



GLOBAL
FINISHING
SOLUTIONS



Refinish Paint Mix Room

Owner's 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
- Online: www.globalfinishing.com

Technical support

- Toll-free: 800-848-8738
- Fax: 715-597-8818
- Email: techservices@globalfinishing.com

Parts and filters

- Toll-free: 800-848-8738
- Fax: 888-338-4584
- Email: parts@globalfinishing.com

Target audience

This document is intended for use by trained, experienced equipment 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
DANGER	Indicates an imminent hazard that will result in death.
WARNING	Indicates a hazard that can result in serious personal injury or death.
CAUTION	Indicates a hazard that can result in personal injury.
NOTICE	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
NOTE	Denotes general information that provides additional context or guidance.
Important	Denotes information to which you should pay special attention.
Reference	Directs you to related content in a separate document.
Prerequisites	Specifies other tasks that must be completed or conditions that must exist before you perform the current task.
Scope	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

The roofs of GFS equipment are not designed or intended to be walked upon or to support weight of any kind. As designed and manufactured, equipment roofs do not meet the minimum requirements of a safe walking and/or working surface under OSHA 1910.22. Under no circumstances should the roof be used by maintenance personnel or others for walking, standing, or storage of any kind. When necessary, roof access should be secured through the use of a properly supported platform that satisfies the minimum load requirements specified by ASCE 7 (Minimum Design Loads and Associated Criteria for Buildings and Other Structures) and ASCE 37 (Design Loads on Structures during Construction). Additionally, personnel should always utilize appropriate fall safety protocols when using an elevated platform. Use of the roof in a contrary manner may result in injury and/or death.

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).

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.

Paint Mix Room safety

WARNING

All equipment must be operated and maintained in accordance with local, state, and federal (OSHA) requirements governing occupational safety, fire protection, and mix room 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, and mix room 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 requirement's or directives.

WARNING

Install the mix room in compliance with locally enforced codes and standards.

WARNING

Do not allow paint to accumulate on the inside of the mix room walls. Remove any accumulation 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

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

WARNING

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

WARNING

Turn on the exhaust fan before using the unit. Ensure the exhaust fan is operating correctly before entering the mix room.

WARNING

The paint mix room's ventilating fan must run continually to avoid the buildup of flammable vapors.

WARNING

If the ventilation system fails to move the required amount of air movement, immediately ensure that all vapor sources are contained. All open containers shall be tightly closed or moved to a safe location. If pumping equipment could be a vapor source, it must be shut down.

WARNING

The amount of flammable or combustible liquid stored in Paint Mix Rooms must be within the limits established in NFPA 33 Standard for Spray Application Using Flammable or Combustible Materials. Consult with your local code official for the edition of NFPA 33 currently being enforced in your location.

Do not exceed the recommended volume of liquid storage listed below:

- If the mix room is located adjacent to or within 6 feet of a spray area, the combined volume of liquids in both locations shall not exceed 120 gallons
- No more than 60 gallons may be stored in the spray area
- If the mix room is located more than 6 feet away, the quantity of liquids permitted shall not exceed 2 gallons per square foot, up to a maximum of 300 gallons
- Additional volume limits may be applicable based upon the volume of liquids present elsewhere in the building

CAUTION

Become familiar with all controls before operating or servicing this mix room.

CAUTION

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

CAUTION

GFS does not provide fire protection for the mix room, but an approved automatic fire protection system must be installed to comply with NFPA 33. A licensed fire protection company must design and install a fire protection system that protects the work area of the mix room.

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.

Paint Mix Room description

Paint Mix Rooms provide safe, controlled environment for all of your paint mixing processes. Mix room construction and recommended airflow velocities are designed to meet appropriate OSHA and NFPA 33 regulations. Fresh, filtered air is pulled into the mix room, while hazardous vapors are removed, for a contaminant-free paint mixing environment. A 4-inch, integrated spill containment keeps spills in one area and eliminates the need for an additional curb.

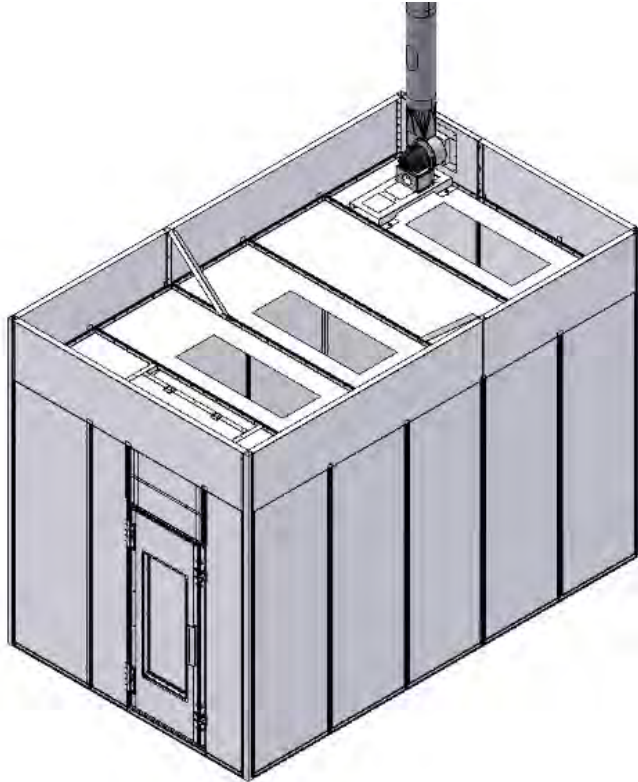


Figure 1. Ultra Paint Mix Room

Preparing for installation

Accepting delivery of your mix room

The mix room 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

Certain manuals, project drawings, and the Job-Specific Guide are also provided electronically to distributors via box.com. Many manuals are available for download on globalfinishing.com.

Table 3. Additional documentation

Document	Description	How provided
Design Drawings	Provides instructions for assembling this particular mix room and includes information about the mix room order, configuration, and components.	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 where you will assemble the paint mix room is level.

NOTE

If not, you must shim or grout the floor to avoid any misalignment.

- There is sufficient overhead clearance for the 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 miscellaneous hardware kits are available on-site. (Either purchased from GFS with the equipment, or obtained elsewhere by the customer.)

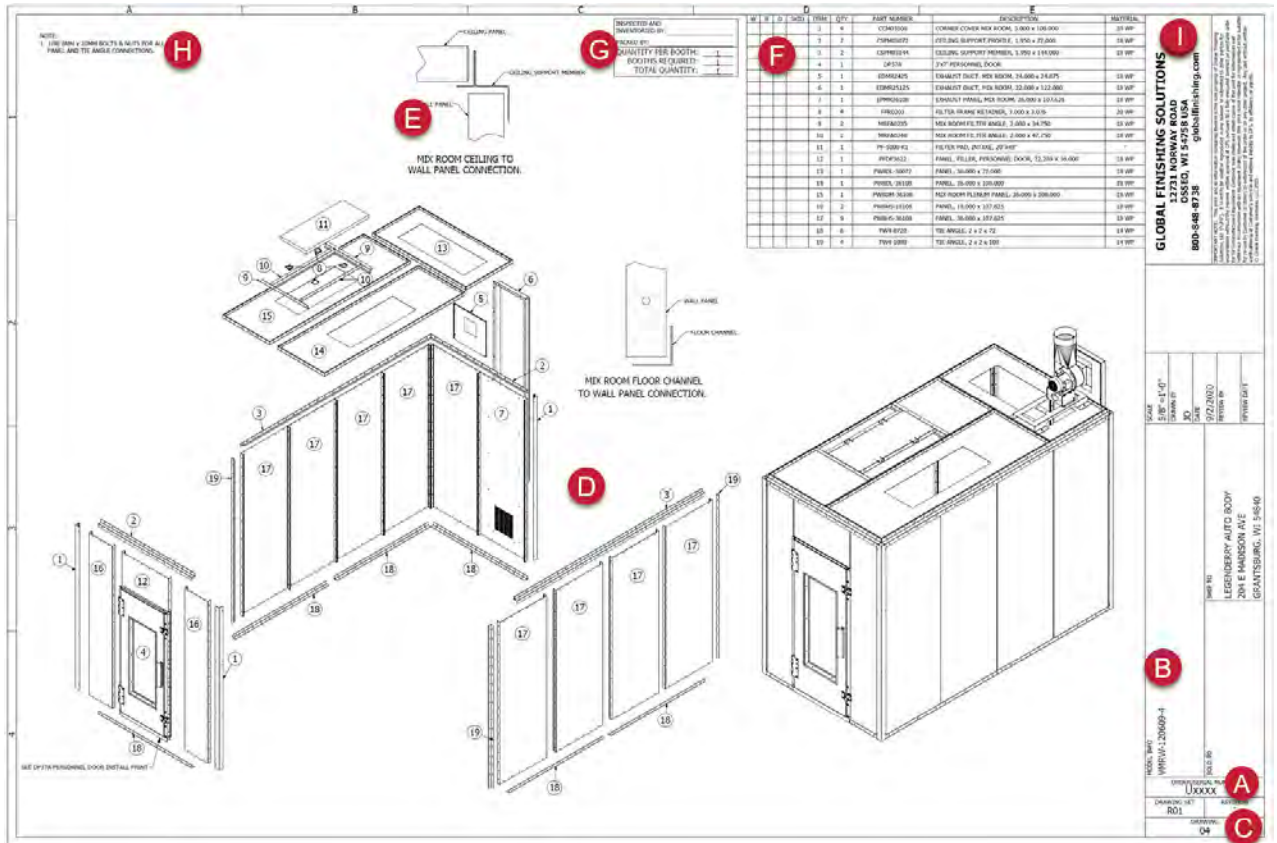
About the Design Drawings document

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 mix room. If applicable, it also includes exploded-view diagrams and parts lists for each section (or subassembly) of the mix room.

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 document, see Page types.)
- **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.



- A: Serial number
- 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
- I: Title block

Installation tools and equipment

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
- Unibit or step drill bits
- Chalk and/or felt-tip marker (for marking initial measurements on floor)
- Chalk-line tool
- 4-foot box level
- Laser level (*Suggested:* Quad laser or rotary laser level)
- Tape measures (35-foot and 100-foot)
- Tin snips
- Duct crimping tool
- Torque nut runner
- Reciprocating saw

Recommended equipment

- Ladders (6-foot and 8-foot)
- Load bar that can extend to at least 9 feet (108 inches)
- 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.

Follow assembly guidelines

Follow these guidelines when assembling the mix room:

- Assemble the mix room in sections, following the sequence provided in this document.
- As you build each section, tighten the bolts only to finger-tight.
- Before tightening the bolts within a section, confirm that the section is plumb and square.
- 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)
- **For dual-skin mix rooms:** Orient panels and parts as shown on the assembly drawings.
- **For single-skin mix rooms:** Orient panels so that each panel’s flanged side faces inward, and the non-flanged side faces the mix room’s exterior.
- **For all mix rooms:** When applicable, orient bolts so that the bolt heads (and a washer) are on the mix room’s interior and the threads are on the exterior.
- Use hardware as specified on the assembly drawings.
- Plumb the panels so that they are perpendicular to the floor. The sides of the mix room must be parallel to each other.

Installation procedure

This procedure describes how to install a paint mix room.

Mark the mix room footprint

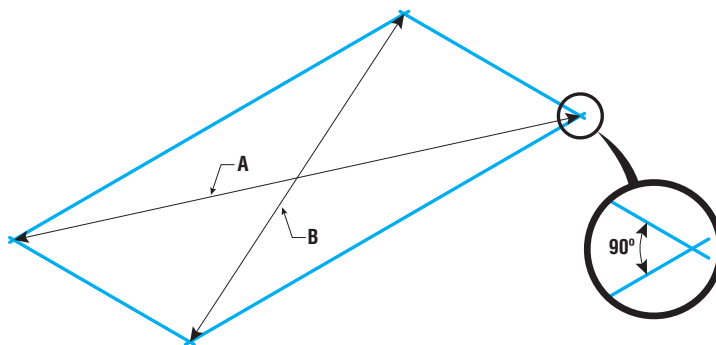
1. Sweep the floor clear of debris.
2. *If applicable:* Use a laser level to check the floor for a single-skin mix room:
 - If the floor is out of level by **1/4 inch or less** over the full length of the mix room, continue to the next step. (You do not need to take any corrective action now. You can 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 mix room, shim or grout the floor as needed to get it to within 1/4 inch of level. GFS does not supply shims.
3. *If applicable:* Use a laser level to check the floor for a dual-skin mix room with a floor leveling system:
 - If the floor is out of level by **1 inch or less** over the full length of the mix room, continue to the next step. (You do not need to take any corrective action now because you will be able to correct for slope when you install the floor leveling components later in the procedure.)
 - If the floor is **more than 1 inch** out of level over the full length of the mix room, shim or grout the floor as needed to get it to within 1 inch of level. GFS does not provide shims.
4. Referring to the **Working Width** and the **Working Depth** shown on the Floor Profile page of the Design Drawings, measure the mix room's footprint on the floor and mark the corners.

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.

5. 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.



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

If applicable: Install the floor channel

Scope: This task applies only for dual-skin paint mix rooms. For single-skin paint mix rooms, skip this task and proceed to “Assemble mix room walls” (page 21).

Prerequisites: If the mix room uses a basement, the basement must already be installed.

Reference: Refer to the Design Drawings.

1. Install the floor outer profiles.

NOTE

If necessary, grout and shim the floor outer profiles to ensure that they are not more than 1 inch out of level. GFS does not supply shims.

2. Anchor the floor outer profiles to the building floor.

NOTE

GFS does not provide the anchors.

3. Install and level the panel leveling profiles.

Assemble mix room walls

NOTE

Refinish paint mix rooms can have single- or dual-skin panel construction. Refer to the General Structural Notes (GSN) page of the Design Drawings.

Perform the appropriate task depending on the type of panel:

- **If the mix room has single-skin panels:** Follow the instructions in “*If applicable: Install the walls for a single-skin mix room*” (page 21).
- **If the mix room has dual-skin panels:** Follow the instructions in “*If applicable: Install the walls for a dual-skin mix room*” (page 21).

If applicable: Install the walls for a single-skin mix room

Reference: Refer to the Design Drawings.

1. Place 2-inch x 2-inch base tie angles onto the slab, marking the mix room perimeter.
2. Fasten one corner connector angle to a panel using 8mm bolts and cage nuts.
3. Install the rear wall panels.
4. Install an adjacent wall panel to the corner connector angle using 8mm bolts and cage nuts.
5. Install the remaining wall panels and corner connector angles.
6. Attach the ceiling support profile.

If applicable: Install the walls for a dual-skin mix room

Reference: Refer to the Design Drawings.

1. Assemble the wall panels in the corner of the mix room furthest away from where the personnel door will be located.

NOTE

One of these panels may be the exhaust panel.

2. Fasten one corner connector angle to the panel using 8mm bolts and cage nuts.
3. Place the exhaust panel (with corner connector angle) onto the floor channel so that the corner connector angle is located in the corner of the paint mix room.
4. Install an adjacent wall panel to the corner connector angle using 8mm bolts and cage nuts.
5. Install the remaining wall panels and corner connector angles as shown in the Design Drawings. Place the H-channel on the installed panels before placing the adjacent panel.

NOTE

Orient the H-channel with the notched end at the top.

6. Attach the panel skin outers on top of the wall panels using 8mm bolts and cage nuts.

Assemble the top of the mix room

Install the roof panels (smooth side down). Bolt the panels together using the 8mm bolts and nuts.

NOTE

Ensure compliance with applicable codes, the intake must be located on the opposite end of the paint mix room from the exhaust filter.

Install the intake filter

1. Obtain the filter media.

NOTE

The intake filter media contains a structural wire grid.

2. Place the filter media into the intake opening, mounting it on the filter frame retainer and filter angles.
3. Secure the filter onto the filter clips.

If applicable: Install the mix room pressurizing blower

Scope: This task applies only if the mix room includes an optional intake pressurizing blower.

Prerequisite: Prior to installing the motor, turn the wheel by hand and make sure it rotates freely. If rubbing occurs, loosen the wheel set screws and reposition the wheel to the center of the shaft. Re-tighten all set screws.

Reference: Refer to the Air Supply Plenum page of the Design Drawings.

1. Mount the blower pulley on the blower shaft and tighten the set screw securely on the key of the shaft.
2. Mount the pulley on the motor shaft.

NOTE

Leave some clearance between the pulley and the motor end bell.

3. Unbolt the motor bracket from the blower assembly.
4. Bolt the motor bracket onto the blower assembly frame at the location noted in the motor to blower assembly detail on the Air Supply Plenum page of the Design Drawings.
5. Use the included hardware to set the motor into place.
6. Position the square head bolts in the groove of the motor mounting bracket and install the motor loosely on the bracket.
7. Bolt the motor adjusting leg to the shaft side of the motor base.
8. With the adjusting bolt in the minimum position, install the belt within the sheave grooves.
9. Position the motor on the motor bracket to ensure proper pulley alignment.
10. Tighten the adjusting bolt to tension the belt and lock in place using the keps nut.

NOTE

Ideal belt tension is the lowest tension at which the belt will not slip during startup.

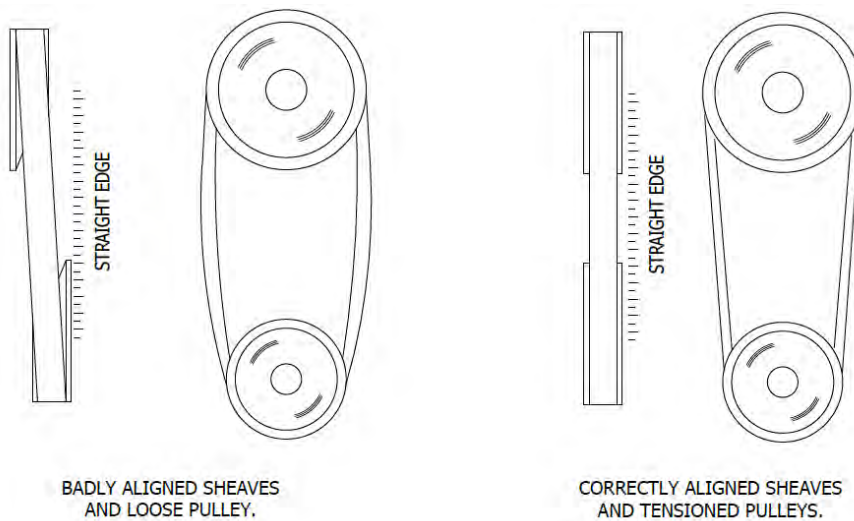


Figure 3. Pulley and sheave alignment

Install the lights

Prerequisites: The mix room 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 33).

Install cage nuts in the light fixture(s)

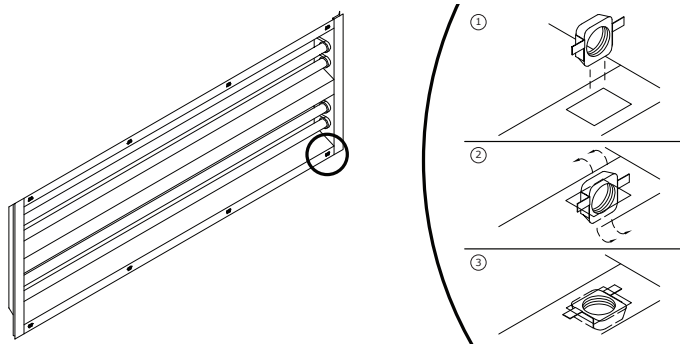
NOTE

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

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.

4. Repeat this procedure as needed to install cage nuts in all light fixture boxes.

Install the light fixture in the panel

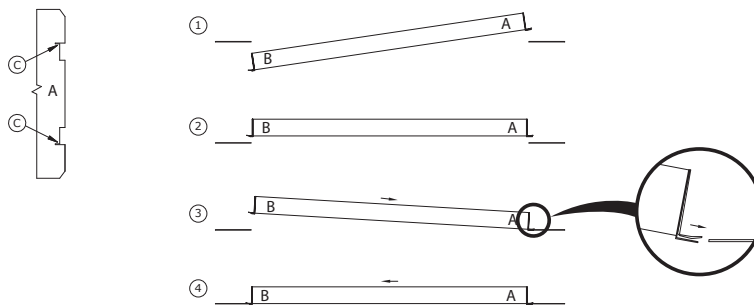
Prerequisites: Cage nuts must be installed in each light fixture as directed in “Install cage nuts in the light fixture(s)” (page 23).

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 exterior of the equipment). Wire to NFPA 70 and do not run wiring over the face of beams.

NOTE

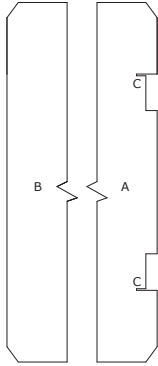
Refer to the following diagram as you complete this task.



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 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

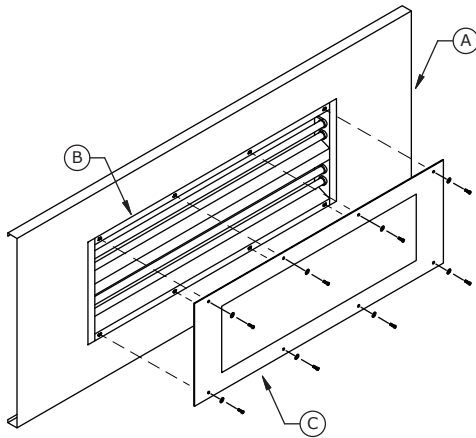
Install covers over the light fixture(s)

Prerequisites: The light fixture must be installed in the light panel as directed in “Install the light fixture in the panel” (page 24), 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 6-mm x 20-mm cap-head screws.

NOTE

To prevent damage to the cover, finger-tighten each of the cap-head screws to a torque rating between 2 and 5 inch-pounds.



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

Install the exhaust fan

1. Assemble the exhaust fan, fan support, and vibration isolators as shown in the Design Drawings.
2. Use 8mm bolts and nuts to fasten the fan assembly to the fan support.

NOTE

If necessary, rotate the fan support 90 degrees to avoid interference with the light fixture.

3. Remove the inlet ring from the blower assembly, install the extension housing, and reattach the inlet ring.
4. Fasten the extension housing and exhaust fan assembly to the exhaust panel using Tek-screws.

If applicable: Assemble the exhaust stack

Scope: This task applies only if the mix room includes ductwork.

Prerequisites: The exhaust fan must already be installed.

Perform the appropriate task depending on the type of ductwork:

- **If the mix room includes plain duct:** Follow the instructions in “*If applicable: Install plain duct with Automatic Roof Ventilator (ARV)*” (page 27).

- **If the mix room includes spiral duct:** Follow the instructions in “*If applicable: Install spiral duct with Automatic Roof Ventilator (ARV)*” (page 30).

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 30) 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.

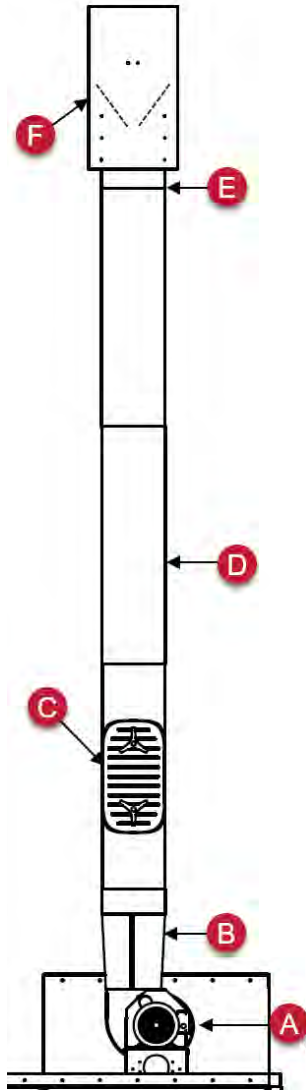
NOTE

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: Rectangular-to-round transition piece
- C: Plain duct with clean-out door
- D: Plain duct (no door)
- E: Flange-to-flange connection between ARV and duct
- F: ARV

NOTE

During installation of the exhaust stack and ARV, apply caulk to all connecting joints and seams.

1. Install the rectangular-to-round transition piece atop the fan.
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

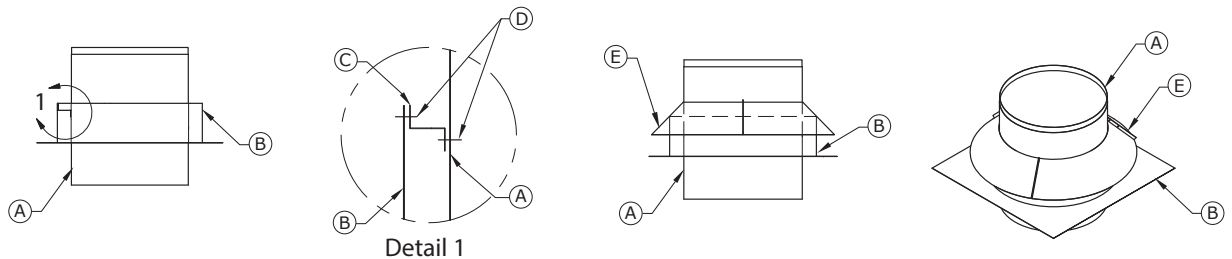
This step applies only if the mix room includes the optional roof flange kit.

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 27) 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.)

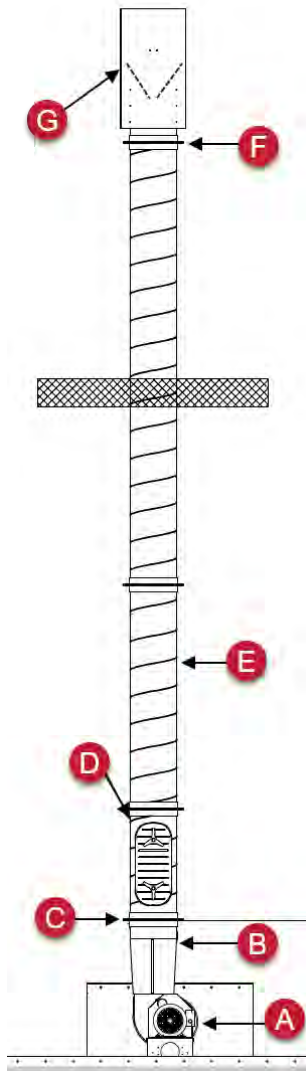
NOTE

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: Rectangular-to-round transition piece*
- C: Connecting ring*
- D: Spiral duct with clean-out door*
- E: Spiral duct (no door)*
- F: Flange-to-flange connection between ARV and duct*
- G: ARV*

NOTE

During installation of the exhaust stack and ARV, apply caulk to all connecting joints and seams.

1. Install the rectangular-to-round transition piece atop the fan.
2. Install the connecting ring.
3. 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.
4. 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.
5. Repeat Step 4 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 6.
6. *If applicable:* Install the roof flange and collar:

NOTE

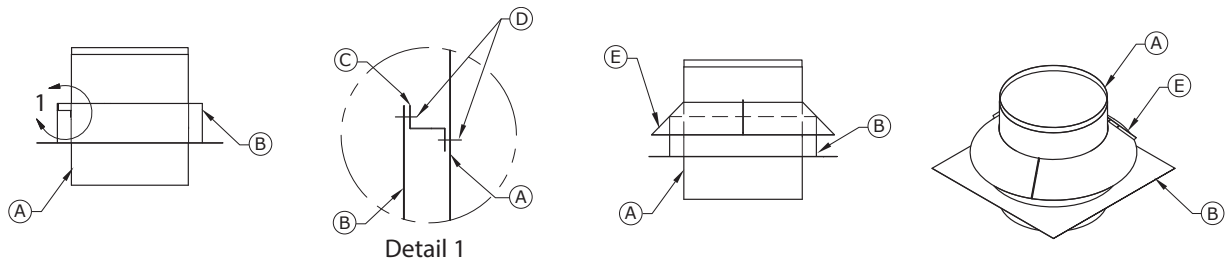
This step applies only if the mix room includes the optional roof flange kit.

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.

7. 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.
8. 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.

Install the personnel door

Prerequisites: The wall where the door will be located must already be installed (including door posts, door header, and threshold).

Reference: Refer to the Personnel Door page of the Design Drawings.

Attach the decals and safety labels

1. Remove the masking tape from the decal.
2. Attach the GFS decal to the panel above the personnel door or on the side wall.
3. Attach safety labels to the locations specified in the Design Drawings.

Perform electrical hookup

WARNING

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

1. Complete the wiring for the following items:

NOTE

To ensure continuous fan operation, the preferred location of the fan On/Off selector switch is the top of the mix room near the exhaust fan.

- Exhaust fan
 - *If applicable:* Mix room pressurizing blower
2. *If applicable:* Complete the wiring for the lights.
 - Black (hot) and white (neutral): Power
 - Orange and red: Unused
 - Green: Ground
 3. *If applicable:* Complete the wiring for the fire suppression interlock.
 4. Complete the wiring and field installation for the switches to operate the mix room.
 5. Complete the wiring for any of the following items that are included with this mix room:
 - *If applicable:* Proximity switches on personnel doors

6. Check the exhaust fan and make sure its rotation matches the direction indicator sticker on the blower.

Operating the Paint Mix Room

WARNING

Turn on the exhaust fan before using the unit. Ensure the exhaust fan is operating correctly before entering the mix room.

1. *If required:* Turn on the power at the main breaker.
2. Make sure the exhaust fan (and pressurizing blower fan, if present) are running before using the mix room.
3. Turn the lights Off/On Switch to the On position.

Maintenance procedures

Maintenance schedule

WARNING

Prior to shutting down the ventilation system for maintenance or servicing the lights, ensure that all vapor sources are contained. All open containers shall be tightly closed or moved to a safe location. If pumping equipment could be a vapor source, it must be shut down.

The Paint Mix Room operators and maintenance technicians should perform these checks at regular intervals to reduce fire hazards, maintain mix room efficiency, and hinder mix room corrosion and wear. Adjust the frequency of the checks according to local guidelines and actual usage.

Complete the applicable equipment maintenance procedures at the intervals shown below.

Items to Be Inspected and/or Cleaned	Daily	Weekly	Monthly	Yearly
Paint Mix Room Cleanliness				
Remove paint buildup from ceiling, walls, floor, doors, and any other surfaces where buildup accumulates.	X			
Check lights and replace defective bulbs if needed. NOTE Replace Lens Protector or Booth Shield on light fixtures as needed.		X		
Filter and Duct Maintenance				
Inspect intake filters for cleanliness, replace as needed.			X	
Inspect and clean intake (if applicable) and exhaust ductwork.			X	
Exhaust Fan and Motor Maintenance and Inspection				
Inspect and clean the exhaust fan, including the fan inlet and intake areas.				X
<i>If applicable:</i> Check the bearings for excessive play (lubricate or replace if necessary) and check and adjust fan belt tension.				X
Check fasteners, set screws, and lock collars.				X
Inspect motor for cleanliness. Clean exterior surfaces only. Remove dust and grease from the motor housing to ensure proper motor cooling. Remove dirt and grease from the wheel and housing to prevent imbalance and damage.				X

Daily maintenance

This section contains tasks that should be performed every day.

Remove paint buildup

WARNING

Do not allow paint to accumulate on the inside of the mix room walls. Remove any accumulation 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.

1. Remove paint buildup from the following locations:
 - Ceiling
 - Walls
 - Floor
 - Doors
2. Visually inspect all other surfaces for accumulated buildup; remove paint or clean as required.

Weekly maintenance

This section contains tasks that should be performed every week. Increase or decrease frequency as needed for specific operating conditions and use of the mix room.

Replace a defective bulb

NOTE

Perform this task if a specific light bulb is burned out or is noticeably dimmer than the other bulbs.

WARNING

Prior to servicing the lights, ensure that all vapor sources are contained. All open containers shall be tightly closed or moved to a safe location. If pumping equipment could be a vapor source, it must be shut down.

1. Remove any protective covering from the light whose bulb is being replaced:
 - **If you use Lens Protector:** Remove the Lens Protector plastic sheet.
 - **If you use Booth Shield:** Score around the light and peel off the Booth Shield covering.
2. Removing the eight (6 mm x 20 mm) cap-head screws that secure the light cover to the panel.

NOTE

Make sure to support the light cover when removing the last screws.

3. Pull the light cover away from the panel and place the cover in a safe place.

NOTE

If you do not use a protective covering on the lights, you might have to clean overspray from the light cover and panel before you can remove the light cover.

4. Rotate the tube 90 degrees to free the bulb from the lamp holder and remove the burned-out light bulb.

NOTE

Two spring-loaded holders keep the tube in place.

5. Replace the bulb by pushing one end of the new tube into one of the two spring-loaded holders, sliding the other end into the other holder, and then rotating the tube 90 degrees to lock in place.
6. Replace the light cover, ensure the alignment of the interlocking safety switch, and then secure it with the eight (6 mm x 20 mm) cap-head screws.
7. Once all light covers have been installed and the mix room is safe to operate, remove the lockout/tagout and apply power to the lights.
8. Verify that all light bulbs illuminate.
9. *If applicable:* Apply a fresh protective covering over the light.

Monthly maintenance

This section contains tasks that should be performed on a monthly basis. Increase or decrease frequency as needed for specific operating conditions and use of mix room.

Clean mix room components

1. Inspect the intake filter and replace as needed.
2. Inspect the intake and exhaust ductwork. If needed, scrape off any build-up; then sweep or vacuum it up. Dispose of build-up or other waste safely.

WARNING

Paint-contaminated items are flammable and may cause spontaneous combustion. Consult local authorities for proper storage and disposal requirements.

Yearly maintenance

This section contains tasks that should be performed on a yearly basis. Increase or decrease frequency as needed for specific operating conditions and use of mix room.

NOTE

Once each year, perform these tasks in addition to the monthly maintenance tasks.

If applicable: Adjust belt tension

Scope: This procedure only applies if the site purchased the optional mix room pressurizing blower.

Belt tension is very important to the proper operation of a fan and to the service life of a V-belt drive. The belts on a new fan are properly adjusted; however, all V-belts stretch in the first few hours of operation. It is necessary to readjust the belt tension after eight hours of running. After approximately 100 hours of running, the belts should be adjusted again. Thereafter, tracking the number of hours the mix room is in use and periodic inspection are recommended so belts may be adjusted or replaced when necessary.

WARNING

Operating drives without guards in place can result in severe injury or death. If you remove any guards, make sure you replace them before removing locks and restoring power.

WARNING

Prior to shutting down the ventilation system for maintenance, ensure that all vapor sources are contained. All open containers shall be tightly closed or moved to a safe location. If pumping equipment could be a vapor source, it must be shut down.

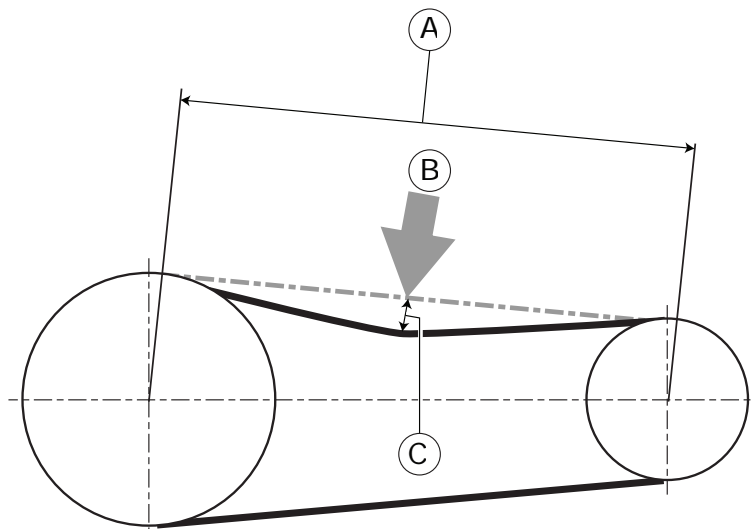
CAUTION

Do not tighten belts by changing the setting of the motor pulley as this changes the fan speed and may damage the motor.

NOTICE

Over-tightening results in too much tension, causing excessive belt wear and noise. Under-tightening results in too little tension, causing slippage at start-up and uneven wear.

1. Measure the belt span as illustrated below.



A: Span length
B: Force
C: Deflection

2. Calculate the required deflection by multiplying the belt span by 1/64.

For example, if the belt span is 32 inches, the belt deflection equals 1/2 inch (32 inches x 1/64 = 1/2 inch).

3. Apply the force from the following table evenly across the width of the belt at the center of the belt span and measure the deflection.

NOTE

A strip of keystone or similar material may be used to distribute the force evenly across the belt width.

Table 4. Belt deflection force

Belt type	New belt force (measured in pounds)	Used belt force (measured in pounds)
B	6.7-9.4	4.5-6.3

4. With the force still applied, measure the actual belt deflection. Adjust the belt tension if the measured belt deflection is greater than the calculated deflection.
5. When the mix room has been returned to a safe for operation state, remove locks and restore power.

If applicable: Replace fan belts

WARNING

Before servicing, lockout/tagout the fan, including the main electrical service.

Scope: This procedure only applies if the site purchased the optional mix room pressurizing blower.

1. Loosen the motor hold-down bolts and move the motor toward the fan. (This is done by turning a jackscrew which is a part of the motor base on models having larger motors.) The belt may be slipped off the motor sheave and then easily removed from the sheave on the blade shaft.
2. Check the numbers on the belt and make the replacement with a belt having the same length and section.



3. Adjust the motor outward to tighten the belt (see “*If applicable: Adjust belt tension*” (page 41)) and tighten the motor hold-down bolts. Be sure that the motor is not cocked at an angle and that the end face of the motor sheave is parallel to the end face of the driven sheave.
4. Adjust the belt tension (see “*If applicable: Adjust belt tension*” (page 41)).
5. After performing the above maintenance, check that all fasteners are tight.
6. When the mix room has been returned to a safe for operation state, remove locks and restore power.

Troubleshooting

Use this table to troubleshoot a mix room that is not operating as expected.

Symptom	Probable Cause	Remedy
There is not enough airflow through the mix room.	The intake filter is dirty.	Replace the filter.
	There are obstructions in front of the intake filters.	Remove any obstructions.
	The filters in use do not match the design specifications.	Change the filters to match the design specifications.
There is too much airflow.	The filters are not properly seated.	Ensure that all filters are in place.
The exhaust fan overloads.	The motor is running too fast.	Contact GFS technical services.
	The ductwork is inappropriately applied.	Check the static pressure of the ductwork configuration and adjust as necessary.
	The fan blades are dirty.	Clean the fan blades and housing.
The intake fan overloads.	The motor is running too fast.	Contact GFS technical services.
	The ductwork is inappropriately applied.	Check the static pressure of the ductwork configuration and adjust as necessary.
	The fan blades are dirty.	Replace the filter and clean the fan blades and housing.
	The belt is loose or worn.	Check the belt on the mix room pressurizing blower, adjust tension or replace as needed.
The light is not functioning properly.	Loose wiring or connections.	Check wiring and connections. Tighten or change as needed.
	The light tube has burned out.	Replace the light tube.
	The ballast is malfunctioning.	Replace the ballast.