Polo Stick Repairs

A step by step guide on how to repair both cane and composite polo mallets

The workshop at Wood Mallets

Contents

Author George Wood has played polo since a child and attained a handicap of 4 goals. He's played on every continent and represented three different countries. After 30 years as a mallet maker he's well aware of the requirements and trends of today's players. No one on Earth has spent more time and effort developing the polo mallet! All mallets break and maintaining them is a constant chore. Hopefully this booklet may be helpful to those who are keen to do some DIY repairs.

Cane vs. Composites

The world's supply of root end manau canes traditionally used for polo mallet manufacture is almost entirely gone. As a result, the inferior species of canes being used simply don't have the density required and tend to break much more readily. The future cane supply situation is bleak and very uncertain. You have two choices, be prepared to repair twice as many cane mallets or try composite materials.

Although I understand the reluctance to change over to composite shafts for those who have become accustomed to the inconsistencies of canes, I firmly believe that our latest composite mallets have huge benefits over others. They're incredibly powerful and generally last several times longer than other types of mallets. Despite rough treatment they retain their shape and they never "wring". Perhaps the greatest attraction is the consistency which is not possible with canes. They have an increased sweet spot, minimal vibration and a revolutionary moulded handle for comfort, grip and long life. Just like tennis racquets, fishing rods and golf clubs, polo mallets can also take advantage of modern materials and technology.

Carlos Gracida using a Fibercane in the Gold Cup UK

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Supplying quality polo mallet components worldwide since 1982.

Heads, splice canes, splicing jigs, grips, slings, binding tape, filament tape, repair sleeves, moulded handles, etc.

Fitting New traditional Grips and slings.

Step 1: Remove the old grip, and sling if necessary, prise out any old tacks with a penknife or screwdriver. Strips of cloth tape can be laid in appropriate areas to build up the handle or it may be filed down to the desired size and shape if required.

Step 2: Affix new sling. Use two large tacks (or 14 mm staples if you have a suitable staple gun) on each side through the central line of the Knob leaving approximately 1" on the handle.

Note: Sling length for an average hand is 21" long allowing 1" on either side under the grip. The length may be adjusted to suit.

Step 3: Cut the grip at an angle as above. This needs to be tacked over the top of the sling with a small gimp pin or tack.

Step 4: Wrap on the grip. For the first complete turn, keep the top of the grip level with the top of the handle.

When the first turn overlaps the gimp pin, stretch reasonably tight and follow the line of the shaped section of the grip down the handle overlapping just under half the grip width. Continue stretching tight with each turn and try to keep a uniform diagonal line until the bottom of the handle.

Step 5: When the handle is fully covered, bind down around the shaft while keeping the grip tight. Using a good plastic tape (We recommend 3M 12 mm #471), wrap tightly over the grip material at least two turns at the point where the handle ends and shaft begins. If this is firm, the grip material below the tape may be trimmed off using a knife and a second wrap of tape can be applied starting on the shaft and binding up over the first wrap of tape. Finish off at the back of the handle. Please note that some mallet makers use tacks to hold the grip in place at the bottom of the handle. This often splits the canes and can be avoided by using a good quality tape.

The new handles are available in two sizes and colors and come ready to glue straight on to the shafts using hot melt glue. A heat gun is also useful at this stage to keep the hot melt glue hot enough, allowing time to fit and align the new handle.

Spare moulded handles are available at NZ$15.00 each with slings fitted. There are two sizes, medium and large. The handle replacement procedure normally takes less than 5 minutes.

Sling adjustment.

Having a sling adjusted correctly so that it supports your wrist make a huge difference. Often slings are too long and the player has to grip the mallet tightly. If the sling is comfortably firm across the back of the hand it allows the whole weight of the mallet to pivot from your wrist.

Our moulded handles allow for the sling to be replaced or adjusted simply by unscrewing the two screws in the knob. If necessary, trim 1” off the sling and cross the ends over as pictured before replacing the end cap. Make sure you don’t over tighten the screws as this can strip the threads.

Replacing moulded grips

The new moulded grips are extremely durable and outlast the traditional style of grip but after considerable use they may need replacing or you may want to fit a smaller or larger handle. The glue we use is standard hot melt adhesive. This is readily available in most parts of the world and is widely used by handymen for quick repair jobs etc. Tools required are a hot melt glue gun and a heat gun (the type used for paint stripping is fine). The secret to replacing a handle is to heat the old handle up with a heat gun so that the black polypropylene part of the handle gets hot enough to soften the adhesive underneath the handle can be twisted off quite easily, it takes a couple of minutes on high heat to get the handle hot enough. Tip: if you wrap a layer of electrical or masking tape on the shaft at the base of the handle before removal, mark the center line of the handle onto the tape. This way, it's easy to align the new handle with the mark and any excess hot melt glue can be peeled off with the tape. Be careful not to break the base of the handle by twisting too severely. If the handle is heated enough it should come off relatively easily. Best to wear some leather gloves or similar before you grab hold of the handle.

Splicing

All canes eventually break. Some quicker than others. Traditionally the root end of Manau cane has been used up until the past few years but as it took up to 70 years to grow and less than 3% were suitable for polo mallets, the supply is now virtually non existent. The majority of cane polo mallets made today are made from Batu cane which also comes from the jungles of Indonesia. Although it has an excellent taper and plenty of knots, very few have the density and strength required to last very long before fracturing. Mallet repairers have never been so busy! Virtually any cane can be repaired and often a mallet can be improved by splicing at either end or in the middle.

It is possible to cut a splice using a handsaw but this takes practice and patience. For the purpose of this instruction, we'll assume that you have the use of a band saw. Preferably a 1" blade with 3 teeth per inch.

Make sure the blade is sharp or you may not be able to get a straight cut

1. Remove the cotton binding either with a sharp knife or by peeling it back from the end.

2. Cut the cane back to the start of the fracture.

3. With the handle pointing horizontally, cut a 4" V cut into the cane. You can mark the V with a felt tip pen first as a guide or we sell clever jigs which help cut the perfect V. Note the mirror used to align the second cut.

The cut out will also provide you with a wedge for fitting heads with.

Make sure that the V cut has a reasonably fine point otherwise the end of the V can become a weak point.

Good quality dense splicing canes are essential. There's no point using lightweight brittle canes that will snap first chukka. Wood Mallets supplies 36" lengths of selected manau canes for splicing to repairers worldwide.

4. Now select a similar diameter piece of splicing cane to fit into the splice. Shape this to fit the V. A bench top sander is be ideal for this. The male end of the V should be a tight fit and should only spread the V slightly.
Be careful not to split the cane by forcing it.

5. Apply glue to the insides of the V and gently position the male end. We recommend using a good quality epoxy adhesive but PVA can be equally strong provided the joint has no gaps.

Each splice should be clamped with at least two small clamps.

Strong spring clips work OK as do rubber elastrator rings or even string

Gluing:

When you're satisfied that you have a good fit, apply some high strength epoxy glue to the thread and into the hole of the head. Twist on the head to about 5mm above the threaded section and check the length and adjust if necessary. Wipe off any excess glue and align the head with the handle. (See section of fitting cane mallet heads) When dry, paint or varnish the heads and customise as required. Knock down the plastic sheath to fit firmly against the top of the head. Apply a wrap or two of plastic tape to keep the plastic sheath in place.

Master craftsman Fidel Russ from Argentina has been the foreman at Wood Mallets for 21 years.

Fitting New Heads

Preparation of the shaft:

Unwrap the plastic tape at the top of the clear plastic sheath above the head and pull it up the shaft away from the head. Saw the old head off either side of the shaft. Break away the remaining pieces of the old head by using a cleaver into the end grain, being careful not to damage the shaft. Any remaining pieces of wood or glue may now be filed flush with the thread.

Re-threading:

Although not absolutely necessary, threading the shaft with a die ensures maximum surface area for adhesion to the threaded hole. In most cases, the existing thread will just need cleaning out with a sharp file.

To thread a shaft from scratch, clamp the shaft between two V's in a vice. (A large tap wrench can also be ideal) It's very important not to weaken the shaft by threading too deeply. Either a 14mm or 9/16" is usually ideal. (Imperial dies have a wider thread and are therefore more suitable)

Thread no further than 38 mm from the end.

A replacement head from Wood Mallets should have a 12mm hole with a 14mm thread. Try screwing the head on bearing in mind that the glue will act a lubricant next time around. If it is too tight, adjust by filing. The end of the shaft should just fit through the bottom of the hole.

7. When dry, the protruding parts of the splice and any excess glue can be rounded off either with a sander or file.

8. Cut the canes to length. Use a tape measure on a bench and mark out 51 1/4", 52 1/4", 53 1/4" etc so that the length of your canes can be measured, marked and cut as required. Always add 1/4" to allow for the extra length of cane that extends through the head.

Binding

The correct cotton binding material is critical. The end result must be light and strong. We use two types of binding. For higher splices we use filament tape. As single tape is strong enough to tow a car! It is however difficult to wrap with out kinks and only suitable if the joint is parallel.

For the binding above the head we use a 25mm natural cotton tape which is available in 100m, 200m and 500m rolls. We get the cotton mill not to shrink it so that the tape shrinks as the glue dries.

The skin of the cane should be lightly sanded to provide adhesion. As an optional extra to increase the strength, you can apply a 3" long wrap of epoxy adhesive and cotton tape, starting just where the head fits. This needs to set and lightly sand down any rough edges. Apply plenty of PVA glue to the shaft. Start binding 8" up from the end of the cane or at the top of the splice, which ever is further.

Bind at a constant 45 degree angle overlapping the previous turn by just under half its width. The glue should be squeezing right through both layers, if not, apply more glue. When you get down to 1 1/2" from the end of the cane, reverse the binding and come back up 2" before returning down to 1" from the end. See picture next page.

Cut the tape with scissors and squeeze out any air bubbles making sure that the tape is thoroughly saturated with glue.

When dry, the cotton tape maybe painted and then gently shave back the cotton tape to about 1 1/2” from the end. Try to leave the cotton tape tapering down to the cane so that it’s easier to get a good fit with the head.

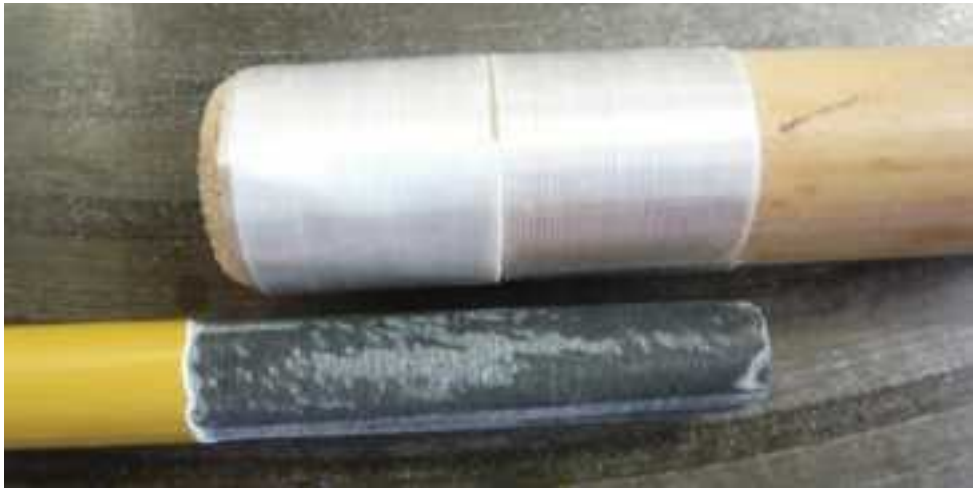
Fitting heads

Drilling out used heads is often where people go wrong and depends on what tools are available. Even a hand drill or brace and bit can work well. It’s hard work for hand held electric drills. Flat spade bits that can be filed down to create a suitable taper are a cheap alternative. At the least, you need 14mm and 16mm bits and some form of reamer. Ideally tapered flute or pin reamers can usually be sourced from local engineering tools suppliers. They need to taper from about 13mm up to 20mm.

Once the old cane has been drilled out at the correct angle and size, the cane should be able to fit snugly into the hole up to the binding. Always make the hole bigger, not the cane smaller! This is where you need to ream out the top of the hole to get a good tight fit. The binding should fit into the top of the head by about 1/2”. Note the taper on the reamer being used opposite. A good tight fit on both the bottom and top of the hole is critical. Check the overall length from the knob of the handle to the middle of the heads.

The cane should be protruding at the bottom of the head. Cut a notch no more than 1 1/4” into the end of the cane at right angles to the handle.

The Hybrid mallet is an exciting new development where a length of cane is fitted to the lower section of the Fibercane shaft. The concept is very simple. A 10 mm hole is drilled up to 75mm (3") into the end of a good quality 16/17 mm diameter cane and glued with epoxy. The length of cane can vary but up to 22" works well. A couple of wraps of filament tape eliminates any splitting. The cane can then be bound with cotton tape and a head fitted exactly in the same way a traditional mallet would be repaired. The result, a lightweight and consistent shaft that feels like cane. For Fibercane mallets with broken lower shafts this is a very viable option for repairs.



Composite mallet repairs

Fixing a broken shaft

Virtually any broken shaft can be successfully repaired by gluing a short fiber glass sleeve about 45 mm either side of the break. Alternatively a length of good quality cane can be used as for the Hybrid mallet described opposite.

We supply two sizes of pre threaded sleeves with either 10.5 mm or 12.00 mm internal holes which will generally repair most shafts. Breaks about half way are very rare and not so easily undertaken.

It's critical to ensure a good fit either side of the break. In most cases this can be done simply with a sharp file although we often use an adjustable die. A little patience is all that's required to achieve a good fit.

When each end fits tightly into the sleeve so that they meet in the middle, a liberal amount of epoxy glue may be applied to all internal surfaces and the joints can then be twisted back together. At this stage the head can be re-aligned with the handle and then left to set. Check that the shaft is set straight and adjust if necessary. When dry, the sleeve may be filed off at the edges and repainted if desired.

Above: Drilling out a head using a drill press and jig.

Below: Using a tapered reamer to widen the hole at the top of the head

When you're happy with the fit of the head, mix and apply plenty of good quality epoxy adhesive to the inside of the hole as well as to the cane.

Fit the head and align with the handle. This is a crucial stage and many people find it difficult to get the heads straight. We use a purpose built jig with a v shaped pointer fitted to the handle as pictured. Alternatively hold the mallet by the sling out in front of you and close one eye. Look down at the handle and make sure its perfectly upright. Adjust the head accordingly. Using a line on the floor can be helpful and face towards the light so that the hand shape is clearly defined.

When this has been achieved, check again and then apply a small amount of glue to a suitable wedge use and tap in lightly.

Don't smash the wedge in! Its' purely to clamp the glue. In the old days, the bottom of the hole was made oval and a wide wedge smashed in used to be what kept the heads in place but modern glue is so much stronger. You don't have to spread a piece of cane far before it splits. Often we see mallets that have been fractured by the wedge well before they get to hit a ball. Generally the wedge should not be any thicker than about 2mm at the cut off point.

When the glue's dried, cut off the protruding piece of cane and sand or file flush. Customise the heads however you like. The most important thing is to keep moisture out. Two coats of urethane, varnish or paint is usually satisfactory. We also recommend a strip of 48mm x 150mm clear all weather or cloth tape to be applied to the hitting surface.

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