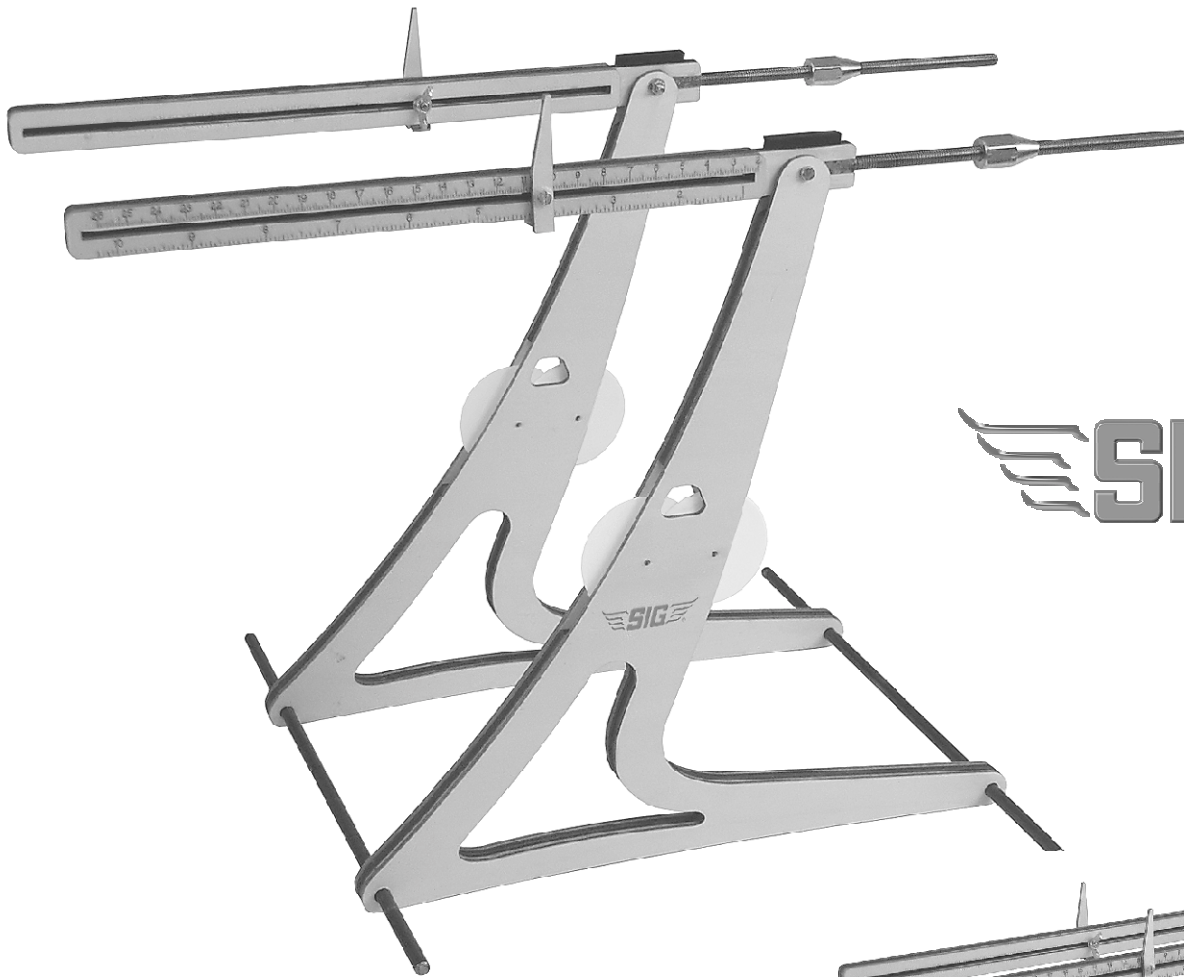


PRO-BALANCER

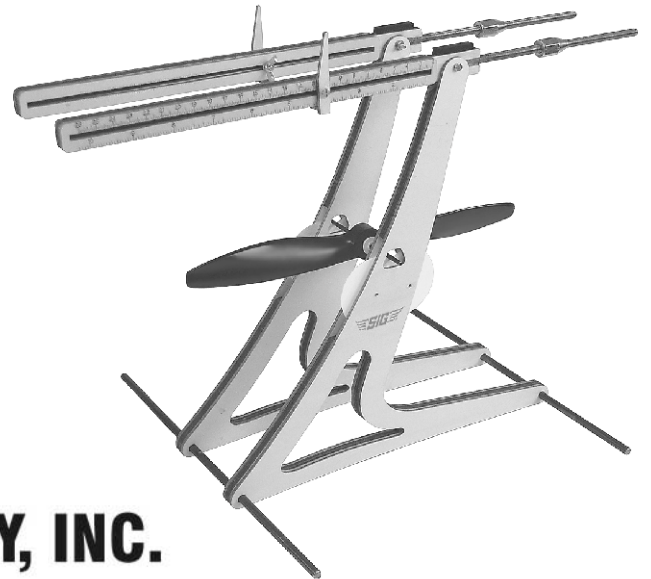


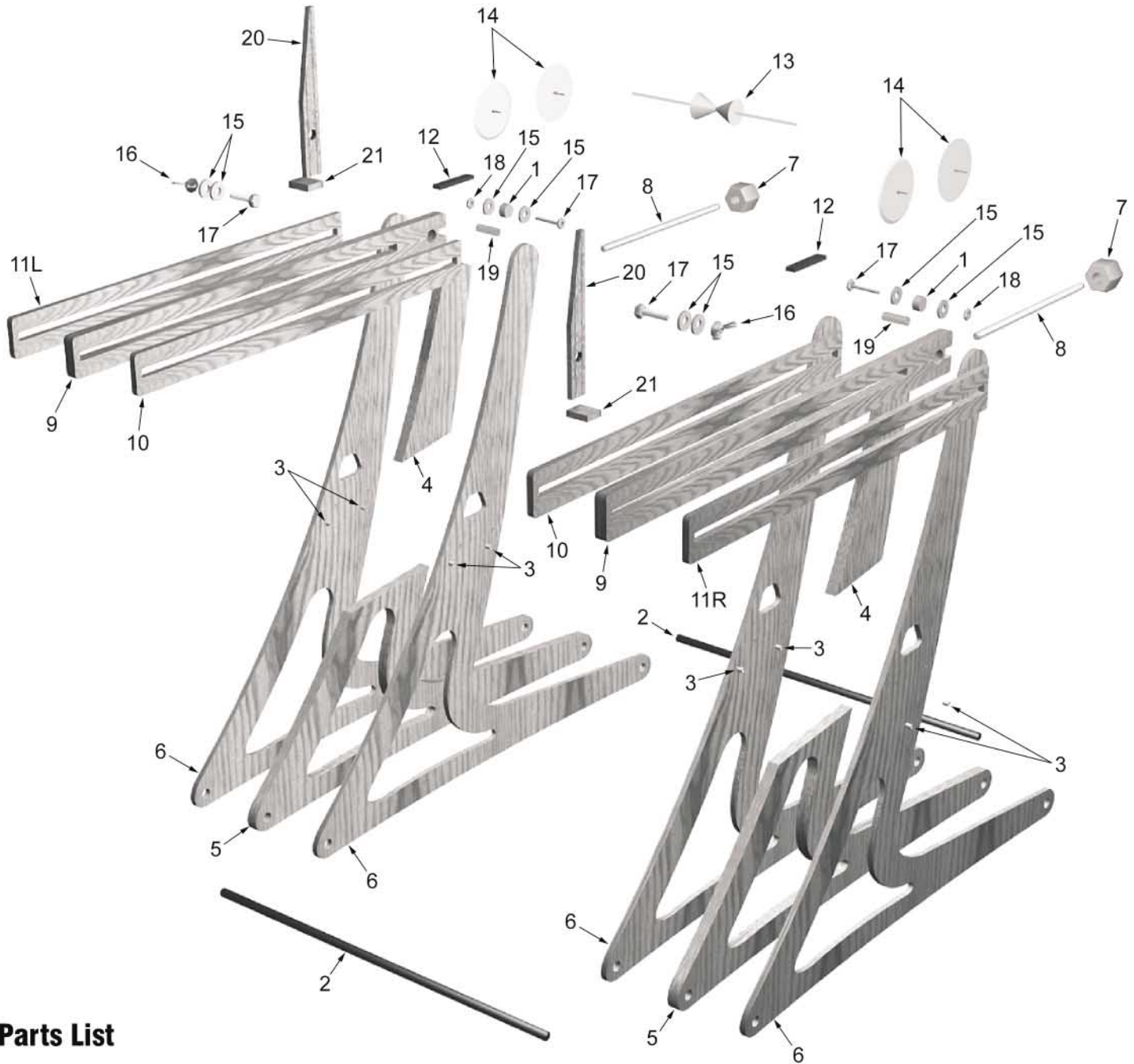
SIG

**KIT NO.
SIGSH900**

ASSEMBLY MANUAL

SIG MANUFACTURING COMPANY, INC.





Parts List

Part No.	Qty.	Item
1	2	BALL BEARINGS
2	2	6mm dia. STEEL ROD
3	1	Plastic Pushrod Tubing for making (8) BEARINGS
4	2	1/4" ply FOOT CENTER TOP
5	2	1/4" ply FOOT CENTER BOTTOM
6	4	1/8" ply FOOT OUTER PARTS
7	2	STEEL BALANCE WEIGHTS
8	2	M6 THREADED BALANCE RODS
9	2	1/4" ply ARM CENTER PARTS
10	2	1/8" ply ARM OUTER PARTS
11L	1	1/8" ply ARM LEFT SCALE

Part No.	Qty.	Item
11R	1	1/8" ply ARM RIGHT SCALE
12	2	FOAM RUBBER
13	1	set of PROP BALANCER CONES and AXLE
14	4	PROP BALANCER WHEELS
15	8	WASHERS
16	2	M3 WING NUTS
17	4	M3 x 20mm BOLTS
18	2	M3 HEX NUTS
19	2	BRASS BUSHINGS
20	2	1/8" ply LE. STOP
21	2	1/8" ply L.E. STOP GUIDE

INTRODUCTION

Congratulations and thank you for purchasing the SIG Pro-Balancer kit. With the Sig Pro-Balancer, you can easily balance your model airplanes and your propellers from one simple device. The Pro-Balancer will handle nearly every model in your fleet (fuselage widths up to 11") and any size model propeller. The wood parts of the Pro-Balancer are CAD designed and laser-cut for accuracy. Ball bearings in the main joints provide accurate results and long life. Strong, precise, and accurate - the Sig Pro-Balancer will serve you well.

This assembly manual has been sequenced to put your Pro-Balancer together in the correct order. We urge you to read through the manual carefully before starting assembly to familiarize yourself with the various parts and assembly sequences. We also urge you to carefully check your kit content against the parts listing on page 2. If you deviate from these instructions, you may wind-up with a problem later. It is also very important that you build your Pro-Balancer as accurately as possible, because the more accurate you build this device, the accurately it will work!

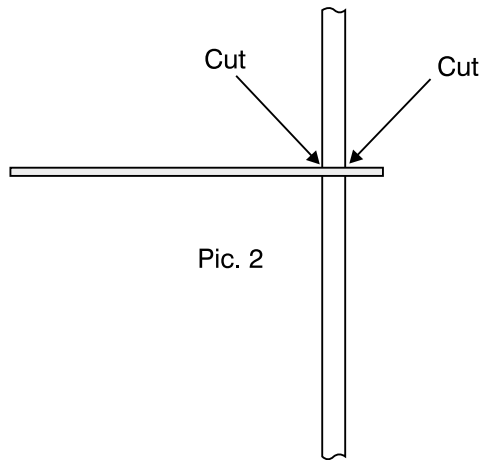
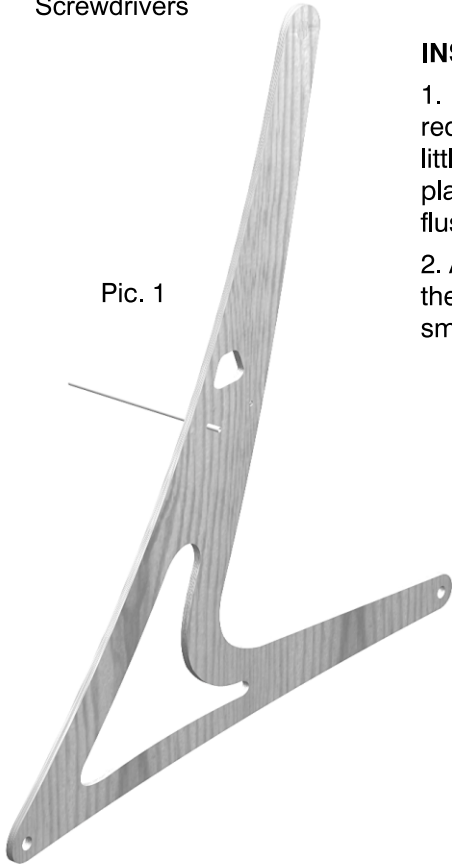
- **ITEMS REQUIRED TO BUILD THIS KIT**
- SIG Super Weld (Order No. SIGSW001)
- SIG Thin CA Glue (Order No. SIGCA002)
- SIG Medium CA Glue (Order No. SIGCA011)
- Paper Towels
- Dremel® Tool and Bits
- Screwdrivers
- Pliers
- Hammer
- Clamps or Weights
- Sharp Cutter
- Sandpaper (Fine Grit)

INSTALLING THE BEARINGS FOR THE PROP BALANCER

1. A piece of plastic pushrod tubing is provided for making the BEARINGS (3) required in the FOOT OUTER PARTS (6) for the prop balancer. Feed the tube into the little holes in part (6) as shown. Apply a small drop of Thin CA to secure the tube in place. Apply CA Kicker to the joint and let dry. Then use a sharp knife to cut the tube flush with both sides of part (6), as shown in Pic. 2.

2. After you have glued all 8 BEARINGS into the four FOOT OUTER PARTS (6), sand the ends of the bearings with fine sandpaper on a sanding block to make them smooth and flush with the wood. Take care that the holes of the bearings remain open

Pic. 1

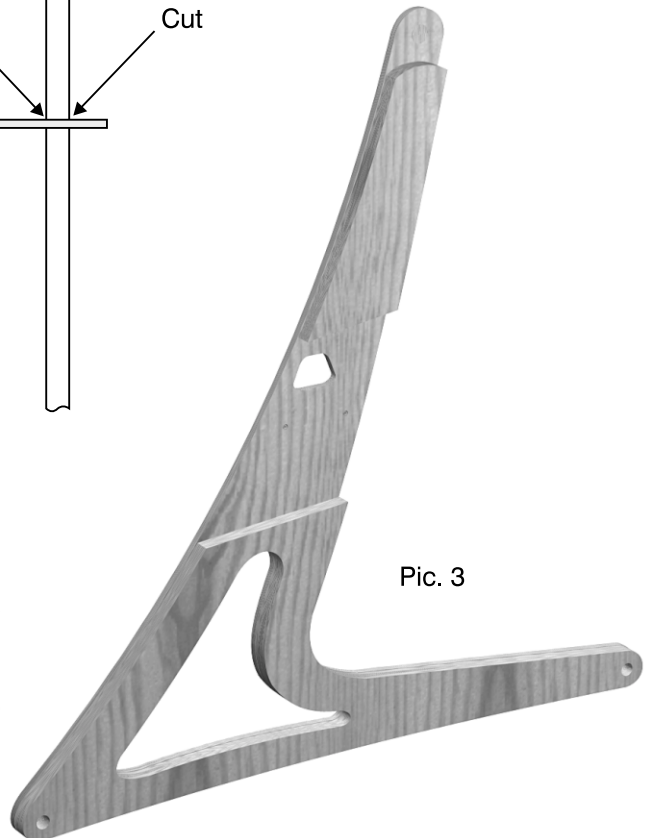


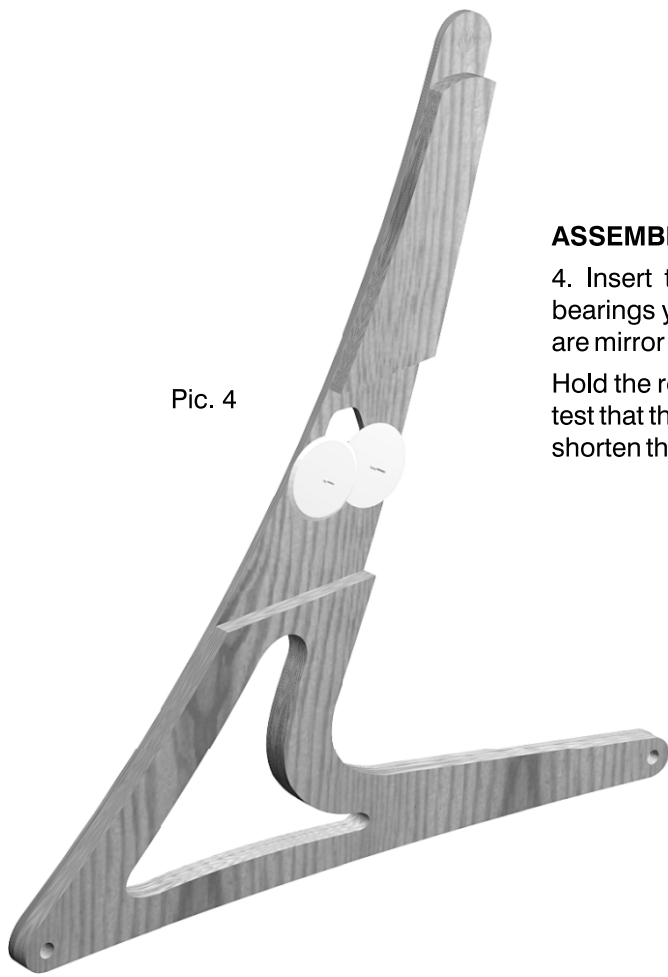
Pic. 2

ASSEMBLING THE FEET

3. Glue the FOOT CENTER TOP & BOTTOM parts (4, 5) to one of the FOOT OUTER PARTS (6) with SIG Super-Weld, as shown in Pic.3. The parts must be glued together absolutely parallel! This is very important, otherwise the prop balancer will not work perfectly. Temporarily stick the STEEL RODS (2) in place to aid in lining up the parts. Take care that you NOT glue the rods to the wood. Clamp or use a weight for pressing the parts together during the drying process. You can remove the glue excess with a wet paper.

Pic. 3



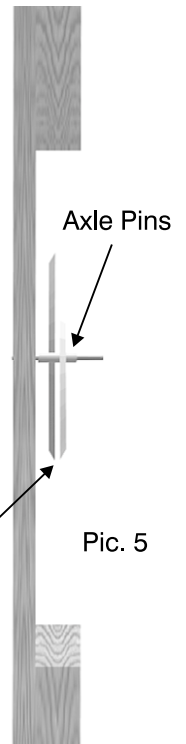


Pic. 4

ASSEMBLING THE PROP BALANCER WHEELS

4. Insert the PROP BALANCER WHEELS (14) into the bearings you created in step 1. Take care that the wheels are mirror image mounted, as shown in Pic. 5.

Hold the remaining FOOT OUTER PARTS (6) in place and test that the wheels can spin freely. If not, you may have to shorten the plastic axle pins slightly with a sharp blade.



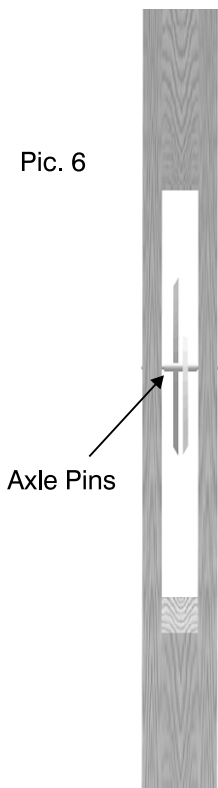
Pic. 5

Mirror Image Mounted Prop Balancer Wheels

FINISHING THE FEET

5. Permanently glue the remaining FOOT OUTER PARTS (6) in place, inserting the axles of the PROP BALANCER WHEELS (14) into the bearings as you join the parts. Be sure not to get any glue on the wheels or axles. Also make sure that the FOOT OUTER PARTS are absolutely parallel and correctly lined up, as Pic. 6 shows. Hold the wood parts in position with clamps or weights till the glue is dry. Remove any excess oozing glue with a wet towel.

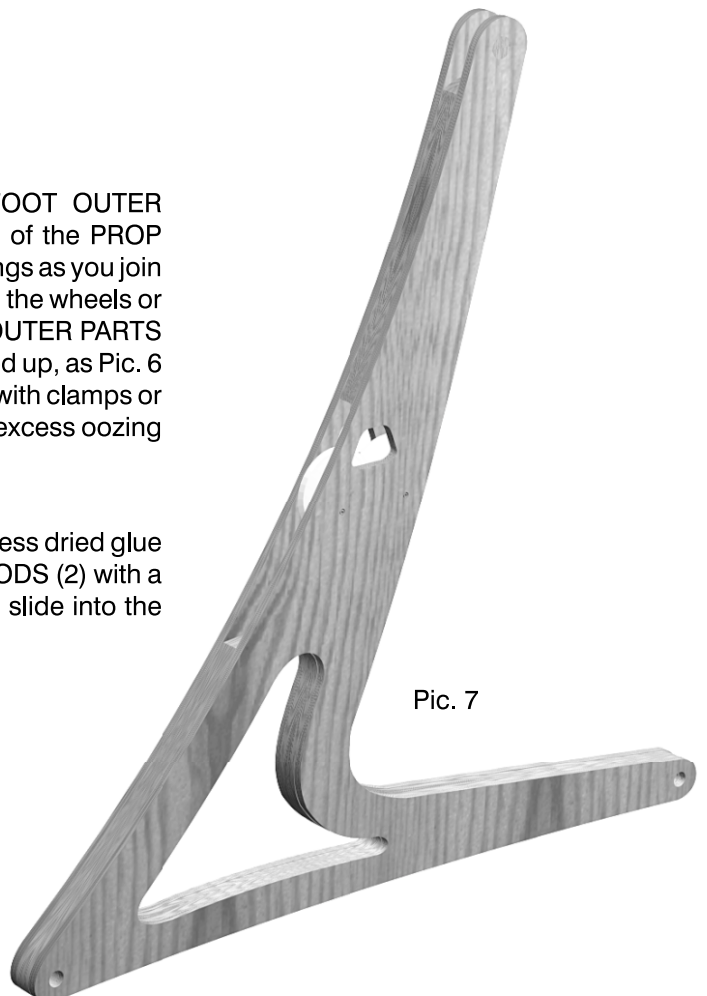
6. After the glue has dried, clean any excess dried glue out of the bottom holes for the STEEL RODS (2) with a Dremel® tool. The STEEL RODS should slide into the holes with only slight friction.



Pic. 6

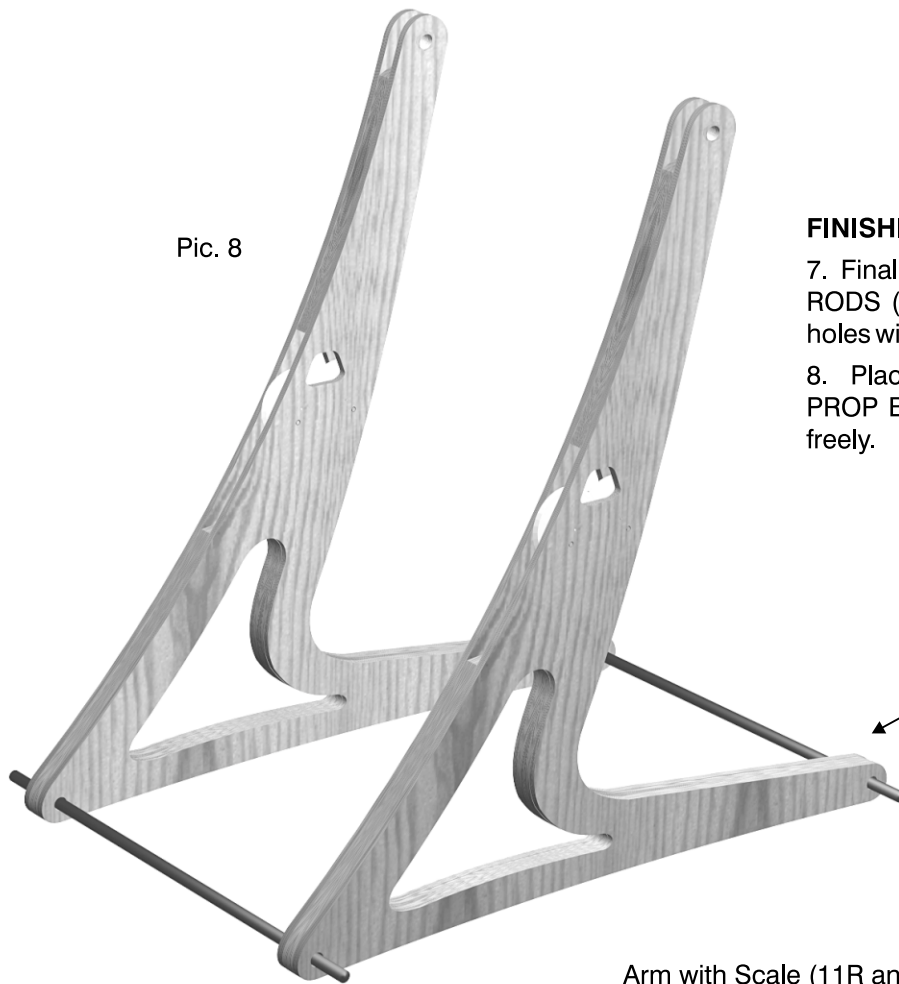
Axle Pins

Bottom Holes



Pic. 7

Pic. 8



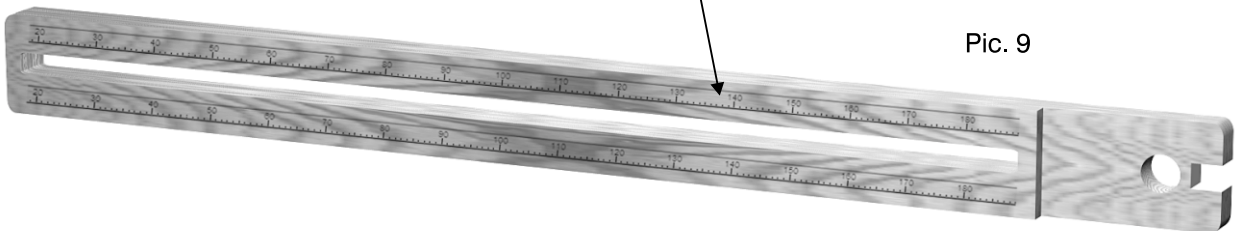
FINISHING THE FEET

7. Final assemble the completed feet onto the STEEL RODS (2) The STEEL RODS should slide into the holes with a slight friction fit.

8. Place a drop of very thin oil on the axles of the PROP BALANCER WHEELS (14), so that they spin freely.

Steel Rods (2)

Arm with Scale (11R and 11L)



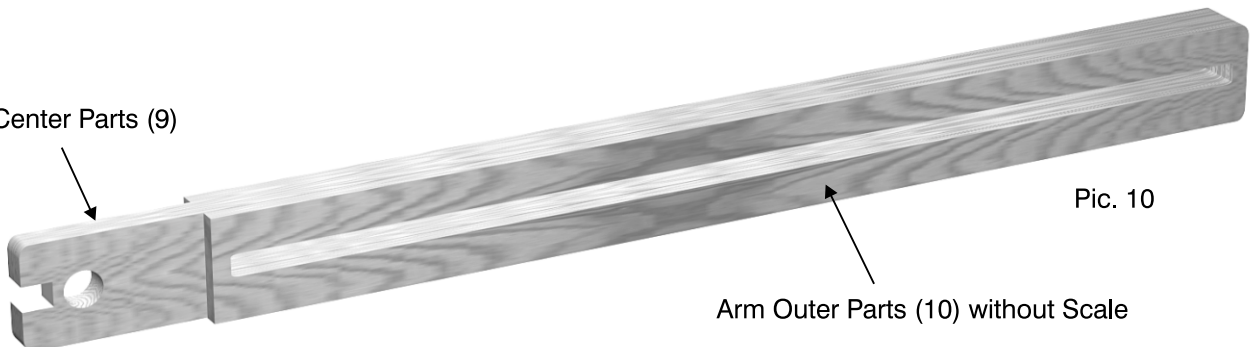
Pic. 9

ASSEMBLING THE BALANCER ARMS

9. Study the exploded view drawing on page 2 to make sure you are completely familiar with the relationship of the parts that make up the arms of the balancer. Glue the ARM RIGHT SCALE (11R) onto the outside of one of the ARM CENTER PARTS (9). Then glue the ARM LEFT SCALE (11L) onto the outside of the second ARM CENTER PART (9). The parts must be glued together absolutely parallel! Use clamps or weights to hold the parts together while they dry. Take care that you end up with one right and one left side arm, readable from the outside of the balancer.

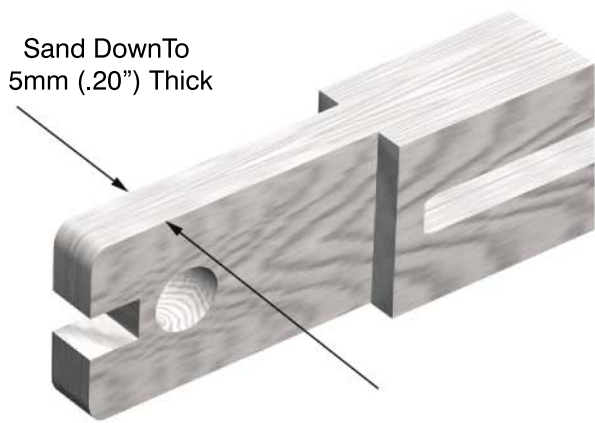
10. Glue an ARM OUTER PART (10) onto the inside of each arm assembly. Again make sure the parts are glued together absolutely parallel! Clamp or use a weight to hold parts together while drying. You can remove the glue excess with a wet tissue.

Arm Center Parts (9)



Pic. 10

Arm Outer Parts (10) without Scale



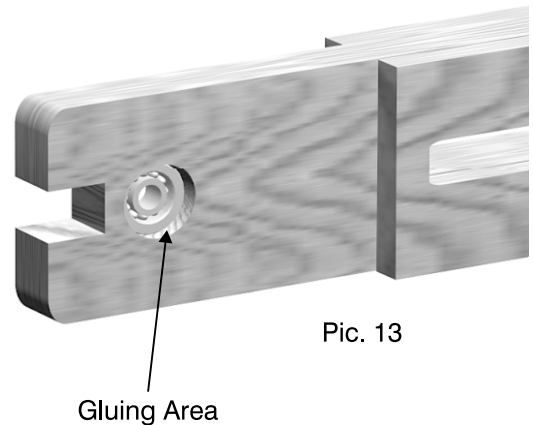
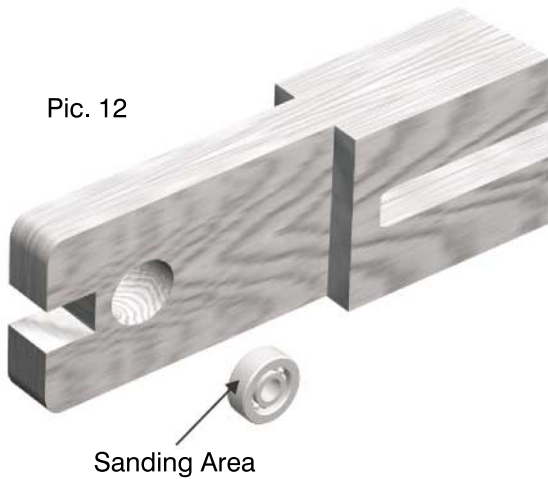
11. Sand the protruding end of the 1/4" thick ARM CENTER PARTS (9) down to approximately 5mm (.20 in.) thick so that the arm will have no friction during movement inside the opening at the top of the assembled balancer feet.

INSTALLING THE BALL BEARINGS

12. First check the fit of the BALL BEARINGS (1) inside the holes in the balancer arms. Wood is a natural product and thus the holes may vary a little bit in size. The objective is for the BALL BEARINGS to fit tight, but not so tight that you have to hammer them in. If the BALL BEARING needs too much pressure to put in, then you may need to sand or drill the hole slightly larger.

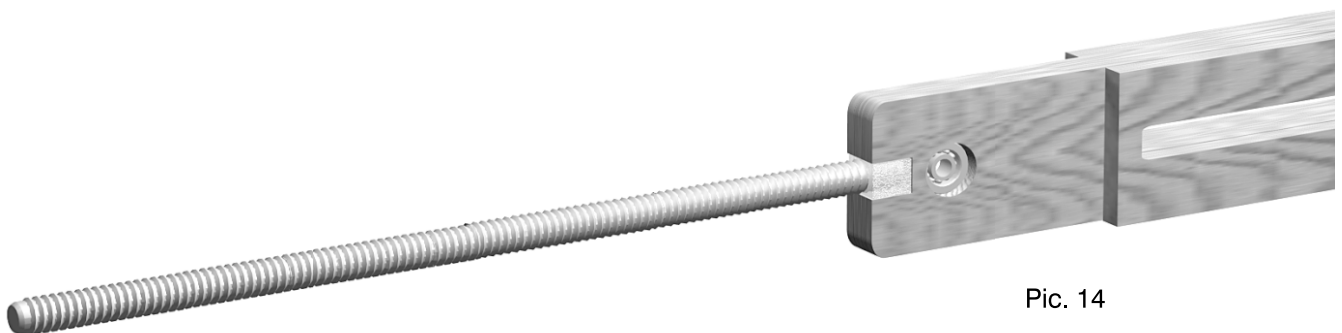
13. Degrease the outside of the BALL BEARINGS with rubbing alcohol, acetone, or some other solvent. Carefully sand the outside of the BALL BEARINGS with fine sandpaper. Take care that no sanding dust gets inside the BALL BEARINGS.

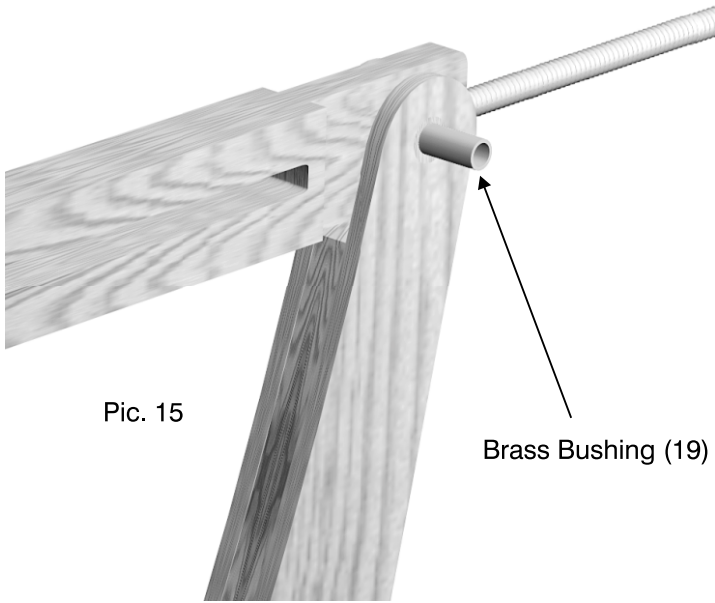
14. Press the BALL BEARINGS into the hole in the arms, making sure that they are absolutely parallel and centered in the hole. Secure the ball bearing with a tiny drop of thin CA on the outside surface of the bearing. Be sure that **NO** CA glue will flow inside the ball bearing! Tip: Use a needle for dropping the CA on the outside.



ASSEMBLING THE THREAD BALANCING ROD

15. Use medium CA to glue the TREADED BALANCE RODS (8) with the flattened side on one end of the rod straight into the gaps of the balance arms. You may have to sand/enlarge slightly the gaps to fit the rods. The flat side of the rods should be flush with the outside of the arms. Use a good amount of CA to fill up all holes inside the gap of the arms. Use CA Kicker to harden the CA. After the CA has set, sand the surface of the gluing spot to make everything even and smooth.





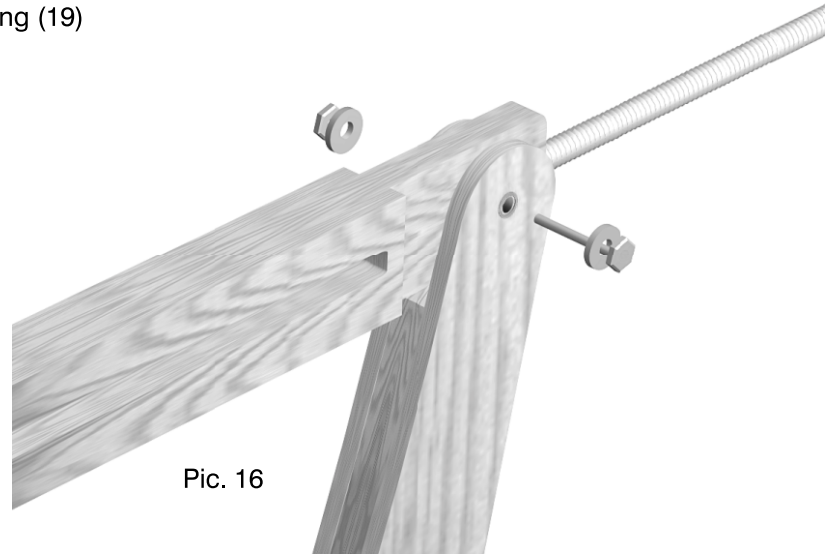
Pic. 15

Brass Bushing (19)

INSTALLING THE BALANCE ARM

16. Check to see that the BRASS BUSHING (19) slides easily in and out of the hole of the ball bearing. If so, press the BRASS BUSHING through the top hole of the balancer foot and through the ball bearing of the balancer arm. Then center the balancer arm inside the "fork", so that the balancer arm can move easily without friction.

17. Secure the balancer arm to the balancer foot with a M3 BOLT (17), M3 HEX NUT (18), and two WASHERS (15). Do not over tighten the bolt. See Pic. 16.



Pic. 16



Pic. 17

BUILDING THE L.E. STOP

18. Use medium CA to glue the L.E. STOP GUIDE (21) to the L.E. STOP (20). Make a "fillet" of glue in the bottom corner of the joint for strength.

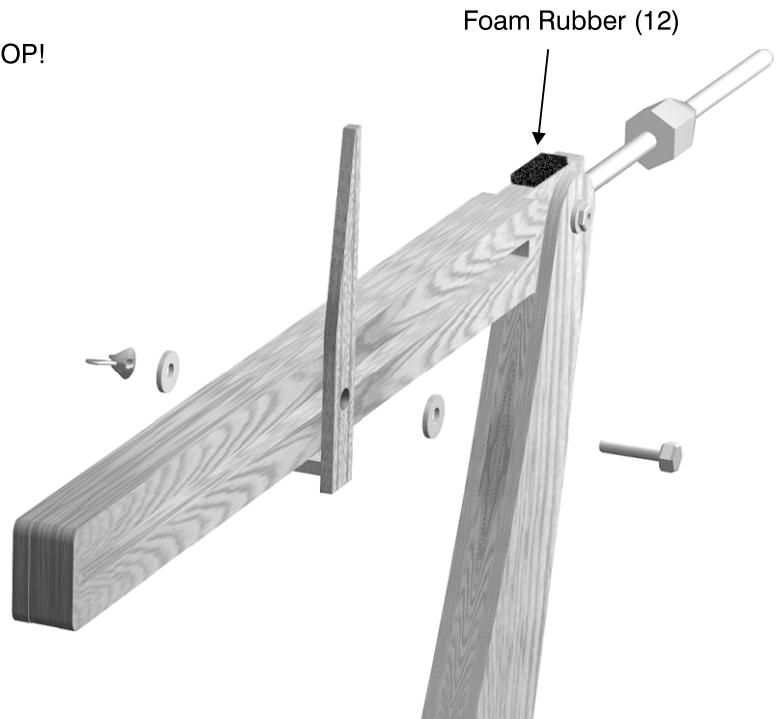
Take care to build a left and a right L.E. STOP!

CA Glue Fillet

FINISHING THE PRO-BALANCER

19. Assemble the L.E. STOPS onto the balancer arms with M3 BOLTS (17), M3 WING NUTS (16), and WASHERS (15). Make sure that the L.E. STOPS are on the sides of the arms with the scales.

20. Cut a piece of FOAM RUBBER (12) and stick it on the balance arm at the pivot point to protect the surface of your model. See Pic. (12).

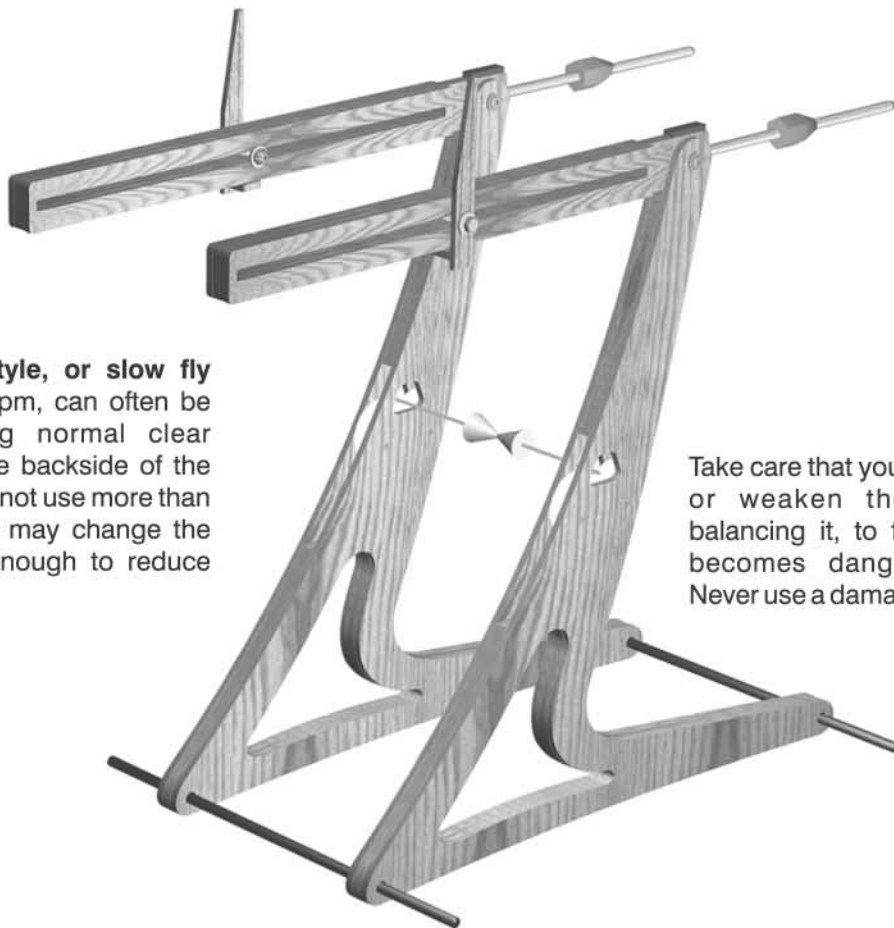


Foam Rubber (12)

USING THE PRO-BALANCER

21. **BALANCE AN AIRPLANE.** First slide the L.E. STOP to the balance point of your model, and fix the stop with the wingnut. Use the STEEL BALANCE WEIGHTS (7) to level the balancing arms. Adjust the position of both balancing feet on the STEEL RODS (2) so that the arms are close to the fuselage of your model. Carefully place your model on the balancing arms so that the leading edge of the model is up against the L.E. STOPS of the balancer. Now level the model by adding or removing weights to the nose or tail, or by moving heavy components like the battery pack. **NOTE:** Glow or gas engine powered models should always be balanced with an empty fuel tank. Balance electric models with the battery in place.

22. **BALANCE A PROPELLER.** Slide one of the CONES off of the PROP BALANCER AXLE (13). Stick the axle inside the propeller hub, and then secure the prop with the second cone. Center the cones and the prop on the axle. Now place the axle and prop onto the prop balancer wheels. Check to see that the prop moves free and easy in the balancer. Hold the prop level and then gently let go of it. Note which blade falls downward. Repeat several times to see if you get the same result. If one blade repeatedly falls, it is heavy and the prop is out of balance!. Carefully sand the heavy blade with fine sandpaper, and then recheck the balance. Repeat until the prop balances perfectly. **Note:** Do not sand the edges of the blade and change its total area. Sand the back and front surfaces, being careful not to change the basic shape or pitch of the prop. Sand primarily on the outer half of the blade, towards the tip, where you will achieve a faster result.



Light thin electric style, or slow fly props, that turn low rpm, can often be balanced by putting normal clear cellophane tape on the backside of the lighter prop blade. Do not use more than 3 layers of tape, or it may change the shape of the blade enough to reduce flight performance.

Take care that you do not damage or weaken the prop while balancing it, to the point that it becomes dangerous to use. Never use a damaged propeller!

SIG MANUFACTURING COMPANY, INC. is committed to your success in assembling the PRO-BALANCER kit. Should you encounter any problem building this kit, or discover any missing or damaged parts, please feel free to contact us by mail or telephone.

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The craftsmanship, attention to detail and actions of the builder/flyer of this kit will ultimately determine the performance, and safety of this kit. SIG MFG. CO.'s obligation shall be to replace those parts of the kit proven to be defective or missing. The user shall determine the suitability of the product for his or her intended use and shall assume all risk and liability in connection therewith.

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