

# **PULLING LARGE-SPAN SLIDE CROOKS**

*The keys to pulling a main tuning slide are penetrating oil, heat and selecting a method of pulling that does not harm the slide crook or instrument body. The choice of pulling method is determined by the position of seized slide.*

*Be certain that your customers are not using petroleum jelly to lubricate their tuning slides. Petroleum jelly has proven to be a corrosive to brass and nickel-silver and is primary cause of stuck tuning slides. The best clue for the presence of petroleum jelly is brown tubes with a blue-green haze.*

## **Summary Task Sequence for Pulling a Main Tuning Slide**

1. Determine if one or both slide tubes are seized.
2. Determine if the tube is dented or corroded shut. If dented, the crook must be removed and the dent raised to the point where the inner slide tube can be removed.
3. If corroded, apply penetrating oil – allow a minimum of fifteen minutes – twelve hours preferred, for the penetrating oil to work.
4. Warm the tube over its entire length with a torch – do not allow the penetrating oil to smoke as it may seize the tube further.
5. Attempt to pull the slide using Slide pulling pliers if there is access to the ferrule; use an Epoxy-Putty form if there is not.
6. Repeat the above steps three to four times if the slide persists.
7. Remove the crook and solder it in to act as a lever to pull the slide. If there is concern of damaging the crook, a mouthpiece or slide-pulling rod can be soldered into the ferrule.

## **Detailed Task Sequence for Pulling a Main Tuning Slide**

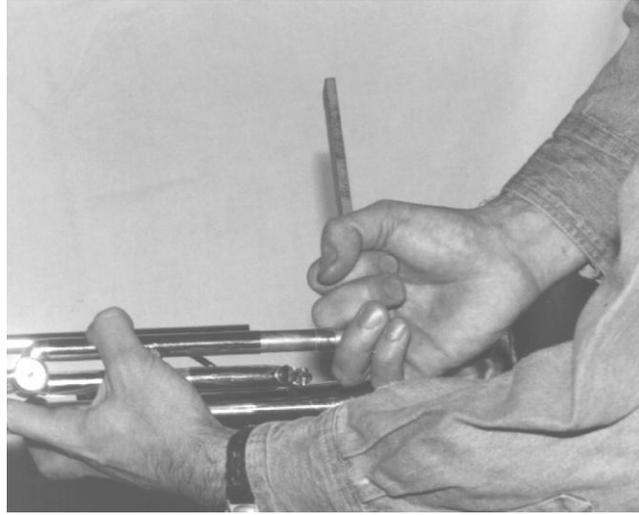
1. Determine if one or both slide tubes are seized.

It is common for the tube closest to the mouthpipe to be that which seizes. The collection of debris at the point between the mouthpipe and inner slide tube is often the reason the slide is seized. It is also important to know specifically which tubes are stuck to avoid residual damage. Flex the crook inward and outward, watching the individual tubes for movement.

2. Determine if the tube is dented or corroded shut. If dented, the crook must be removed and the dent raised to the point where the inner slide tube can be removed.

Inspect for visible tube damage as well as stress at any braces attaching to the outer slide tube. A bent mouthpipe or instrument body could be an indicator of a brace pushed into the tube.

*Always inspect for dents and brace stress before pulling any slide. If there is damage, the crook will have to be removed and the dent lifted. In this instance, we chose an expander to lift a dent in the tube. Often, as the dent rises, the stuck tube may give way.*



3. If corroded, apply penetrating oil – allow a minimum of fifteen minutes – twelve hours preferred, for the penetrating oil to work.

See the Sources page for recommendations on penetrating oils. Apply penetrating oil where the tubes meet as well as from the opposite end of the tube if possible.

4. Warm the tube over its entire length with a torch – do not allow the penetrating oil to smoke as it may seize the tube further. Some shops will freeze the horn, and then heat the tube – the contraction/expansion of the tube hastening the breaking of corrosion.

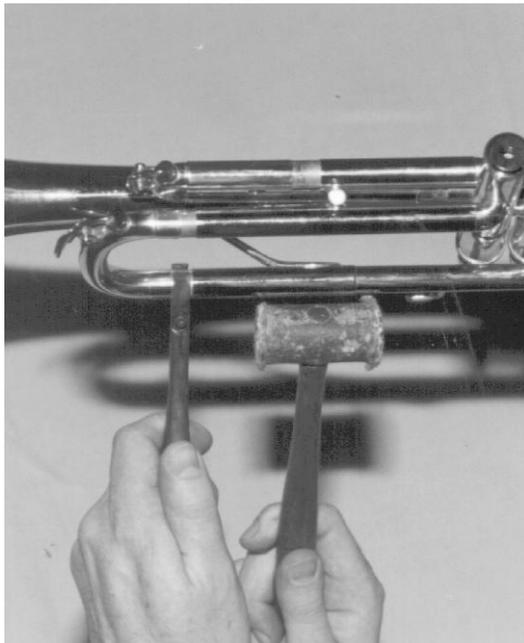
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*It is not uncommon for techs to warm the tube/apply more penetrating oil three or four times before attempting to pull the slide. Be certain that the penetrating oil does not smoke – if the oil burns, it creates a slag which can actually seize the tube further.*

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5. Attempt to pull the slide using Tuning Slide Pulling Pliers if there is access to the ferrule; use an Epoxy-Putty form if there is not.

*Slide pulling pliers are available from a variety of sources. The flat face of the pliers rests against the ferrule. The setscrew prevents the pliers from crushing the tube. The tapered side of the pliers allows clearance for any reinforcing rings common on professional level instruments.*



Slide Pulling Pliers can be used if the slide is not pushed closed. Access to the ferrule is all that is necessary. Inspect the ferrule often when tapping on the pliers to insure the ferrule is not being damaged. In addition, inspect for bending of or stress at any braces or tubing attached to the slide being pulled.



*When using slide pulling pliers, always inspect for braces that may bend or break from the stress of pulling. For example, on the cornet above, the casing to main slide brace is subject to damage. Have another person pull on the mouthpipe in opposition to the pulling force.*

An alternative to slide pulling pliers is making a form of wood or epoxy putty to allow tapping against the crook. Epoxy putty is greatly preferred because of the accuracy in forming and speed in molding. Grease acts as a release agent and the form, if made heavy enough, will survive repeated use.

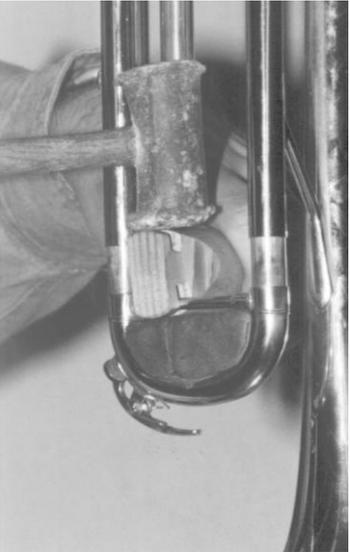


Epoxy Putty is a moldable compound that can be found at most hardware/home remodeling stores. It is easy to mix in one's hands and has a 20-minute working time. Grease acts as a release agent, preventing the putty from bonding to the part. Steel reinforced epoxy putties are available from machine tool suppliers.

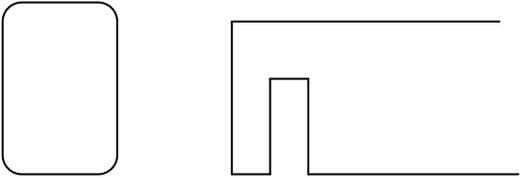
*The epoxy putty can be molded heavier at each tube to allow for a place to focus the tapping in event that one tube is stuck. The form must be fairly massive to avoid shattering. Be certain to coat the part with grease to prevent bonding of the putty.*

Epoxy-Putty is available at most hardware and home improvement stores in their plumbing departments. The Epoxy-Putty can be made into a re-useable form that can be struck with a mallet to force the slide out. This is useful when there is no access for the slide pulling pliers. Coat that part of the crook that is being molded with grease to insure your Epoxy-Putty form does not become permanently attached.

*For main tuning slide assemblies with cross braces, the epoxy putty form can be made to fit close to the brace, with a slotted dowel used to clear the brace. Avoid tapping directly on the cross brace rod or socket as they may bend or collapse.*

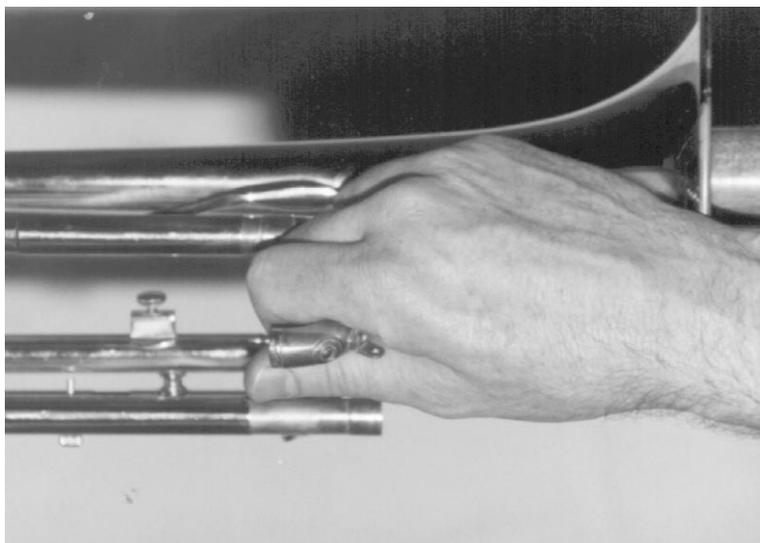


Front and side views of slotted dowel to allow clearance of the cross brace.



6. Repeat the above steps three to four times if the slide persists.

A majority of slides can be removed with the above sequence. If the slide persists in being stuck, proceed as below.



*On many brasswinds the crook can serve as a lever to pull the slide. Remove the crook and solder only one side back into the instrument. The tube can then be rotated out.*

7. Remove the crook and solder it in to act as a lever to pull the slide. If there is concern of damaging the crook, a mouthpiece or slide-pulling rod can be soldered into the ferrule.

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***Special Note: Removing the main tuning slide crook is NOT an option on the new Yamaha student line trumpets because the crook and tubes are one-piece continuous. For these instruments, the Epoxy-Putty form seems the best option to date.***

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*If there is concern of the crook collapsing (a problem on thin-walled crooks and crooks with silver-soldered waterkey bridges and nipples), a tapered mouthpiece shank or slide pulling rod can be substituted.*



*If the ferrule is off the tube, some shops use slip-joint or channel lock pliers to grasp the tube directly, using barrel-shaped dent balls for support. While this will definitely mar the tube, the damage is limited to that area covered by the ferrule.*

## **Less Desirable Means of Pulling Main T.S.'s**

*There are a number of approaches beyond the above to pull stuck main slides and some work with success. The concern this technician has with the techniques below is there is a greater chance of destroying or distorting the crook, cross braces or entire instrument during the process.*

### **Rags/Buffering Wick**

With this technique, a rag or length of buffering wick is wrapped around the crook and chucked in a vise to yank out the stuck slide. The dangers of this technique include distorting or twisting the instrument body, distending the crook, and collapsing the crook if only one tube is stuck.

### **Wooden Assembly Mandrels**

Main slide crooks are not strong enough to withstand direct blows to the inside arc. Tapping on a wooden assembly mandrel is a fairly common means of removal but will most likely cause dents to some degree to the inside of the crook.

### **Wooden Forms**

Similar to using wooden assembly mandrels, the slide pulling kits available to band directors have shown that damage will most likely result from such a choice. There is enough variation in crook shapes that make such a tool useless for all but a few instruments. The Epoxy-Putty form seems a more viable option.

### **Tapping Against the Crook or Cross Brace**

As above, tapping against the crook may work, but the resulting damage and expense of dent removal does not justify the choice. Similarly, if there is a cross brace on the tuning slide, tapping on the rod or its sockets usually only serves to bend the rod or partially crush the sockets.