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Reparatur-Tipps von Alv Elvestad www.pakboats.com für Besitzer von PakCanoe's bzw. allgemein Falt-Canadiern

(=> Text in Englisch)

Anmerkung:
Alv ist Konstrukteur und Hersteller der „PakCanoe" Falt-Canadier und der „Puffin" Falt-Kajaks der Fa. Pakboats www.pakboats.com

REPAIR AND MAINTENANCE OF PAKBOATS

Some of you are preparing for your annual canoe trip to the Arctic and may be taking a folding canoe for the first time.
The following will give you information about how to deal with some of the mishaps that can occur on such a trip.
While I will primarily focus on Pakboats, I believe that this will be equally relevant to other folding boats with PVC coated skins and aluminum frames.

1. There are two categories of repairs.

This may be obvious, but it is still important to keep the distinction in mind.
The first category is the "riverbank repair". You need to get the boat serviceable so it can safely complete the trip and get you home.
And then there is the "permanent repair" you perform after you get home to prepare the boat for the next trip.
I will refer to the two categories of repair below.

2. And there are two kinds of repair.

Equally obvious, repairs to the fabric parts are different from repairs to frame parts, and I will treat them separately.

3. Fabric repairs.

Here is where I tend to make an exception from point 1.
Many paddlers like to cover fabric damage with duct tape. I don't.
The repair kit that comes with the boat is so easy to work with that it is better to make a permanent repair. Duct tape is not very abrasion resistant, and duct tape adhesive makes a real mess.
You can't apply a permanent patch without removing the duct tape adhesive first.
Do yourself a favor and make a permanent repair on the riverbank.

A.) The most common damage is an abrasion.
The best material to use on an abrasion is PVC film with no reinforcing weave.
All you want to do is add wear surface that can be abraded. That is what PVC film is – and that is what we use in keel strips.
We do not include PVC film in repair kits because it is not appropriate material to repair a cut or tear, and we will not be there to explain the difference.

Cut a patch a little larger than the damaged area. Round the corners to make it less likely that the patch will catch on something and start peeling off (you can even bevel the edges).
Clean the patch and the damaged area on the canoe well and apply a thin layer of adhesive on both. Let the adhesive dry until it feels dry to the touch and apply the patch. Rub the patch with your fingers to make sure there is good contact.
If there is a bubble, puncture it and press the air out. The adhesive will cure for about 24 hours, but the bond will be strong enough to let you get back on the water as soon as the patch is in place.

Note: Make sure there is no moisture on the adhesive before you apply the patch.
On a humid day, the cooling caused by the solvent evaporating out of the adhesive can cause condensation on the adhesive surface. The best insurance against condensation is a little heat.

B.) If the skin has been cut or torn you need to restore the tear strength and tensile strength, and the appropriate patch material is the reinforced fabric in the repair kit.
Cut a patch large enough to reach ¾ inch outside the damaged area and apply as described above.
A patch on the outside of the skin is all you need to restore full strength to the skin.
I prefer not to add a patch to the inside because it makes the skin thicker and stiffer.

C.) If you puncture an inflatable part you can make a good repair with the repair kit in most cases. (It is difficult to apply a patch close to a welded seam or a valve). Use the same patching procedure as for the skin. If there are pin holes along a welded seam, your best bet is to empty the air from the inflatable part and coat the leaking area with several applications of adhesive (letting the adhesive dry between each application). This does not take all that long because drying time will be less than 10 minutes between each application.

Note: The most common cause of pin holes is that the air pressure has been too high.
This often happens when inflatable tubes are inflated pretty hard to paddle on a cool morning.
When the boat is left exposed to hot sun on a beach after paddling, pressure in the tubes increases, and the PU coating softens – and pin holes appear.
You can prevent problems by letting out a little air or leaving the boat in the shade.

D.) If you blow a seam in an inflatable part, it can not be repaired with adhesive.
The repair will simply not be strong enough. The only way to repair the seam is to reweld it, and this can not be done in the field.
If you try to repair a blown seam with adhesive you will simply contaminate the weld and make a repair impossible.

The easiest way to repair a welded seam is to use a household iron (the one you use for your shirts).
Use an area of the fabric outside the inflatable tube for testing. Gradually turn up the heat and iron together the two layers of fabric.
Cool down and try to pull the two layers apart. You should get a very solid bond.
The iron will be hot enough when the polyester fabric gets shiny. Iron the blown seam, allowing time to let the heat from the iron do its work.
Let cool and pressure test.

4. Frame repairs.

If you get your boat pinned on a rock or get into a similar situation, there will almost certainly be some frame damage.
Once you have recovered your boat and gear you need to straighten out the frame so the canoe can get back on the river.

A.) The longitudinal rods without plastic clips are easy.
So long as a bend is pretty gradual, the rods can be straightened well enough to be perfectly functional. Don't worry about getting them completely straight. Once the rods are in the boat, a few slight bends are hardly visible.
If a rod is so badly bent that the tube is kinked, it can not be straightened without breaking it.
There are several things you can do:
- Break it and splint it with a couple of pieces of willow and duct tape (easy and functional).
- If the problem is with a gunwale or chine rod you may want to replace the broken rod section with one from a side rod (the ones that support the inflatable tubes in PakCanoes).

The sections are all the same length and interchangeable. You can undo the shock cord by pushing it out one end and untie the knot.
If you can't salvage all the sections, the boat will work just fine with shorter side rods, but I recommend having them in place for the half of the canoe closest to the center at the maximum beam.

B.) If you bend your latch rods, the options are fewer.
The latch clips are riveted on, and it is very hard to straighten a rod where there is a rivet hole.
Usually, the rod will break at the rivet hole.
My recommendation is that you straighten the rod as much as you can and try not to have it break.
If it does, the willow splint and duct tape trick will make a serviceable repair.

It is possible to substitute a section from a side rod, but it requires drilling a new rivet hole for the latch clip. Instead of using a rivet, you can fasten the latch clip with a sheet metal screw.

C.) The cross ribs and stems will give you the same problems as the latch clips, but there are some useful tricks that will help.
You may need to break a rib or two to get them back into shape. Perform the willow splint and duct tape trick.
You may find that you have two broken ribs next to each other. This is where it is handy to have a symmetrical hull. Swap one of the broken ribs with one from the opposite end of the canoe.

D.) We sometimes have requests for a "expedition repair kit", and we have supplied a few.
But from my own trips I have found such kits of very limited usefulness.
If you are going on a very shallow river where you expect a lot of dragging, some extra materials for skin reinforcement may come in handy. But that "expedition repair kit" also had replacement tubing for splints etc.
Unfortunately, once you need to make repairs, the canoe parts are no longer as straight as they once were, and that nice straight piece of insert material does not fit very well into bent tube.
A piece of willow may not sound very hi-tec, but there are times when it is very appropriate.

5. Permanent Repairs.

As you have seen, "riverbank repairs" are sometimes "permanent repairs" – in particular fabric repairs.
The main difference is often that permanent repairs have more of a maintenance and reinforcement character with a view to preparing for the next trip.
Weld problems on inflatable parts are almost impossible to repair in the field and need to be done after the trip. With the 3 separate inflatable cells on each side of the boat, a puncture does not make a significant difference to the boat's performance, so a repair can safely wait until you get home.

Permanent repairs to straight aluminum rods generally consist of replacing rod sections.
My recommendation is for you to be tolerant of moderate bends since they hardly show once the boat is assembled and do not seem to make any difference to the boat's performance.
Stems and cross ribs are rarely repaired. The question is how much deformation can be tolerated, and that is a question only you can answer.
If you run heavily loaded folding canoes down shallow and rocky rivers you can expect to bend some parts – and you will find that it takes quite a lot before there is a noticeable change in the canoe's performance.

Note: I am often asked what spare parts I recommend for a long wilderness trip.
If the intended route is one where encounters with rocks are likely, a spare stem may be a good idea because the stems are key parts of the canoe's structure.
A gunwale terminator (the piece that connects the two gunwales) is also a candidate because it is the smallest frame part and can most easily get lost. Just like the stem, it is also a key part of the boat's structure.