

TOOLS & AIDS



HOHNER


Illus. C07-01

For this workshop we recommend the »**HOHNER SERVICE SET MZ99331**, which includes all the basic tools necessary for harmonica maintenance as shown in these workshops.

A compact and highly recommendable toolkit for the first steps in harmonica maintenance. The set is suitable for both diatonic blues harps and chromatic harmonicas and enables basic maintenance work such as adjusting reed offsets, tuning and centering reeds, exchanging faulty windsavers and maintaining the slide assembly.

For this Workshop C05 - Reed Offsetting you will need the following tools:



Illus. C07-02

Tool 1: Special Tuning Scraper

For tuning reeds down.

Required for: Workshop C07 - Tuning



Illus. C07-03

**Tool 2:
 Reed Lifting Blade with Reed Wrench**

An essential tool for many reed adjustment operations.

Featured in workshops:

- »Workshop C04 - Centering
- »Workshop C05 - Regapping
- »Workshop C07 - Tuning

C07 – Tuning



Illus. C07-04

Tool 3: Hook Tool

Used when offsetting and tuning reeds situated on the inside of the reed plate (blow reeds)

Featured in workshop:

»Workshop C05 - Regapping



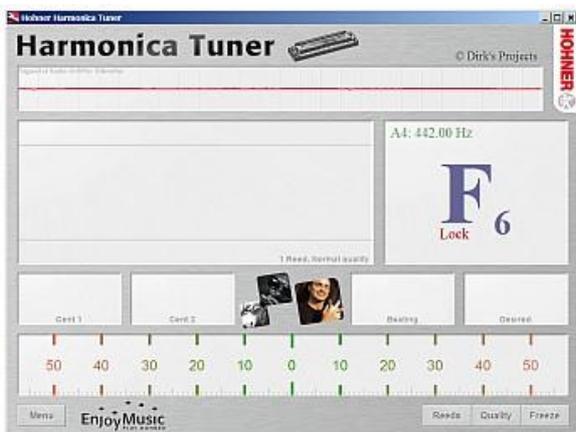
Illus. C07-05

Tool 4: Fine Tuning File

Used for tuning and true-squaring reeds.

Featured in workshop:

Workshop C07 - Tuning



Illus. C07-06

Additional Hardware oder Software: Electronic Tuner

Theoretically it's possible to tune by ear, but few people are gifted with perfect pitch and for the rest of us it's a great deal easier and more accurate to work with an electronic tuner.

The Ill. C07-6 on the left shows the HOHNER Harmonica Tuner by Dirks Projects, which has been optimized for tuning harmonicas.

This tuner is available to download at <http://www.hohner-cshop.eu/downloads/HohnerHarmonicaTunerTrial.zip>

You can test it as shareware. After a trial period it has to be licensed.

C07 – Tuning

STEP 01 - Fundamentals



Illus. C07-07

This workshop shows you how to tune an individual reed (e.g. after replacing it or after it's gone out of tune) so that it's in tune with the surrounding reeds and your harmonica is playable once more. We won't be discussing tuning entire reed plates from scratch (though the techniques used are the same).

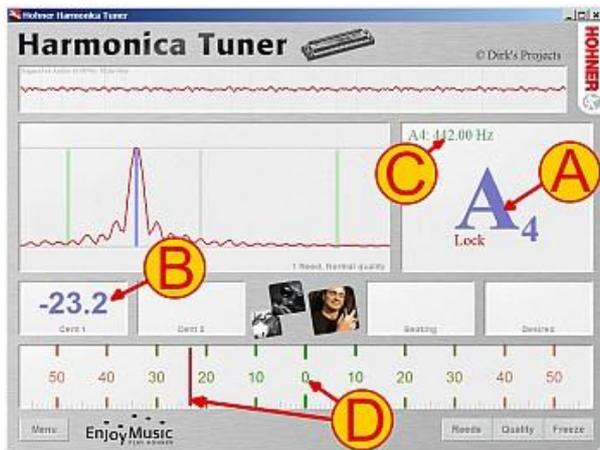
Chromatic harmonicas are tuned to Equal Temperament (12 TET), a system whereby each octave is divided into 12 equal semitone intervals. This is basically the same system used on the piano and is the standard setting on almost all electronic tuners.

As with all other reed adjustments it's important to "plink" or play the reed after every tuning step. Lightly plucking the tip with the reed lifting blade and allowing it to spring back into its rest position will settle the new tuning value and allow you to measure it more accurately.

In all tuning operations, we recommend that you proceed with care. When filing or scraping reeds to remove material, apply minimal pressure to avoid pushing the reed out of alignment and always work along the reed, not across it. After every 2-3 strokes with the file or scraper it's time to control the pitch again. When you have re-tuned a reed, you may find that you have altered the offset, so you'll need to re-gap it as shown in »Workshop C05 - Reed Offsetting

C07 – Tuning

STEP 02 - Pitch



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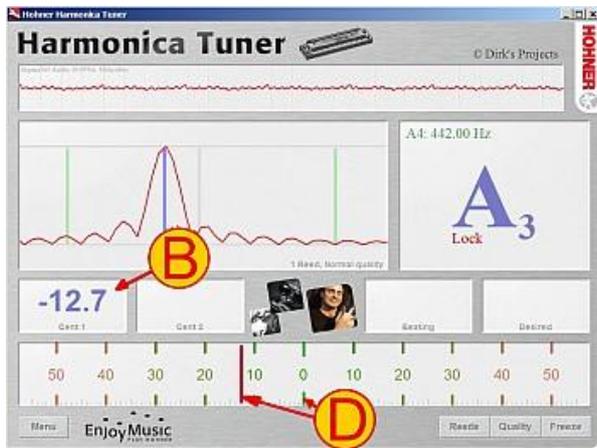
Most high quality tuners have up to four different display zones:

- **A = Pitch**
The expression A = 440Hz refers to the note A4 in internationally accepted terminology.
- **B = Deviation in cents**
Each semitone is subdivided into 100 cents. On an electronic tuner, a +50 cent deviation from any given note therefore corresponds to a -50 cent deviation from the next semitone up. On some tuners the display doesn't show cents; as a rough guide, 1Hz corresponds to approx. 4 cents.
- **C = Basic Intonation Value**
Here you set the basic pitch of the display in relation to concert pitch (A = 440Hz). We recommend setting this value at 442-442Hz, as we are tuning without covers, which lower the pitch of the note slightly when you put them back on.
- **D = Analogue Display**
This type of display makes it easier to recognize the tendency of how your tuning operations are altering the pitch of the note in question.

When tuning, we recommend playing and measuring the pitch of all notes using minimal air pressure. It's essential to breath from the diaphragm with the throat open and relaxed. When measuring the pitch, always try to reach the highest possible note which the reed can produce. Never modulate the pitch by bending or blowing/drawing harder than absolutely necessary, or you will falsify your readings. With low notes it can be helpful here to open the nasal passage, or leave a small air gap between upper lip and instrument, especially with the lower pitched reeds. The tendency of reeds to sound at a lower pitch when played harder is another important reason to set the Basic Intonation Value higher than you actually want the notes to sound when played normally.

C07 – Tuning

STEP 03 - Tuning up



Illus. C07-09

The note is too low.



Illus. C07-09

Reeds Mounted on the Outside of the Reed Plate (draw notes)

A reed mounted on the outside of the reed plate is always a draw note. These are easily accessible and therefore also easier to work on. With chromatic harmonicas it's not necessary to remove the windsaver when tuning draw notes.

To raise the pitch, you need to remove material from the upper surface of the reed at the tip using the **Tuning File (4)**:

Slide the **Reed Lifting Blade (2)** about halfway under the reed to support it. Then file carefully from the reed tip towards the rivet to remove a small amount of material from the surface at the tip. You need to file flat, i.e. almost parallel to the surface of the reed plate, not from above it. Plink the reed to see if it can pass freely through the slot. If it sticks or sounds dull, the filing process has created a burr on the edge of the reed. You then need to true square the edges at the sides and tip with the file, so that it passes through the slot again. Tuning requires a light touch - it's better to remove too little and have to repeat the operation than to remove too much and have to tune down again.

Now check the note against the tuner and repeat if necessary.

C07 – Tuning

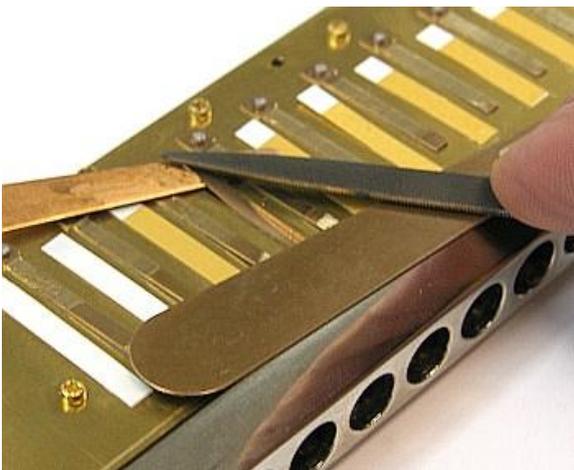


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Reeds Mounted on the Inside of the Reed Plate (blow notes)

The actual tuning procedure is the same as with draw notes, but it's slightly more complicated as the reed is located on the inside of the plate, so it's not so accessible. It can be necessary to remove the windsaver when tuning blow notes unless you're very practised.

Insert the Hook Tool (3) carefully into the channel opening and use the hook to push the reed tip gently up and through the slot. Be careful not to damage the windsaver belonging to the adjacent draw reed, it's mounted right next to the reed you're working on and you can't see it because it's inside the channel.



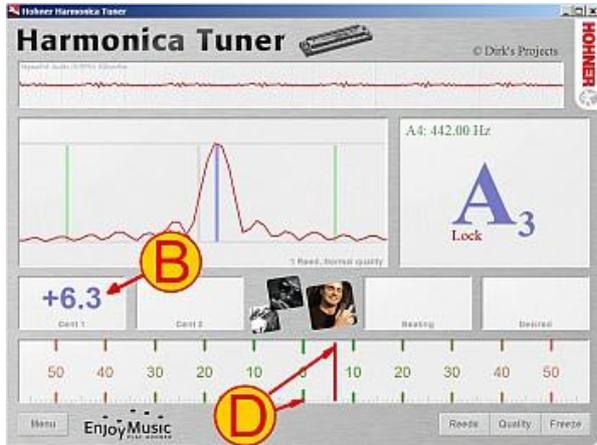
Illus. C07-12

Next, slip the **Reed Lifting Blade (2)** under the reed tip to support it and remove a little material with the Tuning File (4) exactly as described above for draw reeds. In the photo, the reed lifting blade is lying over the top edge of the mouthpiece. This is a good idea to prevent you scratching it while filing. When you release the reed you'll be able to hear if you've burred the edge with the file when it snaps back into the slot. If so, correct as above.

Now check the note against the tuner and repeat if necessary.

C07 – Tuning

STEP 04 - Tuning Down



Illus. C07-13

The note is too high



Illus. C07-14

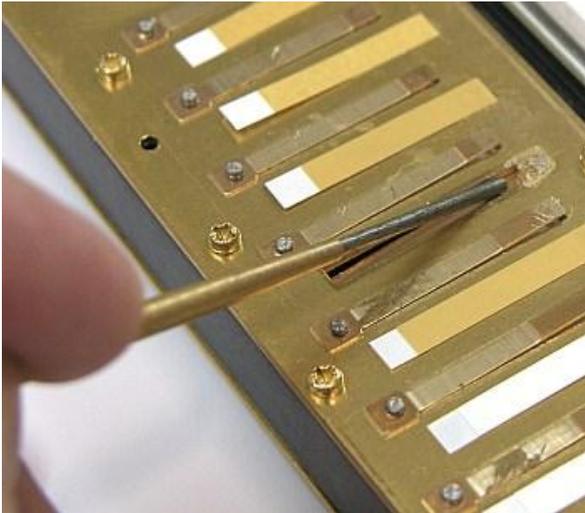
Reeds Mounted on the Outside of the Reed Plate (draw notes)

Slip the **Reed Lifting Blade (2)** under the reed tip as in Step 3 above. It should be supporting about half the length of the reed.

Then use the **Special Tuning Scraper (1)** to remove a little material from the surface of the reed directly in front of the rivet. Scrape carefully in a lengthwise direction towards the rivet and exert as little downward pressure as possible, or you may push the reed profile down into the slot, which will kill the response. Here the scraper is being pushed towards the rivet, which is the most effective way to remove reed material. It's also possible to perform this operation from the rivet end, holding the scraper like a pen and pulling it towards you. This gives you more control but removes less reed material.

Now check the note against the tuner and repeat if necessary.

C07 – Tuning

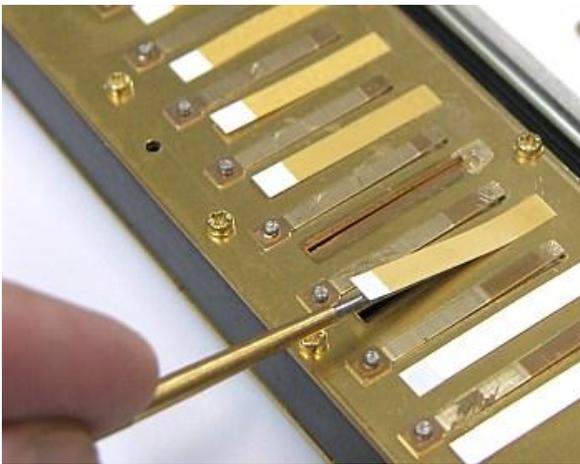


Illus. C07-15

Reeds Mounted on the Inside of the Reed Plate (blow notes)

First of all remove the windsaver. Then use the **Special Tuning Scraper (1)** to remove a little material from the surface of the reed directly in front of the rivet, just as described above. Here too it's important to avoid exerting downward pressure on the reed, as this can push it away from the slot and increase the offset.

Now check the note against the tuner and repeat if necessary.



Illus. C07-16

It's also possible to lift up the windsaver and scrape the back portion of the reed surface from the front, but this is much more difficult and it's easy to both damage the windsaver and push the reed out of alignment.

Now check the note against the tuner and repeat if necessary.

Note:

Tuning can frequently change the offset. After all tuning operations, we recommend you check the reed gapping and correct it if necessary as shown in »Workshop C05 - Reed Offsetting