

## **Carbon Front End Repair Kit** **All Carbon Booms**

This package contains materials and instruction for replacing a Carbon Front End on an all carbon boom.

### **MATERIALS:**

- 1 Front End Assembly
- 1 A-PAK Resin/Hardener kit
- 1 Syringe
- 2 Clear Shrink tube
- 2 Black Shrink tube
- 2 Urethane foam blocks
- 1 60 grit sandpaper



### **INSTRUCTIONS:**

Read through the full instructions and gather tools before starting the repair.

**NOTE:** Removing the existing Front End will be the most difficult task of this repair procedure. If power cutting tools are available to you, they can make the job go much faster. Extreme care must be taken to prevent damaging the boom arms in the process.

1. Cut through the existing the carbon Front End on both sides of the plastic mast clamp. The cuts are to be  $\frac{1}{2}$  cm away from the clamp as shown.



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**2. Remove the black shrink tubing with a razor and tape over the grip just behind the front end so the grip does not get damaged.**

**Make 2 cuts through the Front End laminate down to the surface of the boom arm (top & bottom, 180 degrees apart). The cut should only be 3mm deep. You must avoid cutting into the boom ARM material.**



**Using a hacksaw "blade only" to finish the cut helps to avoid damaging the boom arm surface.**



**3. Mark a line 7.6 cm from the aft edge of the Front End. This is the depth of the boom arm inside the front end.**

**Use a chisel or wedge to dis-bond the pieces off the boom arm as shown. Your chisel should not go past the 7.6cm line.**

**If it will not disbond, check to see that the cuts on both sides of the front end are down to the surface of the arm tube.**



**Use a chisel to carefully separate the Front End pieces from the boom arm.**

**Use pliers or Vice-grips to remove the pieces of Front End by twisting the laminate free from the boom arm.**



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**4. Prepare the area or the boom arm where the old front end was removed for bond adhesion as follows:**

**Remove all adhesive residue.  
File a 2 mm chamfer (rounded edge) at end of boom arm.  
Sand entire area with 60 grit paper.  
Verify the arms fit into the Front End to the 7.6 cm depth.**



**5. Plug the front of the arm tubes using the supplied foam as follows:**

*Note: Foam plugs prevent resin from getting inside the tube during the adhesive injection step.*

**With the foam block resting on a surface, force the front of the boom arm down onto the foam with a rocking motion. The foam block will crush part way and stick to the front of the arm.**

**Use a hammer to force the foam the rest of the way into the arm, leaving foam plug on the inside diameter.**

*Note: Make sure foam plugs inside the arm do not extend past the carbon boom arm.*



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**6. Place boom arms on a flat surface as shown. (Ends extend past table)**

**Slide a black shrink tube and a clear shrink tube over each arm as shown. (the clear tube is to be forward of the black)**

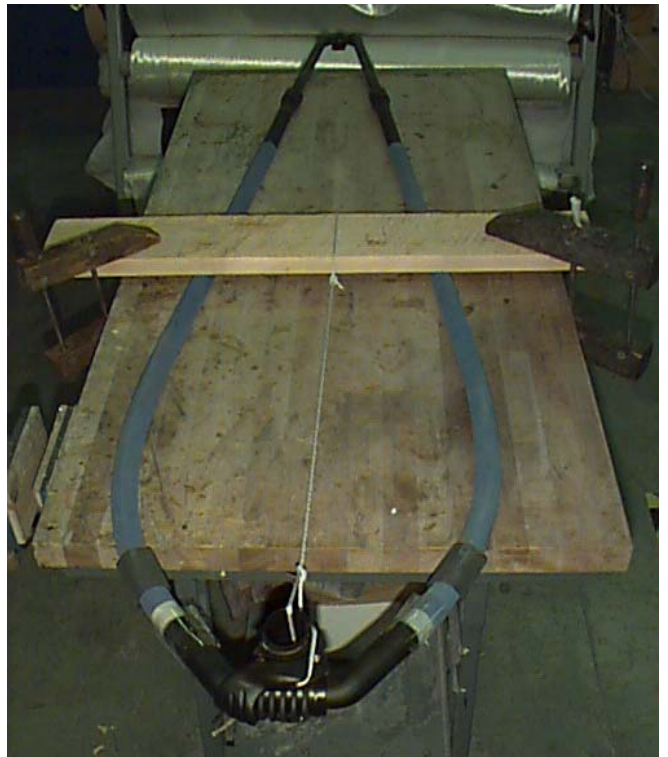


**7. Insert the arms into the Front End Sockets (with the injection holes facing up). The Arm should fit inside to the 7.6 cm mark.**

**Insert the rear end into the back of the booms and lock in place at the 22cm mark.**

**Clamp boom arms securely with a board across the top.**

**Tie a taught line from the front end to the clamped board.**



**8. Move the clear shrink tube into position and apply heat (heat gun or hair dryer) until the tube forms a tight seal over the joint.**

*Note: Over heating can cause the shrink tube to tear.*

*Note: The clear shrink tube must form a tight seal that prevents the resin from escaping when it is injected into the joint.*

**Wrap tape tightly over the shrink tube on both sides of the joint to improve resin containment. Leave the clear shrink tube exposed right over the joint so a fillet of adhesive will be visible during injection.**

**Puncture the shrink tube over the small holes in the front end where the adhesive will be injected with the syringe.**



## 9. Prepare epoxy adhesive:

Mix packets per instructions on packet.

**Note!!!** The pot life after mixing is approximately 5 minutes. Be sure the assembly is all prepared before you mix the adhesive. You will need to work quickly once it is mixed.

Cut corner of pouch and squeeze epoxy into syringe leaving 1 cm to insert the piston.



## 10. Inject resin:

Inject epoxy into one side of the boom through the injection hole. Hold steady pressure on the piston for approximately 10 seconds. A fillet of resin should fill the full circumference under the clear shrink tube.

*Note:* The amount of adhesive to fill the joint will vary from boom to boom. At least 50% of the epoxy in the syringe should be used, however, use as much as the joint will accept.

Remove excess adhesive and apply tape over the hole to contain the epoxy when syringe is removed.

Reload the syringe with epoxy and repeat the injection procedure for the 2<sup>nd</sup> side.

Allow 12 hours (at 20°C or higher) for epoxy to cure prior to removing clamps.

Allow 32 hours for complete cure prior to sailing.

*Note:* Cure times may be cut in half by warming the assembly to 30° - 40°C

## 11. Apply black shrink tube.

Use a razor to take off the clear shrink tube and remove excess adhesive.

Slide the black shrink tube over the area where the clear tube was and apply heat (heat gun or hair drier) until the tube conforms to the boom arm.

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