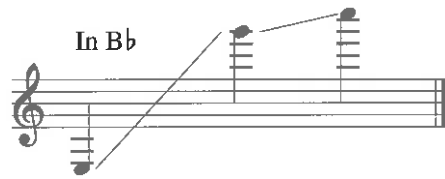


# Introduction

The clarinet is a single reed woodwind instrument with a cylindrical bore. The B $\flat$  clarinet is the most commonly used clarinet and the one on which beginners start. It is about 60 centimeters (23.6 inches) long and has a range of more than three octaves. The clarinet is most often made from grenadilla wood. Some are also made of plastic and metal. Plastic clarinets are made for the beginning student and for outdoor use. The metal clarinet is made exclusively for outdoor performance.



Example 7.1. The range of the clarinet

The clarinet family in order from the highest- to the lowest-pitched instruments consists of the following:

- D clarinet
- E $\flat$  clarinet
- B $\flat$  clarinet
- A clarinet
- Alto clarinet in E $\flat$
- Bass clarinet in B $\flat$
- Contra-alto clarinet in E $\flat$
- Contrabass clarinet in B $\flat$

All of these clarinets function the same from instrument to instrument. The fingering remains basically the same from one to the other, although the spread of the fingers differs with the size of the particular clarinet. Because of the varying mouthpiece and reed size, there must be some embouchure adjustment from instrument to instrument.

## History

The invention of the clarinet around 1700 is credited to the Nuremberg instrument maker Johann Christian Denner. The first known reference to Denner and the clarinet was made by J. S. Doppelmeyer in his *Historische Nachricht von den Nurburgischen Mathematicis und Künstlern* in 1730: "At the beginning of the present century he [Denner] invented a new sort of pipe, the so-called Clarinette, to the great satisfaction of music lovers."

The predecessor of the clarinet was the chalumeau, a peasant pipe with a single reed attached to a tapered mouthpiece. The word *chalumeau* derives from the Latin *calamus*, a small reed, or from the Greek *calane*, a reed pipe. The chalumeau had no barrel or bell and was much shorter than the modern clarinet. The instrument usually had seven holes, and its range was an octave plus one note (from  $f$  to  $g^1$ ). It did not overblow into the upper register.

Denner's new instrument, the clarinet, had a bell and a wider bore and was longer than the chalumeau. The barrel and the mouthpiece were made in one piece. This instrument had eight holes and two keys placed at the upper end exactly opposite each other, one on the front to be played by the index finger and producing  $b^1$ , and one on the back played by the thumb and producing  $a^1$ . By using both keys at the same time, a very poor-sounding  $b^{\sharp 1}$  was produced. The thumb key also served as the speaker (register) key, allowing the clarinet to overblow a twelfth. This made it possible to play from  $f$  to  $d^3$ .

Denner and his sons continued to experiment with and improve their clarinet. The upper register was difficult to obtain and produced an imperfect scale. By placing the thumb hole higher and narrowing it, they changed the notes the first two keys played, creating the basic arrangement of the modern clarinet: the index finger key by itself played  $a^1$  and the two keys together produced  $b^1$ . They also inserted a small metal sleeve into the speaker key hole, penetrating almost to the center of the bore, improving the  $b^1$  and preventing the collection of water in that tone hole.

This improvement created a serious problem:  $b^{\sharp 1}$  could be played only by liping down the  $c^2$ , with very poor results. Around 1740 Denner's son Jacob is generally credited with solving this problem by lengthening the clarinet, adding a bell at the bottom for resonance, and adding a key to be played by the fourth finger or thumb of the right hand. This key covered a hole added near the bottom of the lower joint that produced a low  $e$  and, by adding the register key,  $b^1$ , a twelfth higher. This improvement allowed the clarinet to play a complete range of almost three octaves, from low  $e$  to  $c^3$ .

The clarinet continued to have problems chromatically. Half steps produced by fork fingerings often did not speak well, and some notes were basically unobtainable. Several instrument makers worked on this problem, and a five-key clarinet appeared around 1760. Two new keys had been added on the lower joint of the instrument, producing  $g^{\sharp}/d^{\sharp 2}$  and  $f^{\sharp}/c^{\sharp 2}$ .

Music written for the clarinet began to appear by the middle of the eighteenth century. Vivaldi composed three concerti grossi that included two clarinets in C and two oboes. Handel wrote an overture for two clarinets in D and corno di caccia in 1748. Johann Christian Bach used the clarinet during the 1760s in the wind symphonies he wrote for outdoor concerts in Vauxhall Gardens.

The earliest clarinet concertos were written by Johann Melchior Molter for the three-key clarinet in D. Carl Philipp Emanuel Bach wrote six sonatas for clarinet, bassoon, and harpsichord. These works emphasized the upper register of the clarinet, with little use of the chalumeau (lower) range.

The clarinet was continually being improved by means of experiments in the size of the bore, the diameter, the taper, and the undercutting of the tone holes. This changed the character of the clarinet and resulted in works using both registers freely. Many of these concertos, by such composers as Karl Stamitz, Ernst Eichner, and Georg Fux, were written for the members

of the Mannheim Orchestra, which began using two clarinets around 1760.

The Viennese clarinet virtuoso Anton Stadler, working with the instrument maker T. Lotz, lengthened the clarinet, extending the range down to a low c. It was for this clarinet, called the "basset clarinet," that Mozart wrote the original version of his great concerto, K.622. There is evidence that the Quintet for Clarinet and Strings was also written for Stadler's basset clarinet.

During this time, the clarinetist needed to possess a set of clarinets in several different keys, most often in C, B $\flat$ , and A. Each clarinet had its own sound character and would play more fluently in its home key and closely related keys. This was due in part because the pads used on these clarinets were made of felt and did not close the holes as tightly as modern-day pads. This encouraged the players to use the clarinet that would use the least number of keys in a performance.

✓ Sometime around 1791, Jean Xavier Lefèvre, a clarinet virtuoso from Paris, added a sixth key, producing c $\sharp$ /g $\sharp$ . This was done simultaneously by several other instrument makers as well. Moreover, several clarinetists and instrument makers were experimenting with a variety of keys. When Spohr wrote his Clarinet Concerto No. 1 for Johann Simon Hermstedt, he requested that the soloist use a clarinet with thirteen keys. Heinrich Baermann, for whom Weber wrote his concertos, had a ten-keyed instrument.

✓ Iwan Müller, a Parisian born in Russia, introduced a newly designed thirteen-key clarinet in 1812. His method of making the clarinet was revolutionary: the tone holes were all countersucks as opposed to being built up above the tone hole, and he used pads made of leather filled with wool held in a hollow cup. This not only insured the covering of the hole but also improved the acoustic result. Müller claimed that this clarinet, in B $\flat$ , could play in any key with equal ease.

In 1812 Müller attempted to have his new instrument adopted as the officially accepted clarinet by the Paris Conservatoire. However, the members of the committee rejected his instrument because they felt that each clarinet had its own musical character and sound and this should be preserved. This clearly contradicted the practice of most composers to write for the clarinet that played most easily in the key of their work, regardless of the character of their music.

Although Müller had to close down his instrument shop in Paris as a result of this rejection, he toured England, Holland, and Germany with his new instrument, establishing it as the finest clarinet yet produced. He continued to experiment with new keys and made use of the ring key system. Moreover, he was the first to abandon the use of cord to hold the reed on the mouthpiece, using a metal ligature similar to those in use today.

The final major change in the development of the clarinet was a combination of work by three people. Theobald Boehm revolutionized the flute by designing a completely new key system for that instrument. He added a series of ring keys that circled the finger holes and, when depressed, covered an additional hole at a distance from the finger hole. Hyacinthe Klosé suggested to the instrument maker Louis Buffet that a clarinet could be made using this so-called Boehm system. Working together, they produced a clarinet with seventeen keys and six rings that controlled twenty-four tone holes. The Klosé-Buffet clarinet, presented at the Paris exhibition in 1839, is essentially the instrument used today in most of the world, including the United States.

2	2	
29	24	
25	16	
20	20	
20	15	
12	8	
100	82	2

25  
10  
3

Müller's clarinet served as the basis for two other important fingering systems, one made by Albert of Brussels, the other made by Oskar Oehler, an instrument maker from Berlin. Albert's clarinet system, also called the "simple-system," first appeared around the 1850s and had models with thirteen keys and with fourteen keys. The fourteen-key model was used by the great English clarinetist Henry Lazarus and was very popular in England and Belgium well into the twentieth century. Over several years during the first part of the twentieth century, Oehler added some of the Boehm system advantages to Müller's instrument. As well, he made other improvements involving the shape and position of the keys and worked on perfecting the general mechanism of the clarinet. This "Oehler" system clarinet is the instrument used in Germany today. Clarinetists and instrument makers have made many other experiments but the Boehm and the Oehler system clarinets remain the basis for these experiments and are the instruments used by clarinetists around the world.

### **Assembly of the Clarinet**

The five parts of the clarinet are the mouthpiece, the barrel, the upper joint, the lower joint, and the bell. Before assembling the clarinet, check to see that all the corks have enough cork grease on them to slide easily into their counterparts. If the corks are dry or sticky, take a small amount of cork grease and spread it around the cork with your finger. As the clarinet is being assembled, the reed should be placed in the player's mouth or in a glass of water to moisten it. Water makes the reed supple so it can vibrate freely.

The most efficient way to assemble the upper and lower joints of the clarinet with the idea of preventing mechanical problems is probably too difficult for young students to manage because their hands are too small. Nevertheless, I will describe this procedure and then give an alternative for younger students to use until they are able to master the first procedure.

Begin assembling the clarinet by placing the lower joint in the right hand with the rings and holes facing upward and the top of the joint facing away from the body. Position the right thumb over the keypad located just below key #17. Rest the palm of the hand over the keypad directly below. Extend the fingers to the other side of the joint, resting them on the single keypad located there. Be careful not to put pressure on any of the key mechanisms or connecting rods. This grip helps set the pads and prevents the bending of any of the rods or key mechanisms, which can result in the pads not covering and the keys getting out of adjustment. An alternative for younger students is to grip the lower joint with the thumb positioned below the thumb rest and the fingers grasping the body of the instrument over the key rings.

Take the upper joint into the palm of the left hand with the rings and holes facing upward. Place the ring finger on the lowest ring, which, when depressed, raises the bridge key extending over the cork on the bottom end of that joint. Insert the upper-joint tenon into the lower joint in a twisting motion until the joints are flush together and the upper bridge key is exactly lined up with the lower bridge key. Always use a twisting motion. Do not push them together.

Now cradle the two joints in the palm of the right hand with the thumb rest against the right thumb. Take the bell with the left hand and twist it onto the bottom of the lower joint until the two pieces are flush together.

To continue the assembly, take the three assembled pieces with the left hand around the upper joint, again being careful not to bend any key mechanism. Take the barrel in the right hand and twist the wider end of the barrel onto the upper joint's top tenon until the two pieces are flush together and the labels are lined up. Be careful to put the left hand around the upper joint. If the left hand goes around the lower joint, the alignment

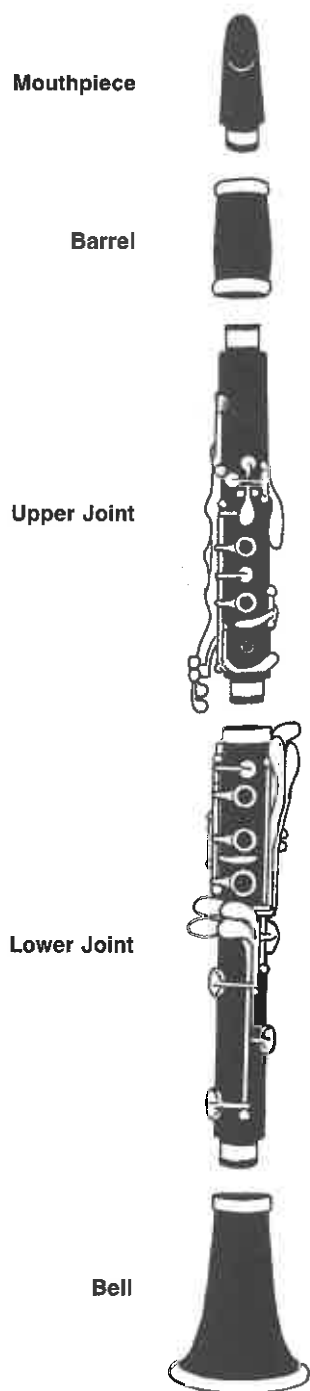


Figure 7.1. The five parts of the clarinet

of the bridge keys will be disturbed and there is a risk of bending keys in the area between the upper and lower joints.

To complete the assembly, take the assembled parts with the left hand around the upper joint. With the right hand, take the mouthpiece without the reed, ligature, or cap and twist it into the top of the barrel, lining up the hole in the mouthpiece with the register key on the back of the clarinet.

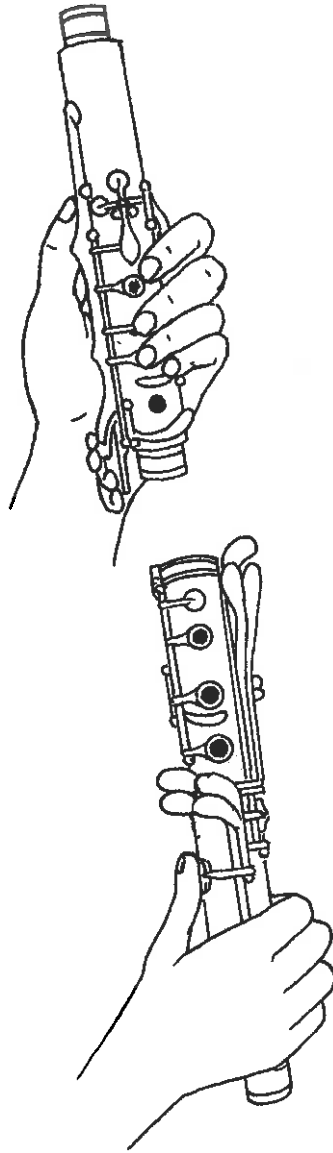


Figure 7.2. Hand position for assembling the clarinet

#### PLACEMENT OF THE REED AND LIGATURE

The ligature holds the reed in place on the mouthpiece. The widest part of the ligature is the bottom, and the screws are always on the right side. Some ligatures are made with the screws on the reed side of the mouthpiece and some with the screws on the opposite side.

To attach the reed to the mouthpiece, place the moistened reed on the mouthpiece with the flat side of the reed resting on the flatbed of the mouthpiece and the thin part of the reed pointing toward the tip of the mouthpiece. Line up the tip of the reed with the tip of the mouthpiece with just a hint of the mouthpiece visible over the tip of the reed. Hold the bottom of the reed in place with the left thumb and take the ligature in the right hand with the wide end of the ligature on the bottom. Slide the ligature over the top of the mouthpiece, being careful not to damage the reed. The ligature should be moved down onto the mouthpiece and over the reed until the top of the ligature sits just below the line on the mouthpiece. If there is a problem moving the ligature low enough on the mouthpiece, loosen the screws until the ligature is able to rest below the line on the mouthpiece. When the ligature is in place, tighten the bottom screw securely. The top screw should be tightened securely, then loosened one turn back. This allows the reed more freedom to vibrate but keeps the reed in place on the mouthpiece.

## Care and Maintenance

### DAILY CARE

The day-to-day care of the clarinet is important. After playing, the collected saliva and condensation inside the clarinet must be cleaned with a clarinet swab. A clarinet swab is generally made of cloth, often cotton or linen, with a long string with a weight attached at the end. There are many types of swabs, but they all fit this general description.

The clarinet should be cleaned out each time it is put away. To clean out the clarinet, take it apart and put it in the case. With the exception of the mouthpiece, take each piece of the clarinet one at a time, put the weighted end of the swab through each piece and slowly pull the swab through it. Be especially careful with the upper joint to pull the swab slowly so it does not get caught on the register key vent inside. As the swab is pulled through, wipe the joints dry. Blow air through the tone holes to clear any moisture. If there is a great deal of moisture in any tone hole, take a piece of ungummed cigarette paper and place it under the pad to soak up the excess condensation.

To clean the mouthpiece, remove the ligature and reed. Take the cloth end of the swab and twist it so it can be fed through the mouthpiece. Gently swab back and forth with the cloth, absorbing the collected moisture. Do not feed the weight through the mouthpiece, as you risk chipping the end of the mouthpiece. If the drawstring is continually passed over the end of the mouthpiece, it will gradually reface the mouthpiece as the string slowly wears away the tip of the mouthpiece.

Often while one is playing the clarinet, condensation will build up in one of the tone holes, usually under the pad of either the  $c\sharp^1/g\sharp^2$  or the  $e\flat^1/b\flat^2$  key or somewhere else in the upper joint. This will cause a fuzzy tone on these notes or a squeak. When this happens, try to blow the water out of the hole. If the problem persists, again take a piece of ungummed cigarette paper and soak up the water. If this does not solve the problem, take the clarinet apart and pick up the upper joint with the left hand. Close the tone holes with the left fingers and stop up the end of the joint with the palm of the right hand. Hold open the key above the hole where the water problem is located and blow in and out through the top of the upper joint. Any water lurking in the tone hole will either be blown out the tone hole or drawn into the inside of the upper joint. To pick up any condensation drawn inside, run the swab through the joint once again.

To avoid excess water in the clarinet during performance, it is wise to swab the clarinet out between movements of a piece or during long periods of rest. The clarinetist should always have a swab and a piece of cigarette paper within reach during performances.

#### LONG-TERM MAINTENANCE

Long-term maintenance should include the following:

1. Dust carefully under the keys with a clean, narrow paintbrush a few times each month.
2. Gently clean out each tone hole with a pipe cleaner. Dirt from the fingers builds up in the tone holes and will eventually affect intonation. Do not disturb any tape added to the tone holes for tuning purposes. The player's hands should be washed before playing the clarinet to help avoid this problem.
3. Apply oil to the metal contact points every month or so. Use a drop of light key oil on each metal contact, being careful not to let it get onto any of the pads.
4. Keep the corks greased. The fit of the joints will vary with the humidity. When the weather is humid, the corks expand; the fit becomes tighter and may require cork grease on a more regular basis. When the weather is dry, the corks shrink and the fit becomes looser. In this case, be careful not to put too much cork grease on the corks, as they might come apart during a performance. Keep the corks greased so there is a firm fit between the joints without any risk of the parts becoming stuck together.



# Fundamentals of Clarinet Playing

Reed 9/10 Chapter 8  
Also finger test  
Chromatic - E-E

## Embouchure

There are two basic embouchures for playing the clarinet: **single lip** and **double lip**. The embouchure used by most clarinetists, the single lip, is easier to teach, to learn, and to use. Thus I will limit my discussion of the clarinet embouchure to the single-lip approach.

Although there are different approaches to forming the single-lip clarinet embouchure, I prefer the one that can be described in terms of "smiling." The corners of the mouth are pulled back, stretching the red part of the lower lip, which is then curled over the lower teeth. Do not put too much lip into the mouth. The edge of the red of the lower lip should be in view. Put the mouthpiece into the mouth with the reed over the lower lip, place the upper teeth down on the top of the mouthpiece about three quarters of an inch from the tip, and close the upper lip around the mouthpiece to make the embouchure airtight. With the mouthpiece in the mouth and the corners of the mouth stretching as in a smile, pull down with the point of the chin so the chin is set firmly against the teeth and gums inside. This pulls the lower lip down and away from the reed and allows it to vibrate freely. The embouchure should be firmly set with no flabbiness in the lips or chin.

(Be careful!)

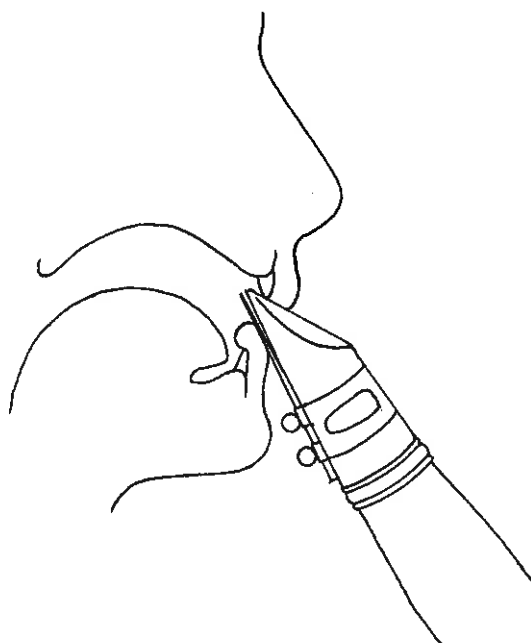


Figure 8.1. Mouthpiece position

too small?

A good way to demonstrate this is to have the student form the clarinet embouchure with a straw. Have the student take the straw and draw in while closing the open end of the straw with a finger. This re-creates the feeling of the embouchure at work.

The most difficult part of learning the clarinet embouchure is determining the pressure against the reed and mouthpiece, or the "bite," when the mouth is closed. It is important that the mouthpiece sit in the mouth firmly enough to inhibit any movement as the clarinet is played. It is equally important that the pressure against the reed is not so much that it hinders the reed from vibrating freely.

To check if the mouthpiece is set properly in the mouth, the instructor should take hold of the barrel as the student is playing and turn it left and right to see how much the mouthpiece moves. If the mouthpiece moves with little resistance, the embouchure must be firmed up by pulling the corners of the mouth out more to stretch the lower lip, by closing the "bite" more, or by both methods. If, instead, the mouthpiece will not move at all and the tone sounds pinched, have the student relax the "bite" a little until the tone sounds freer.

It is important that the student learn from the outset that the embouchure is used only to attach the clarinet to the player. It is often overused by students in their effort to play each note. This is a concept that should be discouraged from the beginning. The embouchure should be set solidly. The only movements should occur to help in leaps from the upper to the lower register and for minor intonation adjustments. Both of these techniques are somewhat advanced and probably should not be mentioned at first.

## Posture and Position

The proper posture for playing the clarinet in a seated position is to have the upper body in an upright position. The shoulders and arms should be in a natural position, with no tension created by pointing the elbows out or moving the arms forward. Hold the head in an upright position so the face points directly forward. Bring the clarinet to the mouth in a comfortable and natural way without leaning forward to meet it.

To help students find the proper position, have them sit in a chair without the clarinet and rest their hands naturally on their legs. Then have them raise their arms and hands as if they were going to be placing them on the clarinet. This will give them the feeling of the proper and natural position for playing the clarinet.

Hold the trunk of the body erect and do not bend over in any way. This places the lungs in their most efficient position for the maximum air intake. If the trunk is bent forward, the lungs become cramped and cannot be filled to their maximum capacity.

Once the clarinet is placed in the student's mouth, the angle of the clarinet should be about forty-five degrees from the body. This places the bell of the clarinet near the knees of a person of average height.

The bell should not be held between the knees. This creates a rigid, inflexible posture and muffles the sound in the extreme low register. The sound of the low f and e can easily get lost in the folds of clothing. This position also builds the bad habit of picking up the weight of the instrument by the knees. This becomes a particular problem when the performer plays standing up and suddenly must compensate for the weight previously picked up by the knees.

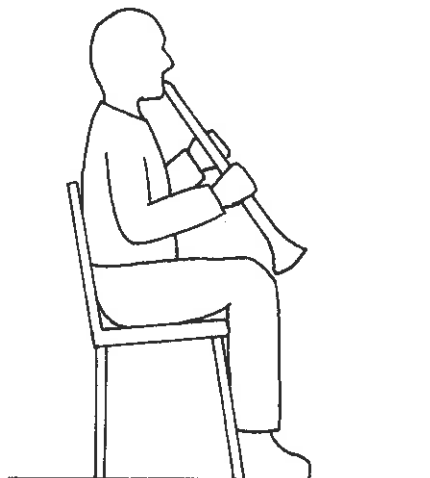


Figure 8.2. Posture when playing the clarinet in a seated position

### Finger and Hand Positions

To play the clarinet, take the lower joint of the instrument in the right hand so the thumb rest rests on the top side of the right thumb at the first joint. This places the first, second, and third fingers over the rings and holes of the lower joint and leaves the little finger to play the four keys at the bottom of the instrument.

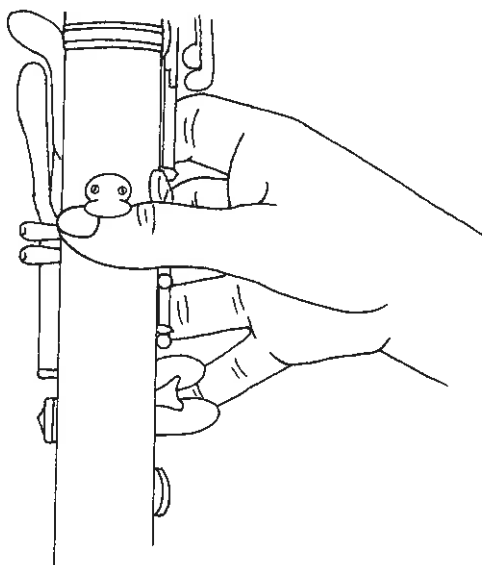


Figure 8.3. Correct position for the right thumb

Put the left hand over the upper joint with the left thumb in position to cover the ring and hole and to push the register key under the clarinet. This places the first, second, and third fingers over the rings and holes of the upper joint and leaves the little finger to play the four keys at the side.