

INSTRUCTION BOOK
AND
REPAIR PARTS
CATALOG

No. 26---3½

No. 3½ Size

JAEGER

Concrete Mixers

IMPORTANT

Be Sure to Keep This Catalog of Repair Parts

The Jaeger Machine Company
Columbus, Ohio

READ THIS PAGE CAREFULLY

Don't be satisfied with thinking a certain part number is the one wanted. Look on the broken or worn part for a number. Also if not absolutely certain, send a sketch and full description.

Take your time in deciding which parts are wanted. Be sure you are right. We will do our best to fill your order right.

Help us help you.



Reproduction of Brass Plate (1/2 size) that is used in two places on each Jaeger Mixer. This gives you the Model and Serial Number to be used if repairs are ever needed.

The JAEGER Mixer No. 3½

Directions For Starting and Operating

Inspect all bolts and nuts to be sure that none have come loose in shipping.

Then try each grease cup to see that they are filled and give each a turn or two. Special attention should be given to the one in the center and UNDER MIXING DRUM, as this is the one which lubricates the main center shaft around which the drum revolves. This should be attended to at least twice a day.

Another important bearing to watch is the one in end of yoke between engine house and mixing drum. Keep this in mind and attend to it same as you do the one for center of drum. After you have found all grease cups and attended to them, then go all over the mixer and oil every part where you see two parts together that move.

Now read and study the engine instructions. See page 3.

After you have engine running and have stopped and started it several times to familiarize yourself with it, if you have a 3½L—a mixer with loader, run the loader bucket up and down a few times. To do this push lever which operates loader which engages clutch, when bucket is up to the top, then very quickly throw lever over to opposite position, which causes brake to be applied, and hold this position until you are ready to let bucket down. Release lever slowly and just before it reaches the ground apply the brake slowly. Repeat this several times until thoroughly familiar before attempting to mix concrete.

All the above should be done at least twice a day when mixer is in use. Study pages 3 and 4 before starting engine.

MIXING

A sufficient number of men should be used to charge mixer with the full batch in about half a minute.

Water, and all of it, should be put in first; *then Stone* should go in next; *then Cement* goes next; *then Sand* in last.

If you are using bank run of gravel you should put *water* in first; then half the amount of *gravel* and then *cement*, and then balance of *gravel*.

By following the above, you will get all the material properly mixed in the proper time.

LOADING THE LOADER BUCKET

If sand and stone are to be used put the sand in first, then the cement, then the stone. If bank run of gravel is to be used put the sand in, then the cement, then the balance of batch. By loading this way you will find your perfect mix will be made in less time than otherwise.

After all material is in mixing drum and loader bucket back down, immediately turn drum over to the other side, let it mix properly (which is in most cases about 30 to 45 seconds). You are now ready to discharge the mixed batch.

Do not let the materials stay in the mixer any longer than necessary, as you would simply be wasting time. The length of time required for mixing depends somewhat on the materials and how dry or wet. Ordinarily concrete wet enough to flow requires 30 to 45 seconds, while dryer concrete takes a little longer time.

Always provide a means of taking care of the mixed concrete, from the machine so your machine and men will not be held up.

WATER TANK

If there is a water tank on your machine—connect hose to connection, turn on water and tank will fill. Dump tank of water into drum and try a batch of concrete. If too wet, set the stop against which the water tank lever hits down a little; this will keep you from dumping in so much water; if too dry, set it up a little.

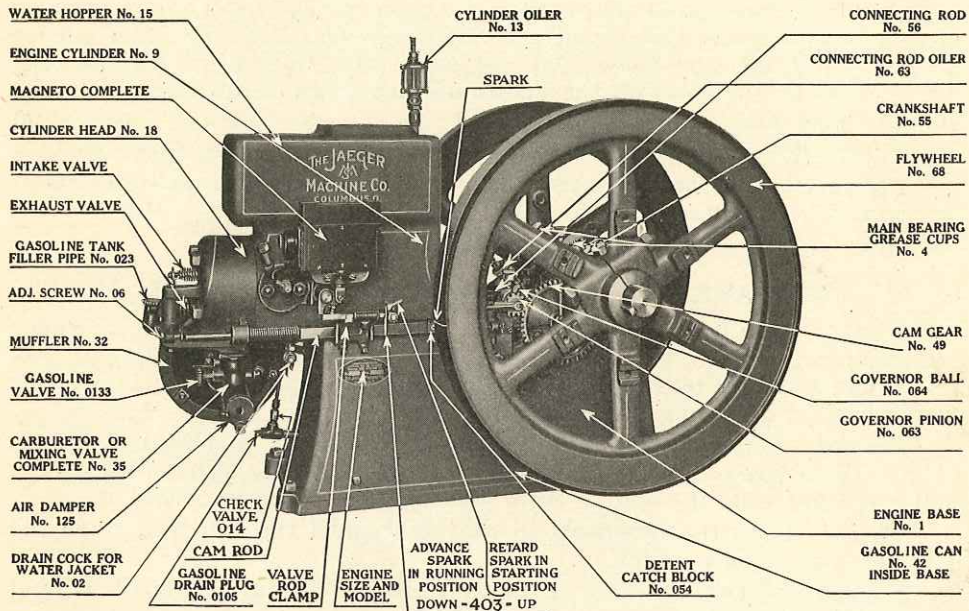
Do not try to adjust float in tank, but adjust lever stop instead. Do this as it is important—it will save a lot of time for you; and don't forget to put all the water for each batch in the drum first.

KEEP MIXER CLEAN

Always be sure to throw in a bucket of water and wash out mixing drum whenever mixer is going to be stopped for any length of time. Keep engine clean by washing it off with kerosene occasionally.

INSTRUCTIONS—The Jaeger Engine, "Type-H"

Oil the engine thoroughly, especially the cam rod, No. 48, the valves, No. 19. See that all parts work freely. The sight feed lubricator, No. 13, which oils the piston and cylinder, should be filled with the cylinder oil and adjusted so that it will drop about 10 drops per minute. See that the grease cups are filled and screwed down a little.



THE USE OF GASOLINE

Be sure that you get a good grade of gasoline and be particular to strain the gasoline into the tank.

THE OILING

You should use only the best grade of oil and should be careful that the valves in the head, the cam rod, as well as the bearings of the engine are frequently oiled, especially the governor stem. Be careful that the hard oil cups are kept full. You never should start up your engine without oiling the valve stems in the head, the cam rod, and the igniter, as well as the governor. It is a good plan to wash engine all over with kerosene occasionally to cut off the grease and dirt.

THE WATER IN THE HOPPER

Should be kept within about two inches of the top. This water will boil when the engine is in operation under load, but do not be alarmed about this. When the water is boiling, the engine is developing the greatest amount of power with the least use of gasoline. All that you need to be careful about is, that there is plenty of water in the hopper.

IN COLD WEATHER DRAIN BOTH THE CYLINDER AND CYLINDER HEAD AT NIGHT TO PREVENT FREEZING.

TO ADJUST THE AUTOMATIC GREASE CUP, No. 63, ON CONNECTING ROD

For summer use—cut down the amount of grease by turning the screw in the shank of the cup until the hole in the bottom of the cup is half closed. Fill the cup and before placing on the engine see how fast it feeds. A cup full of grease should last half a day.

For winter use—the hole in the bottom of the cup should be wide open. You can adjust the screw in the shank of the cup by trial, until you get the proper amount of grease for this bearing.

Oil all movable parts thoroughly and turn the flywheels around two or three times to work the grease into the bearings. Oil the valve stems, No. 19, and make sure they work perfectly free, *feed oil to hole in cam*, No. 49, also be sure and oil the piston and let a few drops run down into tube to piston pin.

Fill the tank in engine base with gasoline. Pour in Filler Pipe, No. 023.

Put just enough water in the water hopper to cover the cylinder about two inches. If convenient use warm water in cold weather. Do not use boiling hot water, as you are liable to crack the cylinder.

YOU ARE NOW READY TO START THE ENGINE

First. Open the needle valve, No. 0133, on carburetor, No. 35, under cylinder head, No. 18, two full turns to the left, close the air damper, No. 125, turn on the oil by raising the lever on the lubricator, No. 13, and be sure the oil is dropping properly.

Second. Place the timing lever, No. 403 on magneto (Figures 12, 13, 14 and 15), Pages 12 and 13, in the starting position. This retards the spark and prevents the engine from kicking back when you start it.

Third. Turn the flywheels to the right until the trip rod trips the igniter which causes a click.

Fourth. Put on starting crank and give a few quick turns over and the engine will start.

Fifth. As soon as engine starts open the air damper, No. 125, (Figure 2), Page 7, change the timing lever, No. 403, (Figures 12, 13, 14 and 15), Pages 12 and 13, to the running position and close the needle valve, No. 0133, slowly until the point is reached where the engine runs with the least number of explosions and without black smoke appearing at the exhaust or a popping sound at the mixer, the latter being caused by an insufficient supply of gasoline, and smoke at the exhaust by too much gasoline.

TO STOP THE ENGINE

First. Shut off the gasoline by closing the needle or fuel valve, No. 0133, see Page 3.

Second. In cold weather drain the water from the reservoir by opening the drain cock, No. 02, underneath the cylinder, also remove plug from bottom of cylinder head. Be sure to do this, as even a light frost may crack the cylinder or cylinder head by freezing the water.

Third. Turn flywheel until exhaust valve closes. This prevents corroding of valve seats and injury to cylinder.

STOP—LOOK—LISTEN

If your engine does not give perfect satisfaction, do not call an expert; read the following pages.

Every engine is carefully tested and inspected to insure our customers 100 percent service.

If Engine Will Not Start or is Hard to Start

An engine to give satisfactory results must get a good mixture of fuel and a good spark, at the proper time, inside the cylinder.

To do this, it is absolutely necessary that you use the proper amount of fuel that is free from water, and there is no obstruction to prevent its flow. Read very carefully the following paragraphs:

FUEL, CLEAN CONNECTIONS

Make certain there is plenty of gasoline in tank.

See if the gasoline flows to the mixing valve. Dirt sometimes gets into gasoline pipe and collects on the gasoline valve under the check valve. Clean all connections carefully.

If you find the mixing valve or connections are dirty, drain the tank by removing the plug and strain the fuel through a chamois skin, which will keep out the dirt and water.

WATER IN GASOLINE

Water in gasoline will cause loss of power. The presence of water is rather hard to detect, but if doubtful you can make certain by straining the fuel through a chamois skin. This is rather dangerous, however, as the gasoline, being a volatile substance, in passing through the chamois forms static-electricity, which will cause sparks unless the funnel fits securely on a conducting material which is properly grounded; in other words, if the funnel fits securely on the mouth of the tank which is properly grounded on engine, you will need fear no danger from this source.

TOO MUCH GASOLINE

It is a common mistake to flood the cylinder in starting engine, which makes it very hard to start. Unless engine is subjected to a low temperature, do not flood the cylinder, as engine can be choked down by feeding too much gasoline just as easily as by not feeding enough. If gasoline is subjected to low temperature, the rate of vaporization is much lower and an extra amount of gasoline is necessary.

TOO LITTLE GASOLINE

If engine is not given the proper amount of gasoline there will be a popping and back-firing out of air inlet; however, this popping noise is also caused by poor ignition, valve not seating properly, or poor mixture. It is possible that the head gasket has given out, allowing water to leak out and mix with the gasoline; if so, it will be necessary to replace with a new gasket. Generally, the leak is so slight that after engine has once been started the leak is not noticeable.

IGNITION

Be sure the magneto wires are properly attached, in good condition, and that a bare wire does not touch any part of the engine.

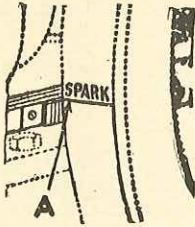
Make certain that:

- (a) The spark plug is clean.
- (b) The valves be properly timed. Read very carefully paragraphs on Valve Timing (Page 9).
- (c) The magneto furnishes a spark, and see that it takes place at the proper time.

If Engine Dies Down After Starting

LACK OF GASOLINE

See that there is proper amount of gasoline in tank.



FAULTY IGNITION

Be sure Timing Lever No. 403 is in running position then turn the flywheels to the right until the piston starts back into the cylinder on the compression stroke, then continue to turn the mslowly until the word "Spark" on the rim of the flywheel is opposite the top of the cam rod. This is the point at which the spark should be made.

If Engine Has No Power

SPARK REGULATION

Have you advanced spark; that is, have you placed Timing Lever No. 403 back in running position after you have started engine?

POOR MIXTURE

The greatest percentage of causes of lack of power can be traced down to poor mixture. If the charge is not mixed properly, it makes a slow burning mixture which will, in most cases, cause back-firing, owing to the charge burning so slowly that it fires the incoming charge, which, of course, would naturally escape back through the mixer on account of inlet valve being open.

Owing to the variance in atmospheric conditions, there is no certain point at which the needle valve may be adjusted; however, if you will carefully watch action of engine and adjust it at a point at which the engine runs most regularly, and without excessive exhaust, you will have no trouble along this line.

Test fuel for water. Water in fuel will cause loss of power. See Page 5.

Make certain that the exhaust valve is closing on inner center. See Page 9.

If valves do not seat properly, remove same and grind them down so that they fit the valve seats properly. This adjustment is fully explained on Page 9.

MISCELLANEOUS

Make certain that the working parts, such as gears, governors, etc., are properly oiled. It is well to examine the oil tube in piston from time to time and make sure that this is not clogged up.

In cold weather, much attention must be paid to lubrication. If the oil is subjected to low temperature it will have a tendency to thicken to such an extent that it will not flow freely down oil pipe. In such cases, it is well to warm the oil before starting.

Oil the governor so that it works freely; also feed the proper amount of oil to oil hole in cam and to the pocket in governor bracket through which cam rod works.

HOW TO ADJUST THE GASOLINE VALVE

The mixing valve or carburetor (Figure 2) is of the suction feed type, gasoline being drawn from the tank in the base by the suction of the piston. The air and gasoline are mixed in this valve to form the explosive gas.

When you start the engine, open the fuel valve, close the air damper and turn the flywheel to the right; this draws a supply of gasoline from the tank and primes the valve. It is a common mistake to flood the cylinder in starting engine. Open fuel valve one-half turn on 2 H.P. engine and from one to two turns on the larger sizes. In cold weather use more fuel. After the engine is running, open the air damper and close the fuel valve slowly until the point is reached where the engine runs with the least number of explosions and without black smoke appearing at the exhaust, or a popping sound at the mixer, the latter being caused by an insufficient supply of fuel, and smoke at the exhaust by too much fuel.

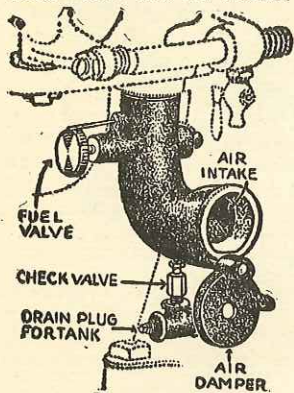


Figure 2

If it is ever necessary to take the mixing valve and feed pipe off the engine, be very careful not to lose the valve out of the check valve, because if this valve is not in place your engine will not get any gasoline. To drain gasoline from tank remove drain plug. (See Figure 2.)

THE GOVERNOR

The governor controls the speed of the engine and is of the ball type. When the engine runs above its regular speed, the balls on the governor widen their circuit, which presses in on the pin going through the governor spindle. This forces the detent blade in so that it catches behind the block on the cam rod and holds the exhaust valve open, at the same time stopping the spark and cutting off the supply of fuel, until the speed of the engine is reduced to where it should be, then the detent blade flies out again, releasing the cam rod and the engine takes up its regular operations. *When running, empty the engine exhaust every eight to ten revolutions of the flywheel.*

HOW TO ADJUST THE DETENT BLADE

When the exhaust valve is wide open and the detent blade is pushed in behind the catch block on the cam rod, there should be only the thickness of a postal card between them. When adjusting the detent blade, the speed lever should be set at lowest speed and the detent blade should stand about one-sixteenth inch away from the catch block.

To adjust the detent blade loosen the locknut and screw the adjusting screw either in or out, until you have the blade where it should be, then tighten the locknut.

THE DETENT CATCH BLOCK

The catch block on the cam rod is made of tool steel and should last a long time. If the block should wear on one side so it does not hold the detent blade properly, file off the point of screw where it is riveted on side of rod next to engine, remove the screw with a screwdriver and turn the catch block around, using the other side. After both sides of the block are worn, it will be necessary to replace same with a new one. (See No. 054 in List of Repairs, Page 21.)

HOW TO PUT ON THE CAM GEAR

If it is ever necessary to take off the cam gear or to put on a new one it must be put on in a certain position, as the cam on the gear controls the time of the spark and the opening and closing of the valves, in fact, every operation of the engine depends on this cam being set just right.

To put on the cam gear, hook detent blade back of catch block, turn the flywheels around until the key in the crank shaft is straight up, as shown by "B" in Figure 3; then set the two teeth that are just under the indicator "A" on the cam gear over the one tooth that is just above the Key "B"; then roll the cam gear around to the right until it reaches the position as shown by dotted gear, being sure to keep the gear teeth together. Then slip the cam gear pin in place and fasten it with the lock washer and nut.

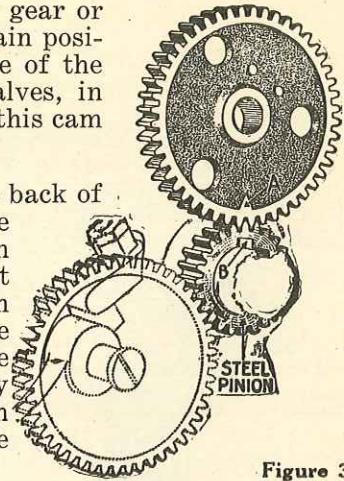


Figure 3

Be very careful in putting on this gear to see that it is just right. One tooth out of the way makes a decided difference in the way your engine will run.

HOW TO PUT ON THE CAM ROD SPRING

The cam rod spring holds the cam rod and roller against the cam rod on the cam gear. As this spring does a lot of work it may wear out; if it does, buy a new one. (See No. 059 in List of Repairs, Page 21.) To put on a new spring, remove the cylinder head, slip the spring over the end of the cam rod and replace spindle screws into the governor pinion.

HOW TO TAKE OFF AND PUT ON A FLYWHEEL

To take off the flywheel, loosen the bolt and drive iron or wooden wedges into the slot, one on each side of the hub. This will loosen the flywheel so it can be removed.

When replacing flywheel, place wheel in proper position on shaft, tighten the bolts down securely and drive in key.

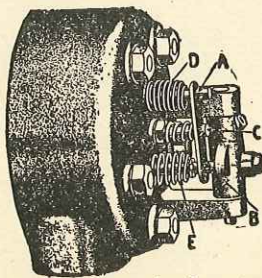
TO TAKE OFF THE GOVERNOR BALLS, SPINDLE OR PINION

If you find it necessary to take the governor apart, first take off the governor pinion. To do this hold the flywheels stationary, which locks the gears, then take a wrench, stand on the governor side of the engine and turn the governor balls to the right, as the pinion is put on with a right hand thread. The governor spindle screws into the governor pinion.

VALVES

The inlet valve "A," as shown in the illustration, is opened by the suction of the piston. For the entire length of the suction stroke gas is being drawn into the cylinder; then when the piston starts to compress the gas this valve closes and is held shut by the valve lock "C," so that no gasoline is wasted.

If there is a loss of fuel at the opening of the mixer loosen the locknut on the valve lock stud "C" and screw stud out one turn and tighten locknut. If engine does not get enough fuel loosen locknut as above and screw stud in one turn and tighten locknut.



VALVE TIMING

In many cases where engine is hard to start, trouble can be traced to the valves not being timed properly.

As this is a four-cycle engine, we will show you the four distinct parts in the movement of the piston and crankshaft and the timing of the valves.

The first is known as the suction stroke, during which time the piston is traveling from extreme inner to extreme outer position, causing a vacuum which automatically opens the inlet valve and admits a charge of gasoline mixed with air from the carburetor.

In the next, or compression stroke, the piston returns from extreme outer to extreme inner position, compressing the charge which has been drawn into the cylinder. During this stroke both valves remain closed. The spark taking place just before the end of this stroke.

The third, or power stroke, is caused by the force of the explosion in the cylinder driving the piston out again to its outer position. Before the piston reaches the extreme outer position the exhaust valve is opened by means of a cam which pushes out the cam rod and works the valve lever and lifts the valve. The proper time for this valve to start to lift is when the crankshaft is half way between the vertical and horizontal position on the downward part of this stroke.

We now come to the last or exhaust stroke. The exhaust is already open so as the piston returns from its outer position it drives the burnt gases out into the exhaust pipe. The exhaust valve remains open until the crankshaft has passed the inner center 3 degrees or 5 degrees.

This adjustment is controlled by means of No. 06 adjustment screw, and is easily regulated.

Notice the setting of this valve from time to time, as this may work out of adjustment as the engine is used.

If exhaust valve spring has weakened to such an extent that suction is pulling in exhaust valve, replace with new spring.

When cam rod is not in contact with No. 06 adjusting screw, the No. 24 valve lock lever should not bind on either valve stem. This can be easily regulated by readjusting the "C" valve lock stud. See illustration on Page 8.

HOW TO GRIND THE VALVES

When an inlet or exhaust valve leaks, remove the cylinder head, take off the valve springs, remove the valve you want to grind and wash it and the valve seat in gasoline, then make a paste of fine emery dust and oil. If you cannot get emery dust, use powdered pumice stone with oil. (You can get powdered pumice stone at almost any drug store.) Smear this on the valve and valve seat, put the valve in place and put a nail through the hole in the valve stem on the outside of the head, grasp the nail with your fingers and turn from left to right for a minute or so, then lift the valve and turn it about half way around and repeat this until the valve and valve seat show an even surface all the way round.

After the valve is ground in, wash off the emery dust with gasoline and do not get any dirt on the valve seat. In replacing the valves be sure to get the heavy spring on the exhaust valve and the light spring on the inlet valve.

PACKING THE CYLINDER HEAD

We use a special graphite asbestos packing between the cylinder and cylinder head to prevent the escape of the compressed gas.

To repack the cylinder head in case the packing should blow out or if you should break the packing when removing the cylinder head, you can use ordinary asbestos packing such as you buy at your hardware store or the kind we furnish under No. 17 on Page 21. If you use the ordinary asbestos packing, soak it in linseed oil; if you buy our special graphite asbestos packing or gasket, it is all ready to be put on.

Before putting on new packing be sure all particles from the old packing which may have stuck to the cylinder or cylinder head are scraped off and that these parts show a smooth, clean surface. If all the old particles are not cleaned off the new packing will blow out in a short time.

After you have the packing in place push the cylinder head in close to the cylinder and screw on the nuts by hand as far as they will go. then use a wrench and turn each nut, one after the other, about one-half turn at a time. *Do not screw one nut down perfectly tight and then go to the next, as this causes an uneven joint and the packing will not hold.* After the engine has been running for about ten minutes tighten the nuts again and you will have a perfectly tight joint.

If you make a new packing from sheet asbestos you must be sure to cut openings in the packing so that water can circulate from the cylinder, through the cylinder head and around the valves; if you fail to cut these water openings the cylinder head will get too hot and be ruined.

BEARINGS

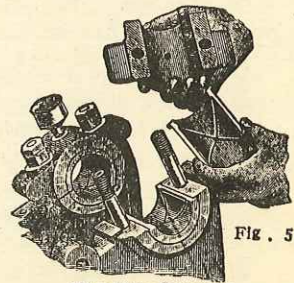
Be sure all bearings are kept properly adjusted. An engine should never be run with a bearing that is too loose or too tight. A loose bearing will soon rack your engine and break something, and a tight bearing will heat up and soon melt.

The main bearings and crankshaft end of connecting rod have die cast bearings which fit perfectly into the machined bearings. The piston end of the connecting rod has a cast bushing.

All the bearings can easily be replaced; the bearing in the piston end of the connecting rod can be driven out and a new one driven in.

The crankshaft bearings and the bearing in the crankshaft end of the connecting rod are made of a special die cast babbit. They are fitted with steel liners so you can take up any wear in the bearings. Remove the bearing cap and take out enough of the steel strips from both sides of the bearing so it fits snug.

After you have removed the steel strips and put the cap back on again, screw down the bolts, but before starting the engine open the exhaust valve by pushing the detent blade in behind the catch block on the cam rod and turn the flywheels around by hand to see that they turn freely. If they bind you have taken out too many steel strips and you will have to put enough back until the flywheels turn easily. Watch the grease cups closely and give them a quarter turn each time you start the engine. See that all bolts are tight and you will have no trouble with the bearings.



The Main Bearings.

PISTON AND RINGS

As explained, what makes the engine run is the combination of air and gas drawn into the cylinder by the suction of the piston, this gas being compressed before it is exploded. To compress this gas it is necessary that the space in the cylinder be gas-tight. The piston is fitted to the cylinder and makes a fairly tight joint, but on account of the expansion of iron when it gets hot, it is necessary to have some other means of keeping the gas from escaping. Each piston is fitted with three rings that spring out and press against the walls of the cylinder, preventing the gas from escaping.

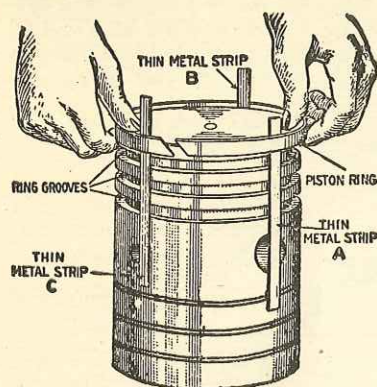


Figure 6

These piston rings hold the compression and must fit free in the grooves of the piston. Feeding a poor grade of gasoline or lubricating oil, or too much of either, will cause a carbon deposit to form around the rings, which will in time bind them in the grooves, so they cannot spring out against the walls of the cylinder to hold the compression. It is very necessary that you use the proper grade of oil and watch the supply of gasoline, for on this depends the proper running of the engine.

Before removing the piston from the cylinder, take out the connecting rod bolts at the crankshaft end of the connecting rod. Remove the bearing which loosens the connecting rod from the crankshaft. Next, you will have to take off the governor spindle, as instructed on Page 8, which gets the spindle and balls out of the way. This is all of the governor that you will have to take off, as the piston will not slip out of the cylinder.

If you find the piston rings are gummed or held tight in the grooves, they must be thoroughly cleaned. To do this you will have to remove the rings and wash them in kerosene or gasoline and you may have to scrape them with a knife.

To remove the rings take three thin metal strips (pieces of an old hack saw blade are fine for this) and slip under the center ring. Start the first strip under the ring at the joint and force it all the way around until you have it at the position shown by "A," Figure 6, then slip the second strip to "B" and the third to "C," which will raise the ring out of the grooves so it can be slipped off. Take the top ring next and repeat the operation; then the bottom ring.

In replacing the rings, put the center ring on first, using the three metal strips as before, then without the three metal strips you can slip the top ring on and then put the bottom ring on, bringing it up from the bottom of the piston. Before putting the piston back in the cylinder, oil the rings and surface of the piston thoroughly.

If, after going over the adjustment of each part according to the instructions in this book, you cannot get the engine to run satisfactorily, write us a letter. Tell us just what you have done, just how the engine acts, and we will tell you by return mail just what to do.

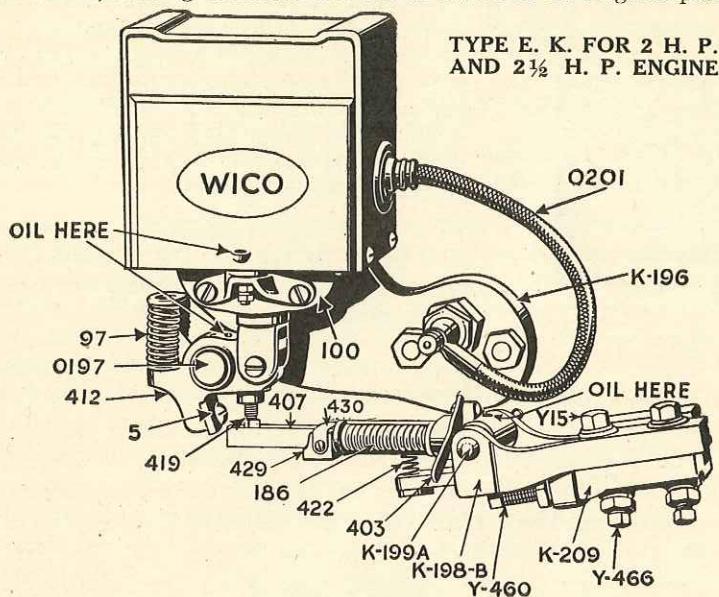
If, in writing, you refer to any certain part, give the regular repair list number of same so we will know exactly what you are referring to.

Wico Magneto

WITH COMPLETE EQUIPMENT

Used on all Models after March 1, 1923

The numbers on Figure 15 will be used in the instructions on adjusting Wico Magnetos. Figure 15 is cut of Type E.K. showing position of the trip finger No. 407 and armature No. 100, after the contact between armature No. 100 and the face of the cores No. 107 has been broken, also the point where trip finger No. 407 trips off of rocker arm No. 412, causing armature No. 100 to return to its original position.



TYPE E. K. FOR 2 H. P.
AND 2½ H. P. ENGINE

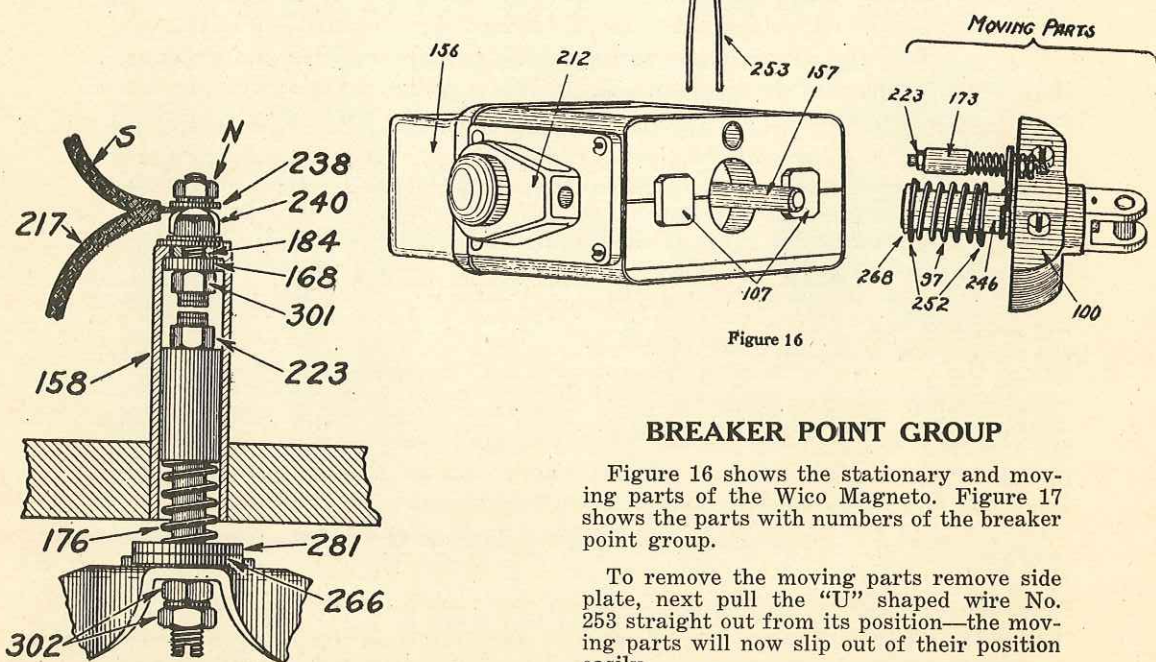


Figure 16

BREAKER POINT GROUP

Figure 16 shows the stationary and moving parts of the Wico Magneto. Figure 17 shows the parts with numbers of the breaker point group.

To remove the moving parts remove side plate, next pull the "U" shaped wire No. 253 straight out from its position—the moving parts will now slip out of their position easily.

Figure 17

ADJUSTMENTS

LATCH-OFF OF TRIP FINGER

(See Figure 15)

The rocker arm (412) is provided with a screw (419) and locknut for adjusting the "latch-off" of the trip finger. This screw must be set so that the latch (407) will slip off the lip of the rocker arm just after the breaker points have been opened by the downward movement of the armature.

If the screw is screwed OUT too far the breaker points will not open and the magneto will not spark.

If the screw is screwed IN too far the trip finger will drive the armature down too far and possibly break the return spring or the part that holds it.

This adjustment will be made originally by the engine builder and should not require attention thereafter. It has nothing whatever to do with the time of the spark.

If necessary the adjustment can be made as follows:

Trip the armature (100) from its contact with the cores (107) and insert a strip of metal 7/64" thick between the armature and the face of the cores. Move the push rod slowly until the latch of the trip finger reaches the rocker arm. The edge of the latch should then just engage the edge of the lip of the rocker arm, and the adjusting screw (419) should be bearing on the top side of the latch, (see Figure 15) so that the least further movement of the push rod will cause the latch to slip off the edge of the rocker arm.

If the latch does not engage the lip of the rocker arm when armature is set as above the adjusting screw should be screwed in until the latch just engages. If the latch engages the lip of the rocker arm too much (more than 1/32") unscrew the adjusting screw to give the proper engagement.

Loosen the lock nut on the adjusting screw (419) before attempting to change adjustment and be sure to set it up tight after the adjustment has been made. Remove the metal strip before attempting to start the engine.

ADJUSTMENT OF BREAKER POINT

(See Figure 17)

The breaker point contacts are perfectly adjusted at the factory, and no readjustment will be required except when installing new contacts, at which time proceed as follows:

The breaker point contacts (301) and (223) should just touch when the armature (100) is 7/64" from the cores (107). To adjust, trip the armature from its contact with the cores, and insert a strip of metal 7/64" thick between the armature (100) and the face of the cores. Loosen the nuts (302) on the breaker point stem, (see Figure 17), and turn the upper nut until the contact (223) just touches the contact (301). Then set up the lower nut tight against the upper nut. As soon as adjustment has been made, be sure to remove the strip that you placed between armature and cores.

REPLACEMENTS

BREAKER POINTS

(See Figure 17)

The best results will be obtained if both contacts are renewed whenever one of them fails. If either contact fails it may leave the other in such uneven shape as to spoil a new contact.

To replace the moving contact (223): Withdraw the moving parts (see Figure 16), and remove the old contact and its spring (176) from the breaker point plate by unscrewing the two nuts (302). Substitute the new moving contact, being careful to replace the felt washers (266 and 281) as shown in Figure 17.

Replace the nuts and the lock washer between them. After replacing the moving parts, adjust the breaker point contacts as explained under "Adjustments."

To replace fixed contact (301): Remove the front cover and the spring support (253) and withdraw the moving parts (see Figure 16). Disconnect condenser lead (S) and primary lead (217) from breaker point tube (158). Remove all nuts and washers from shank of the contact (301) and push contact down and out of tube. There are two insulating washers (168 and 184) inside of tube and these should be removed also.

New insulating washers (168 and 184) and new nuts will be supplied with each new fixed contact and these should always be used in replacements.

Place insulating washers on new contact and insert in tube, replace outside insulating washer, cover it with the large brass washer and lock washer and screw the nut up tight. Replace the two washers (240 and 238) and the nut (N). Insert the two leads and set the nut up tight. After replacing the moving parts, see that the contacts are in proper adjustment (See "Adjustments," Page 13.)

LATCH AND LATCH BLOCK EDGES

(See Figures 14 and 15)

If the edge of the latch (407) becomes worn where it engages latch block (5), a fresh edge can be obtained by clamping the latch in a vise and pulling it out of the trip finger and giving it a quarter turn before replacing it. A fresh edge on the latch block (5) may be obtained by loosening the latch block screw and giving the latch block a quarter turn before replacing it. The screw is headed over at its outer end and the heading should be filed off before attempting to loosen the screw. Be sure to replace the lock washer and set screw up tight. The latch-off screw (419) should be removed to get at the latch block screw. After the latch block is replaced, the latch-off adjustment should be made as described under "Adjustments," see Page 13.

TROUBLE HUNTING

If ignition trouble is suspected, disconnect spark wire from plug and observe spark between wire and engine frame, by holding end of wire about $\frac{1}{8}$ " from frame while cranking engine.

If no spark is produced when magneto is operated, the trouble can be located by proceeding as follows:

See that the armature (100) returns and makes a firm contact with the cores (107) after being tripped off.

Failure to make firm contact indicates a weak-end or broken return spring (97) or friction of moving parts caused by lack of oil.

Remove any dirt from between armature and face of cores.

Turn the flywheel over slowly and see that when the armature (100) is tripped it snaps quickly away from the cores (107). Failure to do this indicates binding or friction or a broken drive spring (186). (See Figures 14 and 15).

Remove the front cover and use a small wire or piece of wood to remove any dirt from the surfaces of the contacts (301 and 223) and from the insulating washer (168). (See Figure 17). See that electrical connections are tight.

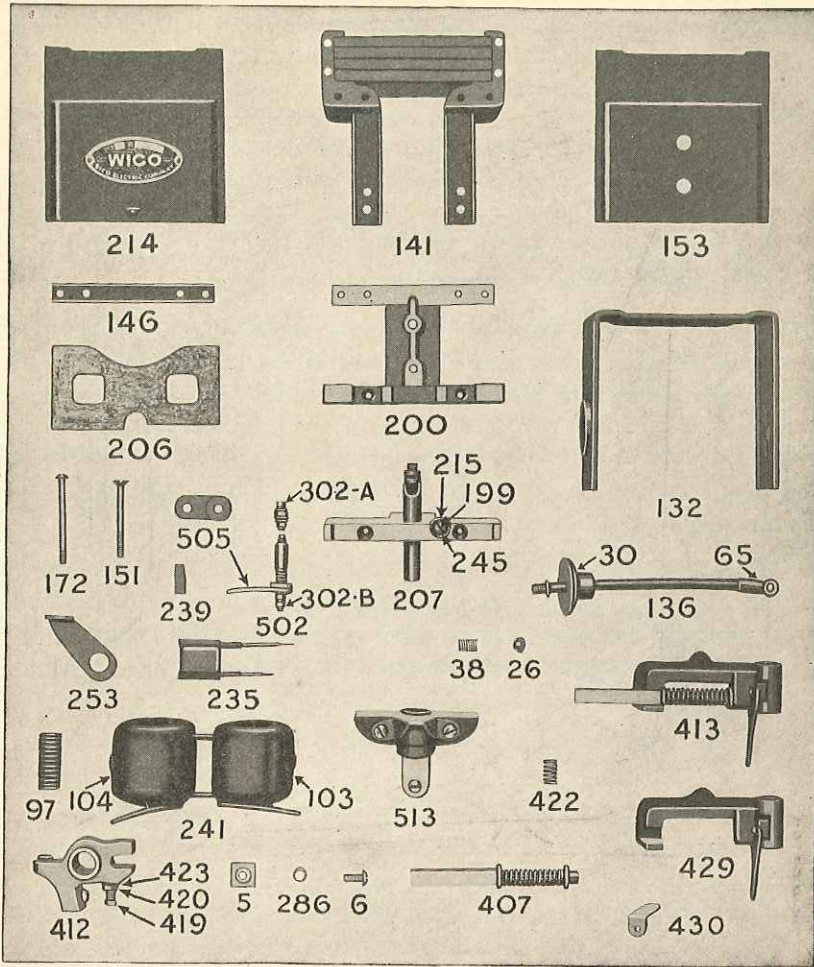
* * *

SPECIAL NOTICE

Before making any adjustments on the Wico Magneto be sure it is at fault.

Start at the spark plug to look for trouble. If you do not get any spark or the spark is weak see that the plug is cleaned of all carbon also examine the porcelain of the spark plug to be sure it is not cracked. If spark plug is in good condition and you fail to get a spark then examine the lead wire, look for breaks and loose connections. Do not try to make adjustments on working parts of magneto until you are sure that the spark plug is clean—then proceed with adjustments as shown on Page 13. To clean a spark plug always take it apart, then adjust fuel and lubricating oil to stop fouling of plug.

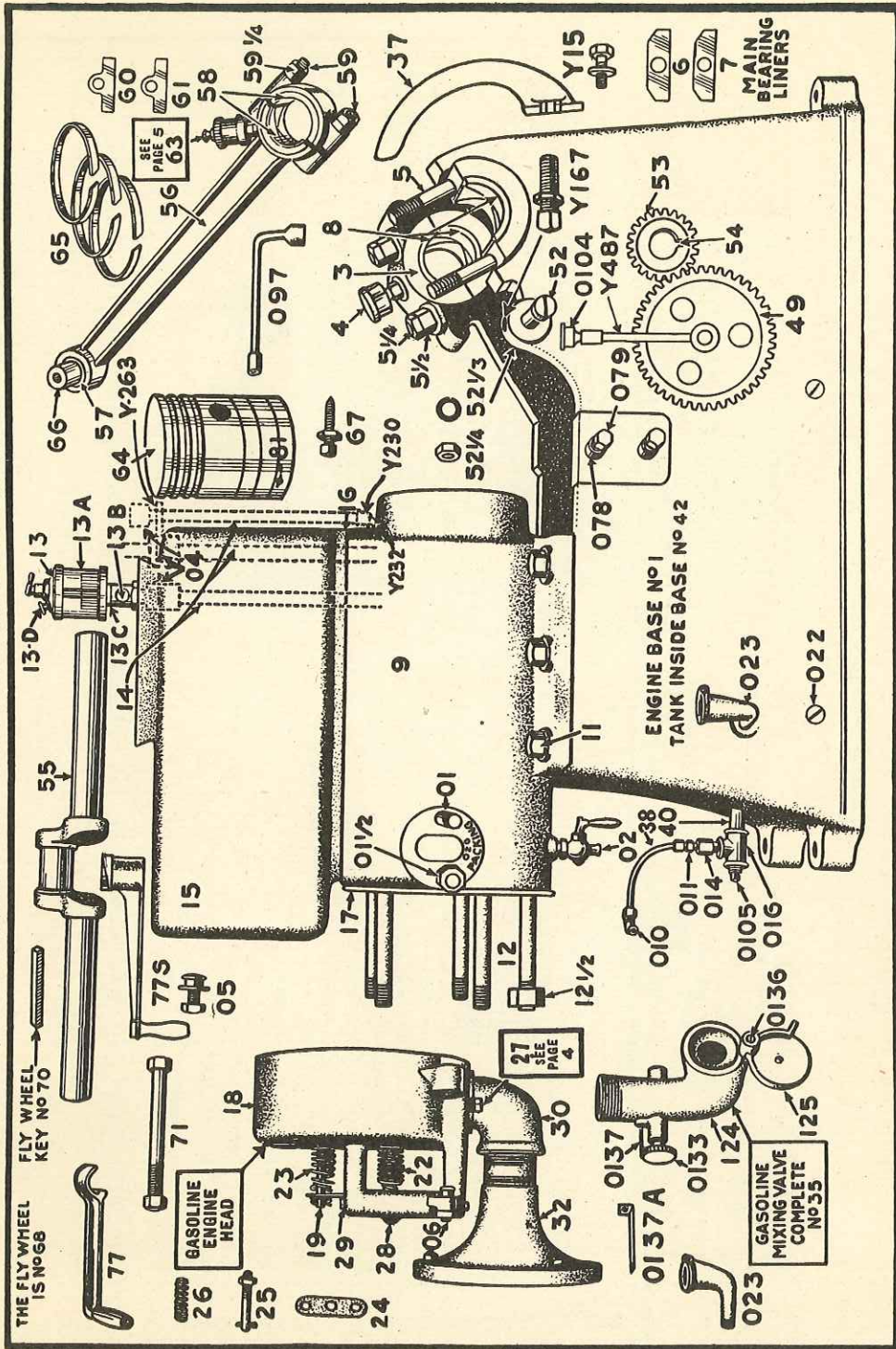
REPAIR PARTS OF WICO TYPE "E.K." MAGNETO



Part No.	Description
EK-5	Latch Block
EK-6	Latch Block Screw
EK-26	Spring Clamp Washer
EK-30	Terminal Ins. Block
EK-38	Terminal Contact Spring
EK-65	Lead Wire Terminal
EK-97	Armature Return Spring
EK-103	Coil Group, right hand
EK-104	Coil Group, left hand
EK-107	Core Group
EK-132	Side Band Group
EK-136	Terminal Group
EK-141	Magnet Group
EK-146	Cross Arm
EK-151	Deck Screw
EK-153	Back Cover
EK-172	Pole Yoke Screw
EK-186	Latch Spring
EK-199	Ground Connection Screw
EK-200	Side Band Screw
EK-206	Assembly Plate
EK-207	Coil Gasket
EK-214	Deck Half Group
EK-215	Front Cover
EK-215	Ground Connection Screw Lock Washer
EK-235	Condenser
EK-239	Coil Wedge
EK-241	Coil Group
EK-245	Ground Lead Clamp Washer

Part No.	Description
EK-253	Return Spring Support
EK-286	Latch Block Screw Lock Washer
EK-302A	Breaker Point Nut
EK-302B	Breaker Point Nut
EK-403	Spark Lever
EK-407	Latch Group
EK-412	Rocker Arm
EK-413	Trip Finger Assembly
EK-419	Latch-off Screw
EK-420	Latch-off Screw Nut
EK-422	Trip Finger Support Spring
EK-423	Latch-off Screw Lock Washer
EK-429	Trip Finger Frame Group
EK-430	Latch Group Clip
EK-502	Breaker Point Set
EK-505	Breaker Point Lubricating Felts
EK-511	Set of Coil Connecting Wires
EK-513	Armature Group
0201	Lead Wire with Terminal
K-196	Magneto Bracket
K-198A	Exhaust Rod Bracket
K-209	Trip Bracket Clamp
O-197	Rocker Arm Stud
K-199A	Trip Finger Pin, with Cotter Key and Washer
Y-15	Oil Guard Cap Screw with Washer
Y-466	Set Screw, with Lock Nut
Type EK Magneto only for 3 H.P.	
Magneto complete with bracket.	

PARTS OF "TYPE H" JAEGER ENGINES



Part No.	Description	Part No.	Description
1	Base and Cylinder for 2 H.P. or Base only for 3, 5, and 8 H.P.	54	Crankshaft Pinion Key
3	Main Bearing Cap only	55	Crankshaft
4	Main Bearing Grease Cup	56	Connecting Rod and Cap (Cap not furnished separately)
5	Main Bearing Stud Bolt and Nut	57	Connecting Rod Bushing (Piston end)
6	Main Bearing Liners, thick, per set	58	Connecting Rod Bearing (2 halves)
7	Main Bearing Liners, thin, per set	59	Connecting Rod Bolt, with Cotter Pin
8	Main Bearings (two halves)	59 1/2	Connecting Rod Nut
9	Cylinder	60	Connecting Rod Liners, thick, per set
11	Cylinder Cap Screw	61	Connecting Rod Liners, thin, per set
12	Cylinder Head Stud and Nut	63	Connecting Rod Grease Cup
13	Sight Feed Oiler	64	Piston, only
13A	Large Glass for Oilier	65	Piston Ring (each)
13B	Small Glass for Oilier	66	Piston Pin
13C	Small Glass Cage	67	Piston Pin Set Screw complete
13D	Cap for Oilier	68	Fly Wheel (each)
14	Oiler Pipe	70	Fly Wheel Bolt
15	Water Reservoir	71	Starting Crank
16	Water Reservoir Gasket	81	Mixing Valve Body
17	Cylinder Head Gasket	124	Mixing Valve Damper
18	Cylinder Head, with Valves and Springs	125	Igniter Stud and Nut
19	Exhaust or Inlet Valve	01	Drain Cock under Cylinder
22	Exhaust Valve Spring	04	Oiler Pipe Coupling
23	Inlet Valve Spring	05	Water Reservoir Bolt
24	Valve Lock Stud	06	Valve Lever Adjusting Screw and Nut
25	Valve Lock Spring	010	Angle Connection
26	Pipe Plug	011	Straight Connection
27	Pipe Plug	013	Pipe Union and Coupling
28	Valve Lever	014	Straight Valve Cage and Check Valve
29	Valve Lever Pin	016	Pipe Tee
30	Street Elbow	022	Tank Rod
32	Muffler Complete with Nipple	023	Filler Pipe
33	Muffler Cap	026	Igniter Gasket
35	Gasoline Mixing Valve or Carburetor	052	Detent Blade Adjusting Screw
38	Supply Pipe and Connectors	054	Detent Catch Block
40	Strainer Nipple	055	Catch Block Screw
42	Fuel Tank in Base of Engine	056	Cam Roller
43	Fuel Tank Binders, with Nuts	057	Cam Roller Pin with Dowel
44	Cam Rod or Exhaust Rod	059	Cam Rod Spring
48	Cam Gear		
52	Cam Gear Stud Complete		
53	Crankshaft Pinion		

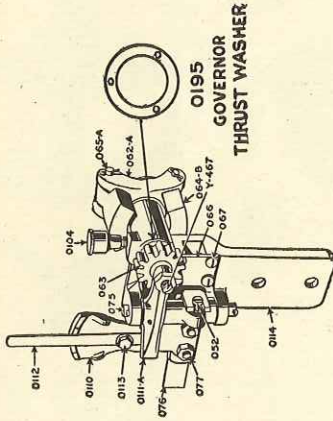
The more information you give, the more correctly your order will be filled.

In ordering repairs always give Serial Numbers that you will find on engine base, and also on front leg of Mixer.

GOVERNOR COMPLETE

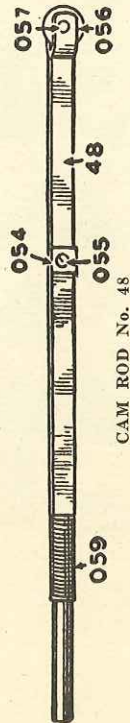
The more information you give, the more correctly your order will be filled.

Part No.	Description
060	Governor, Complete
062	Governor Spindle
063	Governor Pinion
064	Governor Ball
065	Governor Ball Pin, with Cotter Pin
066	Governor Bracket Plate
067	Bracket Plate Screw
068	Governor Spindle Rod
070	Speed Changing Washer
075	Detent Lever Pin
076	Detent Blade
077	Detent Lockout, complete
078	Governor Bracket Dowels
079	Cap Screws
087	Ironer Wrench
0104	Governor Bracket Grease Cup
0105	1/4" Drain Plug
0110	Speed Change Body
0111	Detent Lever
0112	Speed Change Lever
0113	Speed Lever Screw
0114	Governor Bracket
0133	Fuel Valve
0136	Damper Screw
0137	Fuel Valve Spring
0138	Governor Spindle Spring
0142	Detent Spring
Y 111	Cam Roller Stud Nut
Y 167	Cam Gear Pin Set Screw, complete
Y 230	Oil Pipe Elbow
Y 232	Oil Pipe (Short nipple)
Y 263	Oil Pipe Support
Y 487	Cam Gear Oil Pipe, with Coupling



MODEL "H&S"
GOVERNOR
SPINDLE ROD

Part No.	Description
052	Detent Blade Adjusting Screw
062	Governor Spindle
063	Governor Pinion
064	Governor Ball
065	Governor Ball Pin, with Cotter Pin
066	Governor Bracket Plate
067	Bracket Plate Screw
068	Governor Spindle Rod
070	Speed Changing Washer
075	Detent Lever Pin
076	Detent Blade
077	Detent Lock Nut, complete
0110	Speed Change Body
0111	Detent Lever
0112	Speed Change Lever
0113	Speed Lever Screw
0114	Governor Bracket
0138	Governor Spindle Spring
0142	Detent Spring



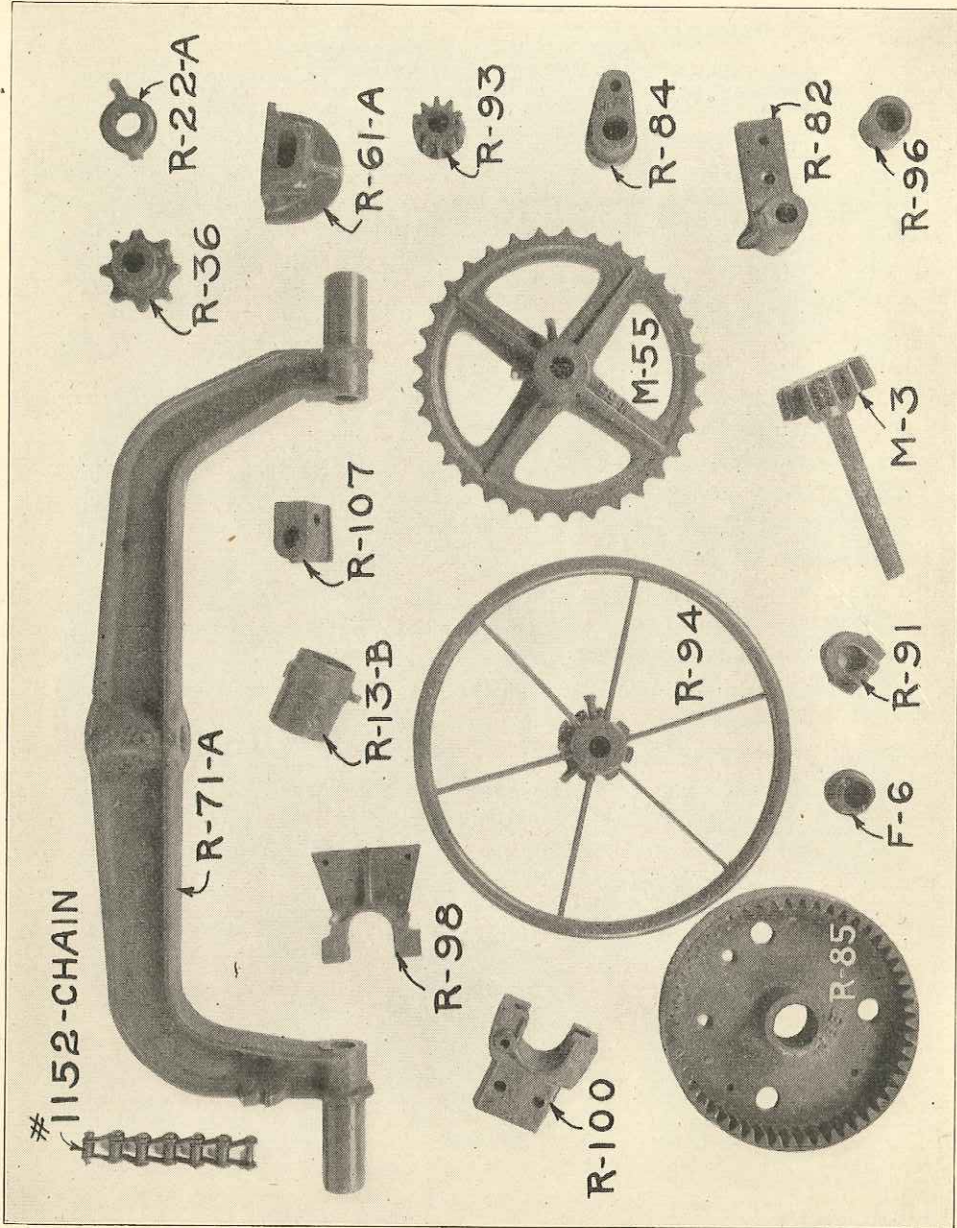
Part No.	Description
48	Cam Rod
054	Detent Catch Block
055	Catch Block Screw
056	Cam Roller
057	Cam Roller Pin, with Dowel
059	Cam Rod Spring

In ordering repairs, always give Serial Numbers that you will find on engine base and also on front leg of Mixer, and it will help us fill your order correctly.

MATERIAL LIST FOR 3½L

Part No.	Description
F- 6	Axle collar
H-29	Take up collar
K-23	Brass washer
K-24	9-tooth idler sprocket
K-24-A	Idler sprocket
K-54	Clutch arm
K-57	Set collar
K-73	Clamp for jack
K-96	Knockout arm
K-98	Idler bracket
K-109	Spring retainer (brass)
M- 3	12-tooth bevel pinion, 1½x17 shaft.....
R-13-B	Drum cap
R-22-A	Drum washer
R-71-A	Yoke supporting drum (without shaft).....
R-72-A	Drum casting
R-73	Bolster costing
R-79	Yoke bearing
R-80	A frame bearing with clutch.....
R-81	A frame bearing without clutch.....
R-83	Clutch arm
R-84-A	Pulling base casting.....
R-85	52-tooth dump gear.....
R-86-A	Cable drum without ratchet.....
R-87	Cable drum with ratchet.....
R-89	33-tooth sprocket with clutch (female).....
R-90	Clutch (male)
R-91	Axle block
R-92	Brake arm
R-93	10-tooth dump pinion without shaft.....
R-94	Hand wheel
R-95	Combination 33 and 7-tooth sprocket.....
R-96	Drum collar
R-97	9-tooth sprocket
R-99	Out bearing
R-101	Dump pinion bearing.....
R-106	Axle spacer

PARTS FOR 3½-E AND TRAILER MIXER BUILT AFTER 1924



For list of parts see page 23

MATERIAL LIST FOR 3½E AND TRAILER

Part No.	Description
F-6	Axle collar
M-3	12-tooth bevel pinion, 1⅞" shaft, 12" long
M-55	33-tooth sprocket
R-13-B	Drum cap
R-22-A	Drum washer
R-36	8-tooth sprocket
R-61-A	Bolster support for (3½E only)
R-71-A	Yoke supporting drum (without shaft)
R-72-A	Drum casting
R-82	Dump pinion bearing
R-84	Pulling bale casting for (3½E only)
R-85	52-tooth dump gear
R-91	Axle block
R-93	10-tooth dump pinion without shaft
R-94	Hand wheel
R-96	Collar for drum shaft
R-98	Yoke bearing
R-100	Yoke bearing
R-107	Pulling bale eye (trailer only)

LIST OF PARTS FOR 3½ SIZE SKID MIXER

Part No.	Description
M-3	12-tooth bevel pinion (23" shaft)
M-26-T	Tight pulley
M-26-L	Loose pulley
M-52	1⅞" set collar
R-13-B	Drum cap
R-22-A	Collar under drum
R-71-A	Yoke
R-72-A	Drum
R-85	Dump gear
R-93	Dump pinion
R-94	Hand wheel
R-96	Drum collar
R-98	Yoke bearing
R-99	Out bearing
R-104	Dump pinion bearing

MISCELLANEOUS PARTS FOR 3½ SIZE MIXER

Description	FOR 3½L ONLY
Axle only, front and rear 1⅞x58¼	
Axle complete, front	
Axle complete, rear	
Top shaft assembly, complete	
Loader bucket	
Wheels, steel, 28x3, for 1⅞" axle (front)	
Wheels, only, for rubber tires, with roller bearing	
Wheels, steel, 28x4 for 1⅞" axle (rear)	
Demountable rims	
Engine house	
Chain	
Engine to mixer, 45 links, No. 1152	
Mixer to overhead clutch, 65 links, No. 1152	
Cable, 19 feet of ¼"	
Brake band with lining	
Lining only, for brake band, 1" wide by 26" long	
Steel pawl for R-80	
Stop lever for hand wheel	

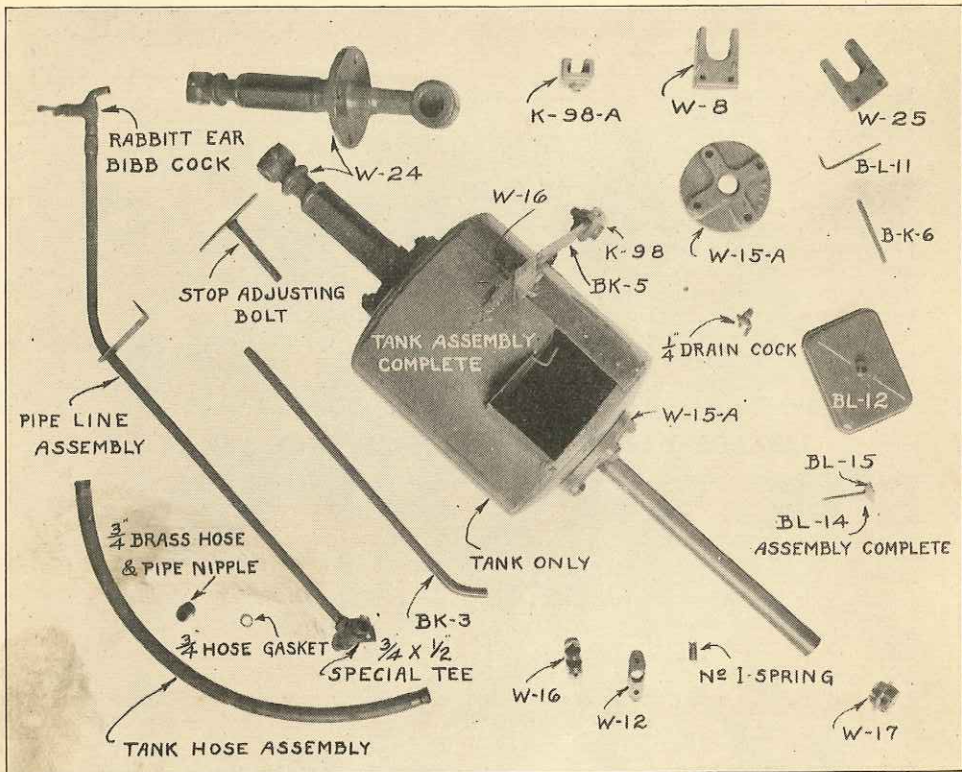
3½E AND TRAILER ONLY

Axle only, front and rear on 3½E and rear on trailer 1⅞x52½
Axle complete, front on 3½E
Axle complete, rear on 3½E
Axle complete, trailer
Wheels, steel, 28x3, for 1⅞" axle
Engine house
Chain, 45 links, No. 1152

COMMON TO ALL 3½ MIXERS

Drum cone only
Mixing drum complete with paddles
Pulling bale
Center drum shaft, 1⅞" diam., 20" long
Plaster paddles
Lining for R-89 friction cone, ¼x2x12 17-32

PARTS FOR TIP-OVER WATER TANK AS USED ON 3 1/2 L



PARTS FOR 3 1/2 WATER TANK

Part No.	Description
K-98	Stop Bracket
K-98-A	Stop Bracket
W-8	Bearing
W-12	Guide for Stem
W-15-A	Flange for Tank
W-16	Trip Lever Bracket
W-17	Valve Bonnet (brass)
W-24	Valve Body and Shaft
W-25	Bearing
BK-3	14" Dia. Water Tank, 14" long
BK-4	Dump Lever
BK-5	Spring Clip
BK-6	Trip Lever
No. 1	Float Guide Stem (brass)
BL-11	Trip Lever Spring
BL-12	Brass Float Adjusting Screw
BL-14	Float Assembly
BL-15	Valve Stem Assembly
	Rubber Valve Seat
	Tank Hose Assembly
	3/4" Brass Hose and Pipe Nipple
	Rabbit Ear Bibb Cock
	Down Spout
	Stop Adjusting Bolt
	Pipe Line Assembly
	3/4"x 1/2" Special Drop Tee
	Tank Assembly, complete