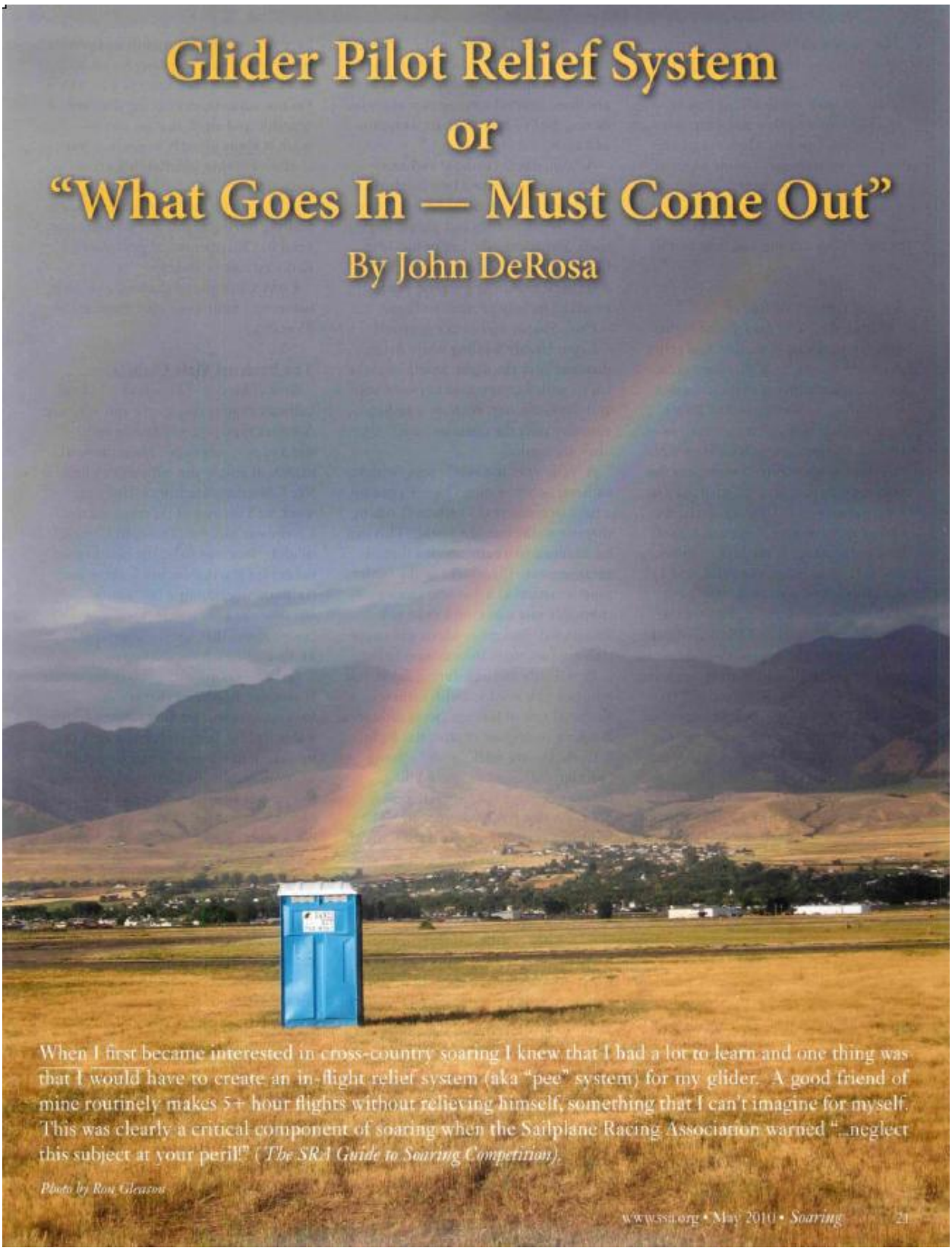
Glider Pilot Relief System or "What Goes In — Must Come Out"

By John DeRosa



When I first became interested in cross-country soaring I knew that I had a lot to learn and one thing was that I would have to create an in-flight relief system (aka "pee" system) for my glider. A good friend of mine routinely makes 5+ hour flights without relieving himself, something that I can't imagine for myself. This was clearly a critical component of soaring when the Sailplane Racing Association warned "...neglect this subject at your peril!" (*The SRA Guide to Soaring Competition*).

Photo by Ron Gleason

The trouble was finding information about this seemingly taboo subject. I was able to locate bits and pieces of details from medical equipment providers, other pilots and from internet soaring news groups. However, there was no comprehensive guide to relief for sailplane pilots. After finding out what I could from all the sources I could find, I wanted to share my research, first by way of my website and now by this article.

A Brief History of Relief

During the early days glider flights were so short that hydration and relief were non-issues. As flight times grew, there came a growing realization that rehydration (replacing bodily fluids, typically lost through sweating) was critical. Unfortunately, XC pilots were reluctant to rehydrate as there was the ever-present problem of "what goes in - must come out." Unfortunately, the idea of relief during flight had a hard time overcoming 1) the lack of publicly available knowledge/materials and 2) the adverse opinion/embarrassment of the whole process. Luckily for the soaring world, Karl and Iris Striedieck broke the mold of ignorance and fear in their famous article in *Soaring* magazine (March 1996, pg 41-42) entitled "To Or Not To?, No Question About it," in which they brought this subject to the general soaring public's consciousness by proclaiming that not relieving yourself during flight was potentially deadly. The topic was now officially out of the closet and even became the "thing to do."

Relief technology has not changed dramatically over the years but access to sources has exploded through the internet. Acquiring the necessary ingredients has never been easier or more straightforward. The only problem is learning what products exist, how to use them and then actually putting them to use. I hope that this article helps to bridge these gaps.

Relief in Flight

This article concentrates on the use of the external male catheter, which looks and is worn much like a condom except that there is a hole in the end to allow urine to exit. The hole in the catheter connects to tubing which routes the urine for capture and disposal. There are three general ways to capture urine during flight - each with its own pros and cons.

A "container" (without catheter) – This idea is to use a bag/bottle of some sort to capture the urine. I have seen funnels, bottles and plastic bags used. Sometimes the bag or bottle is filled with an absorbent material (i.e., a sanitary napkin or purpose-made product) to help prevent spillage.

Pros: Simple and direct approach.

Cons: Unsafe fiddling while flying, disposal after the flight. Smell, as there isn't a sealed connection between you and the container. Without a catheter, you may miss the container with obvious results.

A "hose over the side" (with/without catheter) - Some pilots have rigged up a tube to connect the catheter's tubing directly to the outside world. This can be attached to a catheter or a funnel arrangement. Placement of the outlet pipe is critical as urine is corrosive (basically salt water) and must not find its way into areas which can cause damage (see more information below).

Pros: Little fiddling during flight, just go when you need to (with catheter). Reduced risk of leakage (with catheter). Nothing to dispose of after the flight.

Cons: Unsafe fiddling while flying (without catheter). Some fiddling before urination (i.e., lowering gear doors). Some risk of corrosion. May require a certified mechanic to sign off on installation. Can cause yellow "rain" or "stain." Can freeze up and clog. The system must be rinsed out after and/or during the flight.

A "leg bag" (with catheter) - This is a standard medical supply item which was designed precisely for this application. It has a one-way valve at the inlet to prevent back flow and an on/off valve at the outlet (to prevent poorly timed outflow). There are several sizes available (250ml, 500ml, 1000ml) which you can hide by strapping to your leg. I find that 500ml is good for a six-hour flight and will last several months if cleaned properly. Depending on your glider and position of the bag, you may have to urinate a bit up hill and you will sense some back pressure. An alternative to a bag is a bicycle water bottle, which has the advantages of being discrete, reusable and rigid. Just be sure to mark it appropriately to prevent any confusion about its intended use or contents!

Pros: Can be made "invisible." Little fiddling during flight, just go when you need to. No opening of gear doors. Reduced risk of leakage.

Cons: Cleaning of the bag/container for reuse. Additional cost (bags are $4-$5 each).

The External Male Catheter

Brand/Model – The most common catheter type is single-use and adhesive. Another type you will find is multi-use and non-adhesive. Most national brands of single-use adhesive catheters like Coloplast/Mentor or Hollister will work well for you. I recommend the Coloplast/Mentor "Freedom Clear®" model. It seems to be the best brand/model for staying on, not leaking and (importantly) coming off "easily" because the adhesive is "less aggressive" (more about that later). They cost about $1.50-$2.50 each depending on quantity.

Sizing – Gentlemen, size is important. If you use a catheter that is too small for you, you will be uncomfortable after a short while. If too large you may end up sitting in a wet spot and be equally uncomfortable. To help you determine the proper size, there is a handy-dandy catheter sizing guide available - I am not kidding about this. See the Sources section below.

Application - First and foremost, and no mincing words over an embarrassing topic, you must trim the hairs at the base of your penis. The catheter's adhesive is quite sticky on purpose and when adhesives and hairs get intertwined there can be painful consequences. Begin application of the catheter by washing your hands and then reviewing the how-to pictorial guides printed on the catheter packaging. Make sure that your penis is dry or the adhesive will not adhere properly.

The adhesive starts midway down the inside of the tube of the catheter

and stops about 1/4" before the tail end. As you roll on the catheter (like a condom), the adhesive first appears on the OUTSIDE of the catheter (you will understand this better when you first roll one on). You need to roll the catheter until all the adhesive is against the shaft and the non-adhesive end is deployed fully near the base. Leaving some of the adhesive on the outside is ill advised. Press the catheter's adhesive firmly all the way around to prevent leaks. If you find that there is any adhesive left on the outside, cover it with some toilet paper. Experience and practice is the key here.

You may be tempted to save a few dollars by not applying the catheter until in flight. This is a bad idea for several reasons. First – you simply cannot fly safely while trying to apply a catheter when you are reclined and fiddling with belts and clothes. Second - if you have sweated even a little, the catheter will not adhere properly and will leak.

Clothing

It is important to wear clothing that allows access while in flight. At sites with a history of long flights, and a heavy use of catheters, I have seen pilots already unzipped and connected up before liftoff. Again, the less fiddling the better during flight. Loose fitting pants are important so jeans are generally not recommended. I find that quick drying nylon pants found at outdoors stores work very well. There are also purpose-made PeeTot Pants. You simply need to find out what works best for you.

Use During Flight

As I mention above, "deploying" before each flight is the best approach. Once you have all the plumbing in place then you just go, hopefully with as little fiddling as possible. Practice on the ground so that you know what to expect. You may find that some urine remains in the catheter itself. A soaring doctor friend has told me that this is not an issue for the length of time we are talking about. However, washing up afterwards is always a good idea.

Back on Terra Firma

So, you're back on the ground and you have a bag of "bio-waste." Now, what do you do? There is a certain amount of embarrassment factor to deal with. My advice is to just to get over it and act like it is the most natural thing in the world. Newbies will stand in wonder at your expertise and ask for advice. Ignore those that moan "Ooooo, ick!" After each use, wash out the system/container with diluted bleach.

Catheter Removal

This is the part that probably prevents most pilots from even trying to use a catheter in the first place. The catheter is intended to stay put and not leak (which is good) but this also means that it doesn't just fall off at the end of the day. I have had the best luck by reversing the application procedure and rolling off the catheter a bit at a time. Others recommend a warm shower, which is a good idea anyway after a long flight. Another recommendation is a product called Detachol® made for this purpose. Again, you will have to experiment to determine your own best approach.

The Bottom Line

Having a relief system will help your cross-country flying by having one less thing to worry about.

Deploy your equipment before flight. This is not as difficult as you think. Finally, you will be a safer pilot.

Sources of Equipment

The internet has a wealth of websites which specialize in these devices. However, I suggest that you might want to first visit a local medical supply store that knows about such things. Don't worry about being embarrassed, they handle this sort of thing all the time, but you may get a few perplexed looks when you explain why you need it. They can definitely set you up with everything that you will need (bag, catheter, tubing, etc). You can also purchase "starter kits" with all the necessary items.

Sources of Catheters and Accessories

BioRelief - http://www.biorelief.com - click on "Male External Catheters"
Allegro Medical - http://www.allegromedical.com – click on "External Catheters"
At Home Medical - http://www.athomemedical.com – click on "External Catheters"
Southwest Medical - http://www.southwestmedical.com - click on "Urinary Catheters & Kits"
Oxford Aero Equipment - http://www.oxaero.com/Relief.asp - click on "Using Male External Catheters" for a very good description of catheter use.
PeeTot Pants - http://www.reliefwear.com
Catheter Sizing Guides
Hollister - http://aviation.derosaweb.net/relief/size_guide_hollister.pdf
Mentor - http://aviation.derosaweb.net/relief/size_guide_mentor.pdf
Information
Reprint of the Striedieck "To … or Not to …, No Question About It" article (Soaring, Mar 96, pg 40-41); http://aviation.derosaweb.net/relief/Striedieck_no_question.pdf
A good blog with an assortment of useful comments on the topic; http://soaringweb.org/ART/pee.html
External relief tubes in gliders by Darryl Ramm (http://www.darryl-ramm.com/glider-pee-tubes) and Chip Bearden (http://soaringweb.org/ART/pee.html)
Doing it the Aussie Way; http://www.gliding-benalla.org/flying/health/aussie_way.xhtml
Sailplane Racing Association article *The SRA Guide to Soaring Competition;* http://www.ssa.org/files/member/SRAGuide.PDF
For the Ladies - Read these articles; http://www.freeflight.org.uk/gliding/relief.html and http://www.dg-flugzeugbau.de/pinkeln-e.html#female

About the author: John DeRosa is a past president and current secretary/seminar-chairman of the ChicagoLand Glider Council (http://chicagolandglidercouncil.com). He is the current vice-president of Sky Soaring Glider Club (http://skysoaring.com) in Hampshire, IL. John hosts a website of various glider related subjects at http://aviation.derosasweb.net. John can be reached at john@derosaweb.com.