



The “MAG” Machine®

Item # 23607 (previously 236044)

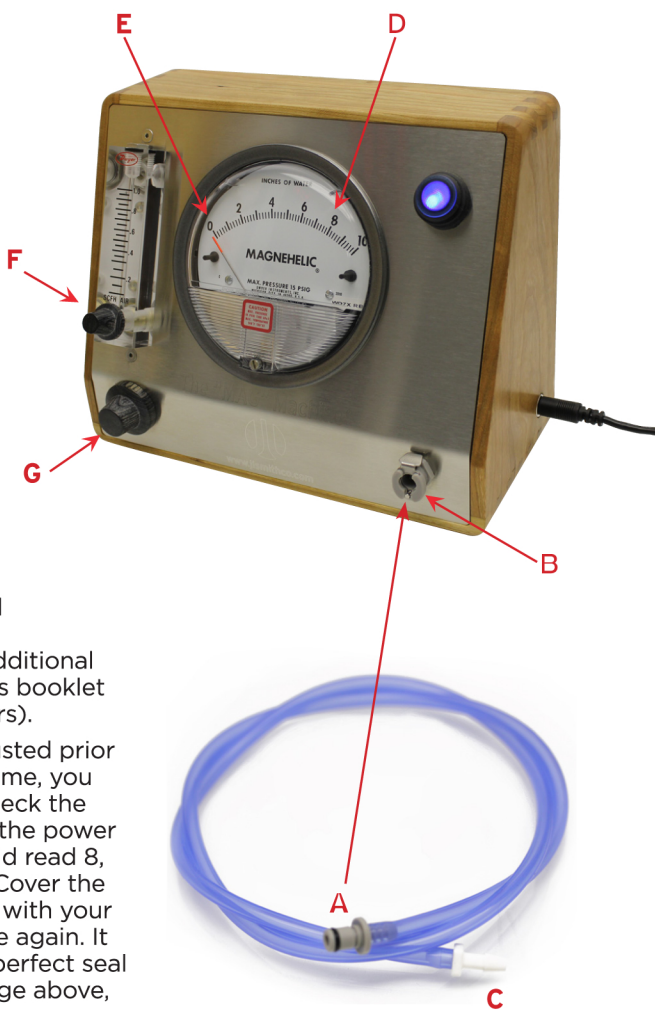
Thanks for ordering the J.L. Smith MAG Machine®. The “MAG” Machine® is the most accurate and reliable leak testing machine in the world, designed to reveal leaks in woodwind and brasswind instruments that cannot be found with other methods such as leak lights and feelers. In addition, the MAG shows the precise degree of leakage in increments on the dial gauge.

Set Up Directions:

Your J.L. Smith MAG Machine® has been pre-adjusted to it's optimal setting. Do not adjust the flow and pressure knobs prior to use.

Connect the grey plastic fitting on the supplied air hose (A) to the quick-click fitting located on the lower right of the machine face (B). Insert the white fitting on the opposite end of the air hose (C) to the appropriate neoprene plug for the instrument being tested. If the supplied plugs do not fit your instrument, other plugs and plug kits are available at www.jlsmithco.com. (See additional products on the back of this booklet for plug kit product numbers).

Though your MAG was adjusted prior to shipment, from time to time, you may need to calibrate it. Check the adjustment by first turning the power switch on. The needle should read 8, indicating full leakage (D). Cover the instrument end of the hose with your thumb and check the gauge again. It should read 0 indicating a perfect seal (E). If you don't get the range above,



adjust the “MAG” as follows:

Adjust the air flow meter (F) to 1.0 on the glass scale. Cover instrument end with your thumb, and use the large knob (G) to adjust the air pressure so that it reads 8. Turning this knob clockwise increases the pressure. If it reads higher, this is okay as long as the machine reads 0 when sealed tight. Ideally, you want the widest range on the needle, which will normally be 0 - 8. If you feel the machine might be “blowing open” a key, turn the pressure down (large knob) so that it operates in the 4 - 6 range.

Using the “MAG”

The J.L. Smith MAG Machine® reveals even minute leaks (yes, these do affect performance!). The MAG is so effective it even shows the minor leakage of fingerprints on clarinet holes and French flute holes. Once the machine is calibrated, a perfect seal will read 0 on the meter. Therefore a “perfect job” will read 0 with light (first touch) pressure on the keys.

Standards:

We’re often asked to give a number for an acceptable seal that is more “real world” than a perfect 0. We don’t do this, because we feel that each technician or shop supervisor needs to determine the standard to be achieved. Standards vary according to the style of pads used, the quality of the instrument, and various other factors.

On clarinets for instance, you may find that you achieve a different result with cork pads than you do with bladder pads. And Valentino synthetic pads seal better than bladder pads, so you may wish to assign different standards for different jobs.

To establish your own standards, start by testing completed repairs that you are happy with. Note the readings and use these as your benchmark.

General Notes:

Always check the calibration of your MAG Machine® before each use.

The MAG is not used as a first test, but rather as a 2nd or even third test to augment and supplement (rather than replace) your feelers and lights.

The MAG doesn’t pinpoint the leak and tell you specifically where it is. It only shows you if, and by what degree, a section of tube is leaking. Therefore, the user must seal the tube at various points along its length to isolate leaks.

Insert the hose into one end of a tube in, say, a clarinet joint, then close the other end with an appropriate size neoprene plug. Close all keys down with normal playing pressure (light pressure). Read the gauge. Wet your fingers to provide a better seal and check again. Sometimes it’s best to wet the neoprene stoppers to ensure a proper seal. If it doesn’t measure 0 on the dial, the instrument can be improved.

Clarinet and Piccolo:

Plug all holes in the body joint with neoprene plugs from your kit and insert the MAG Machine® air hose in one end. If you aren’t happy with the reading, press down lightly on individual keys to see if that improves the reading. If it does, the pad coverage is at fault.

If this is not the issue, remove the keys and check the body alone with all keys off. Occasionally you will find leaks in the body alone, a subtle crack, a post-hole that leaks into the body, etc. If you suspect such a leak, submerge the body joint in water while testing, and you'll see bubbles at the trouble spot.

Once you're certain of body integrity (i.e., the body reads 0), assemble one key at a time. If you see a jump in the reading, the key you just installed is leaking. Leaking can come from grain in a cork pad, cracks or holes in pad skins, spring tension that is too light on a key that is sprung closed, and tone hole defects. Tone hole defects include checks, un-level faces, and open grain.

Oboe and English Horn:

Use the same procedures described for clarinet.

Bassoon:

Use the same procedures as clarinet, plus – use plastic wrap, such as Saran Wrap, between the pads and hole one at a time to test for pad leakage.

Flute:

After testing with a leak light and feeler, plug one end of the flute with a stopper. If the flute has French open holes, plug those with stoppers or use wetted fingers to seal. Insert the MAG Machine® air hose in one end. If you aren't happy with the reading, press down on individual keys to see if pressure improves the reading. If so, then pad coverage is at fault.

If the pad coverage is certain, and the flute still doesn't reach acceptable readings, try our Flute Leak Isolator (#236030). This tool quickly isolates sections of the flute tube along its length so that the area of the leak can be determined.

Once the area of the leak (specific pad and tone hole) is found, check the integrity of the pad coverage and key-to-key adjustment. If this checks out, a leak at the pad skin, the pad washer, the bushing (grommet), or the tone hole itself, is indicated.

If this is not the issue, remove the keys, and check the body alone with all keys off.

You may find leaks in the body itself. These can come from leaks at solder joints including tone holes and boxes (receivers). You may even occasionally find a small hole in the body tube itself. If you suspect such a leak, submerge the body joint in a bucket of water while testing and you will see bubbles at the trouble spot.

Once certain of body integrity (the body reads 0) reassemble the instrument.

Leaks can come from cracks, or holes in pad skins, spring tension that is too light on a key that is sprung closed, and tone hole defects. Tone hole defects include checks, un-level faces, and machining marks. If you press on the G# or D# key to seal and find that the pad had been blowing open, you may wish to adjust down the air pressure. This assumes you do not wish to increase the spring tension.

Complete Your MAG Machine® Kit With These Additional Items:

- 236003 Clarinet testing plug kit
- 236004 Flute testing plug kit
- 236005 Oboe testing plug kit
- 236006 Piccolo testing plug kit
- 236002 Standard asst. testing plug kit
- 236001 Master asst. testing plug kit
- 236056 Flute Leak isolator
- 236054 Feeler Strip Holder
- 236065 Pad Testing Cups - Small set
- 236066 Pad Testing Cups - Large set



Enjoy!



100% Lifetime Guarantee!

J.L. Smith brand tools are guaranteed for life against breakage or defects. Just return any defective tool to us and we'll repair or replace it free of charge.

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