

How To Use a Double Hook Pick

The double hook pick is one of the most useful, and yet most dangerous picks in your scuba repair inventory. It has the unique ability to reach and retrieve O-rings that lie deep in an internal land of a regulator or hose end. This pamphlet will discuss the way to use a double hook pick without irretrievably damaging your gear.

The reason the double hook pick exists is to reach inside a regulator or hose end to snag an O-ring that a straight or curved pick simply won't lift. Those who try to use a pick other than a double hook inevitably do one or both of the following: spear the O-ring, damaging it irretrievably, and/or scratch the land of the equipment with the point. That's the reason that plastic and brass picks are so popular. They are softer than the chrome plating of your equipment and are less likely to scratch it as a result. Indeed, spearing and sacrificing an O-ring with a curved pick is a standard technique for many technicians. Yet it still doesn't take much to scratch the soft brass of a regulator body with any metal pick.



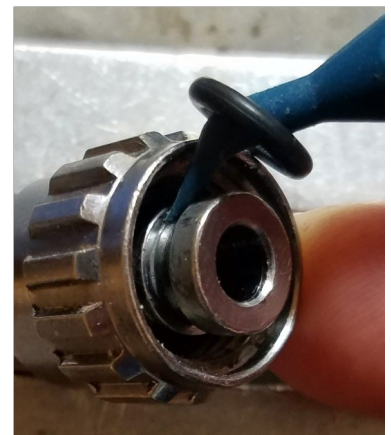
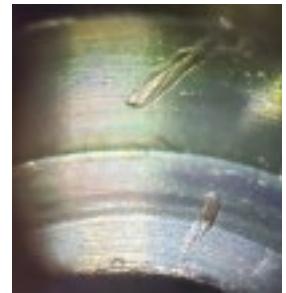
Here, instead of using a plastic pick,



a ham-fisted technician chose to use a metal pick to pry out the HP O-ring from a DGX Gears D6 1st Stage, scratching the land not once, but twice as he removed this stiff rubber part during service.

You need the right tool for the job!

An O-ring sits in a "land" in whatever piece of equipment in which it is used. A land is merely a smooth surface against which the O-ring seals. It needs to be relatively smooth, so that whatever gas pressure is being sealed does not leak through the microscopic crevices created by a rough or scratched surface. At low pressures with soft O-rings (i.e., LP hoses with duro 70 O-rings), there is a lot of tolerance for abuse and corrosion, because the O-ring is often static, or not subject to much movement, in the part that gets abused.

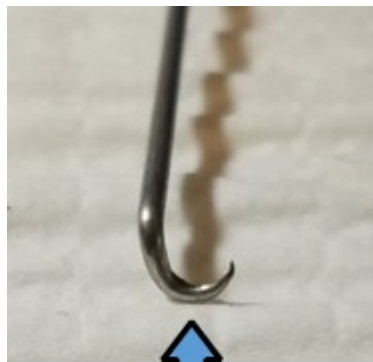


Take an LP hose end, for example. The O-ring that seals the second stage to the hose sits in a groove (land) in the tube beneath the sealing nut. Digging this out with a curved steel pick may deeply scar the land, but the O-ring sits there generally unmoving, molding itself to the scarred land. The outer side of the O-ring is what seals against the regulator connection, and as long as the inside of the reg barrel isn't scratched, your second stage may seal just fine.

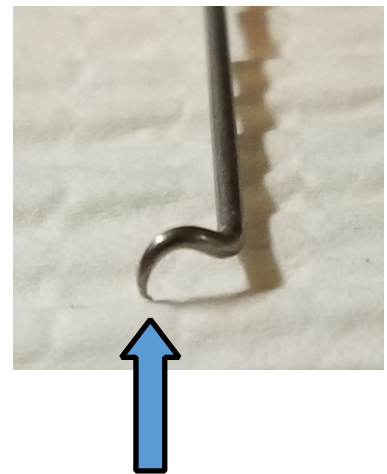
But at high pressures, it's a different matter. Scratching the HP land inside that DGX Gears D6 first stage you are trying to service will mean 3000 psi gas inevitably leaking into the intermediate pressure chamber, giving you IP creep. The O-ring has a harder duro (so as to handle the higher tank pressure) and is less able to mold itself to the scratched land. Getting this O-ring out for replacement requires a stiff plastic pick, or a double hook pick and deft technique.

But a double hook pick made out of plastic or brass simply doesn't have enough strength to last long without losing its shape and becoming useless. A steel pick will do the job, but since it is stronger than brass it will mar a brass reg. In fact, a steel pick will even scratch titanium! Using a straight or curved steel pick is a recipe for disaster, especially when a brass pick will do just as well. But when you need a double hook to reach inside a recess, the only suitable double hook pick is steel.

A double hook pick has a safe side:



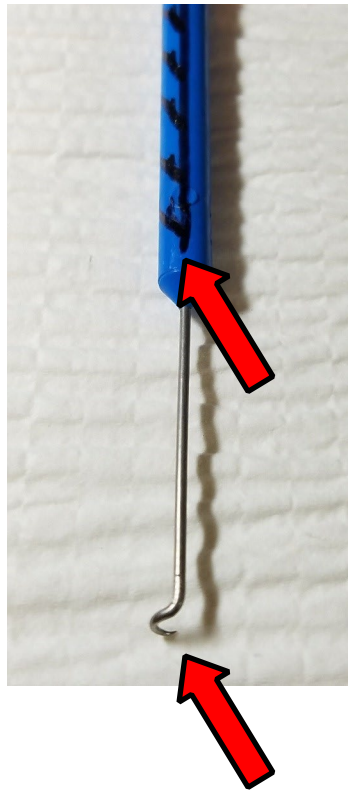
...and a dangerous side (point):



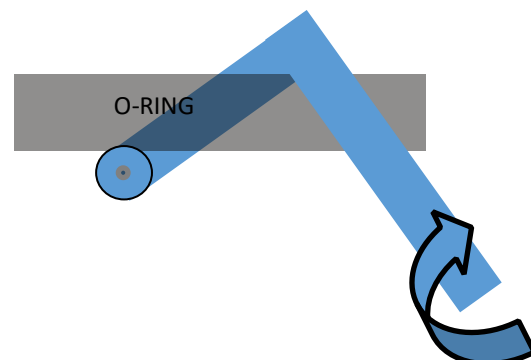
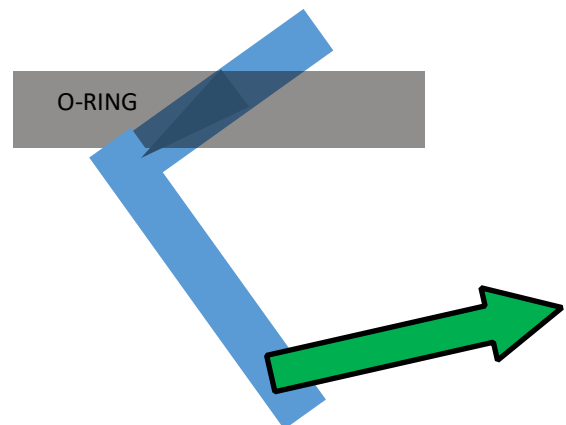
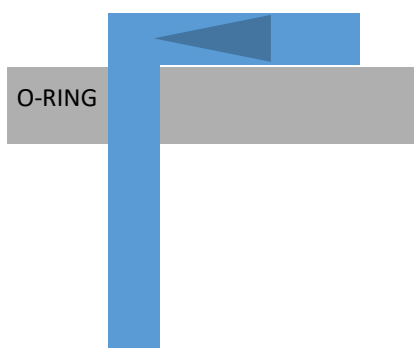
So, the first thing to do when buying a new double hook pick is to mark the handle so that you will know what side is resting on the O-ring land inside your equipment.

Draw a line down the handle exactly opposite the point of the hook, and hatch "the dangerous side" with a marking pen. Whenever you can see hatching, you know you mustn't put any pressure on the land.

Conversely, when you roll your pick handle, so the hatching is underneath, you know the smooth curved side of the hook is lowermost inside the land.



Properly using a double hook pick, then, requires making use of both the safe side and the right angle formed by the second hook. The pick is placed adjacent to the O-ring, by pushing it down into the land with the point protected. With the sharp tip lowermost (underneath the level of the O-ring), the handle is then moved to one side so the sharp tip passes under the O-ring but just above the land.



At this point, the handle is rotated until the tip appears on the other side of the O-ring.

This can be done from the near side of the O-ring or the far side. The side chosen will determine the side to which the handle is swung. Here are pics of a hypothetical O-ring extraction from the far side, similar to the diagrams above:



An extraction from the other side of an O-ring is shown here. Position the hook so the point is lowermost, and then roll the handle slightly away, to keep the point away from the land.



Slide it into position (in this case on the near side of the O-ring) and press the smooth curve of the bottom of the hook into the crevice between the land and O-ring.

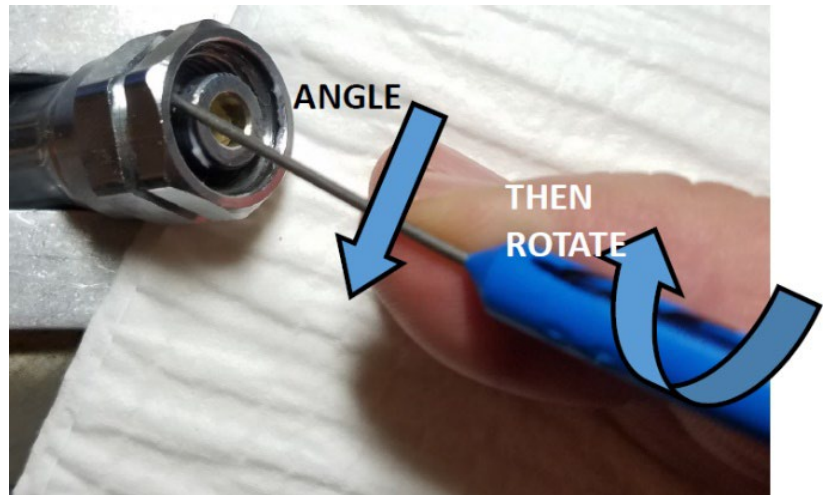
Note the slight bend in the wire from the pressure exerted to force the curve into the crevice.



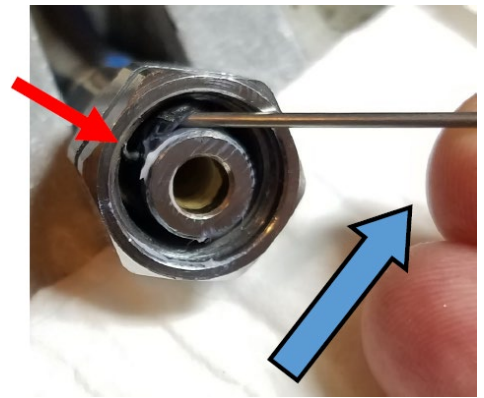
The tip of the hook is now deep in the land on the near side of the O-ring.



Now change the angle of the handle so the tip of the hook slides under the O-ring and rotate the handle away until the sharp tip can just be seen on the other side of the O-ring.



At this point, angle the handle in the opposite direction until the exposed tip of the hook protrudes from the hose end fitting.



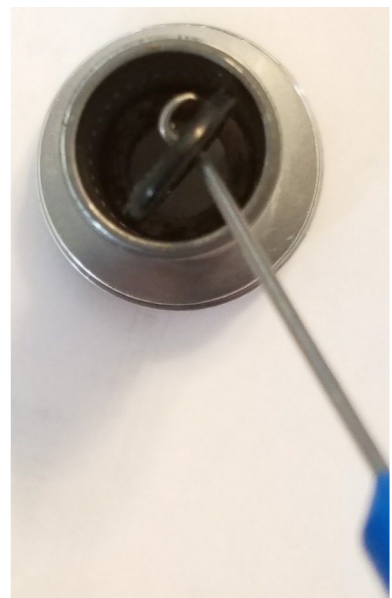
Rotate the handle even more away from you until the O-ring twists, and you can begin sliding the handle under the O-ring (to move the sharp tip away from both the O-ring and the equipment)



and then pop the O-ring out with the shaft of the tool.



Sometimes, working inside the bore of a piece of equipment, there's no room to slide the shaft of the tool under the O-ring. In this case, the O-ring is carefully retrieved with the hook itself:



Remember that the point of the hook is harder than anything you're working on.

Treat it like the dangerous weapon it is when inside your gear and enjoy the ease with which otherwise difficult O-ring extractions can be made!

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