SHOP AND TOOLS

The area where you will be working on these kit components should be properly illuminated, and relatively clean and uncluttered. Sufficient room must be provided to properly work around the larger components. At least one large flat "table" are should be provided for cutting and working with fibreglass. Areas where parts will be stored or temporarily placed must be kept free of oil or grease and dirt to avoid contaminating the surfaces of the parts. Some sort of expendable covering (such as paper) is recommended for protecting workspace surfaces and equipment from resin or adhesive spills or drippings.

The temperature of the workplace is important for other factors than just personal comfort. Temperatures much below 70 F will make the viscosity of many of the liquid materials difficult to work with, and too cold conditions will hamper the proper cure of resins and adhesives. Some sort of heat source is suggested if you plan on working in cold weather, and materials should be allowed to warm up before using them.
In areas of high temperatures, the working times of mixed resins and adhesives will be shortened. Short working times may present problems in properly positioning components to be joined, and one must not attempt to work with materials once the curing process has started. Moving or other rework during the initial setting process will lead to dangerous weakening of structural attachments. Use it dry assembly to verify positioning and clamping provisions before the resin or adhesive is mixed (especially during hot weather).

Although most of the joining materials used with this kit have very little vapours or fumes, it is still good practice to provide adequate ventilation of the work area. This is particularly true if finishing or painting operations are planned for this same area.

TOOLS AND EQUIPMENT

Working with pre-moulded composite panels minimises the amount of special equipment or tools required, as compared to most other, types of aircraft construction. A fairly modest assemblage of hand and power tools will accomplish the tasks quite adequately.

TYPICAL HAND TOOLS (asterix means very useful but not a necessity)

screwdrivers	hammer
hack saw	hacksaw blade holder
pliers	*cleco pliers
Clecos	tin snips
scissors.	utility knife
100 degree countersink	razor blades
non porous gloves	sand paper
files	measuring tape
straight edge (long metal)	level
plumb bob	square
pencils	brushes
mixing containers	wall thermometer
clamps (numerous)	wire cutters
masking tape	*circular (pizza type) cutter

TYPICAL POWER TOOLS

drill motor and bits	sabre saw
grinding discs	heat gun
soldering iron	*Dremel type grinder

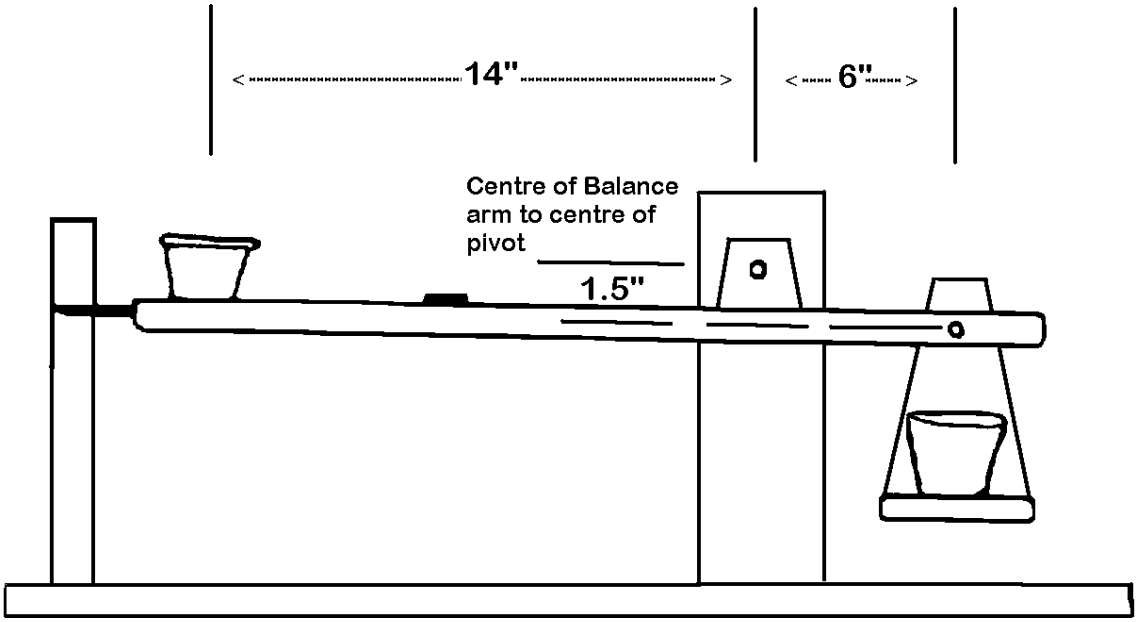
SUGGESTIONS

A coffee can or similar sized container filled with acetone is suggested for keeping the tools free from resin as each operation is complete (observe all cautions concerning sparks fire and noxious fumes). Other workers have strongly suggested that at least two sets of scissors are used, and one of them is kept strictly for the dry, clean operations at the cutting table. Circular pizza type cutters are also useful for cutting cloth, but proper backing such as masonite or hard plastic must be used never cut against any of the structural parts because of damage to the fibres beneath the cutter). The tape of utility knife with the break off blade sections has also been highly recommended, since it is important to always have a sharp knifepoint for proper work.

EPOXY SCALE

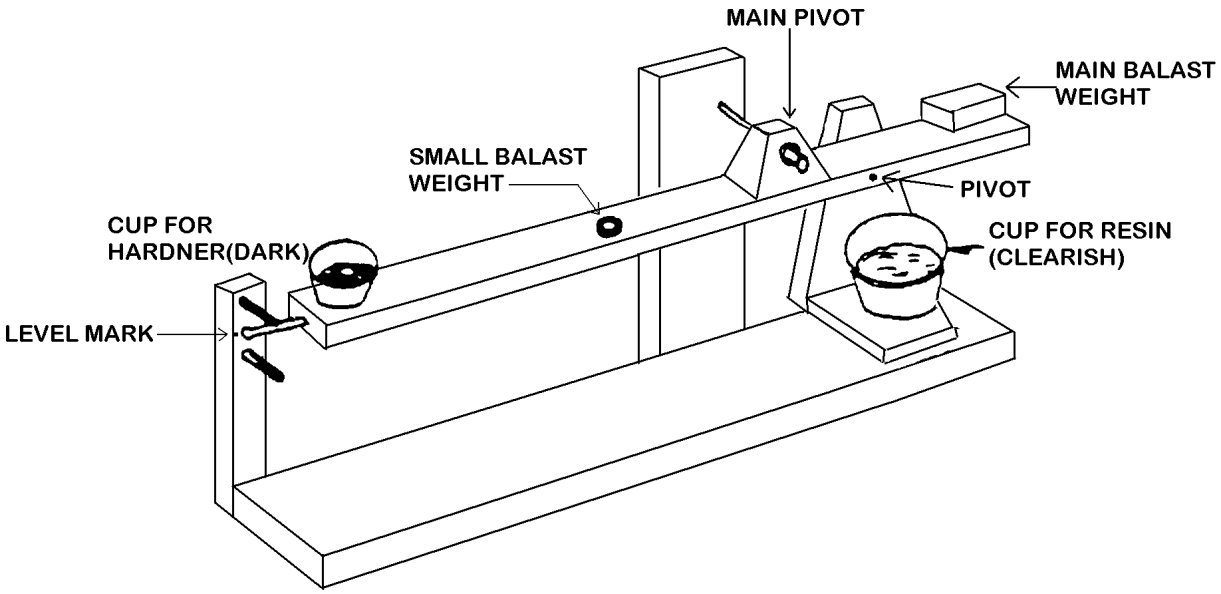
An easily Fabricated epoxy balance scale will prove very useful for many of the assembly tasks in this kit. There are also epoxy measuring pumps on the market which will work even better, by allowing less waste, and quicker measurement, and the $150 or so cost can be justified in many cases. However, this balance system is easy to make, and will cost virtually nothing.

The epoxy in this kit is mixed at the proportion of 100 parts resin to 44 parts hardener (by weight). This proportion is controlled by the relative length of the lever arms as shown in the sketch below, and is common to many similar epoxy systems. It is important that the pivot works at very low friction, and the suggested method of construction is to "bush" the holes with a short length of brass tubing, available in numerous sizes at your local hobby shop.



The perspective view in the next figure shows how the balance is sat up for use. The main ballast weight is to balance out the unequal arms of the lever, and if you use the same type of containers all the time it can be glued in place for convenience. Set up balancing for each use can then be accomplished by moving the smaller ballast weight. Verify the accuracy of your construction by using quantities of small uniform items

such as nails, washers, pennies, etc. distributed in the **100/44** ratio in the appropriate cups. Change the marked location for the hardener cup to provide this calibration.



DIRECTIONS

1. Place the empty cups in the positions shown on the figure (first pour some hardener in the hardener cup and then empty it to approximate the amount that will adhere to the cup when you pour it into the resin).

2. Balance the beam by adjusting the ballast weight.

3. Fill the resin cup with the desired amount of resin (remember that the total quantity will be greater when the hardener is added).

4. Add hardener in the hardener cup until the beam levels.

5. Pour the hardener into the resin and mix thoroughly.