

Harmonica Microphone Selection

Rev. May 23, 2008 CR

There's a huge array of mic's which are suitable for use with the harmonica, and just about as many opinions as to which one is "best". In truth, it all comes down to your own specific preferences and needs... Find out what's best for you as an individual.

Here are some important considerations when choosing:

- What style(s) of music do you play? Some microphone types are better suited for one style over another; some are *fairly* good all around.
- **If you are considering a hand held model:** Is it comfortable to hold? Can you properly cup it? Is the handling noise level acceptable?
- Are you *rough* on your gear? Do you live in a very *hot* or *wet* climate? If so, a fragile crystal type element may not be your best choice.
- **If the mic is a custom:** Has it been properly constructed? Are controls correctly placed to prevent damage or accidental adjustment? The wire type, gasket, soldering techniques, component selection and build quality are all items you (or at least the builder) need to consider.
- **How does it sound?** Aside from the quest for *perfect tone*, you need to know that the sound of a mic can vary with different amplifiers. If possible, try it out with something similar to what you wish to use it with.
- **The "Z" Factor.** Is the mic the correct *impedance* (Hi or Lo) for the input of your amp or PA system? If not, will a matching transformer be a useable solution for you? Crystals are always Hi-Z so no need to guess with one of those.
- Choose a mic *first* for its build quality, for how it sounds, and for how it feels in your hands... and *only* then for how it looks. A hundred dollar flame job is a total waste if it's applied to a poorly built microphone.
- If cosmetics *are* important, select a finish that will stand the test of time. A quick spray can paint job can look very nice but it *will not* hold up. Properly applied automotive finishes are a good choice, as is powder coating or plating.

Toss out the reviews! I'm pretty sure that not many people were urging a guy like Jason Ricci to play through an SM57*... yet it's a bit difficult to fault the result.

And Yes, those vintage Shure and Astatic elements *are* pretty damn nice! It's hard to go wrong with any of those, one may well be the best pick for your "dream mic".

But... with R7 and CR elements now commonly fetching well over \$200 per copy, you might find something just as suitable with a more agreeable price tag. There are many good but not so well known elements lurking out there in unusable housings... just waiting for skilled hands to mate them to an appropriate shell.

I was invited to set up a microphone display in Denver at a three day Jason Ricci harmonica seminar during October of 2007. The info on the following page was presented at that event, thus the references throughout this guide to Jason and some of the other instructors (Chris and Ronnie).

For What It's Worth...

My analysis of why the Shure SM 57 and ElectroVoice RE10 were great picks for Jason Ricci and for Chris "The Buddha" Michalek... and why they may or may not be right for you.

Jason is gifted with the ability to play single notes with an *amazing* degree of speed and accuracy; he also processes his signal path more than most other players. Chris processes his signal even more (understatement)... he also has an incredibly pure vibrato that *demand*s accurate reproduction. Those combinations of hardware and technique pretty much dictate that their microphones provide an *unusually* fast and accurate response.

In order to deliver that quick response, the moving parts of the microphone need to be fairly rigid, of small diameter and of low mass. Dynamic mic's meet those criterion. It's simple physics: larger, heavier structures take more time to accelerate and decelerate, and therefore lack accuracy during *extremely* rapid single note playing, or when using multiple effects, which can get a bit blurry with "slower" microphone types.

Most players (myself included) think that the old bullet mic's such as Astatic JT-30's and Shure 520's are better suited for traditional Chicago blues... which isn't where Jason or Chris typically go. My guess is if Jason were to play one of my flagship "**Twin Tones**" or another quality bullet through all his effects in his usual rapid fire manner, it would sound *slightly* muddy in comparison to the 57.

While they are indeed fine aspirations, damn few of us (if any) will ever duplicate Chris' unworldly violin like vibrato or Jason's inexhaustible rapidity. For us mere mortals, the microphones they use present some very real drawbacks, the biggest of which is that for the average pro level Chicago style player, the "57" just plain don't sound as good. This of course is my opinion, but it is one that seems to be shared by a large majority of players worldwide. Actually, I straight up like the tone of the RE10, but not as much as a CR or an R7, the RE10 and the Shure 545's/585's are my favorite dynamics.

The SM57 and the RE10 are both *low impedance* and require a matching transformer if used with a harp/guitar amp. They both use bulky XLR connectors, which have been known to disconnect at inopportune moments. The straight ended 57 is a bit hard to hold, and when either is cupped, you have to move it around more than a bullet to get equal volume from both ends of a harp. Most players can work around that stuff but some have trouble. They (especially the RE10) *are* good options for those with very small hands who have difficulty in getting a tight seal when cupping a bullet. I've found that the RE10 feeds back *more* when cupped tightly, which is opposite of most other mic's.

Ronnie Shellist uses an SM 57 for his acoustic stuff through the PA... and sounds great! But then picks up a bullet when he plays down and dirty Chicago through his Bassman. I could do another several pages on this, **but it all boils down to what is best for you!**

Crystal Elements

There is no getting around the fact that crystal type elements are fragile, yet when properly cared for they can last for a good long time. Treat them as outlined in the “*Care and Feeding*” section below, and with a bit of luck you could get a decade (or much more) of service from one.

Many players think that the fragile nature of a crystal is a small price to pay; they feel that the tone is unmatched and therefore want nothing else. The two microphones that are most closely associated with Little Walter are both crystal types, they are the small diameter Shure Slim-X and the Astatic model 30, which Little Walter dubbed the “Biscuit” or “Brown Biscuit”. Oddly, Astatic labeled another mic with the same model number. The *other* Model 30 (also a crystal) has the same shell type as a JT-30.

Probably the most played and best known crystal element is the **Astatic MC-151**, they were often supplied in JT-30’s but were stuffed into several other Astatic microphones as well. The **MC-101** is another Astatic crystal and is also very popular, found in Model 30’s, Model A’s, early JT-30’s and others. A similar sounding and more durable *ceramic* variant is the **MC-127**. Astatic had a mishap in the factory during the 1980’s and the mold for the MC-151 was damaged, the later 151’s and a few other Astatic crystals were then made using the MC-127 mold. Most players agree that the older ones sound better. Sometimes the “MC” prefix is left out and the back of the element just reads “101”.

Early model Hohner Blues Blasters, and the Astatic and CAD sister mic’s with the XLR connectors featured the MC-151. Later/current versions have a cheap smaller diameter crystal made in Japan, most (but not all) players much prefer the 151.

As nice as the early Astatic crystals are, there is one which I feel clearly tops them, it’s the Shure R7. The R7 has tonal characteristics similar to the Astatic offerings, but with one big difference, it has a *thunderous* bottom end. It may not suit some players and styles, but most people (myself included) feel this one is the king of the crystals. R7 was actually the replacement part number for a several different Shure crystal elements, some of which had exterior differences but seem internally the same as the R7 replacement. Shure crystals are reputed to be more fragile than the Astatic’s, they are harder to find and are definitely more expensive.

If you like the crystal tone, there are several lesser known crystal and ceramic elements that are also quite nice. Turner produced some, and there were several European and Japanese offerings that are also up there, evidenced by the big lightweight *aluminum* Argonne bullet microphone that Big Walter Horton often used. Brush Development made many early crystals for Shure, Astatic and others, most of them have nice tone as well. **Verify that the output is loud strong before you buy any crystal!** If there is a rattling sound from inside when a crystal element is gently shaken it is dead.

Care and Feeding of a Crystal Element

There are four main points in regard to caring for your crystal:

- **A crystal element** easily damaged by impact shock, *do not* drop it or bump it around. Always pad appropriately when transporting or shipping.
- **The crystal is made from salt**, if you get it wet it can dissolve and die. Keep beverages well away from it and do not allow any liquids to enter when cleaning. If you tend to salivate or spit when you play it's best to allow the windscreen fabric to thoroughly dry before putting it away. If you notice a decrease in output while playing, immediately put it aside to dry and use your other mic. (you *do* need to have more than one mic, *especially* if you use a crystal) If your kid throws your R7 in the bathtub, it might be time to trade him in for a good amp.
- **Temperature extremes** are bad, some crystals weaken or die at around 120F, others are good to around 140F. Either way, leave it in a car on a hot day with the windows rolled up and you can kiss it goodbye! This *also* means that you can't accelerate the above mentioned drying process by using the hand dryer in the bathroom before leaving a gig. I've heard it said that sub freezing temperatures can also harm a crystal but have not seen that stated on any manufacturers' data sheet. Cold does cause things to become brittle, so common sense dictates that a frozen crystal microphone (or amplifier) should be handled *extra* gently and be allowed to warm to near room temperature before plugging in.
- **Never** apply voltage across the terminals of a crystal. Phantom power* from a mixing board or other source will instantly destroy a crystal. Ohm-meter testing is also out, while the current and voltage from an ohm-meter is much lower than phantom power it can still weaken or kill a crystal element.

With all that said, I've seen people beat the hell out of their crystal mic's and never have a problem... but for those less fortunate, one moderate bump and it's toast. *Never* lend an expensive crystal microphone to some drunken harmonica player at a jam session!

When I ship a crystal microphone I seal it in a Ziploc or other watertight membrane, then surround it with bubble wrap, and then encase everything within a good layer of packing peanuts. Anything less and it may not survive the rigors often encountered in the shipping process.

* Phantom power is needed when using condenser type microphones. Most devices that are capable of supplying phantom power have a way to turn it on and off. Many mixing consoles and stand alone preamps have this feature...*always* know what you are hooking up to!

The Shure Controlled Magnetic and Controlled Reluctance Elements (CM and CR)

These are typically the other half of the “which element is best” debate.

The CM and CR are basically the same item, both are *great* harp mic elements. They are *extremely durable* and will survive conditions that will *instantly* kill a crystal. I once was at a jam where some kind soul dumped a jumbo sized rum and coke into my harp case, ice cubes and all (fool that I was to leave it open on stage). Wasn't aware of it right away, found several harps plus two my CR's and one CM swimming in the sticky liquid. Needless to say I was horrified. I had to rinse everything out under a faucet (more horror). When all was said and done the damage was **ZERO!**

Shure massaged the design numerous times, and changed manufacturing facilities twice. So, there are some construction differences that set the CM and CR apart:

- The CR's are older, first made in 1949.
- Tone varies more than a crystal from unit to unit. First few years (black label CR's) seem the best but exceptions *definitely* exist.
- There is a small metal disc visible through the front center hole where the pin on a CR attaches to the diaphragm; on a CM the pin is attached with a dab of epoxy(?) and no metal disc. This is probably the biggest contributor to the tonal difference.
- The magnet structure was changed at some point to use fewer parts.
- The winding and bobbin materials were altered over time, thus explaining the various resistance readings on different product runs.
- First made in Chicago, then Evanston, and finally in Mexico.
- Early CR's had a square black cloth label on back and usually a small white tag on the side. Later CR's had a white cloth label with no side tag
- A few of the earliest white CR's were of the same construction of the latest black ones (but no side tag), and then slowly morphed into the CM.
- Earlier CM's also had a white cloth label, later replaced with a white plastic label. Some CM's had no label at all and were marked on the magnet instead.
- “Made in Mexico” CM's were generally as good as the US built ones, but there were reportedly some quality control issues, a *small* percentage may not sound as good.
- There are low, high and dual impedance versions, be sure to get the one you need... which is high impedance for most harp applications. High impedance models start in the 900+ ohm range.
- Low impedance models can also be used but will require a matching transformer, either built into the mic shell (easy to do with a bullet mic) or added into your signal path somewhere before the amp.

CR's have a stronger bottom end than a CM and typically cut through the mix a bit better. They are tied with the Shure R7 crystal as *my* favorite element, but please, decide for yourself what suits you best. CM's have a pretty good bottom too, stronger than most crystals in that regard, just not quite as strong it's older sibling.

The Shure Controlled Magnetic and Controlled Reluctance Elements (continued)

CR's are expensive; one ebay seller *routinely* gets \$225 each. Hi-Z CM's often sell for \$50 to \$60 but sometimes more. Most good crystals such as the MC-101's and 151's fall somewhere in between. Prices will rise further as supplies diminish. If you like the sound of the CM (some players say they hear no difference between it and a CR) then get it and save a nice chunk of change... or get one to be your bulletproof backup.

It's *not* true that the highest resistance CR/CM elements are the loudest or best sounding. In fact, resistance readings are useless unless you know the stabilized element temp when the reading is taken. My 69F room temp during the Colorado winter will produce a much lower reading than one measured in a 90F room on a summer day. Tone and output result from a combination of several factors, of which coil resistance is but one. My favorite mic, an early run white label CR in a chopped Turner shell reads well under 1100 ohms, yet it has the tone to make a dead man cry... nicer than any (alleged) 1300+ ohm version I've ever heard.

Another benefit of a CR/CM, is that unlike a crystal I will sometimes offer a guarantee on those. Due to a crystals' fragile nature, I am unable to guarantee it beyond its safe delivery into the hands of the buyer. (the *rest* of the mic is usually covered)

Scams:

1. Some sellers pull a label from a CR and stick it on a CM (a CR always has the metal disc visible through the front center hole). Fake labels are sometimes used as well.
2. Some heat a CR or CM with a blow dryer before showing the resistance reading, heat causes the reading to substantially increase; ohm readings are often meaningless anyway.
3. CM's/CR's are often sold without revealing that it is a Lo-Z model (see my section on impedance) or that the front of the element is a restricted one or four hole model instead of the much preferred standard 15 hole front. If the front isn't shown (no big deal) you should ask how many holes are there.

Care and Feeding of a CM or CR

Yep... pretty much a trick question!

- Not that they *never* go bad, but they are pretty damn reliable.
- While you still might want to talk to your kid if it goes into the bath, it and probably the kid, are likely to survive.
- You shouldn't poke anything into the holes in front or fiddle with the workings, which generally is a non-issue once the element is enclosed in a proper housing.
- Probably shouldn't toss it in a fire or run it over with a large vehicle.

Microphone Impedance and Connector Selection

Most harmonica specific microphones are non-balanced *high impedance* types, or impedance converted through a matching transformer so they can be plugged into a guitar type amplifier. The exceptions are the conventional low impedance vocal mic's that many of us use when playing through the input of a PA system.

For high impedance applications I think that the old Switchcraft 5/8" screw connectors rock! They are simple, compact, and very reliable... but only if correctly installed. Some other choices are XLR and 1/4" phone (guitar) jacks.

XLR's... Great for use with XLR based wireless transmitters. Cheaper ones tend to uncouple and drop your cable or expensive transmitter to the floor at inopportune moments. One look at all the funky tape wrapped around the base of Jason Ricci's mile long customized beast of a Shure SM57 tends to drive that point home. The XLR's 3 pins are needed for low impedance balanced applications; a non-balanced Hi-Z (high impedance) harp mic doesn't need the third pin so you have other options.

Quarter inch phone jacks were initially designed for communication and switchboard applications, later adapted for use with guitars and other audio gear. They are simple and work well. They are the most convenient and inexpensive harp mic connector, the original "plug-and-play". Handy, but can come unplugged if you step on your mic cable... usually during a solo. Not as bulky as an XLR but can still get in the way. Phone jacks are not very flexible in regard to use with inline on/off switches and volume controls, but are perfect for the small wireless transmitters designed to plug into a guitar.

Speaking of built-in volume controls... I don't recommend them. All volume controls affect the tone of the element... not always a bad thing but I prefer to be able to remove it when it's not needed and therefore gain the extra tonal option. If a built-in control fails, your mic will be unusable until it's repaired. If an inline control fails, just remove it and continue use the mic. A single inline control can be moved to any mic with a matching fitting, usually a screw type but other configurations are available.

Back to the screw connector: If it loosens you'll know about it well before it falls to the floor, you can quickly retighten and go about your business. It *won't* come unplugged if you step on your cable, and if properly assembled won't easily pull apart if your cable is stepped on. They are small, light and unobtrusive, look good and don't get in the way. Great for use with many available inline accessories, helps keep things compact. **Must** be properly installed! I recommend them for custom builds and install them on my own mic's when practical.

Fixed cables are ok... but they don't offer much flexibility. At least if you remember to bring your mic you'll always have your cable. The right choice if doing a restoration on an old microphone that was originally set up that way. The fixed cables in all the old Shure bullets tend to be troublesome; I usually replace them with screw fittings.

An example of what to avoid when shopping for a harp mic:

Seller has had three ebay user ID's in 1 ½ years time... a *big* red flag. In this case, I'd seen several auctions by this seller, *and*, had actually sold him a microphone. I'm not knocking online auctions, I use them too. There *are* a handful of other builders selling online that are both ethical *and* competent; unfortunately, we seem to be the minority. Use common sense out there... ask lots of questions before buying.

eBay Member User ID History

(unedited copy and paste except for the characters substituted for asterisks)

The box below contains the User IDs that this member has used on eBay.

User ID	Effective Date	End Date
*l*e***e**	Oct-08-07	Present* (10-12-07)
*o*n***c***	May-14-06	Oct-08-07
*0*6***p***	Feb-28-06	May-14-06

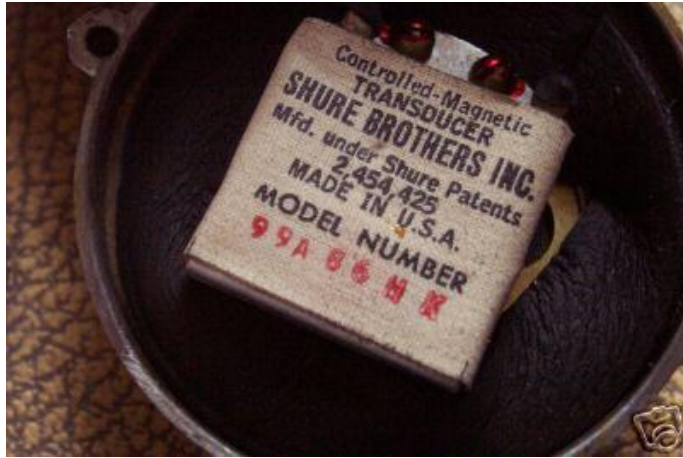
Here's what I experienced:

In several auctions he has sold old microphone elements and claimed that he was unable to test them. *Clearly*, as a mic builder he knows how to test an element. After receiving an evasive reply about the working condition of a batch of elements, I contacted the eventual winner of that auction in order to get a sense of whether I wanted to do future business with this seller. The buyer wrote to me that the *whole batch* arrived either dead or too weak to be useful, and that he was considering filing a claim with ebay.

In the case where he bought a mic from me, it was a stock Blues Blaster in perfect working order. He wrote stating it had arrived DOA. Turns out that the mic was fine, and as I had suspected, he was trying to use it with a standard "pin 2 hot" XLR cable, which will not work with a Blues Blaster or similar mic. I explained the issue to him and all was ok. No big deal, except that he represents himself as a mic builder, yet didn't know of, or how to diagnose this very basic issue. To be fair, he was polite and positive in regard to working out the problem and we exchanged positive feedback.

The next page shows a photo from one of his ebay auctions (10-12-07) depicting how he and several other builders mount their elements. (Not a grudge, I've *personally* had no big issues with this seller, just some question marks. He simply was lucky enough to offer this item when I was seeking this common example of "what not to do").

**The gasket below looks like a piece of foam pipe insulation...
Not good for several reasons:**



- As it's a soft material it will easily compress and move. When you blow or draw with a quick attack, this type of gasket, and thus the element, will actually move around and slightly reduce the response at the diaphragm. The softness and porosity of this material will further absorb the impact of your breathing. The effect is most pronounced when playing sharp fast staccato stuff, accuracy goes into the toilet when you need it the most.
- The diaphragm section of a CM or CR element has three round openings on back; one is partially visible on the right center of the photo. At least one of the other two openings has been obstructed by the poorly shaped foam gasket; this likely has a detrimental effect on the response of this type of element.
- Having been a refrigeration technician for over thirty years I've seen hundreds, if not thousands of miles of this type of insulation installed in every conceivable environment. Even in the humid weather of the Pacific Northwest this material can start to dry out and harden in less than 5 years. That is under *ideal* indoor conditions... on an exposed rooftop in Tucson it takes just a few months. As it hardens it also shrinks, the element starts to move around even *more*, the tight seal you need (and never really had) is even *further* degraded, handling noise develops as well. As the foam dries and crumbles pieces can enter and damage the element. If it's as carelessly wrapped in front (which wasn't shown in the auction) as it is in the back, it can block some of the sound openings, affecting both tone and output.
- Note that the solder connections are obscured in the photo. Are they done properly? Was too much solder and/or heat applied??? I see a lot of people put heat shrink tubing all the way up to the terminals on the element, this induces unnecessary heat when shrinking the tubing (potentially deadly to a crystal) and hides the solder connection from being inspected.

The Exclusive “**Twin Tone**” Harmonica Microphone

This mic gets its name from one of its most prominent features, my *exclusive* “**Twin Tone**” circuit. I start with a vintage US made Shure controlled magnetic or controlled reluctance element, which are already among the best of what’s out there... and then set out to make things even better.

Many of the older CR’s and CM’s incorporated a bleed resistor across the terminals. Most of those mic’s were originally intended for announcing, dispatch or ham radio use, the resistor was added to bleed off some of the high frequencies in order to increase voice intelligibility when background noise was present. Some players (including myself) like the darker sound of these elements with the resistor in place, others don’t and simply snip it out of the circuit. The “**Twin Tone**” offers *both* options in the same mic!

The most often asked question about my “**Twin Tone**” model is: “If I prefer the sound one way or the other, why would I need or even want the second tonal option?”

Here are the answers:

- Some mic’s are a better match for certain types of amplifiers, a “**Twin Tone**” lets you darken or brighten your output and is therefore very well suited to a wide variety of amps and performance venues.
- When the resistor is in the circuit some frequencies are reduced, and so is feedback... it’s a *real* plus in any situation where feedback is an issue.
- Backing rhythms and fills are less pronounced when you use the in “dark” mode, the people you are playing with will almost always appreciate that. Switch it to the bright/normal setting to give a bit more punch to your solos.

The tonal difference between the two modes of a “**Twin Tone**” is subtle, just enough for a discernable nuance in your sound. I believe it to be an extremely useful tool for just about any player.

A *crystal* “**Twin Tone**” is in the works but is not yet available. If you prefer crystal elements over the CM’s/CR’s please talk to me about this project.

These two pages are but a good overview, I’ll be pleased to discuss “**Twin Tone**” construction in depth with any interested party.

Every “Twin Tone” is hand built using high grade materials, meticulous construction techniques and painstaking attention to detail.

- Every element is hand picked for condition and tonal quality. Old factory wiring is de-soldered and the terminals are correctly prepped for new leads. The terminals are also checked for tightness where they are secured to the bobbin.
- The all new internal wiring is high temperature *Mogami* OFC (oxygen free copper), it will not oxidize and degrade the signal over time like other wire types. The tough jacketing is *highly* resistant to abrasion and dry rot.
- Expensive *silver bearing* solder is used exclusively in every “**Twin Tone**” mic. It is stronger and has better conductivity than other solder types.
- All soldering is done with a temperature controlled station to further assure consistency and reliability. All solder joints are inspected and hand cleaned under *high magnification*. No flux residue remains to corrode and weaken the joint.
- A tight fitting gasket is *crucial* if you are looking to get that nice overdriven tone from your harp mic. Gaskets are either supplied factory items for the specific shell, or supplied by Jeff, the new owner at www.harpmicgaskets.com ... good stuff! These gaskets will last at least a decade... and probably much longer.
- The bleed resistors I use are the Shure originals or quality replacements of the same value.
- Connectors are high quality from vendors such as *Switchcraft*. They are well secured and properly soldered to assure long term reliability.
- All 5/8” screw fittings are backfilled with silicone. This immobilizes the wire at the solder joint, it *can't* move around inside the connector barrel when you are playing and eventually break off. I know of no other mic builder who does this.
- The switch for the “**Twin Tone**” circuit is properly located where it won't be easily damaged or accidentally moved while playing, I use a toggle type switch so the position is readily determined by either feel or by visual inspection. Worst case on a broken “**Twin Tone**” switch is that the mic is stuck in bright or dark mode, it *will* continue to operate.
- Repainted finishes (when applicable) are automotive grade with two coats of buffed out clear to help assure durability. Currently applied for me by Rob Wilson, a very good harp player from Northern Colorado and a professional painter for over 20 years.

My “**Twin Tone**” harp mic is built to survive the rigors imposed upon it by a touring musician, private sales carry a one year warranty* on parts and workmanship.

* Excludes painted finishes and obvious abuse (determined at my sole discretion). I pay shipping one way (return to you) to all US locations for warranty repairs. **60 day warranty on CM and CR elements applies.** Warranty void if the mic is disassembled. Sorry, but due to the fragile nature of a crystal element I can not offer a warranty on those items.

My Background

Born in 1955, the middle kid out of eight, started playing the “tin sandwich” at sixteen years of age. Life at home wasn’t so good, dad had walked away from his wife and kids by the time I was ten and we went from riches to rags. Struck out on my own at 17 and became involved in the refrigeration and commercial appliance trades, had some talent and stayed with that until I retired out of a long term state job at the age of fifty.

I’ve had a harp in my pocket damn near every single day of these last 36 years, but until approaching retirement didn’t pursue my playing with any seriousness. Always loved it but never took a lesson or practiced anything. Built/repared mic’s for myself and many friends during the last 25 years but was too busy with my job, and then with raising my daughter to spend any significant time on that. Along the way I became interested in old microphones of *all* sorts and have owned many unique ones over the years.

As my retirement date approached I started to think about what I’d do next. In all those years of an increasingly technical trade I had picked up a lot of knowledge... had filled the presidents, directors and secretary chairs for my trade association (RSES) and was a 16+ year member of the City of Greeley Mechanical Board. I’ve taken countless trade specific classes and hold certifications in numerous related areas... lots of professional accolades. I’m known as an innovative problem solver; guys from all over the country sought my advice when they had difficult issues with complex machinery. Quoted on two prominent mic websites and am linked/recommended on many harp related pages.

I could make a really nice wage (*plus* my modest pension) if I jumped back in as a factory troubleshooter or facilities director, but am ***bone tired*** of that work, and of the politics that are usually involved. Daughter just finished her senior year of high school... a monster volleyball player (understatement), has landed a full ride athletic scholarship to a superb ivy league university! Now excused from college tuition, I can get by without taking another job. Decided... “***screw the money, it’s time to do what makes me smile***”.

Combined my tech and fabrication skills with the harp thing and decided to build mic’s. Have provided mic’s to dozens to satisfied players all over the planet ... and now have friends to stay with as far away as Australia and Iceland! With the time commitment, building this stuff pays lousy, actually less than lousy... it’s indeed a labor of love.

Oh, my playing... it’s *vastly* improved over the last few years. My ***tone*** has gotten really good... I can help you with yours. Not near the level of player of Jason and company but good enough to get a gig here and there. Been thinkin’ about girls in grass skirts bringing me drinks on a beach in Tahiti... Sounds good, left wondering if they like the blues in the South Pacific???

Christopher Richards