



GLOBAL  
FINISHING  
SOLUTIONS



# Dry Filter: Bench Booth

## Installation Manual

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*Read and keep this manual for future reference. All personnel operating the equipment described in this manual should review and understand all instructions before use.*

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# Introduction

## About Global Finishing Solutions LLC

### Leading the Industry in Paint Booth and Finishing System Technology

With decades of experience, Global Finishing Solutions is the leading manufacturer of paint booths and finishing systems for many industries, including automotive refinish, aerospace and defense, industrial manufacturing, woodworking, and large equipment. By combining high-quality components, strong relationships with paint manufacturers, and our experienced distribution network, GFS provides the best equipment and support to set your business up for success.

## Contacting Global Finishing Solutions

### General information

- Toll-free: 800-848-8738
- Fax: 715-597-2193
- Email: [info@globalfinishing.com](mailto:info@globalfinishing.com)
- Online: [www.globalfinishing.com](http://www.globalfinishing.com)

### Technical support

- Toll-free: 800-848-8738
- Fax: 715-597-8818
- Email: [techservices@globalfinishing.com](mailto:techservices@globalfinishing.com)

### Parts and filters

- Toll-free: 800-848-8738
- Fax: 888-338-4584
- Email: [parts@globalfinishing.com](mailto:parts@globalfinishing.com)

## Target audience

This document is intended for use by trained, experienced paint booth installers and maintenance technicians. If you have questions about the installation procedure described in this manual, contact GFS as described above.

## Conventions used in this manual

This section describes how information is presented, organized, and referenced within this manual.

### Safety notices

This manual uses the following standards to identify conditions related to safety hazards and equipment damage.

**Table 1. Safety notices**

Symbol	Description
<b>DANGER</b>	Indicates an imminent hazard that will result in death.
<b>WARNING</b>	Indicates a hazard that can result in serious personal injury or death.
<b>CAUTION</b>	Indicates a hazard that can result in personal injury.
<b>NOTICE</b>	Indicates a situation that can result in equipment or property damage, but poses no risk of personal injury.

### Information notices

In addition to the safety notices described above, this manual uses a boldface keyword to identify certain other types of information.

**Table 2. Information notices**

Keyword	Description
<b>NOTE</b>	Denotes general information that provides additional context or guidance.
<b>Important</b>	Denotes information to which you should pay special attention.
<b>Reference</b>	Directs you to related content in a separate document.
<b>Prerequisites</b>	Specifies other tasks that must be completed or conditions that must exist before you perform the current task.
<b>Scope</b>	Describes limitations to the current task or conditions under which the task applies or does not apply to the procedure.

# General safety

Follow all safety guidelines when assembling, operating, or servicing this product.

## **WARNING**

There are inherent hazards associated with the operation and service of this equipment. For your personal safety, observe all safety information. Failure to observe these safety practices can result in personal injury or death.

## **WARNING**

Operation and maintenance of this product must be performed properly by qualified personnel who observe the warnings in all documentation and notes provided with and on the product.

## **WARNING**

Follow all general standards for installation and safety for work on installations. Follow all good practices for the proper use of lifting tackle and equipment. The use of protective equipment such as safety goggles and protective footwear must be considered.

## **WARNING**

All persons who will operate, service, inspect, or otherwise handle this product must read and understand the safe operating practices, safety precautions, and warning messages in this documentation.

## **WARNING**

Comply with OSHA guidelines and with all applicable local electrical, safety, and fire codes and standards.

## **WARNING**

All field wiring provided must comply with local codes or, in the absence of local codes, the National Electrical Code (NFPA 70). Article 516 covers applicable of flammable and combustible materials.

## **WARNING**

Electrical installation should be completed by a qualified electrician. Installation must meet all applicable national, state, and local electrical codes.

## **WARNING**

Ensure that all electrical components are grounded to a central ground.

## **WARNING**

Disconnect and lock out the main electrical service before installing, adjusting, or servicing the product.

## **WARNING**

Guards and covers that prevent contact with electrically energized or moving parts are required and must not be removed or left open during operation.

## **WARNING**

Local fire and building codes require fire protection. Check with local inspector authorities for requirements.

**CAUTION**

Read and save these instructions before attempting to assemble, install, operate, or maintain the product described. Protect yourself and others by observing all safety information. Failure to comply with instructions could result in personal injury and/or property damage. Retain these instructions for future reference.

**CAUTION**

This manual contains statements that relate to worker safety. Read this manual thoroughly and comply as directed. Operate this equipment in accordance with the guidelines set forth in this manual. It is impossible to list all potential hazards of this equipment. Instruct all personnel involved with this equipment in the safe conduct and operation of the system. GFS recommends that only qualified personnel operate and maintain this equipment.

**CAUTION**

Safety signs, panels, and labels that are normally affixed to the product must be replaced immediately if illegible or missing.

**CAUTION**

New or replacement parts that are installed during repair or maintenance must include all safety signs, panels, and labels as specified by the manufacturer. These must be affixed to the new or replacement parts as specified by the manufacturer.

**CAUTION**

Where applicable, use earplugs or take other safety measures for hearing protection.

**NOTICE**

The product must be installed and serviced only by a trained, qualified service technician. Incorrect installation may void the warranty.

**NOTICE**

If you have questions about the warranty, please contact your distributor prior to contacting GFS.

# Booth safety

## **DANGER**

**Ceiling panel load capacity for installation and maintenance:** You must use temporary platforms that span at least two structural frames for maintenance. **Do not walk on or apply any pressure to lights or explosion relief panels.**

## **WARNING**

All equipment must be operated and maintained in accordance with local, state, and federal (OSHA) requirements governing occupational safety, fire protection, and booth operations. Operators must read and understand GFS and included independent equipment and/or component manufacturer's instructions prior to use. **Disclaimer:** GFS is not responsible for any injury, illness, or property damage that results from not abiding by local, state, or federal (OSHA) requirements that govern occupational safety, fire protection, spray booth, and oven operations. GFS is also not responsible for any injury, illness, or property damage that is the result of not adhering to GFS and/or independent equipment/component operating, service, maintenance, and/or installation requirements or directives.

## **WARNING**

Install the paint booth in compliance with locally enforced codes and standards.

## **WARNING**

A fire suppression system is required by the International Fire Code and NFPA 33. A fire suppression system is not supplied with this booth.

## **WARNING**

Do not allow overspray to accumulate on the inside of the paint booth walls. When overspray accumulates, remove it as soon as possible to prevent a possible fire hazard. Use a non-ferrous, non-sparking scraper to eliminate any possibilities of igniting combustible material.

## **WARNING**

Do not leave piles of paint sweepings in the booth as it creates a possible fire hazard.

## **WARNING**

Treat used filters and any other paint-contaminated items as flammable products and dispose of them safely.

## **WARNING**

Improper disposal of used filters may cause spontaneous combustion. You must consult local authorities for proper storage and disposal requirements. Guidelines include:

- Immediately remove all filters from the booth.
- Discard filters to a safe, detached location, place them in a non-combustible container with tight-fitting lid, or place them in a water-filled metal container to prevent a possible fire hazard.
- Disposal varies depending on the type of paint that is being captured. Consult local authorities for storage and disposal requirements.



**WARNING**

Duct the exhaust air from the fan away from the working environment to the outdoors. Do not operate the booth unless exhaust has been ducted properly.

**WARNING**

Isolate the outdoor vent from air-conditioning intakes, windows, and any other equipment that may recirculate the exhaust indoors.

**WARNING**

Turn on the exhaust fan before using the spray booth. Ensure that the exhaust fan is operating correctly before entering the paint booth.

**WARNING**

Check local codes to see if a booth interlock is required. A booth interlock prevents the spray devices from operating unless the booth fan is operating.

**WARNING**

Some spray activities may require the use of respiratory protection.

**WARNING**

Use an OSHA-approved paint spray respirator when spraying in the booth.

**WARNING**

Do not overfill the manometer. Overfilling allows fluid to collect in the flexible plastic connecting loop in the back of the manometer, which could cause a serious reading error. If the manometer is subject to overflow, make sure that the fluid has not passed into the plastic connecting loop.

**WARNING**

This equipment is designed for the removal of particulate matter only. Reduction of volatile organic compounds (VOCs) requires either coating reformulation or optional, additional equipment.

**CAUTION**

Become familiar with all controls before operating or servicing this paint booth.

**CAUTION**

Proper door alignment is critical to the operation of the booth. Ensure that there is equal space around the doors. Move the bottom of the door jamb to the left or right or in and out until the doors are sealed and plumb.

**CAUTION**

If this installation includes pumps or compressors, install and connect those devices in accordance with the manufacturer's documentation.

**NOTICE**

GFS recommends storing crates indoors pending installation. If you must store crates outside, protect crates and their contents from moisture to prevent damage to equipment.

**NOTICE**

Install the control panel per NFPA 70 and local codes and standards.

**NOTICE**

Failure to anchor the paint booth to the floor properly may result in structural damage.

# Booth description

With crossdraft airflow and open-front construction, GFS' Bench booths provide a flexible, cost-effective solution for a wide variety of finishing applications.

The simplest configuration, crossdraft Bench booths use an exhaust fan to pull air in from the front of the booth, where it enters the working area unfiltered. Air flows horizontally through the working area, over the product or part, and into the filtered exhaust bank at the rear of the booth.

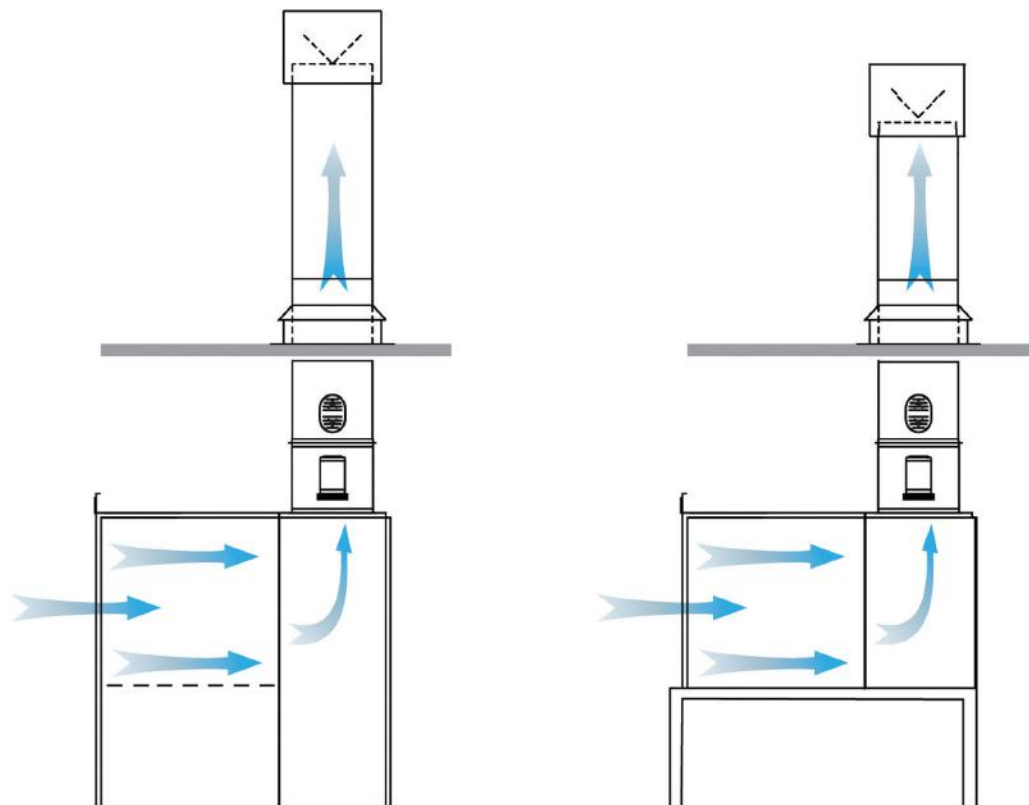


Figure 1. Airflow in free-standing Bench booths (left) and in table-top Bench booths (right)

# Preparing for installation

## Accepting delivery of your booth

The booth is delivered unassembled, in multiple crates.

Upon delivery, count the number of crates you received and compare that number to the expected number per the Bill of Lading. Also inspect each crate for any signs of damage during shipment.

### **NOTE**

If you see shipping damage, note it on the freight carrier's paperwork; failure to do so may result in claim denial.

**If any parts are missing or damaged**, contact Global Finishing Solutions at 800-848-8738 to speak to a Technical Service Representative.

### **NOTICE**

GFS recommends storing crates indoors pending installation. If you must store crates outside, protect crates and their contents from moisture to prevent damage to equipment.

## Gathering required documentation

Ensure that you can locate these documents and that they are available during the installation procedure.

### NOTE

Table 3 lists the location of the hard-copy documents that ship with the booth. The Installation Manual, Job-Specific Guide, Design Drawings, Service/Operations Manual, and the appropriate control panel operator manual are also provided electronically to distributors via box.com.

**Table 3. Additional documents related to booth installation**

Document	Description	How provided
Design Drawings	Provides instructions for assembling this particular booth and includes information about the booth order, configuration, and components.	Ships in the "Miscellaneous" box
General Booth Details	Provides drawings and assembly instructions for common components; may include drawings that do not apply to this particular booth.	Ships in the "Miscellaneous" box
<i>If applicable:</i> Electrical Drawings	Provides wiring diagrams for electrical components.  <b>NOTE</b> Electrical Drawings are provided only if the booth includes a control panel from GFS.	Ships inside the control panel
<i>If applicable:</i> Control Panel Operator Manual	Setup and operation instructions for the control panel.  <b>NOTE</b> A manual is provided only if the booth includes a control panel from GFS.	Ships inside the control panel
Startup documents	A set of documents related to booth startup and commissioning.	Ships in the "Miscellaneous" box

## Confirming site requirements

Before beginning the installation procedure, confirm that the site where the equipment will be assembled meets the following requirements:

- The floor (or surface, for a table-top booth) where you will assemble the paint booth is level.

**NOTE**

If not, you must use washers to avoid any misalignment.

- The area is large enough to allow a minimum of 3 feet (914 mm) of clear space on all four sides of the booth. Check local codes and refer to NFPA guidelines to determine particular space allowances.
- The front of the booth is sufficiently clear to allow for proper circulation of air through the booth.
- There is sufficient overhead clearance for the exhaust unit and exhaust ductwork in the area where the equipment is to be located.
- A licensed electrician has verified that the incoming power meets the requirements specified for the equipment. (The power specification is included with the submittal or provided at delivery.)
- The appropriate devices for lifting/rigging are available onsite. (Either purchased from GFS with the booth, or obtained elsewhere by the customer.)
- The appropriate miscellaneous hardware kits are available on-site. (Either purchased from GFS with the equipment, or obtained elsewhere by the customer.)

# About the Design Drawings document

Use this manual in conjunction with the provided Design Drawings document. This Design Drawings document defines the overall layout and detailed structure of your particular booth. If applicable, it also includes exploded-view diagrams and parts lists for each section (or subassembly) of the booth.

## Page elements

Pages within the Design Drawings document contain the following elements:

- **Title block:** The title block is located along the right edge of each page. It contains the model information, drawing identification label or number, the order/serial number, and other information.
- **Model Info:** Contains text that identifies each page within the Design Drawings document, e.g., "Overall Assembly". When the installation instructions refer you to a specific page within the Design Drawings, look for that text in the Model Info field. (For a description of the various page types that might be included in your Design Drawings document, see "Page types" (page 17).)
- **Scale:** If the drawing is to scale, the scale is defined here (e.g., 3/16" = 1' 0"). Otherwise, this field contains "NTS," or "Not to Scale."
- **Drawings:** The main area of each page can contain any or all of these types of drawings:
  - An exploded and/or assembled view of the product or subassembly
  - Additional views or "Detail" drawings
- **Bill of Materials:** Any page that includes a drawing with labeled parts also includes a table that lists each item number with its corresponding part number and quantity.
- **Quantity per Booth:** Pages that show a subassembly of the product and list the quantity provided of that particular subassembly.
- **Notes:** Pages within the Design Drawings often contain notes that provide information about how to install that particular section or subassembly.

# About the Design Drawings document

**NOTE:**

- USE SHIM HANGERS FOR PANEL TO PANEL CONNECTIONS.
- APPLY ADHESIVE FOAM (FOAM-GUARD) TO BOTH SIDES OF ALL H-CANNELS.
- USE SHIM HANGERS (HANGERS) TO WALL, HANGERS TO THE CORNERS.
- TRIM CORNER COVERS TO MATCH BOOTH HEIGHT.
- USE TEK SCREWS (SS-0375) TO ATTACH BOOTH CORNER COVERS.

**H-CANNEL INSTALLATION DETAIL VIEW**

**WALL PANEL SPACING IS IMPORTANT. INCORRECT SPACING WILL CAUSE THE HOLES IN ADJACENT PANELS TO BECOME MISALIGNED, CAUSE THE WALL TO BUMP OR SAG, OR CAUSE THE WALL TO BECOME LONGER ALONG THE TOP THAN THE BOTTOM. FOR REFERENCE, THESE SHOULD BE SET BETWEEN EACH CASE BUT HOLE FINISHED IN THE TOP OF THE PANEL.**

**PLENUM PANEL WALL PANEL CONNECTION**

**WALL PANEL INSTALLATION DETAIL BETWEEN TUBE COLUMN**

**WALL PANEL TO COLUMN CONNECTION DETAIL**

**BILL OF MATERIALS (F):**

W	R	C	QTY	UNIT	PART NUMBER	DESCRIPTION	MATERIAL
			39	1	EP37A	3x7 PERSONNEL DOOR	
			40	7	HCA20208	H-CANNEL, 107.845	20 WP
			41	2	HCA20208	H-CANNEL, 21.500	20 WP
			42	3	PAC05-36108	PANEL ASSEMBLY, DUAL SKIN, LIGHT	
			43	2	PAC05-18108	PANEL ASSEMBLY, DUAL SKIN, SOLID	
			44	4	PAC05-36108	PANEL ASSEMBLY, DUAL SKIN, SOLID	
			45	1	PAC05-36108	PANEL ASSEMBLY, DUAL SKIN, SOLID	
			46	5	PAC05-24006	PANEL ASSEMBLY, SINGLE SKIN, PLENUM	
			47	2	PAC05-24072	PANEL ASSEMBLY, SINGLE SKIN, PLENUM	

**GLOBAL FINISHING SOLUTIONS**  
 800-648-9738  
 800-648-9738  
 3088408

**DATE:** 5/17/19  
**BY:** BAP  
**DATE:** 5/28/2019  
**REVISED BY:**  
**CHECKED DATE:**

**MODEL INFO:**  
 CA-WMS-2709-DUP-3L-R-F  
 SIDE WALL, 27' L X 9' H

**ORDER/SERIAL NUMBER:** UXXXXXX  
**DRAWING SET:** R01  
**REVISION:**

**DRAWING:** 5

- A:** Title block
- B:** Model info
- C:** Drawing number
- D:** Drawings: Main view (exploded and/or assembled)
- E:** Drawings: Detail view
- F:** Bill of materials
- G:** Quantity per booth
- H:** Notes



## Page types

The Design Drawings document may contain any of the following pages that apply to your particular product.

**Table 4. Page names in the Design Drawings document**

Page name	Description
Chamber Wall	Shows an exploded view of an exhaust bridge chamber's back wall.  <b>NOTE</b> This page applies only to non-drive-through Enclosed Finishing booths that use an exhaust bridge chamber instead of a standard (non-bridge) exhaust chamber.
Concept Drawing	Shows a top view of the booth (labeled "Plan View"), as well as front, side, and rear elevations.
Dry Filter Roll Media Option	Shows how to install roll-style exhaust filter media.
End Wall	Shows how to install a front end wall; applies only to Enclosed Finishing booths with a width of 10 feet or less.
Exhaust Bridge Chamber	Shows an exploded view of an exhaust bridge chamber.  <b>NOTE</b> An exhaust bridge chamber is an option for Enclosed Finishing booths.
Exhaust Chamber	Shows how to assemble a standard (non-bridge) exhaust chamber.
Filter Wall	Shows how to assemble a filter wall; applies only to Enclosed Finishing booths with a width of 12 feet or more.
General Structural Notes	Shows how to anchor various booth components to the slab.
Overall Assembly	Shows an exploded view of the entire booth; identifies the major components and sub-assemblies of the booth.  <b>NOTE</b> For an Enclosed Finishing booths that uses an exhaust bridge chamber, this page also includes a back view of the booth.
Personnel Door Module Kit	Shows how to replace a side wall panel with a personnel door.
Product Door	For an Enclosed Finishing booth, the Design Drawings include a page for each type of product door included in the booth:  <ul style="list-style-type: none"> <li>• Product Door - Filter: Applies to all Enclosed Finishing booths.</li> <li>• Product Door - Solid: Applies only to a drive-through Enclosed Finishing booth.</li> </ul>
Universal Bay	Shows how to assemble the work bay(s) included in the booth.

# Required materials

This section lists the tools, equipment, and documentation required for installing your booth.

## NOTE

Depending on the type of booth you are installing, additional tools or equipment may be required.

## Required tools

- Screwdrivers
- Wrenches and socket set
- Hammer and mallet
- Drift pins (two per person; 1/8-inch to 5/8-inch taper)
- Caulk gun
- Impact driver and drill
- Chalk and/or felt-tip marker (for marking initial measurements on floor)
- Chalk-line tool
- Laser level (*Suggested:* Quad laser or rotary laser level)
- Tape measures (35-foot and 100-foot)
- Tin snips
- Drill with 1/8-inch, 3/8-inch, and 1/2-inch bits
- Torque nut runner
- Reciprocating saw
- *Optional:* Torch and welder in case modifications need to be made on site
- Tools required for decal placement:
  - Stiff squeegee
  - Spray bottle with soapy-water mixture
  - Paper towels
  - Scissors

## Recommended equipment

- Ladders
- Material handler
- Two 26-foot T scissor-lift platforms
- Warehouse forklift with 5000-pound lift weight and a maximum lift height higher than 16 feet

### **NOTE**

Lifts and cranes are not required, but they may improve both the safety and speed of installation.

### **NOTE**

The end user is responsible for providing any lifts, cranes, and material handlers. Alternatively, the end user can coordinate with the installer so the installer can rent those items before starting the work.

# Installation best practices

## Unpack in stages

As you begin each section of the installation procedure, unpack the crate(s) that contain the parts for that section. In general, the skids are organized so the parts that go together during assembly are packed on the same skid.

### NOTE

For faster unpacking, use a reciprocating saw to cut the crates.



**Figure 2. Skids awaiting unpacking**

A packing list is attached to each crate. As you unpack a crate, compare all the parts with that crate's packing list to check for shortages or losses in transit. Also check parts for any damage that might have been caused in shipping.

### NOTE

Slightly bent panels and angle braces can be straightened and will cause no performance or assembly problems.

**If any parts are missing or damaged**, contact Global Finishing Solutions at 800-848-8738 to speak to a Technical Service Representative.

## Sort and label

To help installation proceed more efficiently, sort booth panels and tie angles by size as you unpack them (Figure 3).

For best results:

- Use the *part number* to help identify components as you sort them.
- Label each part with its corresponding *item number* so you can select the correct parts quickly during assembly.



Figure 3. Panels sorted by size in preparation for assembly

## Using the part number

If in doubt whether two parts are equivalent, check the *part number*. The part number is either etched into the part or printed on a label affixed to the part (Figure 4).

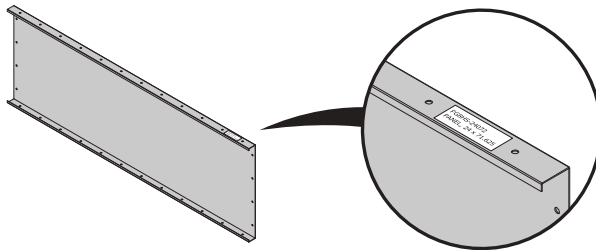


Figure 4. Example of a part number label

## Using the item number

To make it easier to identify a part in relation to the Design Drawings document, identify each part by its *item number*.

To find the item number, look on the Design Drawings document page where that part is used and find the part number in that page's Bill of Materials. Then find the corresponding item number.

For example, in Figure 5, part number PG8HS-24072 corresponds to item number 18. (The numbers on your Design Drawings may be different than shown here.)

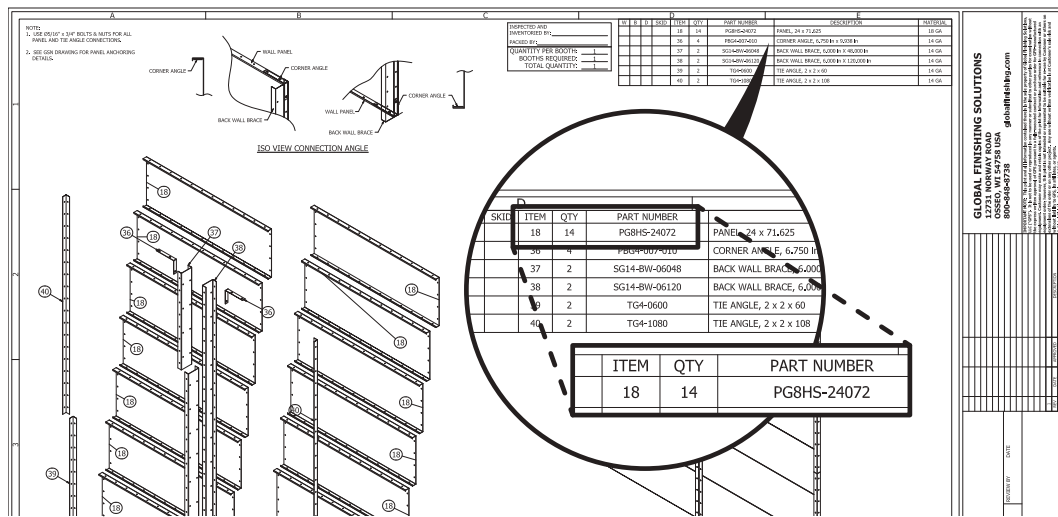


Figure 5. Example of finding the item number that corresponds to a part number

Once you've found a part's item number, write the item number on that part with a marker (Figure 6).

### NOTE

Be sure to write the item number in a location that will not be visible after the booth is assembled (for example, on a flange).

Labeling parts with their corresponding item numbers does require more set-up time, but you'll be able to find parts more quickly, with less chance of selecting the wrong part during assembly.

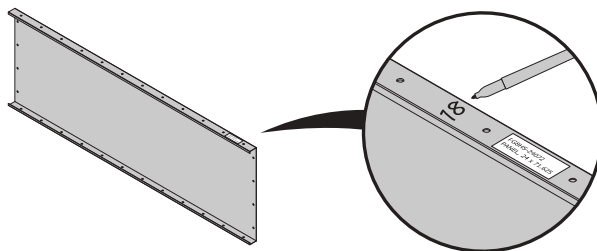


Figure 6. Example of an item number written on a panel flange

## Follow assembly guidelines

Follow these guidelines when assembling the booth:

- As you build each section, tighten the bolts only to finger-tight.
- When directed to do so, tighten the bolts within a section to *snug-tight*. Snug-tight is defined as “the tightness that is attained with a few impacts of an impact wrench or the full effort of an ironworker using an ordinary spud wrench to bring the plies into firm contact.” (RCSC 2014)
- Orient panels so that each panel's flanged side faces outward, and the non-flanged side faces the booth's interior.
- Orient bolts so that the bolt heads are on the booth's interior and the threads are on the exterior. At corners where an assembly angle is used, place the nuts on the inside of the panel flanges.
- Use 5/16-inch by 3/4-inch bolts and nuts for all tie angle and panel connections. Use other hardware as specified within the installation instructions or on the Design Drawings.
- Plumb the panels so that they are perpendicular to the floor. The sides of the booth must be parallel to each other.

# Installation procedure

This procedure describes how to install a free-standing or table-top Bench Booth.

## Prepare the surface where the booth will be installed

### NOTE

For a free-standing booth, the surface where the booth will be installed is the floor of the building. For a table-top booth, the surface where the booth will be installed is a counter, table, workbench, or so on.

1. Sweep the floor or table surface clear of debris.
2. Use a laser level to check the floor or surface:
  - **For a free-standing booth:**
    - If the floor is out of level by **1/4 inch or less** over the full length of the booth, continue to Step 3. (You do not need to take any corrective action now. You can correct for slope later in the procedure by placing washers under the tie angles or panels where the anchors are located. GFS does not supply washers.)
    - If the floor is **more than 1/4 inch** out of level over the full length of the booth, shim or grout the floor as needed to get it to within 1/4 inch of level. GFS does not supply shims.
  - **For a table-top booth:** If the surface is out of level by **more than 1/4 inch** over the full length of the booth, place shims under the table to bring it to within 1/4 inch of level. You can then make final corrections for slope later in the procedure by placing washers under the tie angles or panels where the anchors are located. GFS does not supply shims or washers.
3. Referring to the Working Width and Working Depth from the Concept Drawing page of the Design Drawings, measure the booth's footprint on the floor and mark the corners.

### NOTE

On the Concept Drawing page of the Design Drawings, the Working Width is noted in the Front View diagram; the Working Depth is noted in the Side View diagram.

### NOTE

Ensure that the location allows for the clearances specified in "Confirming site requirements" (page 14).

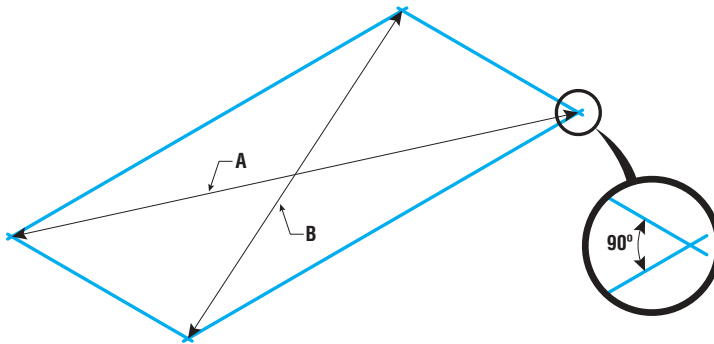
### NOTE

Use a piece of chalk or other temporary mark at this stage, in case you have to adjust the position of the marks in the next step.



4. Measure the diagonals to confirm that the opposite sides are parallel and that adjacent sides are perpendicular to each other.

Re-measure and adjust the corner markings as needed until the diagonals are equal length.



5. After confirming that the measurements are correct and the angles are 90 degrees, snap chalk lines to mark the outline of the booth's footprint.

## Assemble the booth

**Prerequisites:** The booth's footprint must already be marked on the floor or surface as described in "Prepare the surface where the booth will be installed" (page 24).

**Reference:** Refer to the Overall Assembly page of the Design Drawings.

1. Build the rear corners of the exhaust chamber:

**NOTE**

The exhaust chamber is the rear portion of the booth (from the filter rack to the back wall).

- a. Build the back wall of the exhaust chamber by assembling the floor tie angle (if applicable), the horizontal panels, and the upper tie angle.

**NOTE**

The floor tie angle applies only to free-standing booths. Table-top booths do not have a floor tie angle under the back wall.

- b. For each side wall: Assemble the rear-most vertical panel and the tie angles that fit above and below that panel.

**NOTE**

Free-standing booths have a single lower tie angle that fits under both the rear and front vertical panels on each side wall. Therefore, when you install the lower tie angle for the rear-most vertical panel in this step, it will extend past the rear vertical panel toward the front of the booth.

- c. Connect the two side wall sections to the left and right edges of the back wall assembly to form the rear corners.

2. Install the fan panel:

**NOTE**

The fan panel forms the roof of the exhaust chamber. It has a round opening where the exhaust fan connects later in the procedure. (See "Install the exhaust fan" (page 28).)

- a. Connect the back edge of the fan panel to the back wall of the exhaust chamber.
  - b. Connect the left and right edges of the fan panel to the rear-most vertical side wall panels on each side of the booth.
  - c. **For a free-standing booth:** Connect the fan braces to the top of the fan panel.
3. Install the filter rack(s):

**NOTE**

Free-standing booths have multiple filter racks; table-top booths have only one filter rack. If you are building a table-top booth, substitute “individual filter rack” for “assembled filter racks” in the instructions that follow.

- a. **For a free-standing booth:** Bolt the filter racks together.
- b. Bolt the upper and lower wing panels to the top and bottom of the assembled filter racks.

**NOTE**

The wing panels are flat (non-flanged) panels that fit around the edges of the assembled filter racks.

- c. *If applicable:* Bolt the side wing panels to the left and right sides of the assembled filter racks.

**NOTE**

All booths use side wing panels except the 5-foot wide free-standing booth. If you are building a 5-foot booth, skip this step and continue to Step 3.d.

- d. Temporarily connect the upper wing panel (that is, the panel that extends across the top of the assembled filter racks) to the front of the fan panel.

**NOTE**

Use only a few bolts, and tighten them only to finger-tight. You will have to remove these bolts in order to connect the ceiling panel for the work bay in Step 7.

**NOTE**

If the filter rack assembly has side wing panels, ensure that the holes in the edges of each side wing panel align with the holes on the front edge of the adjoining side wall panel.

4. **For a free-standing booth:** Build the left or right side wall of the work bay:

**NOTE**

The work bay is the front portion of the booth (from the filter rack to the front wall).

- a. Connect the front-most vertical panel for that side wall to the floor tie angle and to the rear-most vertical panel (both installed during Step 1).

**NOTE**

The outer edges of the upper, lower, and side wing panels (if present) fit between the two vertical panels of the side wall.

- b. Install a tie angle on top of the front-most vertical panel.

5. **For a table-top booth:** Build the left or right side wall of the work bay:

**NOTE**

The work bay is the front portion of the booth (from the filter rack to the front wall).

- a. Connect a lower tie angle to the front-most vertical panel for that side wall.
- b. Connect that front-most vertical panel to the rear-most vertical panel on that side wall (installed during Step 1).

**NOTE**

The outer edges of the upper, lower, and side wing panels (if present) fit between the two vertical panels of the side wall.

- c. Install a tie angle on top of the front-most vertical panel.
6. Repeat Step 4 or Step 5, as appropriate, to build the opposite side wall of the work bay.
7. Install the ceiling panel for the work bay:
  - a. Remove the temporary bolts (installed in 3.d.) that connect the upper wing panel of the filter rack assembly to the fan panel.
  - b. Bolt the rear edge of the ceiling panel to the front edge of the fan panel (with the upper wing panel of the filter rack assembly in between).
  - c. Bolt the left and right edges of the ceiling panel to the front-most vertical side wall panels on each side of the booth.

8. Install the panel that forms the floor of the exhaust chamber:

**NOTE**

Do not connect the front edge of the panel during this step.

- a. Bolt the back edge of the panel to the back wall of the exhaust chamber.
- b. Bolt the left and right edges of the panel to the rear-most vertical side wall panels on each side of the booth.
9. Install the panel that forms the floor of the work bay:
  - a. Bolt the back edge of the panel to the front edge of the exhaust-chamber floor panel (with the lower wing panel of the filter rack assembly in between).
  - b. Bolt the left and right edges of the panel to the front-most vertical side wall panels on each side of the booth.
10. Bolt the warning panel to the front edge of the work bay ceiling panel.

**NOTE**

Ensure that the warning decal (already installed on the right end of the warning panel) faces the front of the booth.

11. Install the fire curtain.
12. Ensure that the booth is plumb, square, and level.
13. Tighten all bolts in the booth to snug-tight.
14. *If applicable:* Field-drill and bolt the outermost filter rack on each side of the filter rack assembly to the adjoining side wall panel.

**NOTE**

This step applies *only* to a 5-foot wide booth because that size booth does not use wing panels on the left and right sides of the filter rack assembly. If you are building any other size booth, skip this step and continue to "Anchor the booth" (page 28).

## Anchor the booth

**Prerequisites:** The booth must be fully assembled as described in “Assemble the booth” (page 25).

1. Verify that the following sections of the booth are plumb, square, and level:
  - The work bay (from the front of the booth to the filter racks)
  - The exhaust chamber (the rear portion of the booth from the filter racks to the back wall)

### NOTE

For uneven floors or surfaces, place washers under the tie angles or panels as needed to level the booth. Washers are not provided by GFS.

2. Double-check that all bolts have been installed and are tightened to snug-tight.
3. **For a free-standing booth:** Anchor the exhaust chamber and the work bay to the floor.

### NOTE

For instructions on anchoring, refer to the Panel to Slab Connection view and related notes on the General Structural Notes page of the Design Drawings.

4. **For the table-top booth:** Field-drill and bolt the booth to the work surface as needed.

## Install the exhaust fan

**Prerequisites:** The booth must be anchored as described in “Anchor the booth” (page 28).

### NOTE

The direction of the fan blade rotation and the direction of the airflow are indicated on the outside of the exhaust fan housing.

1. Place the exhaust fan on a forklift, orienting the fan so that the fan motor will be facing the appropriate side of the booth when the fan is removed from the forklift.

### NOTE

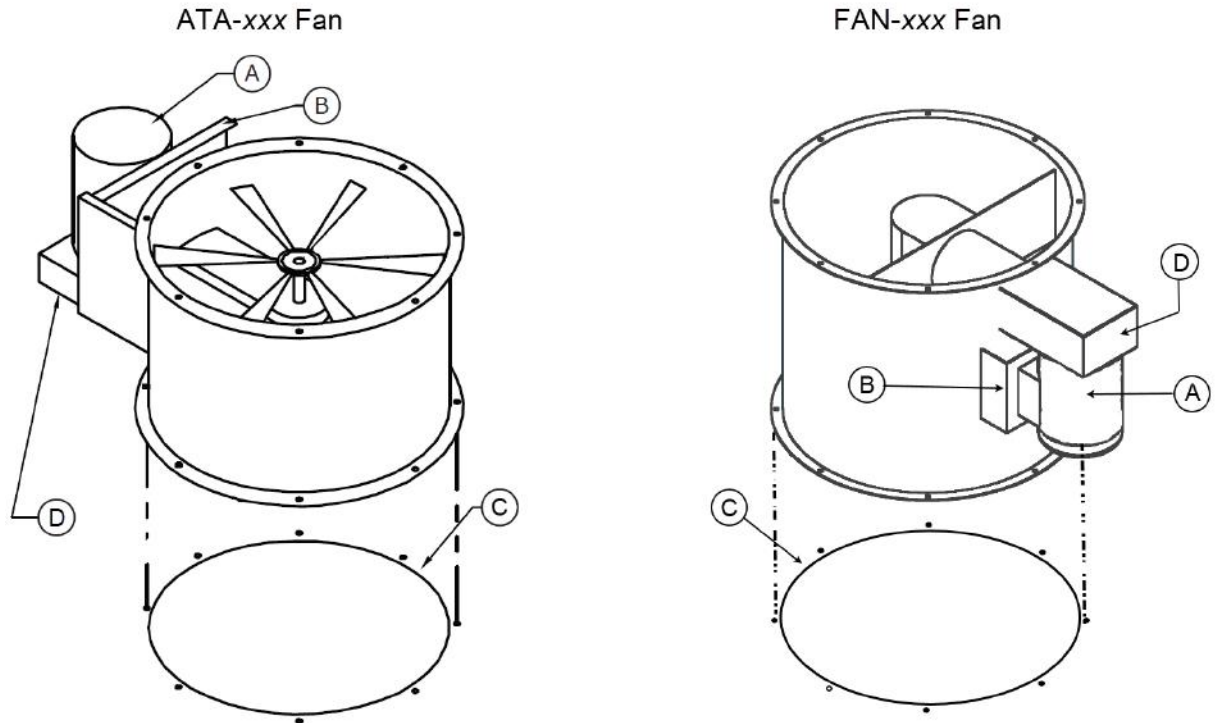
Refer to the Plan View on the Concept page of the Design Drawings to see how the fan motor should be oriented relative to the booth.

2. Apply caulk around the opening of the fan panel.

### NOTE

To identify the fan panel, refer to the Overall Assembly page of the Design Drawings. The fan panel forms the ceiling of the exhaust chamber and has a round opening where the fan connects.

3. Lift the fan to the top of the exhaust chamber and place it onto the fan panel, orienting the fan so that:
  - The fan motor points toward the appropriate side of the booth.
  - The fan motor and belt are more than 3 feet from the front face of the booth.
  - The holes in the fan's lower flange align with the holes in the fan panel.



*A: Motor*  
*B: Motor plate*  
*C: Caulk location*  
*D: Belt guard*

4. Bolt the lower flange of the exhaust fan to the fan panel using 5/16-inch x 1-1/2-inch bolts.

**NOTE**

Tighten the bolts to finger-tight until they are all installed; then tighten them to snug-tight.

5. Caulk the outside of the joint between the fan and the fan panel.

## Assemble the exhaust stack

**Prerequisites:** The exhaust fan(s) must be installed as directed in “Install the exhaust fan” (page 28).

### ***If applicable:* Install plain duct with Automatic Roof Ventilator (ARV)**

**Scope:** This task applies only if the site is using plain duct in their exhaust stack. If the site is using spiral duct instead of plain duct, perform “*If applicable:* Install spiral duct with Automatic Roof Ventilator (ARV)” (page 32) instead of this task.

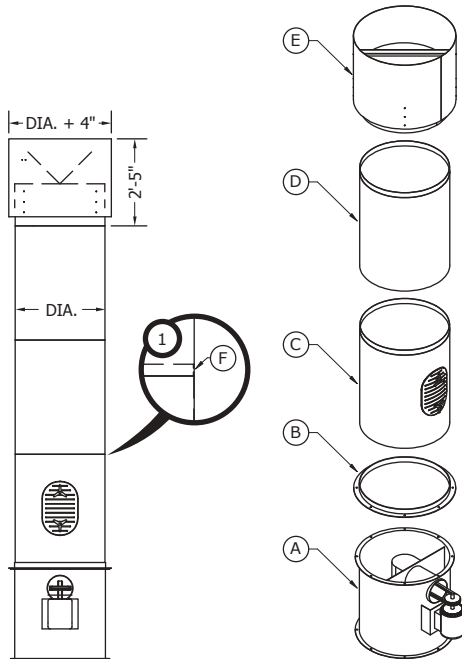
**Important:** If the roof opening is already cut, install all exhaust ductwork (including the ARV) during this step. If the roof opening is not cut, install the exhaust ductwork to just below the roof. (In that case, you will have to finish installing the rest of the ductwork later, after the roofer has cut the roof opening.)

**NOTE**

Use #10 self-tapping screws for duct-to-duct connections.

**NOTE**

Refer to the diagram below while completing this task.



- A: Exhaust fan
- B: Fan ring (flange down; duct lip up)
- C: Plain duct with clean-out door
- D: Plain duct (no door)
- E: ARV
- F: Use #10 self-tapping screws for duct-to-duct connections; caulk outside of all connections

1. Apply caulk to the upper flange of the exhaust fan; then connect the fan ring to the exhaust fan using the following hardware:
  - (8) 5/16-inch x 1-inch bolts
  - (16) 5/16-inch flat washers
  - (8) 5/16-inch lock washers
  - (8) 5/16-inch nuts
2. Connect the plain duct with clean-out door to the ring.

**NOTE**

Slip the bottom of the plain duct with clean-out door into the ring; then Tek-screw the duct from the outside in.

3. Connect a section of plain duct (without clean-out door) to the previous duct section.

**NOTE**

Slip the bottom of the plain duct into the top of the previous section; then Tek-screw the duct from the outside in.

4. Repeat Step 3 for each additional piece of duct in the exhaust stack.

When you have connected all the ductwork required for the exhaust stack, continue to Step 5.

5. *If applicable:* Install the roof flange and collar:

**NOTE**

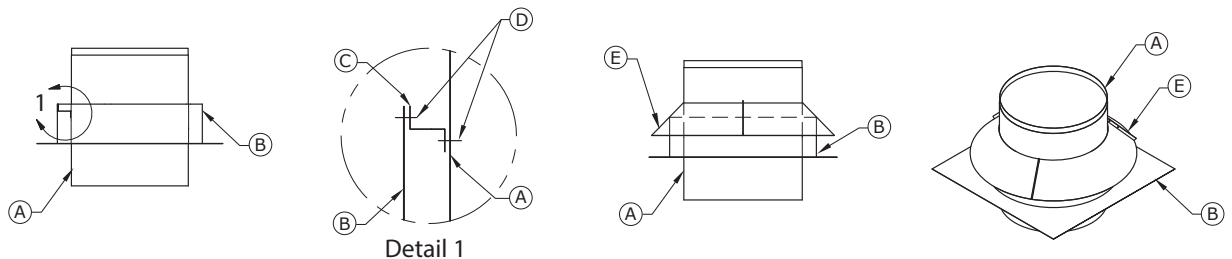
This step applies only if the booth includes the optional roof flange kit. If you are not sure which options are included with this booth, refer to the Concept page of the Design Drawings.

**NOTE**

The building contractor or roofer is responsible for sealing the roof flange after installation is completed.

**NOTE**

Refer to the diagram below while completing this step.



- A: Duct
- B: Roof flange
- C: Stand-off
- D: #10 Tek screw
- E: Collar

- a. Orient the roof flange with the flat base facing down and the cylinder facing up; then slide the roof flange down over the ductwork (which extends up through the roof opening) until the base of the roof flange rests on the roof.
- b. Using #10 Tek screws, connect the stand-offs between the roof flange and the duct.

**NOTE**

Distribute the stand-offs so that they are (approximately) evenly spaced around the duct. Ensure that each stand-off is either flush with or slightly below the top of the roof flange.

- c. Bolt together the collar sections; then slip the assembled collar over the ductwork and slide it down so that it rests on the top edge of the roof flange.
6. Slip the bottom of the ARV into the top-most duct section; then Tek-screw the ARV from the outside in.
7. Working down from the ARV to the exhaust fan, caulk the outside of all connections in the exhaust stack.

**NOTE**

If the exhaust stack includes a roof flange and collar, be sure to caulk the joint between the collar and the duct.

## ***If applicable: Install spiral duct with Automatic Roof Ventilator (ARV)***

**Scope:** This task applies only if the site is using spiral duct in their exhaust stack. If the site is using plain duct instead of spiral duct, perform “*If applicable: Install plain duct with Automatic Roof Ventilator (ARV)*” (page 29) instead of this task.

**Important:** If the roof opening is already cut, install all exhaust ductwork (including the ARV) during this step. If the roof opening is not cut, install the exhaust ductwork to just below the roof. (In that case, you will have to finish installing the rest of the ductwork later, after the roofer has cut the roof opening.)

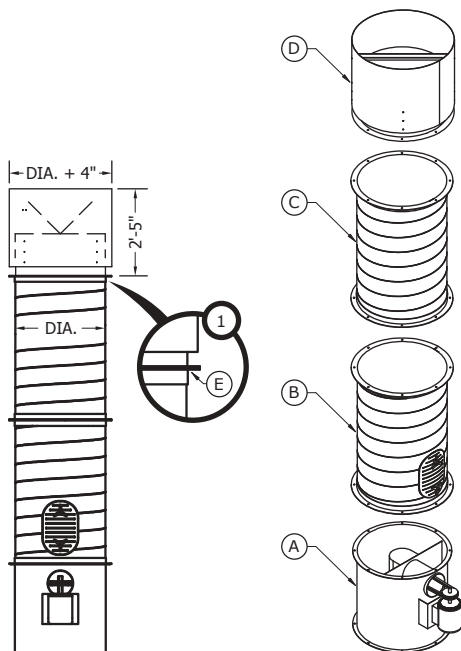
### **NOTE**

For flange-to-flange connections, use:

- (8) 5/16-inch x 1-inch bolts
- (16) 5/16-inch flat washers
- (8) 5/16-inch lock washers
- (8) 5/16-inch nuts

### **NOTE**

Refer to the diagram below while completing this task.



- A:** Exhaust fan  
**B:** Spiral duct with clean-out door  
**C:** Spiral duct (no door)  
**D:** ARV  
**E:** Flange-to-flange connection between ARV and duct

1. Install the spiral duct with clean-out door:
  - a. Apply caulk to the upper flange of the exhaust fan.



- b. Orient the spiral duct with clean-out door so that the door is toward the bottom.
- c. Connect the spiral duct with clean-out door to the exhaust fan flange-to-flange using the specified hardware.
2. Install the next section of spiral duct:
  - a. Apply caulk to the top flange of the previous duct section.
  - b. Connect the next section of spiral duct (without door) to the previous duct section flange-to-flange using the specified hardware.
3. Repeat Step 2 for each additional section of duct in the exhaust stack.

When you have connected all the ductwork required for the exhaust stack, continue to Step 4.

4. *If applicable:* Install the roof flange and collar:

**NOTE**

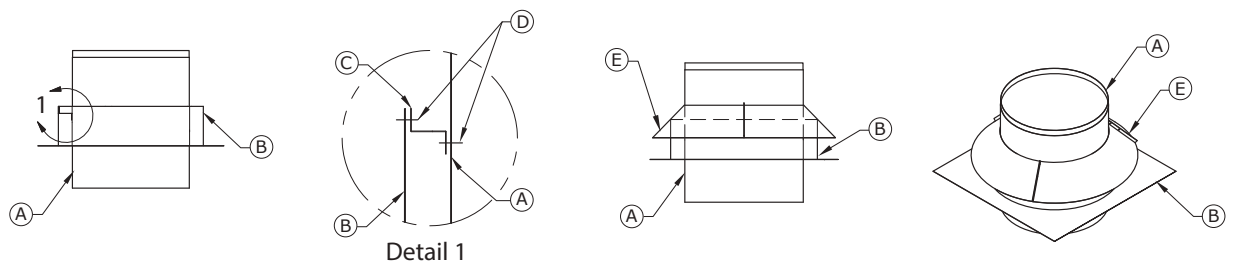
This step applies only if the booth includes the optional roof flange kit. If you are not sure which options are included with this booth, refer to the Concept page of the Design Drawings.

**NOTE**

The building contractor or roofer is responsible for sealing the roof flange after installation is completed.

**NOTE**

Refer to the diagram below while completing this step.



- A: Duct
- B: Roof flange
- C: Stand-off
- D: #10 Tek screw
- E: Collar

- a. Orient the roof flange with the flat base facing down and the cylinder facing up; then slide the roof flange down over the ductwork (which extends up through the roof opening) until the base of the roof flange rests on the roof.
- b. Using #10 Tek screws, connect the stand-offs between the roof flange and the duct.

**NOTE**

Distribute the stand-offs so that they are (approximately) evenly spaced around the duct. Ensure that each stand-off is either flush with or slightly below the top of the roof flange.

- c. Bolt together the collar sections; then slip the assembled collar over the ductwork and slide it down so that it rests on the top edge of the roof flange.
5. Install the ARV:
  - a. Apply caulk to the top flange of the top-most duct section.

- b. Connect the ARV to the top-most duct section flange-to-flange using the specified hardware.
6. Working down from the ARV to the exhaust fan, caulk the outside of all connections in the exhaust stack.

**NOTE**

If the exhaust stack includes a roof flange and collar, be sure to caulk the joint between the collar and the duct.

**If applicable: Install the guy-wire kit**

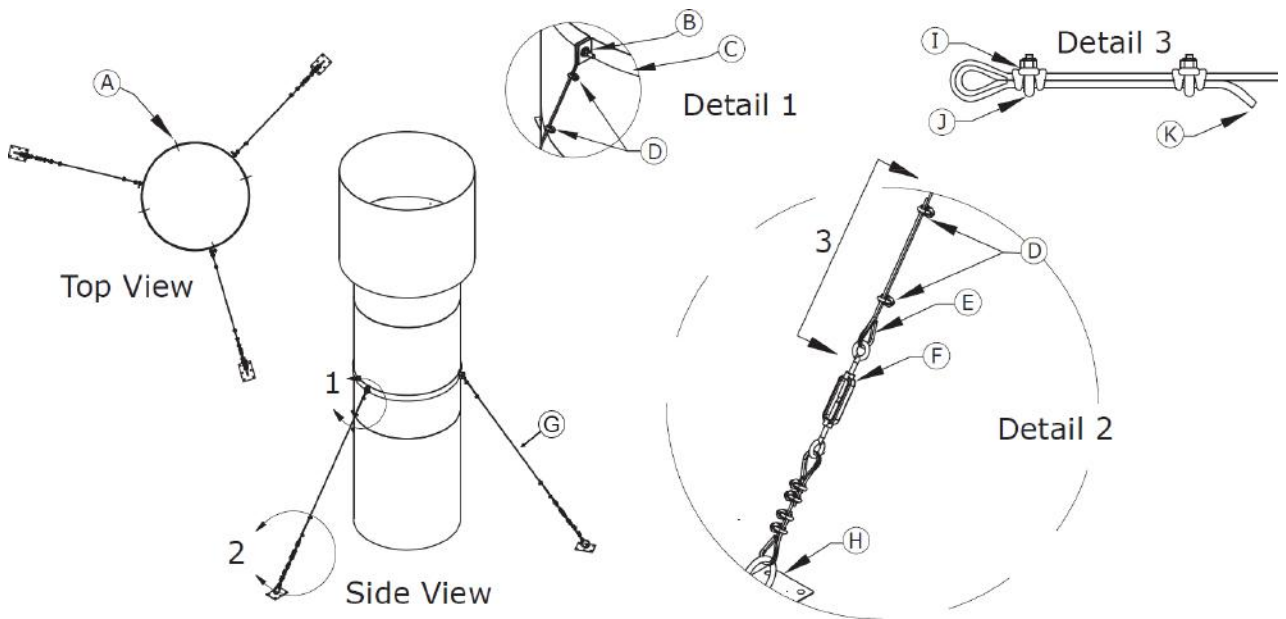
**Prerequisites:** The ductwork and ARV must be installed as described in If applicable: Install spiral duct with Automatic Roof Ventilator (ARV) or If applicable: Install plain duct with Automatic Roof Ventilator (ARV).

**NOTE**

Install the guy-wire kit per the instructions below. It is the responsibility of the customer or their agent (for example, a roofer or building contractor) to supply and install the cable tie-off points on the building roof (plate with ring). The diagram below is provided for reference, only.

**NOTE**

Use #10 Tek screws to attach duct strap to exhaust duct; caulk to seal.



- A: #10 Tek screw
- B: For each connection, use one cable thimble; one 5/16-inch x 1-1/2-inch bolt; two 5/16-inch flat washers; one 5/16-inch lock washer; and one 5/16-inch nut.
- C: Duct strap
- D: Cable clamps (2)
- E: Thimble
- F: Turnbuckle
- G: Cable; thimbles (2); cable clamps (4)
- H: Plate with ring
- I: Grip base
- J: U-bolt (must have U-bolt over dead end of cable)
- K: Dead end

## ***If applicable: Install the light***

**Scope:** This task applies only if the booth includes a light. If the booth does not have a light, skip this task and continue to “Affix the GFS decal to the front of the booth” (page 38).

**Prerequisites:** The booth must be assembled.

### **NOTE**

This task covers only the mechanical installation of the lighting fixtures; wiring should be performed by a qualified electrician as specified in “Perform electrical hookup” (page 47).

## **Install cage nuts in the light fixture**

### **NOTE**

It is usually more efficient to install the cage nuts in all the light fixtures at one time (before you begin installing the lights).

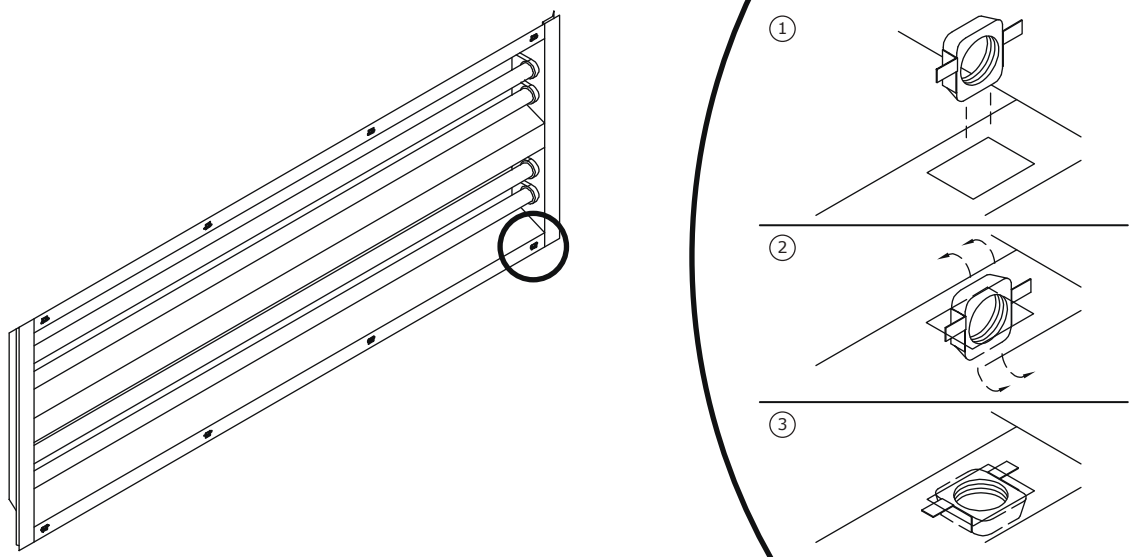
### **NOTE**

The light fixture box requires eight cage nuts.

1. Open the boxes containing the light fixture(s) and remove the hardware kit and the manufacturer’s instructions.
2. For each square hole on the light fixture box: Insert a cage nut into the hole and snap into position.

### **NOTE**

Some force is required to snap in the nut.



3. Confirm that each cage nut can slide within its hole.

### **NOTE**

The cage nut must be able to slide to ensure that it can align with the cover bolt.

## Install the light fixture in the panel

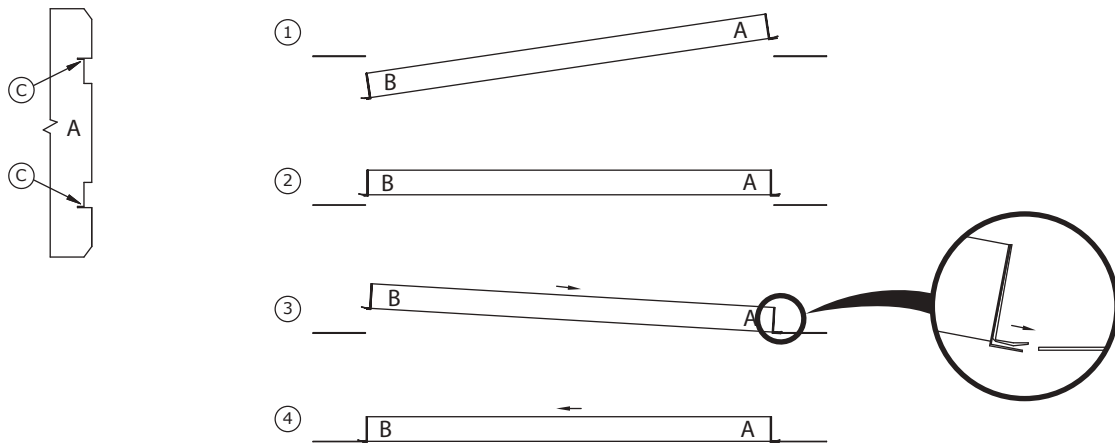
**Prerequisites:** Cage nuts must be installed in each light fixture as directed in “Install cage nuts in the light fixture” (page 35).

### IMPORTANT

Make sure to position the light’s power cord (“whip”) on the back side of the light fixture (i.e., on the side that faces the booth’s exterior). Wire to NFPA 70 and do not run wiring over the face of beams.

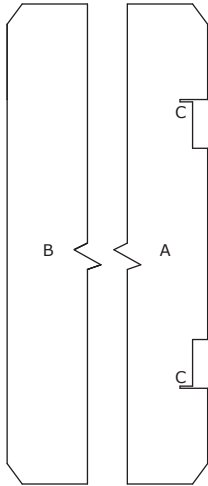
### NOTE

Refer to the following diagram as you complete this task.



**A:** Flange with notches  
**B:** Flange without notches  
**C:** Slot in notch

1. Obtain a light box with cage nuts already installed.
2. Stand facing the light panel from the booth’s interior and hold the light fixture so that its flanged edge is toward you, with the notched flange “A” on the side.
3. Insert the light fixture into the opening of the panel with flange “A” to the side.
4. Slide the fixture over until flange “B” engages the other edge of the opening in the panel; then move the fixture back in the opposite direction.
5. Bend the edges of each notch so that the light panel fits into the slot at the corner of the notch.

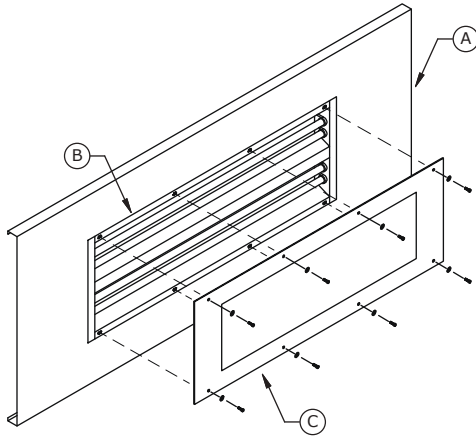


**A:** Flange with notches  
**B:** Flange without notches  
**C:** Slot in notch

## Install a cover over the light fixture

**Prerequisites:** The light fixture must be installed in the light panel as directed in “Install the light fixture in the panel” (page 36), with the whip positioned on the back side of the light fixture.

Place a light fixture cover over the light fixture and attach it using eight 6-mm x 20-mm cap-head screws.



A: Light panel  
B: Light fixture installed in light panel  
C: Light cover

## Affix the GFS decal to the front of the booth

### NOTE

For a list of tools related to decal placement, see “Required tools” (page 18).

### NOTE

Affix the GFS decal near the left end of the warning panel. (The warning decal and booth identification label are already present at the right end of the warning panel.)

1. Inspect the panel where the GFS decal will be applied and ensure that it is clean.

### NOTE

If necessary, spray the panel with soapy water and wipe it dry with a lint-free cloth.

2. Ensure that your hands are clean; then obtain the GFS decal from the “Miscellaneous” box.
3. Liberally spray the left half of the panel with soapy water.
4. Starting from the left edge of the decal, carefully separate the backing from the decal and begin peeling off the backing paper.
5. Adhere the left edge of the decal to the left side of the panel, positioning the decal so that it is about 2 inches from the left edge of the panel and about 2 inches from the bottom edge of the panel.

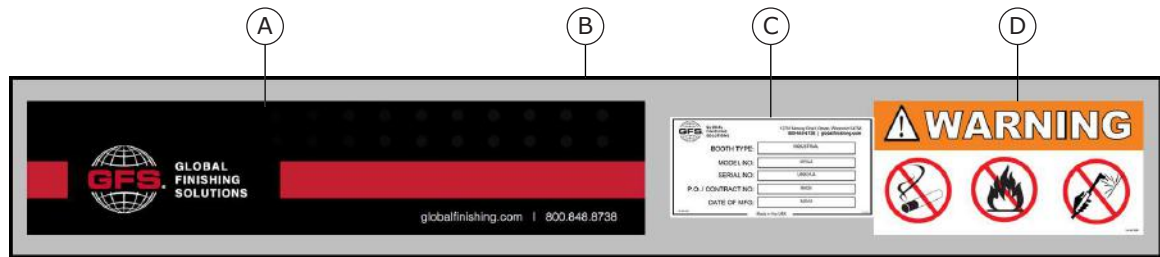
### NOTE

You can also use the placement of the warning decal (on the right end of the panel) as a guide for aligning the top and bottom of the GFS decal.

6. Continue peeling off the backing and smoothing the decal onto the panel until the decal is fully applied.

**NOTE**

Every few inches, use a squeegee to remove wrinkles and air bubbles.



- A: GFS decal
- B: Warning panel
- C: Booth identification label (pre-installed)
- D: Warning decal (pre-installed)

7. After applying the decal, double-check the decal and the entire panel for hand-prints or smudges; clean the decal and panel, if necessary.
8. Wipe off any excess water from the decal and panel.

## Install the manometer

**Scope:** This task applies only to the standard manometer (GFS part number 242-001) paired with GFS single-stage exhaust filter media.

**NOTE**

This step covers only the mechanical installation of the manometer; wiring should be performed by a qualified electrician as specified in "Perform electrical hookup".

### Mount the manometer on the booth

1. Position the manometer on the outside of the booth.

**NOTE**

Choose a convenient location, approximately 5 feet from the floor.

2. Drill two holes (1/8-inch or 9/64-inch in diameter) on a vertical line 3-15/16 inches apart for the provided fittings.
3. Loosely mount the manometer with the provided self-tapping screws.
4. Adjust the gauge until the bubble is centered in the level vial, then secure the manometer tightly.

### Fill the manometer

1. Turn the white adjustment knob counterclockwise until it stops, then turn clockwise three full turns. This puts zero approximately in the middle of the travel adjustment in either direction.
2. Remove the fill plug and carefully pour the red indicating fluid until it reaches zero on the scale.

**NOTE**

Minor adjustments can be made by turning the white adjustment knob.

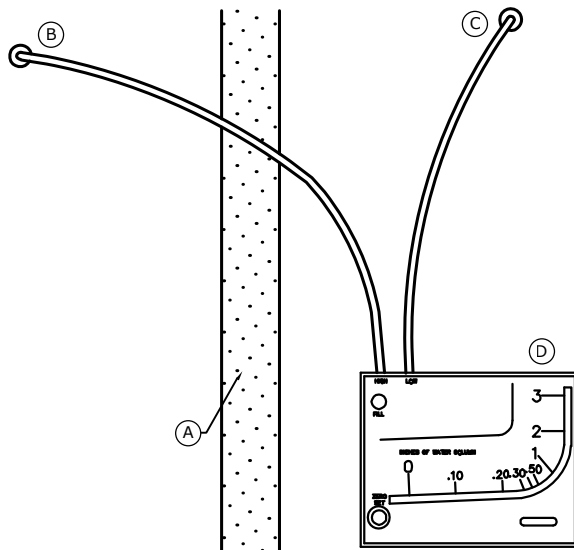
3. Replace the fill plug.

**NOTE**

If the gauge is overfilled, remove the excess by inserting a pipe cleaner through the fill port to blot up excess fluid.

**Install the air filter gauge**

1. Mount the gauge within 3 feet of the filter bank.
2. Install tubing adapters on each side of the filter.
3. Run tubing:
  - a. Run the high-pressure line (left fitting) to the booth.
  - b. Run the low-pressure line (right fitting) to the exhaust chamber.



- A: Filter media
- B: High-pressure line to booth side of filters
- C: Low-pressure line to chamber side of filters
- D: Manometer

4. With the booth off, adjust the manometer to read zero.
5. Place the supplied red pointer flag at the appropriate location referenced below (indicating dirty filters):
  - **GFS Wave®**: 1/2-inch w.c.
  - **GFS Poly™**: 1/2-inch w.c.

**NOTE**

For other filters, the differential setting should be adjusted to the manufacturer's recommendations.

6. After the clean filters are installed and startup is complete, turn on the booth and observe the rise in the manometer reading. Mark the location of the indicator fluid with the supplied green pointer flag (indicating clean filters).



## ***If applicable: Install the control panel***

### **NOTE**

The control panel houses Main Disconnect, Lighting, and Motor Branch Circuit Protection per NEC requirements. It also houses all operator controls.

### **NOTE**

This task covers only the mechanical installation of the control box; wiring should be performed by a qualified electrician as specified in "Perform electrical hookup" (page 47).

### **NOTE**

If you mount the control panel to the side of the booth (rather than mounting it to an adjacent wall), GFS recommends that you use strut channel with strut hardware. You can cut the strut to span the distance between booth back brake flanges in the dimensions that will allow the control panel to be mounted to the strut. When mounting large enclosures, GFS recommends that the strut extend up from the floor for extra support. **Strut channel is not provided by GFS.**

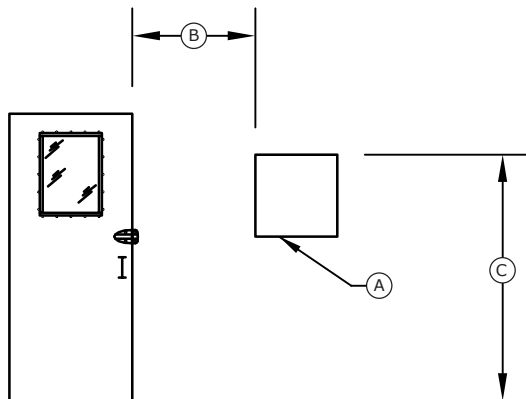
Mount the control panel either on the exterior paint booth wall or an adjacent wall.

### **NOTE**

Position the control panel so that its top is between 70 and 74 inches from the floor. The control panel must be at least 36 inches (914 mm) from any booth opening.

### **NOTE**

Do *not* mount the control panel inside the booth enclosure.



**A:** Control panel

**B:** Minimum of 36-inches between the control panel and any booth doors or openings

**C:** 70 to 74-inches from the floor to the top of the control panel

## Install miscellaneous electrical devices

### NOTE

Ensure that the placement of all electrical devices meets the NEC requirements for clearance from combustible areas.

### NOTE

This section provides instructions for installing miscellaneous electrical devices. As you install each device, retain any unused hardware. Place unused hardware in a bag and tape it to the device so that it will be available for the electrician.

## Install the air solenoid valve

**Prerequisites:** The booth's air supply line must already be installed.

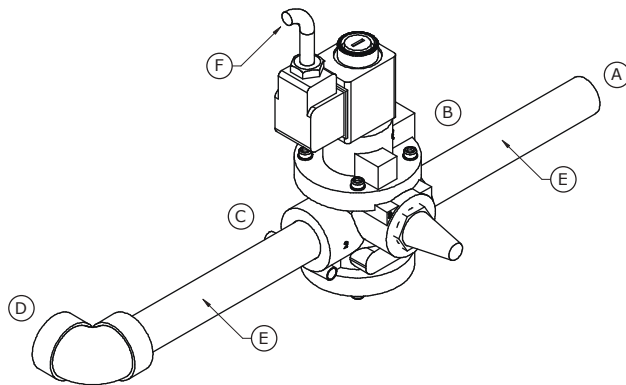
### NOTE

This task covers the installation of the directional valve in the compressed air line piping, and is usually performed by a plumber or mechanical contractor.

Install the air solenoid valve as close as possible to where the compressed air enters the booth, but no closer than 3 feet to any door or opening.

### NOTE

Refer to the following diagram to complete this task:



- A:** From building air supply
- B:** Inlet
- C:** Outlet
- D:** Through booth wall
- E:** 1/2-inch NPT
- F:** Conduit with wiring to control panel

## ***If applicable: Install the Economy Mode switch***

**Prerequisites:** The booth's air supply line must already be installed.

### **NOTE**

This task applies only if the site purchased the optional Economy Mode switch with the booth.

### **NOTE**

This task covers the installation of the switch in the compressed air line piping and is usually performed by a plumber or mechanical contractor.

Connect the Economy Mode switch into the air line just before the air solenoid valve (i.e., between the air supply coming from the building and the air solenoid valve).

### **NOTE**

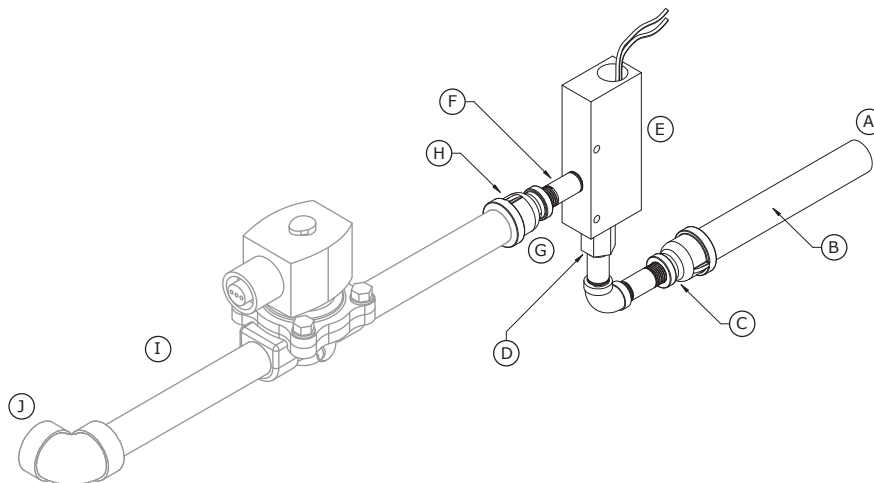
The switch *must* be installed with electrical to the top.

### **NOTE**

Reduce the air supply line to 1/4-inch NPT entering the Economy Mode switch; then transition it back to 1/2-inch NPT upon exiting the Economy Mode switch.

### **NOTE**

Compressed air must be clean, filtered, and dry.



- A:** From building air supply
- B:** 1/2-inch NPT
- C:** Reduce to 1/4-inch NPT
- D:** Inlet
- E:** Economy Switch
- F:** 1/4-inch NPT
- G:** Outlet
- H:** Transition back to 1/2-inch NPT
- I:** Air solenoid valve
- J:** Through booth wall

### ***If applicable: Install the gun hanger switch***

**Scope:** This task applies only if the site purchased the optional gun hanger with their booth.

#### **NOTE**

The gun hanger is optional hardware that provides a place to store a paint gun when it's not in use. Hanging the paint gun on the gun hanger activates a switch that places the booth into Economy Mode (an energy-saving state). The booth remains in Economy Mode until the paint gun is removed from the hanger.

1. Mount the gun hanger bracket to an interior booth wall using two 5/16-inch bolts.

#### **NOTE**

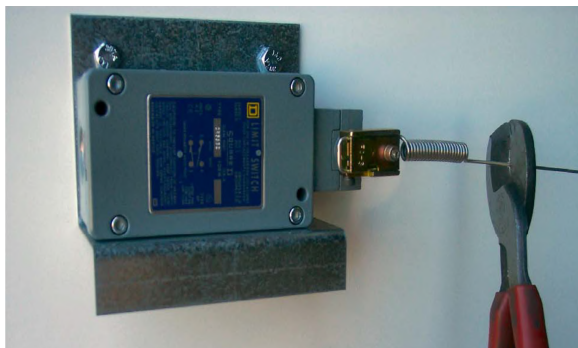
Locate the bracket at about waist height near the most commonly used personnel door.



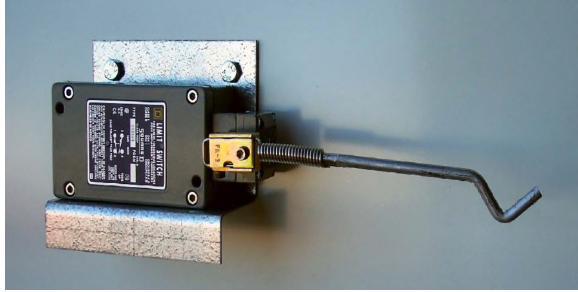
2. Mount the limit switch to the bracket using two 1/4-inch #20 bolts.



3. Mount the arm and cut off the excess.



4. Install the hanger in the spring assembly.



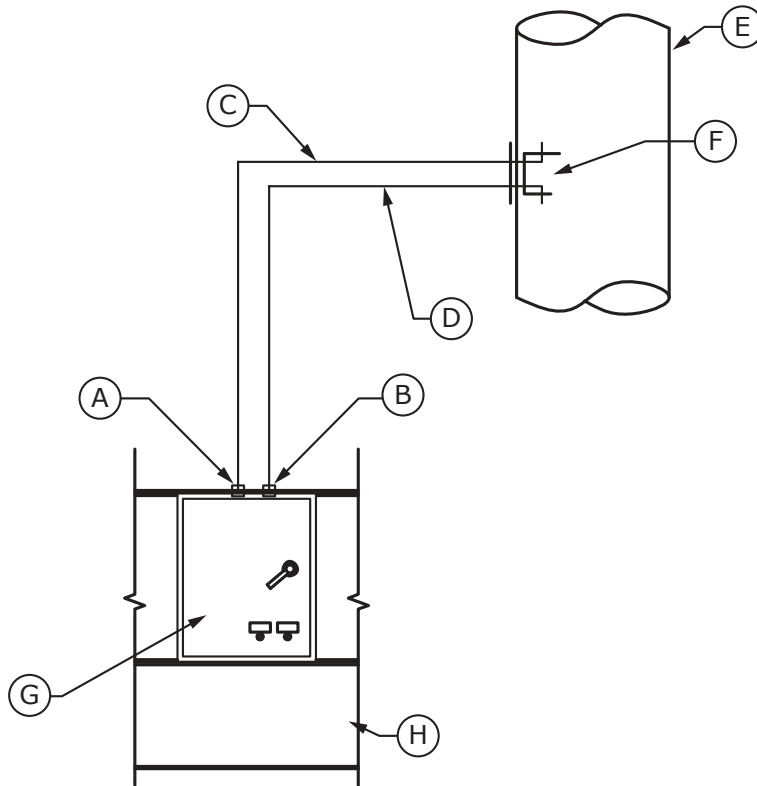
***If applicable:* Install the Consta-Flow System**

**Scope:** This task applies only if the site purchased the optional Consta-Flow System (GFS part number CF-UNV). If you are not sure what options are included with this booth, refer to the Concept page of the Design Drawings.

**NOTE**

The Consta-Flow System kit ships in the “Miscellaneous” box.

**Reference:** Refer to Consta-Flow System - Universal instruction sheet included in the Consta-Flow Kit and to the diagram below.



- A: Low-pressure bulkhead fitting*
- B: High-pressure bulkhead fitting*
- C: Low-pressure sensing tube*
- D: High-pressure sensing tube*
- E: Exhaust stack*
- F: Consta-Flow System (CF-UNV)*
- G: Control panel*
- H: Outside booth (minimum 3 feet from any opening)*

1. Install the Consta-Flow device on the exhaust-stack ductwork.

**NOTE**

For details, refer to the Consta-Flow System - Universal sheet included with the Consta-Flow Kit.

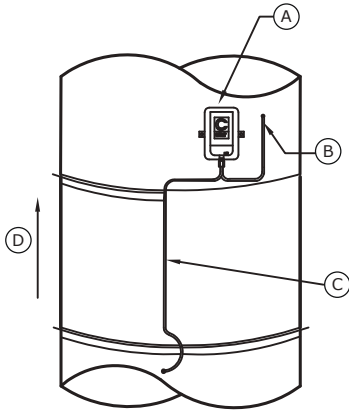
2. Attach tubing to the high- and low-pressure fittings on the Consta-Flow device.
3. Attach the other end of the tubing to the control panel bulkhead fittings for high- and low-pressure.

***If applicable: Install the air-proving switch for the exhaust stack***

**Scope:** This task applies only if the site purchased an optional air-proving switch for the exhaust stack.

**NOTE**

Refer to the following diagram to complete this task.



**A:** Pressure switch  
**B:** High-pressure line to exhaust stack  
**C:** Low-pressure line to intake of fan  
**D:** Airflow

## Perform electrical hookup

### WARNING

Electrical installation should be completed by a qualified electrician. Installation must meet all applicable national, state, and local electrical codes.

Reference: Refer to the Electrical Drawings document while completing this task. (For information on locating the Electrical Drawings , see “Gathering required documentation” (page 13).)

1. Complete the wiring for the following items:
  - Exhaust fan
  - Air solenoid valve
2. *If applicable:* Complete the wiring for the lights.

### NOTE

Lights have five conductor cables:

- Black (hot) and white (neutral): Power
  - Orange and red: Proximity switches
  - Green: Ground
3. Complete the wiring for any of the following items that are included with this booth:
    - *If applicable:* Control panel
    - *If applicable:* Consta-Flow System
    - *If applicable:* Air-proving switch for exhaust stack
    - *If applicable:* Economy Mode switch and gun hanger

### NOTE

If you are not sure what options are included with this booth, refer to the Concept page of the Design Drawings.

## Caulk the booth

**Prerequisites:** The booth must be assembled and anchored to the floor, with the lights already installed.

### NOTE

Do *not* caulk around the light fixtures.

Caulk all booth panel seams, including panel to floor (after the booth is tightened and secured to the floor).

## Install the exhaust filters

**Prerequisites:** Complete all other installation tasks before installing the filters. Waiting until the end of the procedure to install the filters helps ensure that the filters remain clean.

### NOTE

The exhaust filters are inserted into the filter racks between the exhaust chamber and the bay.

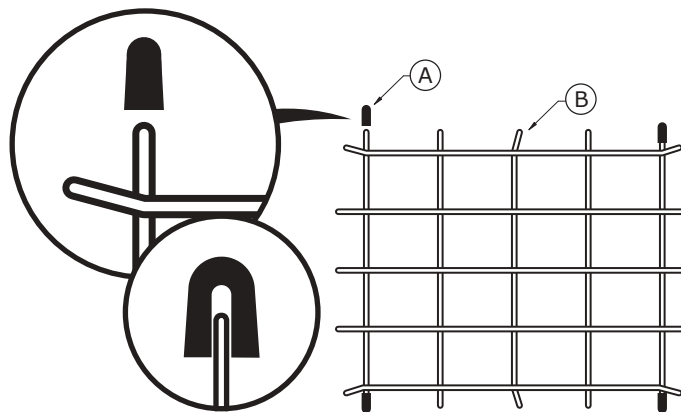
1. Remove the filter grids from the carton.
2. Place rubber tips onto the four straight corners of the filter grids.

### NOTE

The rubber tips hold the grid in place.

### NOTE

Do not push the rubber tip all the way onto the grid end.



*A: Rubber tip*

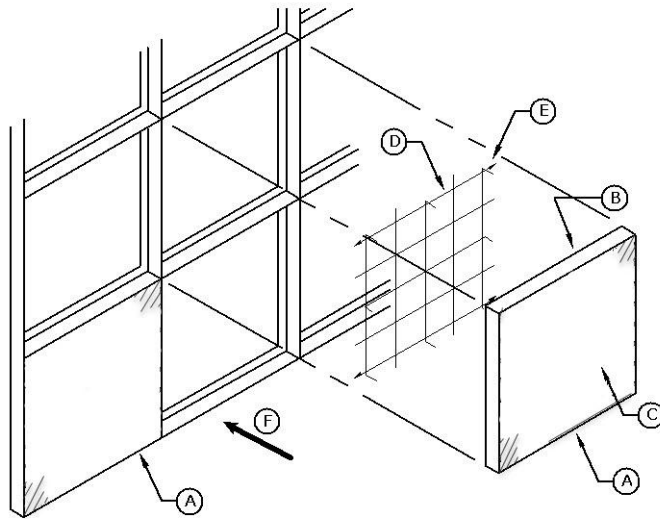
*B: Filter grid*

3. **If the booth uses standard exhaust filters:** Place the grids into the openings in the exhaust chamber filter racks; then install the filters onto the grids.

### NOTE

Pay attention to the orientation of the filter, as shown in the accompanying diagram.





- A: Exhaust filter*
- B: Air-leaving side (dense side of filter)*
- C: Air-entering side*
- D: Filter grid*
- E: Rubber tip on grid corner*
- F: Airflow*

4. **If the booth uses the roll media option instead of standard exhaust filters:** Follow the instructions on the Dry Filter Roll Media Option page of the Design Drawings document to install the roll media.

# Startup resources

This section provides helpful information for performing a booth startup.

## Startup tools and test equipment

This section lists tools and equipment used during the startup procedure.

### Hand tools

- 1/8-inch tip terminal screwdriver
- #2 straight-tip screwdriver
- #2 Phillips screwdriver
- 6-inch adjustable wrench
- 10-mm deep-well socket and ratchet
- Standard hex key (Allen wrench) set
- Adjustable pliers
- Wire stripper

### Test equipment

- Digital multi meter with AC and DC capabilities
- Clamp-on ammeter
- Anemometer 25-5,000 FPM range
- Digital manometer with 0.01-inch w.c. resolution

### Optional equipment

- Non-contact voltage detector

## Complete the Customer Pre-Startup Checklist

**Scope:** This task applies only if the site purchased the GFS factory startup service.

**Prerequisites:** The booth is fully assembled and an electrician has completed the wiring.

**NOTE**

This task is the responsibility of the customer.

**NOTE**

The Customer Pre-Startup Checklist is included with the startup documents that ship in the “Miscellaneous” box.

1. Complete the Customer Pre-Startup Checklist to verify that the booth is ready for startup.
2. Return the completed Customer Pre-Startup Checklist to GFS as directed on the form.

**NOTE**

If you purchased GFS factory startup, then upon receipt of your completed form, GFS will schedule an authorized startup technician to travel to your site to perform startup, commissioning, and training on the equipment.

## Perform the startup procedure

**Prerequisites:** All applicable services, hookups, and other conditions specified in the Customer Pre-Startup Checklist must be ready.

**NOTE**

This task is the responsibility of the startup technician.

**NOTE**

The Startup Checklist and the Dry Filter Booth Startup Report are included with the startup documents that ship in the “Miscellaneous” box.

1. Complete the tasks in the Startup Checklist to verify that the booth is ready for operation.

**NOTE**

For recommended tools, see “Startup tools and test equipment” (page 50).

2. *If applicable:* Return the completed Startup Checklist to GFS as directed on the form.
3. Perform booth testing.

**NOTE**

Inspection results shall be recorded and maintained for at least two years.

4. Notify the customer that the booth is ready for use.