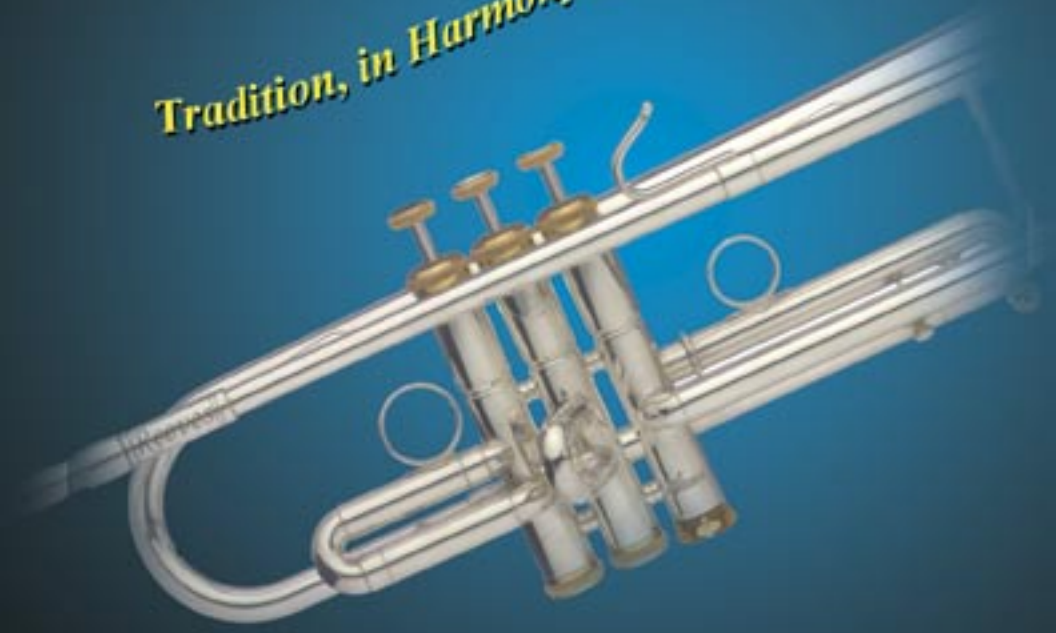
bob reeves

brass mouthpieces

Tradition, in Harmony with Technology



Valve Alignment Guide

Valve Alignment

Definition:
Main Entry: **valve align·ment**
Variant(s): also **piston aline·ment**
Function: noun
1 : the act of aligning or state of being aligned; especially : the proper positioning or state of adjustment of the pistons in relation to their corresponding holes in the valve casings.

In general, a Bob Reeves Valve Alignment will improve:

- **Range** (page 4)
- **Pitch** (page 4)
- **Slotting** (page 5)
- **Endurance** (page 5)
- **Colors in the Sound** (page 5)
- **Accuracy and Consistency** (page 4)

Bob Reeves Brass Mouthpieces is the only facility with a patented alignment process that ensures your horn is aligned to the most accurate standards available.

Average* Mis-Alignment Per Manufacturer

(in thousandths of an inch)

Make	1st valve up-stroke	2nd valve up-stroke	3rd valve up-stroke	1st valve down-stroke	2nd valve down-stroke	3rd valve down-stroke
Bach	.015	.022	.014	.013	.015	.013
Benge	.019	.019	.021	.024	.022	.025
B&S	.007	.007	.010	.011	.015	.011
Calicchio	.016	.015	.016	.021	.019	.018
Conn	.017	.016	.015	.019	.017	.018
Courtois	.020	.019	.022	.029	.029	.030
Destino	.015	.017	.009	.016	.025	.035
Eclipse	.020	.010	.032	.035	.022	.016
Edwards	.010	.011	.021	.033	.038	.041
Getzen	.021	.023	.023	.028	.024	.025
Holton	.026	.026	.032	.025	.023	.026
Jupiter	.018	.020	.010	.012	.015	.012
Kanstul	.019	.018	.023	.026	.018	.019
King	.020	.021	.022	.023	.022	.019
Lawler	.020	.017	.021	.038	.026	.027
LeBlanc	.032	.032	.028	.021	.022	.021
Marcinkiewicz	.018	.018	.016	.043	.036	.032
Martin	.023	.024	.021	.015	.013	.011
Monette	.015	.022	.005	.032	.008	.028
Schilke	.013	.017	.014	.015	.017	.016
Selmer	.017	.019	.018	.022	.023	.019
Stomvi	.013	.015	.018	.017	.015	.017
Taylor	.011	.022	.026	.007	.008	.014
Wild Thing	.009	.010	.006	.015	.014	.011
Yamaha	.012	.013	.012	.012	.013	.013

*Averages computed from over 30 years of empirical data

All horns are designed with proper valve alignment in mind.
It is through accumulated tolerances, unstable pad material,
and speed of manufacture that horns exhibit improper valve alignment.

For reference, the average difference in bore size between medium and large bore trumpets is only .008"

Valve Alignment Benefits

Valve Alignment and Range

When your valves are not lined up properly, each valve combination gives a different timbre. When the timbre changes, a musician will compensate with his/her chops in order to even out the timbre. By compensating with your chops, you are working harder than necessary to play the instrument. When you are working harder than necessary, the upper register becomes difficult.

When your valves are in proper alignment, you don't have to compensate as much to play in tune and even out the sound.

The upper register then becomes easier and more consistent.

By ensuring through proper valve alignment that your horn is giving the best performance possible, you can often use a more efficient mouthpiece, resulting in more sound for less work.

Valve Alignment and Pitch

Valves are pushed down to lengthen the tubing and change the pitch of the note. If the piston is not lining up properly with the holes in the casing, pitch is affected. This leads to manipulation of the lips or the use of false fingerings in an effort to play in tune.

Once the alignment is correct you can concentrate on making music, not adjusting for pitch.

Valve Alignment, Accuracy and Consistency

Accuracy and consistency on an instrument come from trial and repetition over a period of time. Because all horns without a Bob Reeves Valve Alignment use felt, rubber, or some other type of unstable pad material, the alignment of these horns changes over time. These unstable pads are affected by saliva and oil as well as the pounding during use. As the pads change, the alignment changes and the relative positions of the notes change.

Consistency improves with a Bob Reeves Valve Alignment.

Valve Alignment Benefits (cont.)

Valve Alignment and Slotting

Well defined slots are essential to efficient playing. When the valves of your instrument are not lined up properly, the slots are interrupted. It's as though you are half-valving a note (although, in reality, it is much less than half the valve distance) all the time.

When the slots are squirrelly (a result of improper valve alignment), it is more difficult to execute proper slurs and attacks.

After a Bob Reeves Valve Alignment, slotting is greatly improved.

Valve Alignment and Endurance

As outlined in the section titled "Valve Alignment and Range", when your valves are not in proper alignment you must work harder to play the instrument. This is caused by the variation in pitch and timbre resulting from the valves being out of place.

Endurance increases with proper valve alignment.

We give you the exact measurements of how much we adjusted each valve in both the upstroke and the downstroke.

We keep detailed records of each instrument we align so that if you ever need replacement pads, we can send them to you.

Valve Alignment and Sound Color

The easiest way to think of how valve alignment affects sound is to think about what happens to the sound when you half-valve a note; both the high and low frequencies are compromised.

If your valves are out of alignment it is as though they are half-valved all the time, but instead of being half the valve, it's maybe a 32nd of an inch.

You will hear more colors in your sound after a Bob Reeves Valve Alignment.

Our Process

- **Each horn is measured and analyzed**
  We use tools and gauges of Bob Reeves' design
- **New pads are installed**
  We use our own extremely stable pad material
- **The horn is re-measured**
- **The horn is adjusted to fit the new pads**
  This is the best way to assure permanence
- **The horn is re-measured and the alignment is verified**
  This ensures the most accurate alignment available

With incorrect valve alignment, tone suffers along with focus, pitch, and feel.

- **We keep detailed records of every horn aligned**
  This includes the original mis-alignment data which helps if follow up mouthpiece work is needed
- **We have aligned thousands of horns**
  Whatever piston instrument you have, we have probably worked on one like it
- **We have the largest database of horns aligned**
  Our extensive experience enables the best, most permanent alignment possible
- **We have the only stable pad material available**
  Beware of felt, or rubber (including neoprene) pads; their dimensions are adversely affected by saliva and oil

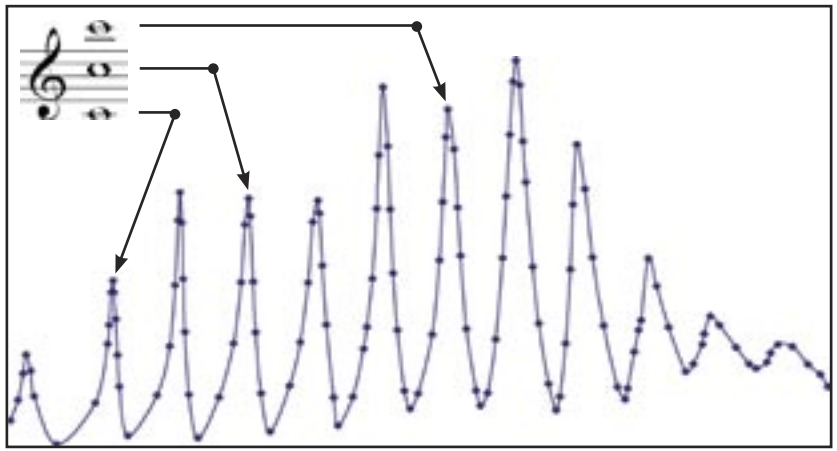
Bad valve alignment manifests itself in less resonance, compromised slotting, and inconsistent timbre from valve to valve.

Questions? 800-837-0980 661-775-8820 (CA & International)

Technical Details

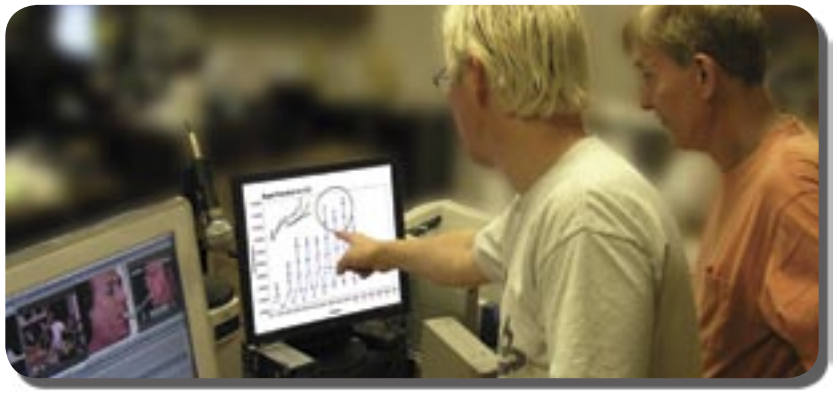
With correct valve alignment, when you excite a note, the resonance is much better than prior to a valve alignment.

The impedance versus frequency graph below illustrates good resonance peaks as measured using a salpingometer.



Well-defined resonance peaks-
a partial result of correct valve alignment.

Proper valve alignment manifests itself in more resonance, better slotting, and more consistent timbre from valve to valve.



After a Bob Reeves Valve Alignment, your horn will have improved resonance peaks and therefore, improved slotting.

Frequently Asked Questions (FAQs)

How do I know if my horn needs an alignment?
Our experience substantiates that most, if not all, horns can benefit from a Bob Reeves Valve Alignment.

Contact us and we'll help you determine if your horn will benefit.

I just bought a brand new horn, does it need to be aligned?
Unless it's a V~Raptor or other horn that includes a Bob Reeves Valve Alignment at the time of manufacture, our answer is (surprisingly) yes. There are a several reasons for this. All manufactured horns suffer from accumulated tolerances. In addition, most horns use either felt, cork, or rubber pad material, of which none are stable. If you are lucky enough to get a horn that has good alignment from it's maker, because of the unstable pad material the alignment will continually change.

Can I just order pads without having an alignment?
No. Just ordering pads from us will most likely cause your horn to be further out of alignment than it is now. This is because we use pads of a dimension designed to optimize our valve alignment, and they are not compatible with unaligned horns.

How long does a Bob Reeves Valve Alignment last?
The work we perform is permanent and is unaffected by playing the horn. If any parts of the valve assembly are replaced or worked on by someone other than Bob Reeves Brass, the alignment will be compromised. The only variable is how our pad material reacts with your body chemistry. This varies from person to person, but most can expect to get a minimum of 5 years use before needing to replace the pads. If you've had an alignment by us and think the pad dimensions have drifted, contact us and we'll send you the appropriate pads based on our record of your horn.

Many trumpet players end up with a drawer full of mouthpieces. This is because they "chase" the alignment of their valves as it changes over time.

FAQs (cont.)

Beware of rubber or felt pads; they compress from use and swell from contact with saliva and oil.

My local repair guy does alignments, why should I send my horn to you?
We have seen many horns lined up by other shops. Upon measuring them with our process, we find that the alignment performed by others is not as effective in solving the problems associated with incorrect valve alignment.

Other shops use different measuring techniques, different port prioritization, and unstable pad material.

Don't you guys just replace the pads when performing a valve alignment?
Replacing the pads plays an integral role in the alignment, however it is only a small part of the process. We adjust your horn to fit our pads. By doing this we assure the most effective and permanent valve alignment.

What if I send my horn for alignment and I absolutely hate the results?
We keep detailed records on every horn we align. This allows us to restore your horn to its un-aligned state if desired.

Since beginning valve alignments in 1975, we have only restored three horns back to their un-aligned state. In these cases, the horns were initially extremely far out of alignment. As a result, the players had chosen large mouthpieces to compensate for the increased backpressure caused by mis-alignment. After our alignment, the mouthpieces were too big for the players. These players were opposed to making any mouthpiece adjustments, and thus we returned their horns to their unaligned states.

FAQs (cont.)

Why do I have to set up an appointment when I'm mailing in my horn?

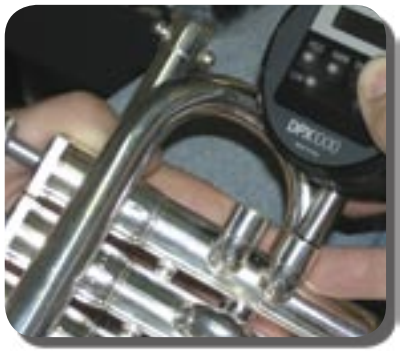
Because of our popularity and limited resources for performing valve alignments, it's best to make a mail-in appointment. It's like you're walking in the door, but instead of you, it's the UPS guy, for example.With a mail-in appointment, your horn is not in our shop for more than a day. Horns that ***arrive without an appointment*** *may take several weeks for us to get to.*

To compensate for bad valve alignment, many players gravitate to larger mouthpieces in an effort to feel comfortable.

Larger mouthpieces are harder to play.

Now that Bob Reeves Brass has aligned my valves, what changes should I expect?

Depending on the severity of your horn's initial misalignment, your results will vary. Even horns that initially have relatively close alignment will play more evenly and with more colors in the sound after our alignment.The average horn will gain improved pitch, slotting, sound, even-ness, and projection.



Can you align my flugel, valve trombone, euphonium, baritone, tuba, or helicon?

Yes. If it has piston valves, we can align it.

How To Ship A Horn

To ensure that your horn is protected and that your shipping costs are minimized, follow these guidelines:

- **The best way to ship a horn is without a case**
  Horns often shift in a case when shipping and get damaged
- **Wrap instrument in bubble wrap**
  Bubble wrap is available at packing supply stores and shipping centers - be sure to tape the bubble wrap closed around the horn
- **Pack in a sturdy box that is big enough to give at least 2-3 inches on all sides of the instrument**
- **Fill the space around the instrument with Styrofoam packing "peanuts"**
  Be sure to pack firmly, too little packing material is dangerous
- **Enclose a letter**
  Provide your ***name, address, phone number****, and return shipping information including how much insurance you would like - we advise you insure your horn for its replacement value*
- **Seal box with packing tape**
- **It is best to make an appointment before shipping your horn**
  With an advance appointment your horn will not be in our shop for more than a day - we usually book appointments two weeks in advance

Most problems on the trumpet are not solely mouthpiece based; they tend to be balance problems.

A horn with incorrect valve alignment will prevent the optimum balance of mouthpiece to horn from being realized and maintained.

Bob Reeves' Patented Valve Alignment
The First – and Still the Best.

- **The only patented valve alignment system**
  US Patent #3,990,342

- **The most accurate available**
  We measure and adjust each horn to within plus or minus .001"

- **The longest lasting — up to 15 years**
  We use pads of our own design that are extremely stable (rubber [including neoprene], felt, and cork pads are not stable)

- **We keep accurate records of each horn we align**
  New pads, if ever needed, can be replaced by the player, without the need to send the horn back to our shop

- **We can align any piston instrument**
  Piccolo trumpets to tubas

- **Both vertical and rotational alignment available**

- **Valve Alignment experience as far back as 1975**

- **Follow-up mouthpiece work, if needed**
  We have worked with thousands of players and know what adjustments are occasionally needed after an alignment

- **Same-day service with appointment**

Bob Reeves Brass Mouthpieces
25574 Rye Canyon Road, Suite D
Valencia, CA 91355
800-837-0980
661-775-8820 (international)
www.bobreeves.com info@bobreeves.com

This guide conceived of by Robert S. Reeves
Written by K.O. Skinsnes
Design and layout by K.O. Skinsnes
Edited by Jesse Irving
Graphics by John Snell
Photography by Larry McCracken