



Maintaining Your Desco Air Hat



By Ocean Eye, Inc.'s Chris Gabel

If you dive in wondrous places like sewer treatment facilities, nuclear power-plants, cement plants, or other challenging environments, then you're probably familiar with the Desco Air Hat. This month, I thought that we'd take a look at this tried and true design and go over some important maintenance aspects of this hat.

First, a little history. The Desco Air Hat was originally designed in 1968. Although it has evolved over the years, the overall design has changed little. In fact, the major design upgrades were implemented in such a way that older hats could be retrofitted rather than retired.

Desco designed their hat as a "free flow" helmet. For those that aren't familiar with the term, that means that there is no demand regulator. The air flows through the helmet all of the time. This allows for simplicity of design and at the same time maintains the integrity of the helmet by creating a positive pressure environment.

To boil it all down, air comes in the hat, flows past the diver, then out. You have an air inlet and an adjustable exhaust valve. Constantly flowing air and a standard double exhaust incorporates two separate successive seals making sure that any particulate matter doesn't flow back in. That's why it's so popular with contaminated water divers.

The shell is one-sixteenth-inch spun copper and the brass castings are deep soldered to assure reliability and resilience. That also means that if you dent the shell, depending on the extent of the damage, it may be able to be salvaged. That said, it's going to take a lot to dent this shell.

GIVE IT THE ONCE OVER

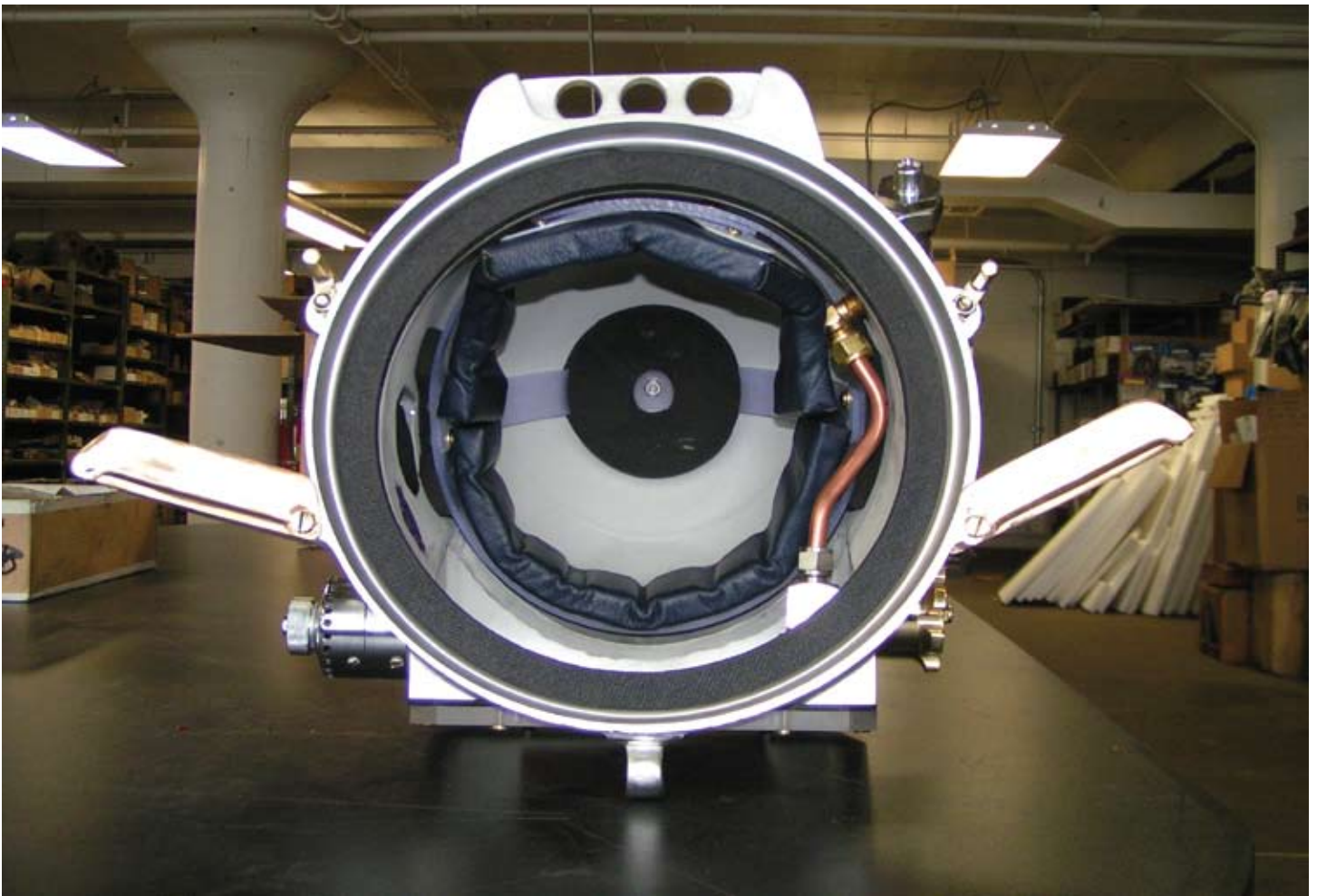
Here's the good news: To take this hat apart, you really only need a screwdriver and a wrench. That said, the Desco Air Hat still needs to be inspected before and after each dive, and go through a standard annual inspection to insure optimal performance.

Before each dive, inspect seals for nicks and tears. Pretty much common sense. If you see damage to soft goods, replace them as necessary.

Next, check the front port for deep nicks, cracks, and scratches. This is a judgment call. If you have a deep scratch or there is a crack that is completely through the faceplate, then you need to replace it. No, duct tape doesn't count (this was for you real creative types, you know who you are).

You also want to make sure that the faceplate is properly seated to the faceplate seal (it should be a pretty uniformed shade of black). If the seal looks like it goes from black to a light gray periodically around the faceplate, then it's likely that you don't have a good seal. You'll need to tighten the





faceplate hardware.

That leads us to the next step. You need to check the hardware around the faceplate for tightness and adjust if necessary.

After the faceplate has been checked and the hardware properly tightened, you now move on to the clamp and lock mechanism. Visually check for obvious damage. Make sure that all of the hardware is in tact and there is some resistance to opening and closing the clamps. The resistance helps prevent the lock or clamp from accidentally disengaging. Although you should have some resistance, you shouldn't have to wrestle the clamp or lock in place.

Now check the air control valve. This is the valve that is located on the right hand side of the helmet (if you were wearing it). It's a big valve so if you miss it, you may be in bigger trouble than you ever thought. Make sure that the valve operates smoothly with some resistance. The resistance makes sure that accidental readjustment doesn't happen.

Next, the shell. As I mentioned, the shell is one-sixteenth-inch spun copper. If the shell has been painted, then you may see some paint pitting, but the copper itself should be in good condition. Do pay some time and attention to inspecting all of the

fittings and joints.

Once you check the shell, you need to move on to the insert ring. At this point, you want to inspect the O-Ring for cuts or damage. You will also check the shim, if it's installed, and neck dam (again, if it's installed) or installed yoke (depending on your drysuit configuration).

After the insert ring, check the air train. Check the non-return valves for proper function. According to the Desco Air Hat manual, "With air connected check the operation of the non-return valves and air train. Close the air control valve to pressurize the air train. Turn off the compressed air supply to the helmet. After one minute open the air control valve. Air should be heard escaping from the air distributor. If no air is heard check all fittings for leakage, repair and retest."

What that test does is to make sure that your non-return valve doesn't bleed air back up the umbilical.

REGULAR MAINTENANCE

Now we need to go over a couple of maintenance items. When talking to Bill Pelky at Desco, he made sure to drive home the point to *only use lambswool* in the air diffuser. He was telling me some horror

stories about what people have put in the air diffuser to create a makeshift filter in the field. Some were interesting and others downright frightening.

Let me put it this way, since this is my primary source of air, I would want to use the appropriate medium. Not something that could, for instance, clog my air supply and not give me the gas I would desperately need. So to the point, please use only lambswool. It's readily available and not expensive and the lambs will grow more.

Since we're on the maintenance topic, I need to cover another point. Should you find yourself having to disassemble any fittings associated with the air train, *never use Teflon tape*. I emphasize this fact because a loose bit of Teflon tape in your air train can do catastrophic things like restrict or stop the flow of air.

Unless you suddenly grew gills, I would take this piece of advice to heart. You can use liquid pipe thread compound in place of the Teflon tape. It's available at just about any hardware store, if your really unsure about your local hardware store, just ask John Madden (*Boom!*).

As with any hat, you need to keep it as clean as possible. Clean the O-Ring with soap and warm water. Check the lamb-



swool in the air diffuser for cleanliness and replace if necessary.

Daily preventative maintenance and an annual inspection by a knowledgeable and reputable manufacturer trained technician is going to keep your hat working optimally for years to come. This is the kind of hat that you will to your grandchildren so that they can dive it. As I've said in the past, you take care of the equipment and it will take care of you.

I'd like to extend a special thanks to Desco's Ric Koellner for the pictures featured in this article. Dive safe. **UW**

Email your maintenance questions to Chris at cgabel@ocean-eye.net.