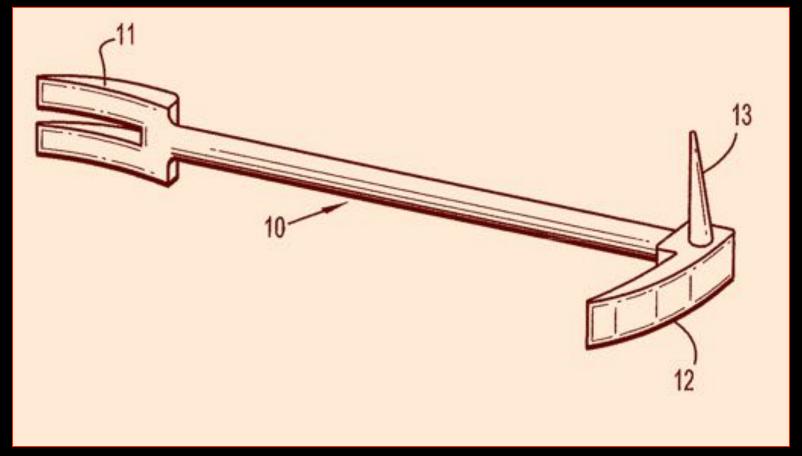
TUNING YOUR HALLIGAN





SEAN J. WILSON SEARCH & DESTROY TRAINING & TOOLS, LLC



AKA:

THE ANARCHIST HALLIGAN BOOK





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DISCLAIMER:



Be advised before reading this guide that modifying your tool in any way will void the warranty from the manufacturer. Taking it out of its original box will void the warranty. Allowing sunlight to fall *directly on the tool itself* will void the warranty. Making commanding eye contact with the sales rep will void the warranty. Taking your tool into a building that is on fire may damage the temper and void the warranty. Dropping your tool on the ground from a height of greater than two feet will void the warranty. Writing your name on your tool in sharpie may void the warranty. Using spray-paint to stencil your company or department identifier will make the tool highly flammable and will void the warranty. Remove rust with positive thoughts only. Stressing, distressing, impressing, embossing, debossing, or caressing the steel may void the warranty. Application of solvents to the handle for the purpose of marking or cleaning should be avoided when possible...when unavoidable, consult local clergy afterward for absolution. Gasoline, WD-40, and other petroleum distillates must not be used or stored in the same building that your tool is housed in. Written plans must be submitted to the manufacturer and okayed in writing by the manufacturer's chief engineer and/or design team a minimum of 120 days prior to any welding on the tool. Your tool is not intended for emergency rappelling or any life-saving applications, usage as such will void the tool's warranty. When maintaining your tool, the presence of hot coffee or cold beer may have an adverse effect on the tool's temper and/or its warranty.

CHAPTER ONE ANINTRODUCTION



PURPOSE OF THIS GUIDE

To be honest, I'd not planned on writing a guide on the finer points of tool tuning. There are a number of very good articles out there on the subject already. But we are asked our advice on this fairly regularly. Enough so that I thought I'd type it up in PDF fashion so that it could be shared via email and social media.

So here we are....throwing our hat into an already crowded ring, and weighing in on what S&D does to tune up our class tools and also our personal halligans that we carry ourselves onduty. For the purpose of sharing with you what we've learned about making tools more useful, functional, versatile, and easier to use and teach with.

We would encourage you to view this guide as a starting point to jump off from, not a destination to arrive at. This guide is not intended to be a bible or an all-inclusive guide to tools or tool-modifications. That book hasn't been written yet, and we are not smart enough to write it. But we have included a lot of ideas for your perusal, for your enlightenment, and sometimes for your entertainment. Some are tried and true. Some are fairly hare-brained, we freely admit....but *you*, on the other hand, are not. We trust you to absorb what is here, and to integrate what you find useful into your working life.

Feel free to disagree with and disregard anything you see here. Feel free to stop reading at any time. Feel free to take your fate in your own hands. You won't hurt our feelings, and we trust we won't hurt yours.

TAKE STOCK OF YOUR COURAGE

Be forewarned....you may take grief about trying some of the things you find in this guide. Just be prepared for that. Steel yourself to the idea that you may be stepping out into a Brave New World alone. And anyone—ANYONE—who doesn't like what you do to your own personal tools, can suck on it. They're *your* tools, after all.

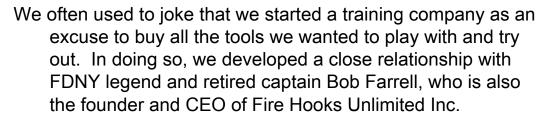
If you work for one of those uptight fire departments, I'll make just two suggestions before you consider modifying their tools:

- 1 It's better to beg forgiveness, than to ask permission.
- 2 Admit nothing ("I dunno"), deny everything ("It was like that when I found it"), make counter-accusations ("I heard you did it").



ABOUT US

SEARCH & DESTROY FIRE TRAINING was founded as a small training company in 2010 by Sean Wilson and Scott Gardner, career firefighters for a medium-sized suburb of Detroit (MI) called Royal Oak. As enthusiasts of breakage and tool-nerds extraordinaire, we began this endeavor essentially as a way to learn more about the parts of the job that interested us most. We have been fortunate enough to have found an interested community in the training world, both within social media and in our area locally and regionally.



We kept Bob on speed-dial, much to his irritation probably, wanting to know essentially everything we could learn about his tools, tool history, and tools in general. We commissioned a couple custom tools for our use that Bob liked enough to add to his catalog. We helped Bob test his beloved Maxximus Rex before it went into full production. Since then, we've helped him test a few other tools as well.





ABOUT US

When Bob approached us to become distributors for his company in 2014, we jumped at the chance and were honored to work directly with *the* most interesting fire service tool company ever. One that has been designing, refining, and making the best tools on the market since before we were born. After Fire Hooks Unlimited, we also quickly added Lonestar Axe LLC (makers of the Pig) to the repertoire of companies that we distribute tools for, solely based on how much we love using the Pig on the job and in our classes. We changed our name to **SEARCH & DESTROY TRAINING & TOOLS**.



We now joke that became tool distributors so that we could buy tools for ourselves at wholesale prices!

Our dual niches in the training world, if we can flatter ourselves enough to think we *have* a niche, is through-the-lock forcible entry techniques and training videos, and also general all-around tool-nerdery. We field messages almost daily regarding very finite details about hand-tools....weights, lengths, finite measurements, etc.....mostly from guys who want to be as informed as they can be before making a tool purchase, especially when buying one they'd never even gotten a chance to use before.



ABOUT US

We put on forcible entry training classes, mostly in Michigan. Email us for a quote.

We have a well-followed Facebook page, a Youtube channel with over 200 training videos on it, and the S&D Online Tool Store. We can do municipal PO orders for fire departments or other organizations.

If you have ANY questions regarding tools, feel free to contact us via email at: SearchAndDestroyFE@me.com

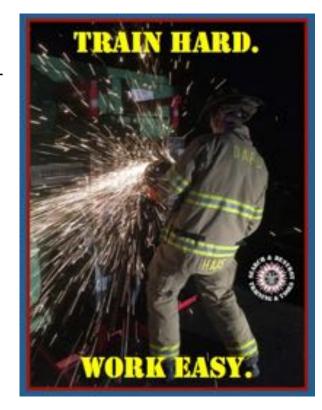
S&D Business line: 586-231-1478

S&D Online Tool Store: www.mkt.com/SearchAndDestroy

Facebook: <u>www.facebook.com/SearchAndDestroyTrainingAndTools</u>

Youtube channel: www.youtube.com/user/SearchandDestroyFire

Training classes video: https-//www.youtube.com#2457E18



"IS THERE A METALLURGIST IN THE HOUSE??"

Most of these tool modifications can be made in one of two ways:

- 1 With a file
- 2 With an angle-grinder



Many people get very up in arms regarding any grinding that's done on a metal tool. Usually because of the prospective damage that can be done to the temper of the metal.

If you are very concerned regarding the temper being damaged, we recommend that you make all modifications using a file and wire brush. While tedious and time-consuming, a file is THE way to ensure the tool suffers little damage.

And there is NOTHING wrong with that. We respect the right for an individual to do whatever he or she sees fit.

"THIS IS GONNA HURT YOU MORE THAN IT HURTS ME."

That said, I have ZERO personal compunctions on applying a well-made single-piece drop-forged halligan bar like the Pro Bar from Fire Hooks Unlimited to a bench-grinder or angle-grinder for short amounts of time.

The bulk of the American Fire Service seems to be made up of amateur metallurgists who crawl out of the woodwork to tell you all the technical reasons that you're going to going to ruin the temper of your halligan by using a grinder on it for 15 seconds.

I cannot dispute any of their claims. At least not in a technical or jargon-esque sense of the meaning.



"YOU WERE EXPECTING EXCALIBUR IN A VELVET-LINED MAHOGANY CASE MAYBE?"

All I can do, by way of dispute, is pick up my BILLY BAROO halligan— a Pro Bar I've owned, carried, and taught with now for almost ten years— and show the battle scars, the notched portions, the gouges and slices I've taken out of it....either during usage or for the express purpose of making it more user-friendly for me and for our students when learning how to use it in classes.

I've used it for my own personal carry, and we've used it in *every single class* for six years now. If I ever <u>am</u> able to kill the thing, I'm going to mount it on the wall of my firehouse like a hunting trophy as a testament to what a bad ass I am (in my own mind). I may even conclude tours of the station with it. Then I'm going to buy another one, and see if I can't kill THAT ONE, too.

A good single-piece drop-forged halligan should be able to be ground on and welded on by someone who knows what they are doing without too much worry regarding damage done to the tool.



THE S&D DECLARATION OF INDEPENDENCE

We at S&D are faaaaar less concerned about the dangers of tool modification than are many within the fire service.

We take a "tool approach" to tools. That is, they are TOOLS. And if we can improve their functional utility by grinding, filing, welding, sanding, painting, stenciling, sharpie-ing, or lightly dusting....we will do so.

And if, in the course of human events, a tool bends or breaks.....we will consider it the cost of doing business and simply replace the tool. I've yet to hear of a fire department big or small that had to close its doors because of a bent halligan, a chipped axe, or a lost pike pole.....and yet I've never run across another group of tradesmen so risk-averse or afraid of damaging a hand-tool. I'm assuming IFSTA might have something to do with that.

We recommend using good practices when modifying tools, especially welding or grinding, so as not to damage the steel or remove too much of it. If a particular skill is above your paygrade (like welding, for instance), find someone with the skill-set necessary.



MANY FISH IN MANY SEAS

Bear in mind that there are a number of different halligan tools on the market, both single-piece (even double-piece!) and three-piece tools.

The single-piece tools are drop-forged, they are often referred to as "SPF" tools, meaning "single-piece forged". The three-piece tools are typically two cast end-pieces that are pinned or welded onto a hollow shaft.

There is a decent amount of variation between one tool and another. The thickness, taper, fork-gap, and other dimensions vary wildly between brands and models.

There are two tools on the market—the Maxximus line from Fire Hooks Unlimited, and the Aazel halligan—that come "pre-tuned" from the manufacturer. Very little needs to be done to these tools by the end-user.

There are other tools on the market that certain of these modifications won't work for (or won't work well for), because of the dimensions of the specific tool in question.



A ROSE BY ANY OTHER NAME

The tool that we will reference again and again is the Pro Bar halligan from Fire Hooks Unlimited. Developed in the mid-1970s by FDNY firefighters, the PB has been considered the gold standard of single-piece drop-forged halligan tools for over 40 years.

The Pro Bar is THE halligan specified for use by the FDNY, the NYPD, and many other large police and fire departments across the United States.

Because of its prevalence, ubiquity, and reliability we will refer to the PB again and again. However we will refer to other halligan tools when the necessity arises due to known unique dimensions. Bowing to practical space considerations, we will not be able to address EVERY variation in dimension amongst the plethora of tools on the market.

We will express opinions and preferences from time to time regarding tools, they were come by honestly through experience and usage. Feel free to develop your own opinions, whether they are in league with or contrary to ours.

"WHO WAS THAT MASKED MAN?"

In the interest of full disclosure, our company—Search & Destroy Training & Tools LLC—distributes tools for both Fire Hooks Unlimited and Lone Star Axe (makers of the Pig).

We are absolutely in love with the tools we sell. We were in love with them before we became tool distributors. We were in love with them before we became a training company.

That being the case, we will reference these tools here as well. They are not, however, the only tools on the market, nor are they the only good tools on the market. We have a lot of respect and good things to say about several other tool companies doing business today.

Lest anyone say that we are biased, I thought I would be the first to point it out. But the bias was born in us loooong before we sold our first Pro Bar or Pig.

CHAPTER TWO

A LITTLE ABOUT TOOLS



PART 1:

THE IRONS SET



Photo courtesy of Matt Hinkle BOX ALARM TRAINING



"THE IRONS"



The age-old slang name given to the forcible entry tools carried by firefighters is "the Irons". Even IFSTA now refers to these tools by that name.

Though many choices about individual tools exist, the irons are generally agreed to consist of a striking tool and a prying tool.

In forcible entry work, a striking tool is necessary to set the prying tool into place behind a door or door-jamb. Once in place, the prying tool is used to push or pull a swinging door through its normal range of motion.

In most fire departments this is typically the flat-head axe and the halligan bar.





THE STRIKING TOOL



The most common striking tool in the irons-set is the flat-head axe. Many other tools are also carried by fire departments and individual firefighters and and preferred over the 6 lb axe.





THE STRIKING TOOL

8 lb Pig

One of the chief advantages that an 8 lb axe, Pig, or sledge has over the 6 lb axe is the force generated when swung directly against the door when forcing inward-swinging residential doors set into wood-frames.

The two extra pounds pays for itself quickly when swung against a light residential door at a house-fire.







ANCILLARY TOOLS: STEEL HOOKS

A common complement to the standard irons-set is a Roof Hook or Talon Hook. These tools come in lengths of 4, 5, 6, or 8 feet.

In addition to overhaul, they can be used to good effect for setting the halligan during solo firefighter, forcible entry, removing residential security bars, and marrying to the halligan to increase leverage during forcible entry.

They also excel at light-prying when used by themselves for removing floor-boards, plank roofdecking, knotty-pine, and stubborn shiplap.

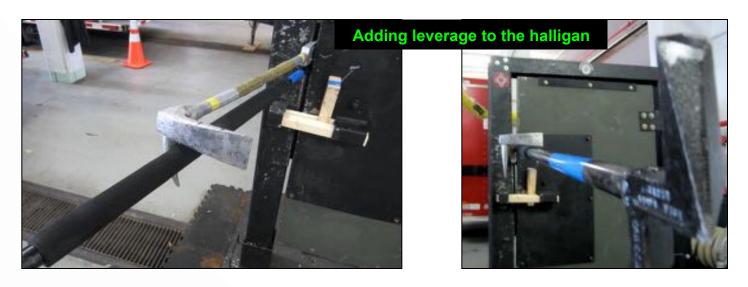






NY Roof Hook

ANCILLARY TOOLS: STEEL HOOKS





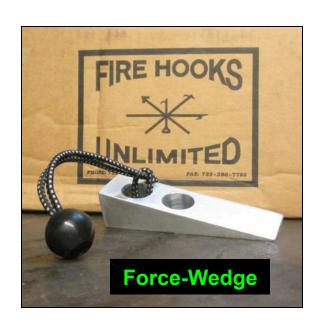
ANCILLARY TOOLS: THE FORCE-WEDGE

A force-wedge is often carried by a firefighter who expects or is expected to force entry by himself or herself

The force-wedge is a small, lightweight piece of aluminum that is often carried with the irons-set married over the spike of the halligan or to the head of the striking tool.

It is used similarly to an axe head to spread the gap between door and frame to allow room for the halligan to be inserted initially or inserted further past the door-stop, and to hold the purchase that the halligan has created so that it can be removed temporarily and used in a different way (i.e. – fork removed and adz inserted).

Unlike a wooden door wedge, a force-wedge can be struck repeatedly to widen gaps.

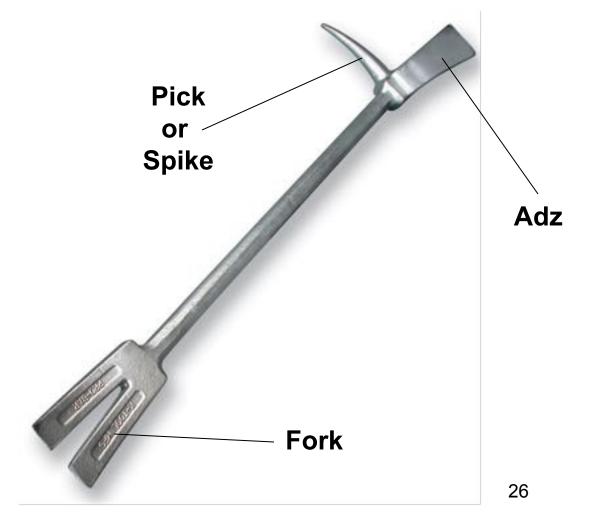




HALLIGAN NOMENCLATURE





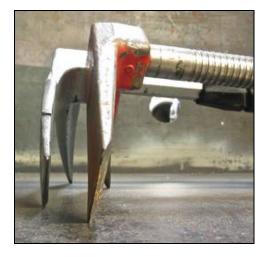


PART 2:

VARYING GRADES OF HALLIGAN

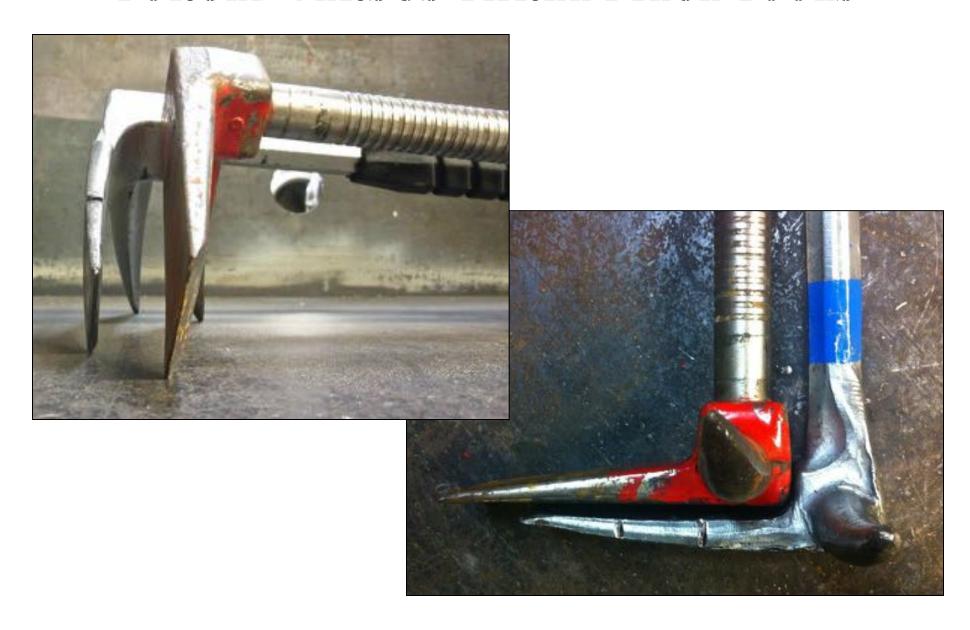












The original halligan bar, invented by Hugh Halligan of the FDNY in 1948, was a singlepiece of drop-forged 4140 steel. It was copied by the Zico (Ziamatic) Corporation soon afterward.

Starting in the early 70s, Paratech and Zico began producing three-piece versions that were not nearly up to snuff, but had a had a much lower production cost and price-tag, which attracted a lot of fire chiefs into buying them despite their poor reputation, inferior dimensions and strength, and questionable usefulness. Both companies today still produce both three-piece versions and also single-piece forged versions.

The Pro Bar, produced originally by the K-Tool Company beginning in 1975 and today by Fire Hooks Unlimited, was not a copy but a complete refinement of the original halligan. It was painstakingly completed by William McLaughlin (inventor of the K-Tool), Bob Farrell (later the founder of Fire Hooks Unlimited), and a small number of FDNY firefighters working in the busiest area of the city at that time, the South Bronx. They had plenty of opportunity to refine, refine until they had a tool that improved upon the original design in all dimensions....every curve and taper. And it is this tool that has been in wide use for over 40 years now that is considered the gold standard by which all other halligans on the market are compared to.



"CAN I TAKE IT APART AND CARRY IT IN MY POCKET?"

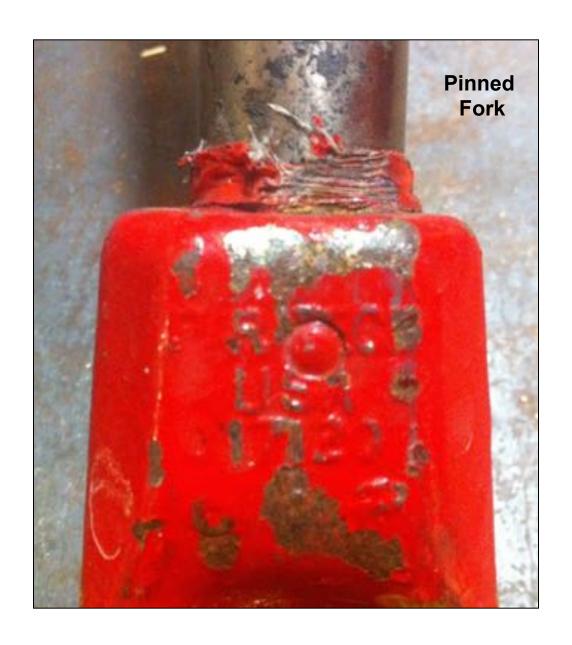
These tools are designed in a *modular* fashion, meaning they are multi-piece and come apart fairly easily. This is done, not with tool usage or function in mind, but with PRODUCTION COST as the driving factor. They are easier and cheaper to mass-produce.

Typically three-piece tools consist of a hollow tubular steel (or solid fiberglass) shaft, and two cast steel working ends....a fork piece and adz/spike piece. These working ends are typically pinned (and sometimes welded) into place.

Observe.

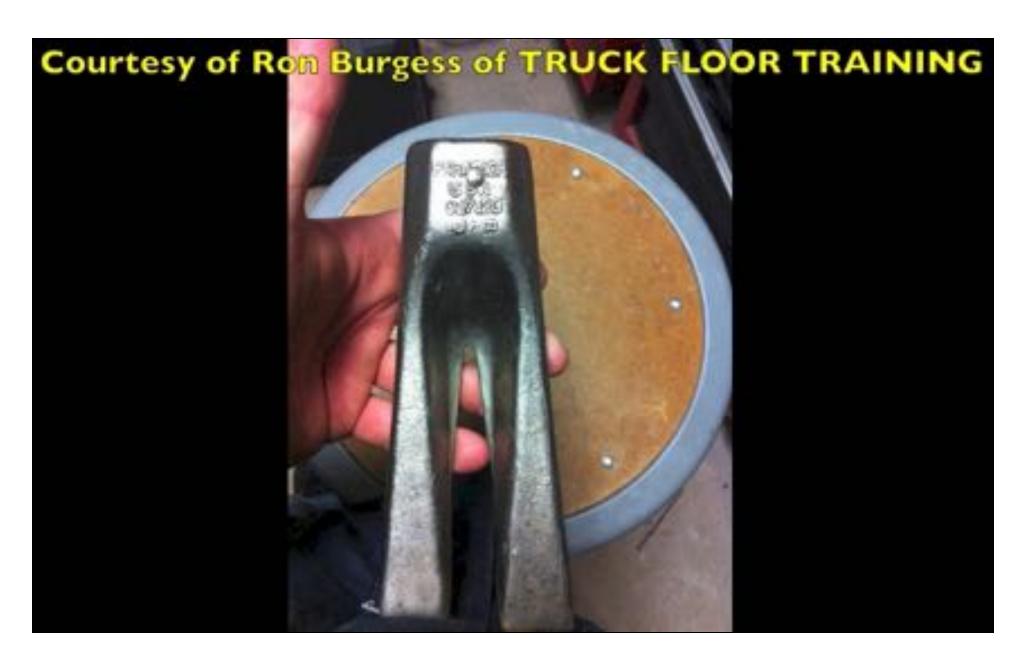












"ODIN, GIVE ME STRENGTH!"

Much of the criticism regarding three-piece halligans centers around the strength of their components and overall-strength as a tool. Again, these tools are made in a modular fashion, with a hollow steel tube and two cast pieces that make up the working ends.

The casting of steel can produce nice, clean lines on a tool....giving it a very precision, polished appearance while producing a product that is not very strong.

Tube steel of a decent thickness itself can be rather strong. However the two cast endpieces, not being as strong as the shaft or well-connected to it, will often fail long before the tubular shaft...leading to dramatic (and possibly injurious) failure of the tool when the pin or one of the cast ends break suddenly.

Drop-forging a tool out of a single piece of steel produces a higher quality product that isn't as polished in appearance, but is a much stronger tool. ANY tool, when forced beyond its capacity through ill-advised usage or extreme mechanical advantage, can fail. But when a single-piece drop-forged halligan fails, it has a tendency to bend at the shaft rather than have the working end break off completely.

"DID YOU JUST SAY WHEN IT BREAKS??"

Believe it or not, I once heard a sales rep try to sell my fire chief on the "positive" aspects of having pinned and removable working ends by saying that WHEN the tool breaks, you can just replace the broken end and not have to buy a whole new tool.

I said, "Shoot, Chief....if that's the case, maybe we should buy a bucket of spare parts for these Swiss Army halligans and keep them on the truck so we can swap them out on-scene."

And, as usual, my wry and rapacious wit went unappreciated.







DUBIOUS STRENGTH

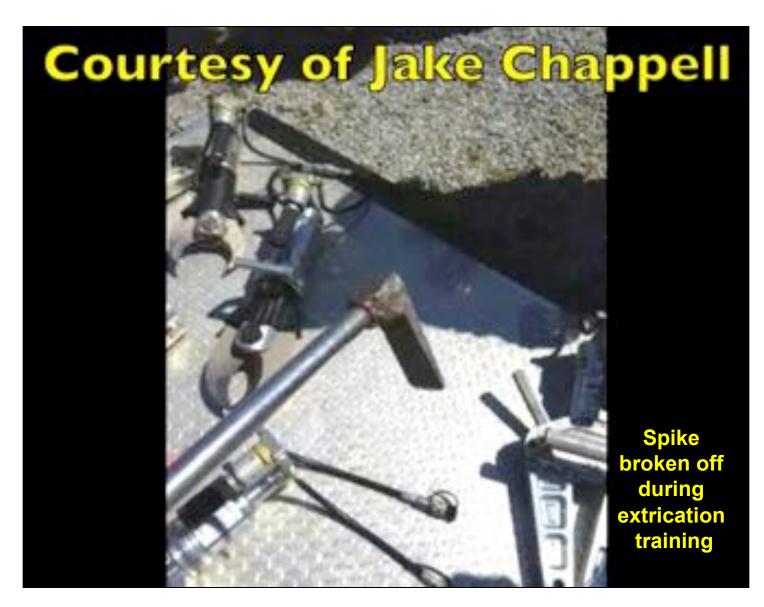




DUBIOUS STRENGTH



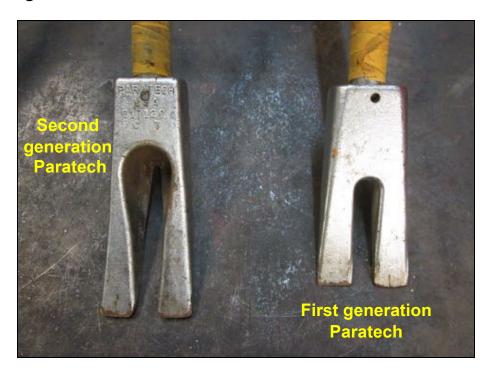
DUBIOUS STRENGTH



"YOU MEAN IT GETS WORSE?!"

Believe it or not, for me at least, the worst aspect of the three-piece halligan tools is *not* the reduced strength or higher propensity for breakage. I've seen a lot of pictures of them broken and heard a lot of stories of friends breaking them during use, but I've never done it or seen it happen with my own eyes.

What I *have* experienced personally is <u>how hard you have to work</u> to overcome the poor design of the tool and the dimensions that make every molehill a mountain when using a three-piece halligan.



"YOU MEAN IT GETS WORSE?!"

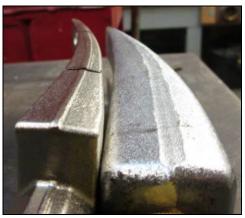
Look at some of the side-by-sides in this presentation:

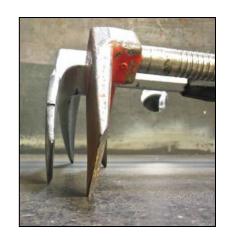
The fork of a three-piece halligan is easily twice as thick (or thicker) than most of the single-piece forged tools on the market....making it waaaaay harder to fit the tool into a tight door-seam, between the frame and the door itself.

The adz is straight (rather than slightly curved), making it more difficult to angle around doors past the door-stop.

And the end of the adz is ground to a bevel on the bottom-side of the tool (rather than the top), which gives the adz a tendency to slip and cause the tool to kick out when used for prying.







POOR FUNCTION



STUCK WITH BAD TOOLS: THE OPTIONS

"Alright....but my FD carries nothing but three-piece Paratechs, and that's not gonna change anytime soon. What can I DO about it?"

The way we see it at S&D, you have three options:

- 1 Buy your own halligan.
- 2 Start building a case for your FD to replace all of their halligans.



3 – Hone your skills and your existing tools to the point where you can make it work.

We at S&D took all three paths actually. We bought our own tools for our training company and started carrying those tools personally.

Then we started campaigning the white shirts to replace the boat anchors we had on our trucks. It took two chiefs and three budget years to get all our Paratech three-piece bars replaced with FHU Pro Bars. It didn't happen overnight. Real progress never does.

In the meantime, we practiced with what we had and tried to understand how to make it work by learning about purposeful technique and door-systems. And we tuned up these tools too.

SKILL VERSUS TOOL

You may have dealt with sub-standard tools your entire career. And that sucks. But it's not an excuse to not take care of them, and not develop your skills in using them. Because it will be your experience and skill that determine more what can be done with that tool than the tool itself. The analogy I use is Jimi Hendrix.

I could steal Jimi Hendrix's guitar from the Rock and Roll Hall of Fame. But it wouldn't do me any good whatsoever. Because I couldn't make it do anything that he did.

But Jimi Hendrix on the other hand, could have walked into any pawn shop in the world and picked up a second-hand out-of-tune cheapo guitar that was missing two strings and made a live album with it that people would still be talking about today.



Such was his skill, that his tools bordered on insignificance.

TOOL ADVOCACY



The squeaky wheel gets the grease. Become the guy that bangs the GOOD TOOL drum.

Remember that if you are the only guy on your department that has taken a forcible entry class or has taken the time to download and read the FDNY forcible entry manual, then that makes **YOU** the resident expert on forcible entry in your area.

Talk about tools, talk about the problems with the tools the department owns, and how these problems are obstacles for the department to do its job. Explain why a fat fork is going to slow you down—or even stop you—when making entry into a tough commercial door. If possible, show good tools side by side with the ones the department has. The visual argument is compelling and hard to ignore. Talk about your experience using good tools in a class or training that you had.

Explain how, for all the technological advancements within the fire service, fire suppression is still mainly performed using water and hand-tools. And how quick entry and quick exposure of hidden fire is key to keeping fires the size they were upon arrival. Nothing can be done until access is gained and hidden fire exposed. Good tools in the hands of trained firefighters actually *lessen fire damage*.

It takes time. But eventually you will develop a reputation for knowing about hand-tools. And so your opinion will become one that is sought out when it's time to make a purchase....even if only to shut you up!

If none of that works, back over the tool with the ladder truck.

CHAPTER THREE

HALLIGAN MODIFICATION



PART 1:

NECESSARY EQUIPMENT





MARKING

You'll need a way to measure and mark the areas that are going to be knicked, ground, or filed. Therefore, you will need:

- 1 A sharpie or soapstone marker
- 2 Tape measure, either standard or cloth-tape measure

For rudimentary work such as this, I think a sharpie does just fine.

And if you already have a cloth-tape measure I think they are a little easier to use for our purposes here, but a standard tape measure works almost as well.









TOOLS FOR THE TOOLS

It's also pretty nice to have a bench-grinder with a grinding-wheel and a wire-wheel on it. The grinding-wheel for light grinding, and the wire-wheel for cleaning up burrs and sharp edges, and for removing rust or drywall debris.

Holding the tool in a mounted bench-vise is the best and safest way to secure the tool while it is being worked on. Several of these modifications I would not recommend attempting unless you have a bench-vise to hold the tool securely....both for reasons of safety, and because without a way to ensure the tool won't move you could botch the job that you're trying to do on it.



Wear eye and ear protection when using all power tools.



FILE THAT AWAY FOR FUTURE USE

If you're using a file for all or some of these modifications, we recommend having at least two types:

- 1 A coarse file for removing a large amount of real estate with each pass of the file
- 2 A medium or fine file for removing burrs and smoothing rough edges





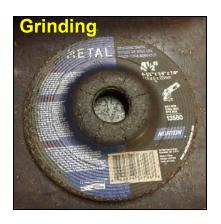
HOAGIES AND GRINDERS

If you're using an angle-grinder to make these modifications, you'll want a few different blades.

- 1 A narrow metal-cutting blade (1/8" thickness)
- 2 A metal-grinding blade
- 3 A sanding flap-disc, 120 grit

Again, always wear eye and ear protection when using power-tools.









THE DREMEL TOOL

Compared to an angle-grinder, the Dremel Tool can't be used to remove as much metal as is sometimes needed for tool tuning. But it can be handy for making narrow notches or grooves.

I don't think I would buy one special for this project. But if you have one, equip it with a metal-cutting blade, and keep it handy.



PART 2:

MARKING THE FORK & ADZ





PURPOSE

Marking the fork and adz of the halligan with gap-lines and set-lines is one of the quickest, easiest, and most helpful tool modifications that one can perform to make using the tool better understood during both training and actual forcible entry.

We are going to file or grind small lines on each side of the fork and adz in order to give us a set of landmarks for driving the tool through the seam between door and frame, and past the door-stop or jamb. These landmarks will help us to know (not guess) where the tip of the forks or adz are in relation to the door-stop or jamb.

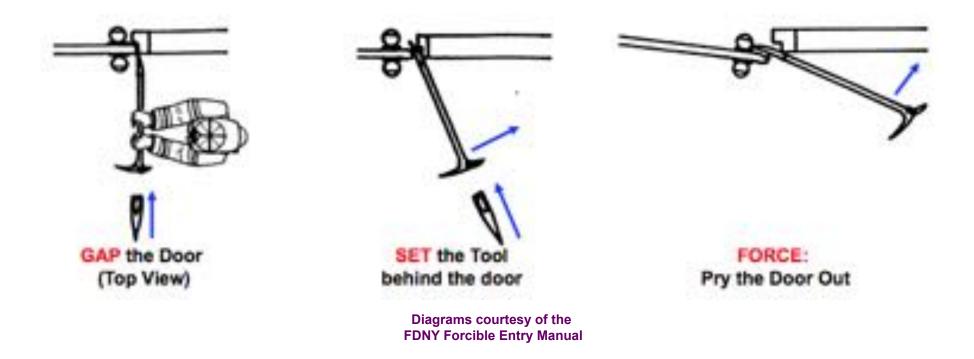




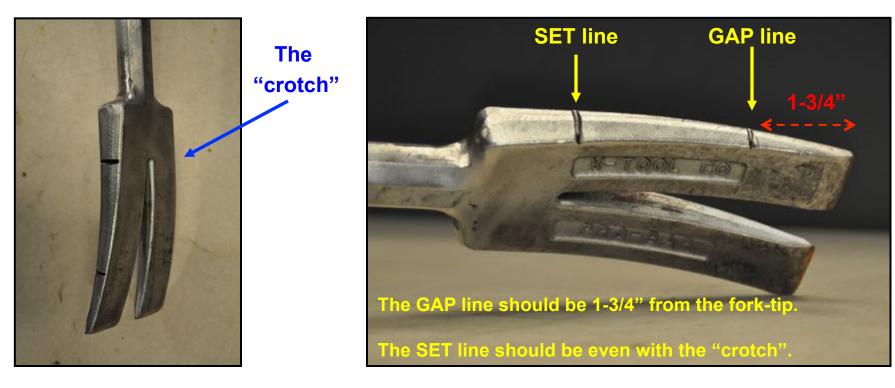
REVIEW OF G-S-F THEORY: FORK

To review, the basic GAP-SET-FORCE technique states that we should use the fork or adz of the halligan first to widen the seam between door and frame (gapping), next we adjust the angle of the bar slightly while it is driven in farther past the door-stop or jamb (setting the tool), then—and only then—prying the door outward or pushing it inward through its normal range of motion (forcing).

This technique is detailed at length in the FDNY Forcible Entry Manual, which can be found easily online by merely Googling it.



MARKING THE FORK: GAP & SET LINES



For <u>outward-swinging doors</u>, we use two lines to help navigate the insertion of the tool. We use first a GAP line, then a SET line.

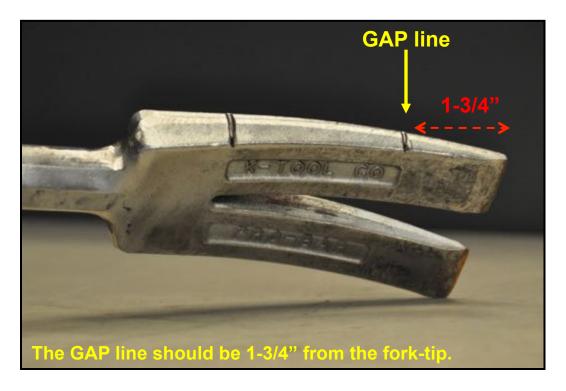
On <u>inward-swinging doors</u>, we typically utilize only the SET line.

The GAP line is measured and marked 1-3/4" from the end of the fork-tips.

The SET line is marked at the at the bifurcation point where the fork-end splits into two individual tines. This is sometimes called the "crotch".

MARKING THE FORK: THE GAP LINE



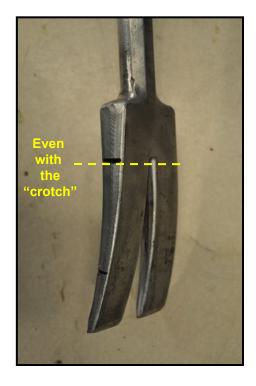


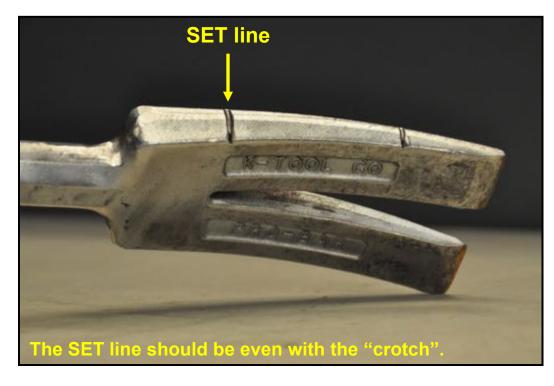
Why 1-3/4" from the fork-tips? Because most commercial and residential doors measure 1-3/4" thick. When forcing an <u>outward-swinging door</u> with the fork, the tool is driven in until the fork is buried into the seam until the GAP line is flush or nearly flush to the door.

At this point, the fork-tips are in contact with the door-stop or jamb. The halligan firefighter now needs to adjust the angle of the tool in order to travel past the door-stop/jamb.

In the case of a metal frame, no amount of additional striking of the halligan by the axe firefighter is going to drive the tool in further because the fork-tips will merely be bouncing off of the (possibly concrete-filled) metal jamb.

MARKING THE FORK: THE SET LINE





After gapping an <u>outward-swinging door</u>, the angle of the tool should be adjusted slightly and driven in further until the set line is between <u>the front-edge of the door</u> and the rear <u>edge of the door</u>.

In this position, we know that the fork-tips are in place to get a good "grab" on the back of the door without slipping out of the seam or piercing the edge of the door.

MARKING THE FORK: THE SET LINE







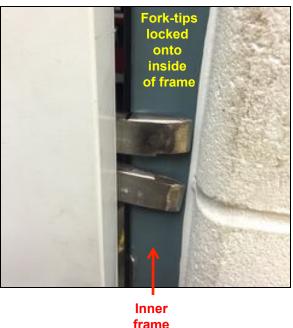
After gapping an <u>outward-swinging door</u>, the angle of the tool should be adjusted slightly and driven in further until the set line is between <u>the front-edge of the door and the rear edge of the door</u>.

In this position, we know that the fork-tips are in place to get a good "grab" on the back of the door without slipping out of the seam or piercing the edge of the door.

MARKING THE FORK: THE SET LINE







frame casing

For <u>inward-swinging doors</u>, we typically use just the SET line. After creating a slight gap between the door and the door-stop or jamb, we adjust the angle of the tool slowly and have our partner drive the halligan in further until the set line is between the front-edge and rear-edge of the door-stop or jamb.

Once the SET line is positioned in this spot, we know the fork-tips are through the seam and will lock onto the inside of the frame-casing when the bar is pushed toward the door. This is a strong spot for prying.

MAKING YOUR MARK







First, measure each side of the fork, 1-3/4" down from the fork-tip. Mark the side of the fork with a sharpie or soapstone marker.

Next make a slight hash-mark inline with the "crotch" of the fork. Turn the tool on its side and mark the sides of the fork.

GROOVY.



Now, clamp the bar in a vise, and go to town!

If you're on the filing committee, remember that this doesn't have to take forever....these are just shallow grooves that provide a visual landmark.

If you're using an angle-grinder, bear the same thing in mind. All you're looking for is a pair of narrow nicks made evenly on each side of the fork. Use a metal cut-off blade for your angle-grinder. These are typically 1/8" thick and will produce a groove about that same thickness.



A Dremel Tool with a metal-cutting blade attached is also a good plan for marking the fork and adz with gap-lines and set-line. A little finer than using an angle-grinder.

MARKING THE ADZ



Now we are going to mark both sides of the adz for the same purpose as we did the fork: to add a visual reminder to help us picture in our mind what the tool is doing on the far side of the door, out of our view.

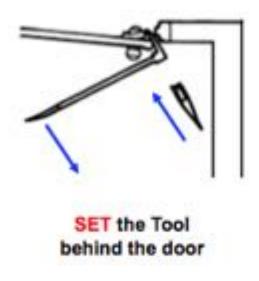
Using the adz-end of the tool is especially beneficial when the door we are forcing is near a wall that would block our range of motion if we used the forkend to try to force the door. Although some firefighters prefer to use the adzend during most forces because of its versatility, and the number of options it provides in terms of varying amounts of both leverage and spread.

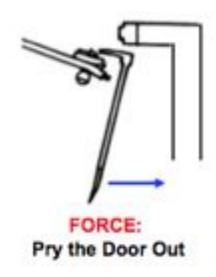
REVIEW OF G-S-F THEORY: ADZ

To review, the basic GAP-SET-FORCE technique states that we should use the fork or adz of the halligan first to widen the seam between door and frame (gapping), next we adjust the angle of the bar slightly while it is driven in farther past the door-stop or jamb (setting the tool), then—and only then—prying the door outward or pushing it inward through its normal range of motion (forcing).

This technique is detailed at length in the FDNY Forcible Entry Manual, which can be found easily online by Googling it.



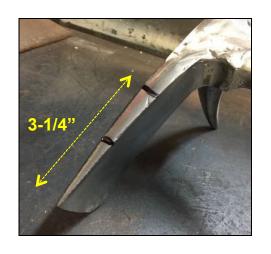




MARKING THE ADZ



"SAAAAY!.....WHAT GIVES??"





Before you ask, let's address this: If you were paying attention, you'll notice that the SET line on the fork and the adz are two different lengths from the end of the tool.

For the adz-end, we chose a length that is purely functional. The measurement we at S&D use is 3-1/4"....that is long enough to travel through the seam and past the door-stop or jamb and ensure we have a good set on the tool before attempting to force the door without it spitting out or "skinning" the door (tearing just a portion of the door).

For the fork-end, we use an existing landmark that is easy to spot even in less-than-perfect visibility: the "crotch" of the fork, where the bifurcated tines come together. This existing landmark where most halligan-tuners choose to place the set line is a little farther down the tool than is absolutely necessary for a good tool-set. But because it's so easy to spot visually during the force, we use it for the set line out of mere convenience.

NOT ALL CROTCHES ARE CREATED EQUAL





The depth of the opening in the "crotch" can vary from one manufacturer to another. This is something to bear in mind when filing or grinding set lines into the fork. You may want to take a quick second to measure yours before marking it.....uh, the one on the *halligan*.

Most single-piece forged bars measure *about* 4-1/2" from the tip of the forks to the crotch.

In the upper left picture: The FHU Maxximus (5"), FHU Pro Bar (4-1/2"), Akron Brass Tri Bar (4-1/2"), the Zico Quic-Bar (3-3/4").

PAINTING THE GROOVES



Feel free to paint the grooves cut into the fork and the adz, if desired. I've even seen people use glow-in-the-dark paint....which is pretty cool!

Paint markers work well. I just use a sharpie. It eventually washes out and fades after a few months, but I almost always have a sharpie in my pocket. So when I see it needs a new coat, it's not a major production.



PART 3:

SQUARING THE SHOULDERS

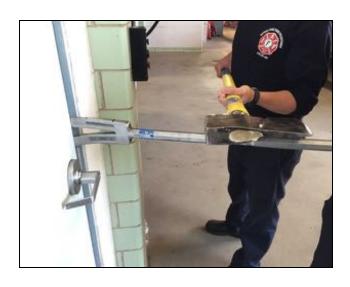


PURPOSE

Squaring the shoulders of the fork of your halligan can make it easier to drive the fork-side of the tool into the seam between door and frame when operating in low visibility or when in tight quarters that don't allow the adz-end of the tool to be struck.

The striking tool slides along the shaft of the halligan until it contacts the shoulder of the fork, transmitting the force to the fork and driving it deeper into the seam.

The usefulness of this technique should be kept in mind when deciding what type of toolwrap, if any, you use. Some types of tool-wrapped used on halligan bars can interfere somewhat with the use of this technique.







PURPOSE

This method can also be used to good effect when performing single-firefighter forcible entry.



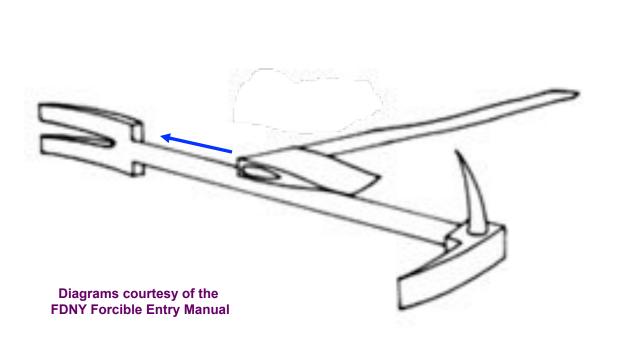


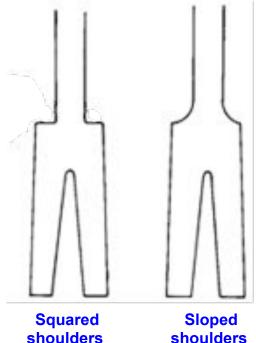
SQUARING THE SHOULDERS

The drop-forging process, while known for the superior strength and durability it creates, is not known for creating especially clean lines on tools.

Many of the single-piece forged halligans (especially the older models) have "sloped" shoulders....that is, shoulders that slope gently from the shaft to the widening of the fork. This gently sloping angle can deflect a blow from an axe, Pig, or sledge.

This slope can be "squared" with file in about an hour, or working gently with angle-grinder in about ten minutes.





FILING THE SHOULDERS

Place the fork-end of the tool in a bench-vise, and get ready to remove some metal. There is a significant amount of metal to be taken off.

So if you're using a file, grab a cup of coffee and turn on your favorite podcast....STUFF YOU MISSED IN HISTORY CLASS or FIREFIGHTER TOOLBOX are both good ones.

Now, start filing. When you're sick of doing that.....keep filing!







GRINDING THE SHOULDERS

If you're using an angle-grinder, be cautious and sloooow in your approach to squaring.

Use a brand-new metal grinding blade on your angle-grinder, this will make it easier to get a nice right-angled shape. Work in short intervals with the grinder on the tool, so as not to overheat the metal more than necessary.

Usually when I square a tool, I bounce back and forth working on one shoulder then the other to allow time for some of the heat dissipate, and also to give my eyes fresh perspective in creating the nice "L" shape that I want.

I have read suggestions about "quenching" the tool periodically, either in water or in motor oil for metallurgical reasons. I can't tell you whether it's a good idea or a bad idea, but I've never done it. If you want to, knock yourself out. Just don't use any oil that's going to be flammable, huh?







From the manufacturer

After squaring with an angle-grinder

In order to effectively perform shoulder-striking, some halligans need some small amount of squaring that can be done in ten minutes with an angle-grinder, or an hour or so with a file.

The Pro Bar from Fire Hooks Unlimited, the IAF bar (now out of business), and the Zico Quic-Bar (single-piece forged version) to name a few.







Not all halligans, however, need to have their shoulders squared. Some brands or models come from the manufacturer with shoulders that are at a nice, clean right angle to the shaft for shoulder-striking.

The Maxximus halligans from Fire Hooks Unlimited, and the Aazel bars fall into this category.







And some (most of the three-piece tools) cannot be effectively squared because the shoulders do not stick out far enough from the shaft to make effective striking points.

As if you needed *yet another* reason to dislike three-piece bars.







The Akron Tri Bar, Council Tool bar, and the Paratech SPF "hooligan" have, as part of their integral forged shape, two tabs along the shaft at the adz-end and fork-end for attaching a carrying-strap.

It is **not advisable** that you square the tab for a couple reasons: (1) You may remove too much metal to make the attachment point viable, and (2) The tab itself may not be thick enough for solid striking with an axe or other striking tool. These tools, however, come nice and square on the opposite shoulder and are good for striking on that side.







The now-defunct company lowa American Fire Tools (IAF) made two versions of halligantype tool. One was a fairly standard looking bar with moderately sloped shoulders, and the other was was a bar with angled shoulders and a sling attachment connecting the fork to the shaft.

The bar in the middle picture here is no problem to square (this one's actually been worked on a little). The bar on the right you may very well just have to forego squaring, unless you want to tackle grinding or filing a LOT of metal on just one side.

Point of interest: My understanding is that these bars were not drop-forged, but casted.







Fire Hooks Unlimited sells a variant of the Pro-Bar that they call the "Roof Pro Bar". The Roof Pro Bar comes with two welded chain links on the shaft....one near the adz, the other where the shaft meets the fork.

The purpose is for attaching to a carry strap, *and* for tying the fork-end link to a rope and throwing off the roof of a building to vent windows below on upper-level floors.....hence the name "Roof Pro Bar".

The side of the fork without the chain-link can be squared in the same manner as any Pro Bar halligan.





In the case of the Leatherhead Tools halligan, the shoulders come pretty square right from the factory. The only snag in their fork set-up is actually the shaft of the bar, not the fork itself.

The shaft of most of the forged bars are octagonal, which means that the striking tool slides along the shaft of the halligan smoothly and evenly across a flat surface. On the LH bar, the shaft is HEXagonal....which means that the striking tool slides along the *angle* where two of the six sides come together. This can make for sloppier striking.







The 3-piece version of the Zico Quic-Bar also has a hexagonal shaft, making any kind of shoulder-striking potentially more difficult.







There isn't a whole lot that can be done about it. And it's hardly the end of the world, but I point it out so that it can be adjusted for when striking the shoulders of this tool.

One slight modification that can be done to the tool to aid along-the-shaft striking, is smoothing out the angle of the shaft on the sides of the shoulders of the fork.

This angle can be smoothed on either the full-length of the shaft or just the 6-8" of the shaft just above the fork-shoulders. This can be done with a file or with a grinding-wheel on an angle-grinder or bench-grinder.

It won't be as flat as truly octagonal steel, but it'll help some.











PART 4:

SMOOTHING THE FORK-RAMPS



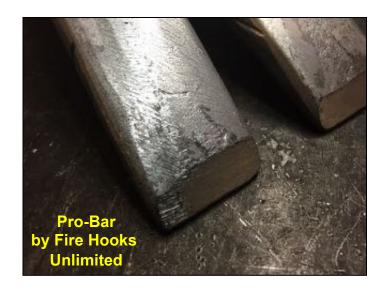
PURPOSE

As with most of these modifications, smoothing the fork-ramps is not necessary (or even possible) on all halligans. It will vary by make and model.

Some of the older bars, both forged and three-piece, have slight "ramps" on the bevel side of the fork near each tip. These serve to mark the spot where the fork begins to thicken considerably.

While hardly fatal during use, many firefighters have for years filed or ground these down to make the fork-end easier to insert into the seam of a tight door jamb, between the door and frame.





SMOOTHING THE FORK-RAMPS

This is an easy modification, and can be done in about 30 minutes with a file, or less than five minutes with an angle-grinder.

First....place the bar in a bench-vise.



FILING THE RAMPS

If you're working with a file, file parallel to the long-axis of the fork, over the crest of the fork-ramp. Filing in this direction over the entire width of the fork-tip will smooth out this abrupt line and make the entire fork tip-taper a little more gradually.

Be patient and take your time.



GRINDING THE RAMPS



If you're using an angle-grinder, use a metal-grinding wheel to work side-to-side along the short axis of the fork.

Make repeated short, gentle passes directly along the crest of the fork-ramp where it begins to dramatically taper off.



SMOOTHING THE FORK-RAMPS

I'm actually fairly conservative in this modification. Some people remove *much more* metal than what is shown here. Feel free to decide for yourself how much metal you'd like to take off.

My own purpose when making this modification is not to vastly alter the thickness of the fork-tips, merely to make the ramps taper more gradually. Thus, allowing easier insertion into a tight seam between door and frame.





NOT ALL HALLIGANS NEED IT

Again, not all halligans need to be modified in this way. It's mostly the three-piece bars and older single-piece forged tools, though a couple of the newer SPF tools on the market could benefit from touching up the fork-ramps.

The Maxximus (Fire Hooks Unlimited), Aazel, and Leatherhead bars don't even need to be touched at all in this way.



AND SOME NEED IT MORE THAN OTHERS

The Akron Tri Bar is a newer halligan on the market, but it has the same fork-ramp thicknesss as some of the older tools.



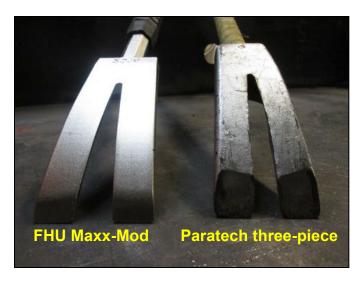


AND SOME NEED ALL THE HELP THEY CAN GET

Let's face it.....if you're carrying a three-piece bar, it's gonna need all the help you can give it.

My first choice would be to have these tools replaced. But even in a progressive atmosphere with adequate funding, that doesn't usually happen overnight. It's gonna take time to sell that idea to the powers that be.

In the meantime, you can spend a few minutes putting perfume on pig and make it just a liiiiiiiittle bit better for your efforts.





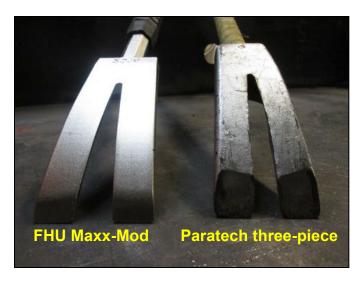


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PART 5:

GAPPING THE FORK





"PLEASE....HOLD ALL APPLAUSE UNTIL THE END"

Most of the techniques that we teach in our classes are not original to our company. They were originated countless years and decades ago by incredibly sharp firefighters across the land, and have been floating around in the ether of the fire service ever since. We have had exactly THREE original ideas of our own that I don't believe anyone else can lay claim to.

Though the *technique* used with this modification is NOT ours, we are (I believe) the first to make this fairly simple tool modification that allows it to be used with some of the more commonly-found halligans in the fire service.

It's wholly possible that others have done this before us, but when we came up with the idea we had not seen or learned it anywhere else.

In February 2014, we did a short pictorial series and video on making this modification to a standard Pro Bar halligan. Shortly afterward our friend John Hayowyk Jr. in New Jersey contacted us about writing an article on it for FIREFIGHTER TOOLBOX. His article is well worth your time. You can read it here:

http-//firefightertoolb#237F3A0

Look...we don't have much to brag about, so when we get the RARE opportunity to...we take it!

PURPOSE

If you're carrying a halligan with a gap between the fork-tips of <u>one inch or more</u>, you can remove the knob-portion of a ball-shaped key-in-knob lock using just your halligan and an axe (or force-wedge).

With the knob removed, you can manipulate the latch-mechanism quite easily with a flathead screwdriver, a Key Tool, or a pair of needle-nose pliers (what we call an "S&D Key Tool Set").







TECHNIQUE

Using the axe head or force-wedge as a spacer and a fulcrum, the fork-tips are slipped over the neck of the handle, behind the knob. The bar is then pushed hard and fast toward the door, removing the ball-shaped knob and the locking cylinder with it.

With the knob removed, you can manipulate the latch-mechanism quite easily with a flat-head screwdriver, a Key Tool, or a pair of needle-nose pliers (depending on the brand of lock).

To watch a video of this technique in action, follow this link:

www.youtube.com/watch?v=y-RklbXBg14

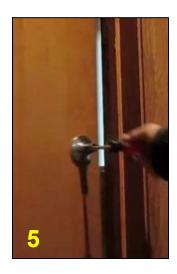
Or just do a youtube search for: "S&D fork-end fun".











GAPS VARY WITH MAKE AND MODEL

Most of the newer SPF halligans on the market have a gap of one inch, which is a good width for pulling key-in-knob locks.

Some of the older SPF bars are just shy of that, and almost all of the three-piece bars are significantly less than that, however.

Therefore, depending on the make and model, you may be able notch the gap a bit to create one inch worth of space between the tips if your bar doesn't have it already.

The FHU Pro Bar unmodified from the factory has a gap between fork-tips of 7/8"





FHU Pro Bar with gap widened to 1-1/8"

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TAKE NOTE

This fork-end technique works very well against most <u>ball-shaped</u> key-in-knob locks, both commercial and residential grade. The reason is because the fork-tips (if one-inch wide or greater) fit nicely over the neck and behind both sides of the knob.

With a good "grab" on either side of the knob, the force exerted horizontally on the lock-set will pull the knob off cleanly, separating it from the rest of the lock-set....which also takes the locking cylinder out of the equation, and leaves the latch-mechanism exposed for manipulation with the appropriate key-tool.





TAKE NOTE

This fork-end technique, however, is NOT very effective against <u>lever-style</u> key-in-knob locksets. The reason for this is that one side of the lever has a small lip that the fork can get behind, but the opposite side usually sits flush to the shaft of the neck as it protrudes from the collar of the lockset. In short, there is nothing for the fork to "grab" on this flush-side of the neck, so it can't exert a clean pulling force on the lockset to remove the lever.

Not the end of the world....an S&D Rex Tool or Maxximus Rex makes very short work of this lockset. Or you can follow this link to watch a how-to video of an alternative method using just a standard set of irons:

www.youtube.com/watch?v=3bg96kZfx3M

Or do a youtube search for: "S&D Lever Action Irons".





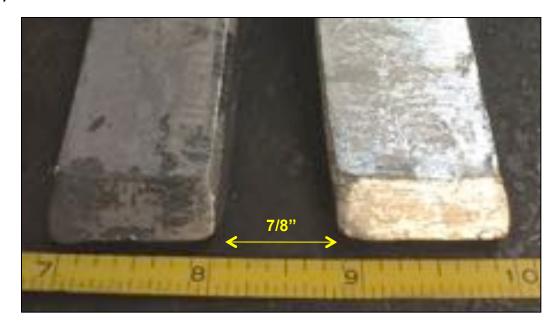
GAPPING THE PRO BAR

Because there about *one million* in service today, and because it's the gold standard by which other SPF halligans are judged, we'll focus on the <u>Pro Bar by Fire Hooks Unlimited</u>, and use it as an example for the "how-to" portion of this modification.

The Pro Bar as a tool is over forty years old, and was not designed with this specific purpose in mind. The gap at the opening of the fork-tips is 7/8" wide, and tapers upward evenly to the point of the crotch.

For other makes and models of halligan, you may need to use different measurements than are provided here, but the principle and aim of the modification will be the same.



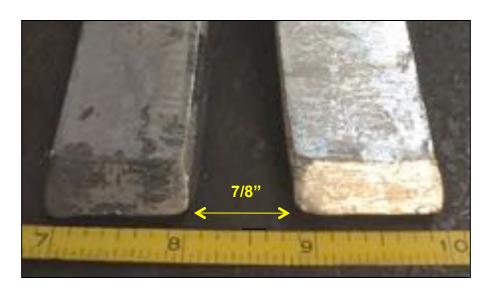


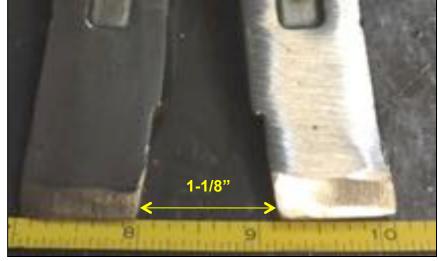
GAPPING THE PRO BAR

Specifically addressing the Pro Bar halligan:

Our modification is going to center on removing approximately 1/8" of the metal on the inside margin of each fork-tip, leaving us with a totally new gap measuring 1-1/8".

Again, for other makes/models of halligan, you may need to use different measurements than those that follow for achieving a 1-1/8" gap.

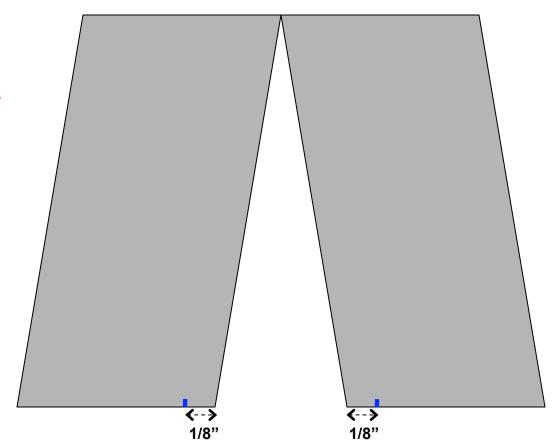




GAPPING THE PRO BAR, STEP ONE:

First, measure and mark a small vertical hash-mark 1/8" over from the inside edge of each fork-tip using a sharpie or soapstone marker.

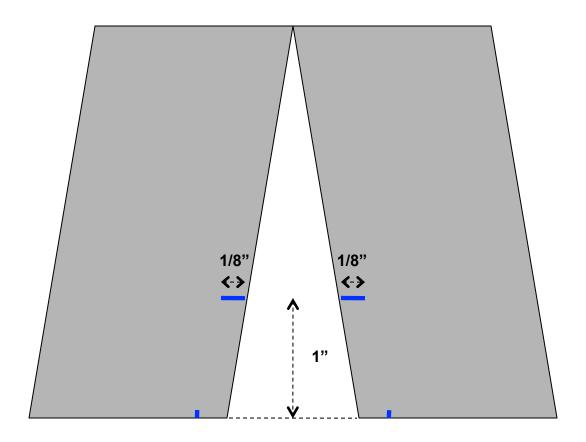
This silly diagram is not even close to scale and is for illustration only.



GAPPING THE PRO BAR, STEP TWO:

Next, measure and mark a small horizontal hash-mark along the inside edge of each fork, 1" up from the end of the fork-tip.

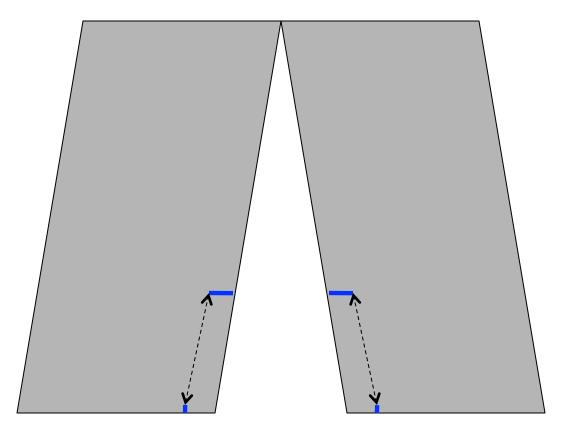
Extend the two hash-marks horizontally 1/8" from the inside edge of the fork.



GAPPING THE PRO BAR, STEP THREE:

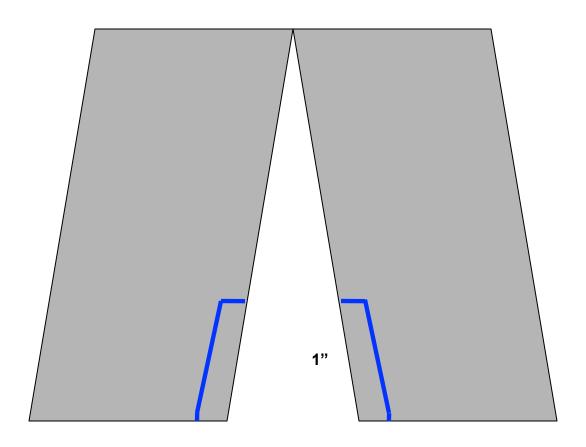
Then, using a sharpie or soapstone marker, draw a line connecting the end of the topmost hash-mark to the bottom-most hash-mark.

This vertical line should be slightly diagonal and remain roughly parallel to the inside edge of the fork.



GAPPING THE PRO BAR, STEP FOUR:

Lastly (but not leastly), place your marked halligan into a bench-vise and begin filing or grinding to remove the marked portion from the bar.



BACK TO THE GRIND

Your best bet is to turn the bar on its side and fit into a bench-vise as pictured, and start filing or grinding on the inside edge of the bottom-most fork.

As always, work slowly and carefully, in a disciplined fashion until you remove the metal from the area you've marked.









DIFFERENT HALLIGANS: MAXXIMUS HALLIGANS (ALL)

The Maxximus, Maxximus Rexx, and Maxx-Mod halligans all come from the factory with a one-inch wide gap between the fork-tips and *do not* have to be modified in any way.





All the Maxximus halligans fit nicely behind the knob. (Maxximus, Maxximus Rex, and Maxx-Mod)

DIFFERENT HALLIGANS: LEATHERHEAD BAR

The Leatherhead halligan has a one-inch wide gap between the fork-tips and does not have to be gapped.



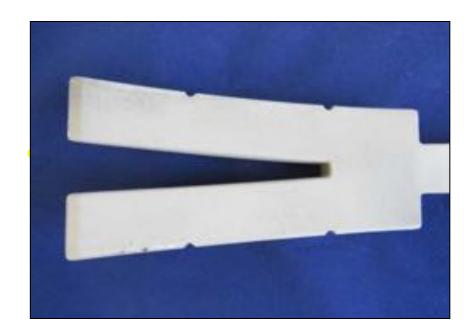
DIFFERENT HALLIGANS: AKRON TRI BAR

The Akron Tri Bar is somewhat unusual in that is wider at the front than it is in the rear because it angles inward because of the ramps. You may choose to gap the fork-tips on this bar (I probably would), but it is not absolutely 100% necessary.



DIFFERENT HALLIGANS: AAZEL HALLIGAN

The Aazel halligan is 1" at the fork-tip gap and does not need modification in this way.



DIFFERENT HALLIGANS: ZICO QUIC-BAR SPF

The Zico Quic Bar SPF (second generation) has a gap of only 3/4" between fork-tips. Because each fork-tip is narrow (compare to the Pro Bar pictured below on the left), there is not enough metal to spare losing the additional 3/16" from each side that would be necessary to establish a gap wide enough to pull key-in-knob locks.

It is **not advisable** that you attempt to gap the fork of this tool. Breakage would be likely to occur with heavy conventional prying.

FHU PRO BAR: Each fork-tip, 1-1/8" wide Fork-gap, 7/8" Overall width, 3-1/8"





ZICO QUIC BAR (SPF): Each fork-tip, 7/8" wide Fork-gap, 3/4" Overall width, 2-1/4"

DIFFERENT HALLIGANS: IAF BAR

The IAF bar is no longer made because its manufacturer, Iowa American Fire Equipment, is no longer in business. It's a cast copy of the Fire Hooks Unlimited Pro Bar in almost every dimension. The gap between fork-tips on the IAF bar are the same as on the Pro Bar: 7/8". Ergo, this bar should be gapped and can be done so to good effect.



DIFFERENT HALLIGANS: PARATECH 3-PIECE

Y'all ready for this? The tool everyone loooooves to hate is back with a vengeance!

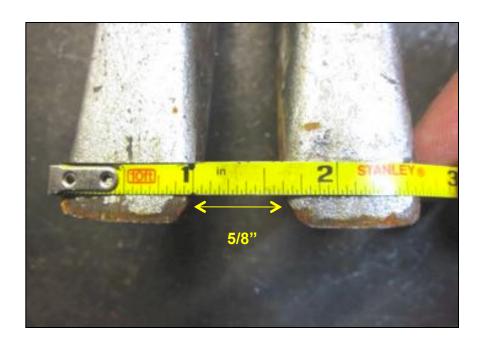
Be forewarned: modifying THIS tool is not for the faint of heart....BUT fortune favors the bold! This could be your chance to get this tool replaced! If you're lucky, with this modification, the fork-tip will break and you can finally get that PB or Maxximus Rex that you've been dreaming of!



GAPPING THE PARATECH 3-PIECE

The Paratech 3-piece is completely unfit for most forcible entry applications.....so why should the fork be any different? Not only is the gap far too narrow (only 5/8") to allow it to fit over the neck of a key-in-knob lockset, the fork-tips are also completely parallel to one another for the first three inches or so from the fork-tips up toward the crotch.

Only about half-way up does it begin to taper at all. According to company literature this is so the fork can be used a gas valve shut-off. Well. That's a relief. There are only fifty other tools with this feature on the truck.





GAPPING THE PARATECH 3-PIECE

So let's do the math: if we've got a 5/8" gap, and we need to establish a 1-1/8" gap, we need to remove 1/4" from the inside margin of each fork-tip.

P.S. – You can shut off gas-valves with a Pro Bar, or pretty much any halligan.









GAPPING THE PARATECH 3-PIECE

Prior to our little gapping exercise, there would've been NO WAY the fork on this tool would've been able to fit over these knobs.

For a video of how to do this modification on a Paratech 3-piece, follow this link:

www.youtube.com/watch?v#237ECF4

Or do a youtube search for: "S&D Pirate Your 3 Piece Halligan"





PART 6:

THE ADZ-RAMP



PURPOSE

There is an angle at the tip of the adz on most halligan bars. This angle is often referred to as the "adz-ramp". Like the fork-ramp, the adz-ramp is useful because it narrows the tip of the adz to a fine point (or at least a rough point) narrow enough to begin the insertion of the adz into the seam between door and frame.

On a good halligan, the adz-ramp will be on *the top-side* of the adz. On the Paratech three-piece halligan (among others), the adz-ramp is on the *under-side* of the adz.





PURPOSE

Why, you might ask, would it matter which side of the adz the ramp is on? Well...it does matter because one is more prone to slippage in certain situations.

When gapping an inward-swinging door set into a metal frame, the adz is inserted behind the door-stop/jamb and the tool is rotated up or down (away from the spike) in order to apply inward pressure against the door and overcome the locks.

In this situation, it's the under-side of the adz that contacts the narrow lip of the door-stop. It's only about 1/2" wide, so that's all the "grab" you have with the tool. That half-inch is an important spot though, because that's all you have to pry against in order to force the door.

The tool, even a good tool, has a tendency to slip out because the lip of the door-stop is so narrow. A disciplined approach to constant tension on the bar must be taken.

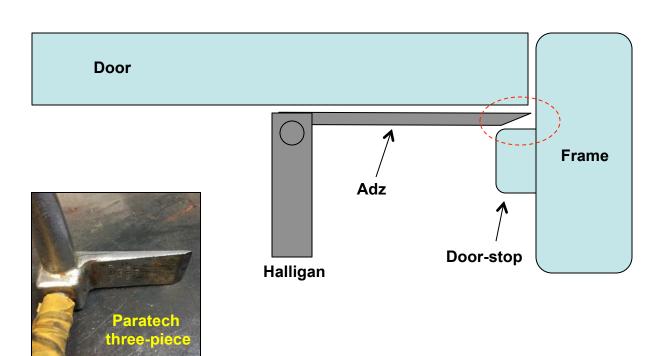




UNDER-SIDE ADZ-RAMP

When the adz-ramp is on the under-side of the adz, the portion of the adz that contacts the door-stop is the angle of the adz-ramp. This angled portion does not "square up" to the door-stop/jamb very well.

When pressure is applied to the bar by rolling up or down, the adz-ramp has a greater tendency to slip on the door-stop and spit out of the tight spot it's inserted into.

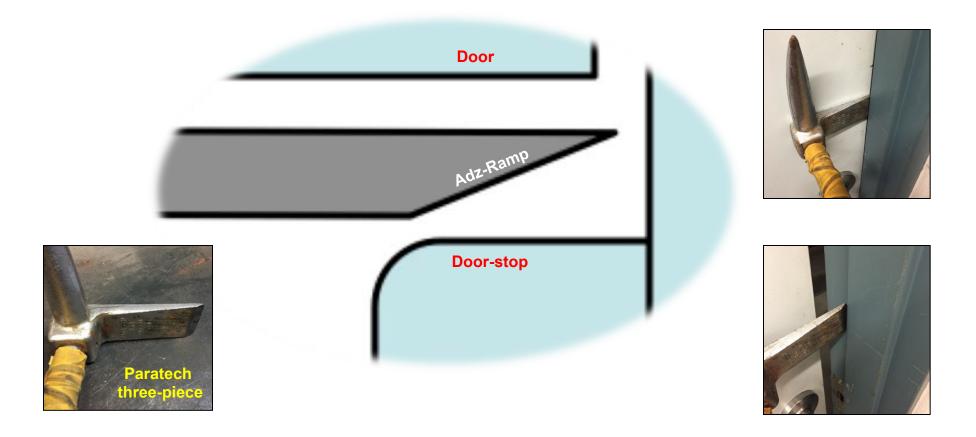






UNDER-SIDE ADZ-RAMP: CLOSE-UP

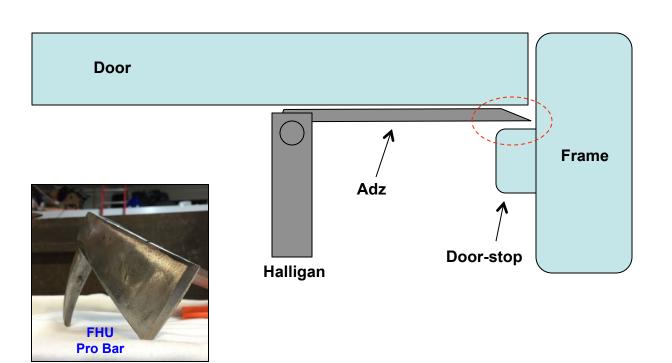
It's this area right here that is the problem. The "grab" that the under-side of the adz is going to have is always going to be slight anyway, because the lip of the door-stop is so narrow (about one-half of an inch). But when the under-side of the adz is <u>angled</u>, it can't "square up" to the door-stop, and it becomes much more likely that the tool will spit out of the seam between door and door-stop.



TOP-SIDE ADZ-RAMP

When the adz-ramp is on the top-side of the adz, the portion of the adz that contacts the door-stop is flat. The angle of the adz-ramp is in contact with the door.

The face of the door is not a narrow lip like the door-stop is, it is very wide and flat. There is a reduced chance the tool will slip. It may still slip....but if it slips, it is in contact with the door, and has fewer places to go. Also, the surface of the door may be creased slightly, giving the tool a resting spot that defies slippage somewhat.



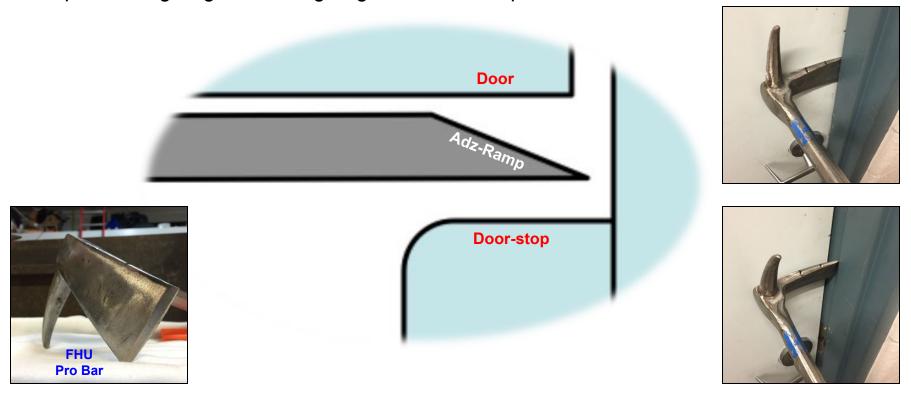




TOP-SIDE ADZ-RAMP: CLOSE-UP

When the under-side of the adz is flat (not angled), it can "square up" better to the doorstop of a metal door-frame. This results in a better "grab" on the narrow door-stop, making the tool less likely to spit out when it is rolled up or down (away from the spike) to exert inward pressure on the door.

The top-side adz-ramp will contact the door, but the door may be creased from the pressure, giving the leading-edge of the adz a "pocket" to rest in.





Re-conditioning an adz-ramp that is on the proper side of the adz is easy. We have to do it from time to time on our company's tools because they see such hard usage during our classes.

It's changing the bevel completely is a little more involved. But if you're stuck with one of these lousy Paratech three-piece bars....what've you got to lose?

It takes about 30-45 minutes with an angle-grinder, using a metal cut-off wheel and a grinding wheel. If you have access to a band-saw with a metal-cutting blade, that's even better.

First, put the adz-end into a bench-vise with the under-side facing up.





Next, use a ruler or other straight-edge to mark a straight line along the crest of the adz bevel, where it starts to angle downward.

The line of the crest is easy to see and to trace.





Now, using your puckered lips, kiss this end-portion of the adz goodbye.

Then, with a steady hand, cut this portion of the adz off using an angle-grinder with a metal cut-off wheel or a band-saw with a metal-cutting blade.





Now that you have the under-side ramp gone for good, flip the tool over in the vise so that you can work on the top-side to create a more useful bevel.



PARATECH ADZ-LIFT 5

Switch the angle-grinder to a metal-grinding wheel. This next phase will take about 20 minutes of grinding and shaping. Take frequent breaks to allow the metal to cool, or keep a bucket of water handy to quench the tool periodically.

Start closest to tip. Work side-to-side across the short-axis of the adz in short, repeated strokes moving back-and-forth. Be patient. Work slowly. Shape carefully.





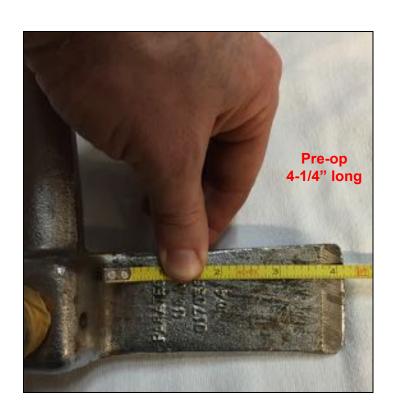


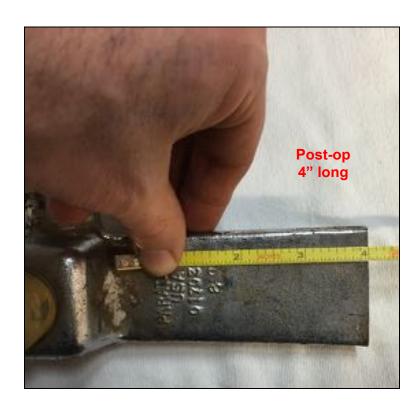


PARATECH ADZ-LIFT 6

So here it is. You're only going to lose about a quarter of an inch with this modification.

Ask yourself: Am I really gonna miss it?





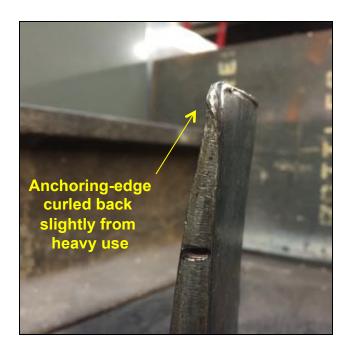
RECONDITIONING AN SPF ADZ-RAMP

Phew! Compared to all that trouble cutting an adz-ramp off and putting a new one onto a threepiece halligan, merely *reconditioning* one on a single-piece forged halligan that's on the correct side in the first place is a piece of cake!

With heavy usage, the tip of the adz will flatten down and the anchoring-edge of the adz that remains in contact with door-stop or inside of the frame-casing will bend out just a tad over time.

A few minutes with an angle-grinder, or half an hour with a file, will get it humming again!





RECONDITIONING AN SPF ADZ-RAMP

The FHU Pro Bar and the Zico SPF Quic Bar (second generation) both have a very decent adzramp right from the factory.

The only thing you'll need to tune here is to give the adz back its shape should it get flattened out over time by very heavy usage (like it'll get if you're running a training company).

Consider that simply periodic maintenance.







PART 7:

GRINDING & WELDING



"THE ONLY THING WE HAVE TO FEAR...IS FEAR ITSELF."

We take a very *laissez-faire* attitude toward the types of modifications that the ladies and gentlemen out there make to their tools. We are tool-nerds, not tool-snobs.

The way S&D sees it, a particular modification might not be something we would personally do to our own tool. But if a firefighter can use a tool to good effect....what business is it of ours to be anything other than encouraging?

We'll discuss a few ideas here that are floating around the ether, merely for your perusal or amusement. We love hearing any ideas anybody has out there for tool modification. We'd love to hear YOUR ideas and see pictures of nutty stuff that you've done to YOUR tools. Email same to: SearchAndDestroyFE@me.com

Nutty ideas, hare-brained schemes, and plans that are so-crazy-they-just-might-work are the yeast of evolution in the bread-dough of the American Fire Service...nothing rises without it.

Good ideas catch on or are tweaked into something useful or innovative. Bad ones die a hard death, the way the "Hux Bar" did....and the way the three-piece cast halligan is going to within the next decade probably.

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CASE IN POINT, VOLUME I

This is a picture of Pete Lund, who retired from the FDNY after 30 years service, last as a lieutenant in Rescue 2. He subsequently died after becoming suddenly ill at the scene of a fire operating with his volunteer department in 2005. He was only 54.

Without belaboring a point, let's just say that Lt. Lund had a *rather good* reputation within the fire service. To the point that his nickname was "Vulcan", who you may remember was the mythological Roman god of fire.

'Nuff said.





CASE IN POINT, VOLUME I

Now...the FDNY has two unions that represent its membership: The Uniformed Firefighters Association, who represents the firefighters, and the Uniformed Fire Officers Association, who represents the officers.

Due to union rules regarding what tasks fire officers can and cannot perform, fire officers are prohibited from carrying a set of irons or a full-length halligan. Fire officers, however, *can* carry a short "officer's tool" of 24" or less for "personal use".

Here's a picture of Lt. Lund making his own shorter "officer's tool" halligan out of a 30" Pro Bar. One that he cut the middle section out of, and welded back together

Photo and story courtesy of Ricky Riley TRADITIONS TRAINING LLC



CASE IN POINT, VOLUME I

Look again closely at this picture. Not only will you see grindage and welding, you'll see one-half of a Pro Bar fork being used as the entire fork.

This is not just a shorty halligan. This is a Frankenstein-style tool that is pieced together out of the corpses of the recently deceased. Which is just plain *awesome*.

And if Pete Lund could do this.....again and again and again throughout his career....to the point that his "officer's tools" were sought after in the FDNY and surrounding areas, then who's to tell you that making a *shallow nick* on the fork with an angle-grinder for determining depth of insertion is going to wreck the entire bar for life?

I reject that idea. Because of firefighters like Pete Lund, and all those who are not content to stop thinking and wondering and trying. Even in the face of small-minded people.



CASE IN POINT, VOLUME II

The gentleman pictured below is Lincoln Quappe, assigned to Rescue 2 of the FDNY. He, like so many of the Rescue men, was killed on 9/11. He was famous for his welding ability and his desire to tinker with tools.

The bar on the left is a 54" halligan that he welded together out of two Pro Bars. An earlier Rescue 2 firefighter named Glenn Harris originated this tool, and covered the weld with a section of pipe and welded that on to form a heavy sleeve.

Quappe was such a highly skilled welder that he dispensed of the heavy sleeve and shed pounds from the bar in doing so. So it became known as "the Lincoln Bar". The 54" Pro Bar is now manufactured by Fire Hooks Unlimited.





CASE IN POINT, VOLUME III

Captain Robert "Rex" Morris of Rescue 1 of the FDNY was forced to retire at the age of 65 because of municipal rules on age.

"Rex" Morris not only invented the wildly popular and effective Rex Tool for pulling locks, effectively making the K-Tool obsolete, but he also wrote the book on forcible entry. Literally. He authored the forcible entry chapter for Delmar Press' FIREFIGHTER ESSENTIALS HANDBOOK, and he was one of the co-authors of the FDNY FORCIBLE ENTRY MANUAL.

Look closely at the picture of Captain Morris' personal Pro Bar below.





CASE IN POINT, VOLUME III

Captain Morris is considered the King of Forcible Entry, hence the nickname "Rex" (Latin for king).

So....if the *King of Forcible Entry* isn't afraid to thin out the first 1-3/4" of the fork-tips on his personal Pro Bar, why should I be? Somehow he has managed not to break either tip off....maybe with proper usage and good technique it's possible to avoid.

Working for Rescue 1 of the FDNY, and spending 40 years on the job....I'm guessing this bar may have been used once or twice. And yet, here it is in one piece. Go figure.







CASE IN POINT, VOLUME IV

Fire Hooks Unlimited offers a version of their Pro Bar that they call the "Roof Pro Bar". It features two welded rings on the shaft, one near the adz-end and the other where the fork meets the shaft. Each ring is a heavy chain link.

These rings can be used for attaching a carrying-sling if desired, but the real reason they are there is so that a rope or length of webbing can be attached to the fork-end ring and the tool thrown from the roof or upper-story window to vent a window on a floor below.

If FHU – a tool company we have great respect for – feels that having an experienced welder weld on their tools for this purpose is acceptable, then we have to agree that this is a safe practice.







WELDED RINGS

Although the Pro Bar can be ordered from Fire Hooks Unlimited with two welded rings (or even just one on the fork-end if desired) for a nominal fee, firefighters have made this modification to existing halligans on the truck for years.



LEVER LUMPS

I'm not sure what anyone else calls this, but I call call them "lever lumps". The practice of welding a short piece of cylindrical steel rod across the short axis of the bevel-side of the fork for the purposes of increasing the amount of spread when prying with the fork-end.

In essence, the welded portion makes the fork thicker, but only in one spot where the tool is going to be used to contact the fulcrum of the door-frame that it's going to pry against and pivot on. It also serves as a natural set line for the tool in the sense that, when you drive the fork-end in to the seam between door and frame to the lever lump, it will pretty much stop there and you know you're set past the door-stop.

I've never seen the need to do this to any of our company halligans, but I know a couple guys who have done it to their own personal bars and like it.



POCKET LEVER LUMP

Our good friend Ron Burgess Jr. of TRUCK FLOOR TRAINING has been playing around with this idea lately.

He milled out a small piece of pocket-sized aluminum that can be added to the fork at the crucial moment after the fork is set past the door-stop when forcing an inward-swinging door.

Very interesting idea.









REALLY SQUARED SHOULDERS

Gary Lane of ROGUE FIRE LLC in Ohio did this years ago to his own personal Pro Bar.....welded on an additional piece of flat steel to each side of the fork up near the shoulder and then ground them flat to create a set of super-shoulders that would make even James Caan in THE GODFATHER envious.

Welded AND ground?! A double-whammy!.....The horror!.....The horror!.....



HALLI-REX

John Pierce, a friend of ours in New York who is also a fellow Fire Hooks Unlimited enthusiast came up with this dangerous and irresponsible idea that we immediately fell in love with! He removed the spike of this Pro Bar and replaced it with a Rex Tool.

Have your cake, eat it too, share the idea with others.

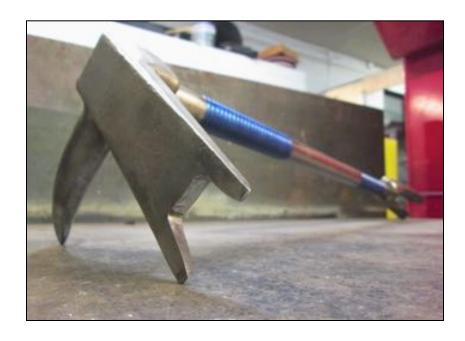


DANZIG'S 3-PIECE

Another S&D original!.....After we got all our 3-piece Paratechs replaced with REAL halligans (Pro Bars), I took to performing unholy experiments on them. We've used these in our classes and haven't broken one yet, believe it or not.

Don't do this to any SPF bar you or your department own! BUT....if you've got a Paratech, Zico, or Zak 3-piece tool on the truck or in a storage closet, consider helping it along to a more functional utility (and maybe untimely demise if you're lucky!) by making this easy modification using just an angle-grinder.





DANZIG'S 3-PIECE

While not even CLOSE to the awesomeness of the true "through-the-lock halligan" that the Maxximus Rex is, you can at least pull a key-in-knob lockset using this guy here.

Once you get all your Paratech 3-piece bars replaced with actual halligans, I recommend modifying a couple of the junker Paratechs like this....if only to hear them scream.

For a video of how to make this modification, please click on this link:

www.youtube.com#238BD28

Or do a youtube search for: "S&D Pirate your 3-piece"





A LITTLE TWIST OF CAIN FROM THE GUY BELOW....



Ask yourself: "How is doing this to it going to make it any worse than it already is?"

AAZEL CUT-DOWN

Our good friend Jason Jefferies from the Charlotte (NC) Fire Department was detailed recently to another station as visiting-captain and found this lil' guy that the natives had modded up.

It's an Aazel Monster halligan, sold as a wide-adz tool. The last three inches or so of the adz flare out on either side, increasing the width of the adz from two inches to three inches.

It's a tool their department bought, but apparently the guys it was assigned to didn't care for the wide-adzness of it and so they cut it down to the standard width of 2".









ROOF HOOK WEDDING RING, VERSION ONE

Amongst those assigned as the OVM, or firefighters that are adamant about carrying a Roof Hook at all times with the irons, this is a common and popular modification.

A heavy chain link is welded to the shaft of the Roof Hook in order to marry to the halligan fork at the proper height to allow the adz to rest over the lower angle of the Roof Hook.

The Roof Hook from Fire Hooks Unlimited is a tubular shaft. That means it's hollow. Care should be taken when welding not to burn through the hollow shaft. As with any toolwelding, only an experienced welder should attempt this modification.







ROOF HOOK WEDDING RING, VERSION ONE

This mod allows these two tools to be easily carried in one hand, or under the crook of one arm.....leaving the other arm free for carrying the water-can, high-rise bundle, RIT bag, axe, Pig, etc.







ROOF HOOK WEDDING RING, VERSION TWO

Our pal Michael Taylor fabricated up his own homemade version of a metal hook available from Fire Hooks Unlimited known as a "T-Hook". It's actually one of my favorite overhaul tools.

Michael thought it would be a good idea to weld a 1" steel ring at the point where the shaft meets the head for the purpose of marrying the spike of the halligan through. This same modification, the marrying ring, can be made to a standard Roof Hook.



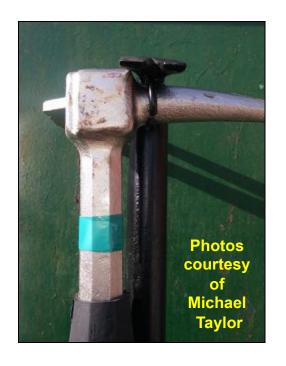


ROOF HOOK WEDDING RING, VERSION TWO

Michael used a standard 1" diameter welded steel ring that bought at Lowes. He removed a portion of it so it would fit snugly and "grab" the spike when inserted. Pretty clever.

The trick is to keep the open-end from catching during overhaul, of course. Michael says it's still going strong but that if the ring ever breaks, he'll replace it with an unaltered ring.

This tool combo can be carried with one hand or under the crook of one's arm. If desired, a small strap made of webbing and quick-release straps could be added mid-shaft.







CHAPTER FOUR

STRIKING TOOL MODIFICATION



PURPOSE

The striking tool in the irons-set doesn't get as much attention as the prying tool, because frankly it doesn't have to be as well-designed and well-crafted....it just has to have weight and length.

The halligan must be slender and strong and well-curved and proportioned to not only fit into tight spots, but also to apply good mechanical advantage in order to stress the lock-set and doorsystem once in place. In addition to its design, we've discussed so far a lot of little modifications that can be made to the halligan to aid in that process.

The striking tool provides the locomotive force to move the halligan where it needs to go, and occasionally to hold that place while the halligan is removed from the door-seam and re-inserted in a different way.

In a word, the striking tool doesn't have to be "smart" the way a halligan does. The prying tool is the brains, and the striking tool is the brawn. Its length and weight are the main things that determine how much force can be effectively generated with it. However, there are still a number of slight mods we can make to the striking tool to improve its function and its ease of use for us.



IDEOLOGY & PREFERENCE

Let us just say, right here at the outset, that there are a lot of good striking tools on the market. We certainly have our favorites.....the Lock-Slot 8 Axe and Pig among them.

We expect you have your favorites too. And we're not here to talk you out of them. Among some of the other tools we have an appreciation for are the Piglet, the Badaxx, the Iron Fox Axe, and the Adz-Maul from Fire Hooks Unlimited.













PHYSICS VERSUS PHYSIOLOGY

There is a lot of debate about tool-weight. Six pound axe versus 8 pound axe. Eight pound Pig versus the 6 pound Piglet. Etcetera, etcetera.

It's true that a heavier tool will generate more momentum when swung, and therefore more force upon delivery to the target. But that truism makes two assumptions:

- 1 The firefighter swinging that heavy tool can *swing it forcefully*.
- 2 The firefighter swinging that heavy tool can land it on target.

We all know what happens when you make an assumption. You make an ass out of you, and umption.

I personally *love* my Lock-Slot 8 and my Pig. But suffice it to say....not everyone wants an 8 pounder or can swing an 8 pounder to good effect. It requires the mass and physical strength to land it hard and on target. And not everyone can do that with the 8 the way they can with the 6.

Now, some wise-guy in every firehouse in America will tell you that if you can't do that then you've got no place in the fire service. Well, I used to work with a Herman Munster-sized dude that competed regionally at those Scottish highlander games, winning most of them. He could swing a 20 pound sledge like I swing a fly-swatter. And he used to say the same thing about the 20 pounder.

But it's not fun or fair to be judged by someone else's ability, I prefer to be judged by my own.

WHY S&D LIKES HEAVY-IRONS

We at S&D have a preference for a carrying a heavy-irons set. Either an 8 lb axe, Pig, or 8 or 10 lb sledge or maul. It's only a preference, it's not a rule or a mandate, and a heavy tool is not for everybody. But I thought I would explain why we feel the way we do about the tools that we ourselves carry.

It really boils down to one simple reason. You yourself know that reason already, even if you're too polite to mention it when discussing forcible entry in the training realm:

An 8 lb sledge applied directly to the door will open most residential inward-swinging doors.

Two or three good swings will open most doors that are attached to a house, and many apartments too. Wood frames just don't offer up much in the way of resistance. And that's why nimrods who don't know any better succeed in kicking open doors like buffoons year after year, making all firemen look like slack-jawed yokels instead of tradesmen, because they CAN most of the time....but I digress.



WHY S&D LIKES HEAVY-IRONS (CONT'D)

When you walk up to a building on fire carrying a heavy irons set, you're not carrying two tools (and axe and a halligan). You're carrying *three*:

- 1 A halligan for conventional prying
- 2 An axe (or something like it) to set the halligan for conventional prying
- 3 An 8 lb sledge to bash the door in at house-fires because it's faster than conventional prying

So at a house-fire, we walk up, split the irons, swing on the door with the back an LS8 three-four-five times... and if that doesn't open the door, we transition to conventional prying with the halligan. And if that door wasn't blown through the frame beating on it, it's probably because it's got five locks on it, or a lock-complement that's more aggressive than the standard key-in-knob and deadbolt you find on most doors.

That, in a nutshell, is why we favor heavy-irons. Sure...you can use an 8 lb axe or a Pig to good effect setting the halligan in place in a commercial door and frame versus the 6 lb axe. But we put the two extra pounds to work right outta the gate at house-fires. It has more to do with that than for any other reason.

Now is the time that someone usually pipes up and says, "But most victims are found behind the door!".

SIGH!....Sure, okay, you're right. But....you have my permission, if *I'm* ever off-duty and unconscious on the floor trapped by fire in my own house, to bump me on the noggin opening the door fast and get me the HELL out of there.... rather than tink-tink-tinking around with the irons for two minutes on a door that is well over-matched by their usage.

THE KEY? A TOOL YOU CAN USE WELL

Hey, if you can swing the 8 in full-arcing overhead swings, or with both hands down at the end of the handle like you were swinging a baseball bat.....that's awesome! You're more than a match for most of us, sir! And if you can swing the 8 with force and accuracy, then that's the tool for you! But if not, my suggestion is to explore the better-made 6 pound tools, like the Piglet and the Badaxx....and not apologize for it. **Better to use a lighter tool well than a heavy tool poorly.**

Chris Moren, inventor of the Pig, recently developed the Piglet because he was responding to the demand from guys who wanted a 6 pound tool with some of the same features and striking-face that could be easily carried on a belt or SCBA waist-strap or carried in hand as an officer's tool.

For a video highlighting the difference in striking power, follow this link: www.youtube.com#23AA5AF

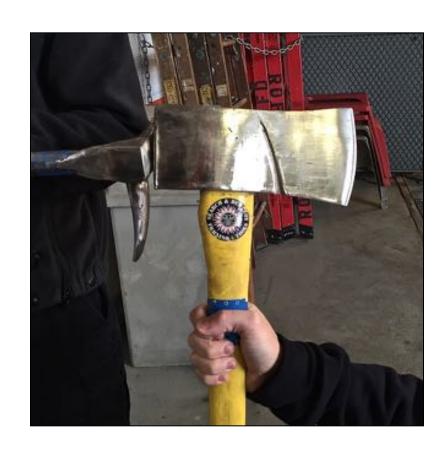
Or do a youtube search for: "S&D Sledge Technique".





PART 1:

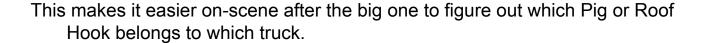
THE TOP-GRAB & OVERSTRIKE PROTECTION





MARKING THE TOP-GRAB

In our medium-sized career department, we have three stations. Each station has its own marking color: green, yellow, and red. Because each new batch of white shirts likes to shuffle the ladder trucks from station to station from year to year, the ladder trucks also have their own color: orange. S&D uses blue for its company colors.



We put a stripe of spray-paint circumferentially around the handle about 5 inches below the head of our axes and our Pigs. A piece of colored electrical tape also works well. This makes for a good visual reminder to grab this area with the top-most hand when swinging. We call this the "Top-Grab" because it's the highest point that should be grabbed on the handle.

Without a reminder, it can be easy to grab closer to the head. In low-visibility conditions, it's possible you could have an overstrike, where you overshoot your target and strike the other tool with the handle. Easing back on the handle and keeping your hand 5 inches below the head gives you some room to allow for an accidental overstrike without breaking a knuckle.

If you have to mark your tools anyway...why not make the markings work for you?







IMPORTANCE OF THE TOP-GRAB



WHY OVERSTRIKE PROTECTION?

You'd expect a training company that trains a lot for 4-hour and 8-hour blocks at a time would be pretty hard on tools. But what about a medium-sized suburban department? You wouldn't expect it to be overly hard on tools.

Well, this Pig belongs to my FD and *it's less than a year old*. It's taken a beating....maybe because it's a tool that has a reputation for giving the beatings! These handles are not difficult or expensive to swap out, but it's a minor pain and can be avoided to a certain extent by covering or cushioning the first few inches of the tool below the head.



OVERSTRIKE PROTECTION, ANGLE-IRON

More than a few firefighters, mostly ones that are also amateur or even professional welders, have added angle-iron to the the under-side of the axe or Pig head as protection during an overstrike.

Use two pieces of 1" or 1-1/2" angle-iron. Both pieces should be between 2-1/2" to 4" long.

Place the angle-iron as close to the handle as possible so that they rest somewhat on the handle. You also don't want interfere with the marrying-groove if present....you'll want to measure the location of placement against where the halligan forks rest so there is no interference marrying the irons.





OVERSTRIKE PROTECTION, PARACORD WRAP

There are many, many videos on youtube detailing the plethora of ways that an axehandle can be wrapped using paracord. It would be easier to search for them there, than it would be for us to describe them here.

Some people will just do a tightly-wound simple under-wrap with paracord, and then do a wrap over that using electrical tape.

Fun little project if you like typing knots and working with your hands.



OVERSTRIKE PROTECTION, WIRE WRAP

A lot of do-it-yerselfers and would-be woodsman will wrap the top-most portion of the handle underneath the head in 12 or 14 gauge wire and then wrap that in duct tape or electrical tape.

Upside is the wire's pretty tough, the downside is that the tape gets gummy over time and has to be re-done.







OVERSTRIKE PROTECTION, RUBBER GUARD

An easy way out of this one is to simply buy a commercially-available rubber overstrike guard and slip it onto your handle.

They sell them in varying sizes and thicknesses and are available at most hardware stores for around \$10-15.





OVERSTRIKE PROTECTION, INTEGRATED HANDLE

Yet another easy option is the new handle being offered standard on the Lock-Slot 8 Axe from Fire Hooks Unlimited.

It has a rubber-impregnated grip toward the bottom of the handle, and comes with a slender overstrike-guard just below the head (easily removable if desired).

This overstrike-guard doubles as a "Top-Grab" marker in low-visibility situations....when your hand slides up and hits the overstrike guard, you know you're in the right spot.









PART 2:

LOVE & MARRIAGE





LOVE & MARRIAGE

People have been filing or grinding a marrying-groove into their axe-heads for decades now. To the point where a few fire tool companies have started designing axes with a groove already integrated into the design. By far, the easiest thing is to buy an axe with a marrying-groove already in it.

But if that's not an option, or if you're carrying an axe you already love, it can be modified using elbow grease and patience.





EASY MARRYING GROOVE

Here's a quick, down-and-dirty modification to help marry your halligan to your axe using just a file.

File a small portion off of each side of the underside of the head about two inches back from the blade, where it's still fairly thin. Use the full-width of the file on each side.

Making your groove *here* means that you will be able to get a more slender area created that the fork of the halligan will seat well over in a shorter amount of time spent filing.

The upside is that it's a quick and easy modification that can probably be done in about an hour. The downside is that the handle of the axe and the shaft of the halligan will sit a few inches apart, making it a little harder to carry.





EXTRA FANCY MARRYING GROOVE

This set of personal irons belongs to Andy Golz, a good friend of mine in Duluth, Minnesota. Andy made this modification to his Fire Hooks Unlimited standard 8 lb Force-Axe years ago, before they started offering the Lock-Slot 8 Axe. He did such a nice job that I wanted to make sure there several pictures of it included here. Andy says:

"I started out by figuring out where I wanted the halligan to end up in relation to the axe. I opted to try to get the shaft as close to the handle of the axe as possible to make it easier to get my hand around both tools. From there, I made an outline with a sharpie on the axe head of where I wanted the forks to end up.

After that I used an 1/8"-thick cutting-wheel on an angle-grinder and cut into the outline. Once I had the outline cut out, I switched to a 1/4"-thick grinding-wheel, and ground away all of the remaining material left in the outlined area.

Once that was finished, I just had to do some more grinding to fine tune the marrying slot. The hardest part was trying to make it so the two tools would stick together when you tapped them down."











MARRIAGE & SPLITSVILLE

Who says that marrying grooves are just for axes??

Our pal John Pierce proves otherwise with his notched 10 lb splitting maul.

He did this using primarily a bench-grinder.



ADZ-MAUL

Firefighters have been making their own heavy-irons sets for years out of 8 and 10 sledges or splitting mauls by welding a bracket to the top of the head for the adz of the halligan to marry through. Sometimes the handle is even cut down to the length of the halligan for easy swinging in tight spots.



If you're a welder or you know someone who is, this is an easy modification to make.

Fire Hooks Unlimited makes a commercially-available version with a strong bracket that can accommodate a regular or wide-adz halligan mounted on a 28" handle. We've suggested this tool to cash-strapped fire departments who want a set of heavy-irons but need a little lighter price tag.









THE NOTCHED PIG

Lonestar Axe makes two versions of the head on their extremely popular Pig tool. The first (and I believe original) is the non-notched head, which has a pike off the back that is not notched. This used most often for roof-work.

The notched-head has a slight indentation on each side of the pike, for the purpose of marrying the forks of the halligan bar through when used primarily as part of an irons-set.

One of the criticisms of the notched-head is that when used for removing roof material from a vent hole, some say the notch can catch. Some owners have taken to filing down the abrubt angle to something a little more smooth and less likely to catch.





CHAPTER FIVE

MARKING TOOLS



PURPOSE

Marking your tools in one way or another should be a foregone conclusion. Whether this is a personal axe or halligan, or one belonging to the department, it should be fairly easy to identify....if not to someone from outside the organization, at very least to its owner.

It's not even a matter of "light fingers" though there's that, too.

Years ago, we responded to a mutual aid fire in a neighboring city with multiple trucks from one of our out-stations on a day I wasn't working. My next work day, I was detailed to that station and it was evident to me when I was checking out the engine that another city's axe got loaded onto our truck. I was probably the only one who could tell the difference, but it it was a different brand, *and not a good brand either*...the axe head sat too far forward and was not balanced. At that out-station, no one had taken the time and trouble to mark any of the tools. I spent the rest of the day on the phone with a couple different cities that were there trying to track down our axe and retrieve it.

Why did I care? Not just because I'm a tool nerd. But because I had spent too many years fighting the good fight to get the good stuff for OUR department. And whether other guys knew it or not, cared or not, or would even know what the hell I was talking about or not....I knew, and I cared.

So, pretty please, with sugar on it....take your rookie and go mark the fuckin' tools.

PURPOSE

Marking need not be an invasive, time-consuming process. It's mostly about just getting the right tool back on the right truck in the middle of the night after the big one without a lot of deliberation.

It could be as little as taking a sharpie and writing "CFD" on the handle or under the adz. This of course has to be re-done from time to time, but it only takes a moment to re-do.

That said, you may feel free to get as permanent or fancy as you'd like. We'll detail a few options here.





PART 1:

MARKING WITH TAPE





MARKING WITH TAPE

The two most common types of tape used are hockey-stick tape and colored electrical tape.

If you live in the northland, hockey-stick tape is easy to come by at practically any decent sporting goods store, in every color of the rainbow. If you are from the southland, it's not as easy to find locally, but you can order from Amazon for just a few bucks....again, in every color of the rainbow.

Colored electrical tape can be bought at most any good hardware store. Electricians use this to differentiate wiring circuits in complicated electrical rigging.





MARKING WITH TAPE

For the purposes of identification, using hockey-stick tape can do double-duty as a handle-wrap or just as a single-stripe of identifying color around some relatively unused portion of the handle. We will get deeper into using hockey-stick tape to make a handle-wrap in a little bit.

Electrical tape doesn't make a very good wrap, as it is slick and also has a tendency to slide around on the object it is wrapping when gripped tightly and put under stress (like when a tool is swung hard).

Electrical tape should be used sparingly, as a single-stripe of marking color, or used to secure down the ends of a hockey-stick tape wrap, but a wrap itself should not be electrical tape.



For smaller FDs, a single stripe of one color may be sufficient.

For bigger FDs, you may need to use two or three if you have battalion or division colors along with house colors.

Or if you just want your irons to have Chicago Blackhawk colors.



PART 2:

MARKING WITH SPRAY-PAINT



MARKING WITH SPRAY-PAINT

Not everyone is, but I'm a big fan of marking with spray-paint.

The upside? It's fast, it's cheap, and you can use any color of the rainbow.

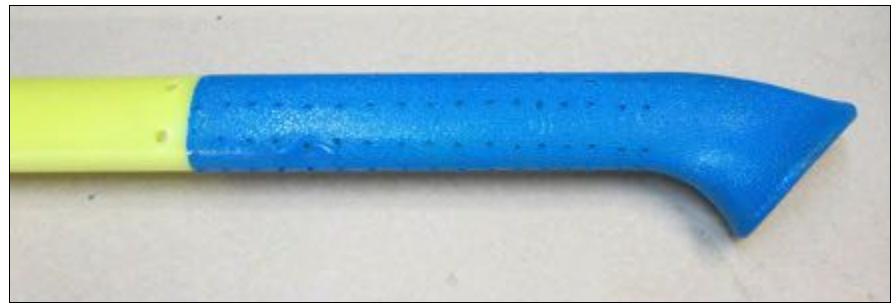
The downside? It chips off over time, and needs to be re-done periodically to look nice.

I'll make four suggestions:



1 – Use Rustoleum brand if you can swing it. If not, whatever you've got sitting around the station will probably be okay.





2 - Follow the drying directions.

Drying time varies wildly between colors. Some will be dry to the touch and ready to load back onto the truck in 15 minutes. Others will still be tacky 8 hours later.



3 – Use painters tape.

You can use medical tape, but you'll get some bleed-thru around the edges. Smooth the tape down along the edges so that you get a nice, crisp line of paint at the edge.

Remove the tape IMMEDIATELY after spraying. This lessens the chance of the paint bleeding thru the tape. Then set the tool somewhere out of the way to dry.





4 – Consider using a clear-coat spray-paint as a second coat. This will lessen chipping.

Now, that that's out of the way, I guess it's time to tell you:

Some ass-hat on your department is going to suggest to you that this is not a good idea because spray-paint is flammable and taking it into a fire could be dangerous.

Suggest to them that they are too stupid to live. Dried spray-paint is no more flammable than the stickers on your helmet. Less so, in fact.





PERIODIC SPRAY-PAINTING

Whether it's an axe or halligan or a hook, you'll have to periodically re-paint your tool. This is usually as simple as taping it off with painter's tape, and spraying it.

These pictures are all of the same axe. Taken just before re-painting and about an hour later, after the paint was dry. The process of taping and painting took about 3 minutes.













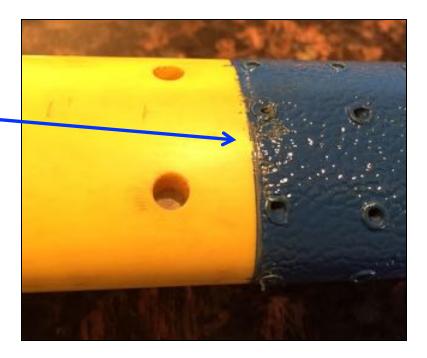
SPRAY-PAINT REMOVAL

If you ever want to change colors, simply scrape any loose paint with a wire brush or steel wool (should only take a minute) and re-paint with the new color.

If it's a lighter color than the original color you may have to use two coats or remove it by scrubbing it with a rag soaked in gasoline.

DON'T BE A DUMMY!...If you use gasoline as a solvent to clean *anything*, make sure you're in a well-ventilated area free of any and all ignition sources!!! Also, wash the tool with soap and water when done, before applying new paint.

S&D uses the line where the manufacturer's textured grip begins for marking and for our stippling grip. Feel free to do it any way you like it, that's just what we do.



PART 3:

OTHER IDEAS



MARKING WITH A SOLDERING PEN

This is a fast and easy one that can be done on plastic-covered fiberglass handles for axes, sledges, and the Pig. You use just a standard cheapie soldering pen or wood-burning pen. If you'd like it to do double-duty, mark your department's initials (or whatever) about 5" below the head of the tool, and that can serve as the "Top Grab" marker for hand placement.



Let the pen heat for five full minutes to come up to temp....don't walk away and forget about it!

Trace your lettering while the pen is heating, or just go freehand (that's what this is).



With a smooth and steady hand, write your letters into the handle. Take care to just melt the surface plastic. Once cool, fill in the grooves of the lettering with a sharpie or a paint marker.



Oh, yeah.....some wise-guy on your department is going to tell you that this will "void the warranty" on the handle. Ask him if he's still got the receipt if that happens. That usually shuts stupid people up. I've been doing this for over a decade. Never been an issue. It's the FIBERGLASS underneath that is the actual shaft. The plastic covering just gives is a comfortable shape and keeps you from getting fiberglass splinters.

MARKING WITH A WOOD-BURNING PEN

Not that you have to been as fancy as the axes coming out of Scott Sullivan's workshop, but if you have a hickory-handled axe or sledge, it doesn't take much to burn your name or company numbers into the handle using a wood-burning pen or soldering pen.







MARKING WITH A MIG WELDER

I like stuff that's "one-and-done". You do it once and never deal with it again. This falls neatly into that category. A permanent way to mark your personal or station tools that is unmistakable will help make it a lot less likely that it's ever gonna find another home.

Unless you are an experienced welder, **do not** attempt this modification without help the help of one. A tool is not the place to learn how to weld.



MARKING WITH A DREMEL TOOL

Here's another way to permanently mark your steel tools!

Our pal Matt Gray ground these very blocky and simple letters into his halligan using a Dremel Tool with a metal cut-off wheel and paint markers.

With a simple plan and a steady hand, you can make these same type of shallow grooves in you halligan or axe head.





CHAPTER FIVE

WRAPPING TOOLS



PURPOSE

To wrap or not to wrap, that is the question. To be blunt....it really doesn't matter.

Chances are a unwrapped tool that slipped out of your hands would've also slipped out of your hands if it had been wrapped.

What it should be, is *comfortable* in your hands when using it. It should feel *good* in your hands, like slipping on an old pair of jeans. You should know its feel, and it should know yours. That's actually one of the best reasons to tune any tool....to become more intimate with it and to learn its heft and balance so that in the middle of the night it is no stranger, but an old friend that comes comes lightly to hand.

This is my way of saying that this is a *personal* decision, and that the person that has to make it is you. We'll explore some possibilities here, all of them good. These are but a few out of many. It's up to you to decide for yourself.



Photo courtesy of Ben Frommer

MY OWN PREFERENCE

I'm a minimalist when it comes to tool wrapping. I started off wrapping halligans and axe handles with hockey-tape wrap. That was easy when I had only a handful of tools on the engine to concern myself with. A Saturday morning on shift in the work-room with a set of irons, a wire-wheel, a file, a cup of hot black coffee and the Velvet Underground on the radio was pretty close to achieving nirvana for me.

Fast-forward ten years to being co-owner of a training & tools company with a dozen halligan bars, a dozen axes/Pigs/sledges, and at least that many hooks to worry about. Well....let's just say, I subscribe to a more *low-maintenance* approach now.

I don't wrap halligan bars anymore, I stiple axe handles, and I cut the celtex grip off of roof hooks and Fiber-Flex them.

But that's just me....I ain't got time to bleed anymore. YOU should do it exactly the way that YOU like it, and anyone who doesn't like it can suck on it.





PART 1:

HOCKEY-STICK TAPE



HOCKEY-STICK TAPE

The hockey-stick tape wrap is probably the single-most commonly used wrap in the fire service for a wide variety of hand-tools. It can be used to good effect on axe handles, halligans, hooks, and many other tools.

Its simplicity, low-cost, color options, and textured grip make it a natural choice for many firefighters when wrapping their equipment with the goal of improving the grip.

The down-side of the hockey-stick tape is that it must be re-done periodically or else the tape-ends will start to come loose, the edges of the tape fray, and the glue used will start to get gummy. If you're a neat-freak, you'll need to stay on top of it.

We will detail here some of the more popular methods of wrapping with hockey-stick tape.







HOCKEY-STICK TAPE

Of the types of hockey-stick wraps, there are three most common.

- 1 SIMPLE WRAP: The tape is simply wound around the handle or shaft of the tool with nothing underneath.
- 2 SPIRAL WRAP: The tool is first wrapped with a length of cord, oxygen tubing, or twisted tape in a loose spiraling fashion....this is called an "under-wrap". Then the tool is wrapped with hockey-stick tape as with the Simple Wrap. The under-wrap material provides a little texture and "give" to the shaft or handle, allowing for a nice grip.
- 3 DOUBLE SPIRAL WRAP: Same as the Spiral Wrap, but the under-wrap is spiraled down the shaft or handle, then spirals back up it, creating a diamond-shaped or "X"-Shaped appearance.



HOCKEY-STICK TAPE: SIMPLE WRAP

Of the types of hockey-stick wraps, there are three that are the most common.

1 – SIMPLE WRAP: The tape is simply wound around the handle or shaft of the tool with nothing underneath. 'Bout as easy as it gets.





HOCKEY-STICK TAPE: SPIRAL WRAP

2 – SPIRAL WRAP: The tool is first wrapped with a length of cord, oxygen tubing, or twisted tape in a loose spiraling fashion. Then the tool is wrapped with hockey-stick tape as with the Simple Wrap. This underneath-material provides a little texture and "give" to the shaft or handle, allowing for a nice grip.



HOCKEY-STICK TAPE: DOUBLE SPIRAL WRAP

3 – DOUBLE SPIRAL WRAP: Same as the Spiral Wrap, but the underneath material is spiraled down the shaft or handle, and then spiraled back up it, creating diamond-shaped or "X"-Shaped appearance.





Here we'll demonstrate the not-so-finer points of doing a SPIRAL WRAP on a halligan bar.

First, grab your halligan, your hockey-stick tape, and whatever you're using for your under-wrap material.

Common choices include: twisted 1" medical tape, 550 parachute cord, small diameter manila twine, or oxygen tubing.





Next, decide how much of the bar you want to wrap.

Feel free to follow your heart....but we would recommend *against* wrapping the entire shaft of the halligan. Is anyone going to get hurt if you do? No. But what *is* likely to happen is that the tape on the shaft nearest the fork-end of the tool is going to get chewed up from use and you'll have to replace the entire wrap prematurely.

What we would recommend is wrapping either just: 1) The middle third of the bar, or 2) A short 5-6" wide section closest to the adz-end of the tool.







Now get your under-material ready. If you're going to use oxygen tubing or cordage of some kind, you'll have to secure it to the bar with small pieces of tape spaced out here and there.



If you're using hockey tape or med tape to make a twisted-tape under-material, cut one section of tape, 30" long. Then stick one end to something that's not going to move, and hold the other end in your left hand. Pull the piece of tape taut.

Now, with your right hand, grasp the middle of tape and fold it over on itself so that the non-sticky side is on the inside of the fold. Then twist the tape in your hands until it is a tightly-spiraled sticky string. Leave each end unfolded and un-spiraled.







Mark the shaft where you intend the tape-wrap to start and stop.

Attach the beginning of your "sticky string" to one side, and wrap it around the shaft of the tool as far as desired.

When you reach your end-point, cut the sticky string with a knife. Push all the sticky string into firmly into place on the halligan shaft.



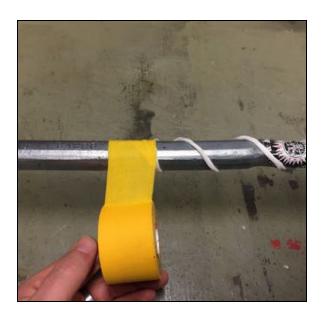




Wrap diagonally with overlapping turns.

Keep tension on the tape as you unspool the roll to effect a nice tight wrap.

Cut the tape where desired, and smooth the tape down by gripping it with your hands.











HOCKEY HANDLE

For axe, sledge, and Pig handles feel free to wrap as much or as little as you care to. It's all personal preference and there is no right or wrong. Some people like to wrap the entire length. We like to wrap the bottom half or so, from about the middle of the shaft to the start of the fawn's-foot (the bend at the end of the handle). We also will leave a single stripe of tape about 5" under the head to mark the top-grab.

We like the top half of the handle to remain mostly uncovered so that it slides nicely in gloved hands when swinging it.



2

HOCKEY HANDLE: A NOTE ON KNURLING

If you choose to use the manufacturer's textured knurling as a guide for how much of the handle to wrap, be aware that the length of this knurling will vary from manufacturer to manufacturer. Nupla...who supplies handles to Fire Hooks Unlimited, Lonestar Axe (who makes the Pig), Fire Axe Inc., and Iron Fox Axe makes their handles with the bottom 10" with a textured knurled grip. Others, like the Akron Brass pick-head you see pictured here use 14". Which is not to say that one is "right" and one is "wrong"....Just keep it in mind when deciding what it is that YOU want.

S&D uses a measurement of 15-16" from the bottom of the handle when wrapping a standard 36" axe handle regardless of what the manufacturer does. Again, no right or wrong here....personal preference is king.



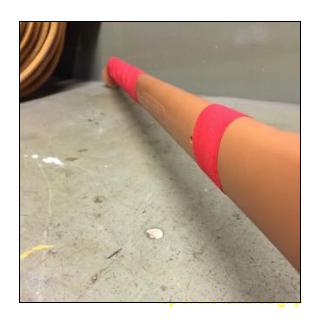


The Pig (36" total tool length)



Here we'll demonstrate the not-so-finer points of doing a DOUBLE SPIRAL WRAP on a Pig.

First, grab your tool to be wrapped, your hockey-stick tape, and whatever you're using for your under-wrap material.







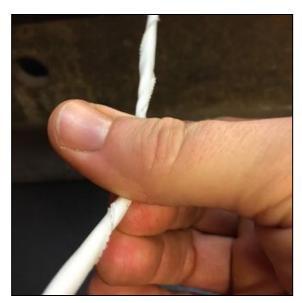
Next, mark the starting point and ending point of your wrap on the handle.

Now get your under-wrap material ready. In this short series we are going to demonstrate a DOUBLE SPIRAL WRAP using twisted medical tape for the under-wrap.

Cut two pieces of medical tape, each 36" long. Twist each one upon itself in the fashion described earlier to make a "sticky-string".

**NOTE: The pictures below are not 36", but merely meant to demonstrate the method.



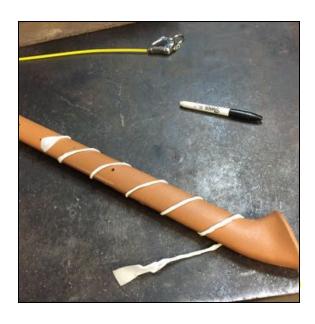


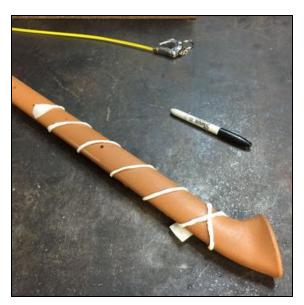


Begin making your under-wrap at the highest point on the shaft toward the head, and work in a gentle spiraling fashion downward toward the fawn's-foot.

Once at the fawn's-foot, continue working the same spiral UPWARD now, toward the head. Take care to make neat and uniform "X"s as the upward spiral crosses the downward spiral.

At about this point, you should exhaust the first of your two 36" long sticky-strings. Merely lay the beginning of the second one over the end of the first, and continue.







Again, make the intersections of the downward spiral and the upward spiral neat and uniform up the handle. You can adjust them slightly by moving the sticky-string that makes the upward spiral.

Now trim any excess sticky-string where the final intersection is made.

Your under-wrap is complete, and the handle is ready to be wrapped.



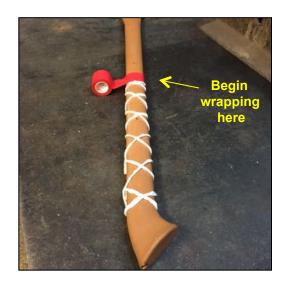




Now it's time for the hockey-stick tape over-wrap.

We highly recommend starting your over-wrap at the highest point of the under-wrap closest to the head.

This seems like a minor point, but the overlapping spirals of hockey-stick will "step up" as each wrap gets closer to the fawn's-foot, rather than stepping down. This will provide slight additional friction when swinging the tool.





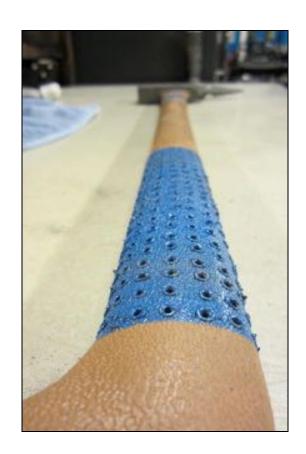






PART 2:

STIPPLING



STIPPLING GRIP

- I first read about this type of grip on Nate Jamison's awesome website MIDWEST FIREFIGHTER. I did an immediate face-palm because I'd been using a soldering pen for writing my department's initials into axe handles for about ten years at that point.
- I **do** really like a hockey-stick grip. What I **don't** like are tape-ends coming loose and hanging off, the eventual gumminess from the glue leaching thru the cloth, and the messy re-wrapping that must be done a couple times a year (or more depending on usage).
- "Stippling", or creating a series of shallow holes with a soldering-pen, takes ten minutes per tool and you never have to touch it again.
- I switched all our S&D axes and Pigs to this style grip, and loved it. I eventually did it to all our tools at my station, and now ALL the new tools that our department buys.
- Again, some jack-ass at your department is going to tell you that it'll void the warranty on the handle. Ask him to go dig up the warranty paperwork and the original sales receipt. That oughta buy you enough time to finish every axe handle in your department.
- We've been doing this to every axe, sledge, and Pig that our department and that S&D owns for 6 years now. We've never had any issues whatsoever.





HOW MUCH STIPPLING EXACTLY?

That, of course, is up to you. Feel free to cover as much or as little of the handle with little holes as you like. We stipple just the bottom portion of the handle that comes with a textured grip to it on the Nupla handles.

It's about 8 inches total from the top of the textured grip to the beginning of the fawn's foot ("the bend at the end").



STIPPLING ADVICE

Before you begin:

You don't have to make a million rows with dots that are right on top of each other. We only make 8 rows total: One on the seam of the spine, one on the seam of the belly, and three on each side.

We also keep our spacing about 5/8" or 3/4" apart. I personally don't mark anything out ahead of time, I just make a "base-row" on the spine and free-hand all the rest to line up to that first row.....DRESS RIGHT, *DRESS!* But if you're a neatnik, there's nothing wrong with marking your rows out with a sharpie first.

Use a light touch and make shallow holes.

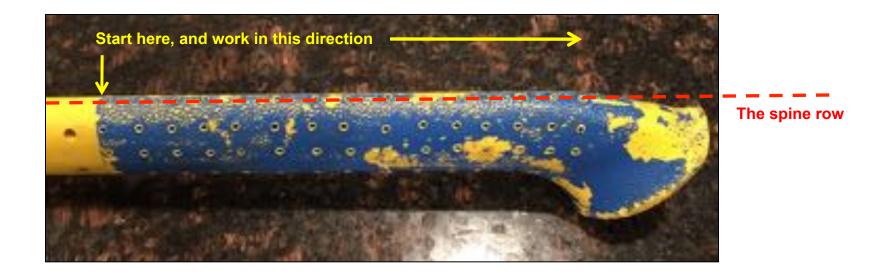


STIPPLING HOW-TO 1

First, plug in your soldering pen or wood-burning pen and let it warm up for five minutes.

Now, place the axe on a table with the handle-end facing to the right (if you're a southpaw, reverse this) and the spine of the handle facing up. Hold the handle with your left hand.

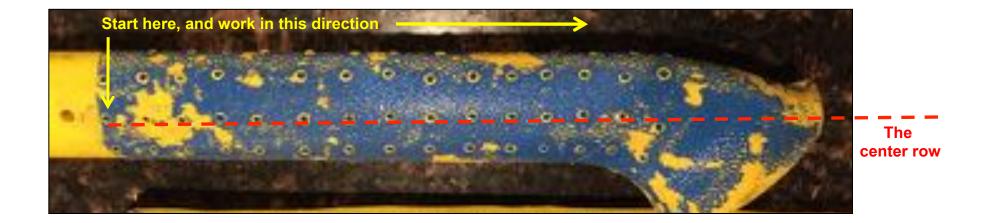
Start at the beginning of the manufacturer's textured grip (or at whatever point you've chosen if different), and work in a straight line along the seam of the handle's spine, making a hole every 5/8" or 3/4".....this will be your "base-row" that all other rows line up with in a grid fashion.



STIPPLING HOW-TO 2

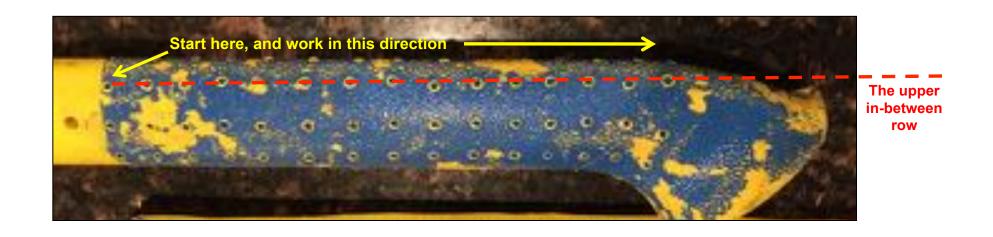
Next, place the handle flat on the table.

Using the base-row as your guide, mark another row in the very center of the handle from the top of the textured grip to beginning of the fawn's-foot.



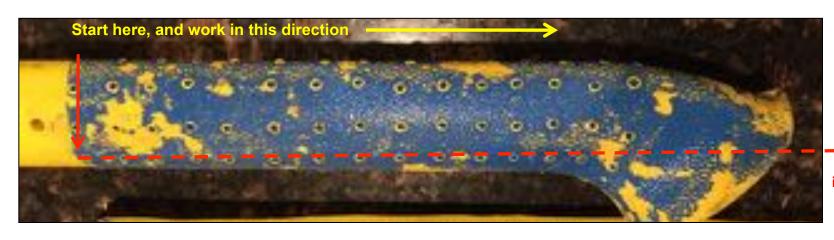
STIPPLING HOW-TO 3

Now split the difference between the spine and the center row, and begin a new row. We'll call this one the "upper in-between row". As always, use the the base-row on the spine as your guide.



STIPPLING HOW-TO 4

Then do the same thing for the lower half of the handle. Split the difference between the center row and the underbelly seam on the bottom of the handle (the seam opposite the spine), and create another row using the base-row as guide. We'll call this row the "lower in-between row".



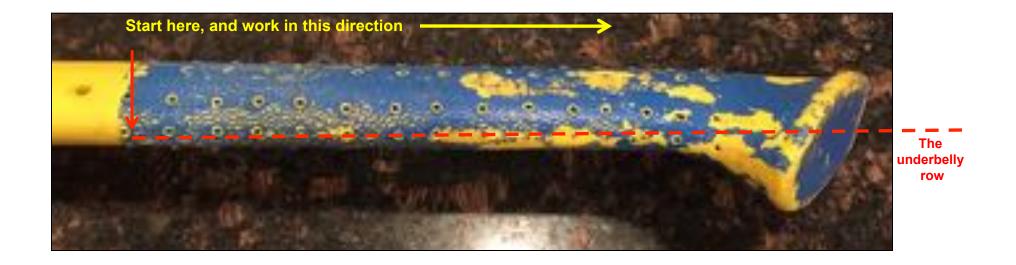
The lower in-between row

STIPPLING HOW-TO 5

And finally for this side, mark the seam of the handle's underbelly with a row, using the lower in-between row as a guide.

Now, flip the handle over and use the same method to mark the other side of the handle.

Voila! Eight rows all based off of the base-row of the spine. Once you do this to a couple tools, you can knock them out in about five minutes a piece. Obviously, you'd like the rows to look neat.....but they're small enough that you don't have to be obsessive about it.



PART 3:

OTHER WRAPS & GRIPS



GLOW-IN-DA-DARK

Fox Fire sells glow-in-the dark paint, adhesive strips, tetrahedrons, helmet bands, and wrapping tape. I've heard that it holds up rather well.

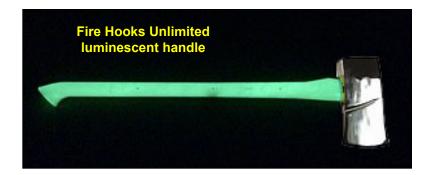
Several years ago, Fire Hooks Unlimited came up with a luminescent handle that has the glow-in-dark color injected right into the plastic. I carry one of these on my LS8 and it's pretty cool. I always know my axe from somebody else's.

Despite what any manufacturer might tell you, nobody is sweeping a room by the light thrown by their axe. You won't be throwing away your flashlight anytime soon, I'm afraid.

But these products are all nice for spotting your partner across a dark and smoky room, or finding your axe or hook in a hoarder's basement or on the front lawn later after the fire's out and you're packing up.







FIBER-FIX WRAP

For about six months now we've been experimenting with commercially-available carbon fiber wrap called FIBER-FIX. It's sold at many hardware stores, including Home Depot and Lowes. It's intended usage is for splinting and fixing broken objects, but—like duct tape—its possibilities are endless.

We've wrapped one of our Roof Hooks with it and it's held up astoundingly well. If not permanent, it can be expected to last for years, and you won't be able to remove it without serious sanding down to bare metal. For that reason, we wouldn't recommend applying it it axe or sledge handles, only to all-steel hooks and halligans.

If you're just doing a couple tools, it's not terribly expensive, but wrapping your FD's entire tool arsenal with Fiber-Fix complement might get pricey.









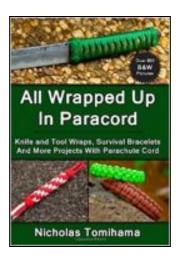


PARACORD WRAP

People will wrap damn near anything in paracord if it sits still long enough! There are countless techniques of both simple and elaborate design for handle-wraps and overstrike wraps, and at least that number of videos of varying quality floating around youtube.

If this type of wrap interests you, you may do better to watch some of those videos, as the techniques and variations are far too numerous to list or demonstrate here.











unclepigskinleather.com





SHELLACKED PARACORD

Our pal Harry Stark out in California sent us these pics of his shellacked paracord wrap awhile back. I've never used it personally, but Harry seems to like it and he says it hold up well.

I imagine it requires a re-coat periodically. A very interesting option. There are numerous videos online demonstrating a how-to for wrapping an axe-handle and other tools with paracord, and a quick perusal of the local hardware store's paint department ought to help find the right shellac or varnish for the job.

Just goes to show that you're only limited by your imagination!







THE UGLY GRIP!

I haven't done this one in years, but I used to rough up the handles on a wire-wheel before spray-painting them. Kinda like a poor-man's stippling.

The paint sticks around a little while longer because of a slightly greater (and pocked) surface area, and the smooth plastic becomes like sand-paper to the touch.

Not especially nice to look at as-is, but if you paint it then none's the wiser.









NEW INTEGRATED GRIP

Fire Hooks Unlimited just this month came out with a NEW integrated hard-rubber grip handle for its Lock-Slot 8 Axe. Bob Farrell, CEO of Fire Hooks Unlimited, came up with the idea and will be putting it exclusively on the LS8 starting next month. The old handles will still be available on request, but this will be the new standard 36" handle for the LS8.

It also comes with a removable overstrike-pad underneath the handle that is intended to double as the top-grab in low-visibility situations.









RUBBER GRIP

Fire Hooks Unlimited's line of MAXXIMUS halligans all come wrapped in a heavy rubber grip that insulates up to 24,000 volts.

Some people really love the grip, and some people remove the grip right out of the box. Removal is easily, but permanently, done with a utility knife. It's all personal preference.











CHAPTER SIX

ROUTINE MAINTENANCE



ROUTINE MAINTENANCE

The nice thing about maintaining any tuned tool is that you have a built-in road map: For the most part, you just re-do whatever it is that you've done and try to keep the rust down....you clean it up on a wire-wheel or with a flap-disc, re-file or re-grind the shoulders or the adz-bevel, touch up the paint and re-do your hockey-tape wrap or whatever it is you like.

Not exactly rocket-science, but here are a few ideas.



PART 1:

RUST NEVER SLEEPS



NOT-SO-RAPID OXIDATION

With exposure to moisture and the products of fire (smoke, electrolytes, solvents, petroleum distillates, and water), it's inevitable that you'll get a little rust on any tool.

Most makes of halligan come from the manufacturer either plated or power-coated. With usage and time, some of the original finish is scraped away, especially from the working-ends of tool like the fork and adz. And also from areas that you have tuned up, like the squared shoulders and gap and set lines ground onto the fork and adz.

Bare steel left bare oxidizes....that's pretty much all there is to it.





RUST REMOVAL

By far, the easiest and fastest way to remove a little bit of rust is with a wire-wheel attached to a bench-grinder. A steel rotary-brush on a power drill or angle-grinder may be even better for hitting some of the hard-to-reach nooks and crannies on axe heads and halligans.

For pike-pole heads, and for the head and shaft of steel roof hooks, an angle-grinder with a sanding flap-disc is far easier than a mounted bench-grinder. More on flap-discs in a bit.

For *heavy rust* on old or seriously neglected tools, a flap-disc or (even a grinding wheel) on an angle-grinder may be your first step.

For light rust, feel free to use a coarse steel wool....especially if you're really into the intimate and low-tech approach.







TIME, DISTANCE, AND SHIELDING

In preventing rust on bare metal, there are really only three options:

- 1 A hard coating occluding it from the oxygen in the air (paint or powder coat)
- 2 A soft coating occluding it from the oxygen in the air (a light machine oil)
- 3 Frequent and regular removal of rust by mechanical means

Really, the choice is yours here. All are fairly controversial in one way or another: IFSTA says you shouldn't paint axe heads because it will hide defects. Some safety-minded people say you should never apply oil to any surface that strikes or is struck, lest it slip and smack you in the melon. And a lot of firemen-metallurgists say that a flap-disc sander is going to remove the steel's surface temper and ruin your tool.

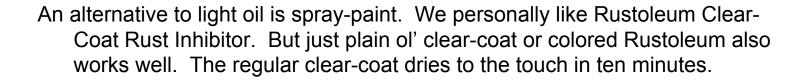
Soooo....I guess you should just treat tools as disposable then? I mean, if you want to play by the "rules" that is.

Or, like most of us, you just bite the bullet and pick your poison.

RUST PREVENTION

After any sanding, grinding, filing, cutting, or welding you're going to have exposed bare metal.

Consider putting a light coat of either WD-40 or 3-in-One Oil on the affected areas and wiping them dry with a rag. Some people say you should not oil any striking surface or surface that is struck. Let your conscience be your guide. A light coat of oil isn't going to remain long on the surface anyway.

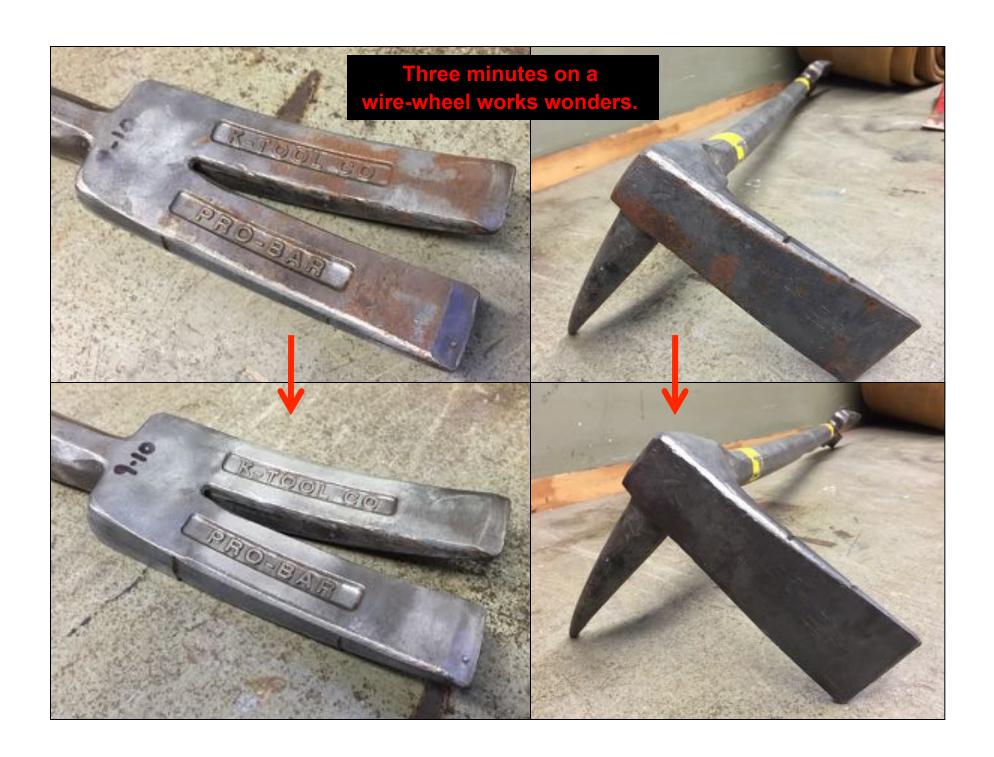


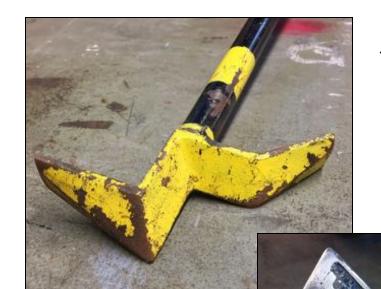
For tools like the Pig, Piglet, and the Badaxx that have bare steel heads we use *two coats* of the Rust Inhibitor. Every few months we put it on a wirewheel and remove all of it, then re-apply.

Lonestar Axe recommends using carnauba wax ("the queen of waxes" and the main ingredient in surfboard wax) to coat the head of the Pig and Piglet periodically.









This FHU Roof Hook was stripped down to bare steel, head and shaft, using an angle-grinder with a sanding flap-disc. It was then re-painted using Rustoleum spray-paint.



To our Pigs, we apply two coats of Rustoleum Rust Inhibitor (clear-coat), or just plain Rustoleum clear-coat spray-paint. Every few months, or whenever it needs it, we strip it off with a wire-wheel and re-apply.



PART 2:

SMOOVE OPERATOR





IT SERVES ME RIGHT TO SUFFER, BABY

As a training company, our tools are hit pretty hard (quite literally). They're struck thousands of times in a single class, and absorb more abuse in an eight-hour day than do most tools on the fire truck see in a year.

Hundreds of tiny indentations from the steady rain of blows, bent adz-tips, blunted fork-tips, mushrooming, even occasionally a bent or broken spike.

So from time to time we have to clean them up. Mostly what we use is an angle-grinder with a sanding flap-disc on it. Sometimes it's something a little harder.











FLAP-DISC

These cratered and pitted areas aren't just unsightly, they can become dangerous pieces of fast-flying metal should one of them break off while being struck and find your face or eyes. Which is one reason we supply safety glasses to all participants in our classes.

We use a 120-grit sanding flap-disc on our angle-grinder and smooth over the pitted areas. We work gently and slowly, and not in any one area for too long to avoid any undue build-up of heat.

If necessary, we'll switch to a grinding-wheel to re-trace the adz-bevel or un-blunt the the fork-tips, both of which take quite a beating in class.













PART 3:

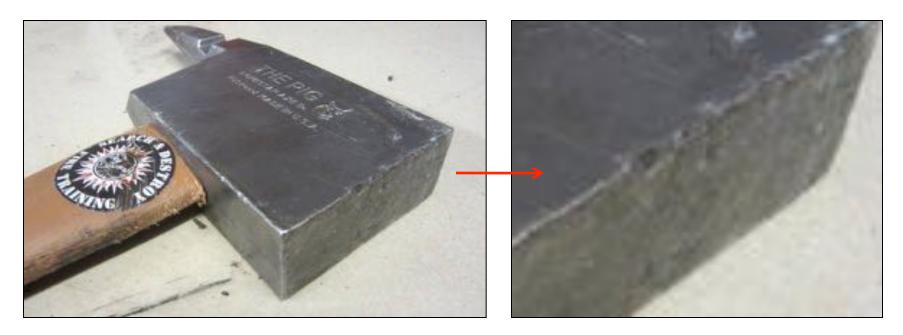
MUSHROOMING



'SHROOMS

Most striking tools, even very hard ones like the LS8 Axe and Pig, will develop slight deformations of the striking face. At its edges, these deformations will widen out slightly and begin to cascade over the sides. This is called "mushrooming".

A little bit of mushrooming is hardly the end of the world. But when the edges start to curl over the edge and the connecting portion to the rest of the head becomes thinner, they can run the risk of breaking off when using the tool and becoming tiny projectiles that can the user's eyes. It's advisable that these mushrooms be removed with a file, bench-grinder, or angle-grinder before this happens. It's very quickly and easily done.



'SHROOMS

Most standard axes used in the fire service are a milder steel than some of the newer, high-end tools on the market released in the last few years. These axes, most still quality tools, will have a tendency to mushroom more under heavy usage.

I usually remove these rough edges off the back of of the head by applying them to a benchgrinder for a couple quick passes. In less than a minute, they're gone. Feel free to use an angle-grinder or file as well.



'SHROOMS

Most of the newer "designer axes" to hit the market in the last 10 years are made out of a harder steel that keeps it shape better. However, over time and heavy usage, any striking tool will eventually mushroom. These tools can be filed or ground gently using a bench-grinder or angle-grinder the same way milder steel axe heads can be.

Because the steel is harder, you may need to make multiple passes to get rid of the mushrooms on each side. If you'd prefer to use a file, feel free.





PART 4:

MAINTAINING THE BLADE



"BLADE...LASER...BLASER"

Axe blades are fairly simple. Put the axe head in a bench-vise with the blade facing upward. Remove any burrs or chips by filing each side of the blade in a moderate, consistent angle. Consistency in the angle is the key factor here.

Don't worry overly about the blade being "sharp". You're using it as inclined-plane to create purchases in door-seams, hold the progress created by the halligan, and to make holes in roofs.....not to shave with.





PART 5:

MAINTAINING THE FORCE-WEDGE



ALUMINUMUMUMUMUMUM

We're big fans of force-wedges for solo irons-work. They hold up pretty well to the abuse they take. But if you're in the training business like we are, or if you just have a couple of good hard commercial forces with yours, they may need some attention from time to time.

Being made of aluminum, when struck hard repeatedly by steel, the back end will mushroom a bit, and the tip can get a little wonky.

These are easy fixes.







BENT TIP

If you bend the tip of your force-wedge, first straighten any serious curling by putting it in a bench-vise and clamping down on it hard in the jaws of the vise.

After the bulk of the curl is straight, place the tip into the vise with the point sticking straight down toward the ground.

Tighten down on the vise firmly, then take a 3-4 lb handsledge and strike the back of the wedge to bend it back into proper shape.

I've never found it necessary, but if you're reeeaaaallly a stickler for fixing things up into OEM shape, you can heat the aluminum with a small propane torch and fine-tune your re-shaping a bit more.





CLEAN-UP

Now take a quick moment and apply the backside of the force-wedge (where it is normally struck) to a bench-grinder to remove any mushrooming from being struck with an axe or sledge.

Also sharpen the tip just a bit to help it to fit into the tight seams between doors and their door-frame.

Take a moment to remove the lanyard or bungee (if any), and smooth out all edges and burrs with a wire-wheel.





PART 6:

NOT-SO-ROUTINE MAINTENANCE



BENT TIP

Brian Brush of FIRE BY TRADE fixed a badly bent spike by simply heating it with a welding torch and bending it back in place.

If you haven't noticed, I hang on to photos that people send me. I got this one not long ago from Andy Golz in Duluth, MN. He came in one morning, and the spike of the Pro-Bar on the truck was a little wonky.

Naturally, no one he asked had ANY IDEA about how it got that way.

I recognized this bend right away because my own Billy Baroo bar had the same bend in it for about 2-3 years. Mostly it came from some hard usage inserting the spike into the seam between door and frame and pushing down on the bar in simulated tight-quarters evolutions.

That, and about a year's worth of spiking the frame (baseball-bat swing) practice in classes and for my own amusement.



BROKEN TIP

One day, after having had that distinctive bend for a couple years, I was doing some HARD baseball-bat swing practice of my own on our prop....which utilizes 6x6 wolmanized lumber for the faux-frame for spiking.

After awhile I noticed that the tip was even more bent that usual. I took the Pro-Bar back to the work room and put it in the vise, and smacked it a few times with a 4 lb hand-sledge to straighten it.

It straightened, but I noticed right away that it had a stress crack in it after being struck. I figured the best thing to do was to finish the job, so I struck it a few more times until the crack became the picture you see on the upper right here.

From there, I just wiggled it back and forth like a loose tooth until it came off completely.





NEW TIP

With that out of the way, I put the grinding-wheel on the ol' angle-grinder, and spent about ten minutes working circumferentially around the broken tip.

I re-fashioned a new point, and worked on the effacement of the spike-shaft as it narrows down from its full thickness.

Could Stevie Wonder do a better job? Probably.

Do I mind losing a half an inch off of the spike? Not at all, it's not quite as pointy as before, but we still use it in every single class and it still works great.

No one has ever even asked me about it.



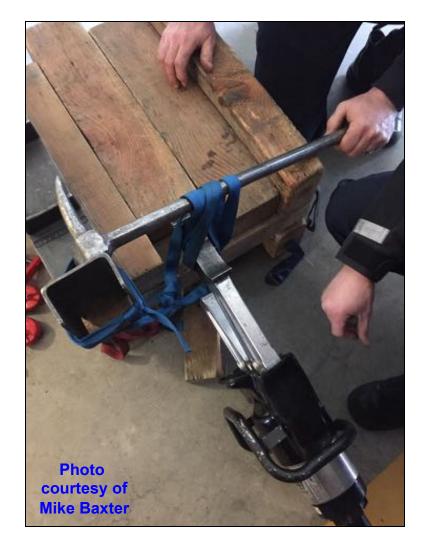


BENT SHAFT

We were sent this picture recently by our friend Mike Baxter in Oregon. They found an old Pro Bar in a supply closet deep in the bowels of the firehouse. It had been bent at the shaft slightly, so they took it upon themselves to straighten it.

Using box-cribbing, the jaws, webbing, and mad technical-rescue skills they stressed the bar in the right way and in the right place to clean 'er up and put a good tool back in service!

It should go without saying that something on this magnitude of stress and pressure must be done *very*, *very* carefully. Done without careful consideration, and this could be a dangerous exercise that could get someone hurt....maybe you. Let your training and experience be your guide.



BENT SHAFT

"Basically, we used the box crib, but made it solid across the top to help keep it from shifting. The 4" x 6"s on the ends are upturned to keep the bar elevated and the 4" x 6" below the spreader tip had to be slid back a bit so the jaws could travel.

We started with a 3-wrap webbing which I thought at 12,000 lbs would be enough. Snapped it like peanut brittle. A 6-wrap held, but we destroyed the webbing. I was amazed at how much force we had to apply. We also hit the bar a few times with a Pig while it was under pressure to help capture the progress.

We also set the adz into the B-Post Brace and lashed it with more webbing to keep it from biting into and splitting the cribbing, and also from kicking out.

As you can imagine, we did this in very small, controlled increments since we were dealing with so much force. We bent the bar about the same amount in the opposite direction and that seemed to do it. We have no idea how the thing got bent in the first place."





--Mike Baxter, BEND (OR) FIRE DEPARTMENT

CHAPTER SEVEN

GARY LANE PRESENTS.....



"IF YOU HAVE A PROBLEM...IF NO ONE ELSE CAN HELP, AND IF YOU CAN FIND THEM...MAYBE YOU CAN HIRE...."

Y'see....there's these crazy sum'bitches in Ohio named Gary Lane and Brian Abbott that run a small training LLC called, oddly enough, ROGUE FIRE.

Gary is maybe the least satisfied person I've ever met. If a tool is wide, he cuts it down. If a tool is narrow, he welds an extra piece onto it. That's just the way he was made, I s'pose.

He's been responsible for causing FHU to offer both the Modified-Maxximus ("Maxx-Mod") and Modified Buster Tool ("Buster-Mod"), because he just wasn't *quite* happy with what was being offered to him.

So he did what the most interesting people do: he made something new out of something old. Which is part of the magic of the fire service, always has been. Here's a few pages of Gary's bad ideas. We don't recommend that you attempt to replicate them. But that's your call to make.



PART 1:

"THE OCHO"



PLASMA CUTTER TO THE FACE

One day, this guy in Kent, OH realized he didn't really like his Fire Axe Inc. 8 lb flat-head axe all that much. The blade was too broad, the balance was off, and it rolled when you struck with the back.

Rather than pissing and moaning about spending \$200 on an axe he didn't *love*, Gary decided to do something about it. He cut off the front 1/3 of the blade using a plasma cutter.

Take THAT, temper!



CUT DOWN IN ITS PRIME

Then he whacked the handle off at the knees, to make it about 24" long overall. Not sure what he used....a sawzall, maybe?

Then he ground the crap out of the head on a bench-grinder to create a new blade.





WHAT'S NEXT?...CEMENT SHOES?

Then he re-wrapped the handle with hockey tape and a webbing-loop (not unlike Thor), to make a short-handled 7-ish pound striking tool for conventional irons-work.





PART 2:

THE ORIGINAL MAXX-MOD



WIDE ADZ NO MORE

Gary, ever the malcontent, wanted a "Maxximus Pro-Bar". That is, he wanted a Maxximus halligan, with all the fine features of the Maxximus line of halligans....like lighter weight, harder steel, thinned fork and adz, and squared shoulders....but he wanted a standard adz, not a wide one.

So, he took out a sharpie, marked it.

And then....





WIDE ADZ TO NARROW IN ABOUT TEN MINUTES

With wanton disregard for his own safety or the tool's temper, he fired up his angle-grinder and cut the offending portion of the adz off with a simple metal-cutting wheel.





THE CLEAN UP

After the extra adz was removed, he switched to a grinding wheel on the angle-grinder and cleaned it up, then he switched *back* to the cutting wheel and notched a new gap line at the 1-3/4" mark on the fresh side to match the factory one on the other side.





NOW COMMERCIALLY AVAILABLE!

How's it holding up? Pretty good by all accounts.

Fire Hooks Unlimited – finally broken down by Gary's persistence and proof – now offers them for sale at the same price as the wideadz Maxximus bar.





PART 3:

WIDE-ADZ ROOF HOOK?





ROOF HOOK HEAD MOD

There's no pleasing some people. So Gary cuts down the wide-adz Maxximus halligan....then he widens his NY Roof Hook!

Gary and Brian Abbott, the co-conspirators of ROGUE FIRE LLC spent an afternoon welding on an extra piece of steel to both hooks on the head, and an extra flange on each side of the chisel-tip at the bottom of the handle. They used some 1/4" diamond plate that they had on hand.

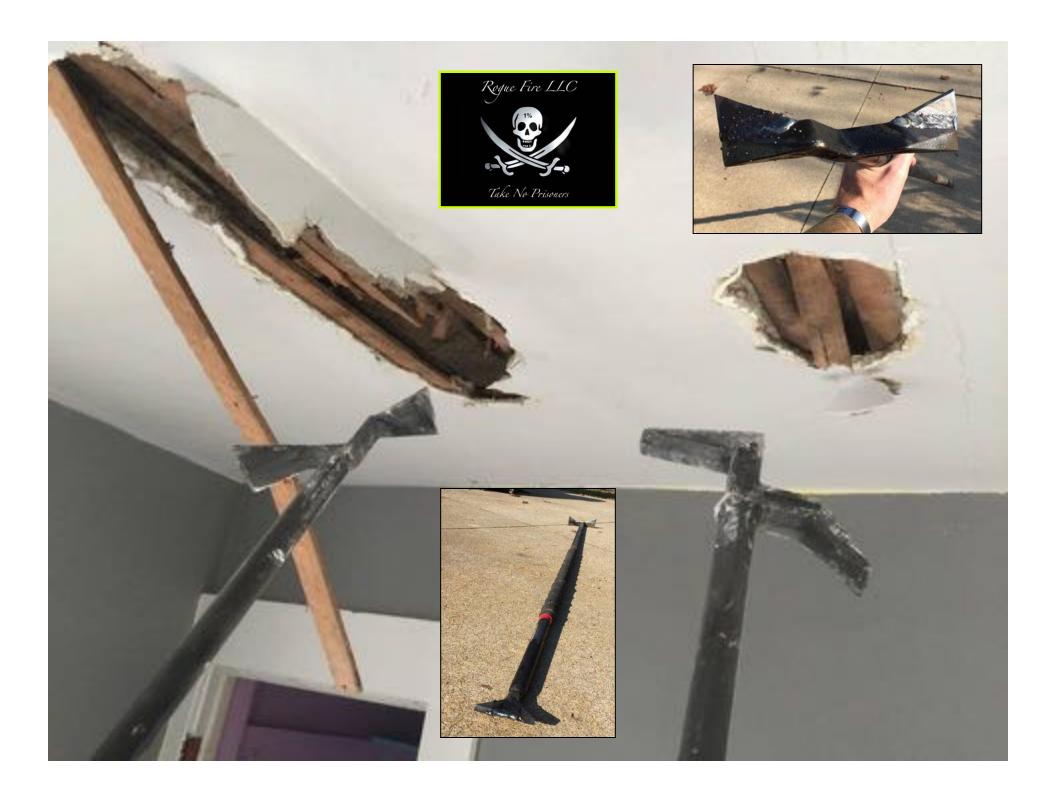
Gary says the initial insertion into the ceiling isn't much different. But the head now pulls a bit more drywall and plaster on the down-stroke.

I have no idea why they widened the chiseltip....because they had two more pieces of steel, I imagine.









PART 4:

BENT TIP



WIDE ADZ TO NARROW IN ABOUT TEN MINUTES

Gary did a number on his Pro-Bar spike a few years back. Hit it hard on some concrete accidentally swinging on a foul ball.

So Gary simply heated it up with a small propane torch and bent it back into place using channel-locks.

End of story.

He didn't get arrested or nothin'.











CHAPTER EIGHT

TOOL RECOMMENDATIONS



TOOLS WE REALLY, REALLY LIKE...

As distributors of tools ourselves, you may doubt our sincerity or intentions in sharing our opinions regarding tools and tool selection. That's understandable.

However, let me say, that both principal owners of **SEARCH & DESTROY TRAINING & TOOLS LLC** are career firefighters both with an excess of 15 years on the job. We are tool-nerds through and through. We started our training basically as an excuse to buy tools we always wanted to play with. And we became tool distributors so that we could be *even more* tools at wholesale prices!

We wouldn't sell anything that we wouldn't personally use. We wouldn't suggest a tool that was a bad fit for an individual or an organization. And I'll tell you why: there's way too many quality tools, and the good ones sell themselves without needing any real help from us. Their quality and usefulness is self-evident. We don't have to work that hard....we just talk about the tool as we know it and have used it. Mostly what we do is let guys bounce ideas off of us, and help them to make up their minds.

There are a few tools that I'll mention in this section that we DON'T sell. But we would if the company that made them were interested in taking us on. Because we believe in their product as a good quality tool that a trained fireman can do some work with, not just in its ability to make us a sale.

Tools are our hobby and it's a lot of fun to talk about them with people. If you ever have any questions on any hand-tools, whether we sell them or not, we'd be happy to chat with you via email or on the phone. Just give us a shout!

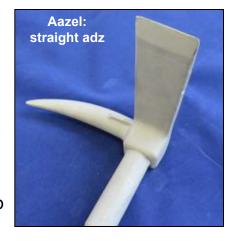
S&D'S IDEAL HALLIGAN

Our company owns a pretty decent tool arsenal, including tools from a lot of different makes and models of halligans and axes. After using most of the ones commercially-available, we've narrowed our preferences down. In a halligan, we want to see the following things:

- 30 INCH LENGTH Although longer tools offer more leverage, they may be
 too wide for use in recessed door-ways and they do not marry well to axes, so
 they must carried separately. The exception to this would be a shorter officer's
 tool, like a 24" halligan carried more for "general purpose" use rather for
 primary forcible entry duty as part of a front-line irons-set.
- ALL-STEEL SINGLE-PIECE DROP FORGED CONSTRUCTION None of the working ends should be pinned on or welded on (including the spike).
- SLIGHTLY CURVED ADZ The adz should have a <u>slight</u> curvature to it to help traveling around the door-stop. The adz should <u>not</u> be straight and it should <u>not</u> be highly arched.
- TUNED OR TUNABLE The tool should come from the factory either ready to go out of the box, or should be able to have its shoulders squared and its fork gapped without undue fear of breakage from removing too much metal.

Unfortunately, the only two tools on the market that fit our bill are the Pro Bar and the Maxximus halligans. Again, these are just OUR preferences.







THE PRO-BAR

FROM FIRE HOOKS UNLIMITED

Invented in 1975 by William McLaughlin of the FDNY, who was already a legend having invented the K-Tool just a few years earlier.

A refinement of the original Hugh Halligan bar that was invented in 1948.

I most often recommend the PB to purchasing officers and chiefs for their department because of its 40+ year unassailable and proven track record.

The PB is the work-horse of forcible entry hand-tools.
As you've seen here....you can weld on 'em, grind 'em, re-shape them, beat 'em up every which way....and they just keep coming at you.

Takes a licking, keeps on kicking.

At around \$225, they are fairly inexpensive....even when compared to the Paratech three-piece tools, which are only about ten bucks cheaper.



THE MAXX-MOD FROM FIRE HOOKS UNLIMITED

Almost two pounds lighter than the Pro-Bar.

Harder, thinner, and tuned every which way so that it's ready to rock and roll and chewing its way through the box when UPS drops it on your porch or the firehouse apron.

This damn halligan pretty much makes this whole guide to tool-tuning completely unnecessary.

Your biggest decision is....who gets to carry it??

Chrome vanadium steel with a finish like a set of Craftsman wrenches, this tool requires very little maintenance other than the occasional wipe-down when it gets drywall crumbs on its face.

At \$250, it costs only a little more than the Pro-Bar.



Check out the Maxx-Mod in action here:

https-//www.youtube.com#2449392

THE MAXXIMUS REX

FROM FIRE HOOKS UNLIMITED

If our company is known for one thing, it's our Through-the-Lock forcible entry training videos and other materials. We are enormous fans of TTL entry as it applies to firefighting, EMS, and even SWAT operations in some cases.

The Maxximus Rex halligan is the personal bar of each of the principal owners of S&D because with it, a trained firefighter can make entry through just about any door, commercial or residential, either by conventional prying or by going through-the-lock.

We spent 4 weeks testing the Maxx Rex for FHU before it went into full production and had our minds blown minute-to-minute by its design and capabilities.

With a price tag of only \$265, it's a huge savings over the cost of a Pro Bar (\$225) plus a separate Rex Tool or K-Tool (\$150) for pulling locks.



Check out the Maxx Rex in action here:

https-//www.youtube.com#24495A8

THE LOCK-SLOT 8 AXE

FROM FIRE HOOKS UNLIMITED

I never fell in love with an axe until I held the LS8 for the first time. It's the most perfectly balanced axe I've ever held in my hand. A balanced axe can be held in the flat of the palm, without rolling forward or backward.

We love the 8 lb weight for using first as a sledge directly against residential inward-swinging doors, and for the extra force when setting a halligan on a tough commercial door.

The game-changer as far as this tool is concerned, what sets it apart from everything else for us, is the LOCKING marrying-groove. Any make and model of halligan will fit and LOCK into place, making carrying the irons a one-handed affair as easy as carrying a suitcase. This one feature alone makes the LS8 my favorite striking tool of all-time. No question.

At \$125, it's only a few bucks more than other entry-level 8 lb force-axes, and \$75 less than the Fire Axe Inc. 8 pounder.





Check out the LS8's locking groove in action here:

yellow, 36" brown, and 36" hickory

https-//www.youtube.com#24491C0

THE PIG

FROM LONESTAR AXE

The best roof tool there is, hands down. The front of the head pushes the roof in. the back of the head pulls it out. Their motto of "8 lbs of fire-ground domination" doesn't even do it justice.

Well-balanced, front-focused, hits like a hammer-drill, never fails to start, and doesn't stop till you do.

Look into the notched-head if you're thinking about upgrading your irons-set with a Pig. Because is has no "blade", pair it with a Force-Wedge for versatility.

If your interest is primarily in ventilation, roof work, and making smashingly-dramatic entries, then consider the non-notched.

Available in black handles or tan....28", 32", or 36". The 32" and 36" marry well with a standard 30" halligan, but the 28" is too short.

The 28" is a nice "officer's tool" for personal carry. The 28" also marries nicely to a 24" Pro Bar for a set of "officer's irons".



Pig versus 6 lb axe:

https-//www.youtube.com#244981D

One reason firemen buy their own Pig:

https-//www.youtube.com#24498AB

THE PIGLET

FROM LONESTAR AXE

Chris Moren, inventor of the Pig and owner of Lonestar Axe, got tired of guys asking for a lighter version of the Pig...so he bowed to the demand and rolled out the Piglet at FDIC last year.

With a head weighing 6 lbs, it's two pounds lighter than the Pig. It makes for a great belt-carried roof tool, or for a personal-carry officer's tool for all-around work.

It comes standard on a 28" black handle, but can be special-ordered on 32" or 36" length as well.

The pike does not come with a marrying notch...so although it can be part of an effective irons-set, it cannot be married to a halligan fork.





See us using the Piglet in our classes:

https-//www.youtube.com#2449F2E

NY ROOF HOOK

FROM FIRE HOOKS UNLIMITED

You probably have gathered by now that we're a fan of steel hooks for overhaul, roof work, and ancillary functions like forcible entry.

Lightweight, strong, and effective....the heads pull far more material on the down-stroke than national standard pike pole heads. And an all-steel hook is the way to go over lbeam construction pike poles....or worse, those big fat hollow round ones that you can't even grip well.

Please....I beseech you....if you're in the market for a roof hook, buy FIRE HOOKS UNLIMITED! They are faaaaar lighter than either the Leatherhead or Akron Brass versions.

A 6' I-beam pike pole weighs about 7 lbs 2 oz. A 6' all-steel Roof Hook from FHU weighs about 7 lbs 5 oz. The 6' Leatherhead and Akron Brass versions weigh *over ten pounds!* Don't buy a tool that no one wants to use for overhaul because it's too heavy!





NY ROOF HOOK FROM FIRE HOOKS UNLIMITED

For more information regarding the uses of the NY Roof Hook, see the FIRE SERVICE WARRIOR training PDF:

THE NEW YORK ROOF HOOK - TOPSIDE, OUTSIDE, AND INSIDE



TALON HOOK

FROM FIRE HOOKS UNLIMITED

Same construction as the NY Roof Hook, the Talon Hook has a halligan-style fork added to the end of it.

The fork adds utility for marrying to the halligan to increase leverage when forcing tough exterior doors.

Although primarily an overhaul tool when used by itself, it can also be used to force light interior doors using the fork-end.

Available in lengths 4', 5', 6', 7', & 8'. The 5-footer is the most popular size.









DIFFERENCE IN WEIGHT: 3 0Z. DIFFERENCE IN COST: \$5





We participated in the development of this tool with the New York City fire Departments remarks and development demans. Our all purpose head, sixtoff steel shall, chief and and others grips make up the unit.

The chief end to used as a priving tool for wrattle haloften and sted dures. The short lengths are for going up for recipes and souther to the med. Accept only streat sized for a light-neight but strong tool. Can also be ordered in liberglass. SPECHY.

First autilial to chapt in \$16.00 Eather



I		List Pric	*
ı	834 -	7	585.00
ı	851 -	4	101.00
Ì	MHC.	5	1291.00
ì	KD-1	6	\$227.00
	B24	*	94255.00
	1014	107	\$276.00

33

SO...ARE THERE ANY OTHER ARGUMENTS WITH YOUR PURCHASING OFFICER WE CAN HELP YOU WIN?





FHU FORCE-WEDGE

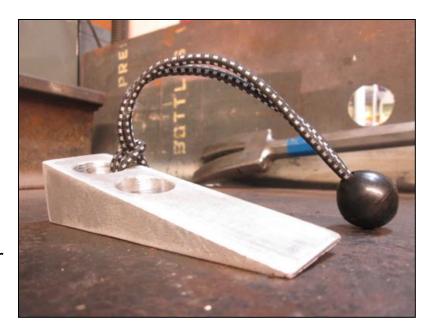
FROM FIRE HOOKS UNLIMITED

Unfortunately, solo-firefighter forcible entry is getting to be the norm rather than the exception everywhere....rural and urban, career and volunteer.

One way for a trained and experienced firefighter to overcome that obstacle is to carry a forcewedge to do some of the gap-creation, wedging, and place-holding that an axeman would be doing in a better world.

We helped FHU re-design their wedge to make it slimmer, easier to use, and easier to marry to a halligan or Pig with the bungee ball that's now included with every wedge.

At \$15, it's the cheapest on the on the market with the best utility.





THE BUSTER-MOD

FROM FIRE HOOKS UNLIMITED

The unholy forging of the minds of Chris Morgani's Original Buster Tool and Gary Lane's nutty tinkering.

Intended as a "light-irons" striking tool, the
Buster-Mod is a 17" long 4 lb hand-sledge
with a Rex Tool lock-puller welded to the
back and mini-Pro Bar forks at the bottom of
the handle that can also be used as a forcewedge for gapping and wedging.

The tough stainless steel ring welded underneath the head is for marrying the spike of the halligan through for one-handed carry.

If you'd like to lighten your load from carrying a full irons-set by yourself, and also include some through-the-lock capability to your solo irons-work....the Buster-Mod is the right tool.



THE S&D REX TOOL

FROM FIRE HOOKS UNLIMITED

I always liked the standard Rex Tool for pulling keyin-knob locks and mortise locks. But when it came to deadbolts, I preferred the more slender head of another tool called the Truckman's Tool. Both are made by FHU.

So several years ago, I contacted Bob Farrell of FHU and commissioned them to build a couple custom tools for us that were 18" long, and had a Rex head on one side and a Truckman's Tool head on the other.

Voila! The most versatile lock-puller on the market was born. Bob like the idea enough that he gave them to us for free and added the tool to their catalog.

The S&D Rex, when combined with a trained firefighter and a key-tool set, can pull and manipulate any type of keyed door-lock installed on commercial and residential doors.





THE BAD-AXX

Invented by Scott McCann in Spokane (WA), with firefighter survival on his mind, the BA is a lightweight all-metal tool designed for interior work.

More functions than can be listed in one small writeup, suffice it to say that every inch and every dimensioned was designed with a specific use in mind.

Most notably, its bearded blade, pike, and handle notches...all for the purpose of effecting a hasty roof or window bailout using the tool as an anchor.

We reviewed to the tool last year and gave it high marks.

With a 6 lb head, some people find it too light for roof or breaching work, but we believe its going to be a favorite of engine and interior crews for a long, long time.



IRON FOX AXES

We don't sell them, but the IFA is another tool we have a lot of respect for, and would sell their products without any reservation.

Far and away, one of the best pick-headed axes I've ever used was the IFA.



SEARCH & DESTROY TRAINING & TOOLS

- Force Wedges
- Pocket-sized cable-cutters
- Axes
- · Pro-Bar halligans
- Maxximus halligans
- Saws & blades
- Roof Hooks, Talon Hooks, & Colorado Hooks
- Other steel specialty hooks
- . The PIG!
- Key Tools & Key Tool Sets
- Lock-pullers
- Small tools packages
- Irons-set packages





















VISIT OUR ONLINE TOOL SUPER-STORE: WWW.MKT.COM/SEARCHANDDESTROY

THANK YOU

Thank you for spending a considerable amount of time absorbing this information presented here in this guide. We appreciate firefighters, fire officers, and fire chiefs like YOU who love the job and want to perform better in it.

If you didn't see your favorite tool or tool-modification here, please don't take it personally....that is no slight. There are many good tools on the market, and many useful ideas that you can apply to those tools. What we have laid out for you are the tools that we like best and that have served us well both in our training classes over the last six years, in our own career training, and on the real-world fire-ground for the last sixteen years.

I hope you had as much fun reading this as I did writing it.



Sincerely,

SEAN J. WILSON, CO-OWNER & LEAD INSTRUCTOR SEARCH & DESTROY TRAINING & TOOLS LLC SEARCHANDDESTROYFE@GMAIL.COM

NO, REALLY....THANK YOU

In appreciation for your *obvious* love of tools (who else in their right mind would read a 300+ page book about halligans and axes), here is a small discount that you can use on the S&D Online Tool Store. Good for \$5 off any order over \$50, excluding sale items and tool-packages.

Visit the store at: www.mkt.com/SearchAndDestroy

Enter this discount code at checkout: **TUNEMEUP5**

Be safe out there, and have fun doing it!





The S&D 'BREAK SHIT"

PHOTO CREDITS



Thank you to all our friends for their assistance in supplying us with exemplary photographs to use by way of illustration in this guide. All attempts have been made to credit the individual photographers who took the pictures used here in this guide. It was not possible in all cases. If you see your photo here and would like us to credit it, please contact us and we would be happy to do so.

Thanks to (in no particular order):

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Rogue Fire LLC	FDNY Training Division	Traditions Training LLC	Fire Engineering Magazine
Legacy 6 Fire Equip	Truck Floor Training	Black Sheep Rebel Club	Sullivan Axe Works
The Pigskin The Jason Jefferies Training Institute			

RESOURCES AND SOURCES



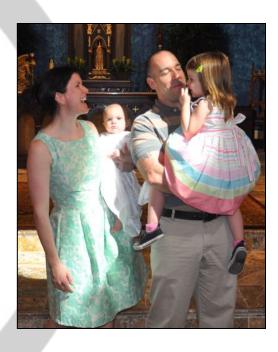
Thank you to all our friends, comrades, and mentors who contributed directly to the writing of this guide. S&D would especially like to thank the following individuals, without whom this guide could not have been written:

SCOTT GARDNER, S&D T&T BOB FARRELL, FIRE HOOKS UNLIMITED INC. WILLIAM McLAUGHLIN, K-TOOL CO. BRIAN BRUSH, FIRE BY TRADE LLC RON BURGESS JR., TRUCK FLOOR TRAINING NICK ESPOSITO, TRUCK FLOOR TRAINING ANDY GOLZ, DULUTH (MN) FIRE DEPARTMENT JASON JEFFERIES, THE JASON JEFFERIES TRAINING INSTITUTE GARY LANE, ROGUE FIRE LLC BRIAN ABBOTT, ROGUE FIRE LLC CHRIS MOREN, LONESTAR AXE LLC MATT MCEVENEY, ROYAL OAK (MI) FIRE DEPARTMENT RYAN TENGLER, ROYAL OAK FIRE DEPARMENT JASON HENDRICKSON, ROYAL OAK FIRE DEPARTMENT

EXTRA EXTRA SPECIAL THANKS

And extra special thanks to the three people in my life without whom nothing I do would be possible or worthwhile....Buck, Nando, and Iil' Ilsa.





IN LOVING MEMORY OF BRIAN WOEHLKE.

