

# FLEXIGLASS *CHALLENGE* PTY LTD

## FIBREGLASS SHELL CUTTING

(FROM DRAWING MEASUREMENTS & SKINS)

### OCCUPATIONAL SAFETY and HEALTH REQUIREMENTS

PPE – Hearing and eye protection

Tools Drill – Electric / Compressed air

Rivet Gun – Air / Hand

Angle Grinder

Hacksaw – Air / Hand

General O S & H

Unit 1/3 or 2/2

Unit 2/1

Unit 2/3

Unit 2/4

Read customer order form THOROUGHLY.

Identify and select the correct shell and panel from rack.

Check overall quality of shell and panel for imperfections.

Gelcoat cracks, scratches, air bubbles

Missing texture finish missing within the cutting sizes.

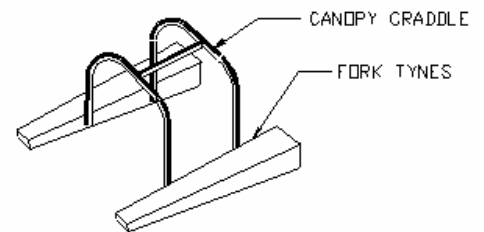


Diagram One

If shell or panel is rejected, place on HOLD or Quarantine using methods as per PRO-11. Notify Production Manager.

### LIFTING THE CANOPY SHELL

Use a forklift with the canopy cradle attached to the forklift tynes. (See Diagram One)

or

Two people lift by the flanges on the bottom edge of both sides of the canopy shell. (See Diagram two)

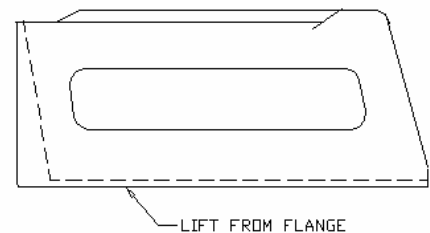
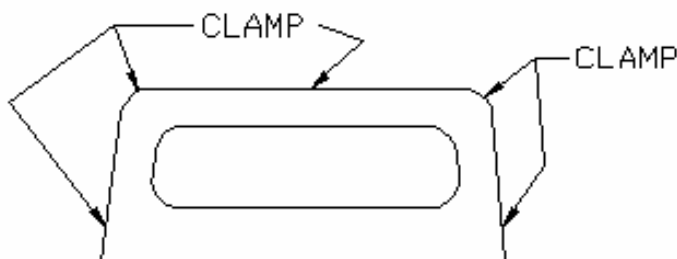


Diagram Two

### CLAMPING THE FRONT PANEL



Move shell to cutting booth.

Record shell batch no. from Shell used onto canopy order form

Select the correct front panel (if required).

Clamp the front panel in the appropriate position using vice clamps.

Make sure the panel fits snug in the corners

in a position close to where it's cut length will be.

Check that the shell to be marked out is the correct shell required by the Applicable drawing.

**NOTE : Should a skin be used for marking out the cutting lines - See separate section page 4.**

### MARKING THE FRONT CANOPY HEIGHT

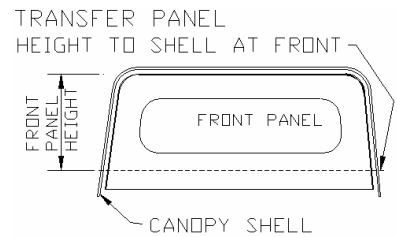
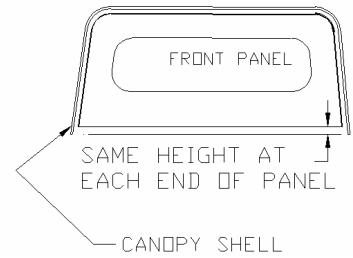
Make sure the excess on the side of shell to be trimmed on both sides is approximately the same for each side on most shells.

Otherwise the canopy shell will be out of square.

Mark the correct panel height on the panel as given on the drawing.

Transfer this measurement from the inside to the outside of the shell.

**Note:** On some shells the height measurement from top to each side flange may be different when the master mould was made.



### MARKING THE REAR CANOPY HEIGHT

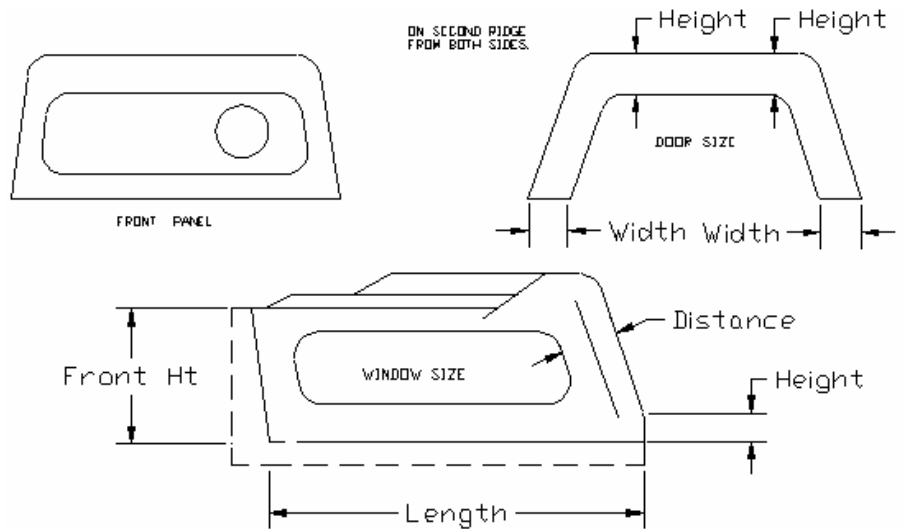
#### Method One (old style plug)

Door height down from the ribs determines the rear end height.

The cut line is then the joining of these two points.

Rear trim line is measured down from the change of slope at the rear corner edge of the shell.

**NOTE :** If no change of shape at the rear corner measure down from the top to the door height and placing the door pattern on and establishing the bottom line of the door and the canopy.

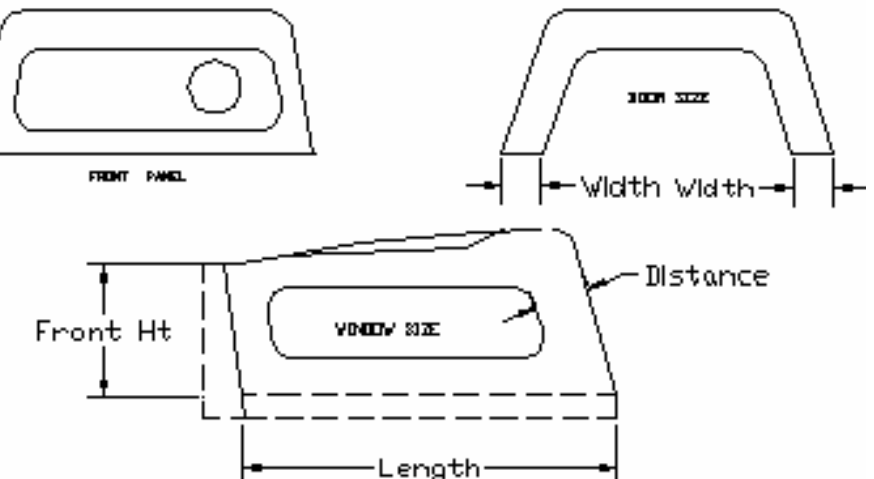


#### Method Two (modern style – Series II)

This method requires the panel height to determine the front height.

The rear door height is a parallel line off the flange to the rear end.

This is the major difference in the two cut line of marking up.

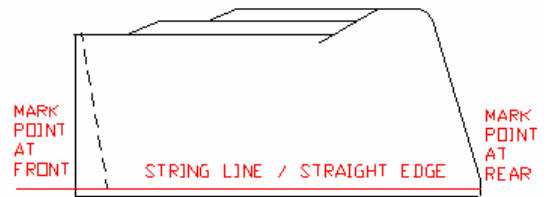


### MARKING THE SIDES

One method is to use a straight edge between the two points (shown opposite).

The other is by a chalked string line.

Hook the beginning of the string at the front of the shell in line with the front height mark.

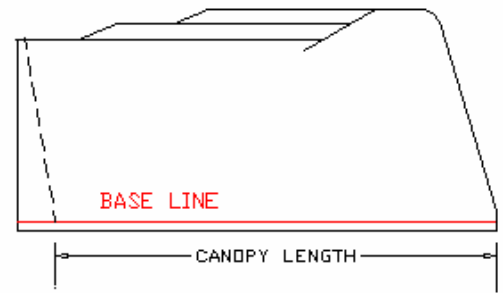


Using the rear mark, tension line, give string line one strong horizontal pull outwards, then release it.

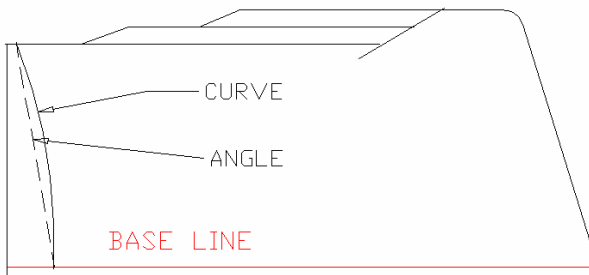
### MARKING THE CANOPY LENGTH

Use a measuring bar or tape, measure from the rear corner, and mark off at the front at the correct length.

NOTE : To eliminate errors this length can be pre - marked on an L shaped marker stick for the common models or a skin can be used.



### MARKING THE FRONT CURVE / ANGLE



All lines slope forward to mirror the back end of the vehicle cabin (eg 3.5° is the angle off 90°).

Except for tray tops and canopies that sit behind the cab rack or headboard at 90 degrees.

The curve or angle is to be similar to the slope at the rear of the vehicle's cabin.

Place the bottom edge of the pattern along the trim off line and mark off. (Beginners - clamp the template to the shell for better accuracy).

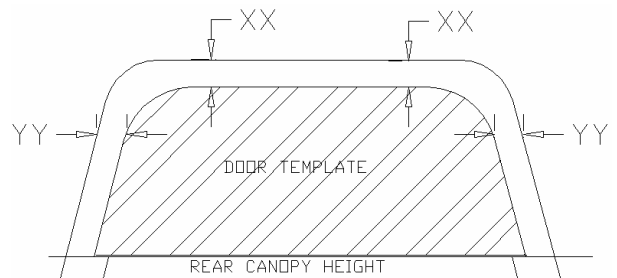
Join up the cut off marks on either side with a flexible straight edge

### MARKING THE DOOR OPENING

Centralise pattern on the shell with the height of the door being measured from the second rib either side.

This gives you the correct door height.

Check that the measurement at the top corners is equal on both sides



Mark the opening for the door. Use a rigid pattern if available.

The last section to be done is to mark out for windows.

If a vent is to be fitted this should be marked out using a template in the position as instructed by the production order.

## MARKING A SHELL USING A SKIN / OVERLAY (Pattern / Template)

When a fibreglass shell overlay (pattern / template) is available it should be used.

Normally the outline shape will be marked. Some overlays will also have a window cut out as well.

Trace around the overlay marking as close to the edge as possible

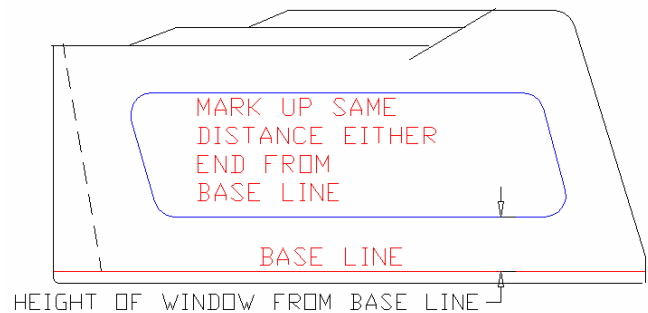


## MARKING FOR WINDOW / DOOR

Refer to Production order for window / door type

Select template. Refer to the drawing for the correct height above the trim line.

Mark two points one front, one rear of the window.



Hint : Beginners place a straight edge on the correct height marks.

Using the window pattern, position the window template. Refer to the drawing for distance from the rear of the shell.

Mark around the template and repeat the same for the other side.

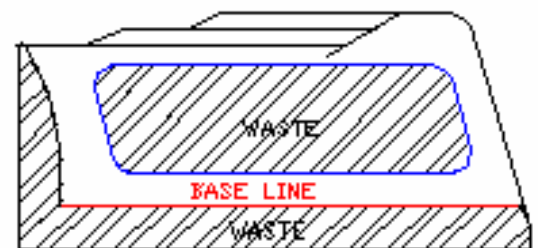
**NOTE :** Use the correct template as there could be different windows / doors on either side.

## CUTTING THE SHELL

Activate booth dust extractor.

Using an air Grinder with Diamond tipped Cutting Wheel and protective equipment, trim shell to size.

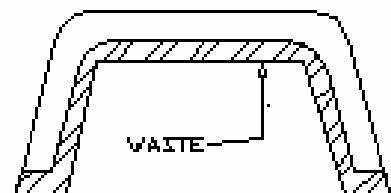
Start to cut the excess off the shell.



NOTE: If the mark of the shell is via a skin / overlay then cut to the outside of the line.

If the mark out has been marked with a template cut to the inside of the line.

Cut the excess off the front obtaining a neat contour from top of the shell around the angle cut off line



Cut out the window opening. Do the four straight lines of the window using the diamond wheel.

The corners are done with an air hacksaw or jig saw using either a diamond or tungsten blade.

Remove ALL off cuts and waste to bin provided, break long lengths in half for convenient disposal.

Visually inspect all cut lines for accuracy. Adjust if necessary.

## MARKING THE FRONT PANEL

**NOTE :** This may be done first before the panel is placed in the shell for marking.

See your Production Manager for your state's workshop practise.

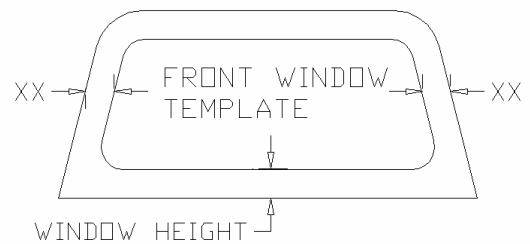
Mark out the window or boot opening in the front panel.

View production order for window size.

Refer to your drawing for it's correct fitting height.

Make sure it is centralised.

Scribe around the pattern / template using a scribe or similar.



## CUTTING THE FRONT PANEL

This is the same cutting method as a canopy shell.

Cut out the straight lines using a diamond wheel.

The corners are cut using an air hack saw or jig saw.

The use of trestles or stands is essential for the correct cutting height and safety.

Shut off Dust Extractor.

Store tools in appropriate rack.

Move the trimmed shells to assembly area without damage.

**NOTE:** When in doubt see your Quality Supervisor or Production Manager.