



# How To Maintain Your Classic Diving Helmet

By Ocean Eye, Inc.'s **Chris Gabel**

Instead of our usual fare of maintenance tips for today's modern and technologically advanced gear, let's take a look back and discuss maintaining historical diving helmets.

I recently had the honor and privilege of diving Rich Riley's Schrader commercial hat, receiving air from a 1916 hand pump, at the ADCI Midwest Chapter meeting in Pittsburgh. I would like to thank Riley, of Marion Hill Associates, and express my appreciation to him for allowing me such an opportunity.

As fate would have it, I was also able to dive Fred Barthes' Chinese hat, and followed that with a visit with Desco's Ric Koellner in a time span of a little over a month. Then I was able to take a cursory look at Ray Mathieson's vast collection of heavy gear, which features a plethora of different nameplates, some of which I couldn't even dream of trying to read.

All these events got me thinking about how many historical hats are still in service – everything from MK Vs to Russian and Chinese heavy gear (specifically the TF3 hat). So this edition's maintenance article is based on what it takes to maintain these hats and keep them in service.

### Common Problems

I've found some interesting remedies for common problems, some of which are actually ingenious and somewhat humorous. For instance, I learned from some individuals that when a leather gasket starts becoming too worn you can shim it with a new gasket cut from a paper bag or heavier construction paper material. As a matter of fact, I've heard of people using multiple shims of four and five layers. Incredibly, this resolution works like a charm for heavy gear helmets such as the MK V.

Ken Downey from Morse Diving gave me some pointers helping a friend out with separating his MK V helmet from its attached breastplate. The problem was that the gasket had been in place for so long that the helmet and breastplate were fused together via the leather gasket. It took a few weeks of soaking the gasket material with WD40, but with some patience and four burley friends, the helmet came loose.



Classic gear, such as this MK V, require constant visual inspections to ensure diver safety.



It can be difficult to separate the MK V from its breastplate.

### Shedding Some Light

I was informed that new lights are no longer made out of glass, but are now Plexiglas. What does that mean? Well, a little more care in cleaning for one. You also have to be mindful of the way that the lights are mounted (those are the windows for those of us new to historical diving). Some are much easier to replace than others.

I've seen hats in which the lights were "leaded in," where the manufacturer actually used a lead seal between the glass and hat. This can be very tricky to replace and expensive, as well. Not something for the faint at heart to try and replace.

Also, please take note that duct tape does not constitute a permanent repair. In a talk with Ric at Desco, he informed me that they've even witnessed tractor lights attached with duct tape to some helmets.

### Valves, Valves, and More Valves

One component that requires constant attention and maintenance is the non-return valve. Paying attention to this assembly is

An advertisement for SCHLEIFRING. The background is a dark grey gradient. At the top right, the company name "SCHLEIFRING" is written in large, white, sans-serif capital letters. Below it, the tagline "revolutionary transmission technologies" is written in a smaller, white, sans-serif font. In the center, a white crosshair graphic is overlaid. Below the crosshair, the text "SCHLEIFRING covers all sectors of the worldwide requirement for highly sophisticated rotary joints and slip ring systems." is written in white. On the left side, there is a vertical image of a slip ring assembly with a blue glow. On the right side, there is a photograph of a large, industrial slip ring system with a laptop computer mounted on top. At the bottom, the website "www.schleifring.com" is written in white. Below the website, the text "SCHLEIFRING North America LLC" and "Email: sales-ind@schleifring.com" is written in a smaller white font. A yellow bracket on the right side contains the text "leading technologies in any field of power, signal &amp; data transmission".





(Opposite) Regular valve inspection and maintenance is also a huge factor in keeping your classic hat in good working order.

not an option. In talking to many of the helpful people for this article, the non-return valve came up in conversation consistently.

You must check the internal spring and seat. They need to be clean and in good condition. The spring must be clean, functional and free from corrosion. The seat must not show significant signs of deterioration.

Some of the seats are leather, so leather conditioner should be used when they are exposed during disassembly and inspection. This rule also applies to the leather gaskets. I was informed that you can never use too much Neatsfoot Oil. The leather needs to be kept supple and pliable.

Another design (starting in the late 1960s) uses an o-ring cartridge design. That o-ring needs to be inspected and replaced if it is deformed or any deterioration shows in any way.

While you are in the general area, you should be looking at the exhaust valve and make sure that it functions and operates smoothly.

Another must is to maintain the air control valve. This is your air supply valve that gets tied in to the helmet or breastplate (depending on the type of hat your diving). The air control valve that most, if not all, historical divers use

**SEACON  
1/2 horz  
is this a pickup?**

is a needle valve. That needle valve needs to be checked before every dive for function and cleaned and repacked at least once a year to make sure of proper function.

Since the buoyancy control, air supply, carbon dioxide control, and emergency egress depend on the air control valve and exhaust valve, both need to be checked and re-checked before every dive. We all know can happen if a non-return valve fails, so the same rule applies to the exhaust and air control valves.

### Constant Visual Inspection

Visual inspection before a dive is important. Again, as I have said before, this may seem like common sense. Everyone gets excited to get in the water and dive their historical gear. The "hero" pose on the dock is the ever popular secondary goal of the day. Something that would make Cuba Gooding Jr. beam with pride. Make sure that you look at all of the soldered seals around the lights and breastplate. They can look like anything from bright silver to a dull gray. What you want to make sure of is that there are no breaks in the solder. Also check for pitting.

As with any hat, any hoses must be checked prior to each dive. This is especially true if you haven't dove the hat in a while. If the leather gasket is nicked or broken, then it needs to be replaced.

As I mentioned, you can shim gaskets with heavy paper material such as a paper grocery bag, but even that has its limits. Valves should be regularly checked for leaks and made sure that they freely rotate (make sure not too freely). They should have a slight resistance to them.

Check the seal around lights and make sure that there are no breaks in the sealing material. If any of the lights are cracked, they need to be replaced before diving.

### Bringing Damaged Hats Back to Life

Should the helmet have serious damage, then it's time to send it to the professionals, people who have the experience and expertise to bring a historical hat back to life. People like Ric at Desco and Ken at Morse Diving.

I was able to witness some of Ric's staff work to install new lights. I saw Chris Koellner building a hat with the care and precision of a true craftsman. Some of the helmets were works of art. Others were frightening and resembled something more out of the middle ages than a working diving hat. Regardless, these folks can bring them back to their true potential.

### Be Smart, and Enjoy Your Gear

I know most, if not all, of this seems like common sense. But then again, sometimes common sense isn't so common and we all

get complacent. Especially when we just want to get in the water and dive our personal treasures.

I can't stress how important it is to remember where we came from to understand where the industry is going. I applaud those people that can keep this gear up and running. All of the effort is appreciated, no matter how much cursing occurs while trying to get the gear up and get ready for a dive, or getting hit repeatedly in the nose by the breastplate and hat itself.

I would like to thank everyone that helped contribute to the article. Rich Riley from Marion Hill Associates, again, thank you for the experience of diving your Schrader on a hand pump. I'm certainly grateful that no one got tired of spinning the pump wheel while I was in the river.

Ray Mathieson, thanks for the drawings and catalogs. They were a huge help with article. Hearty thanks also to Ric Koellner, Bill Pelky, and Chris Koellner from Desco; Ken Downey from Morse; and Fred Barthes, Vince Scarponi, and Wayne Gerhartz from the Northeast Equipment group. I apologize to anyone I missed. I tried my best to keep track of the amazing amount of information being fired away during our dives.

Next issue, back to the new stuff. Dive safe. **UW**

Email your maintenance questions to Chris at [cgabel@ocean-eye.net](mailto:cgabel@ocean-eye.net).



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