



EARTH TO SPACE

JAKE HOBACK CREATES KNIVES THAT ARE TRULY OUT OF THIS WORLD, INCLUDING ONE THAT NASA MAY SEND INTO SPACE

STORY BY JOSHUA SWANAGON, PHOTOS BY JAKE HOBACK KNIVES

How do you get to space? By being well-grounded. This year, while at the 2017 BLADE Show in Atlanta, Georgia, I got to spend some time with Jake Hoback of Jake Hoback Knives. As we ate lunch and talked, I was immensely impressed with the vast wealth of knowledge Jake has about all things knives, metallurgy, folding mechanisms and other topics I can't even remember enough about to comment on. But what really impressed me the most, was how humble he was, in spite of his near-computer-like brain.

Or so I thought.

It was when the topic turned to the Paraclete—a new model Jake created to prototype the zero-gravity folding mechanism—that I knew this story had to be written. After all, it isn't every day you get to spend time with a maker designing a prototype knife with aspirations to submit it to NASA for consideration to take it to space.

But, I'll let him tell you about himself and the Paraclete in his own words. —JS



KI: How did you come to speak with NASA about the zero-gravity folder?

JH: I have a good friend who is the lead engineer for NASA JPL, he has been a great help in getting me on the right path with what would be needed in space travel. So, I spent a bunch of time down at JPL discussing different questions with NASA engineers. I have not brought them a design as of yet, as I wanted to use the Paraclete knife model as a proving ground for some very specific ideas on lock/bearing/lightweight design before going ahead with a knife made specifically for space travel. Now that the research/idea-exchange phase is over, I am designing a knife from scratch that will better accommodate specific needs for space travel.

KI: What are some of the considerations that arise when designing a folder for zero gravity?

JH: I can't give away all I have learned at the moment, as I have not had a chance to submit my design to NASA, but some of the things that you have to consider for non-terrestrial use are things that most collectors and users on Terra would not really like. The blade shouldn't fall closed without manually closing it. It needs to have as few moving parts as possible. It will also have to be extremely lightweight to the extent that it's extremely expensive.

Right: Jake Hoback with a Mars Rover mockup at JPL (Jet Propulsion Laboratory), a federally funded research and development center and NASA field center.



“I HAVE CONSULTED WITH MACHINISTS WHO HAVE BEEN IN THE GAME FOR MORE THAN 60 YEARS, ENGINEERS WHO BUILT THE MARS ROVER, DESIGNERS WHO HAVE BUILT RACING CHASSIS.”

KI: How do you start the thinking process for something so monumental?

JH: One foot in front of the other! One step at a time. I mastermind with other designers, engineers, machinists. I have consulted with machinists who have been in the game for more than 60 years, engineers who built the Mars Rover, designers who have built racing chassis. I pray about it a lot! One thing I can say is, you can't do something

like this without having help from good people.

KI: Would the cold of space effect the performance of the zero-gravity folder during a spacewalk?

JH: First and foremost, I highly doubt a knife will ever be used on a spacewalk. The reason behind this is a fairly simple one: way too much risk. Space travel is inherently risky, so NASA has a specific tool for every job,

none of which to my knowledge and research, includes cutting something outside of a spacecraft. But if I were to consider the usage, I would say that no oil would hold up to the vacuum of space, most glues would out-gas and cause sensor problems with the suit and craft, and the extreme cold would contract the materials and potentially cause the knife to lock up depending on how you account for expansion and contraction of materials. It can be done, but not easily.

KI: I can only imagine it would have been hard to test different ideas without your own personal zero-gravity chamber. Were you given access to a zero-gravity chamber for T&E purposes?

JH: The gravity is the easy part to account for, it has little effect on how the knife will operate. The big worry is vacuum and safety. I had no access to NASA's gravity-chamber in Ohio.

KI: Have you given any thought to the possible historical implications of a project like this?

JH: Not really, I'm more interested in how it all works, design application, and functionality. Honestly it doesn't really matter to me if it goes into history books. I just like the challenge. I'm assuming it could be big, but then again, no one may notice as well. I don't get too hung up on the opinions of others.

KI: Can you give us some details about how the zero-gravity folder works?

JH: It works mostly like any other folder, with a lot more safety involved.

KI: What safety features are involved that wouldn't be found on a typical folder?

JH: I don't know if I'll call it the zero-gravity folder, since that's the name of the bearing system, but it will

Other Features

- Pivot thrust bearings
- NEW! 270° lock
- HRD (Hoback Roller Detent)
- Hardened stainless steel lock insert with over-travel prevention
- Engineered internal/external lightening pockets
- Standard sizes on all screws for ease of replacement

Bottom Left: 270° lock interface close-up.

Bottom Right: Paraclete custom knife showing 270° lock interface.

Jake Hoback Knives
jakehobackknives.com
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Left: 270° lock interface.

have the following features:

- It won't fall closed like a ball-bearing folder will
- It will have a rounded/sheep foot/Wharncliffe blade
- It is not a leaf/liner/frame lock

KI: What are some of the struggles you encountered during the creation of this new technology?

JH: The hardest part is the business side of things—this will be a project that will cost many thousands of dollars—but it has a high potential of not working out. A lot of the features of this knife do not inherently sell knives to the average Joe, mainly because the typical knife collector doesn't need/use/want those features as they do not fit the status quo.

KI: Was there any point during the initial conceptualization that you asked yourself if you took on more than you bargained for?

JH: It's not in my nature to think that. I have been told I'm a freight train once I get moving, death before dishonor.

KI: Do you think the zero-gravity folder will be something you retain explicitly for this level of use? Or do you think it will be something you begin to incorporate into new designs in your regular knife line?

JH: A little of both. I think some of the allure for collectors will be exclusivity, but I have some great ideas for this that will go into other designs as well.

KI: If you had the chance to do it all over again, what would you do differently?

JH: I would become a banker and



The Early Days

KI: How long have you been making knives?

JH: Since childhood, but selling them since 2004.

KI: What got you started in this field?

JH: The need for a high-quality knife in a specific design for field work. A big chopper, chopping the heads off of fish for otolith (ear bone, DNA sampling) samples. And for camping chores, as we camped for weeks at a time in the Western Washington woods.

KI: When did you start making folders?

JH: In 2009—again, the need for something that met my needs and wants. Mostly for outdoors and for better tolerances.

make real money (joking). Maybe a ninja—ninjas are always fun.

KI: Is there anything else you would like to add about yourself, your knives or the zero-gravity folder? This is your open forum.

JH: Jake Hoback Knives is a company that specializes in tool making. This is not just banging on metal to make something pretty, this is engineering from the ground-up (or space-down, in this case). We don't cut corners. We don't give 100%—everything we do is 1000% effort, 100% of the time. Tools not trophies. **KI**

+ SPECS

PARACLETE

Blade Material: CTS-XHP

Overall Length: 9 inches

Blade Length: 3.75 inches

Closed Length: 5.365 inches

Blade Thickness: 0.15625 inch

Frame Thickness: 0.15625 inch

Frame Material: Grade 5 titanium, jugged inlays

Weight: 5.2 ounces

Carry Option: Tip up right/left-handed

MSRP: \$1,075 for custom version, no MSRP for production model available yet