

Carbon Fiber Instrument Panels

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PLEASE NOTE

This document may have been updated with new information, changes, or corrections.

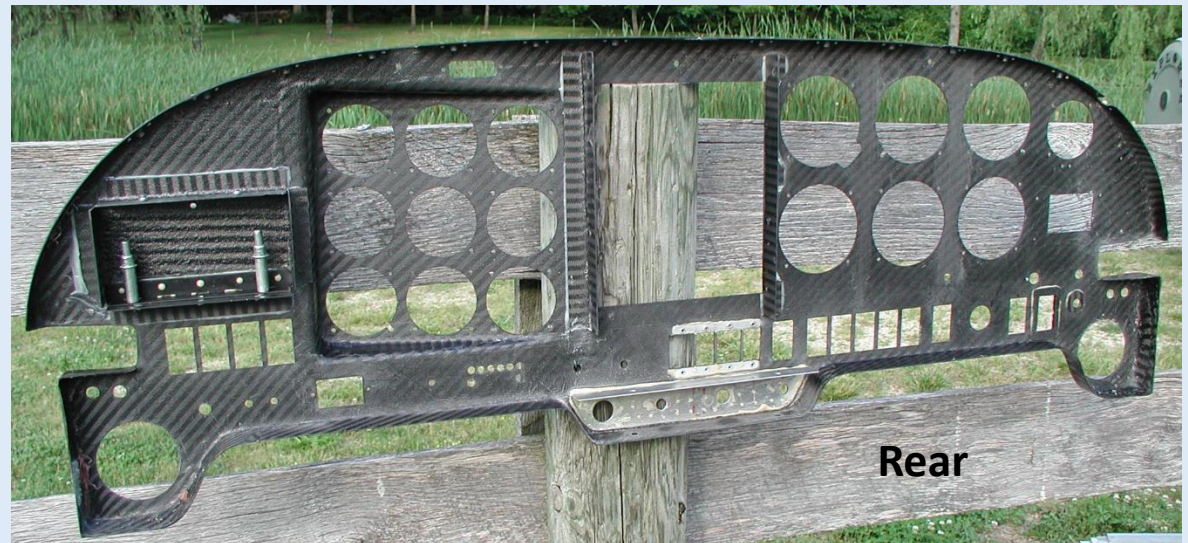
Be sure to visit my presentation web site and download the latest version of this document. It could make an important difference to you!

<http://aviation.derosaweb.net/presentations>

Thank you, John OHM Ω

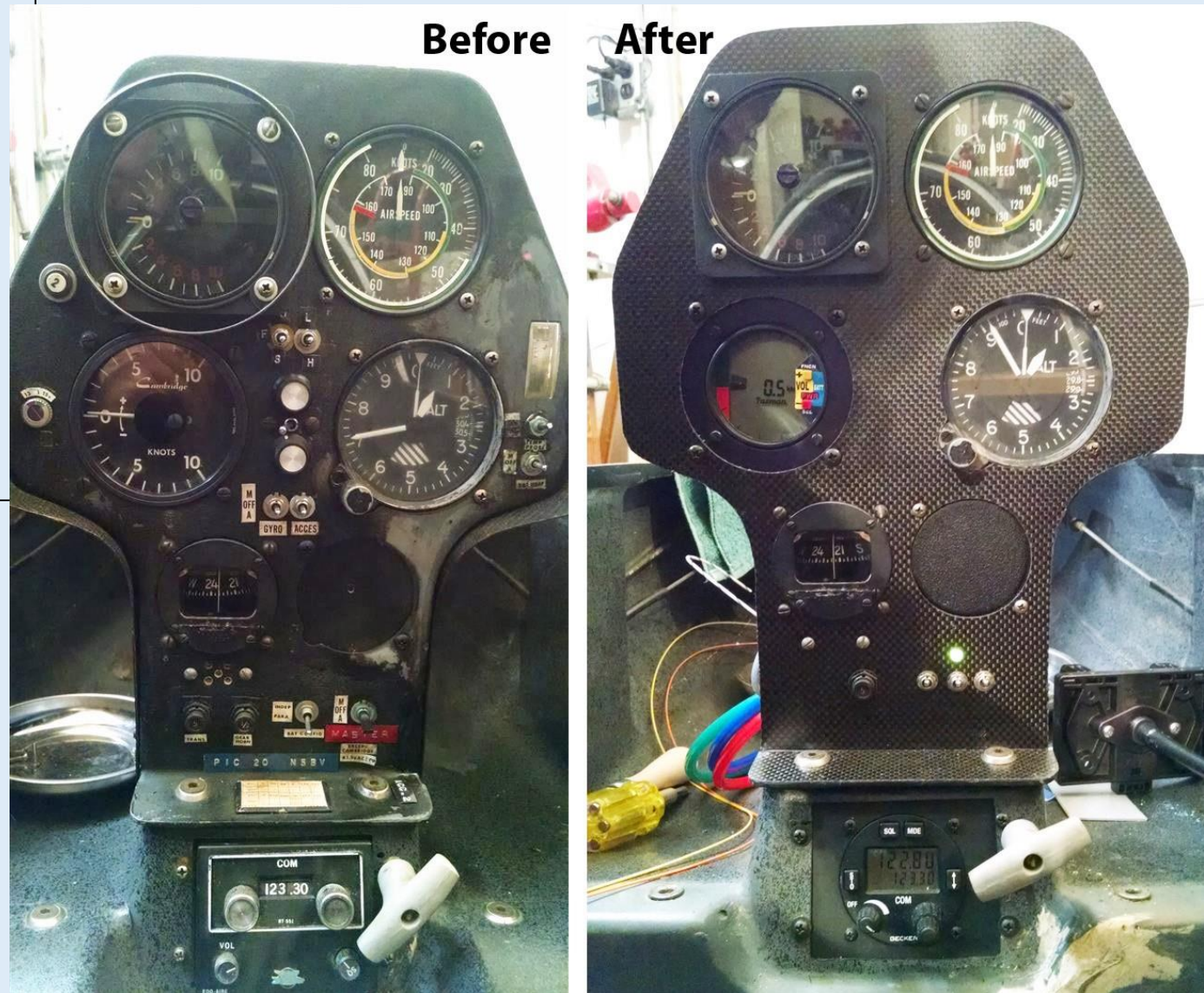
Instrument Panels

Solid Carbon Fiber RV-6



Instrument Panel

Carbon Fiber Veneer Overlays



Instrument Panel

Carbon Fiber Veneer Overlay Types

Real CF
Semi-Rigid →



“Fake CF”
Non-Rigid →

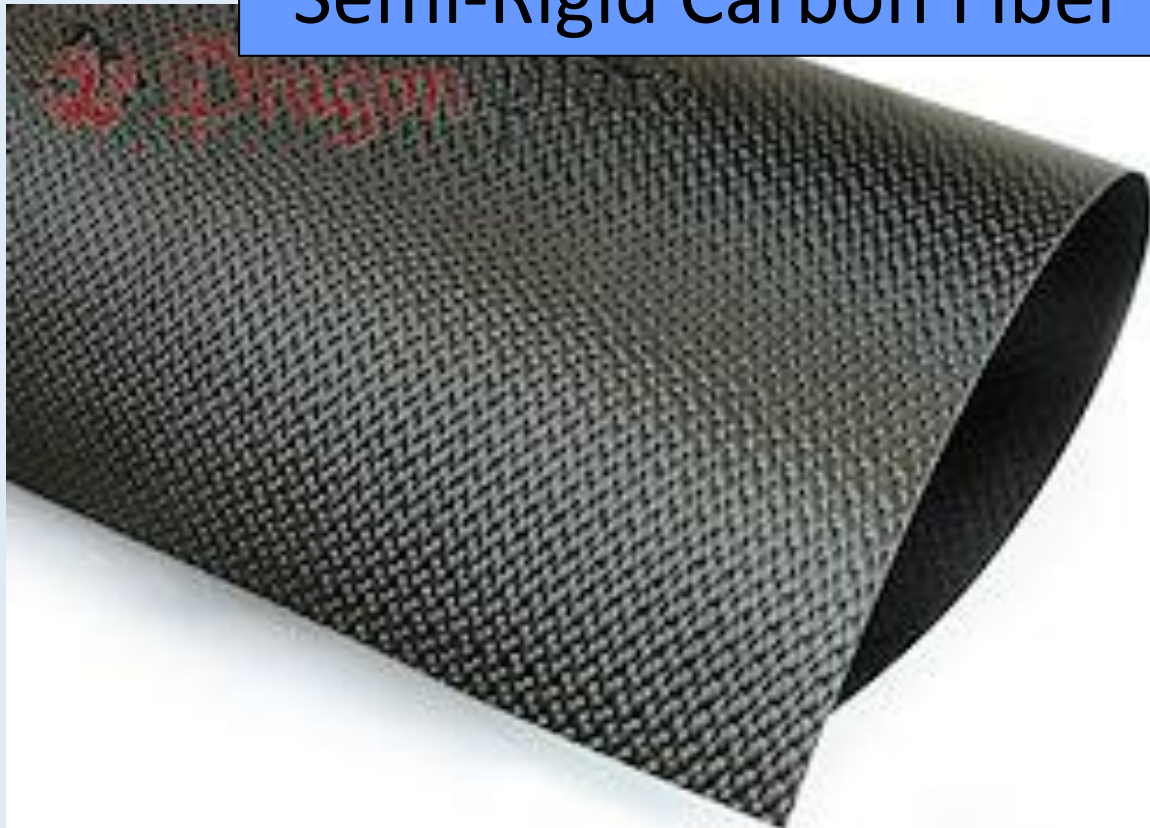


Semi-Rigid Carbon Fiber Veneer Instructions



Source: <http://dragonplate.com>

Semi-Rigid Carbon Fiber Veneer



<http://dragonplate.com>

Veneers are well suited for covering large surfaces or for decorative trim. Comprising of 100% real carbon fiber in a harness-satin weave, this veneer presents a unique appearance.

The gloss and matte finishes provide any project with a distinctive facade. Material will form into a cylinder as small as 1 inch. Can also be used for outdoor applications as we utilize a UV resistant resin that extends the life of the part and finish under sun exposure.

Semi-Rigid Carbon Fiber Veneer

Original
Instrument
Panel



Semi-Rigid Carbon Fiber Veneer

Original
Instrument
Panel



Semi-Rigid Carbon Fiber Veneer

Sanded



Semi-Rigid Carbon Fiber Veneer



Primed
And
Painted

Semi-Rigid Carbon Fiber Veneer

Sizing the
CF
Sheet

(3M Adhesive)



Semi-Rigid Carbon Fiber Veneer



Glued
Down
CF Sheet
to the
Instrument
Panel

Semi-Rigid Carbon Fiber Veneer



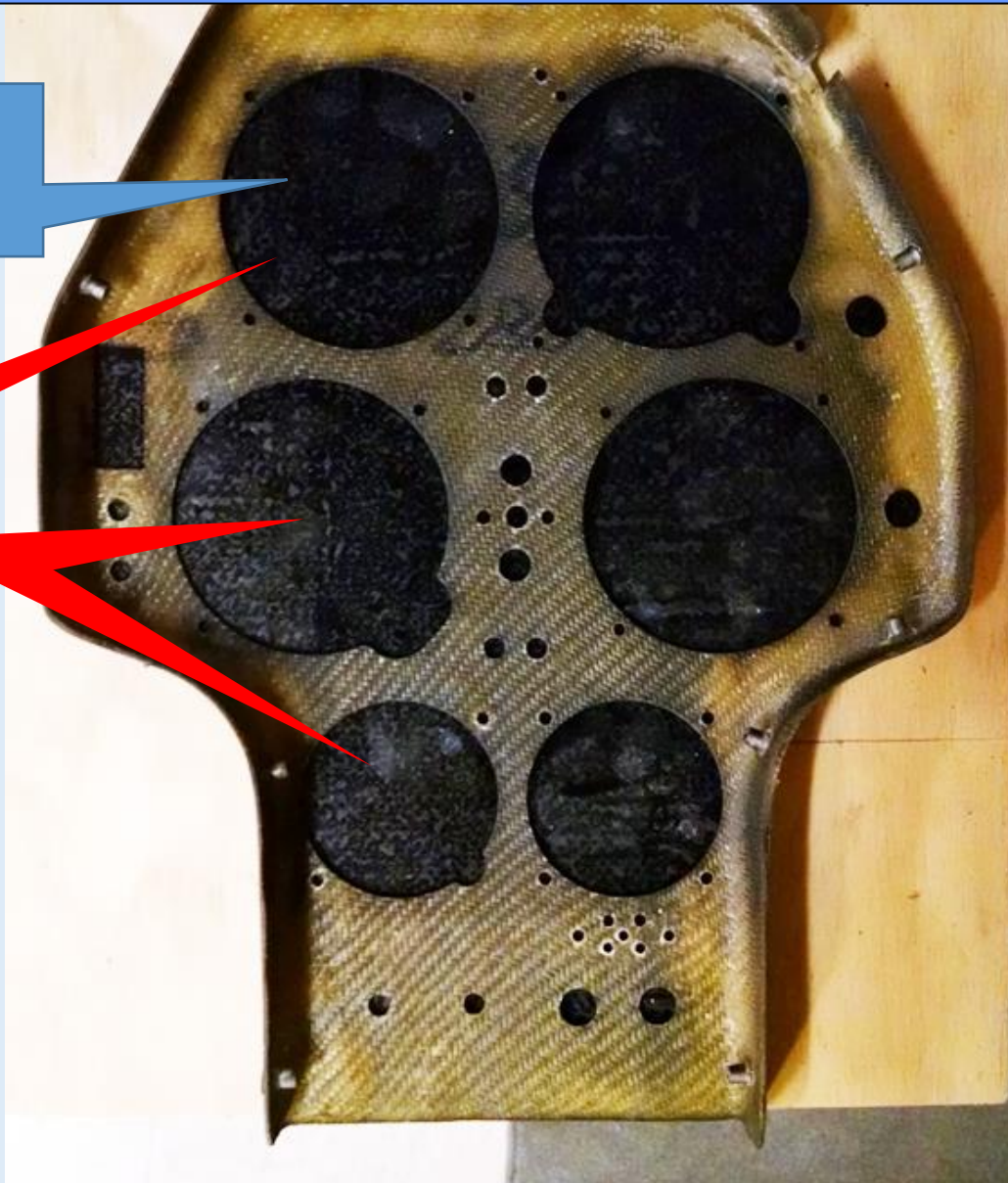
Tools
Used to
Trim the
Perimeter
of the CF
Sheet

Semi-Rigid Carbon Fiber Veneer

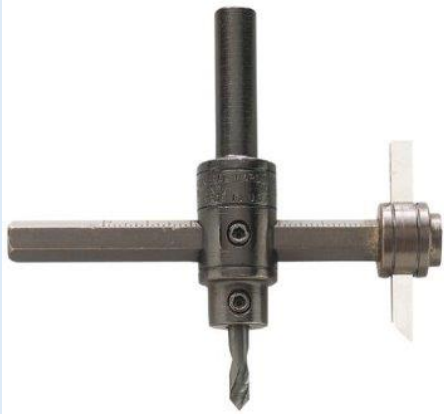
Glued
and
Trimmed
CF
Sheet

Next ... Cutting the
Instrument Holes

But ... How to
cut the holes?



Which tool to use to cut the Instrument holes?

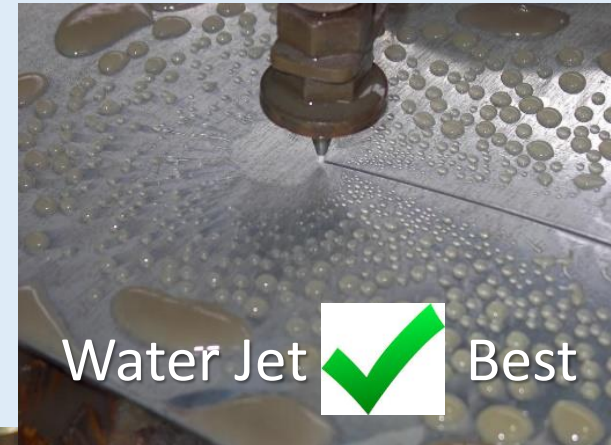


1. Hole Saws
2. Water Jet
3. Nibbler
4. Fly Cutter
5. Circle Cutter

Hole Saws  Best



2-1/4" = ~57mm (57.15mm)
3-1/8" = ~80mm (79.375mm)



Water Jet  Best





Common Instrument Hole Sizes & Conversions



Common Non-Metric Sized Holes	Closest Metric Sizes (over/under)
2-1/4" (2.25")	57mm (2.24") 58mm (2.28")
3-1/8" (3.125")	79mm (3.11") 80mm (3.15")

Common Metric Sized Holes	Closest Non-Metric Sizes (over/under)
57mm	2-7/32" (56.36mm) 2-1/4" (57.15mm)
80mm	3-1/8" (79.375mm) 3-5/32" (80.17mm)

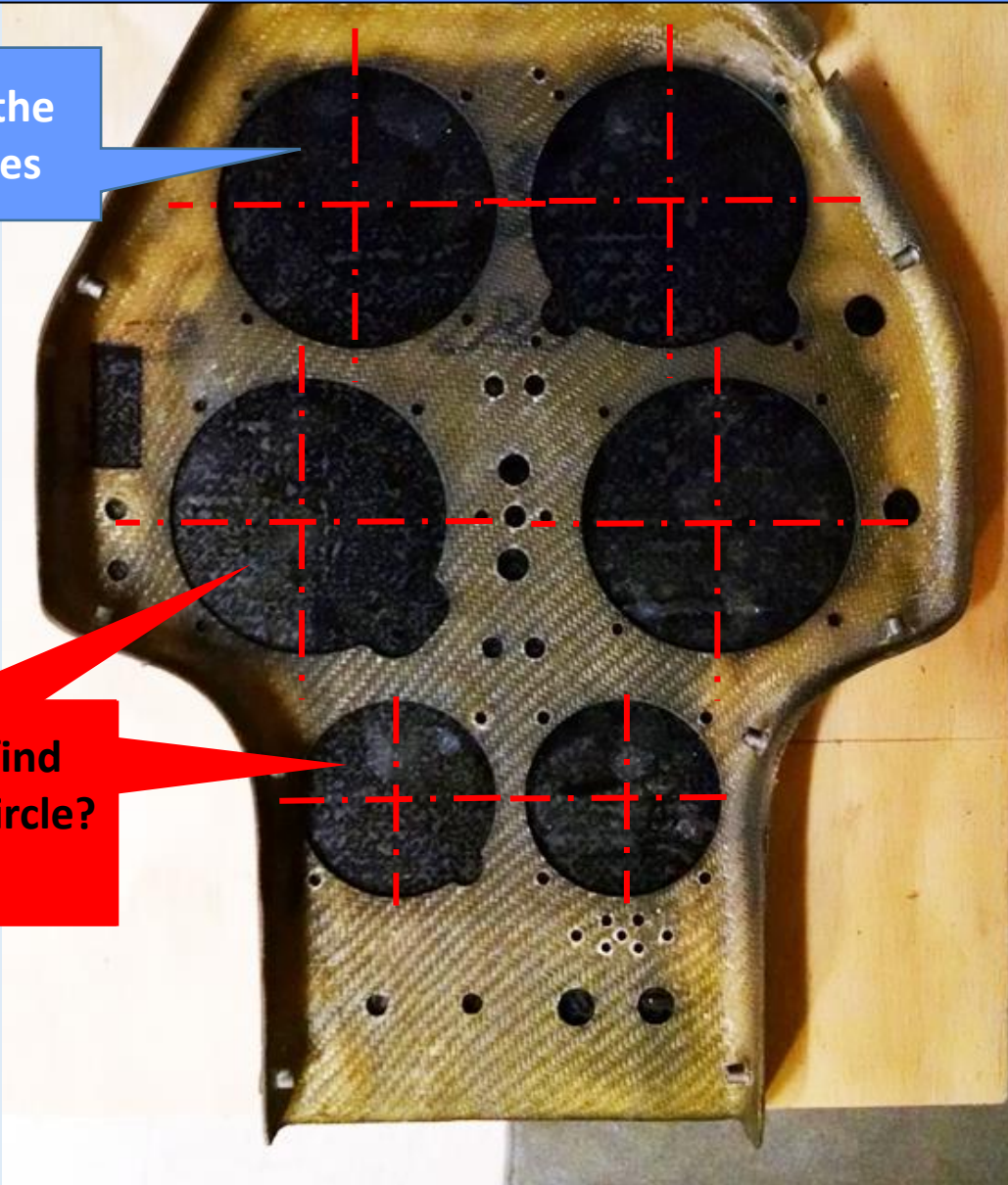


Semi-Rigid Carbon Fiber Veneer

Next ... Cutting the
Instrument Holes

But ... How to find
the center of a circle?
Not easy!

Working
from the
backside of
the
instrument
panel



Semi-Rigid Carbon Fiber Veneer

How to find the
Center of the
Instrument
Hole?

Hole
Saw

Fiberglass
Instrument
Panel

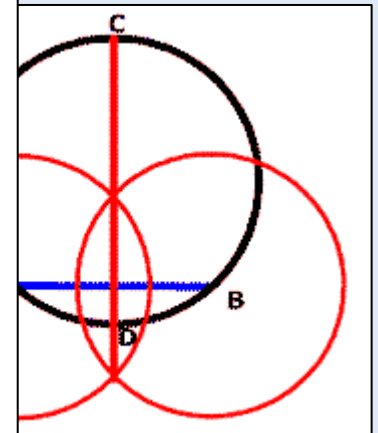
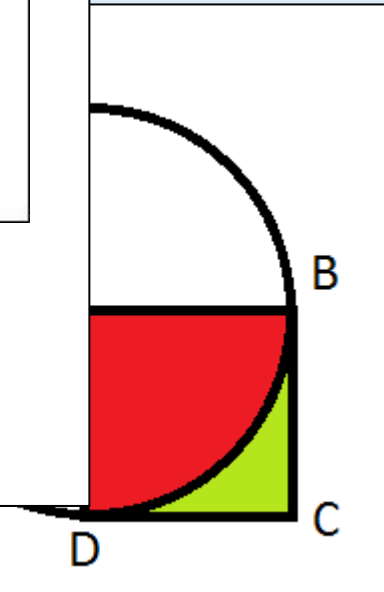
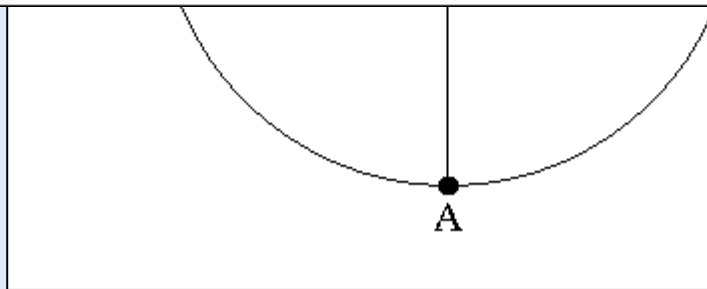
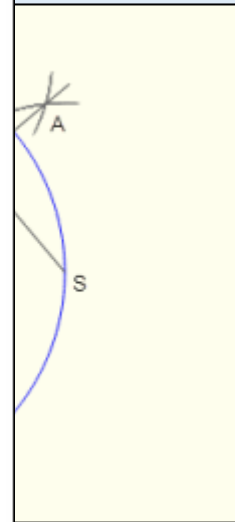
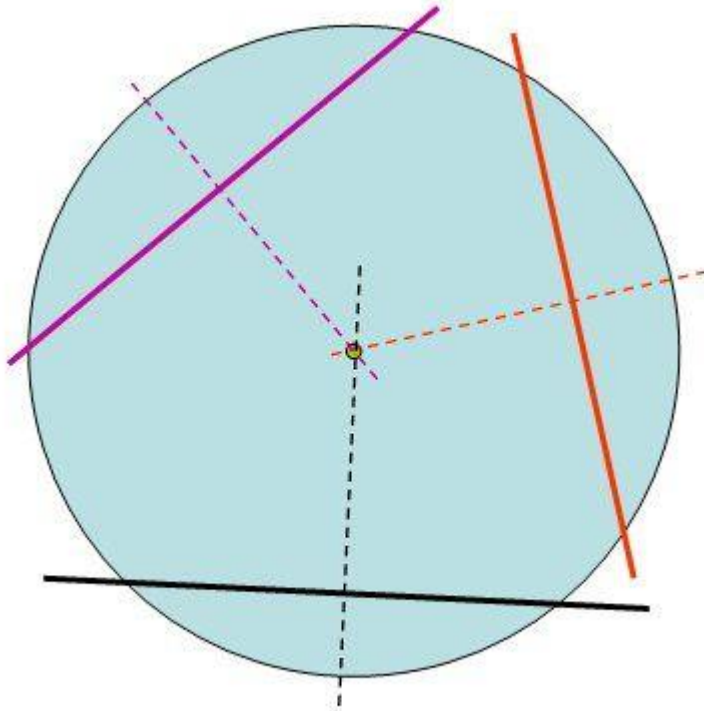
Carbon Fiber
Sheet

Instrument Hole

But ... How to find the
center of the
instrument hole?
Not easy!

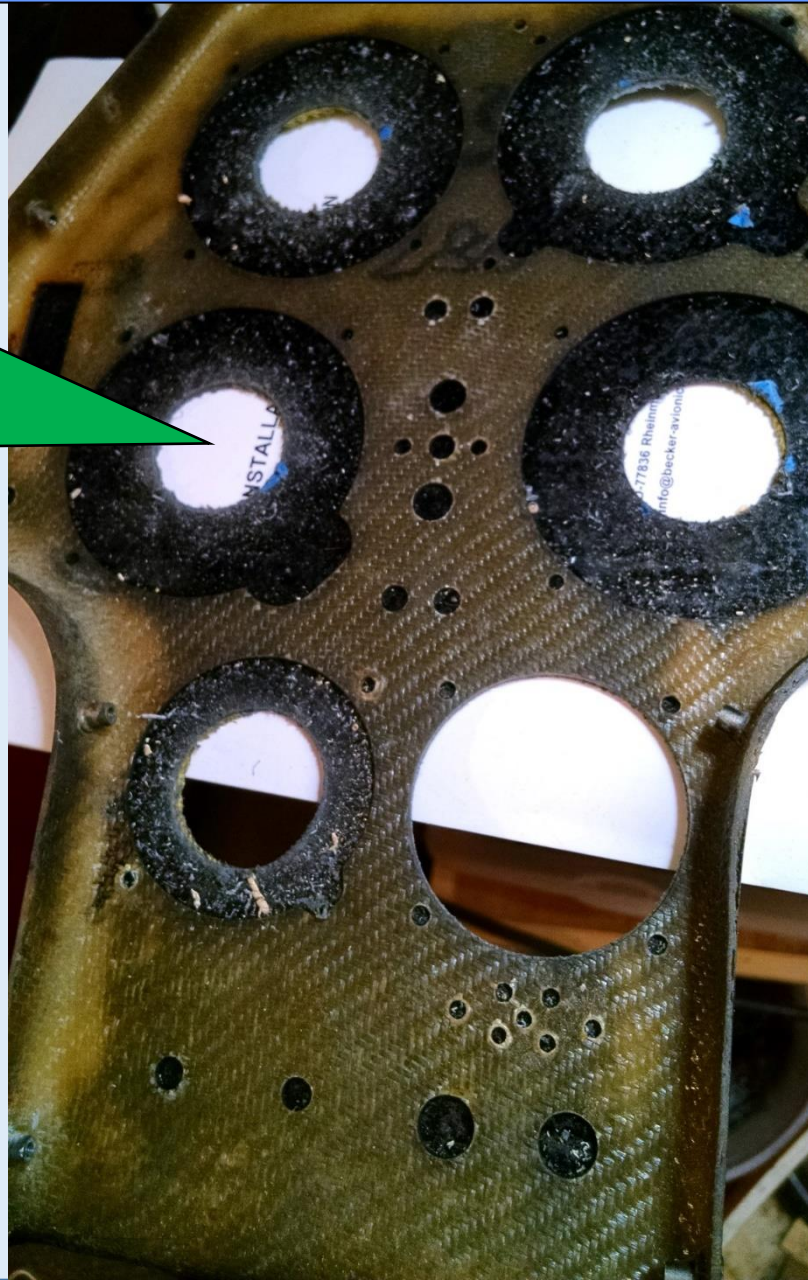
Semi-Rigid Carbon Fiber Veneer

Ways of
finding the
center of a
circle is
Not straight
forward!



Semi-Rigid Carbon Fiber Veneer

Solution!
Cut 1"
Starter
Holes



The
starter
hole's placement
does not need
to be extremely
accurate

Semi-Rigid Carbon Fiber Veneer

Use a
Drill Press!

Centering
the Hole

Hole
Saw

Fiberglass
Instrument
Panel

Carbon Fiber
Sheet

Wood Backer
Board

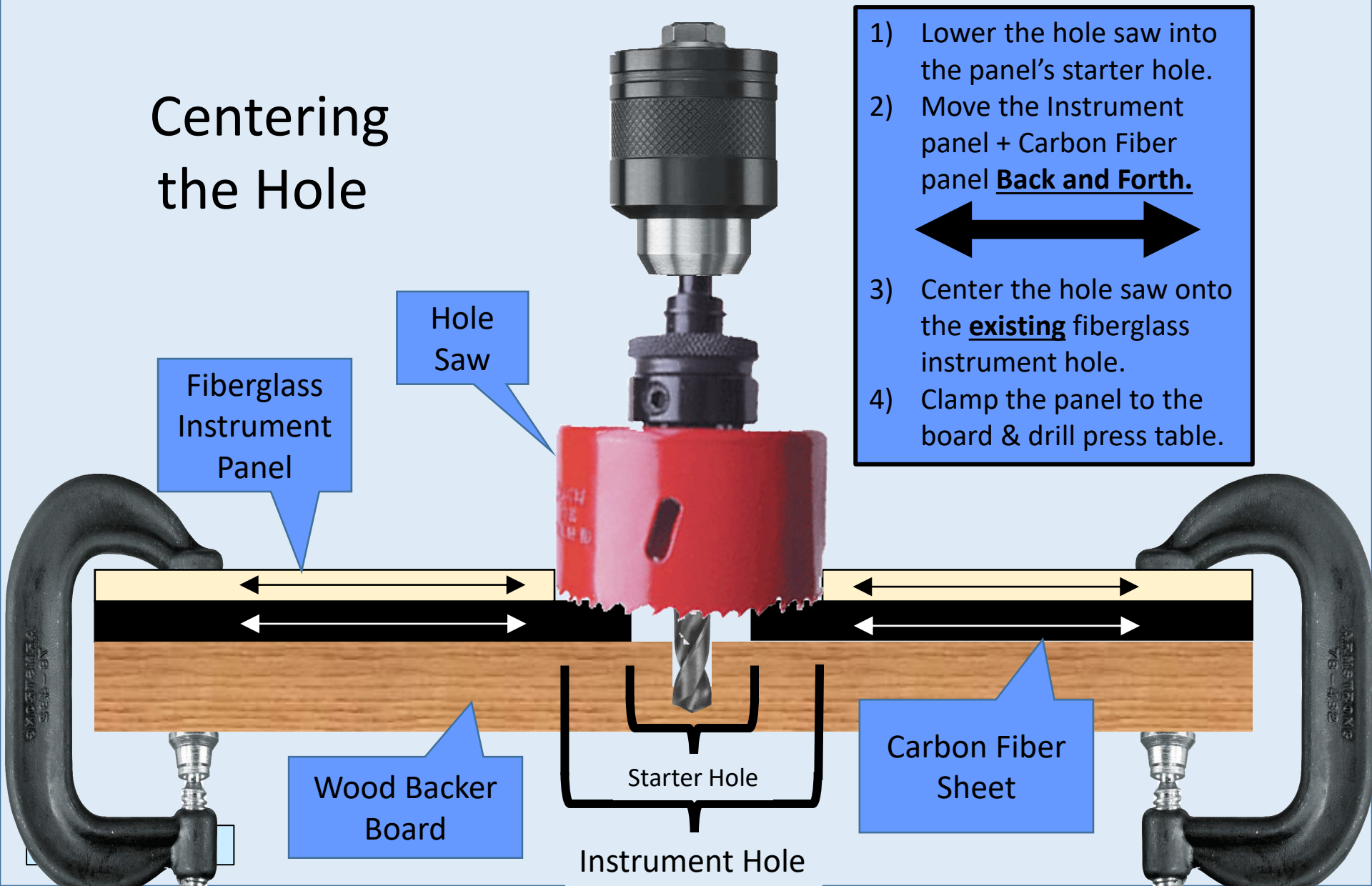
Starter Hole

Instrument Hole



Semi-Rigid Carbon Fiber Veneer

Centering the Hole



- 1) Lower the hole saw into the panel's starter hole.
- 2) Move the Instrument panel + Carbon Fiber panel **Back and Forth.**
- 3) Center the hole saw onto the **existing** fiberglass instrument hole.
- 4) Clamp the panel to the board & drill press table.

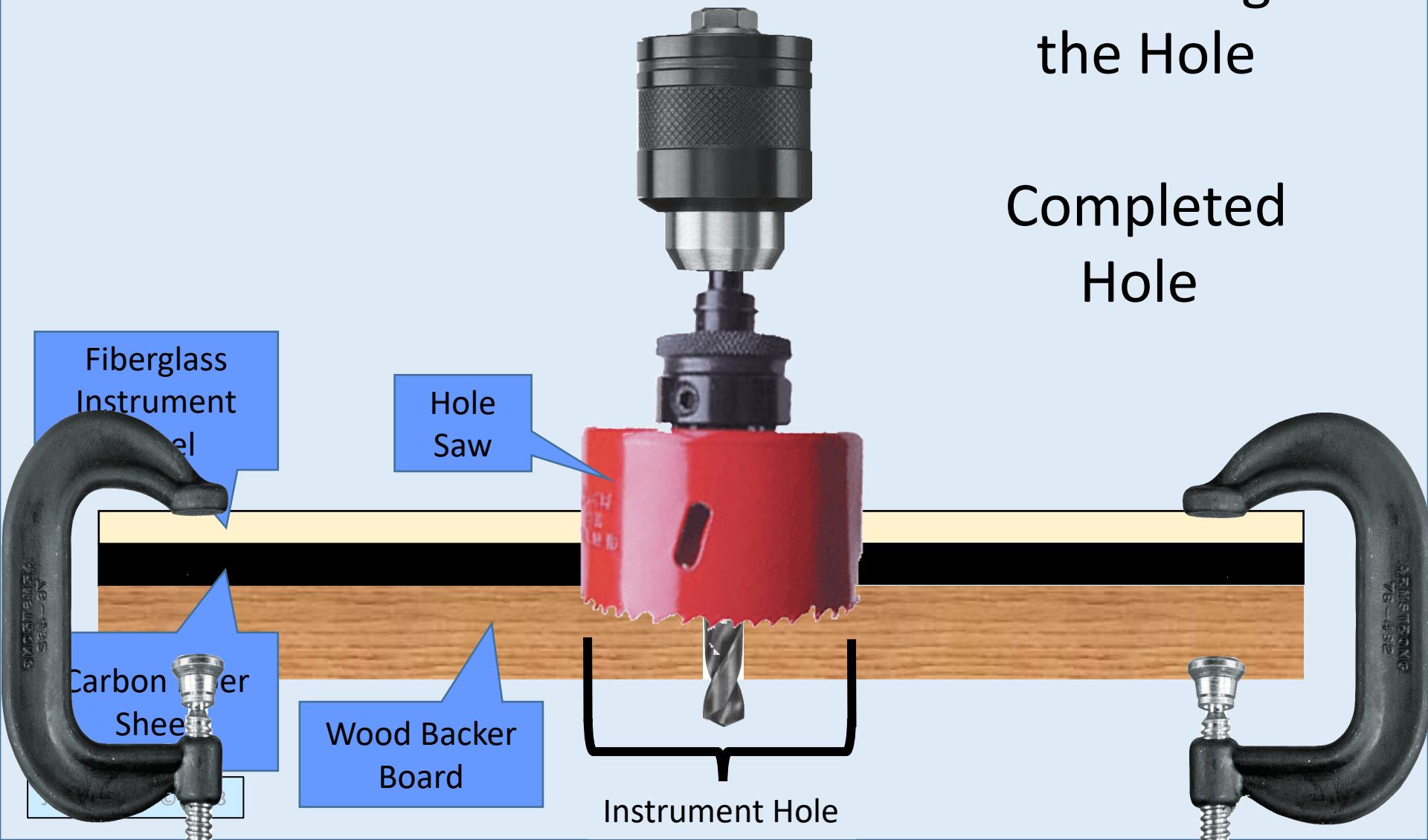
Semi-Rigid Carbon Fiber Veneer Large Hole



Semi-Rigid Carbon Fiber Veneer

Centering
the Hole

Completed
Hole



Semi-Rigid Carbon Fiber Veneer



Completed Sawn Hole

Semi-Rigid Carbon Fiber Veneer



CF Plugs

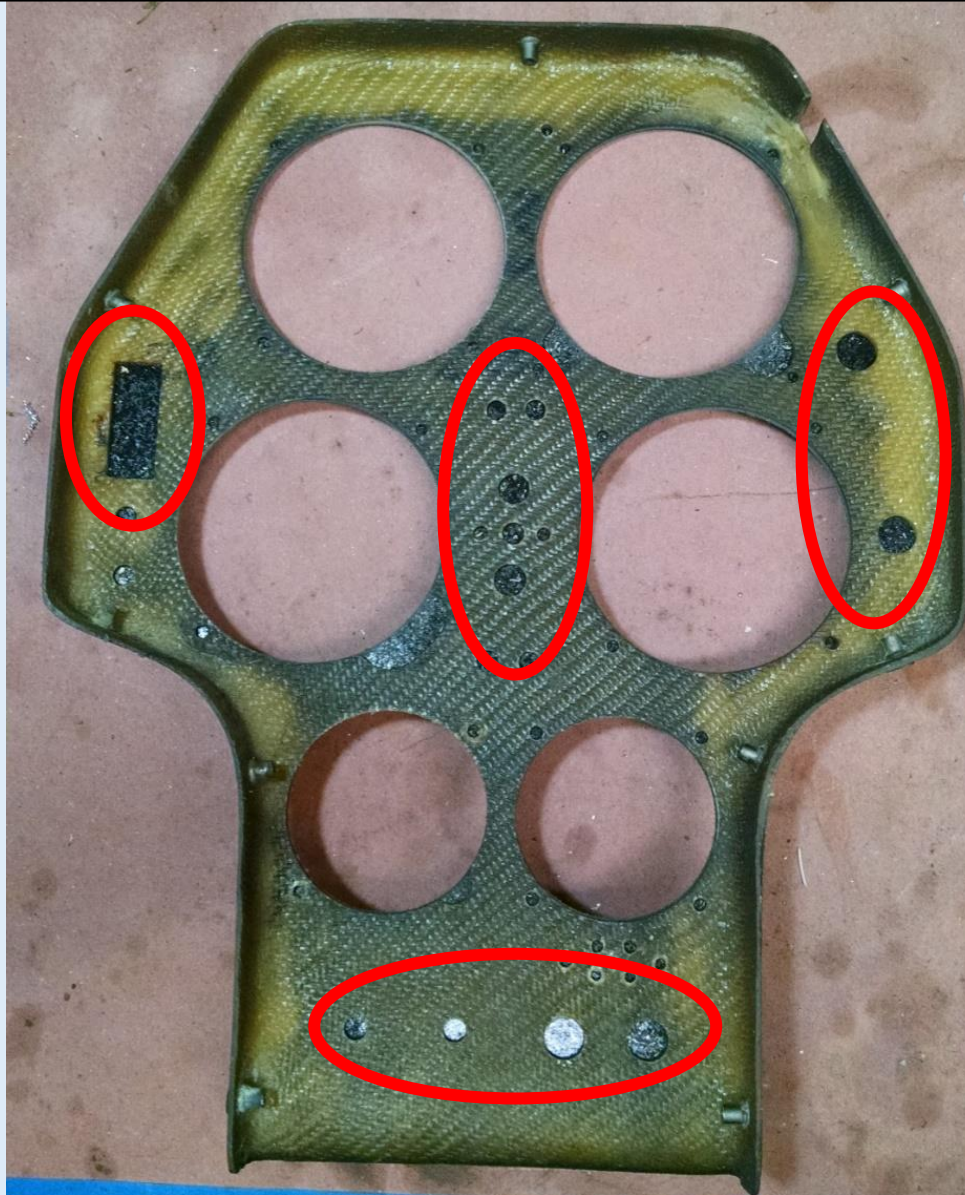
Semi-Rigid Carbon Fiber Veneer

Results
Surprisingly
Clean Holes



Results – Clean Holes

Semi-Rigid Carbon Fiber Veneer

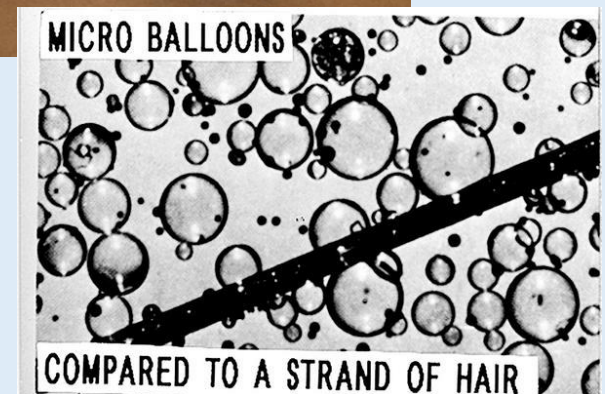


Fill
the
unwanted
holes with
epoxy to
stiffen
the CF
covering

Semi-Rigid Carbon Fiber Veneer



Fill Holes
With Epoxy
Mixed with
Micro-
Balloons



MICRO BALLOONS

COMPARED TO A STRAND OF HAIR

Semi-Rigid Carbon Fiber Veneer



Could also
use
Microfibers



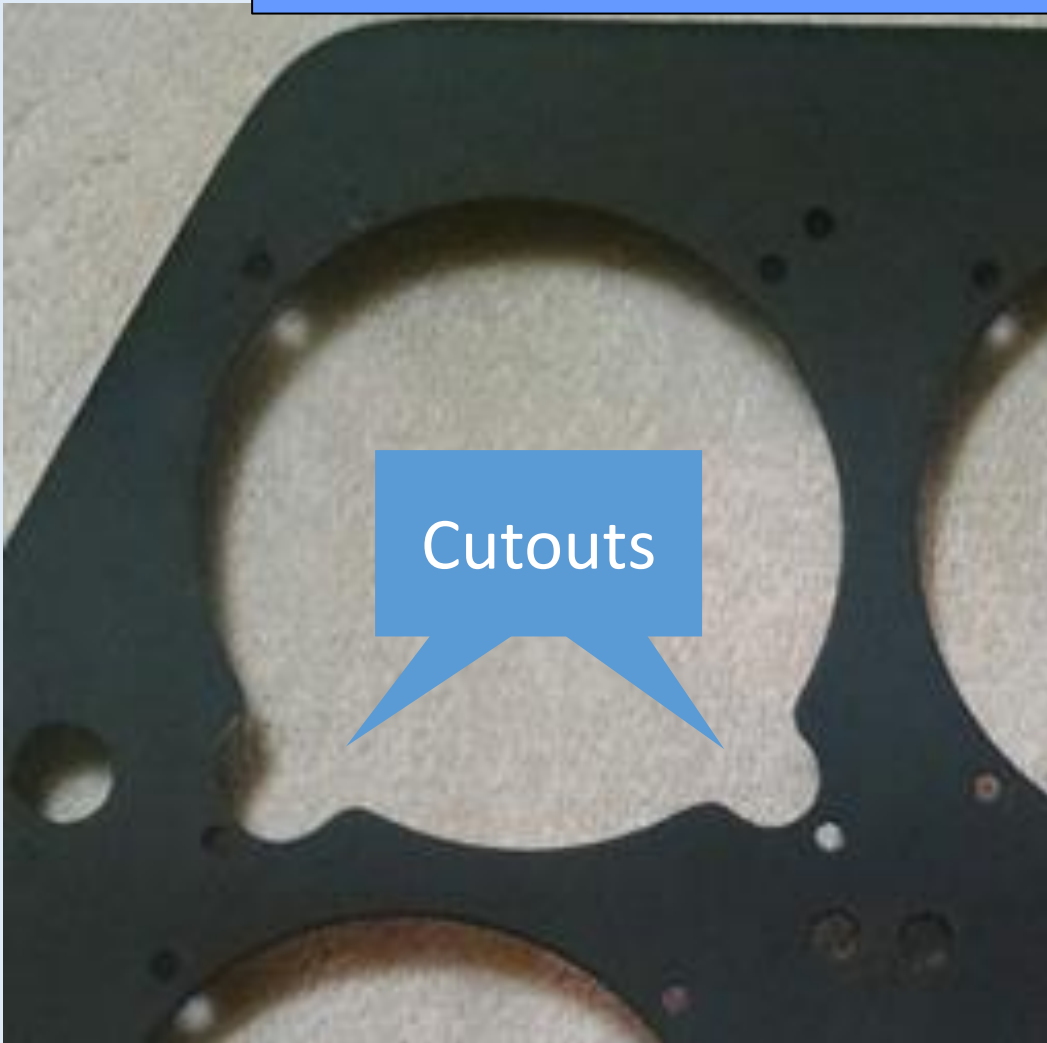
Source: <http://www.westsystem.com>

Semi-Rigid Carbon Fiber Veneer

Results
(Epoxy uncured)



Semi-Rigid Carbon Fiber Veneer



How to Fill the
Altimeter
Cutouts?

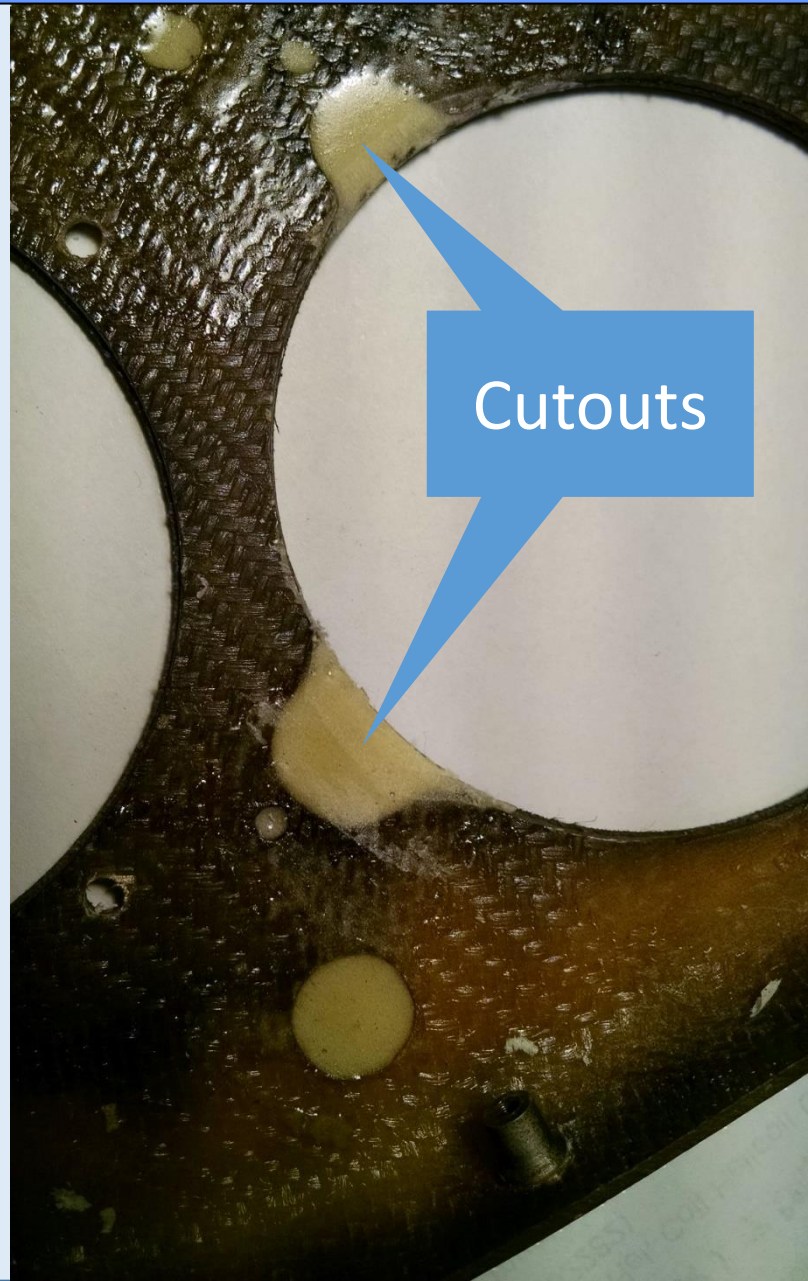
Semi-Rigid Carbon Fiber Veneer

Covered an instrument with wax paper and insert into the hole. Then pour in Epoxy.



(Epoxy uncured)

Semi-Rigid Carbon Fiber Veneer



Filled
Cutouts
Results

(Epoxy Cured)

Semi-Rigid Carbon Fiber Veneer

Final
Result



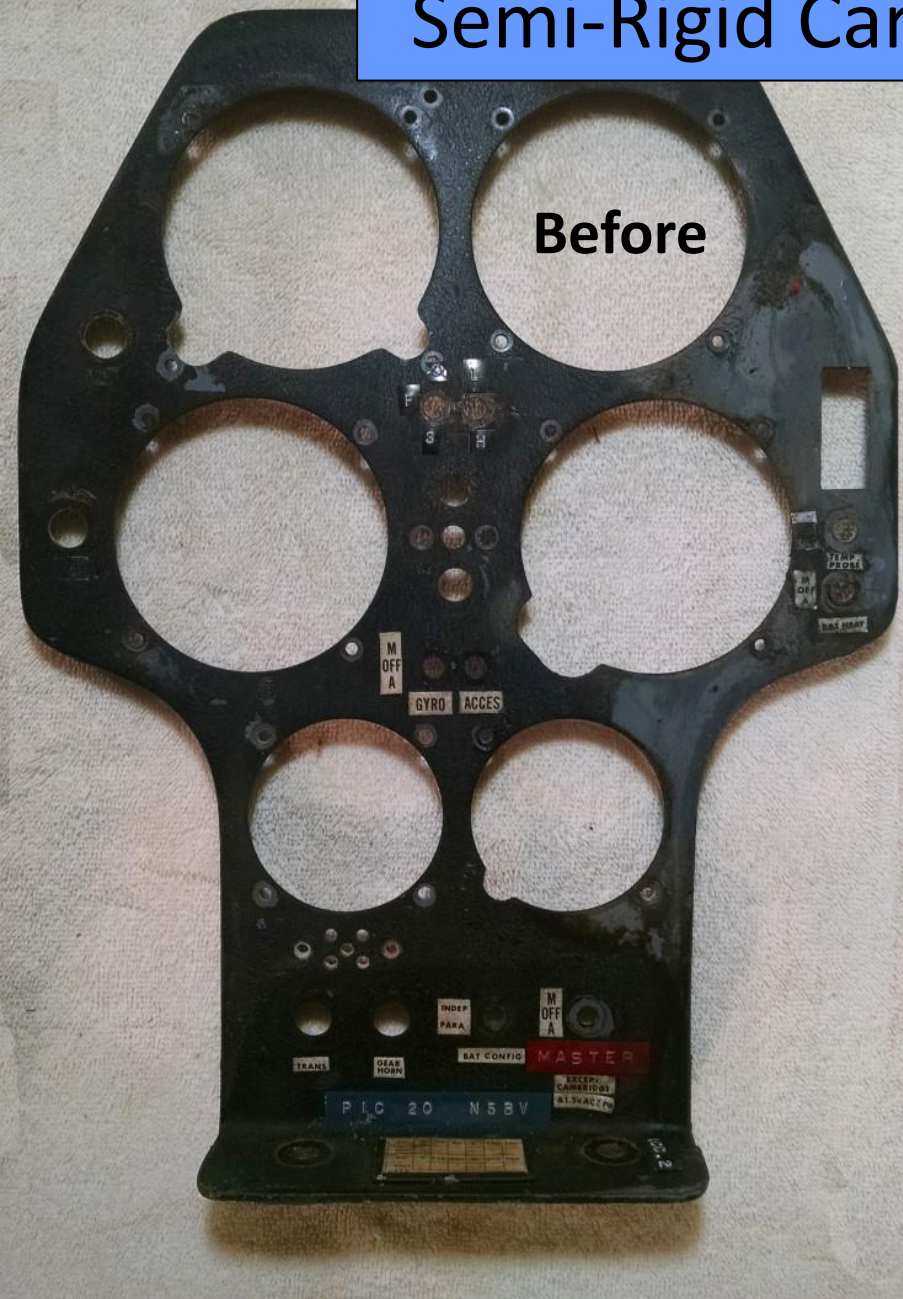
Semi-Rigid Carbon Fiber Veneer

Final
Result



Semi-Rigid Carbon Fiber Veneer

Before



After



Semi-Rigid Carbon Fiber Veneer



Non-Rigid Fake Carbon Fiber Wrap



3M Di-NOC Non-Rigid Wrap



Also known as
“Contact Paper”



3M Di-NOC Non-Rigid Wrap



3M Di-NOC Non-Rigid Wrap



3M Di-NOC Non-Rigid Wrap



Simply apply the wrap to the surface and then cut around the edges

Some moderate heat can be applied to the material to form it around curved surfaces such as the edges of instrument panels

3M Di-NOC Non-Rigid Wrap

Example
Panel



3M Di-NOC Non-Rigid Wrap

Example
Panel



3M Di-NOC Non-Rigid Wrap



Pros and Cons

Carbon Fiber Semi-Rigid

- **Pros**
 - Toughness
- **Neutral**
 - Appearance
- **Cons**
 - High Cost (~\$75+)
 - Difficulty Tooling
 - Rigidness
 - One color available

3M Di-NOC Non-Rigid

- **Pros**
 - Low Cost (~\$15+)
 - Ease of Tooling
 - Many Colors
 - Curve Flexibility
- **Neutral**
 - Appearance
- **Cons**
 - Not very tough
 - Deformation

Sources

CF Semi-Rigid Sheet

- dragonplate.com
- eBay

3M Di-NOC Non-Rigid

- Amazon
- eBay
- Many other vendors

See My Other Presentations

- Glider Electrical Wiring
- Transceiver Troubleshooting
- Oxygen Systems
- Working with Glider Air Lines
- Sailplane Wiring
- Trailer Wiring & LED Lights
- Pilot Relief Systems
- Battery Testing
- Spar Alignment Tool
- L'Hotellier Fittings
- Carbon Fiber Panels
- IGC Filename Decoding
- Blanik L-23 Strut Work
- Survival & Bailout Kits
- Removing Painted Contest IDs

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Let me know of any comments!
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