenser, 53, should have a capacity of 16-18 microfarads. If the condenser when tested shows to be below capacity it should be replaced.

To remove the condenser, 53, disconnect the ground and coil leads by removing the breaker arm spring clamp screw and washer. After removing the two condenser screws and lockwashers, the condenser may be removed by sliding it slightly away from the breaker arm pivot and pulling it upward. In replacing the condenser make certain that the condenser case gasket, 50, is in place and that the coil and ground leads are firmly fastened.

COVER

The cover with the breaker assembly intact may be removed after the gear housing, distributor cap, or breaker cover, as the case may be, has been removed. It is however first necessary to loosen the breaker arm spring screw and pull the coil and ground lead terminals. Next loosen the four screws one in each corner of the cover, until they are free. It is not necessary to completely remove the screws from the cover. If the cover seems to stick it may be loosened by slightly tapping with the palm of the hand.

When replacing the cover make certain that the gasket, 72, is cemented to the main housing.

COIL

TESTING

It is not necessary to remove the coil from the magneto when testing the coil. When using an Eiseman coil tester, connect the ground lead of the tester to the housing of the magneto; connect the breaker lead of the tester to the breaker arm spring terminal screw of the magneto; connect the spark lead of the tester to the high tension terminal on the coil; turn the cam until the breaker points are open. The coil must be replaced if it requires more than 1.5 ampere to give a steady spark or a 5 mm. gap.

REMOVAL OF COIL AND COIL CORE

With the magneto cover off remove the two fillister head screws, holding the coil core clamps in place. Under one of the coil core clamps is found the ground end of the primary and secondary of the coil. Turn the rotor until the magnetism no longer grips the coil core to the main housing. Pull the coil and coil core free. When replacing the coil and coil core on the magneto be sure the ground surface of the core is against the laminated cores of the housing and the primary and secondary ground lead.

When the coil is in place the coil terminal should be up and toward the breaker point. The surface of this contact must be cleaned. Be sure to place the ground lead of the coil under the core screw lock washer, not under the core coil clamp.

REMOVAL OF COIL FROM CORE

The coil, 19, is held to the coil core, 21, by two wedges. It is therefore necessary to press against the coil core with considerable force to remove it from the coil. Be careful when removing the core from the coil that the coil is supported in such a way that there is no danger of the primary of the coil being pushed out of the secondary.

When replacing a coil on the coil core, slide it on, being sure that the finished side of the core is down and high-tension button on the coil is up. Then, on the finished side of the core, press in the two wedges, one on each side, until they are flush with the primary coil winding. Slide the coil shield on, one on each side, and thread the primary lead through the slot provided in the coil shield.

STOP DEVICES

The stop device serves the purpose of rendering the magneto inoperative by short-circuiting the primary circuit and thus stopping the engines.

The black nut is rotated to the left on the left-hand threaded stud, which pushes grounding sleeve into contact with the housing, thus short-circuiting the primary. The magneto remains inoperative until the stop nut is rotated to the right, thus opening the circuit.

IMPULSE COUPLING

IMPULSE COUPLING LOCK-NUT

The impulse coupling lock nut is best removed by using Wico tool number S4704. The impulse nut has a right hand thread and therefore, in order to unscrew it it is necessary only to turn the magneto over until the trip arm is against the impulse stop.

When re-assembling impulse lock nut it will be necessary to use Wico tool S5619 to prevent the rotor from turning.

DUST COVER

If the magneto is equipped with a dust cover, it may be removed by loosening the small screw, 73, which holds it in place. The dust cover, 18, gasket, 23, and dust cover ring, 26, may then be removed from the magneto. If the cork gasket, 23, shows signs of wear, it should be replaced.

• DRIVE CUP AND DRIVE SPRING

To remove the drive cup, after having removed the impulse lock nut as explained above, and the dust cover as explained above, with the drive spring, 34, turn the drive cup in the direction of the proper magneto

rotation until the trip arm latches against the impulse stop. Continue to turn the cup until the projection of the cup has cleared the projection on the driven flange. Without the friction of these parts against each other the cup can be pulled out far enough to allow it to unwind. A firm grip should be taken on the cup to prevent possible injury to the hand. Then, pull the cup with the spring still in it, off the shaft.

To remove the impulse drive spring from the drive cup it is merely necessary to work the spring out of the cup with a screw driver.

In replacing the drive spring, locate the spring over cup so that the outer eye in the spring is over the slot provided inside wall of the cup. For a clockwise magneto, the spring should be installed so that the turns spiral in toward the inner eye in a clockwise direction. For a magneto of counterclockwise direction, it should be just reversed i.e., the spring should spiral inwards in a counterclockwise direction.

The model C. drive cup can be used interchangeable on magnetos of clockwise or counterclockwise rotation. Some of the earlier drive cups had two holes in the outside wall, one for clockwise rotation and one for counterclockwise rotation. When using one of these drive cups with two holes, to determine the correct slot for a given rotation, hold the drive cup so that the two slots are horizontal and on top. The slot for the clockwise rotation is then on the left and the slot for the counterclockwise rotation is on the right. If the correct slot is used the spring will start in one slot and pass the second before it has made a quarter of a turn. When using the newer drive cups the same hole is used for both rotations.

To replace the drive spring in the drive cup insert the outer eye of the spring as far as possible into the proper slot. Next, take the drive cup spacer, 35, which contains the slot for the inner eye, insert a large screw driver in the center hole, so it will bind, and the drive cup spacer can be turned with the screw driver acting as handle. Insert the inner eye of the spring slot in the drive cup spacer and wind the spring around the spacer until the spiral closes sufficiently to allow the spring around the spacer to slide inside the drive cup. This method of winding the spring eliminates any possibility of distorting or scratching the spring surface. The spring may be more easily inserted if the lugs of the drive cup are securely held in a vise.

To reassemble the drive cup and spring to the magneto proceed as follows: first make certain that all parts are clean and there is grease between the turns of the impulse drive spring. Then put the brass and steel spacing washers into the drive cup with inner eye, the springs and the notch provided in the washer. Now place the drive cup with the spring and spacing washers on the shaft. Press the parts together, hold the impulse cup out far enough so that the projections on the drive cups clears the flange and then give the cup a full turn as follows: make a half turn and allow the cup projections to lock against the driven flange, then, with a fresh hold on the drive cup, make the other half turn. When the cup is wound, press it firmly into place and apply a small amount of grease to the bearing service of the impulse nut.

DRIVEN FLANGE GROUP AND TRIP ARMS

After having removed the impulse lock nut, drive cup, drive spring and various spacing washers, the driven flange group may be removed. If the flange sticks insert two screw drivers 180° apart, under the flange and gently pry it off. When replacing the driven flange group make certain that it is pressed on the shaft as far as it will go. Since the flat on the rotor shaft is slightly tapered, being the larger at the rotor end of the shaft, it is often necessary to press the driven flange on with considerable force to gently tap it into place with a soft headed hammer. Driven flange groups are furnished without trip arms.

TRIP ARM

To remove a trip arm, clamp the driven flange in a vise, push the point of a knife between the snap ring and the trip arm pivot, near the opening of the snap ring. This will spring the snap ring a little and then by inserting a knife in between the snap ring and pivot as far from the opening as possible, the ring may be pulled off. Now the trip arm may be taken off. It is recommended that a new snap ring be used if the old one becomes damaged in the process of removal.

The simplest method of putting on a new snap ring is to take a socket wrench, or a similar device or a size slightly larger than a pivot. Put the ring on the pivot and press down on the ring with the open end of the socket wrench.

IMPULSE STOP GROUP

The impulse stop group, 41, used on the model C magneto serves not only to hold the driven flange group and rotor stationary while the impulse is winding up but also contains an oil seal which prevents the lubrication oil, used in the magneto, from leaking out and also prevents foreign matter from entering the magneto. The stop lug should be on the left hand side of the magneto viewed from the drive end. When it is necessary to replace the oil seal the impulse stop group must be replaced as a unit.

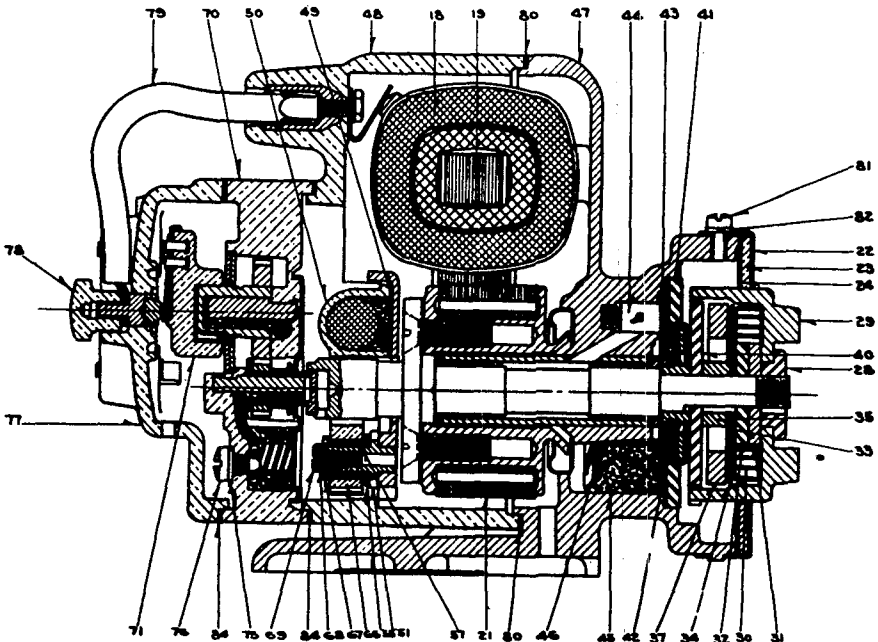
In replacing the impulse stop group it is recommended that a new impulse stop gasket be used rather than replacing the old gasket.

LAG ANGLE ADJUSTMENT

After the impulse stop coupling has been re-assembled then it is necessary to adjust the impulse lag angle, which provides retarded spark for starting. The position of the impulse stop group determines the lag angle of the magneto which should be 27° - 30° .

To set the lag angle, loosen the four impulse stop group clamp screws at the outer edge of the stop group and turn as follows: the impulse stop plate had stamped on its face two witness marks 180° apart, one of which is used for clockwise and the other for counterclockwise magnetos. These marks serve to register against corresponding marks 5° apart, on the main housing, acting as a guide to the amount of rotation of the stop plate during the adjustment of the lag-angle. When either the counterclockwise witness mark on the impulse to group is even with the center mark on the main housing an impulse range of 13° is obtained. The rotation of the stop plate in the same direction as of the rotation of the magneto increases the impulse range by the amount of its rotation. Thus, since the markings on the main housing are 5° apart, by turning the stop-plate three marks in the direction of the magneto rotation from the center mark will produce a range of approximately 28° . After adjustment has been made be certain to tighten the impulse stop group clamp screw.

It is important that the lag angle be correctly adjusted to 27° - 30° to insure the most efficient performance of the engine.



OIL SYSTEM PARTS

After the impulse stop group and all other impulse coupling parts have been removed, the impulse spacer and oiling disc may be removed from the rotor shaft. Then remove the main oil pad, 45, the oil pad spring plate, 46. After this the oil scraper unit, 44, may be removed from the main housing.

When reassembling, first insert the oil scraper unit in the hole provided, making certain that the scraper itself is in the groove and does not get caught and lay over the oil hole, causing the oil circulation to be stopped. The oil pad spring plate should have sufficient tension in the spring to hold the main oil pad securely against the oiling disc. The oil pad should be thoroughly saturated with Wico or S.A.E. 20 oil before installing in the magneto. Next, replace the oiling disc and the impulse spacer.

ROTOR

The ability of magnet steel to retain its magnetism is known as its coercive property. The magneto steel used in the model C rotors has such extremely high coercive value that it is practically impossible for these rotors to lose any appreciable amount of magnetism under any condition.

Great care should be taken when handling the rotor outside of the magneto to see that the metallic chips do not adhere to it and before reinstalling the rotor, it should be thoroughly examined to make certain that it is absolutely clean.

MAIN HOUSING

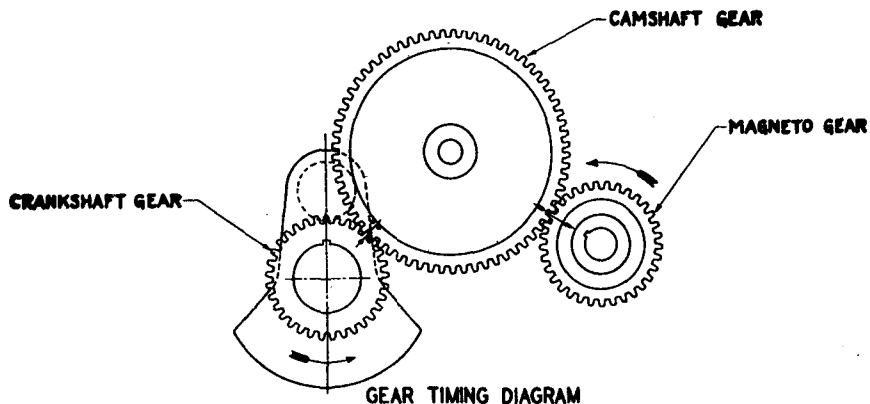
CAUTION

Under no condition should the four screws holding the laminated cores on the main housing be removed. These cores are put on at the factory and finished to very close tolerances to maintain the proper air gap between the cores and the rotor.

REPLACEMENT OF ROTOR BUSHING

In order to replace the bushings in a model C housing, it is necessary to have certain tools and fixtures, known as the rebushing tool. Nearly all distributors have one of these rebushing tools and it is suggested that you take the housing to the nearest distributor who does have one rather than send them directly to the Wico Electric Company.

In cases where the housing has been damaged inside, or the rotor bearing tube has been worn to such an extent that the bushing will not fit tightly or excessive wear has taken place on the end of the tube or the tube is loose in the housing, a new main housing will have to be supplied at the regular price.



MAINTENANCE INSTRUCTIONS-STROMBERG TYPE "UR" CARBURETOR

When servicing any carburetor unit, Stromberg or any other make, one point of importance must at all times be borne in mind. That is to replace all worn parts or gaskets, and clean the interior of the unit, clearing all channels of any obstruction that might have become lodged therein during operation.

In the following paragraphs we will attempt to point out step by step the various service and repair hints which a mechanic will find most helpful and be called upon most frequently to refer.

Gasoline enters the carburetor through the gasoline inlet #14 into the float chamber. Here it is maintained at a fuel level of 9/16" by the float and float needle valve and seat numbers 11 and 13. As explained, the gasoline enters the carburetor at #14, passes through the float needle valve and seat #13 into the float chamber where, after it reaches a certain height, raises the float assembly #11 up until the float lever forces the float needle valve to seat, stopping the flow of gasoline into the carburetor.

If the float is not set properly or if there is dirt in the float needle valve and seat, the gasoline will continue to run into the carburetor causing what is termed a "high fuel level" and resulting in a flooding condition of the carburetor.

To remedy this condition it is necessary to remove the float lever and float assembly from the carburetor and remove the float needle valve and seat. The float assembly may be removed by pulling the float fulcrum pin #12 from the float hanger. There are no tools required for this operation:

After removing the fulcrum pin #12, the float may be lifted out with ease. This will expose the float needle valve and seat assembly so that it may be removed by using a 1/2" socket wrench. After removing this assembly it should be inspected. This will allow you to determine whether there is any dirt or foreign material deposited on the seat. If a condition of this kind exists, it is only necessary that the two parts be blown out with compressed air, removing any loose obstacle. After cleaning the needle and seat assembly, place the needle in the seat and tap the needle lightly with a light hammer to insure a good fit in the float needle valve seat. Before replacing the float needle valve and seat assembly, a new gasket should be installed. Then reassemble the fuel valve assembly.

Should for any reason the float needle valve and seat show wear same should be replaced with new parts and assembled as outlined above.

To reset float it is merely necessary to invert the throttle body assembly and set as follows: The distance between the body gasket surface to the top edge of the float is 1-9/32". If the measurement is other than this it may be corrected by bending the float lever to whichever position is necessary to obtain the proper reading.

MAIN METERING SYSTEM - Should for any reason the main metering jet #10, main discharge jet #9, need to be removed for service or repair, the following procedure should be followed. When removing jet #10, it is of course necessary to first remove the throttle body assembly from the carburetor. The jet may then be unscrewed by means of a screw driver that has a bit wide enough so as not to slip and burr the shoulder of the jet. After same has been removed it should be inspected and blown out. The replacement of this part is seldom necessary since there is not any wear, and any dirt that has accumulated can generally be removed.

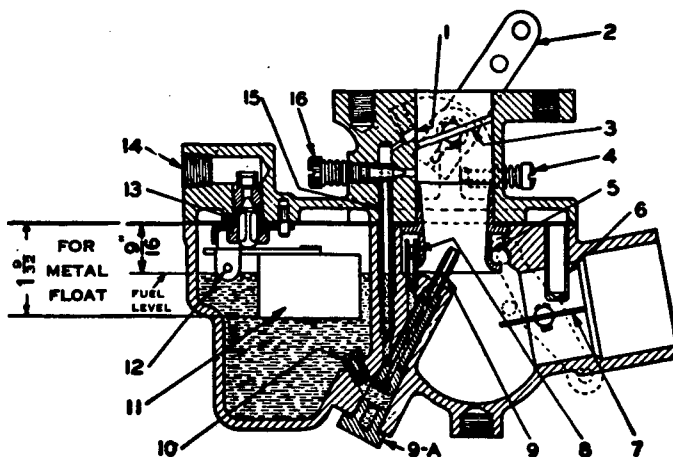
To remove main discharge jet #9 from the carburetor it is first necessary to remove the main jet plug #9A. This may be done by using a 9/16" socket wrench. The jet #9 may then be taken out by unscrewing with a screw driver. After removal it should be blown out and replaced. At the time of servicing the main jet, the high speed bleeder #8, should also be removed and blown out.

It is also a good idea to blow out all channels of the main body when the main discharge jet and bleeder are removed. This will remove any foreign matter which may in the future obstruct the flow of air through the bleeding system. When replacing main metering jet and plug, new gaskets should be used.

IDLE SYSTEM - Should the idle system become plugged it may be checked as follows: First remove throttle body from main body. The idle tube #15 may then be unscrewed with an ordinary pair of pliers. The idle tube should then be blown out.

To check the idle system in the throttle part of the carburetor body, the idle needle #16 should first be removed. It is then necessary to remove the small plug covering discharge hole #1. After this all channels should be blown out and discharge holes checked to see that they are open.

Should the throttle valve require replacement, same should be assembled so that the lower edge will be flush + or - .004" from the #60 idle hole. This tolerance must be maintained in order to obtain the correct idle performance.



PARTS ILLUSTRATED

1. Discharge Hole
2. Throttle Lever
3. Throttle Valve
4. Throttle Lever Stop Screw
5. Venturi
6. Vent Tube
7. Choke Valve
8. High Speed Bleeder
9. Discharge Jet
- 9A. Jet Plug
10. Metering Jet
11. Float Assembly
12. Fillcrum Pin
13. Float Needle Valve and Seat
14. Gasoline Inlet
15. Idle Tube
16. Idle Needle

**MAINTENANCE INSTRUCTIONS SERIES "R" - AC FUEL PUMP
#1523929**

Fuel pump repairs are divided into two classifications:

1. Repairs made without disturbing pump installation.
2. Repairs which necessitate removal and disassembly of the fuel pump.

Repairs made without disturbing pump installation

LACK OF FUEL AT THE CARBURETOR

Check as follows:

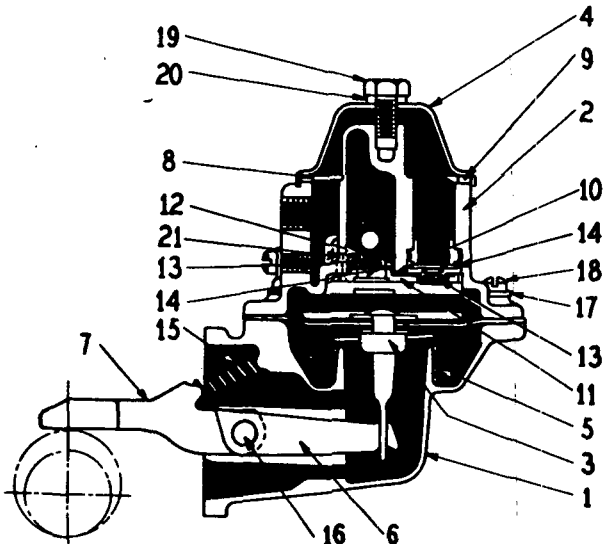
<u>Cause</u>	<u>Remedy</u>
Gasoline tank empty	Refill.
Leaky tubing or connections	Replace tubing and tighten all pipe connections at the fuel pump and gasoline tank.
Bent or kinked tubing	Replace tubing.
Dirty screen	Clean the screen, 8. Make certain gasket, No. (9) is properly seated when reassembling.
Loose cover plate cap screw	Tighten cover plate capscrew (19) securely, replacing cover plate cap screw gasket, 20, if necessary.

FUEL LEAKAGE AT EDGE OF DIAPHRAGM

Check as follows:

<u>Cause</u>	<u>Remedy</u>
Loose cover screws	Tighten cover screws, 18, alternately and securely. Also check inlet and outlet pipe connections.

NOTE: Check if leak occurs at pipe fittings thus allowing fuel to run down pump to flange and appear to originate there. Do not use shellac or any other adhesive on diaphragm.



Repairs which necessitate removal and disassembly of the pump

FUEL PUMP TROUBLE CHART

<u>Trouble</u>	<u>Cause</u>	<u>Remedy</u>
Broken rocker arm.	Visible	Replace rocker arm, 7.
Broken arm spring	Visible	Replace rocker arm spring spring, 15.
Defective or worn links	Pump does not supply sufficient fuel	Replace links, 6.
Broken diaphragm return spring	Does not supply fuel to carb.	Replace spring.
Punctured or worn out pump diaphragm	Fuel leaking through vent hole in body.	Replace diaphragm assembly 3.
IMPORTANT: Mark the top cover, 2, and body, 1, with a file before disassembling so that in reassembling they are placed back in the same relative position.		

PROCEDURE IN ASSEMBLING

BODY, ROCKER ARM AND LINK ASSEMBLY

Assemble link, 6, rocker arm, 7, and rocker arm spring, 5, in body. Insert rocker arm pin, 16, through hole in body, engaging link and rocker arm. Use a punch and stake die cast metal of body over end of pin in one place on each end, to retain in place.

NOTE: It has been found that the assembly of the rocker arm pin can be simplified by first assembling a piece of .240" drill rod through the rocker arm pin hole in one side of the body far enough to engage the rocker arm and link, then insert rocker arm pin from opposite side, pushing out the drill rod until the pin is in proper position. If after assembling the rocker arm pin it is found that the rocker arm or link does not work freely, this can be corrected by placing a punch against the opposite end of the rocker arm pin, tapping it lightly with a small hammer in the reverse direction from which it was assembled.

DIAPHRAGM AND PULL ROD ASSEMBLY

The diaphragm, 3, for this pump is an assembly including protector washer and pull rod and is serviced as a unit.

To correctly assemble diaphragm in pump body, proceed as follows:

1. Place diaphragm spring, 5, in position in pump body, 1.
2. Place the diaphragm assembly, 3, over spring, 5, centering upper end of spring in lower protector washer.
3. Press downward on the diaphragm, 3, and hook the slot in the diaphragm pull rod over the hooked end of the link, 6.

VALVE AND COVER ASSEMBLY

1. Place outlet valve spring retainer, 12, in pump cover, 2, taking care not to bend or distort leg of retainer.
2. Place valve plate gasket, 10, in position.
3. Place outlet valve spring 13, in position in spring retainer, 12.
4. Place outlet valve, 14, on spring, 13.
5. Place inlet valve, 14, on valve seat.
6. Place valve spring, 13, on center of inlet valve, 14.
7. Place valve plate, 11, in position and secure with 3 screws, 21.
8. Place strainer screen, 8, in position on top of cover, 2, making certain that it fits snugly around the gasoline inlet and edges of cover.
9. Assemble cork gasket, 9, in cover plate and install cover plate 4 on top of cover assembly. Make certain that gasket seats properly and strainer screen is not wrinkled or distorted.
10. Place fibre washer, 20, on cover plate capscrew, then insert and tighten screw securely.

COVER ASSEMBLY

1. Push upward on rocker arm, 7, until diaphragm, 3, is level with the body flange.
2. Place cover assembly, 2, in proper position designated by mark on flanges made before disassembling the pump.
3. Install cover screws, 18, and lockwasher, 17, tightening only until they barely engage lockwashers.
4. Release rocker arm, 7, which will place the diaphragm, 3 in its highest position.
5. Tighten cover screws, 18, alternately and securely.

MAINTENANCE INSTRUCTIONS - WISCONSIN MODEL AC4 ENGINE

DISASSEMBLY AND ASSEMBLY OF CONNECTING ROD, PISTON, ETC.

1. Loosen cap screws 624C holding oil pan.
2. Remove connecting rod bolt nuts 528 and remove conn. rod cap.
3. Rotate crankshaft so that crankshaft throws are horizontal, then gradually withdraw the connecting rod and piston assembly thru the bottom of the crankcase.
4. Piston may be removed from the conn. rod by removing snap rings 539 and driving out piston pin 436.
5. Re-assemble in the reverse manner.
6. Clearances must be observed in connection with the piston and piston rod as follows:

Piston clearance to a bore .0025 - .003

(a) This is measured at the bottom of the skirt.

Piston pin clearance (in conn. rod)0005 - .001

Large end conn. rod running clearance001 - .002

Conn. rod side clearance004 - .011

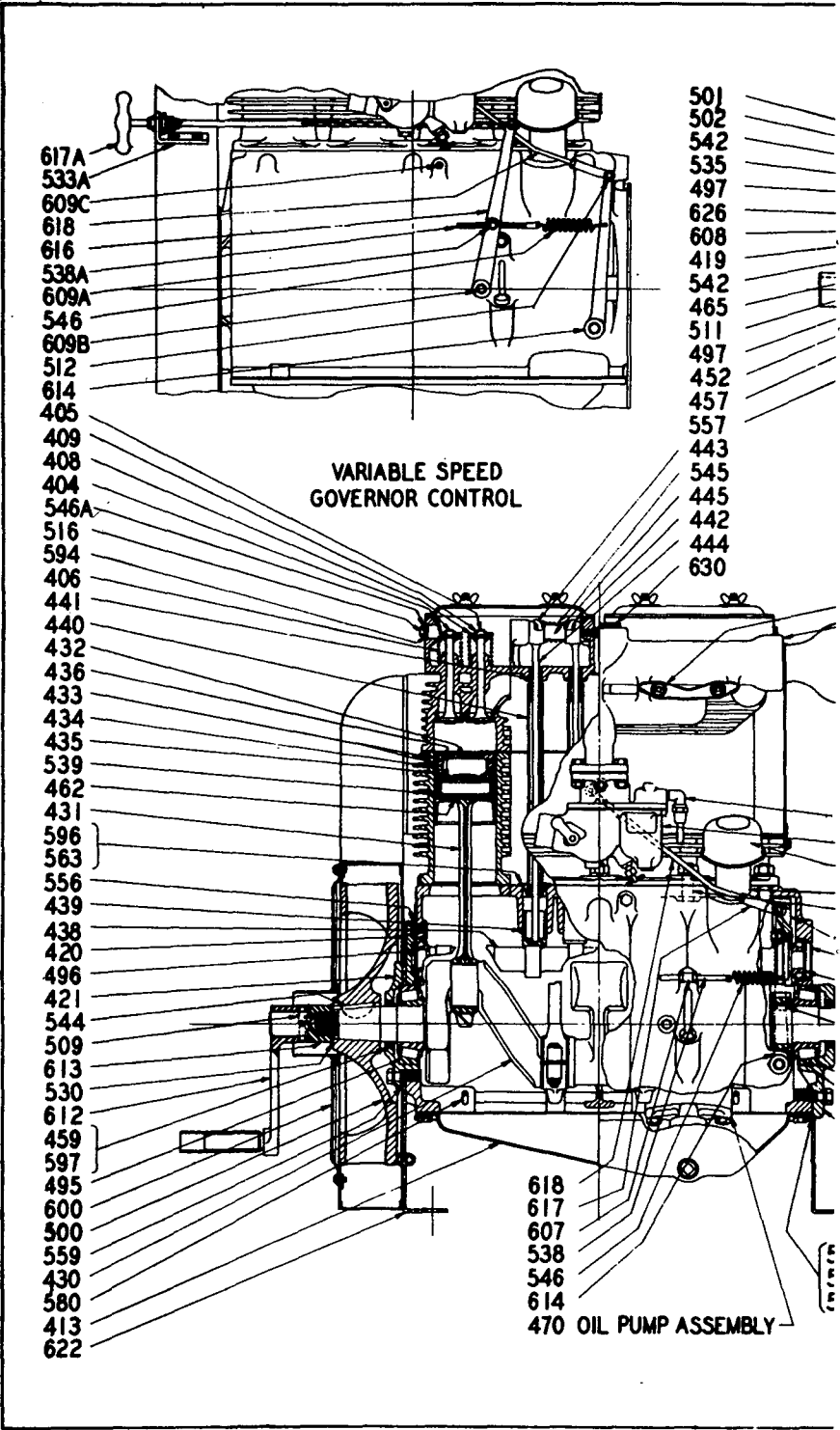
Piston ring clearance in conn. rod002 - .003

DIS-ASSEMBLY AND ASSEMBLY OF OIL PUMP

1. Oil pump is removed through the bottom of the crankcase after the oil pan 413 has been removed.
2. Remove two cap screws 624E and withdraw oil pump assembly from bottom of engine.
3. To check gears, remove cap 472.
4. To re-install follow reverse procedure.

DIS-ASSEMBLING HEADS, ROCKER SHAFTS & VALVES

1. Removal of shrouding and manifold.
 - (a) Remove shrouding 603 and 604 by removing mtg. screws
 - (b) Remove gov. linkage 618
 - (c) Remove fuel line 588 from carb. by loosening nut 582
 - (d) Remove manifold hold-down carb. 532 by removing nuts 525, and lockwashers 529A
 - (e) Remove manifold and carb. assembly 483 completely from the engine.
2. Removal of heads of engine.
 - (a) Remove ignition cables 641, 642, 643, & 644 from spark plugs.
 - (b) Remove cyl. head stud nuts 525A.
 - (c) Lift off heads (in pairs).
3. Removal of valves
 - (a) Remove cyl. hd. cover 410 by removing wing nuts 526.
 - (b) Remove valve spring ret. by pushing down on ret. 408 and remove 409 wedges.
 - (c) Valve can be withdrawn thru combustion chamber
4. To remove rocker lever pin remove welch plug 594 and drive out pin 445.
 - (a) Two inlets and 2 exhausts rockers lever lock on each pin.
5. To replace valve inserts 461 they must be chipped out of heads.
 - (a) This can easily be done by drilling the metal on one side of the insert which will permit the inserts to be easily broken and removed.
6. To re-assemble, follow the reverse procedure and set the valves at five thousandths of an inch (.005") cold.

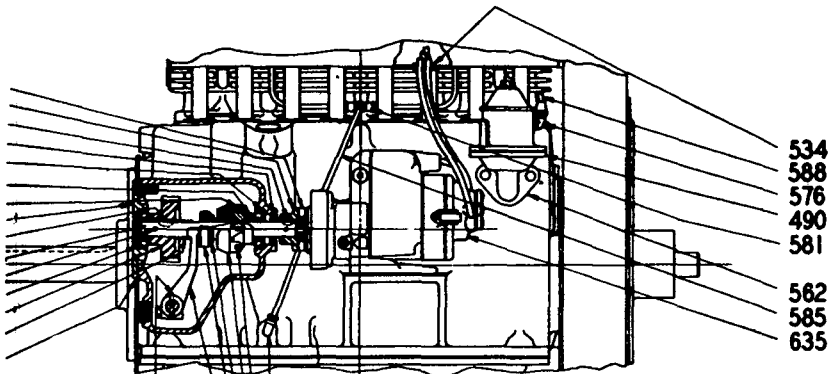


- 617A
- 533A
- 609C
- 618
- 616
- 538A
- 609A
- 546
- 609B
- 512
- 614
- 405
- 409
- 408
- 404
- 546A
- 516
- 594
- 406
- 441
- 440
- 432
- 436
- 433
- 434
- 435
- 539
- 462
- 431
- 596
- 563
- 556
- 439
- 438
- 420
- 496
- 421
- 544
- 509
- 613
- 530
- 612
- 459
- 597
- 495
- 600
- 500
- 559
- 430
- 580
- 413
- 622

- 501
- 502
- 542
- 535
- 497
- 626
- 608
- 419
- 542
- 465
- 511
- 497
- 452
- 457
- 557
- 443
- 545
- 445
- 442
- 444
- 630

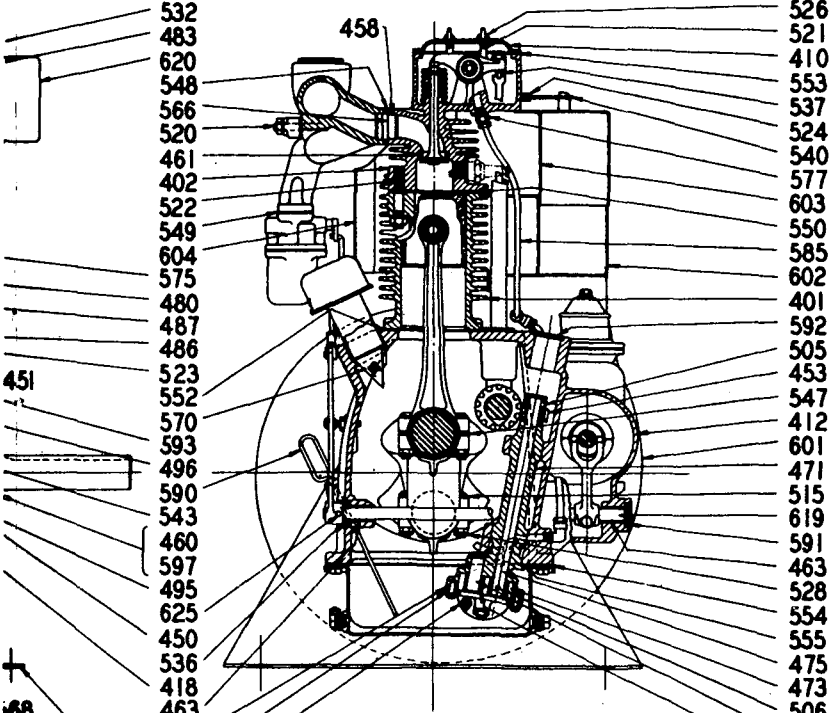
VARIABLE SPEED
GOVERNOR CONTROL

- 618
- 617
- 607
- 538
- 546
- 614
- 470 OIL PUMP ASSEMBLY



- 534
- 588
- 576
- 490
- 581
- 562
- 585
- 635

- 627
- 615
- 498
- 609
- 605
- 510
- 578



- 526
- 521
- 410
- 553
- 537
- 524
- 540
- 577
- 603
- 550
- 585
- 602
- 401
- 592
- 505
- 453
- 547
- 412
- 601
- 471
- 515
- 619
- 591
- 463
- 528
- 554
- 555
- 475
- 473
- 506
- 476
- 474

- 483
- 620
- 548
- 566
- 520
- 461
- 402
- 522
- 549
- 604
- 575
- 480
- 487
- 486
- 523
- 552
- 570
- 593
- 496
- 590
- 543
- 460
- 597
- 495
- 625
- 450
- 536
- 418
- 463
- 558
- 472
- 572
- 623

TYPE 'AC4' 2-5/8 X 3-1/4
 4CYL. AIR COOLED ENGINE
 WISCONSIN MOTOR CORPORATION
 MILWAUKEE WISCONSIN

DIS-ASSEMBLY AND ASSEMBLY OF CYLINDERS

1. After heads are removed, remove push rod tubes 440 and valve taper push rods 444.
2. Remove nuts 525B & lockwashers 529C and cyl. block can be removed from crankcase.
3. The normal cylinder bore is (2.625-2.624). Over-size cylinders can be fitted with over-size pistons.
4. Re-assemble in reverse order.

DIS-ASSEMBLY AND RE-ASSEMBLY OF CAMSHAFT FROM CRANKCASE

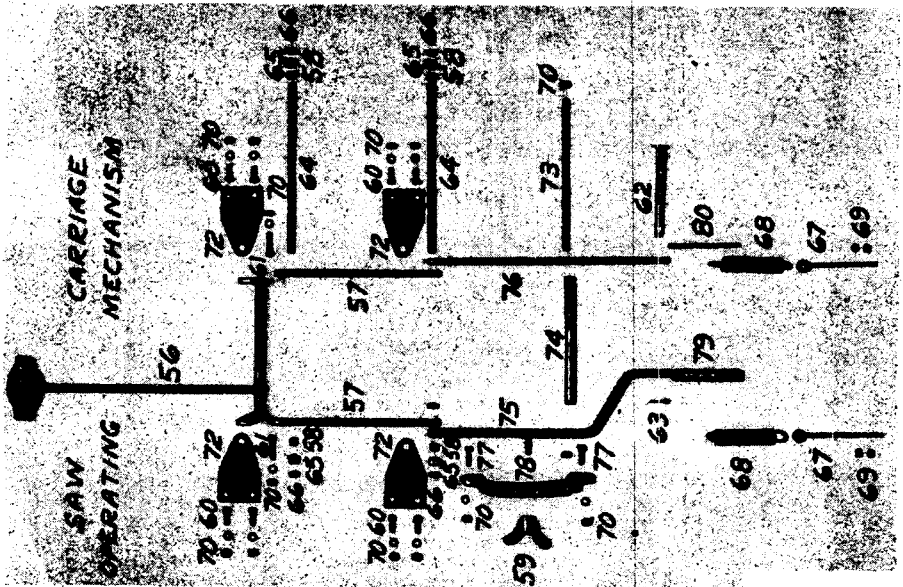
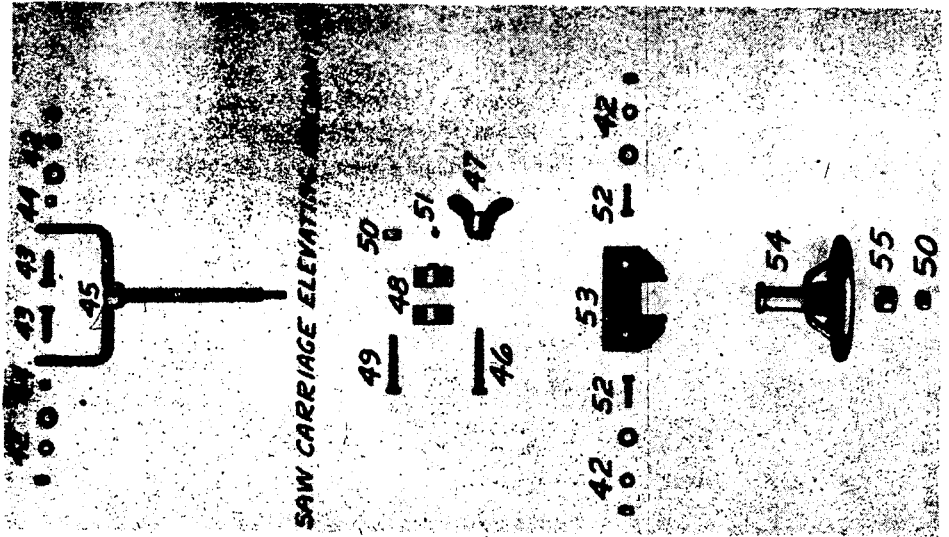
1. After the cylinder is removed, remove push rod tube cups, 596 which will permit the removal of tappers 439.
2. Remove flywheel screen 600 and flywheel 500.
 - (a) To remove flywheel, loosen cranking nut 613 and hit the crankshaft on the threaded end very sharply by using either a babbit hammer or brass rod so threads will not be damaged. (Flywheel fits on taper which a sharp rap with a hammer will loosen.)
3. Remove flywheel shrouding 601 and engine support 622.
 - (a) To remove engine support 622, remove crankshaft brg. cage 421.
4. This will expose camshaft brg. cage cover 420 which should be removed to withdraw camshaft through the brg. bore.
5. To re-assemble, follow reverse procedure.

DIS-ASSEMBLY AND ASSEMBLY OF CRANKSHAFT

1. Front main bearing has been removed with the removal of 421 bearing cage.
2. Remove bearing cage on take-off end 418.
3. Before crankshaft can be pulled out of crankcase gov., cross shaft 619 must be removed.
4. Remove slotted pipe plug 531 directly below 419 gov. brg. cage.
 - (a) Pull out taper pin 627 from gov. yoke 615
5. Remove gov. assembly after 419 bearing plate and mag. drive member 502 have been removed.
 - (a) Remove drive member after knocking out pin 511.
 - (b) The gov. assembly is removed through the bearing cage hole in the crankcase.
 - (c) Through the same opening, lever 615 can be removed.
 - (d) Gov. cross shaft 619 can be withdrawn from gov. lever 614 side of carburetor side of engine.
6. Crankshaft can now be removed through the bearing cage opening on the take-off end of the engine.
7. Re-installing the crankshaft and re-timing the engine.
 - (a) Crankshaft is re-installed in the reverse order of the dis-assembling.
 - (b) The timing marks on the camshaft and crankshaft must coincide, that is, the one dot on the crankshaft must be in line with the tooth on the camshaft which is marked with 2 dots in accordance with the gear timing diagram.
 - (c) Crankshaft end play should be fitted to approximately .006 end play, (There is no way to measure this exactly, but by driving the shaft with a babbit hammer first one way and then the other, a slight drift of the camshaft can be felt.)

SAW CARRIAGE ASSEMBLY

<u>Ref. No.</u>	<u>No. Reqd.</u>	<u>Part Number</u>	<u>Description</u>
1	1	A763	Arbor and pulley assembly
2	2	T5044	Spacer shaft
3	4	M308	5/8" 11-thread nut
3	4	M388	5/8" Lockwasher
4	2	T5049	Idler pulley shaft
5	2	P2182	Idler pulley
5	4	M1779	Idler pulley bushing, 1" x 1-1/4" x 2" long
6	2	T5064	Collar, 1-3/8" O.D., 1/2" long
7	2	M404	Set Screw 1/4" x 3/8"
8	4	T5085	Roller (flat)
9	2	M269	1/8" x 2" Cotter key
10	2	T5045	Roller, pin
11	1	T5048	Roller pin
12	3	P2198	Roller (grooved)
13	2	M307	5/8" 11-thread jam nut
13	2	M388	5/8" Lockwasher
14	6	M1818	1/8" Straight Zerk fitting
15	1	T5128	1-1/8" Hex left-hand nut
16	1	P2176	Arbor collar without keyway
17	1	P2269	Arbor collar with keyway
18	1	M1775	#15 Woodruff key
19	8	M2237	3/8" -16 x 3/4" capscrew
20	4	M408	3/8" -16 x 1" set screw
21	1	M413	1/2" -13 x 1" set screw
22	1	P2173	Side frame and housing
23	1	P2174	Side frame and housing
24	1	M1819	1/8" 90° Zerk fitting
25	2	P2175	Bearing cap
26	2	M1776	Timken bearing cup #2720
26	2	M1776A	Timken bearing cone #2786
27	10	M2111	#14 Timken bearing shim .020
28	1	M1780	Grease Pipe (1/8" x 10" pipe nipple, street ell and coupling)
29	2	M391	3/8" -16 x 1" cap screw
<u>GUIDE ROD ASSEMBLY</u>			
30	1	P2178	Front carriage frame casting
31	1	P2182	Idler pulley
31	2	M1779	Idler pulley bushing (1" O.D. x 1-1/4" O.D. x 2" long)
32	1	T5086	Spacer collar
33	1	T5059	Idler shaft
34	2	M408	1/2" -13 x 1" set screw
35	4	M177	1/2" -13 x 3/2" machine bolt
36	4	M306	1/2" -13 hex nut
36	4	M387	1/2" lock washer
37	1	M1818	1/8" straight zerk fitting
38	2	T5054	Guide rod
39	1	P2179	Rear frame, or pivot casting
40	1	T5056	Pivot shaft
41	2	M273	3/16" x 1 1/2" cotter key



SAW CARRIAGE ELEVATING MECHANISM

<u>Ref. No.</u>	<u>No. Reqd.</u>	<u>Part Number</u>	<u>Description</u>
42	4	M306	1/2" - 13 Hex nut
42	4	M387	1/2" Lock washer
42	8	M375	1/2" Cut washer
43	2	M172	1/2" - 13 x 2" Machine bolt
44	2	T7901	Bushing
45	1	A768	Adjusting screw and clamps
46	1	M204	5/8" - 11 x 4" Machine bolt
47	1	P2190	Wing nut 5/8" tap
48	1	P2177	Handwheel bearing.
49	1	M203	5/8" - 11 x 3-1/2" Machine bolt
50	2	M308	5/8" - 11 Hex nut
51	1	M1818	1/8" Straight Zerk fitting
52	2	M171	1/2" - 13 x 1-3/4" Mach. bolt
53	1	A-795	Adjusting screw bracket
54	1	P2180	Handwheel
55	1	P2168	Stop washer

SAW CARRIAGE OPERATING MECHANISM

56	1	T9180	Foot lever
57	2	T9162	Foot lever links
58	4	T9181	Bushing for lever link
59	1	P2190	Wing nut - 5/8" tap
60	8	M169	1/2" - 13 x 1-1/4" Machine bolt
61	2	M172	1/2" - 13 x 2" Machine bolt
62	1	T8760	Carriage lever pin
63	1	M273	3/16" x 1-1/2" Cotter pin
64	2	T9149	Pivot studs
65	4	M308	5/8" - 11 Hex nut
66	6	M307	5/8" - 11 Hex jam nut
67	2	T5198	Eye bolt
68	2	T9616	Tension spring
69	4	M305	3/8" - 16 Hex nut
70	16	M306	1/2" - 13 Hex nut
70	16	M387	1/2" Lock washers
72	4	T5071	Carriage lever pivot plates
73	1	T8759	Stud bolt
74	1	T9164	Spacer
75	1	T9165	Saw carriage lever, right
76	1	T9166	Saw carriage lever, left
77	2	M171	1/2" - 13 x 1-3/4" Machine bolt
78	1	P2197	Carriage lever. quadrant
79	1	T9182	Carriage link
80	1	T5067	Carriage link

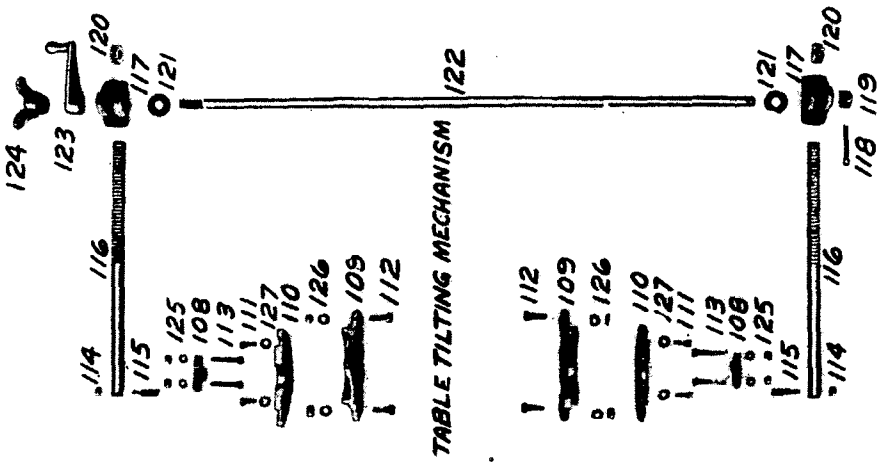
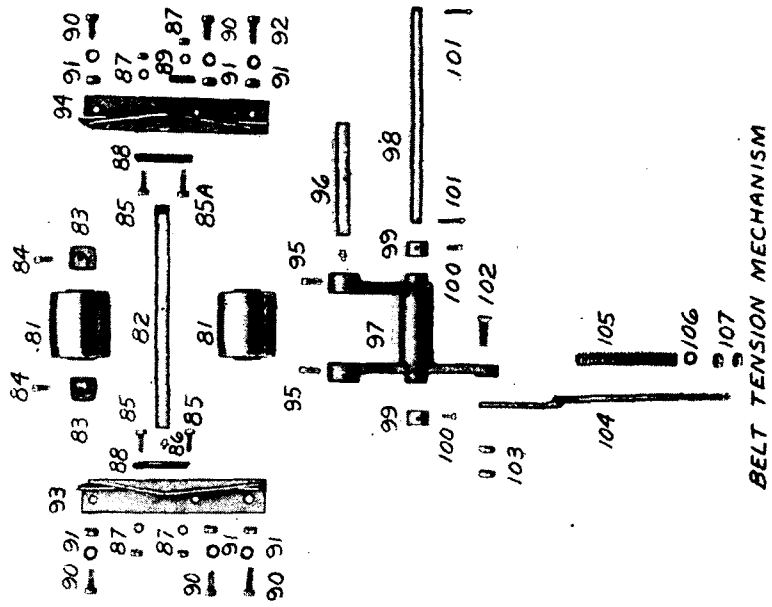


TABLE TILTING MECHANISM



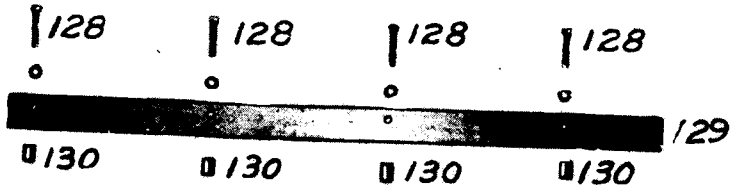
BELT TENSION MECHANISM

BELT TENSION MECHANISM

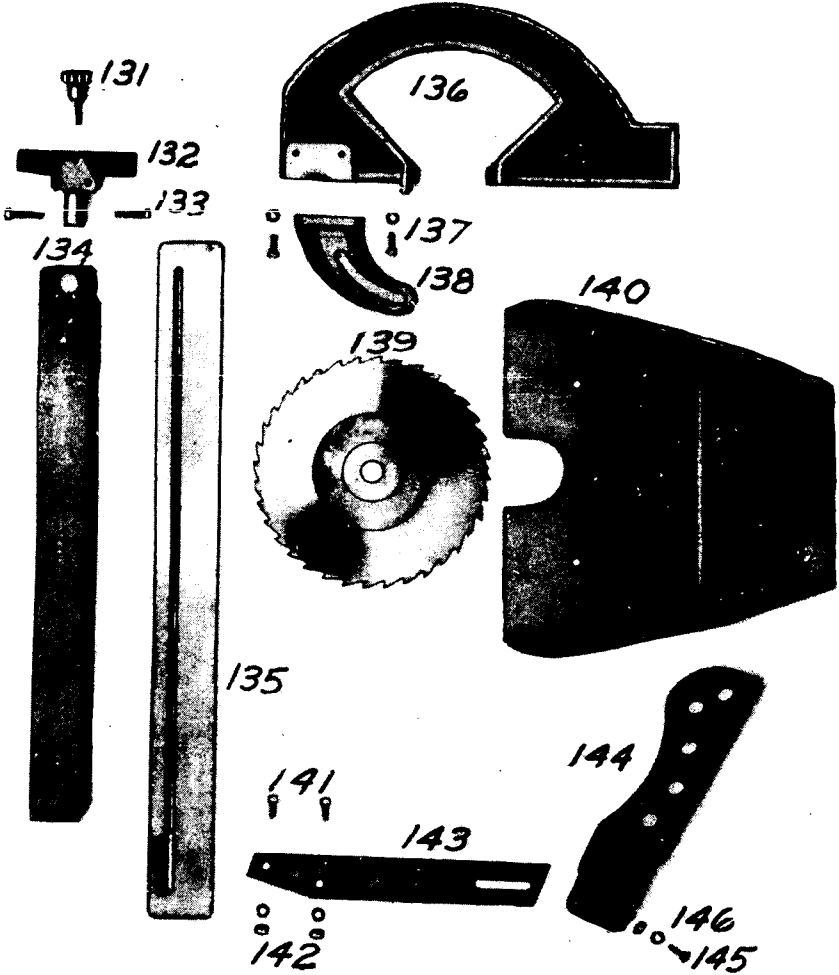
<u>Ref. No.</u>	<u>No. Reqd.</u>	<u>Part Number</u>	<u>Description</u>
81	2	P2182	Idler pulley
81	4	M1799	Idler pulley bushing 1" I.D. x 1-1/4" O.D. x 2" long
82	1	T505f	Idler pulley shaft
83	2	P223C	Set collar
84	2	M412	1/2" - 13 x 3/4" Set screw
85	3	M147	3/8" - 16 x 1-1/4" Mach. bolt
85A	1	M156	3/8" - 16 x 1-1/2" Mach. bolt
86	1	M1818	1/8" Straight Zerk fitting
87	4	M305	3/8" - 16 Hex nut
87	4	M386	3/8" Lock washer
88	2	T11851	Idler pulley shaft adjusting plate
89	1	T5062	Idler pulley shaft lock plate
90	4	M169	1/2" - 13 x 1-1/4" Mach. bolt
91	6	M306	1/2" - 13 Hex nut
91	6	M387	1/2" Lock washer
92	2	M170	1/2" - 13 x 1-1/2" Mach. bolt
93	1	Al648R	Pivot bracket - right
94	1	Al648L	Pivot bracket - left
95	2	M408	1/2" - 13 x 1" Set screw
96	1	T5051	Idler yoke pulley shaft
97	1	P2181'	Idler yoke
98	1	T5050	Yoke fulcrum shaft
99	2	T5052	Set collar for idler yoke
100	2	M407	3/8" - 16 x 3/4" Set screw
101	3	M273	3/16" x 1-1/2" Cotter key
102	1	M245	5/8" - 11 x 2" Plow bolt #2 head
103	2	M307	5/8" - 11 Hex jam nut
104	1	A791	Belt tension screw
105	1	M1787	Belt tension spring
106	8	M375	1/2" Cut washer
107	2	M306	1/2" - 13 Hex nut

TABLE TILTING MECHANISM

108	2	P2188	Pivot bracket clamp
109	2	P2187	Pivot bracket
110	2	P2186	Table pivot casting
111	4	M391	3/8" - 16 x 1" Cap screw
112	4	M170	1/2" - 13 x 1-1/2" Mach. bolt
113	4	M159	3/8" - 16 x 2-1/2" Mach. bolt
114	2	M305	3/8" - 16 Hex nut
115	2	T10307	Rack pin
116	2	T5060	Table top tilting rack
117	2	P2189	Rack guide
118	1	M2081	5/16" x 2-1/2" Cotter key
119	1	T9161	3/4" - 10 Hex nut, drilled
120	2	M1790	Rack pinion
121	2	M378	3/4" Cut washer
122	1	T5046	Rack guide shaft
123	1	P2191	Rack handle
124	1	P2190	Wing nut 3/4" tap
125	4	M305	3/8" - 16 Hex nut
125	4	M386	3/8" Lock washer
126	4	M306	1/2" - 13 Hex nut
126	4	M387	1/2" Lock washer
127	4	M374	3/8" Cut washer



SAW BLADE, GUARD, GAUGES

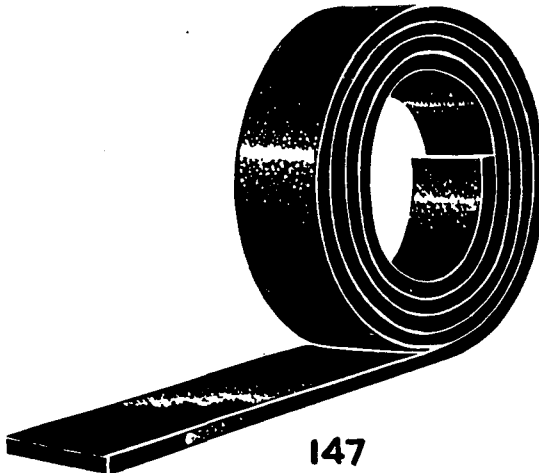


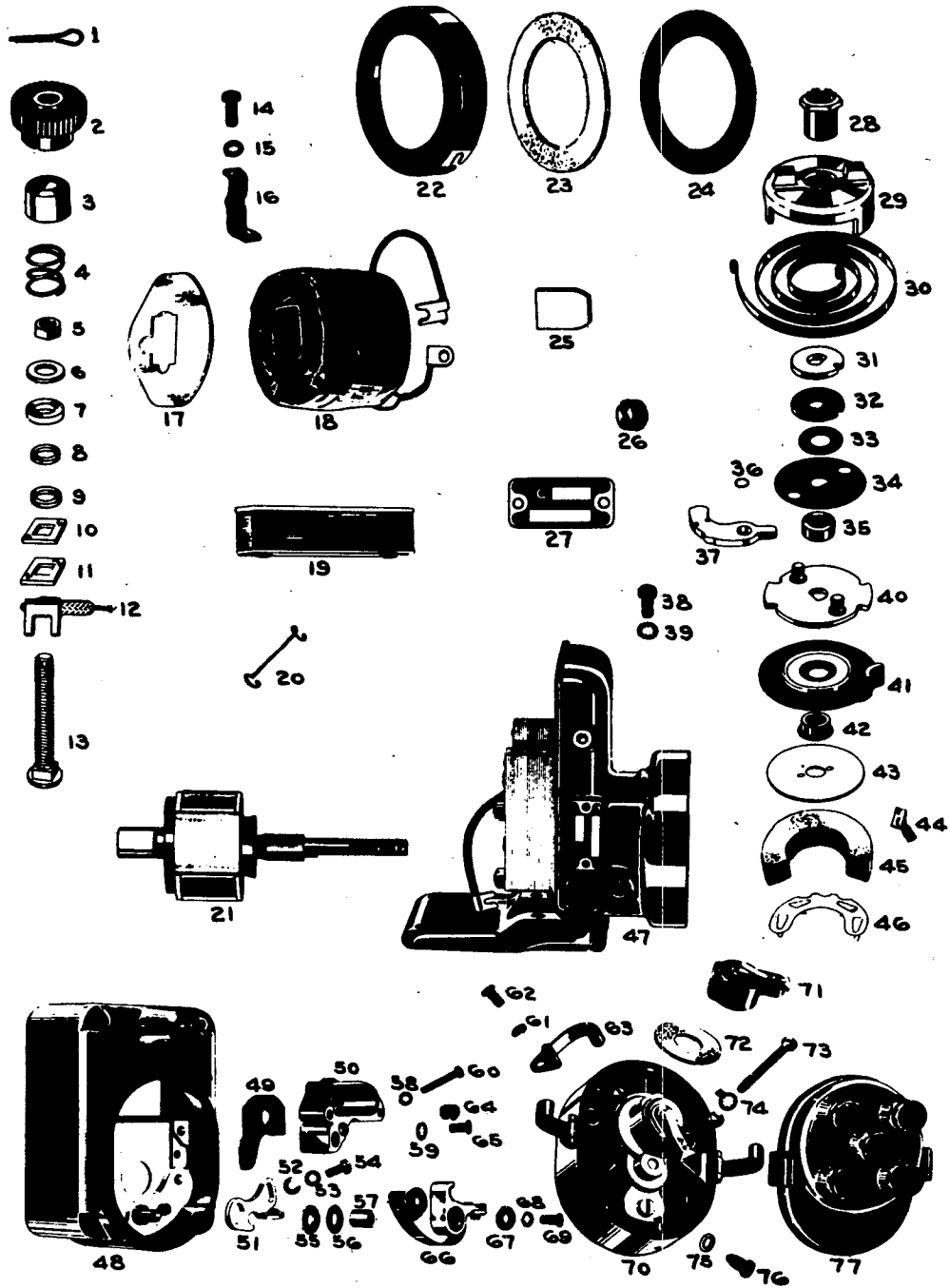
GENERAL

<u>Ref. No.</u>	<u>No. Reqd.</u>	<u>Part Number</u>	<u>Description</u>
128	5	M2216	3/8" - 16 x 1-3/4" Cap screw
128	4	M386	3/8" Lock washer
129	1	T5088	Straight edge
130	4	T5126	Straight edge spacers
131	1	P2194	Hand screw
132	1	P3061	Ripping gauge bracket
133	2	M393	3/8" - 16 x 2" Cap screw
134	1	P3060	Ripping gauge
135	1	T5113	Wood throat
136	1	P2196	Gross cut gauge
137	2	M392	3/8" - 16 x 1-1/4" Cap screw
137	2	M386	3/8" Lock washer
138	1	P2199	Quadrant
139	1	M2927	16" Combination Rip and Crosscut saw
139		M2928	18" Combination Rip and Crosscut saw
139		M2929	20" Combination Rip and Crosscut saw
140	1	T5115	Saw dust collector
			(Used only with 16" or 18" blades)
	1	T11350*	Saw dust collector
			(Used only with 20" blade)
141	2	M153	3/8" x 16 x 1" Machine bolt
142	2	M386	3/8" Lock washer
142	2	M305	3/8" - 16 Hex nut
143	1	T9179	Saw guard support
144	1	T5127	Saw guard
145	1	M115	3/8" - 16 x 1" Carriage bolt
146	1	M386	3/8" Lock washer
146	1	M305	3/8" - 16 Hex nut
	1	A767	Table top
	1	A766	Saw rig frame
147	1	M1794	Rubber drive belt - 4 ply - 4" x 13' - 6"
148	1	M2216	Capscrew, table adjusting

*When T11350 used, following parts also needed:

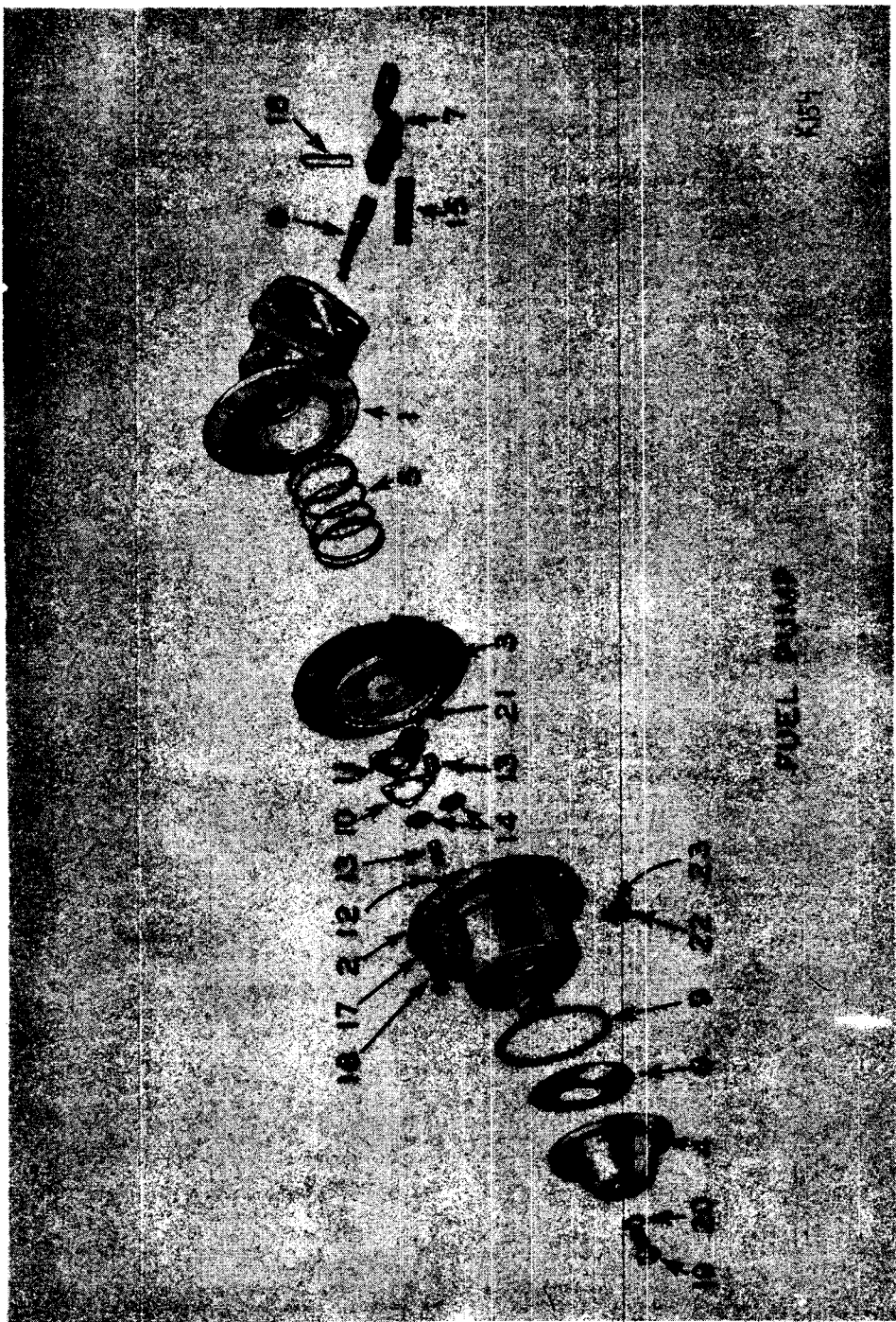
1	T11367	Foot lever quadrant filler
1	M2422	3/8" x 1-1/4" F.H. Capscrew
1	M386	3/8" Lock washer
1	M374	3/8" Flat washer





PARTS LIST - WICO MAGNETO, SPECIFICATION C-241F

<u>ITEM NO.</u>	<u>PART NUMBER</u>	<u>PART NAME</u>
1	M-95X	Stop Nut Cotter Pin
2	1992B	Stop Nut
3	16-368	Grounding Sleeve
4	L6-369	Primary Grounding Spring
5	1991	Ground Stud Nut
6	M-33X	Ground Stud Washer
7	M-35X	Ground Stud Insulating Washer (outside)
8	M-34X	Ground Stud Insulating Bushing
9	M-34X	Ground Stud Insulating Bushing
10	3539	Ground Stud Insulating Washer
11	3539	Ground Stud Insulating Washer
12	X2721A	Ground Stud Lead Group
13	4631	Ground Stud
14	M-126XB	Coil Core Clamp Screw
15	M-55XA	Breaker Arm Clamp Screw L.W.
16	2503	Coil Core Clamp
17	1760	Coil Gasket
18	X2766	Coil Group
19	X2706	Coil Core Group
21	X2717	Rotor Assembly
22	3095	Impulse Dust Cover
23	16-914	Impulse Dust Gasket
24	16-915	Impulse Dust Ring
25	2264B	Coil Wedge
26	IXa-345	Main Housing Coil Plug
27	2506	Identification Plate
28	16-491C	Impulse Lock Nut
29	4203	Drive Cup
30	15-186	Drive Spring
31	16-583	Drive Cup Spacing Washer (Brass)
32	IVA-583	Drive Cup Spacing Washer (Steel)
33	M-42XA	Driven Flange Spacer Washer
34	2288	Drive Spring Retainer
35	2122	Driven Flange Spacer
36	A-243X	Snap Ring
37	A-179X	Trip Arm
38	2641	Impulse Stop Screw
39	2749	Impulse Stop Screw L.W.
40	X2287	Driven Flange Group
41	X2719	Impulse Stop Group
42	2121	Impulse Spacer
43	2745	Oiling Disc.
44	X1487	Oil Scraper Unit
45	1379	Main Oil Pan
46	2505	Oil Pad Spring Plate
47	X3025	Main Housing Assembly
48	X2798	Cover Assembly
49	1533	Condenser Case Gasket
50	X1413	Condenser Group
51	1196	Fixed Contact
52	IXA256-	Fixed Contact Screw Washer
53	M-55XA	Fixed Contact Screw L.W.
54	M-31X	Fixed Contact Screw
55	1197	Breaker Arm Spacing Washer
56	1197T	Breaker Arm Spacing Washer-Use with 1197, when required to remove excessive play of Breaker Arm
57	1418	Breaker Arm Spacer
58	M-90X	Condenser Screw L.W.
59	2573	Breaker Arm Spring Screw L.W.
60	1383	Condenser Clamp Screw
61	M-55XA	Terminal Screw L.W.
62	16-738	Breaker Arm Clamp Screw
63	X1503	Distributor Cap Clip Assembly
64	1194	Cam Oil Pad
65	16-738	Distributor Clip Screw
66	X1408	Breaker Arm Group
67	1207	Breaker Arm Clamp Washer
68	16-738	Breaker Arm Spring Screw
69	16-738	Breaker Arm Clamp Screw
70	X2732	Gear Housing Assembly
71	16-X477B	Distributor Arm
72	16-561B	Gear housing Dust Washer
73	2537	Gear Housing Screw
74	2635	Gear Housing Screw L.W.
75	M-39XA	Oil Plug Washer
76	16-449	Gear Housing Oil Plug
77	X3128	Dist. Cap Group Includes Terminal nuts and gasket
79	X1615	Secondary Interlead
80	2504	Cover Gasket
81	4697	Dust Cover Screw
82	M-55XA	Dust Cover Screw L.W.
84	2497	Dist. Cap Gasket
84	11	Gear Housing Gasket

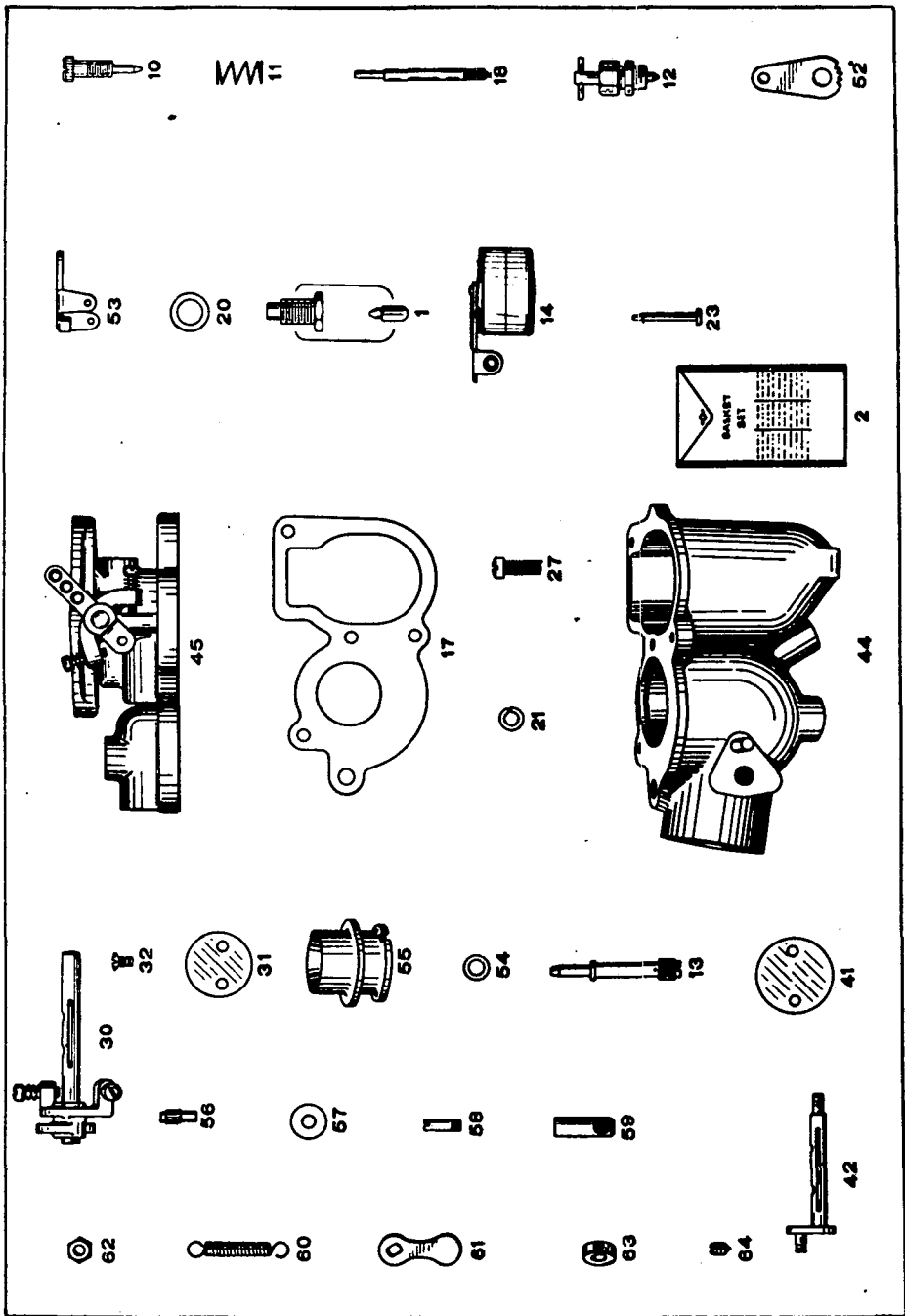


FUEL PUMP

6154

**PARTS LIST SERIES "R" AC FUEL PUMP
#1523929 WISCONSIN #LP-20-A Ref. #90**

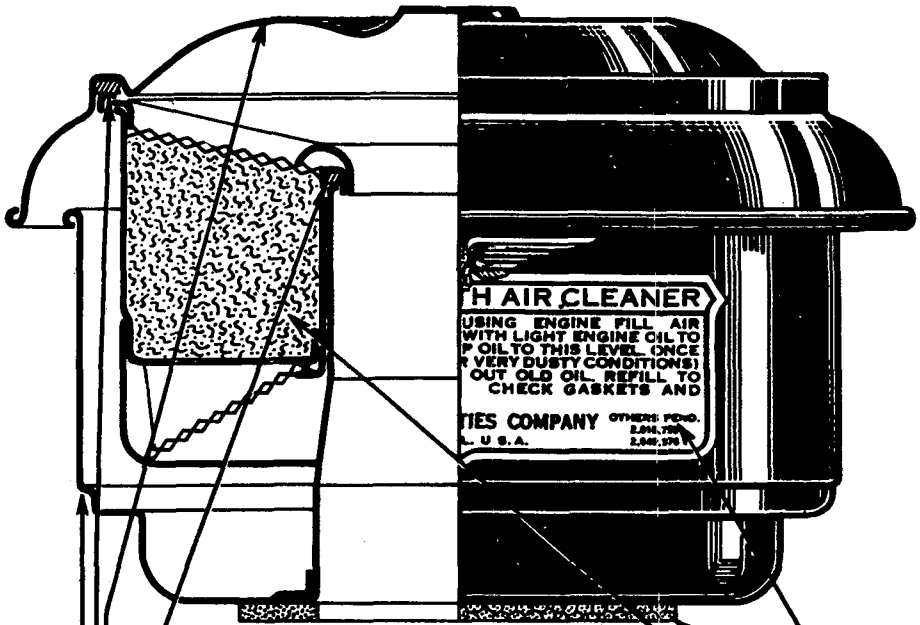
<u>Ref. No.</u>	<u>AC Part No.</u>	<u>Qty. used Per pump</u>	<u>Description</u>
1	1521707	1	Body
2	1521636	1	Top cover assembly
3	1521924	1	Diaphragm spring assembly
4	1521475	1	Cover Plate
5	1521927	1	Diaphragm spring
6	1521708	1	Link
7	1523930	1	Rocker arm
8	1521479	1	Screen
9	1521480	1	Gasket (cover plate)
10	1521472	1	Valve plate gasket
11	1521471	1	Outlet valve plate
12	1521473	1	Retainer (Outlet valve spring)
13	856270	2	Valve spring
14	855279	2	Valve
15	1521476	1	Rocker arm spring
16	1521578	1	Rocker arm pin
17	855064	6	Lockwasher (top cover screw)
18	855493	6	Top cover screw
19	1537148	1	Cover plate cap screw
20	1521476	1	Gasket (cover plate capscrew)
21	856374	3	Valve retainer screw



PARTS LIST STROMBERG UR 3/4 CARBURETOR #426048

Wisconsin L-16-D

<u>Key</u> <u>No.</u>	<u>Part</u> <u>Number</u>	<u>Description</u>
1	P-21371	Float needle valve & seat
2	J-4494-G	Complete gasket set
10	P-15396	Idle needle valve
11	P-12530	Spring for idle needle
12	P-16362	Metering jet .043"
13	P-18340	Main discharge jet #48
14	P-16342	Float
17	P-16325	Gasket for main Body
18	382117	Idle tube
19	P-11571	Plug-main discharge jet
20	P-11572	Gasket - float needle & seat
21	P-1791	Lockwasher - main body attach. screw
23	P-10344	Fulcrum pin - float
27	P-6249	Screw - main body attach.
30	P-24450	Throttle lever & stem assy.
31	P-16347	Throttle valve
32	P-4522	Screw - Throttle & choke valve attach.
41	P-18204	Choke valve
42	P-18202	Choke stem & lever
44	P-18190	Main body
45	425444	Throttle body - complete with #60-68 idle holes, throttle valve & stem
52	P-18194	Clip-choke return spring
53	P-15410	Hanger - float
54	P-9600	Gasket - main discharge jet
55	P-16326	Venturi 5/8"
56	P-17187	Pin-choke valve stop
57	P-12400	Washer - choke stem
58	P-16327	Bleeder - high speed #60
59	P-16353	Vent tube
60	P-18341	Spring - choke return
61	P-18206	Lever - choke
62	P-2290	Nut - choke lever
63	P-17081	Collar - throttle stem
64	P-16161	Setscrew - throttle stem collar



SERVICE PARTS LIST

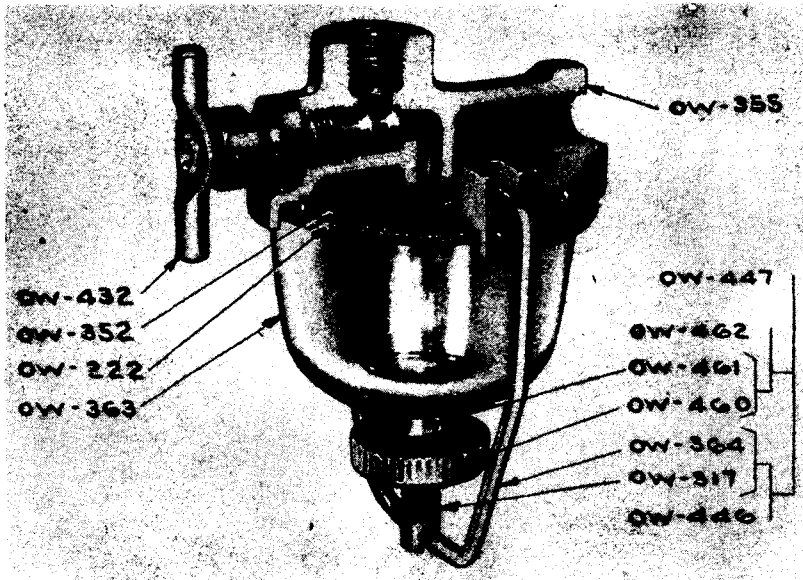
- | | |
|---------------------------------|-----------------------------|
| ① <u>OIL SEAL GASKET A-7421</u> | <u>FILTER UNIT A-7432</u> ⑤ |
| ② <u>TOP CAP A-9313</u> | <u>GASKET A-7419</u> ⑥ |
| ③ <u>TOP CAP GASKET A-7422</u> | <u>DECAL. A-9012</u> ⑦ |
| ④ <u>BODY ASSEM 7428</u> | |

PARTS LIST

LO-24 AIR FILTER

UNITED SPECIALTY CO. H-55-7185

<u>Part Number</u>	<u>Description</u>
A-7422	Gasket
A-9313	Top cap
A-7432	Filter unit
7428	Body assembly
A-7419	Gasket
A-7423	Decalcomania



PARTS LIST
LP-19 FUEL STRAINER
TILLOTSON OW418

<u>Part Number</u>	<u>Description</u>
OW-462	Thumb nut and clamp cup assembly Consisting of:
OW-460	Thumb nut
OW-461	Clamp cup
OW-446	Clamp cup stud and clamp wire assembly Consisting of:
OW-317	Clamp cup stud
OW-364	Clamp wire
OW-432	Shut-off cock
OW-361	Strainer cover (Main body)
OW-222	Gasket
OW-352	Strainer screen
OW-362	Strainer bowl

PARTS LIST - CAMSHAFT, MAGNETO, FUEL PUMP & FUEL LINE ASSEMBLIES ***

<u>Ref. No.</u>	<u>Qty.</u>	<u>Part Number</u>	<u>Description</u>
420	1	BG-140	Camshaft brg. ret.
438	1	EA-95	Camshaft
451	1	GB-42	Camshaft gear
470	1	K-92-A-1	Oil pump
489	1	LP-19	Fuel strainer
490	1	LP-20-A	Fuel pump
496	2	ME-70-1	Camshaft brg. cup - Timken #05185
496A	2	ME-70-2	Camshaft brg. cone - Timken #05079
501	1	OA-130	Mag. coupl. disc
502	1	OA-132-A	Mag. dr. member
511	1	PA-270	Pin for mag. dr. member
529	3	PE-3	1/4" lockwasher for mtg. cam. gear
529A	4	PE-4	5/16" Lockwasher for: 2-for mtg. oil pump 2-for mtg. fuel pump
529B	2	PE-5	3/8" lockwashers for mtg. mag.
533	1	PG-112	Support clip for fuel line
533C	3	PH-14-A	Lead washers for cam. brg. plate
535	1	PH-270-A	Oil seal for mag. dr. shaft
555	1	QD-531	Gasket for oil pump to case
556	7	QD-533-A	Gasket for cam. brg. ret.
562	1	QD-538-A	Gasket for fuel pump
575	1	RF-270	Elbow in fuel pump inlet
576	1	RF-320-2	Elbow in fuel pump outlet
577A	1	RF-795	Nipple for fuel filter to pump
582	4	RF-808	Tube nut for fuel line
588	1	RM-472	Fuel line - pump to tank
588A	1	RM-822	Fuel line - pump to carb.
623C	3	XC-17	5/16-18 x 3/4" flat hd. screw for cam. brg. ret. plate
624A	3	XD-6	1/4-20 x 3/4" hex. hd. screw for cam gear
624E	2	XD-17	5/16-18 x 1" hex. hd. screw for mtg. oil pump
624F	4	XD-27	3/8-16 x 1" hex. hd. screw for mtg. mag.
624D	2	XD-15	5/16-18 x 3/4" hex. hd. screw for mtg. fuel pump
631	2	XK-38	1/8" street ell for fuel strainer
635	1	Y-21-E	Magneto
641	1	YL-46	Spark plug wire to #1 cyl.
642	1	YL-47	Spark plug wire to #2 cyl.
643	1	YL-48	Spark plug wire to #3 cyl.
644	1	YL-49	Spark plug wire to #4 cyl.
645	1	YL-86	Wire on mag. - coil to dist.



100-10

GOVERNOR CONTROL LEVER ASSEMBLY

PARTS LIST - GOVERNOR CONTROL AND FLYWHEEL ASSEMBLIES

<u>Ref. No.</u>	<u>Qty</u>	<u>Part Number</u>	<u>Description</u>
421	1	BG-145-A	Main brg. plate w/crankshaft oil seal and ret. - fan end
459	1	HF-259	Oil seal cork for crankshaft-fan end
494	1	ME-71-1	Main brg. cup - flywheel end
495	1	ME-71-2	Main brg. cone - flywheel end
500	1	NC-141	Flywheel
509	1	PA-239	Pin for starting nut
512	1	PA-251	Pin for gov. control rod yoke
525C	1	PD-76	Nut for variable speed lever sup. pin
525D	2	PD-77	Nut for gov. control rod yoke
525F	1	PD-115	Nut for variable speed cont. brkt.
525G	1	PD-174-1	Wing nut for gov. control
525H	1	PD-175	Nut for mtg. gov. control
529	2	PE-3	Lockwashers for mtg. var. speed cont. brkt.
529D	1	PE-68	Washer for mtg. gov. cont.
530	1	PE-58	Lockwasher for mtg. start. nut
533A	1	PG-249	Variable speed control brkt.
533D	1	PH-22	Plain washers
	5	PH-26	4-for main brg. plate - fan end copper washer 2-for variable speed lever
533J	1	PH-30-A	Washer for screw support pin
536	1	PH-283	Oil seal for gov. cross shaft
538A	1	PI-115-B	Gov. spring adj. screw
546	1	PM-116	Gov. spring
559	2	QD-601	Gasket for main brg. pl. - fan end
597	2	SD-43	Oil seal ret. for crankshaft
609A	1	TC-351	Variable speed adj. screw swivel pin
609C	1	TC-356	Variable speed lever stop
609B	1	TC-352	Variable speed lever support pin
612	1	U-212	Starting crank
613	1	UC-73	Starting nut
614	1	VB-118-6	Gov. control lever
616	1	VB-107	Variable speed lever
617	1	VE-158-1	Gov. control rod yoke
618	1	VE-374	Gov. control rod to carb.
619	1	VE-347-2	Gov. cross shaft
619A	1	VE-475	Variable speed control
619B	1	VE-480	Rod & hd. assembly
619C	1	VE-477	Fitting for gov. control
619D	1	XA-4	Flat hd. screw for var. spd. cont. chain
623B	6	XA-34	1/4-20 x 1/2" rd. hd. screw 4-for shroud to cyl. hds. 2-for variable speed cont. brkt.
624	1	XD-4	1/4-20 x 1/2" hex. hd. screw for adj. screw supp. pin hole
625	1	XH-2	Taper pin for gov. cont. lever
624H	4	XD-29	.3/8-16 x 1-1/4" hex. hd. screws for main brg. plate - fan end
627A	2	XI-1	Cotter pins 1-for gov. cont. rod yoke pin 1-for cont. rod to carb.
627C	2	XI-7	Cotter pin 1-for variable speed lever 1-for chain at control
640	1pc.	#9100G	Furnace chain - 11 1/2" long



GOVERNOR AND MAGNETO DRIVE ASSEMBLY

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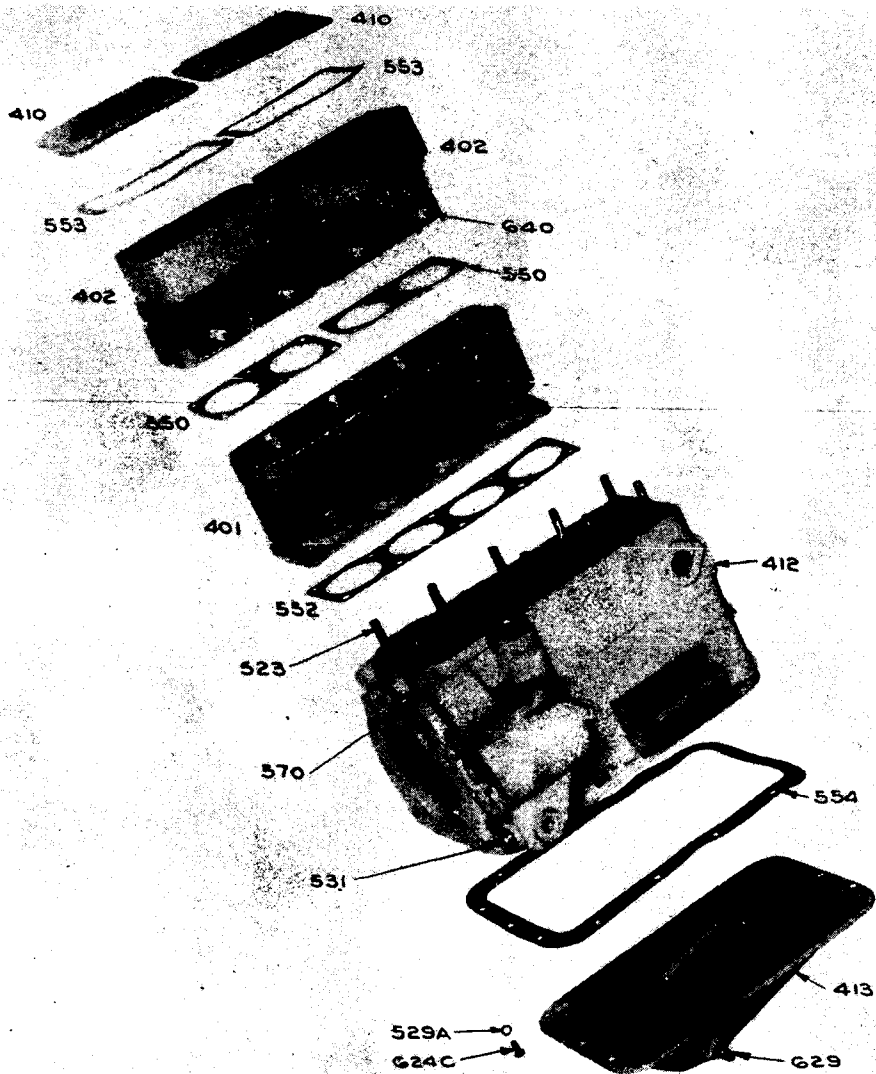
PARTS LIST - GOVERNOR AND MAGNETO DRIVE ASSEMBLIES

<u>Ref. No.</u>	<u>Qty.</u>	<u>Part Number</u>	<u>Description</u>
419	1	BG-196	Mag. dr. shaft bearing pl.
452	1	GD-92-A	Mag. gear
457	1	HF-354	Gov. thrust sleeve spacer
463	2	HG-188	Gov. dr. cross shaft bushing
465	1	JD-356-A	Mag. dr. shaft
497	2	ME-99-1	Mag. dr. shaft brg. cup
497A	2	ME-99-2	Mag. dr. shaft brg. cone
498	1	ME-100	Gov. thrust brg.
501	1	OA-130	Mag. coupl. disc
502	1	OA-132-A	Mag. dr. member
505A	4	PA-121	Pins for name plate
510	2	PA-265	Gov. flyweight fulcrum pin
511	2	PA-270	Pins 1-for mag. gear 1-for mag. dr. member
531	1	PF-79	Plug for gov. yoke clamp screw hole
531A	1	PF-18	1/8" slotted pipe plug for oil header
533C	4	PH-14-A	Lead, washer
535	1	PH-270-A	Oil seal for gov. dr. shaft
542	2	PL-14	#5 woodruff keys 1-for mag. dr. gear 1-for mag. dr. member
546A	1	PM-124	Spring for gov. thrust sleeve
557	5	QD-534-D	Gasket for mag. dr. brg. plate
578	1	RF-981	Elbow in crankcase for oil line to rocker shaft
591	1	SA-11	Plug for gov. cross shaft on gov. end
592	1	SA-31	Plug for oil pump dr. column
595	1	SD-32	Name Plate
605	2	TC-322-A	Gov. flyweight
606	2	TC-328	Gov. flyweight thrust pin
608	1	TC-346B	Gov. flyweight hub
609	1	TC-348	Gov. thrust sleeve
615	1	VB-106-2	Gov. yoke
623C	4	XC-17	5/16-18 x 3/4" flat hd. screw for mag. shaft brg. plate
626	1	XH-9	Taper pin for gov. flyweight hub
627	1	XH-9-1	Taper pin for mtg. gov. yoke to shaft
628	4	XI-33	Cotter pins for gov. flyweights



PARTS LIST - MANIFOLD CARBURETOR & AIR CLEANER ASSEMBLY

<u>Ref. No.</u>	<u>Qty.</u>	<u>Part Number</u>	<u>Description</u>
423	1	BI-189-A	Air filter brkt.
458	2	HF-258	Inl. manifold dowel tube
480	1	L-16-D	Carburetor
483	1	LD-208-F	Manifold
485A	2	LK-15	Hose clamps for air cleaner base
485B	1	LL-40	Hose for air cleaner
487A	1	LO-24	Oil bath air filter
488	1	LO-38	Carb. drip plug assembly
520	4	PC-333	Stud for manifold strap
525	4	PD-10	5/16-24 nuts for man. strap
525E	2	PD-78	Nuts for mtg. air cleaner brkt.
529	2	PE-3	1/4" lockwashers for mtg. carb.
529A	6	PE-4	5/16" lockwashers 4-for man. strap 2-for air filter brkt.
532	2	PG-100-A	Manifold strap
538B	1	PI-133	Stud & wing nut assem. for mtg. air cleaner
540	1	PK-70	Cyl. hd. shroud ret. spring
548	4	QB-75	Exh. man. gasket.
549	1	QC-53	Carb. mtg. gasket.
566	2	QE-18	Inl. man. gasket.
575	1	RF-270	Elbow in carb.
620	1	WD-34	Muffler
624D	2	XD-15	5/16-18 x 3/4" hex. hd. screw for mtg. air filter brkt.
624A	2	XD-6	1/4-20 x 3/4" hex. hd. screws for mtg. carb.
630	2	XK-13	1-1/4" pipe plug for manifold
632	1	XK-58	Street ell for exh. muffler



MAIN ENGINE ASSEMBLY

PARTS LIST - MAIN ENGINE ASSEMBLY

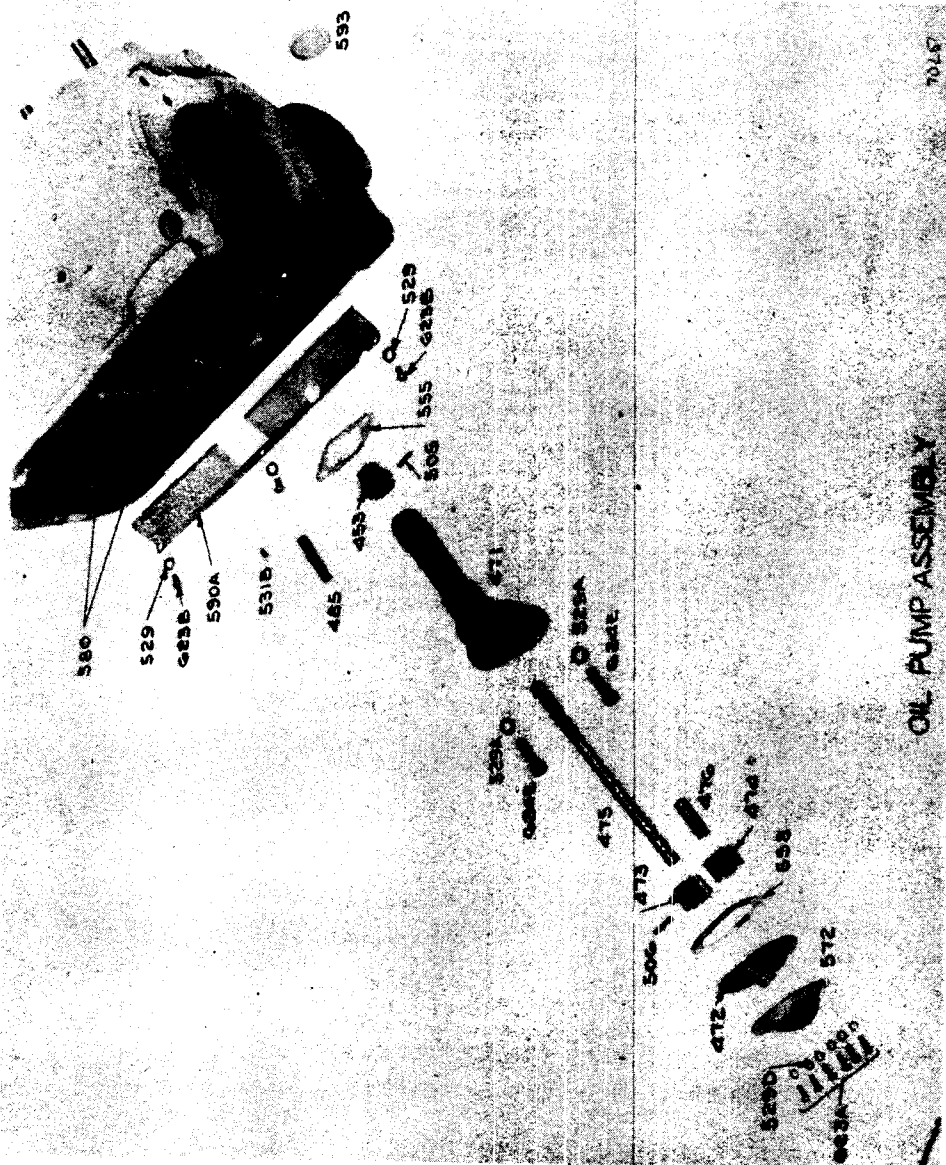
<u>Ref. No.</u>	<u>Qty.</u>	<u>Part Number</u>	<u>Description</u>
401	1	AA-78-B	Cyl. only
402	2	AB-73-A-2	Cyl. hd. with studs, inserts and push rod casings tube guides
402	2	AB-73-A-2	Cyl. hd. with studs, inserts, push rods and casing tube guides valves and springs
410	2	AN-37	Cyl. hd. cover
412	1	BA-46-G-4	Crankcase with studs, oil filler tube, oil filler screw, plugs, oil header, oil spray nozzles, and mag. dr. shaft bushings
413	1	BB-111	Oil pan
523	10	PC-337	Studs for cyl. base
529A	14	PE-4	Lockwashers for oil pan
531	1	PF-79	Plug for gov. yoke clamp screw hole
550	2	QD-525	Gasket for cyl. hd.
552	1	QD-528-A	Gasket for cyl. base
553	2	QD-529-C	Gasket for cyl. hd. cover
554	1	QD-530-B	Gasket for oil pan
570	1	RC-80	Oil filler screen
624C	14	XD-14	5/16-18 x 5/8" hex. hd. screw for oil pan
629	2	XK-2	3/8" square hd. pipe plugs for oil drain
640	4	YD-18	Champion #15 spark plugs

PARTS LIST - CYLINDER HEAD ASSEMBLY

Ref. No.	Qty.	Part Number	<u>Description</u>
404	4	AE-77-C	Exh. valve
405	4	AE-77-N	In. valves
406	8	AF-43	Valve springs
408	8	AG-26	Valve spring seats
409	8 pr	AH-9	Valve spring seat locks
410	2	SA-53	End plate for rocker shaft
437	1	DF-45-A	Spark plug wrench
440	8	FE-5	Valve push rod casing tube
439	8	FA-41-A	Valve tapper
441	8	FE-6	Valve push rod casing tube guide - in cyl. head
442	4	FX-146	Valve rocker lever - exh. - 1 & 3 in. - 2 & 4
443	4	FX-147	Valve rocker lever - exh. - 2 & 4 Inl. - 1 & 3
444	8	FX-148	Valve push rod
445	2	FX-149-A	Valve rocker lever shaft
461	8	HG-156	Valve seat insert
505-A	4	PA-121	Pins for name plate
516	8	PB-163	Screw for cyl. heads
521	4	PC-334	Studs for cyl. hd. cover
522	12	PC-335	Stud for cyl. head
524	2	PC-365	Stud for, cyl. shroud ret. spring
525	8	PD-10	5/16-24 nut for tapper adj. screws
525A	12	PD-11	3/8-24 nuts for cyl. head
525B	10	PD-12	7/16-20 nuts for cyl. base
526	4	PD-147	Wing nut for cyl. hd. cover
536A	8	PH-293-A	Washers for tap in cyl. heads or rocker shaft ends
537	8	PI-114	Valve tapper adj. screws
529	4	PE-3	1/4" lockwashers for shroud to heads
529B	12	PE-5	3/8" lockwashers for cyl. hd. studs
529C	10	PE-6	7/16" lockwashers for cyl. base
545	4	PM-73	Spring for spacing rocker levers
553	2	QD-537-A	Gasket for end plate
563	8	QD-598	Gasket for push rod casing tube
577	2	RF-1005	Str. conn. to rocker shaft
581	1	RF-1006	Tee for copper tubing to rocker shaft
585	3	RF-1038	Copper tubing for oil lines to rocker shaft
590	1	RJ-134	Oil level gauge
594	4	SA-40	Welch plugs for rocker shaft end holes
595	1	SD-32	Name plate
596	8	SD-42-A	Push rod casing tube seat
623B	1	XA-34	1/4-20 x 1/2" rd. hd. screw for shroud to hds.

PARTS LIST - CRANKSHAFT, CONNECTING ROD & PISTON & MAIN BEARING ASSEMBLIES

<u>Ref. No.</u>	<u>Qty.</u>	<u>Part Number</u>	<u>Description</u>
418	1	BG-137-A	Main brg. plate w/oil seal & ret.
430	1	CA-50-A	Crankshaft w/main brg. & crankshaft gear & key
431	4	DA-51-A	Conn. rod compl. Allowance on conn. rods in which brgs. have been burned out but which are otherwise in condition to be rebabbitted
432	4	DB-168-B	Piston
433	8	DC-151-A	Piston ring - compr.
434	4	DC-151-A-1	Piston ring - scraper
435	4	DC-137	Piston ring - oil
436	4	DE-62	Piston pin
450	1	GA-33-A	Crankshaft gear
460	1	HF-261	Oil seal cork - T.O. end .
462	4	HG-157	Piston pin Bushing
486	1	LJ-165-C	Oil filler tube
487	1	LO-7	Oil filler cap
494	2	ME-71-2	Main brg. cup - Timken #414
495	2	ME-71-1	Main brg. cone - Timken #420
515	8	PB-148	Conn. rod bolt
528	8	PD-148	Conn. rod bolt nut
529B	6	PE-5	3/8" lockwashers for mainbrg. pl.
531	1	PF-79	Plug for gov. yoke clamps screw hole
536	1	PH-283	Oil seal for gov. cross shaft
539	8	PK-52	Ret. ring for piston pin
543	1	PL-53	Woodruff key for crankshaft gear
544	1	PL-83	Key for flywheel
547	8	QA-108-A	Shim
551	2	QD-527-A	Gasket for main brg. pl. - T.O. end
568	2	QF-33	Shim for main brg. plate - T.O. end .006"
569	2	QF-33-A	Shim for main brg. plate - T.O. end
591	1	SA-11	Plug for cross shaft on gov. end
597	2	SD-43	Oil seal ret. for crankshaft
619	1	VE-347-2	Gov. cross shaft
624H	6	XD-29	3/8-16 x 1-1/4" hex. hd. screw for main brg. plate
627A	8	XI-1	Cotter pin for conn. rod bolt



OIL PUMP ASSEMBLY

70157

PARTS LIST - OIL PUMP ASSEMBLY

Ref. No.	Qty.	Part Number	<u>Description</u>
453	1	GF-83-2	Oil pump dr. gear
471	1	KA-55-A	Oil pump body
472	1	KB-34-A	Oil pump cover
473	1	KC-54-A	Oil pump gear - driver
474	1	KC-55-B	Oil pump gear - driven
475	1	KD-114-A	Oil pump drive shaft
476	1	KD-115-B	Oil pump stub shaft
485	1	LJ-239-1	Tube for oil saber
505	1	PA-117	Pin for oil pump gear - driver
506	1	PA-261	Pin for oil pump gear - driven
529A	2	PE-4	5/16" lockwashers for mtg. oil pump
529D	6	PE-14	#10 lockwashers for oil pump cover
529	3	PE-3	1/4" lockwashers for mtg. splash plate
531B	1	PF-97	Plug for oil saber boss hole
555	1	QD-531	Gasket for oil pump to case
558	1	QD-535	Gasket for oil pump cover
572	1	RD-110-A	Oil pump strainer
580	4	RF-905	Oil spray nozzle
590A	1	RK-162	Oil pan splash plate
593	1	SA-51	Plug for camshaft hole in case
623A	6	XA-8	Rd. hd. screws for oil pump cover
623B	3	XA-34	1/4-20 x 1/2 rd. hd. screws for oil splash plate in crankcase
624E	2	XD-17	5/16-18 x 1" hex. hd. screws for mtg. oil pump

**PARTS LIST - FUEL TANK & SHROUDING
ASSEMBLY**

Ref. No.	Qty.	Part Number	Description
525	4	FD-10	5/16-24 nuts for shroud & eng. support to case
525D	4	FD-77	1/4-20 nuts 2-for mtg. fuel tank straps 2-for fuel tank strap clamp screw
529	25	PE-3	1/4" lockwashers 11-for mtg. air shrouding 6-for mtg. flywheel screen 6-for fuel tank straps 2-for fuel tank straps clamp screws
529A	4	PE-4	5/16" lockwashers for flywheel shroud
529C	4	PE-16	7/16" lockwashers for eng. supports - T.O. end
532A	1	PG-173-A	Fuel tank strap T.O. end
532B	1	PG-174-A	Fuel tank strap flywheel end
534	2	PH-198	Ignition cable grammet
569A	1	RC-77	Easy-on gas tank cap
575	1	RF-270	Elbow in tank for fuel line
595A	1	SD-33	Wisconsin Decol
598	1	SD-43	Instruction plate
600	1	SE-20-B	Flywheel screen
601	1	SE-21	Flywheel shroud
602	1	SE-22-B	Cyl. shroud mag. side
603	1	SE-23-A	Cyl. hd. shroud mag. side
604	1	SE-24-B	Cyl. shroud - manifold side
621	1	WE-106	Fuel tank
622	1	WE-45-C	Engine support - flywheel end
622A	2	XA-52	Clamp screws for fuel tank straps
623	1	WE-46-E	Eng. support - T.O. end
623B	16	XA-34	1/4-20 x 1/2" rd. hd. screws 6-for flywheel screen 9-for shroud
624	8	XD-4	1/4-20 x 1/2 hex. hd. screws 2-for shroud to support 6-for fuel tank straps
624K	4	XD-71	7/16-14 x 1" hex. hd. screws for eng. support T.O. end
628A	4	XJ-31	Rivets for instruction plate