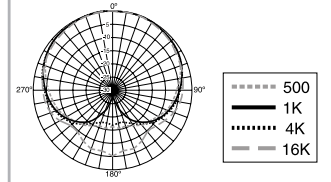




DP30/C

**DP30/C**

Frequency response	30Hz to 30kHz $\pm 2\text{dB}@1'$
Polar Pattern	Cardioid
Sensitivity	10mV/Pa (-40dBV/Pa)
Power requirements	48V Phantom, 10mA
Peak acoustic input	145dB SPL
Output	XLR (PIN 2+)
Minimum output load	600 $\Omega$ , balanced between pins 2&3
Noise	22dB SPL (A weighted)
Dimensions L x D	10.75 x .860 inches (275mm x 22mm)
Weight	.22lb (100g)



Made in U.S.A.

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www.earthworksaudio.com  
Printed in U.S.A.

**Earthworks®**  
**CLOSE**  
**MIC™**  
SYSTEM  
FOR TOMS & SNARE  
HIGH DEFINITION MICROPHONES™

**USER'S**  
**MANUAL**  
**CMK4** CLOSEMIC™  
SYSTEM  
**CMK5** CLOSEMIC™  
SYSTEM



**CMK4**

**CMK5**





## NOTES

Congratulations on your purchase of an Earthworks CMK4 or CMK5 CloseMic™ Kit System. You will be thrilled with the results you will be able to obtain using the CloseMic™ Kit System. After reading this manual, if you have any unanswered questions, please email or phone us using the contact information on the back page of this manual.

Happy Drumming!

First, identify the exact product you have purchased from the list below. Then verify that you have received each of the items listed below the product model/name.

Items Enclosed with:

### **CMK4 CloseMic™ Kit**

- 4 – DP30/C Drum Periscope™ Microphones
- 4 - LP1530 LevelPads™
- 4 – RM1 RimMount™
- 4 – PW1 Foam Windscreens
- 1 – CMK-C High Impact Carrying Case  
with custom foam insert
- 1 – CMK4/CMK5 User's Manual

### **CMK5 CloseMic™ Kit**

- 5 – DP30/C Drum Periscope™ Microphones
- 5 - LP1530 LevelPads™
- 5 – RM1 RimMount™
- 5 – PW1 Foam Windscreens
- 1 – CMK-C High Impact Carrying Case  
with custom foam insert
- 1 – CMK4/CMK5 User's Manual

## IMPORTANT NOTICE - Please Read This:

Use of the LevelPad™ - DP30/C microphones have a high output level, which may overload the preamps of some mixers or consoles. Many outboard microphone preamplifiers and preamplifiers in mixing consoles will handle as much as +24dbv at the microphone input, without distortion. We suggest that you check the “maximum preamp input level” specifications of your mixer or preamplifier to see if it will accommodate signal levels this high. Some mixers and preamps will not handle levels this high at the microphone input. To prevent overload, please use a LevelPad™ in the microphone cable feeding each DP30/C Microphones.

Some mixer or outboard preamplifiers have a pad that can be switched in or out. However, some of these pads are not attenuators that precede the pre-amplifier input, instead they only reduce the gain of the preamplifier. These (so called) pads will provide no input overload protection from high level microphone signals (see Fig. 1-A). In contrast, other outboard or mixer pre-amplifiers have actual pads that precede the preamplifier. These types of pads will provide the input overload protection that is needed (see Fig. 1-B). Such pads will typically provide -10dB or -20dB attenuation. However, due to the very high output level of the Drum Periscope™ microphones, -10 dB or even -20dB may not be enough attenuation when close miking snares or toms with DP30/C Microphones.

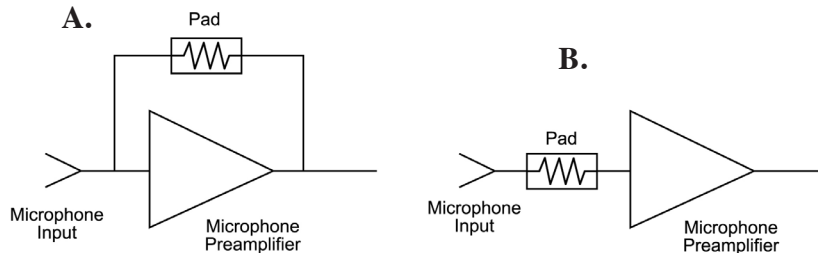


Figure 1-A and 1-B Preamp Input Pads

In any case where the pad does not precede the preamplifier, or the pad does not provide enough attenuation, the Earthworks LP1530 LevelPad™ can be used and will provide either -15dB or -30dB of attenuation. The LevelPad™ comes housed in a stainless steel tube with gold-plated XLR connectors on each end. As the LevelPad™ is inserted in the mic line, it will always precede the preamplifier input. It makes no difference if the LevelPad™ is inserted at the microphone, or somewhere in the middle

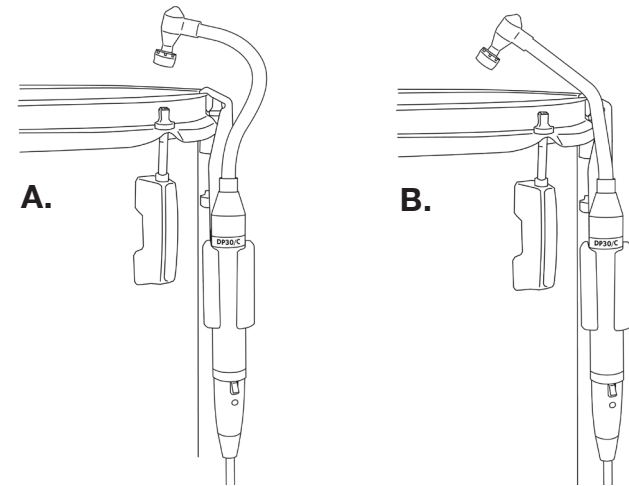


Figure 8-A and 8-B Miking the Top Head of a Tom

The DP30/C High Definition Drum Periscope Microphones™ have been used successfully by drummers with major recording artists in both recording sessions and for live performance. The Drum Periscope Microphones™ will provide you with years of exceptional and reliable results and will withstand the rigors of the road. We welcome you to the ever-growing number of drummers and sound engineers using Earthworks High Definition Microphones™.

We know that when you use the Earthworks High Definition Drum Periscope Microphones for your recording and live performances you will be thrilled with the results. We are pleased to welcome you to the ever-growing family of professionals using Earthworks High Definition Microphones™.

We hope the suggestions in this manual have been beneficial to you. Don't be afraid to experiment with mic placement. You can be as creative with your mic placement as you are with your music. You are the judge of what works best and sounds best.

If you have any questions, or require any additional information, please do not hesitate to contact Earthworks using the contact information on the back cover of this manual.

### FIFTEEN-YEAR WARRANTY

All Earthworks® products (excluding accessories) carry a fifteen-year limited warranty (parts and labor). If you have any problems with your Earthworks products, please contact our warranty/repair department by email at: [returns@earthworksaudio.com](mailto:returns@earthworksaudio.com) or by telephone at (603) 654-6427, ext 19.

suggested that the microphone head be positioned between 1.5 inches and 3 inches above the drumhead.

All of the previous information in this manual applies to both toms and snares when using a Drum Periscope Microphone.

The DP30/C SnareMic has been optimized for miking snare drums and toms and has a low frequency response down to 30Hz. If the DP30/C sounds a little “tubby” on your snare drum, then use a high-pass filter set somewhere between 60Hz and 100Hz to reduce the low frequency response or a low frequency equalizer (EQ) to accomplish the same thing by attenuating/cutting a few dB in the area of 60Hz to 100Hz for the desired results.

The DP30/C SnareMic™ can be used on either the top drumhead, bottom drumhead or both. Figure 7-A shows a snare drum with a DP30/C microphone placed over the top drumhead, while Figure 7-B shows a snare drum with both the top and bottom heads miked.

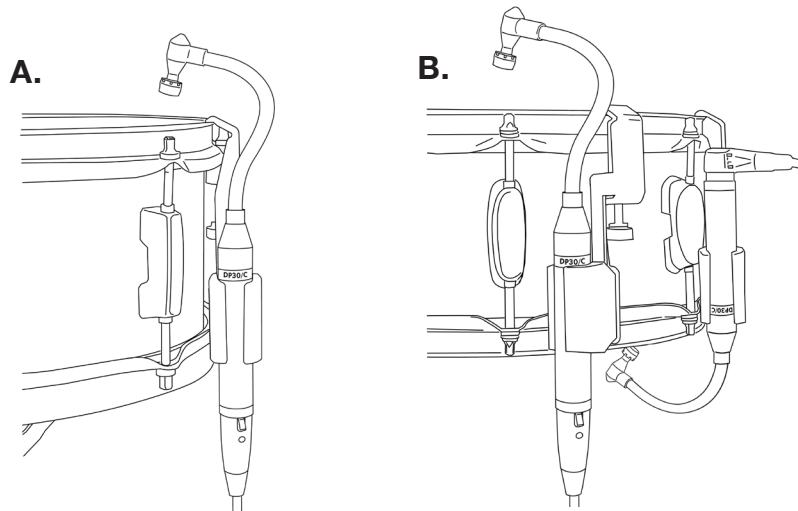


Figure 7-A and 7-B Miking the Top or Top & Bottom of a Snare

### Close Miking Toms with the DP30/C

This extended low frequency response and the crisp transient response of the DP30/C will provide a rich and full tom sound. You can mike either the top head of a tom with the DP30/C TomMic™ as indicated in Figure 8 or you can also mike the bottom, or top and bottom of a tom in a similar fashion as shown on a snare in Figure 7-B. You will notice in Figure 8-A the microphone head is placed closer to the drum rim, while in Figure 8-B the microphone head is moved closer to the center of the drumhead by changing the position of the mini-flex gooseneck.

of the mic line, or by plugging the LevelPad directly into the preamplifier input. The most popular practice is to plug the LevelPad™ into the pre-amplifier input, which makes it more accessible to switch the attenuation settings (-15dB or -30dB) if needed. Figures 2-A, 2-B and 2-C show how the LevelPad can be inserted into the microphone line in one of three ways as indicated below:

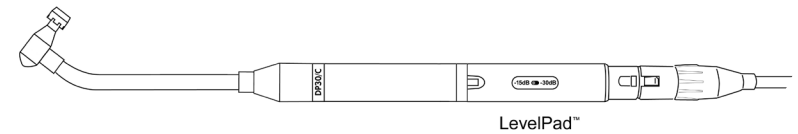


Figure 2-A LevelPad™ inserted at the microphone base

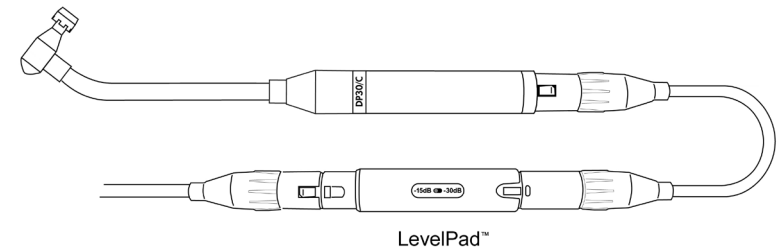
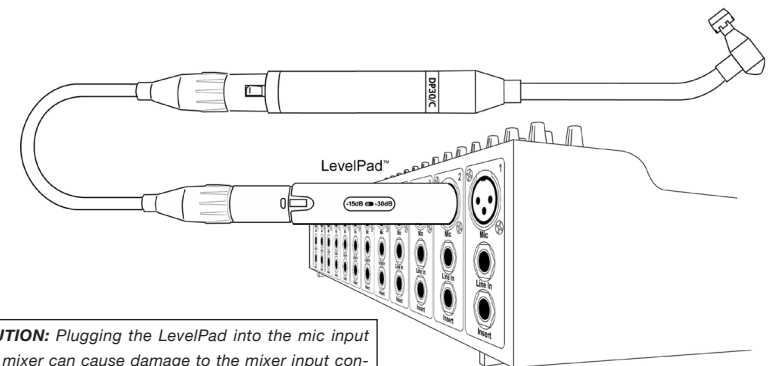


Figure 2-B LevelPad™ inserted in the microphone cable.



**CAUTION:** Plugging the LevelPad into the mic input of a mixer can cause damage to the mixer input connector if the LevelPad receives a hard push to the side. However, if you are careful, placing the LevelPad at the mixer mic input will provide greater ease of use in changing the LevelPad attenuation switch.

Figure 2-C LevelPad™ inserted into mixer mic input

## Earthworks Drum Periscope™ Microphones

The Earthworks DrumKit™ High Definition Three-Microphone Systems have had great success because they pick up drum sounds with far more detail and accuracy than conventional microphones. This improved sound quality is due to proprietary advanced technologies utilized in Earthworks High Definition Microphones.

Many drummers such as Jeff Campitelli with Joe Satriani, Keith Carlock with Steely Dan, and FOH engineers such as Randy Lane with Dream Theater, were using Earthworks High Definition Microphones™ for overheads and kickdrum with exceptional results. They then wanted the same exceptional sound quality from their snare and tom mics. With the introduction of the DP30/C microphone, they were able to get the same pristine, detailed sound from their toms and snares as they were from their Earthworks High Definition drum overhead mics.

We worked with major artists for nearly two years developing and field testing the DP30/C High Definition tom and snare mic. During the development phase, we miked a set of drums with nine Earthworks High Definition Microphones (including our new DP30/C tom and snare mics) and also nine industry favored mics. When veteran engineers heard the difference between these two recordings, they made the comment that the improvement was so dramatic, it didn't even sound like the same set of drums. They all agreed, "the increase in detail and sound quality was astounding."

The DP30/C was designed specifically for snare and toms that features a flexible mini-gooseneck for easy positioning in addition to a high acoustic input level that can handle up to 145 dB SPL. The Earthworks patented polar technology provides excellent rear rejection and a uniformity of frequency response out to 90 degrees off-axis. This vastly reduces phase cancellation or other phasing issues, and minimizes cymbal leakage as well as acoustic feedback problems in "live sound" applications.

## Earthworks High Definition Microphones™ the New Science in Microphones

David Blackmer, the brilliant engineer who invented the unique technologies of dbx, is also the inventor and founder of Earthworks. In the last few years of his life, David developed a number of revolutionary technologies that dramatically improve the quality and performance of microphones. In short, Earthworks High Definition Microphones™ will pick up sounds and detail that other microphones cannot. These technological improve-

The flexible mini-gooseneck will allow you to move the microphone head either up or down above the drumhead as well as in and out from the drum rim. In addition, you can change the angle of the microphone head for your desired results. Figure 6-A shows how the microphone head can be rotated while Figure 6-B shows how the microphone head can be moved more toward the center of the drum by changing the positioning of the mini-gooseneck.

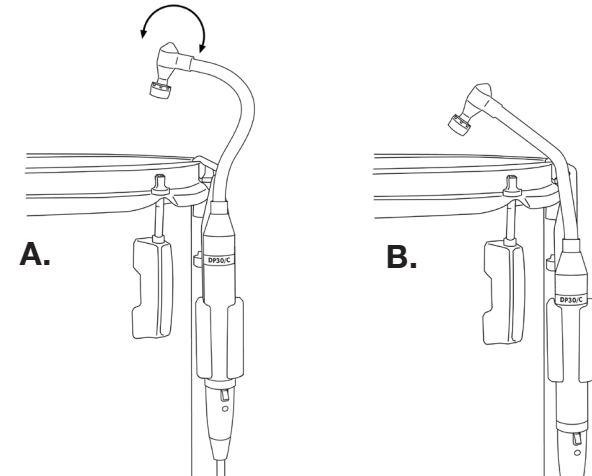


Figure 6-A and 6-B Positioning the Microphone Head

## Plug in the LevelPad, if necessary

In close miking drums, one should keep in mind that the peak sound level at the microphone head is extremely loud. Microphones used for close miking drums should have a sound pressure handling capability of at least 140dB SPL to prevent audible distortion. The Drum Periscope™ microphones will handle up to 145dB SPL without distortion. However, as mentioned earlier, with this kind of high sound pressure level, it is possible for the microphone output to be as much as +24dBV which may overload some microphone preamplifiers. The use of the Earthworks LevelPad in the microphone line will prevent any such distortion or overload. So, to be safe, we suggest that you first plug a LevelPad into the mic line feeding the Drum Periscope microphone. For full information refer to pages 3 and 4 of this manual.

## Close Miking Snare Drums with the DP30/C

As previously mentioned, when close miking drums with a DP30/C microphone, never position the microphone head parallel to the drumhead. Always position the microphone head at an angle to the drumhead. It is also

The various types of metal drum rims may have the bottom flange of the rim either closer to the shell or further from the shell. Depending upon the type of metal drum rim, one of the previously described three positions will allow the RimMount bracket to be mounted parallel to the drum shell. The soft protective Polyolefin® coating on the RimMount bracket will prevent the possibility of scratching the drum shell finish. Position the rim-guide so the bottom edge “flange” of the drum rim fits comfortably into one of the rim-guide grooves. This will insure that the cushioned rim-guide remains securely in place as you tighten the thumbscrew to firmly secure the RimMount to the drum rim.

### Adjusting the Microphone Height

Once the RimMount is mounted securely on the drum rim with the DP30/C microphone housed in the rubber holder, the microphone body can be moved either up or down in the rubber holder to adjust the desired height. Then the mini-gooseneck will provide a good amount of latitude in positioning the microphone head from any pre-set microphone body height. Adjusting the height of the Drum Periscope microphone body is shown in Figure 5-A and 5-B.

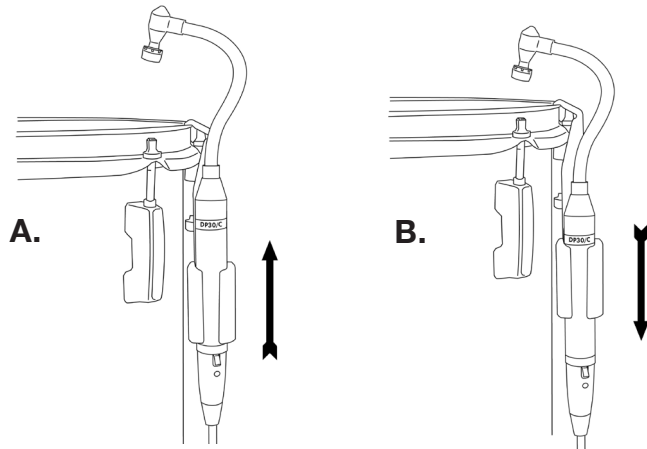


Figure 5-A and 5-B Adjusting DP30/C Microphone Height

### Positioning the Microphone Head

Once the Drum Periscope microphone height has been set, then the microphone head can be positioned where you desire. However, you should never place the microphone head “parallel” to the drumhead. The microphone head should always be at “an angle” to the drumhead. This will prevent any possibility of the diaphragm being forced to the microphone back plate which could cause an unwanted pop or thump in the sound or recording system.

ments are in the areas of impulse response, diaphragm settling time and polar technologies. Those who have heard Earthworks High Definition Microphones™, say that they hear more of the attack, and more subtle details with a more pristine quality in the sound than with any other microphones, regardless of price.

### Miking Drums

There are many ways to mic drums and it seems that most every recording or live sound engineer has their own way of doing so. Our objective is not to indicate which drum miking approach is better, but to make suggestions and look at advantages and disadvantages of each. Every engineer or producer uses their own methods to obtain the results they desire, and that’s what matters.

### Multi-microphone Method

The objective in multi-microphone drum miking is to place a separate microphone on either most or all the elements of a drum set. Typically, separate mics are used on snare, toms, high-hat and kick drum with one or two overhead microphones. The overhead mics pick up the overall sound of the drums including cymbals, which are typically not miked separately. With this method, the mixing engineer can control the level, and signal processing (limiting, EQ, etc.) for each element of the drum set (toms, snare, hi-hat, etc.). This provides a great deal of control over the sound of the entire drum set and allows bringing out certain patterns on sock cymbal, snare, etc. Multi-miked drums may be desirable when you are recording in a large room with high ambient sound as it will reduce the amount of unwanted room sound. Multi-miking is also a popular practice for miking drums in “live sound” applications such as concerts, as it will provide more gain before feedback in addition to greater control of the drum mix.

### No Phase Cancellation Issues with Earthworks™ Microphones

One of the typical disadvantages in the multi-microphone approach, when using conventional microphones, is the interactive microphone phasing problems that result in the cancellation of certain frequencies. These phasing problems are a result of the poor polar response of conventional microphones. Conventional microphones have a drastically different frequency response between the front and sides of the microphone. It is common for conventional microphones to have a loss of 10 to 20 dB at high frequencies on the sides of the microphone. This is why you can

## NOTES

not place three singers on a conventional microphone, the one in front of the mic sounds great, but the two on the sides have a dramatic loss of quality. These drastic changes in high frequency response on the sides of the microphone cause phase differences, and these are the root cause of phase cancellations with conventional microphones.

In contrast, Earthworks has a patented polar technology that provides our microphones with the same frequency response on the sides of the microphone as it does at the front (no more than a 3dB loss at any frequency out to 90° off-axis). This very uniform frequency response at the front and sides of the microphone will nearly eliminate any phasing issues when using Earthworks microphones. In addition, Earthworks cardioid microphones have a very high rejection of sounds at the rear (back) of the microphone. This feature will greatly reduce the leakage of cymbals or other sounds at the rear of Earthworks microphones.

## Close Miking Toms and Snares with the DP30/C Drum Periscope Microphones

### Inserting the DP30/C into the RM1 RimMount

It is suggested that you insert the Drum Periscope microphone into the RM1 RimMount™ prior to attaching the RimMount to the drum.

To insert the Drum Periscope microphone into the RM1 RimMount™ just place the mic head and the mini-gooseneck into the rubber holder from the bottom of the RimMount. Then push the body of the microphone from the bottom (XLR connector end) to move the microphone up inside the rubber holder. The fit will be firm, so you will need to apply a little pressure to move the microphone body up into the rubber holder. The suggested procedure is illustrated in Figure 3.

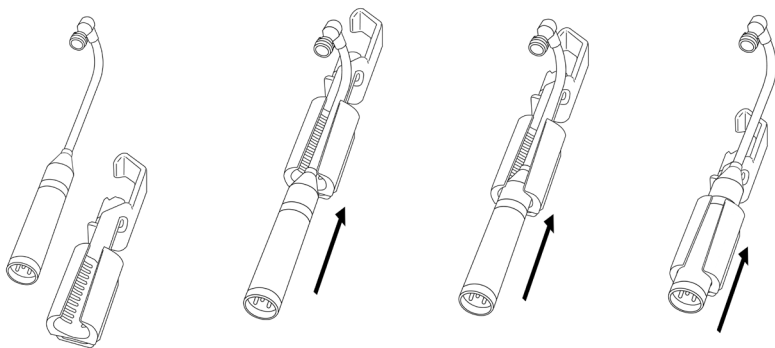


Figure 3. Inserting the Drum Periscope™ Mic into the RimMount™

## Mounting the RM1 RimMount to the Drum

The RM1 RimMount is designed for metal drum rims, and will not work on wooden drum rims. While reading this section, please refer to Figure 4-A, which refers to the various elements of the RimMount™. Mounting the RimMount to the drum rim is quite easy. First, unscrew the thumbscrew so there is more than enough space for the Delrin® cushioned rim-guide to clear the bottom of the drum rim. Then determine where on the drum rim you want to place the microphone and place the top “hook portion” of the RimMount bracket over the top edge of the drum rim.

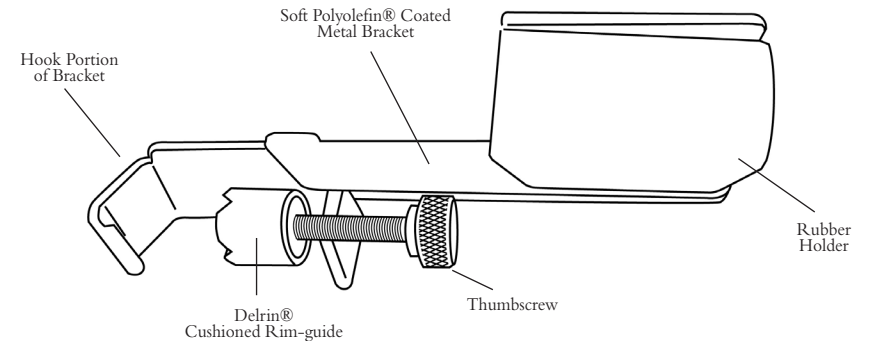


Figure 4-A. Elements of the RM1 RimMount™

Referring to Figure 4-B, notice that on the cushioned rim-guide there are two sets of grooves. One set of grooves is in the “center” of the rim-guide, while the other set of grooves is “off center” (or closer to the edge of the rim-guide). These two sets of grooves provide you with “three” mounting options: (1) placing the “off center” rim-guide grooves close to the drum shell, (2) or rotating the “off center” grooves 180 degrees will place the rim-guide further away from the drum shell, and (3) the “center” grooves will allow placement in-between the positions described in 1 and 2.

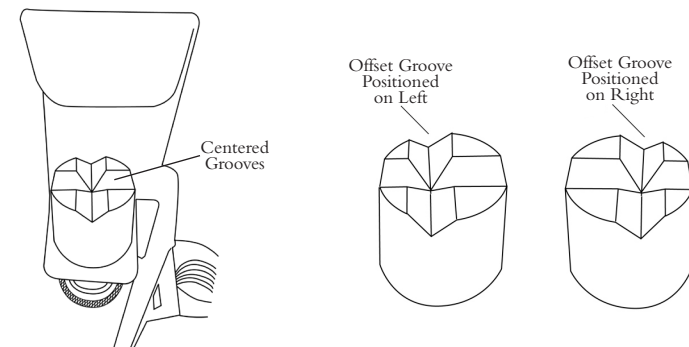


Figure 4-B Positioning the Cushioned Rim-guide