

**101 WAYS TO SAVE
MONEY ON BAND
INSTRUMENT
REPAIRS**

Repair Technicians Tell All!

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**Member
National Association of
Professional Band Instrument
Repair TechniciansSM
NAPBIRTSM**

Join us at:

GENERAL INFORMATION

WHY WE'RE DOING THIS

After several years of seeing the same kinds of (preventable) problems with band instruments, and teachers, students, and players saying "I never knew that!" we decided to find a way to help people avoid as many instrument pitfalls as possible. With all of the problems the player/teacher has in the daily routine, the last thing you need is a mechanical problem. Our goal is to help you avoid as many problems as possible by using preventive maintenance.

OUR MISSION

The Instrument Hospital is dedicated to the following:

The finest customer service

The highest quality repair

The longest lasting repair

The lowest prices consistent with high quality work

During our presentations and the preparation of this booklet, our opinions and recommendations are based on these principles.

BACKGROUND

Barb and Mike both earned Doctorates from Florida State University in flute performance and trombone performance, respectively. Mike performed for the Walt Disney World Co. and in the Central Florida area, toured with the Duke Ellington Special Orchestra, then taught college in South Georgia. After discovering the fun of instrument repair, and years of apprenticeship, both are now employed by Funk's Music Center. Barb does woodwind repair and is certified in Straubinger flute repair, and Mike is the brass technician and a master clinician for the National Association of Professional Band Instrument Repair Technicians.

CAVEATS

We attempt to offer as much hard data as possible when offering advice to friends and customers, but sometimes someone will object to what we say. If you put five technicians in a room you will hear six opinions. We will try to stick to verifiable facts unless otherwise stated.

AUDITION YOUR TECHNICIAN

Don't be afraid to see if a repair technician can do what they claim they can do. If you are going to entrust your instruments to a technician, it is obviously in your best interest to make sure that technician can deliver the desired results. If you are in a new situation, ask other teachers and players about local technicians, and give the shop a couple of horns to evaluate their work.

RELY ON YOUR TECHNICIANS

You can't have enough tools and parts on hand to adequately keep your instruments in top shape, so stay in touch with your favorite shop and let them help you avoid problems and supply you with emergency supplies. We encourage our customers to visit our shop. If you want to spend some time observing, call us in advance because we **only** have room for one or two extra people in the shop. Also remember that some shops do not like visitors.

MAINTENANCE AGREEMENTS

Encourage your students and parents to get maintenance and repair with their rent-to-own instruments. The additional two or three dollars a month is money well spent when an instrument is dropped or a slide is crushed. Here is an example: if maintenance is three dollars a month for thirty months on a trombone rental, the total cost is ninety dollars. Our customer had a trombone slide bent in half, (no maintenance) and the replacement cost was \$160.00. Parents often object to the additional cost of maintenance, but you can help by using this kind of example to encourage them. You can also remind the parents that even if their child does a good job of taking care of their instrument, most of the rest of the kids in the band room are fifth grade knuckleheads!

LOANER INSTRUMENTS

Try to avoid on site repairs by a store rep because (except for water key corks) these repairs usually are not very good or do not last. Try to acquire a few of your own loaner horns if possible. If a school has its own loaner instruments, we usually keep them in playing condition without charge. Also, if you have loaners, you can always have instruments in the shop without taking instruments away from the students.

SACRED COWS DON'T ALWAYS MAKE THE BEST BAR-B-QUE

Under most circumstances, we advise people to purchase the newest instruments possible. There are exceptions to this advice, especially concerning older professional instruments. The newest computer technology and manufacturing techniques are producing amazing instruments, both in quality and consistency. Remember that a 1960 instrument was built using the same technology that built the 1960 automobile. This is fine for a collector, but I would not want to drive a thousand miles in my first car! While on the subject of older instruments, use caution when overhauling instruments or buying overhauls. Brass instruments corrode from the inside out. The older metal can be brittle and the overhaul process can thin the metal to the point of cracking. Technicians that rebuild and relacquar instruments can do beautiful work, but make sure the instrument is worth the money to overhaul.

CRYOGENIC TREATMENT

Cryogenic treatment for metal instruments is a process by which the instrument is exposed to a temperature of minus 320 degrees F for several hours. The gradual lowering and raising of temperature relieves stress and tension in the metal and improves the instrument's response and resonance. The process is only useful for advanced players with high quality instruments. The cost starts at about one hundred dollars for trumpets. While I have no scientific study to cite to quantify the results of cryogenics, the process improved my trombone, and I have played other instruments before and after the treatment and the improvement was noticeable. The process will not damage instruments.

MARCHING WITH PROFESSIONAL INSTRUMENTS

When your students purchase step-up or professional instruments encourage them to keep their beginner horns for marching band. Marching band is where more instruments get damaged, and while we can repair damaged instruments, we can't make them look like new again. F-attachment trombones are especially susceptible to damage because of a structural weak spot in the tubing by the rotor. Energetic horn motions will bend the tubing and the rotor casing. Finally, if there is an accident and a horn gets mangled, better the student model than the pro line horn.

OTHER GENERAL INFORMATION

Don't use super glue on solder joints. It doesn't work and it costs more to repair when we have to clean it off. Use mouthpiece pullers (only!) for stuck mouthpieces. We always pull mouthpieces for free, so don't let dad use the pliers.

Don't let kids put music on the horn in the case. I know you know, but I had to say it. I always replace water key corks without charge.

Encourage your students not to use dent bags. There are better options that protect and look cool.

Remember to tell students and parents to get to the repair shop in May, June, or July. If you wait until August or later, the wait can be three weeks or more. One of our friends has a six week wait in the fall!

BRASS STUFF

OIL VALVES EVERY DAY BEFORE YOU PLAY (ALSO TROMBONE SLIDES WHEN USING SLIDE OIL)

New metals and manufacturing techniques mean better instruments, but they need to be oiled every day to function well and prevent corrosion. Some older instruments might not need oil every day but the new ones will not tolerate lack of lubrication. The type of metal used in each instrument, indoor or outdoor use, climate, and amount of use dictates the frequency of lubrication. The amount of oil needed is determined by the size of the instrument, so feed the larger horns more oil. French horn rotors need to be oiled in three places - the front bearing, the back bearing, and in the slide tubes. Some French horn builders recommend oiling new rotors once an hour while practicing for the first month of use.

I do not have a preference in valve oils. Professional players like different oils, and specific oils with specific instruments. I do know that you can't mix some petroleum oils and some synthetic oils or you get a thick mess. I also tend to like the oil that is in the horn rather than in the bottle.

GREASE TUNING SLIDES ABOUT ONCE EVERY TWO WEEKS

My preference is petroleum based lubricant, rather than lanolin or wax based. As with valve oil, remember that the big horns like lots of lube.

STORING VALVED INSTRUMENTS

When you store valved instruments for long periods, like during the summer or marching season; put a heavier oil on the valves to prevent corrosion and sticking. I like 3 in 1 oil, sewing machine oil, or gun oil. While valve oil will evaporate quickly, the thicker oils will stay in the instrument for a long period of time and protect them. Normally you need only apply valve oil after storage and you are ready to play, but it might be necessary to wipe off the thicker oil in some instances.

DEZINCIFICATION

(RED ROT)

Brass is an alloy of copper and zinc in varying percentages. The zinc will oxidize out of the alloy before the copper, leaving a pink, brittle area, which is the copper remnant known as red rot. You can see red rot on brass instruments as small pink spots on lacquered surfaces, or as bumps on silver or nickel plated surfaces. Lead pipes, trombone slides, and trumpet tuning slides are the most likely places to find these spots. Once the dezincification has started, the parts will become brittle and porous and have to be replaced, presenting expensive problems if the horn is so old that parts are not available and must be custom made. The buffing and thinning of the metal during the overhaul process accelerates the demise of many older instruments because of the red rot already in the horn. Fortunately, red rot can be prevented by washing the instrument. I recommend washing about once a month, more often for marching instruments. Another benefit of clean instruments is that they are cheaper to repair than dirty, corroded ones. Instrument manufacturers are also helping by making corrosion resistant lead pipes with a higher copper content. Look at newer student model trumpets and you will see the dark red color of the metal.

TRY TO GET SILVER FINISHES ON LOW BRASS INSTRUMENTS

For school instruments a silver finish will last longer and take repair better than lacquered brass. It is cheaper to disassemble silver instruments because the silver doesn't bum like lacquer during the soldering process. The initial cost for silver is higher, but the repair costs over ten to twenty years will be much less.

A CELLO STRING MAKES A GOOD FRENCH HORN LEADPIPE CLEANER

Most of the cleaning problems in French Horns occur in the leadpipe, so using a swab to clean the leadpipe and tuning slide will help prevent dezincification in these areas. One quick and easy way to make a swab is to get a cello "A" string and remove the little brass ball from the loop. Put a 2" X 2" piece of cloth or paper towel in the loop and pull the whole assembly through the pipe from the tuning slide through the receiver. When in doubt, use a smaller rather than a larger piece of cloth. Do this once a week and the horn will play better and last longer. If cellos in your school start losing strings I disavow this method.

FRENCH HORN FINGER HOOKS AND HAND RESTS

If you have French horn player that experiences pain in the left hand and arm, it might be necessary to move the finger hook to fit the player. If the finger hook is in the right place, the hand moves easier and things like carpal tunnel syndrome and tendonitis are less likely to happen. Women with smaller hands are the most likely to have this problem. Another attachment that helps free the finger movement is the hand rest. This rest is soldered on the horn above the index finger knuckle and puts the weight of the horn on top of the hand instead of on the smallest finger. As with the moving the hook, the hand rest is a quick, easy way take care of left hand pain and fatigue.

FRENCH HORN ROTORS

If you need to retie rotor strings, you can figure out the pattern by looking at another valve. If you have never done this, take a working horn and untie and retie a rotor several times until you get the hang of it. Do not bend the levers to make them level with each other, use the lever string adjustment to level the rotors. Too much bending will break the levers. Two other things to remember are: bump the end of the string to make it easier to thread through the hole, and don't overtighten the string or the valve will drag. It's a horn, not a guitar!

YAMAHA VALVE GUIDES

Sometimes younger players can loosen the stems on Yamaha low brass instruments, causing the valve guide to slide to the wrong place. The players also break the plastic guides when they try to use their fist to get the valve back in place. I have included an assembly diagram at the end of this booklet to help sort out the parts puzzle if you have to put the valve back together. I have always liked the plastic valve guide because it is quick and quiet, but kids sometimes have other ideas as to what to do with plastic pieces. As of October 1999, Yamaha has introduced a metal version of this guide, which can be installed with a spot of solder to keep it from moving.

OTHER ITEMS

Do the trombone slide test. Unlock the slide and see if the slide will fall by itself. If it will not move without force, send it to the repair shop.

A touch of slide grease on mouthpiece shanks will help keep mouthpieces from sticking.

Did I mention oiling the valves every day?

WOODWIND CONCERNS

WOODWINDS NEED A CHECK UP EVERY 12 MONTHS

Woodwind keys bend during normal use (and misuse) and need adjustment about once a year. We recommend taking them to the shop during vacation times so you don't have a crisis the night before the concert.

WOODWIND SCREWS

Woodwind screws are an entire subject unto themselves. Some screws back themselves out, some just look like they are coming out, and some won't come out without thermonuclear persuasion. If you have a screw that keeps backing out, show it to your technician. If the screw looks wrong, ask your technician. If you are not sure what the screw does, ask the technician. You have to think backwards and sideways to adjust woodwinds and one screw adjustment on a flute or oboe can wreck the entire system. This is not an effort to discourage do-it-yourselfers, just understand that this is a rather tricky business.

FLUTE AND CLARINET ASSEMBLY

When assembling flutes, do not touch the keys, and keep the tubes parallel. Also, use a twisting motion, not a rocking motion. Just touch the collar of the body and the end of the foot joint. One of the first things we do with flute players is ask them to put together their instrument. Whether beginners, high school players, or college level players, most grab the middle of the joints and twist. Using this method will ruin a flute mechanism in just under five seconds.

For clarinets, you must hold the upper ring key down to avoid damaging the bridge key, but don't touch the bottom joint keys. Grabbing the keys and rods on the clarinet will achieve the same results as flute (see above).

Please note: Our records show that 90% of our first time customers assemble their instruments incorrectly. The next time you see a group of woodwind player, do your own informal survey.

MARCHING BAND PICCOLOS

When choosing marching band piccolos, we recommend using metal body instruments if possible. The screws tend to strip out of the wood and plastic body instruments in the vigorous and exciting world of marching. The stripped screws can be repaired, but the soldered assembly of the metal instrument tends to hold up better in outdoor use.

DO NOT USE SILVER POLISH ON FLUTES

If you get silver polish on flute pads they will be ruined, and polish in the mechanism will lock up the whole works. Use a soft, dry cloth to wipe of the body and tops of the keys. Don't try to get under the keys or rods because you might snag a spring or tear a pad as well as bend the keys or rods.

USE CORK GREASE EVERY DAY

When assembling clarinets and oboes, or putting mouthpieces on saxophones, use a little bit of cork grease every day. Cork grease tends to dry out and leave you with dry cork (just waiting to rip). It doesn't take much grease, but you need to use it every day. Also remember to use a twisting motion for woodwind assembly.

PAD SAVERS

Pad Savers are products that are designed to be placed in woodwind instruments while they are not being played. Their purpose is to wick moisture away from the pads, extending pad life. The manufacturer of Pad Savers recommends swabbing the instrument after playing then inserting the Pad Saver before putting the instrument in the case. The new Pad Savers have improved wicking action and do not shed fibers into the instrument's action. If you have students who never swab, a Pad Saver is better than nothing.

STRAUBINGER PADS FOR FLUTE AND CLARINET

David Straubinger has devised a new system for pad manufacture that results in a firmer, more stable pad that holds its adjustments far better than traditional pads. For upper model flutes, there is a remarkable difference in performance after the Straubinger overhaul and should be seriously considered by advancing flutists. Barb Kremer is a certified Straubinger technician and flutist, so call her for a serious flute talk.

SEND THE ENTIRE INSTRUMENT TO THE SHOP

When you send a woodwind to the shop, send all the parts except the reed. If we have to fit the mouthpiece cork we need the mouthpiece, and since we play test every instrument, we need the necks, bells, bocals, etc.

SWABBING

Francois KIoc, a Buffet clarinet builder and technician, recommends that you swab new wood clarinets every 15 minutes for the first 6 months. The reason being that a new clarinet is stored in climate controlled conditions before, during, and after manufacture, and then we blow 90 degree, 100 percent humid air into the bore! The shock to the wood is obvious, and it's a wonder there aren't more cracks than there are.

UNFOLD WOODWIND SWABS

Special attention should be given to double reed swabs. Make sure that they are **completely** unrolled or unfolded and have no knots in the cloth or the string. When we see a stuck swab in an instrument, it means that someone forgot this first rule of double reed swabbing. (Rule no. 2 is quit pulling if the swab gets stuck. Rule no. 3 is to tell dad about rule no. 2.)

OTHER WOODWIND CONCERNS

For flute cleaning swabs, use a thin, absorbent cloth like a cotton handkerchief. When putting the flute in the case, fold the swab and lay it on top of the instrument. You should not have to force the case closed. Forcing the case closed with an oversized swab will bend the keys.

Wash woodwind mouthpieces in warm (not hot) soapy water about once a month. Use the appropriate brush on the inside.

SOME NOTES ON METALS

- Brass: A copper alloy consisting of about 70% copper and 30% zinc, also known as yellow brass.
- Red Brass: A copper alloy consisting of about 90% copper and 10% zinc, also known as rose brass.
- Gold Brass: A copper alloy consisting of about 87.5% copper and 12.5% zinc.
- Nickel Silver: A copper alloy consisting of about 65% copper, 10-18% nickel, and the remainder zinc.
- Monel: An alloy consisting of about 67% nickel, 32% copper, and 1% iron. This material is used in piston valves and allows a more consistent finish, closer tolerances, and eliminates plating problems. Contrary to some claims, monel must be oiled every time you play, and when the horn is put in storage.
- Sterling Silver: A silver alloy with at least 92.5% silver.
- Solid Silver: A non-specific silver alloy.

FINAL NOTES

When in doubt, call us. That's why we're here.

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Oiling Rotary Valves

1. Each place must be oiled.
2. Oil at least one place every day.
3. Some players use heavier oils on the bearings, or on older, loose valves.
4. Remember that clacking valves are dry valves.

