# Carbon Fiber Instrument Panels

By John DeRosa
http://chicagolandglidercouncil.com
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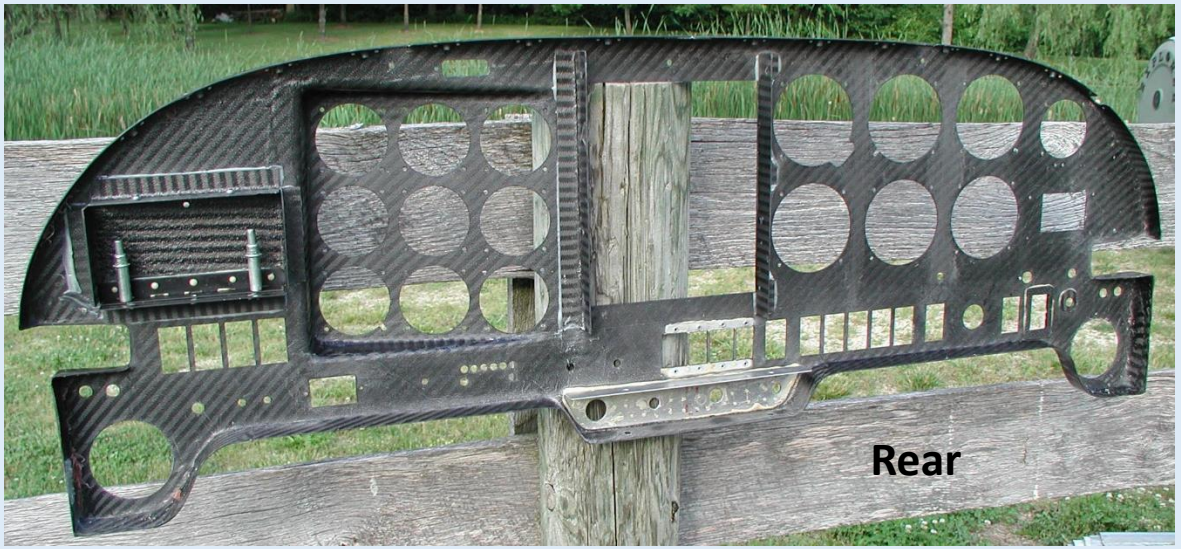
# Instrument Panels

## Solid Carbon Fiber RV-6

# Instrument Panel

## Carbon Fiber Veneer Overlays

# Instrument Panel

# Carbon Fiber Veneer Overlay Types

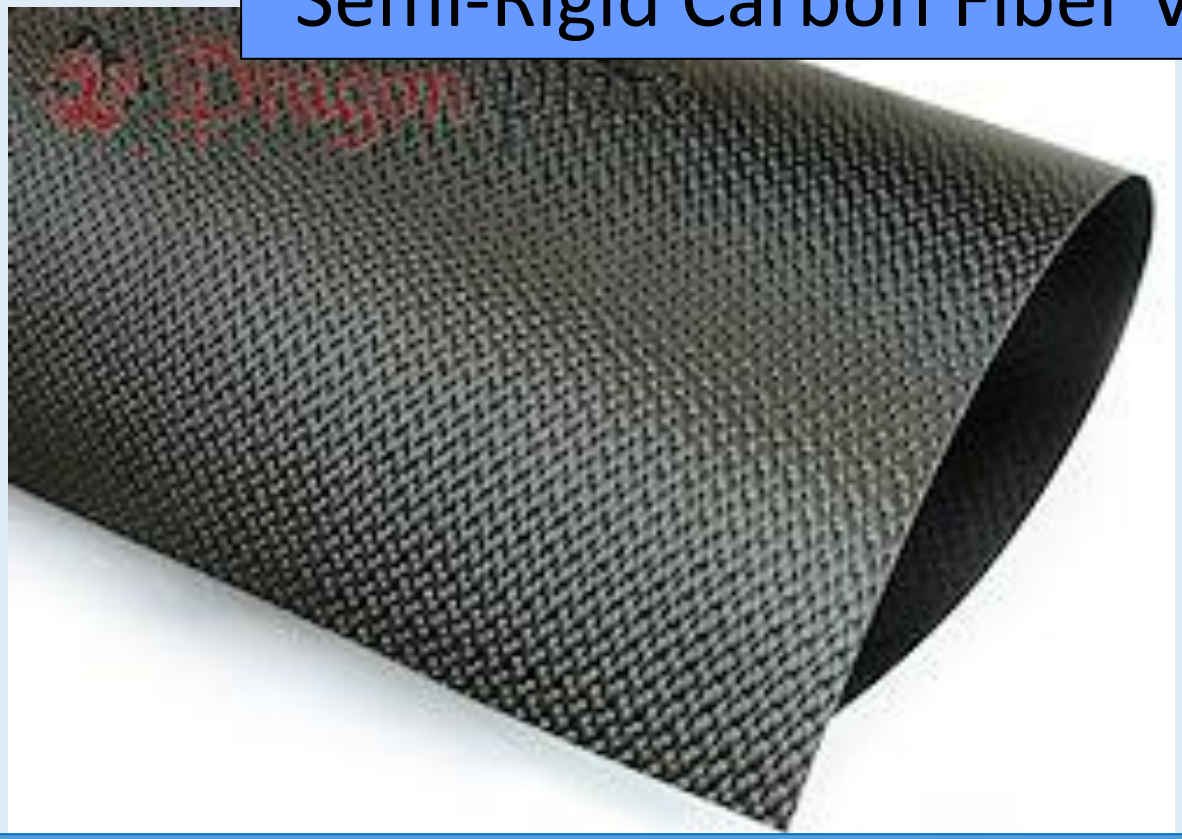
Real CF
Semi-Rigid ➔


"Fake CF"
Non-Rigid ➔

# Semi-Rigid Carbon Fiber Veneer Instructions

Source: http://dragonplate.com

# Semi-Rigid Carbon Fiber Veneer



http://dragonplate.com

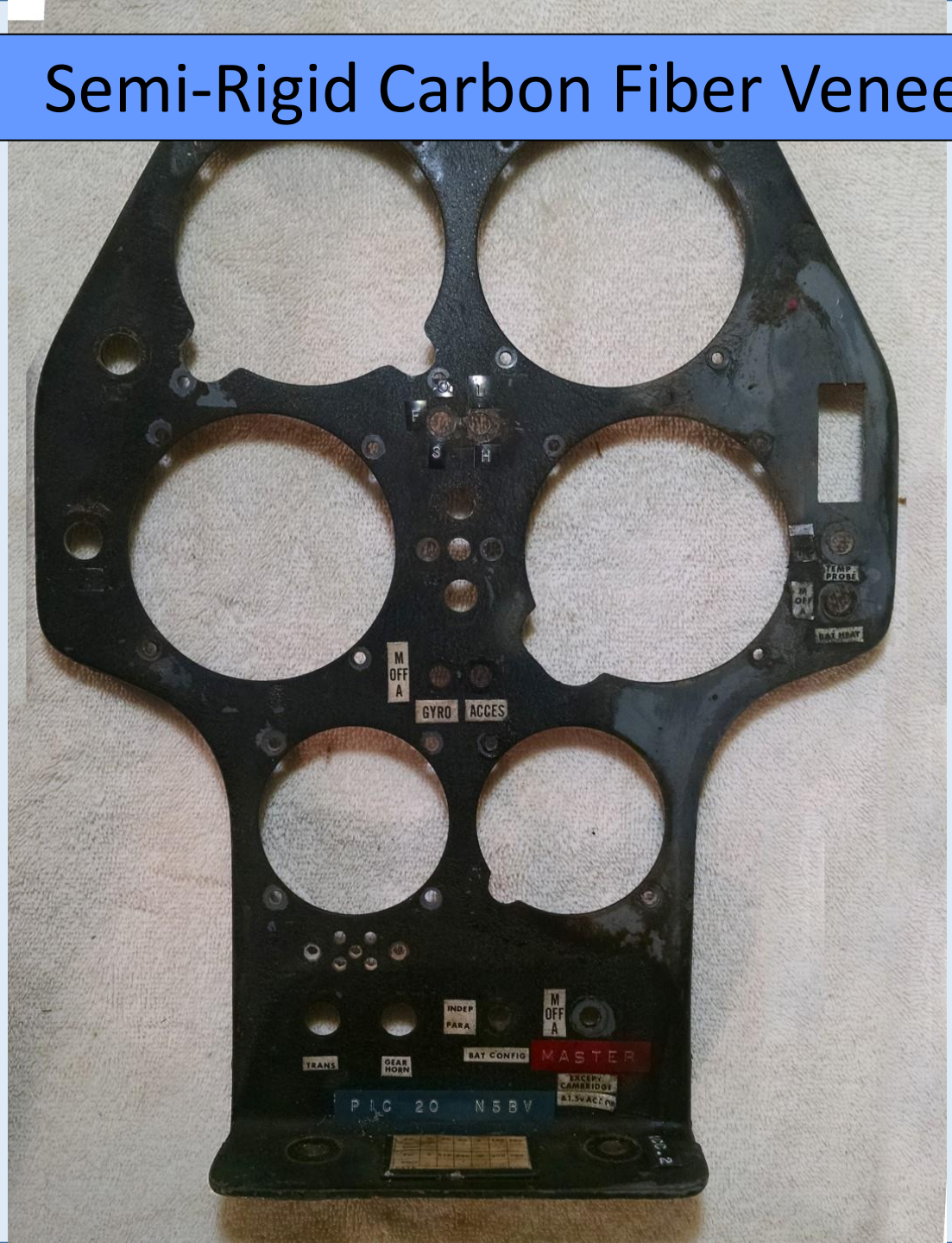
Veneers are well suited for covering large surfaces or for decorative trim. Comprising of 100% real carbon fiber in a harness-satin weave, this veneer presents a unique appearance.

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

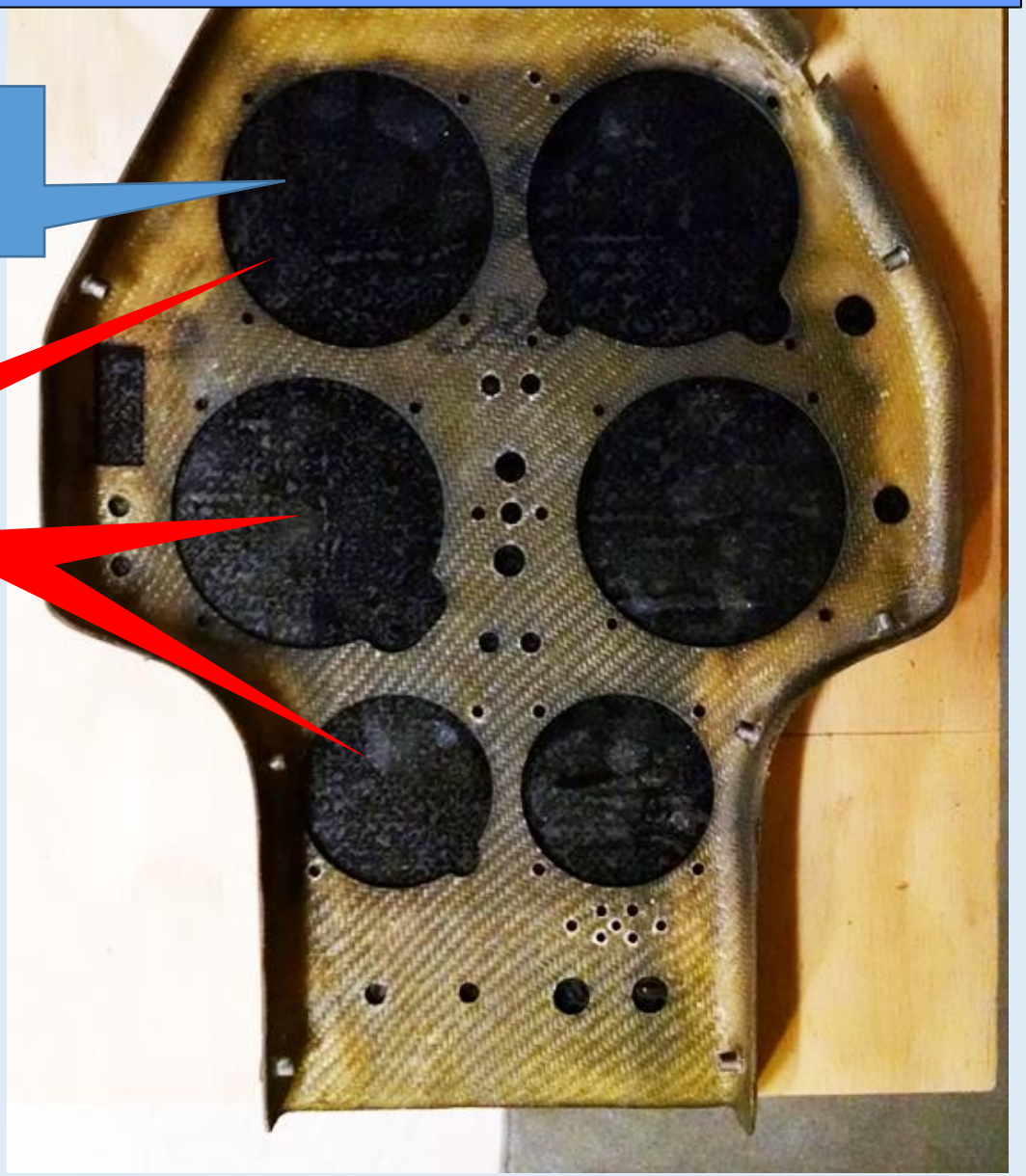
# Semi-Rigid Carbon Fiber Veneer

Tools Used to Trim the Perimeter of the CF Sheet

# Semi-Rigid Carbon Fiber Veneer

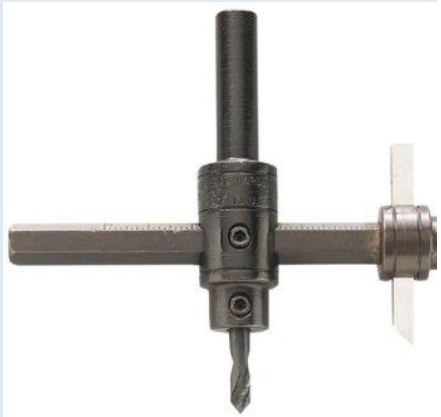
Next … Cutting the Instrument Holes

But … How to cut the holes?



Glued and Trimmed CF Sheet

# Which tool to use to cut the Instrument holes?



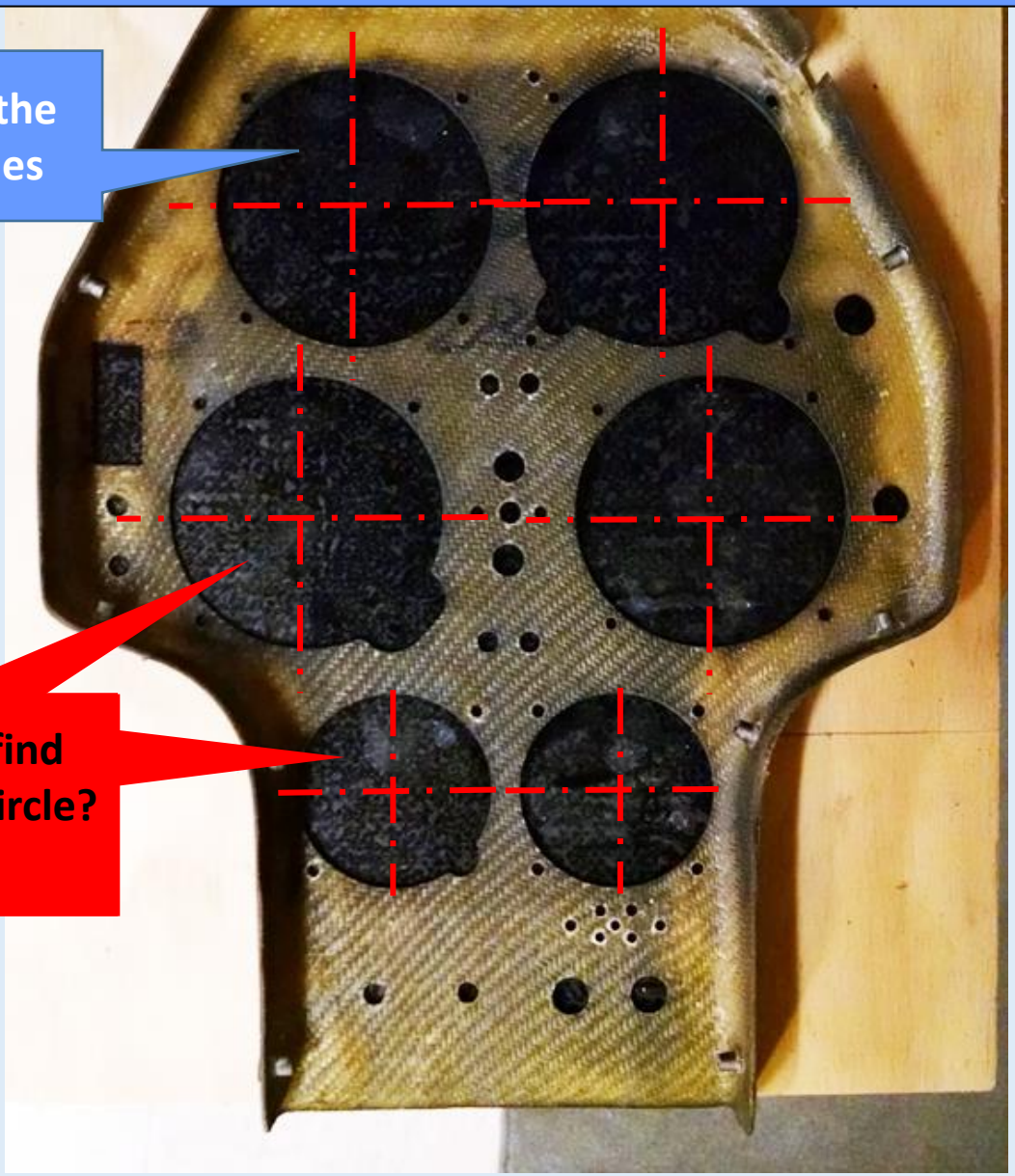
Hole Saw ✓

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

- Hole Saw
- Nibbler
- Fly Cutter
- Water Jet
- Circle Cutter


# Semi-Rigid Carbon Fiber Veneer

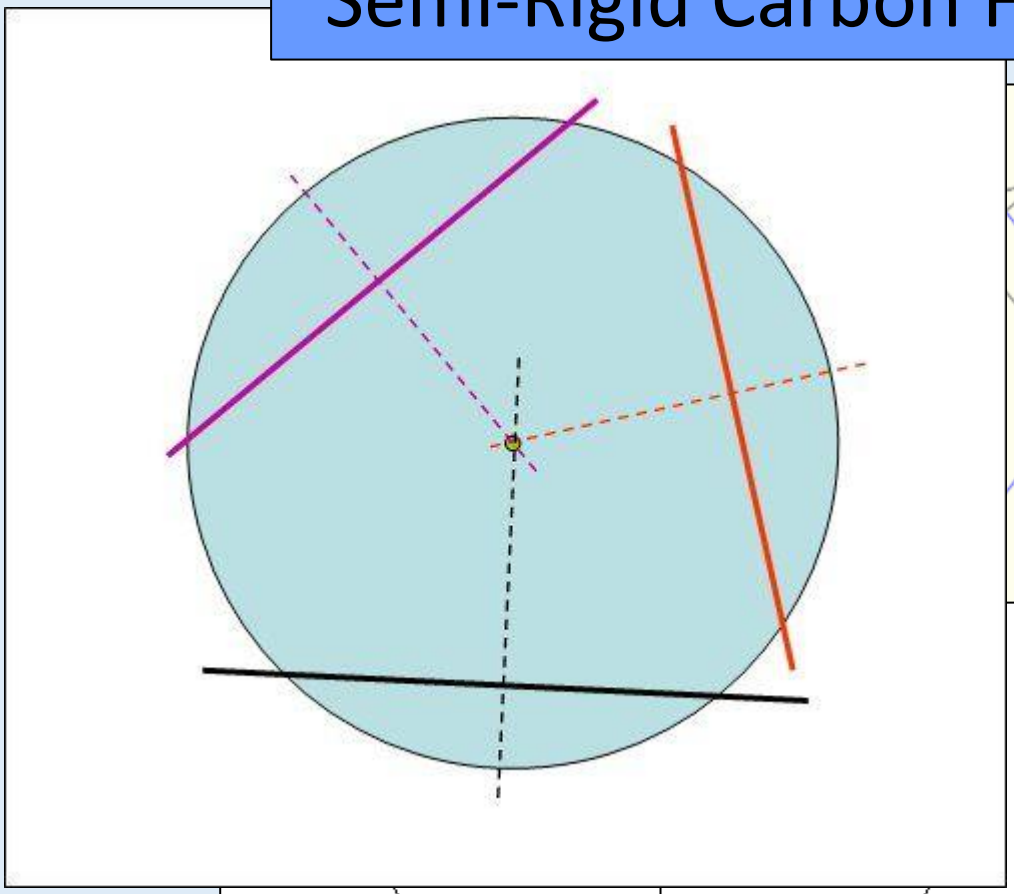
Next … Cutting the Instrument Holes

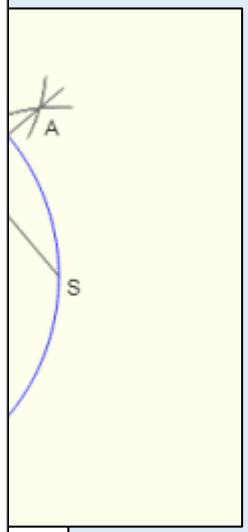


But … How to find the center of a circle? Not easy!

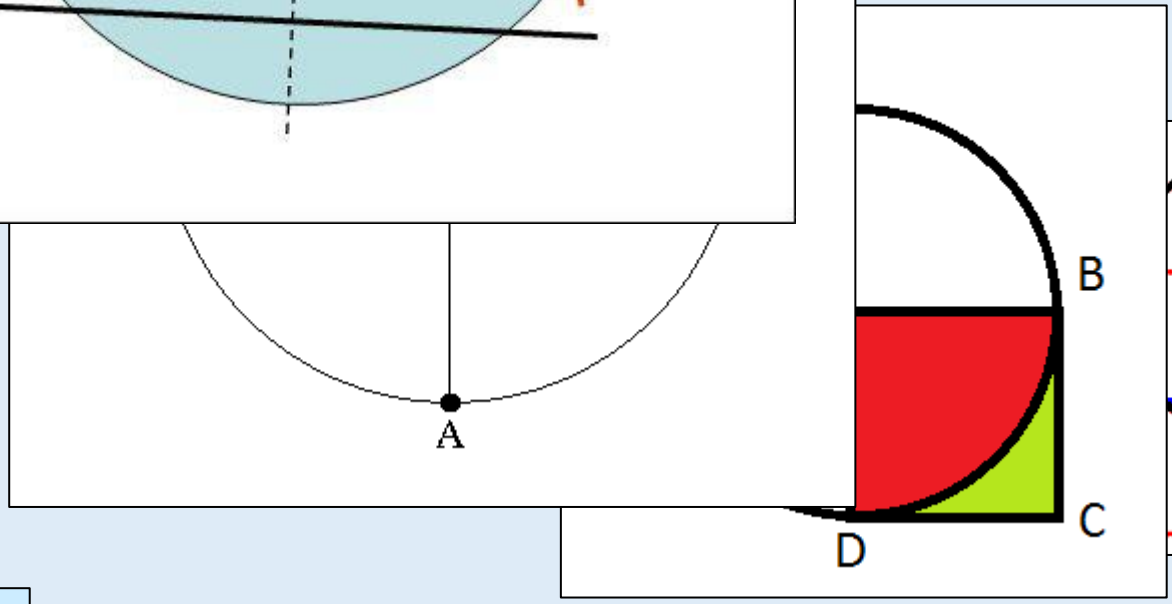
Working from the backside of the instrument panel

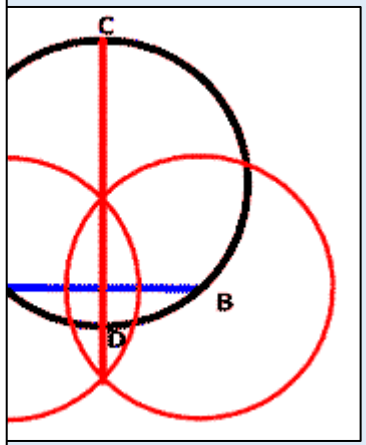
# Semi-Rigid Carbon Fiber Veneer



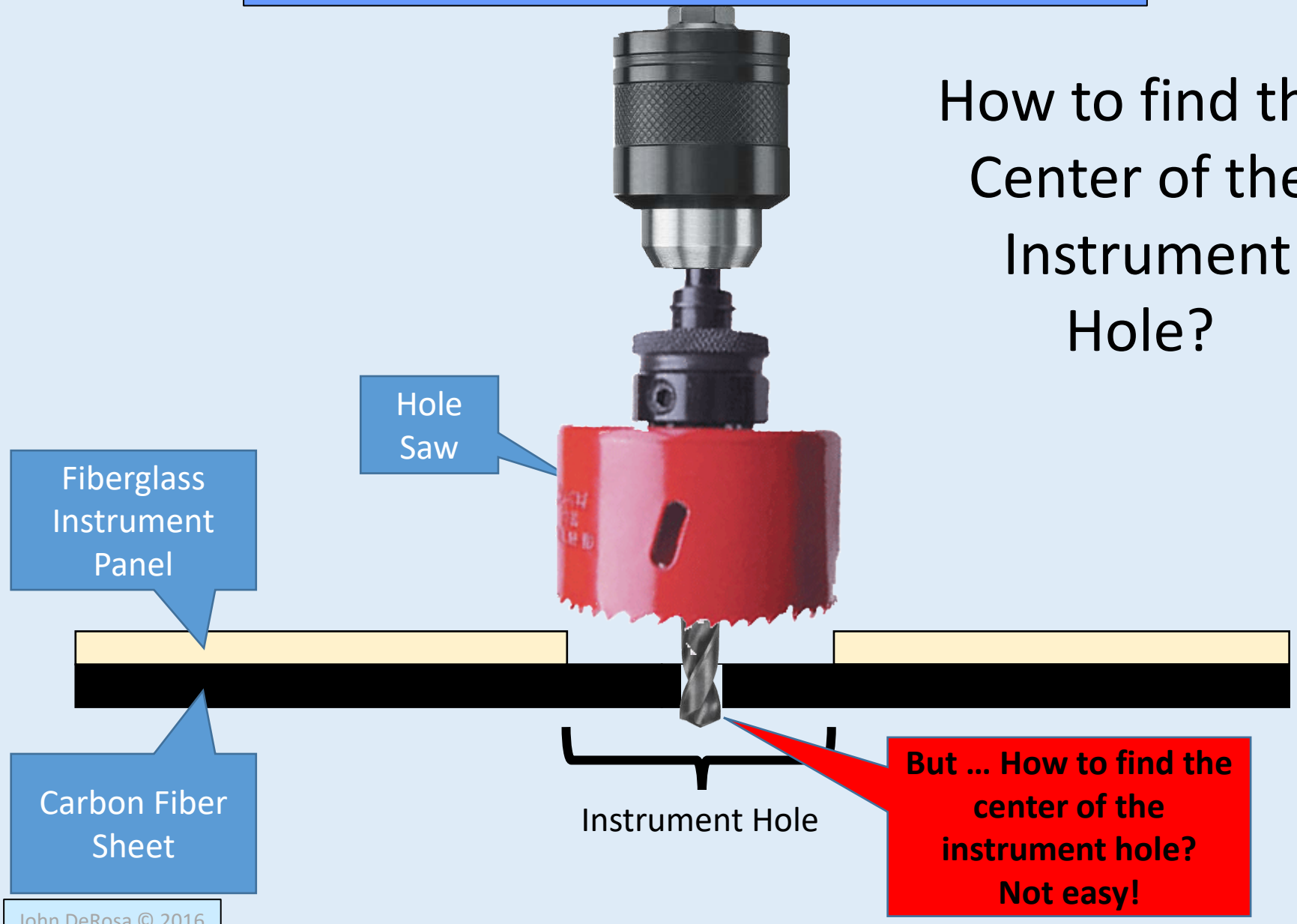



Ways of finding the center of a circle is **Not** straight forward!



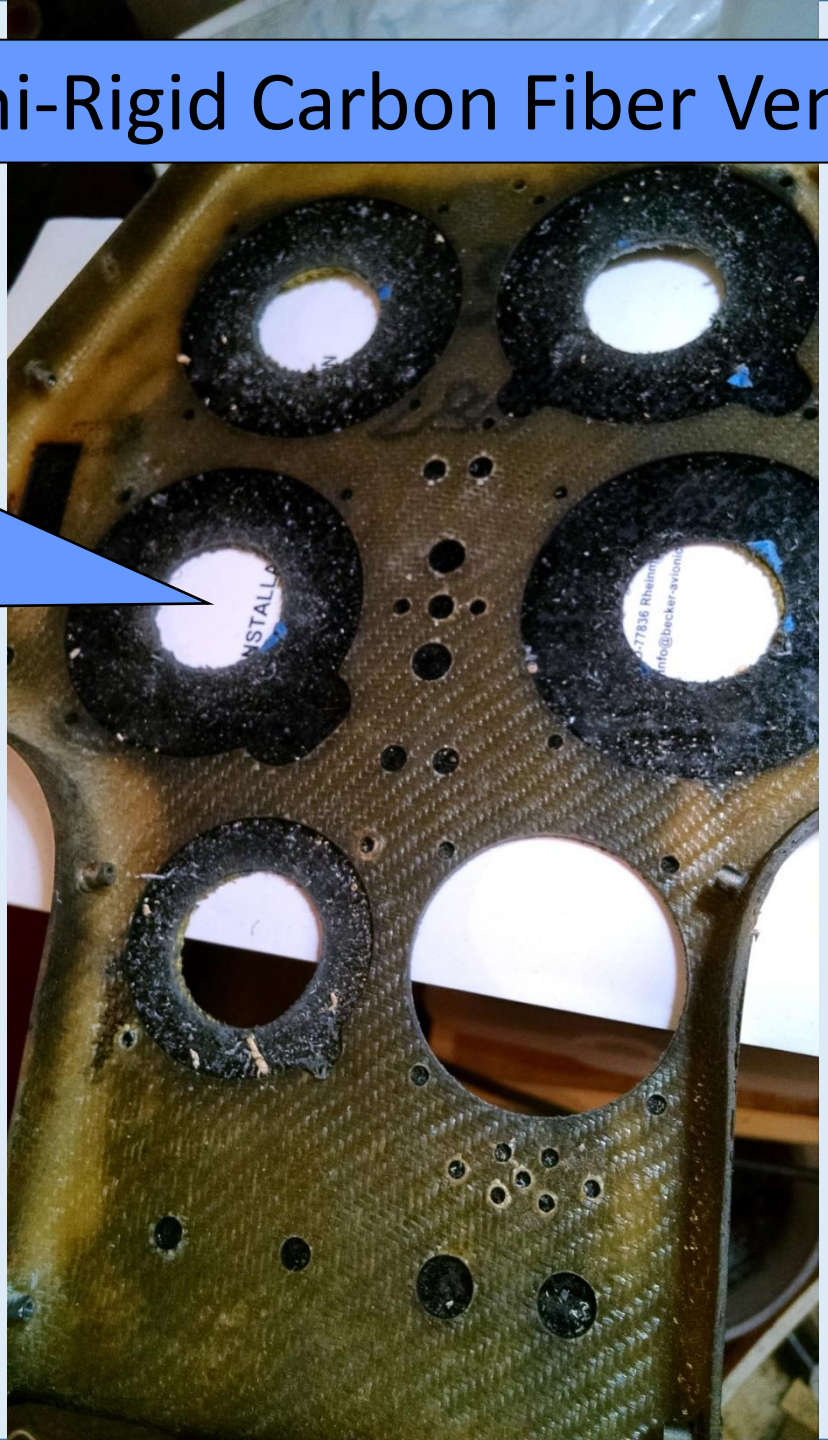
# Semi-Rigid Carbon Fiber Veneer




How to find the Center of the Instrument Hole?

# Semi-Rigid Carbon Fiber Veneer

**Solution!**
Cut 1” Starter Holes



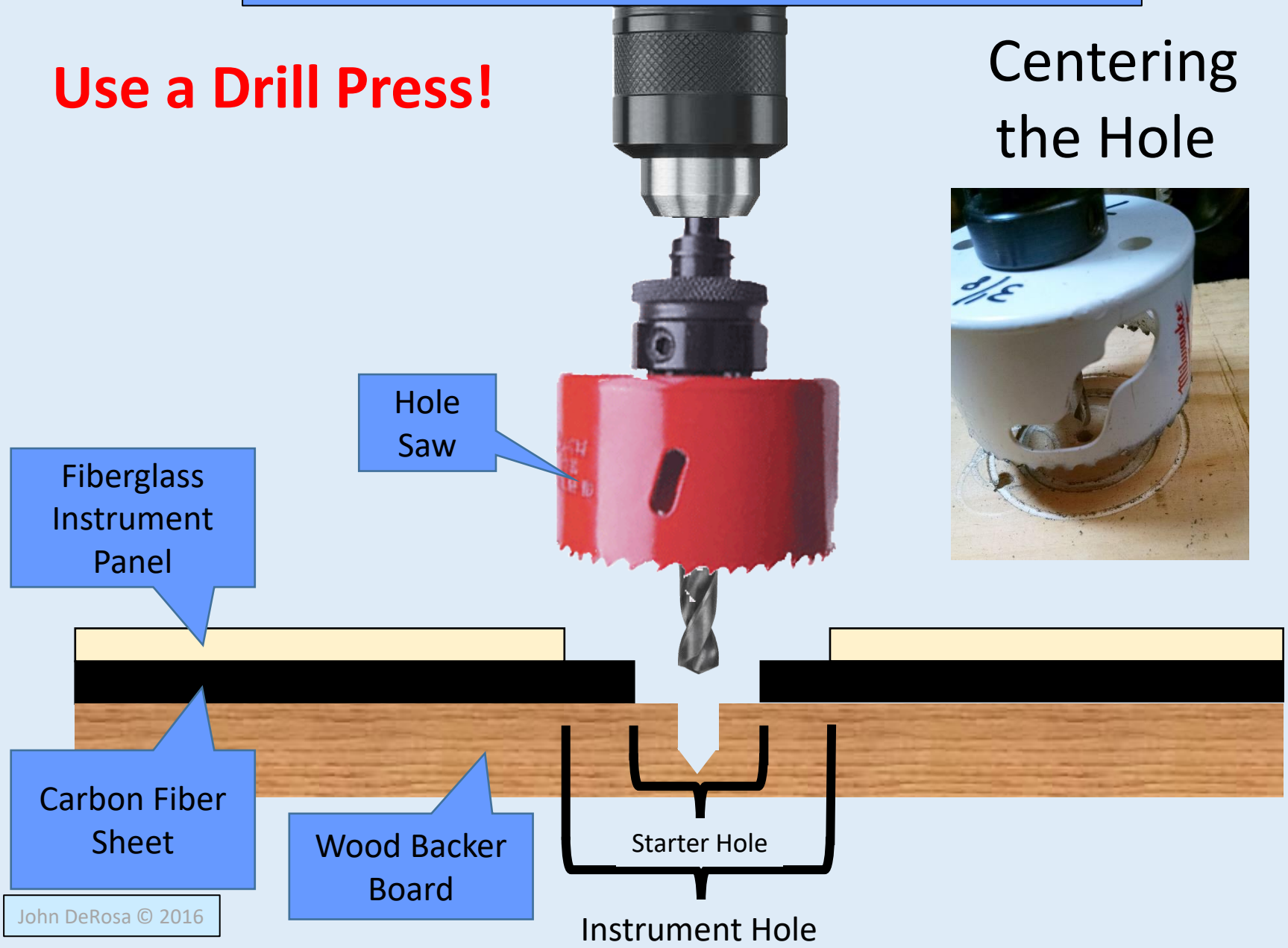
Cutting the Starter Holes

# Semi-Rigid Carbon Fiber Veneer

**Use a Drill Press!**

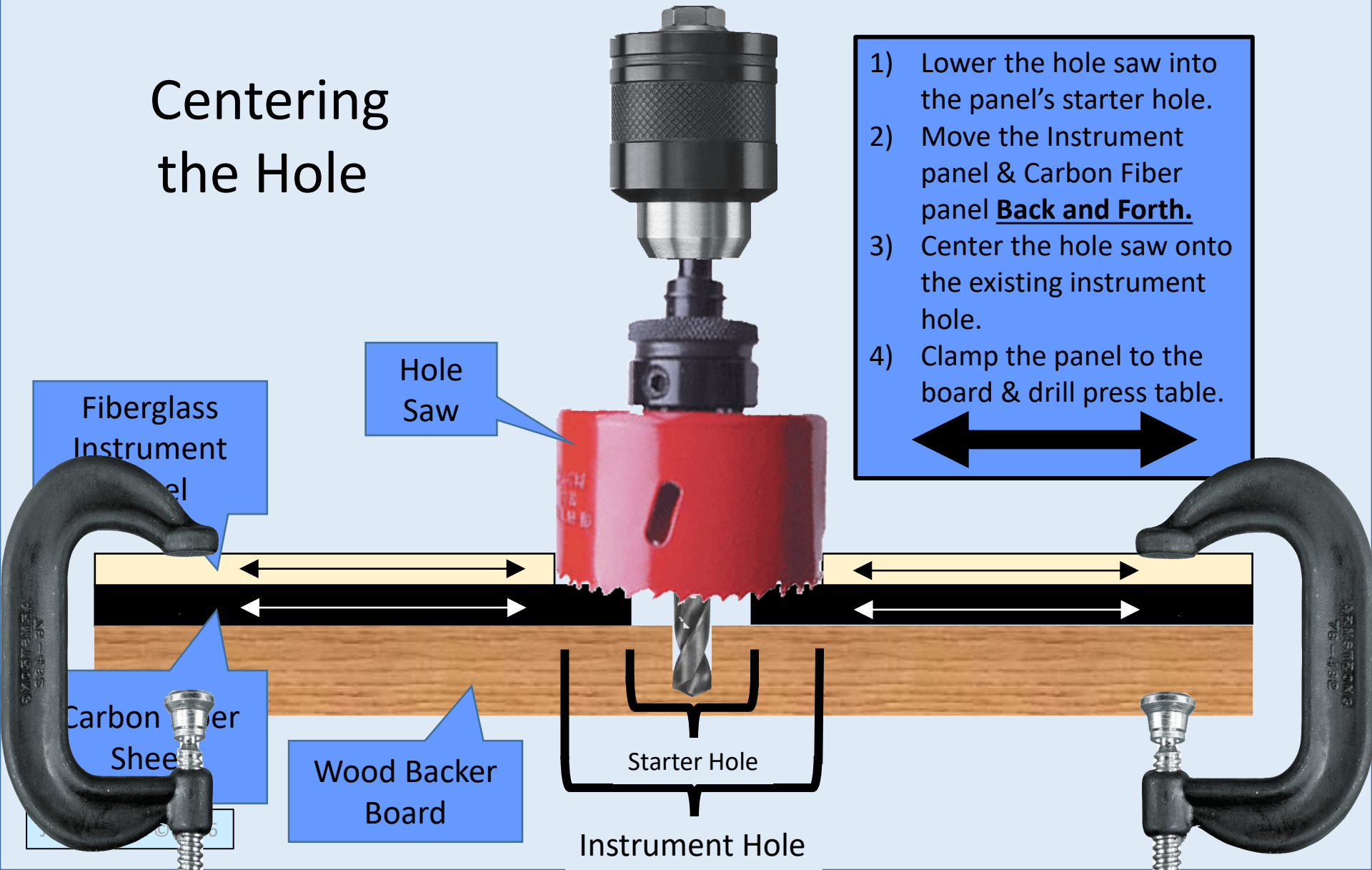
Centering the Hole





# Semi-Rigid Carbon Fiber Veneer

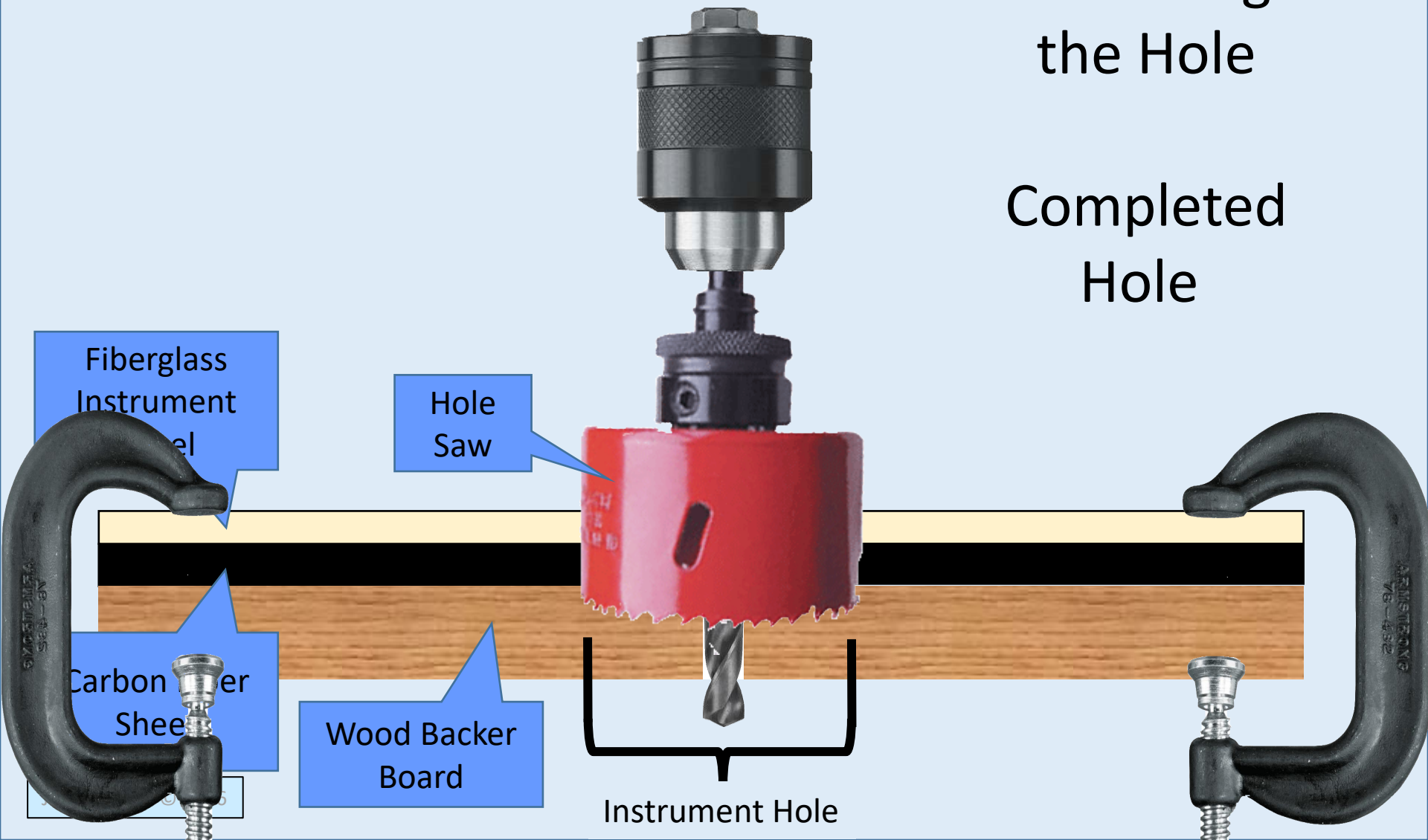
## Centering the Hole




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 instrument hole.
4) Clamp the panel to the board & drill press table.

# Semi-Rigid Carbon Fiber Veneer rge Hole

# Semi-Rigid Carbon Fiber Veneer



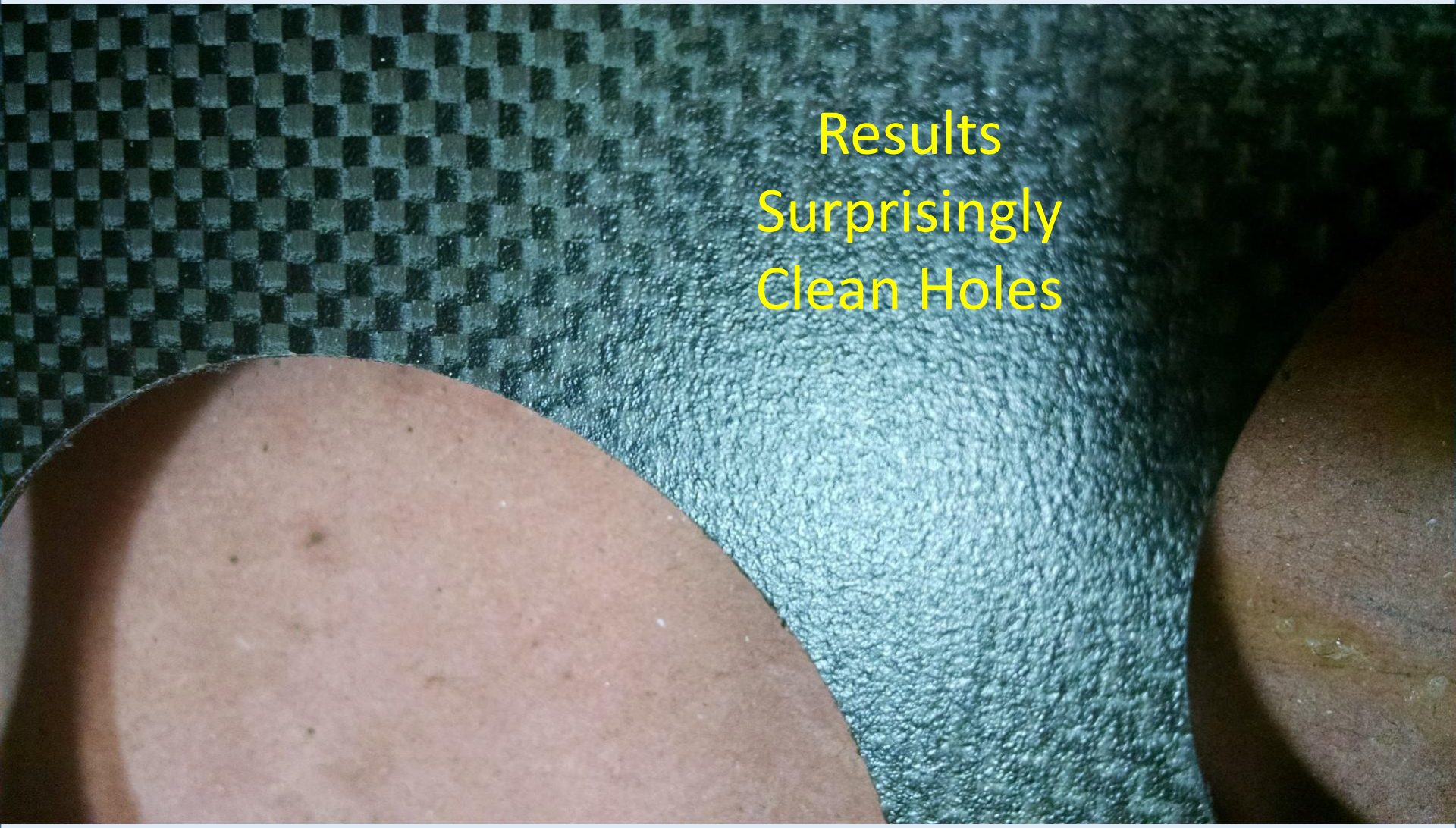
# Semi-Rigid Carbon Fiber Veneer

Completed Sawn Hole

# Semi-Rigid Carbon Fiber Veneer


CF Plugs

# Semi-Rigid Carbon Fiber Veneer




Results – Clean Holes

# Semi-Rigid Carbon Fiber Veneer

Filling Unwanted Holes to Stiffen the CF Covering

# Semi-Rigid Carbon Fiber Veneer



Fill Holes With Epoxy Mixed with Micro-Balloons


Source: http://www.westsystem.com

# Semi-Rigid Carbon Fiber Veneer

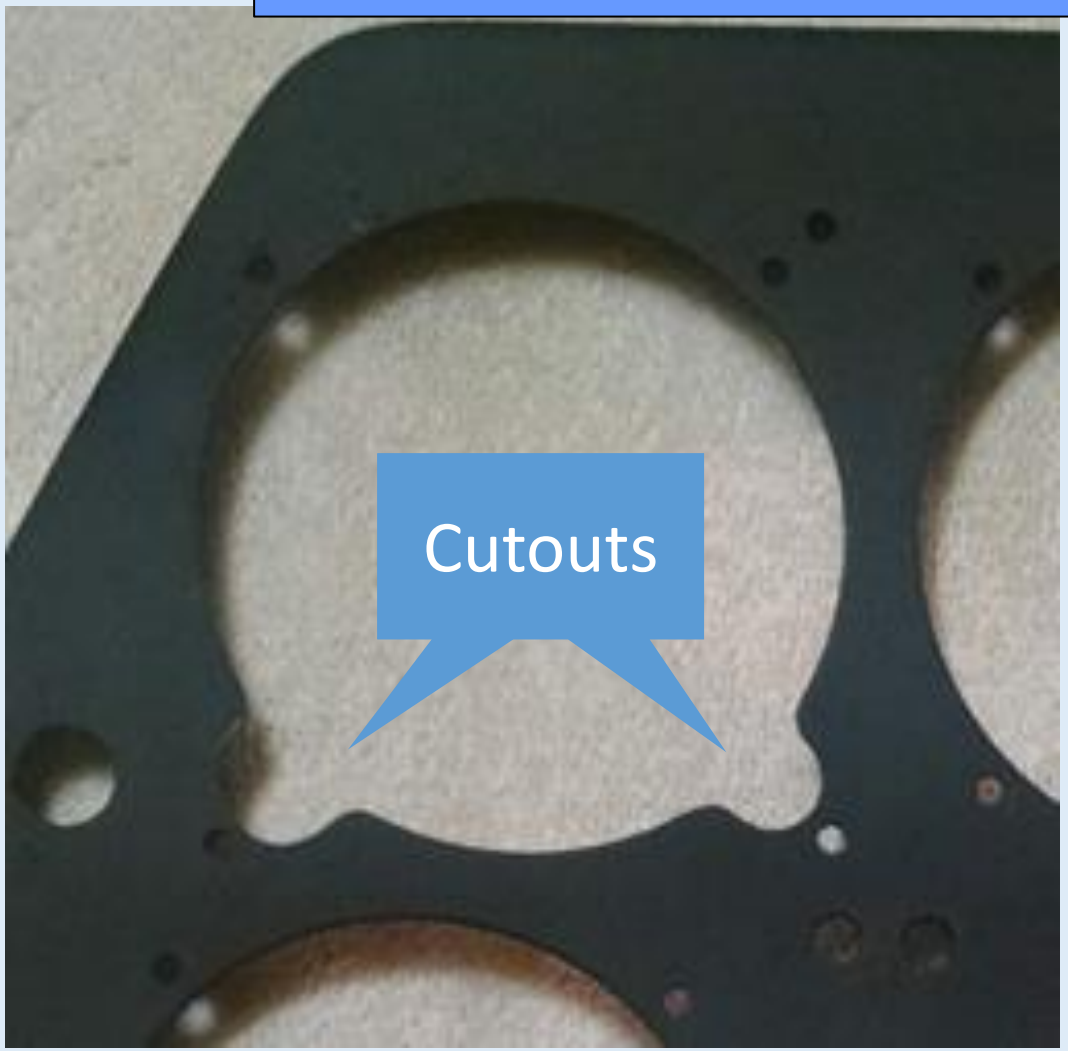

Could also use Microfibers

Source: http://www.westsystem.com

# Semi-Rigid Carbon Fiber Veneer

## Results
## (Epoxy uncured)

# Semi-Rigid Carbon Fiber Veneer

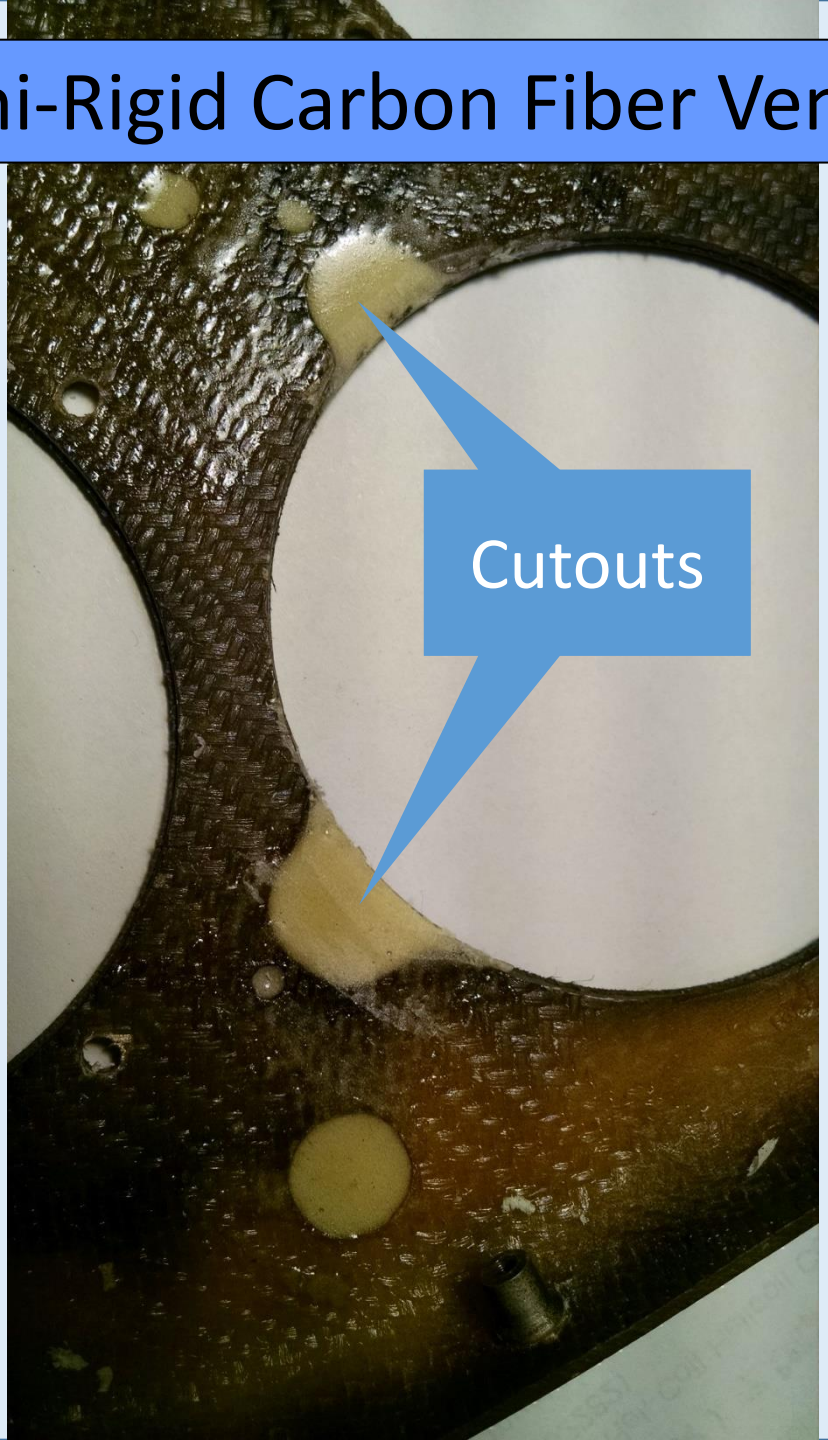



How to Fill the Altimeter Cutouts?

# Semi-Rigid Carbon Fiber Veneer


(Epoxy uncured)

# Semi-Rigid Carbon Fiber Veneer




Filled
Cutouts
Results

(Epoxy Cured)

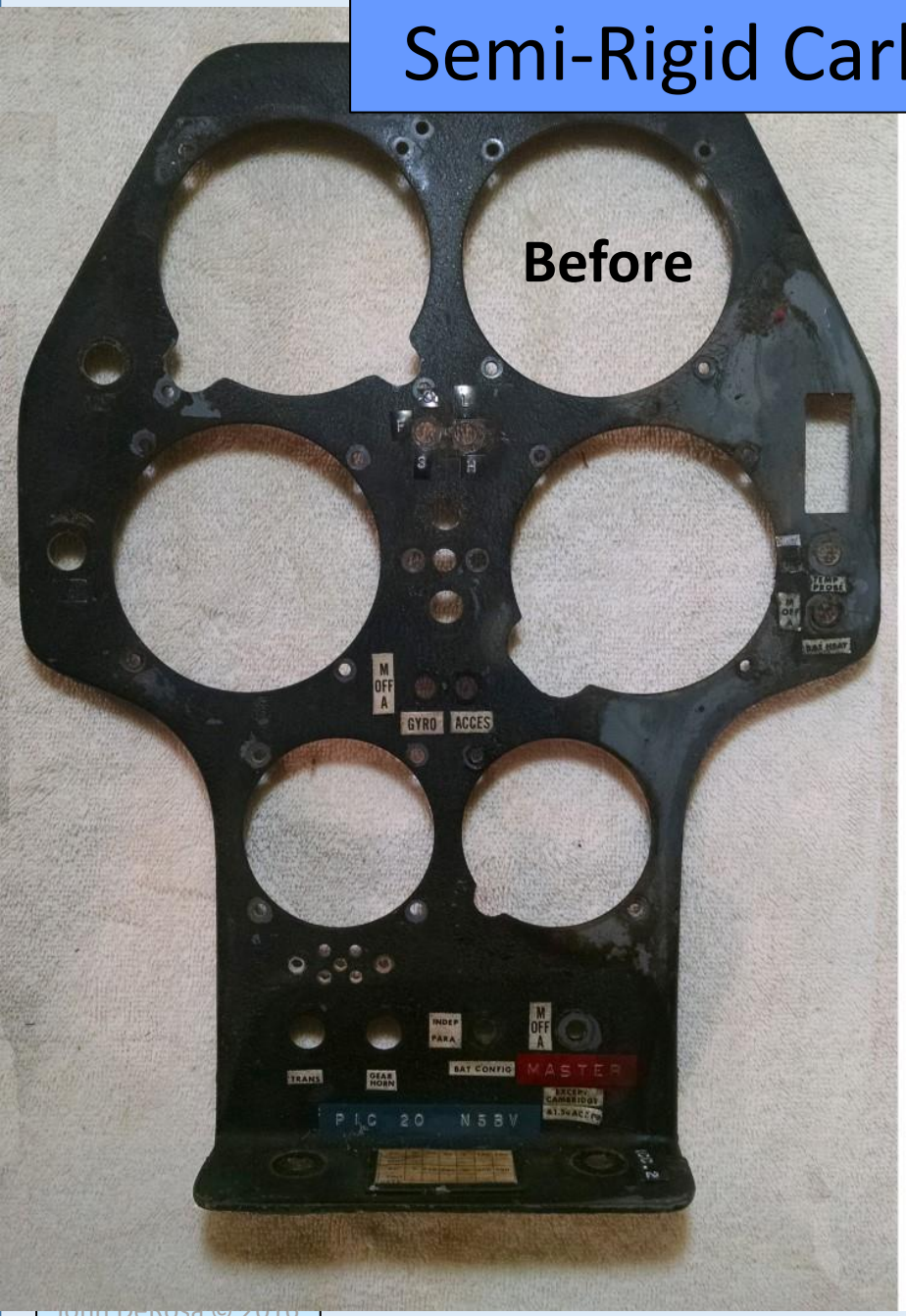
# Semi-Rigid Carbon Fiber Veneer

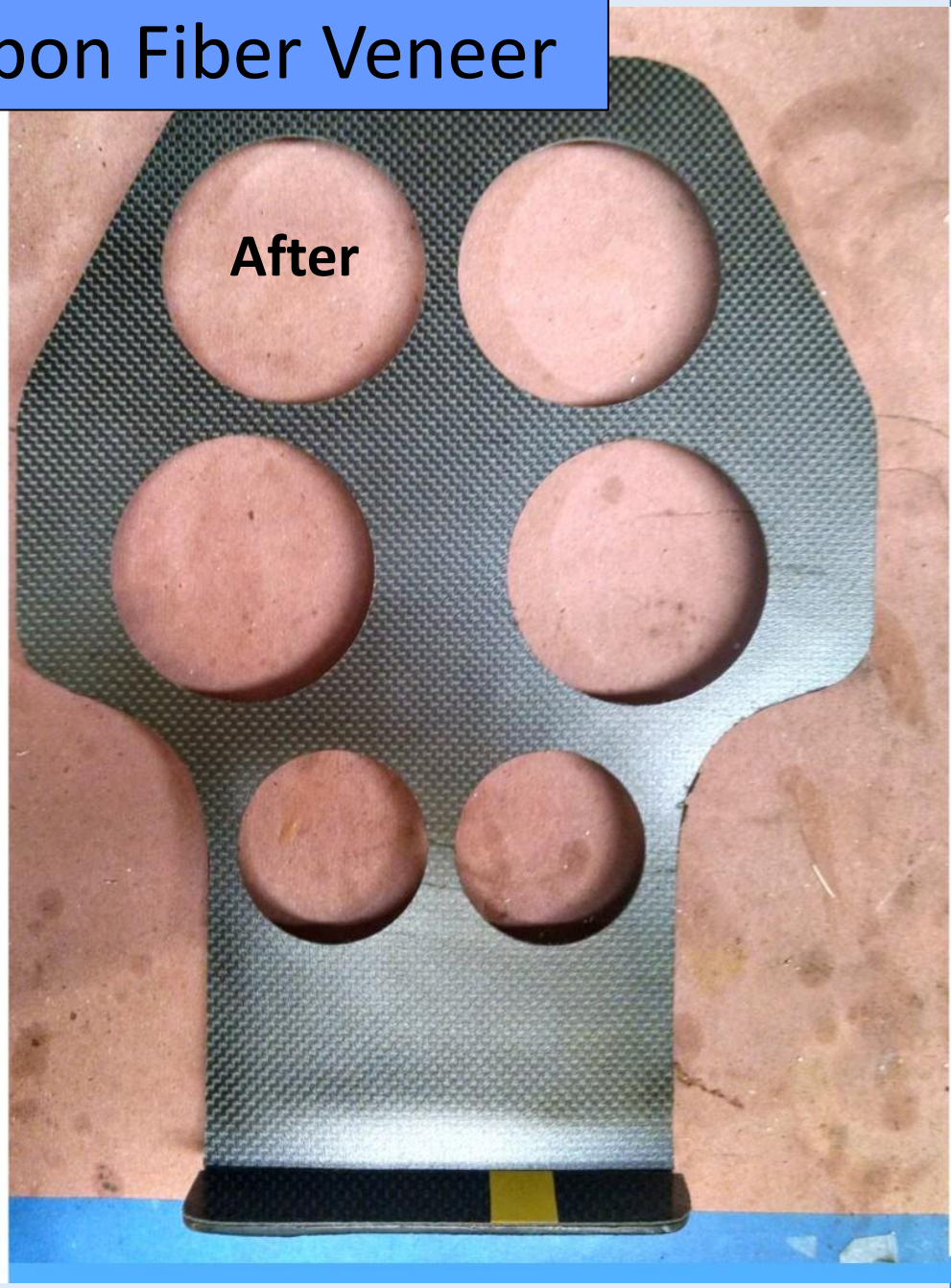
Final Result

# Semi-Rigid Carbon Fiber Veneer


Final Result

# Semi-Rigid Carbon Fiber Veneer



# Semi-Rigid Carbon Fiber Veneer


# Non-Rigid Fake Carbon Fiber Wrap

# 3M Di-NOC Non-Rigid Wrap


AKA “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

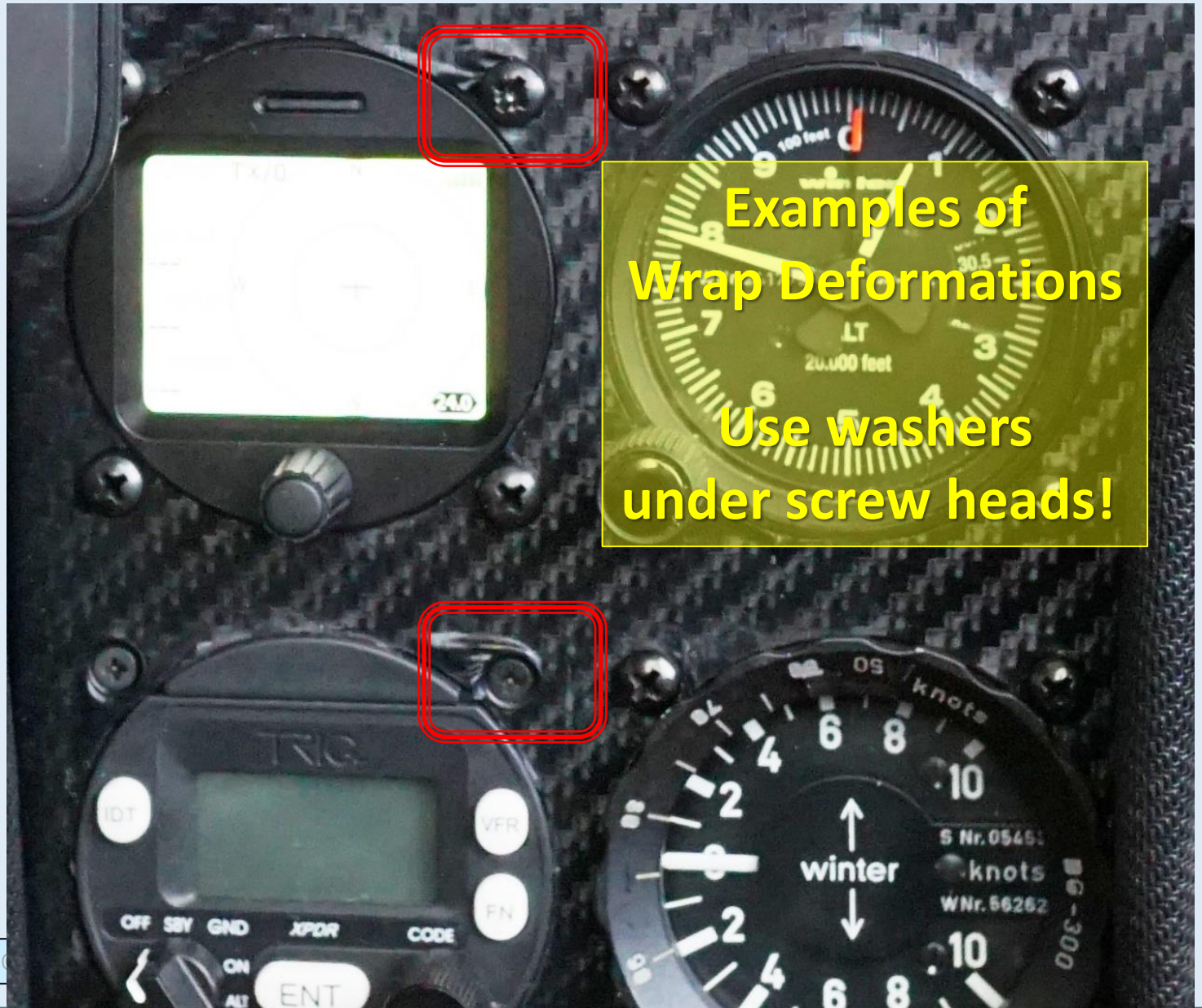
# 3M Di-NOC Non-Rigid Wrap


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

- Aviation Wiring
- Transceiver Troubleshooting
- Oxygen Systems
- Working with Glider Air Lines
- 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
- Emergency Location Devices & Kits

http://aviation.derosaweb.net/presentations
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