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MANUAL PREVIEW

Nelson
Operator's Manual
Jumbo
Gas Engines

Operator's Manual

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NE-O-JUMBO GAS

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Instructions and Repair
Parts Price List Covering

NELSON BROTHERS

JUMBO

GASOLINE ENGINES

FEED MILLS

**Pump Jacks
etc.**

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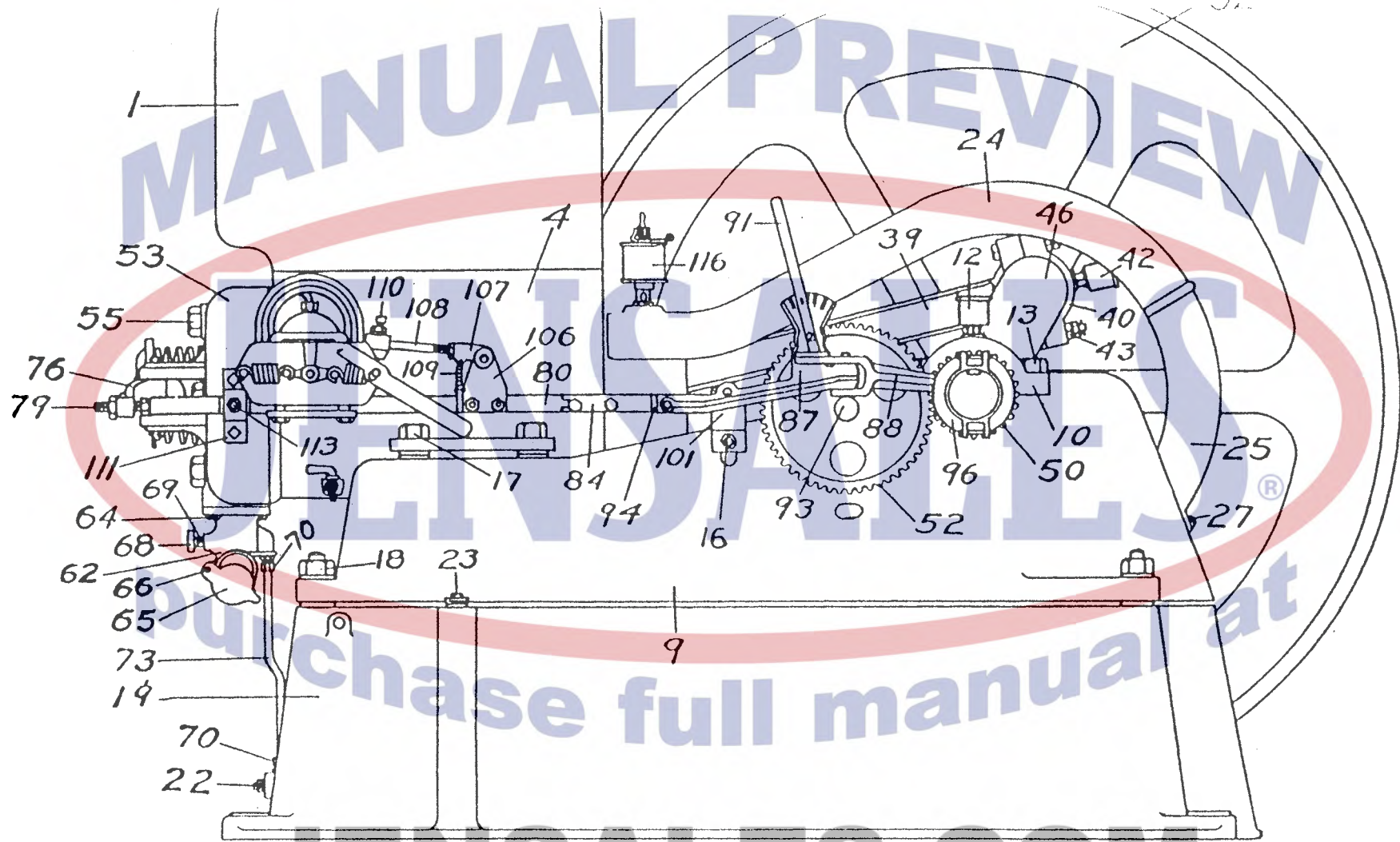


Plate I.

THIS SHOWS WEBSTER MAGNETO IGNITION IF YOUR ENGINE IS EQUIPPED WITH A DIFFERENT TYPE OF IGNITION REFER TO SEPARATE INSTRUCTION SHEET COVERING

or Call 800-443-0625

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NOTICE:—Don't fail to give the name and number of part wanted, also model and number of engine.

Magneto—

With this magneto no batteries are required. It is water, oil and weather proof, giving a uniform hot spark in all kinds of weather. It entirely eliminates the many troubles incident to battery ignition. Should your magneto ever give trouble do not tear it down or meddle with it in any way, but send it in to your dealer or the factory where it can be properly adjusted and repaired.

Lubrication—

The life of an engine depends upon keeping it properly oiled. Many an engine has been almost ruined by lack of sufficient or a proper grade of lubrication during its first hour of use. Use only the best grade of gas engine oil on the cylinder, never use common machine oil. When an engine is new and stiff it requires more oil than after the same is well broken in. The sight feed oiler should drop from ten to fifteen drops per minute, and after being filled should be adjusted accordingly. Always keep hard oil in the grease cups and turn them down as often as need be. Don't fail to oil all working parts. A safe rule to follow is to oil all parts where two surfaces run or rub together. Oil the exhaust and intake valve stems just outside their bushings. Oil side rod where it passes through the brackets, oil detent roller, cam roller, cam gear, cam gear stud, etc. Don't neglect your lubrication in any respect.

Cleanliness—

Don't forget that it is important to keep your engine clean. After the engine has been used for some time, the working parts become gummed with oil and dirt, hence it is absolutely necessary to clean all working parts with gasoline or kerosene, after which they should be thoroughly oiled again. Keep top of engine subbase drained of lubricating oil, by opening small drain plug on governor side of engine. In connection with low grade gasoline as fuel there is more or less carbon formation. It becomes necessary, therefore, to occasionally clean the inside of the cylinder, the piston and piston rings. When engine is running constantly day after day, these parts should be cleaned every month at least. Remove all dirt and carbon from inside of cylinder, from the piston and rings. The rings should be loosened up and the grooves thoroughly cleaned. Kerosene oil should be used for cleaning these parts. For removal of rings see page 9.

Occasionally, depending upon operating conditions, the ignitor should be removed from the engine and the points cleaned, removing all carbon or corrosion, which interfere with the proper contact of the points. Sandpaper can be used for this purpose.

ADJUSTMENTS

Adjustments are made necessary through the constant vibration of the engine, through natural wear, and through some one meddling with the engine. You should, therefore, frequently go over your engine to see if any adjustments are needed or any wear to be taken up.

NOTICE:—Don't fail to give the name and number of part wanted, also model and number of engine.

Nuts and Cap Screws—

These should be watched closely and kept tight, otherwise great damage to the engine might occur.

Adjusting Carburetor—(Reference Plate I.)

The carburetor or mixer used on our engines when properly adjusted is very economical in the use of fuel. The needle valve, No. 68, regulates the supply of fuel while the air regulator, No. 65, controls the air. In starting the engine, the needle should be open about $\frac{1}{4}$ of one turn and the air regulator completely closed. As soon as you get an explosion, the shutter should be opened wide. The best position, however, of the needle valve and air regulator can be determined by the action of the engine. Change the adjustment until the exhaust is clear and the engine runs smoothly. The check valve, No. 70, is found at the lower end of the fuel tube and should the fuel supply prove irregular this should be examined to make certain that no dirt or sediment from the gasoline has gotten into the same preventing it from seating properly and holding the fuel to the proper level.

Adjusting Governor—(Reference Plate I)

When operating, as the speed of the engine accelerates, the weights tend to fly outward. This outward movement acts on the detent quadrant causing it to hook up with the side rod plate and thereby preventing the side rod from operating the ignitor which supplies the spark to the engine. As the speed of the engine gradually dies down, the governor weights close up, unhooking the detent quadrant from the side rod which permits the latter to again operate the ignitor causing the internal explosion which keeps the engine in motion. If the governor fails to work and permits the engine to race, examine the detent and side rod plate to ascertain why they are not hooking up properly. It is possible that the cap screws which hold the side rod plate to the side rod have become loose and have permitted the plate to slip back. This is properly adjusted when there is a space of about $\frac{1}{32}$ " or less between it and the detent plate when the quadrant is in the closed position with the side rod farthest forward. Occasionally the fly wheel key becomes loose, allowing the fly wheel to work in or out on the shaft which affects the proper operation of the governing apparatus. If the fly wheel works in, the engine is apt to race and not govern at all, whereas if the fly wheel works out the detent quadrant is apt to hook up and not unhook readily, causing the engine to die down. Often the detent roller and governor collar are badly cut out or worn as result of insufficient lubrication. Keep the governor parts clean, free from dirt and well oiled.

Plate I.

This shows Webster magneto ignition. If your engine is equipped with a different type of ignition, refer to separate instruction sheet covering.

NOTICE:—Don't fail to give the name and number of part wanted, also model and number of engine.

Regrinding Valves—

After an engine has been in use for some time carbon or soot deposits form within the combustion chamber and due to vibration, shell off and often becomes lodged on the valve seats where it is packed down firmly by the constant action of the valve. This will cause the valves to leak and as a result weaken compression. It is therefore advisable to occasionally remove the cylinder head and regrind the valve and valve seats. This can be done most conveniently with the ordinary brace. After applying a mixture of fine emery and oil on the valve and seat, oscillate the valve back and forward a complete turn for a short time. Do not turn the valves one way only, as this is apt to start the same cutting and it will not seat as well. If a brace is not handy you can put a nail through the hole in the valve stem on the outside of the head, grasp the nail with your fingers and turn the valve back and forth as above. To make certain that the valves are properly seated, hold the valve in place with one hand and pour gasoline into the exhaust or intake chamber, as the case may be, and observe whether or not there is any leakage of gasoline past the valve seating surfaces. They should be sufficiently tight to hold gasoline. Before re-assembling wash off all emery and dirt from valves and valve seats. When replacing valve springs, be sure and put the light spring on the intake valve and the heavy spring on the exhaust valve.

Replacing Gaskets—

It occasionally happens that the cylinder head gaskets or ignitor gaskets will blow out. This is usually due to the fact that the engine has stood in stock or been a long time in transit and as a result, the gasket has shrunk, or a certain amount of contraction or expansion has taken place between the cylinder and cylinder head. It is for this reason that we caution operators to first retighten the cylinder head stud bolts before starting the engine up. Water leaking into the combustion chamber is more often due to escaping past the gaskets than anything else. This condition is very frequently mistaken for a sand hole in the cylinder. To replace a blown gasket, proceed as follows:—Remove the head or magneto ignitor, as the case may be and scrape every particle of the old gasket off. Then use a fresh gasket cut from 1/32" or 1/16" asbestos packing or a good standard grade of packing material, applying a thin coat of shellac or varnish to both sides, before replacing it. As it is very important that all the old gasket is removed, we recommend the use of sand paper. When tightening up the stud nuts, or bolts, they should be given about one-half turn at a time thereby drawing them up together evenly. If one nut is tightened down firmly at a time the joint will be uneven and the packing will not hold. After they are drawn up quite firmly rap the cylinder head with a hammer and retighten the nuts. Start the engine up and allow it to run until it is heated up somewhat, then let it cool down and retighten the nuts. Repeat this two or three times and a firm joint will be established, which will give no further trouble. In tightening up the stud nuts or bolts, care should be taken not to twist them off. If the ordinary packing fails to hold, then use an extra gasket with the hole the same size as the cylinder, but only 1/2" wide. Place this over the regular packing and tighten as above. Don't fail to cut all the holes in the regular gasket to correspond with port holes of cylinder, otherwise the cylinder head may over-heat and be ruined.

TROUBLES

No matter how perfectly an engine may be built and no matter how thoroughly familiar you may be with engines you will have some trouble—everyone does. If you are experienced with engines you know at once where to look for trouble. Assuming, however, that you are not, we make the following suggestions.

The four principal causes of kerosene-gasoline engine troubles.

ENGINE FAILS TO START

Improper Fuel Supply—

1. Lack of fuel in tank. Refill tank.
2. Water or dirt in fuel. Drain tank and fill with clean fuel.
3. Dirt under check valve, preventing same from seating properly.

Remove and clean.

4. Leaky feed line. Replace.
5. Fuel line disconnected.
6. Needle valves do not seat properly.
7. Needle valves not properly adjusted.
8. Leaky head gasket, permitting water to enter combustion chamber and carburetor. Repack cylinder head, as per instructions elsewhere.

Poor Ignition—

1. Adjust as per instructions given in magneto sheet.
2. Terminal wire on magneto not properly attached to insulated terminal on plug.
3. Terminal wire broken inside the insulation.
4. Spark points worn off. Replace with new ones.
5. Carbon deposits around spark points causing short circuits.

Remove plug and clean.

Loss of Compression—

1. Cylinder and piston dry, need more oil.
2. Rings gummed up with old oil and stick in grooves; clean with gasoline.
3. Carbon or dirt under one of the valves; clean with gasoline.
4. Valve lever adjusting screw in too far preventing valve from seating.
5. One or both of the valves loose on the stem.
6. Packing of cylinder or ignitor blown out; should be repacked (see paragraph above.)
7. Piston scored or badly worn; cylinder scored; rings broken or badly worn.

Improper Adjustments—

1. Needle valve not properly adjusted.
2. See mag. instruction.
3. Cam gear out of time. (See "Timing Exhaust Valve.")
4. Valve lever adjusting screw not properly set.