Jamestown Metal Products

Fume Hood

Maintenance & Operation Manual

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Maintenance and Operation Manual

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Fume Hood Applications

If your fume hood is to protect you, it must be designed to be compatible with the type of work that will be performed. For example, working with radioisotopes or carcinogens requires a fume hood with a non-absorbent lining (usually stainless steel) designed to be easily decontaminated.

Today, energy efficiency is a high priority. A HOPEC (Hand Operated Positive Energy Control) fume hood is an energy saving and extremely safe alternative fume hood design.

Only a specially designed laboratory fume hood should be used for perchloric acid procedures. This fume hood type should be clearly labeled and its use restricted to only perchloric acid procedures.

Other specialized applications may require explosion proof fixtures, electrical receptacles, non-combustible liner materials or fire extinguisher systems.

Never use a fume hood that has not been designed for the type of procedure being performed!

To be sure your fume hood is the right one for the work you are doing, you may contact your local jamestown representative or give us a call at 716-665-5313. Our website at *www.jamestown.com* is an excellent source for frequently updated technical information and reference materials about fume hoods and other laboratory equipment. You can also email us for information at *info@jamestown.com*.

Common Fume Hood Types

Bench Fume Hoods:

Most common hood type used for general chemistry procedures. Specialized versions include; ADA Bench Hoods for access by handicapped personnel, OS Height Hoods with larger interior height for work requiring intermediate sized equipment, HOPEC, Radioisotope and Perchloric hoods as described above.

Walk-In Hoods:

A floor-to-ceiling fume hood for chromatography, distillation, pilot plant mock-ups, vat drug preparations and other procedures requiring large equipment inside the containment chamber.

Your Safety is our Top Priority!

Your new Jamestown Fume Hood is the result of extensive research and development to design fume hoods that are economical, efficient and the safest on the market. The design, materials and construction are periodically reviewed to assure an even better and safer product.

But you, the fume hood operator, are the single most important safety feature in the laboratory.

No matter how safe the fume hood system is designed to be, the operator must follow certain procedures for it to work safely and efficiently.

We urge you to become familiar with the recommended fume hood practices outlined in this booklet in addition to those published by your organization but, most important, make a habit of applying them every day. We think you'll agree it's the best way to help ensure a safe, healthy work environment for you and your co-workers.

Our fume hoods, as manufactured, are the safest in the industry but we need your cooperation to keep them that way in your environment.

Maintain an appropriate attitude towards safety.

Every laboratory should have written procedures for handling emergencies such as:

- "Runaway experiments"
- Fire
- Explosion
- Power failure
- Blower failure
- Service fixture failure

These procedures should be posted in a prominent place and all laboratory workers must be familiar with them in order to react appropriately in an emergency situation.

"What if..." drills should be run when a fume hood is first installed, or when staff or procedures change. In surprising numbers of instances, misplaced fire extinguishers, inaccessible fuse boxes and blocked exits are only discovered during such a mock emergency.

Safety drills are not only for the new employee. Long-time employees need reinforcement of safety procedures also.

Aerodynamic Principle & Safety

A Jamestown Fume Hood is designed to contain harmful contaminants and vent them out of the work space. It provides an enclosed area that has a protective air barrier between you and the harmful materials you work with. The directional air flow caries the contaminants towards the rear of the hood and dilutes them with large quantities of air to safely exhaust the hood.

If anything disrupts this air flow, the fume hood's ability to protect you will be seriously reduced**.**

Follow these important safety procedures to ensure proper air flow within the hood:

- **Use the illumination provided and be sure the hood is operational.**

Always turn on the interior light for proper illumination of the work area. Verify the exhaust system is working properly and that air is entering and flowing through the fume hood before starting fume producing activities. Be certain you know how to turn on the hood. In many facilities it is automatically controlled by the HVAC system. In others, control of each hood is local at an on/off switch located on or near the unit.

Verify you have a proper face velocity at or above 100 FPM through the sash opening you select before beginning fume-evolving activities. To confirm that your fume hood's exhaust system is working properly we recommend equipping the fume hood with an air flow monitoring device. Correct face velocity can be assured by periodically checking air flow with a hand-held velometer. Refer to page 10 for more specific information regarding velocity alarms.

- **Verify proper baffle settings.**

Safe and proper fume hood operation requires an understanding of the function of fume hood baffles as well as the HVAC system. Operators should not adjust the baffle settings once they have been balanced by qualified HVAC personnel.

- **Set-ups and apparatus should be as far back from the fume hood face as is possible for safety and optimum performance.**

When you stand in front of the hood with the sash open, the airflow passing your body creates a zone of low pressure directly in front of you extending in about four inches. Since contaminants can enter this area of turbulence from inside the hood, all experiments and equipment should be placed at least six inches behind the plane of the sash, behind the protective air barrier. The further back you can place the source of contaminants, the greater protection a hood can provide. However, don't place items you're using so far back that you need to lean your head or face into the hood during procedures.

- **Allow air flow at the work surface.**

Do not block the lower rear baffle slot of the fume hood. Large, bulky objects should not be placed directly on the fume hood working surface. Block such objects up two or three inches to permit a flow of air underneath and into the lower rear baffle exhaust opening.

- **Avoid rapid movement in front of the fume hood face.**

Avoid rapid movement and excessive personnel passage in front of the fume hood. Air disturbances so created may draw fumes out of the hood.

- **Operate the hood with the sash closed as much as possible.**

While working at the fume hood, open the sash only as far as you need to for access to your work area. The lowered sash increases the distance between your breathing zone and the area where fumes could escape into the lab. It also offers added protection by acting as a solid barrier against splashing chemicals or debris from explosions or runaway experiments.

- **Never store chemicals in the hood.**

Use of laboratory hoods as storage enclosures for corrosive, toxic or flammable materials may jeopardize fume hood performance and create unnecessary hazards. Limit materials within the hood to those required for immediate use.

Today, virtually all packaging is designed to safely contain reagents. Any leaky package should be disposed of immediately and appropriately, not stored in the fume hood. Clean up spills as soon as possible. Always use grounded electrical equipment.

- **Avoid extreme heat.**

Never permit the temperature of the sash surface to reach or exceed 160^{o} F, as laminated safety glass cracks at this temperature. We recommend our standard tempered glass, instead of safety glass, as it is stable up to 400^{o} F.

Black hood liner material, such as epoxy, can also absorb invisible infrared light from heated objects and may crack under heat stress.

- **Maintain lab safety instructional materials.**

Design a videotape outlining your organization's safety procedures, and be sure new employees view this tape. Jamestown can supply a video of this nature, but it lacks specific chemical information and procedures that only you, as the end user, can provide.

In summary, safety in fume hood operation involves three concepts:

- **Following accepted procedures.**
- **Avoiding questionable procedures.**
- **Maintaining the structural integrity of the equipment and the safety awareness of the laboratory staff.**

Clean Fume Hood = Safe Fume Hood

Periodic cleaning of the fume hood interior.

A neat and clean fume hood is not only aesthetically advantageous but also safer and easier to "shut down" in case of an emergency! Clean up any chemical spillage as soon as possible. All worktops recommended by Jamestown are "dished" to help contain spills. Use only cleaning materials recommended for use in conjunction with the procedures being conducted within the hood. By keeping the fume hood clean, the chemical residues of your procedures will have less time to potentially damage the internal components, thereby minimizing the risk of a possibly catastrophic failure of a key hood component.

The following are basic cleaning and maintenance procedures which can be performed by the fume hood operator. Confirm that the cleaning agents being used will not react with the chemicals being used in the hood.

CLEANING

- **Polyglass Liner:**

Can be cleaned with mild soap and water. For persistent stains use our polyglass liner cleaner (part number: SP26), acetone (with a thorough wipe-down afterwards due to flammability), JSS #22 Remove or #400 automotive sandpaper.

- **Sash Glass:**

Can be cleaned with a commercial glass cleaner.

- **Painted Steel Surfaces:**

Can be cleaned with mild soap and water, ethyl alcohol or commercial glass cleaner.

- **Epoxy Liner and Worktops:**

Can be cleaned with mild soap and water, solvent or commercial glass cleaner.

- **Plumbing Fixtures:**

Fixtures are coated with a corrosive resistant coating. Clean with mild soap or detergent only. Do not use an abrasive cleanser.

Basic Maintenance

Schedule frequent maintenance checks of the condition of sash components, exhaust system and load bearing parts.

The very nature of the materials used in a fume hood, harmful or corrosive chemical fumes, can lead to deterioration of the fume hood's components due to the long-term effects of any chemical reactions. Any metallic load-bearing member inside the hood needs to be checked frequently for corrosive deterioration. Be aware of vertical sash counterbalance systems utilizing cables that can release the sash in guillotine fashion of the cable snaps. Horizontal sashes have been known to break loose and cave into the hood when corroded suspension systems give way. Internal back baffle panels have broken free of their deteriorated hanger brackets.

Newer style hoods by most manufacturers combat some of these problems by eliminating or chemically coating the metal parts in question. Jamestown has incorporated a chain driven sash counterweight system that eliminates the possibility of fraying cables or fractured pulleys.

BASIC MAINTENANCE

- **Sash:**

A properly balanced sash, at 50% open, should not move up or down without operator assistance. If the sash is out of balance, do not attempt to adjust it yourself. No portion of the sash mechanism is user adjustable. Contact the appropriate maintenance department for your facility or a Jamestown representative.

- **Velocity Alarm:**

Test the velocity alarm daily by placing your finger over the thermistor reference hole on the front cover plate. Face velocity readout should quickly drop to zero and the audio alarm should sound.

- **Fans and Ductwork:**

Be sure your maintenance staff schedules frequent checks of the fume hood's fans and face velocities. Because the ductwork system is exposed to toxic and corrosive fumes, it is a vulnerable link in your lab's exhaust system and requires vigilant monitoring.

Instructions for Perchloric Fume Hoods

Perchloric acid, $HClO_4$, is unforgiving if not handled correctly. Its acidity is nominal but each molecule essentially carries around four extra oxygen atoms which like to react, burn, or explode; whichever is easiest.

Concentrated perchloric acid should never be heated. Old bottles of acid should be discarded as hazardous waste. It can be expected to react with most types of plastics, except PVC or Teflon.

Perchloric acid may form contact explosives with some shaft bearing lubricants. Only fluorocarbon lubricants should be used on perchloric acid fume hood exhaust fans. We recommend the exhaust streams for these hoods be dedicated and not mixed with other fume hood exhaust streams.

Periodic cleaning of the perchloric acid fume hood interior.

Due to the explosive and reactive nature of perchloric acid salts that accumulate in the hood and ductwork, the washdown system in your fume hood should be used after every use or at minimum, once a day. In continuous use applications washdown the hood at week's end.

Discontinue experiments in the hood and remove devices that could be damaged by water. Switch the exhaust system off, then turn on the washdown bar to flush water through the hood system. The rear baffles should be flushed for at least five minutes. Next, police the hood interior with a sponge, thoroughly rinsing the sponge to remove chemical residue. Be sure the hood interior is completely dry before replacing your equipment.

In most cases, the fume hood ductwork washdown system interfaces with the hood washdown system. Check with the appropriate party in your facility to determine how your system operates. Test the system with an empty hood before attempting a washdown procedure.

Other special considerations for perchloric acid hoods:

Any components used in conjunction with perchloric acid experiments, such as distillation racks, should be fabricated from stainless steel not aluminum.

Instructions for HOPEC Fume Hoods

HOPEC (Hand Operated Positive Energy Control) fume hoods look slightly different than our ISOLATOR hood but they work in much the same fashion. It also addresses concerns such as ADA (Americans with Disabilities Act) and LCV (Low Constant Volume). The main difference being:

- The fume hoods are designed to be operated with at least 50% of the combination sash closed. This condition is achieved by either:

1. Having the vertical portion of the sash completely closed and the horizontal panel(s) open for operation.

2. Having the horizontal panels fully closed and the vertical portion of the sash raised not more than 15".

- The hood is deeper than an ISOLATOR hood due to the design of the front airfoil. The airfoil is bright yellow to remind the operator to keep all experiments and equipment at least six inches behind the plane of the sash.

Velocity Alarms

Air is drawn into the fume hood by its exhaust system which creates a pressure difference between the surrounding room and the hood interior. The speed of the air passing through the sash is called the face velocity. Proper face velocity is required to protect the operator and surrounding area from harmful components inside the hood.

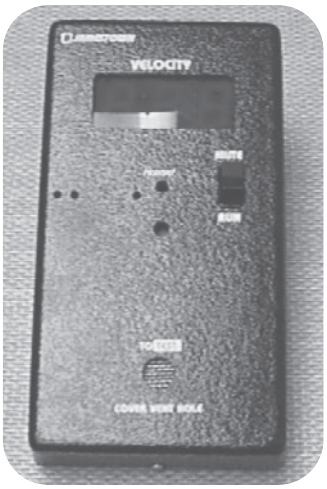
There are two different models of velocity alarms available to choose from.

Alnor Velocity Alarm

The Alnor AirGard 335 Velocity Alarm has audible and visual indicators. In dangerous situations a continuous audible alarm will alert the operator. An electronic bar graph moves back and forth through universally recognized zones, red - yellow - green, as the velocity changes. Corresponding large colored LEDs also illuminate. A digital display can be enabled to view velocity quantitatively.

Jamestown Digital Velocity Alarm

This unit will give the fume hood operator a continuous digital readout of fume hood face velocity. If the face velocity drops below a preset alarm set point an audio alarm and flashing red LED display will alert the operator of dangerous situations that may arise.



Always verify you have a proper face velocity before beginning fume hood activities. Remember to test the velocity alarm every day and that everything is running correctly. If it is not, make sure the proper maintenance department for your facility is contacted immediately. Do not use the fume hood until this condition has been corrected.

Velocity Alarm Calibration Instructions

Calibration of Jamestown Digital Velocity Alarm

1. Power up the alarm and set the switch to “Run”, calibrate as follows:

    a. There are three calibration potentiometer holes located on the alarm face plate.
    b. With the fume hood and make-up air off, turn the left most potentiometer (RP2) until the digital counter just moves off zero. Now turn the potentiometer back in the other direction until the reading barely returns to zero.

2. Turn the fume hood and make-up air on. Using the sash or damper adjustment, or both, set the face velocity at the desired sash setting to the desired alarm set point (10 to 100 FPM) using a velometer, not the velocity alarm.

3. Remove the alarm cover and select the one of the ten numbered DIP switches (SW1) that corresponds to your alarm set point. Move the DIP switch to the right (On position). Replace the alarm face plate.

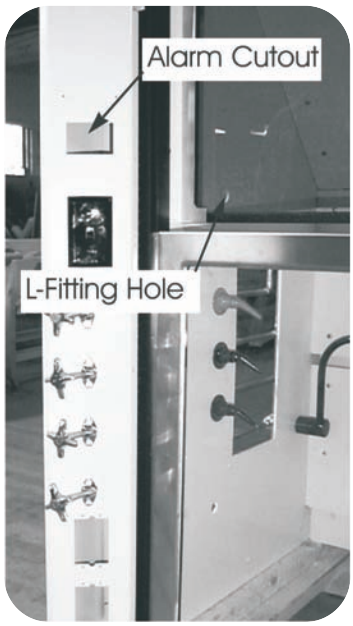
4. Turn the set screw on the center potentiometer (RP1) until the alarm signal activates.

5. Using the sash or damper adjustment, or both, set the fume hood velocity to 100 FPM using a velometer, not the velocity alarm. Adjust the rightmost potentiometer (RP3) until the digital readout is 100 FPM. Alarm is now calibrated and ready for use.

Alarm is now set to digitally read the average face velocity and activate the alarm if the desired minimum value is not held. **Note**: Audio alarm can be muted by activating the Mute switch, but the warning light cannot be turned off.

Calibration of Alnor Velocity Alarm

Please refer to the AirGard 335 owner’s manual for proper calibration of this device or visit their website for manuals and information at www.alnor.com.



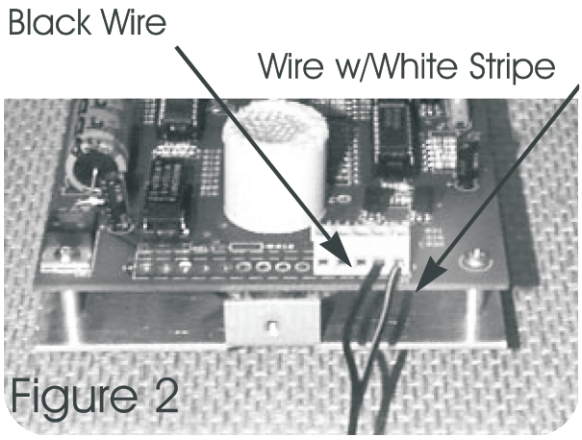


Figure 2

Procedures for Trained Personnel

The following maintenance items should be undertaken only by building maintenance, trained fume hood or HVAC installation personnel.

- **Periodic inspection of the ductwork system.**

At least twice a year the exhaust duct and fan integrity should be inspected. Check for localized corrosion, broken fan parts and debris clogs. If items such as tissue, paper or foil are used in the hood, it is possible for them to be drawn into the baffle/duct system, forming blockages that reduce air flow.

- **Periodic smoke tests.**

At least twice a year we recommend running a smoke test on each hood. Smoke sticks and other testing materials are available for purchase from Jamestown.

- **Periodic testing of the velocity alarm.**

At least once a year test the accuracy of the velocity alarm by using a hand held velometer.

- **If the sash becomes "cocked".**

If the contact between the airfoil and the sash handle is not continuous and flush, loosen both sprockets, on the side that is not making contact with the airfoil, from axle contact by loosening the 3/32" Allen screws (two per sprocket). Close the sash fully making sure it is flush against the airfoil. Verity the chain is properly seated on the sprockets. Re-tighten the Allen Screws on each sprocket.

- **If the sash is out of balance.**

Note: If the sash is a combination sash, first verify all horizontal sliding panels are in place.

Contact your Jamestown representative, who can supply additional small weights to balance the sash. Attachment instructions will accompany the counterweight pieces.

- **If the sash does not operate smoothly or makes noise.**

Contact your Jamestown representative immediately for an inspection. The chain mechanism should not require lubrication. This may be a symptom of a more serious problem.

- **If the sash glass breaks.**

Replacement sash units may be ordered through your Jamestown representative. Do not attempt to replace the glass without first requesting a copy of the instructions for sash replacement.

Fume Hood Safety Labels

If the instructional label on your fume hood is missing or is illegible, we have, for your convenience and safety, reproduced it on this page. Use a copy of this as a temporary safety measure but be sure to contact your local representative or Jamestown Metal Products for an immediate replacement.

FUME HOOD OPERATING INSTRUCTIONS

1. Before using the fume hood, make sure the light is on and the proper face velocity is present. Immediately report any malfunction of the exhaust system!
2. Maintain a protective barrier between yourself and all active procedures.
3. Keep active procedures at least 6" behind the plane of the sash.
4. Operate the fume hood with the sash closed whenever possible.
5. Do not obstruct the baffle openings or place large or bulky items directly on the work surface where they could obstruct the proper airflow through the fume hood.
6. Do not obstruct the airflow at bottom airfoil.
7. Do not place your head inside the fume hood. Keep your hands outside as much as possible.
8. Avoid storing containers of corrosive or volatile liquids in the fume hood.
9. Wipe up any spillage immediately.
10. Wear safety goggles at all times.
11. Do not misuse the hood or use materials which the hood has not been designed for.
12. Ensure that all laboratory workers are following company safety policies and procedures, as well as any additional guidelines supplied by the manufacturer of the hood. Be familiar with suggested maintenance procedures.

PERCHLORIC ACID FUME HOOD OPERATING INSTRUCTIONS

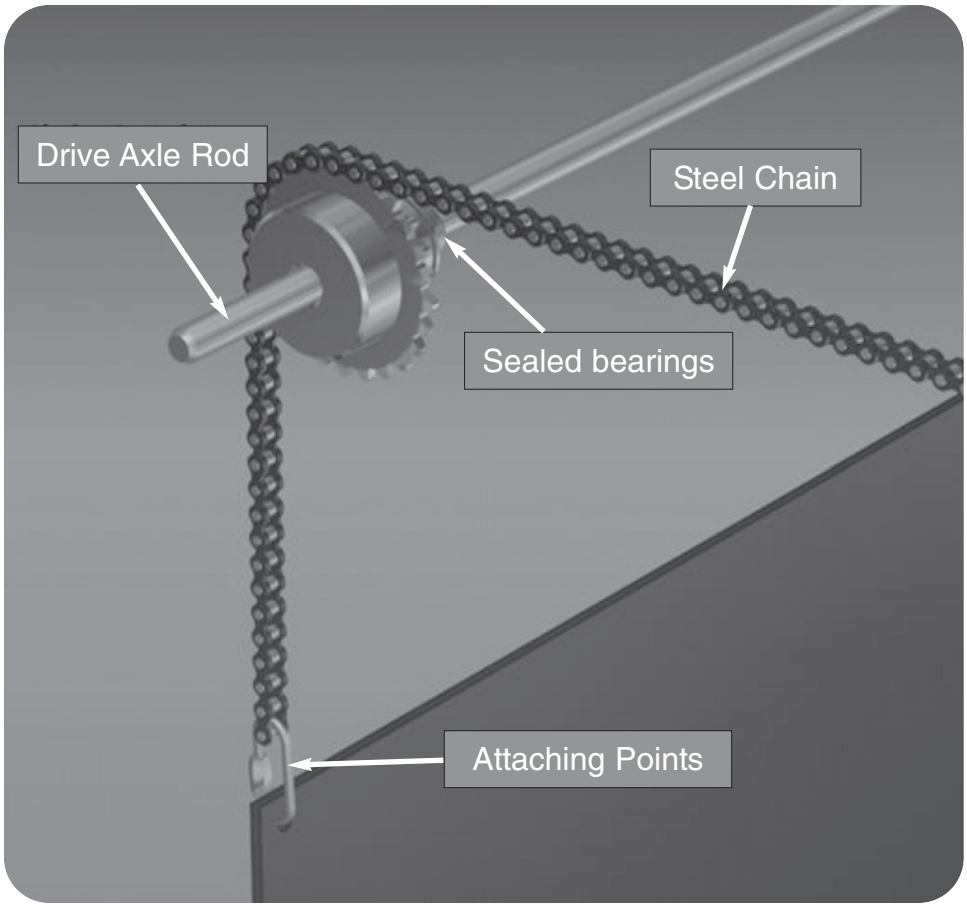
1. Keep all perchloric acid procedures under scrupulous control. Never allow the reagent to come into close proximity with any plastic, except PVC or Teflon.
2. Never use this hood with reagents other than perchloric acid.
3. When your use of this hood is finished, or, at minimum, once a day, run a washdown cycle for at least ten minutes. Switch fan off, then run the cycle, being sure the washdown trench drain is clear at all times.
4. Before using the fume hood, make sure the light is on and the proper face velocity is present. Immediately report any malfunction of the exhaust system!
5. Maintain a protective barrier between yourself and all active procedures.
6. Keep active procedures at least 6" behind the plane of the sash.
7. Operate the fume hood with the sash closed whenever possible.
8. Do not obstruct the baffle openings or place large or bulky items directly on the work surface where they could obstruct the proper airflow through the fume hood.
9. Do not obstruct the airflow at bottom airfoil.
10. Do not place your head inside the fume hood. Keep your hands outside as much as possible.
11. Avoid storing containers of corrosive or volatile liquids in the fume hood.
12. Wipe up any spillage immediately.
13. Wear safety goggles at all times.
14. Do not misuse the hood or use materials which the hood has not been designed for.
15. Ensure that all laboratory workers are following company safety policies and procedures, as well as any additional guidelines supplied by the manufacturer of the hood.

PERCHLORIC ACID IS COMBUSTIBLE, REACTIVE AND EXPLOSIVE. USE EXTREME CAUTION.

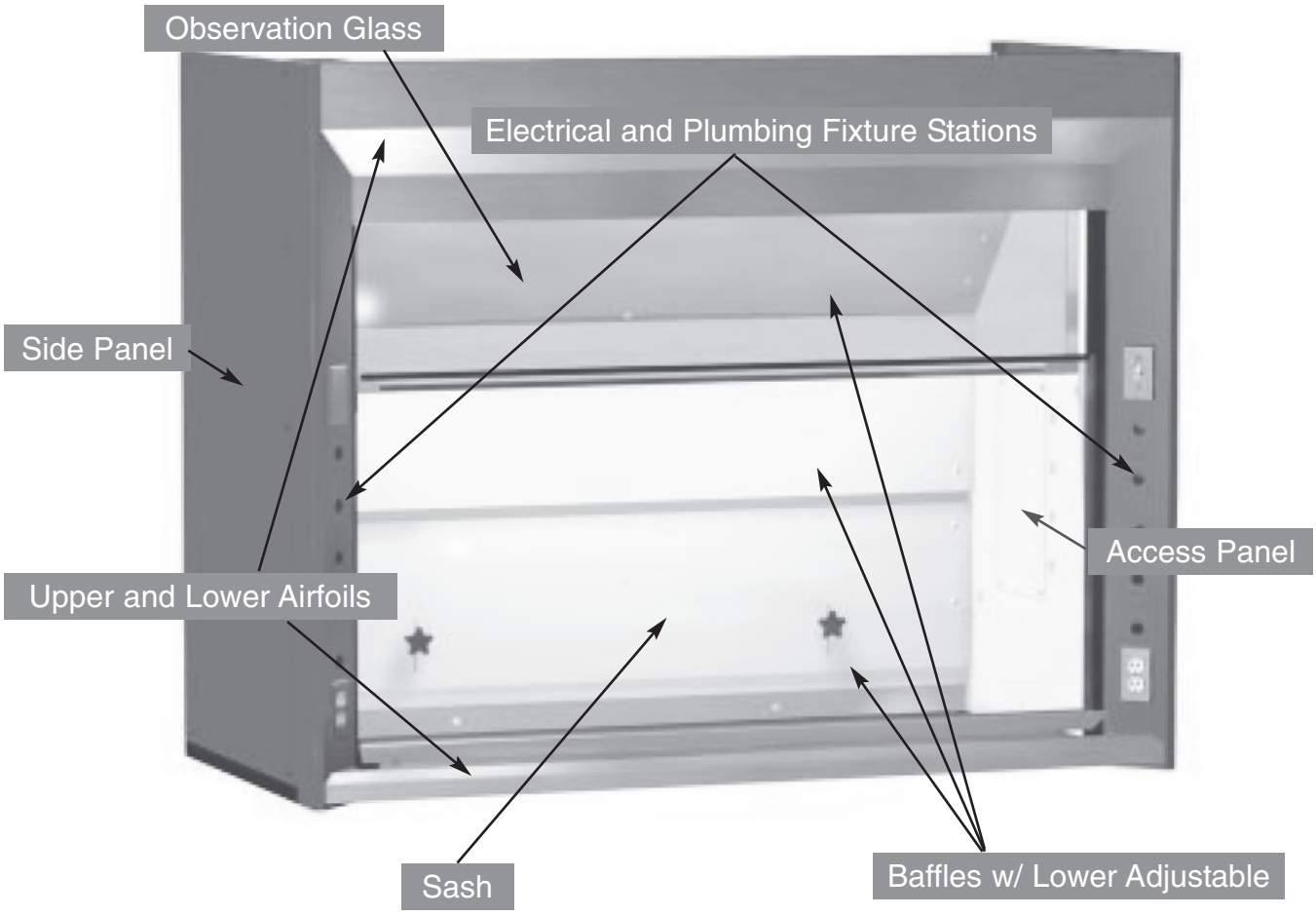
Product Warranty

Jamestown Metal Products for a period of three years, from date of shipment, warrant that furnished products shall be free from defects in material and workmanship. Jamestown Metal Products shall also warrant the products to be as represented and will repair or replace any part, under normal use, if examination discloses it to have been defective within the warranty period.

Jamestown Metal Products for the life of the sash mechanism warrant that furnished products shall be free from defects in material and workmanship. Sash mechanism refers to the #35 case-hardened steel chain, sealed bearings, drive axle rod and chain attaching points at both sash handle and counterweight.



Hood Features & Identification Label



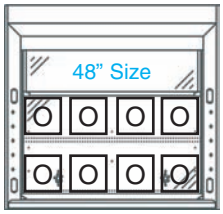
ISOLATOR FUME HOOD
716-665-5313
Manufactured by Jamestown Metal Products
Jamestown, New York 14701

Model:	F-100-72	Serial No:	263 1 01
Phase:	1	Equip No:	12557YS
Cycles:	50/6	Voltage:	120
Max KWS:	2.4	Max Amps:	20

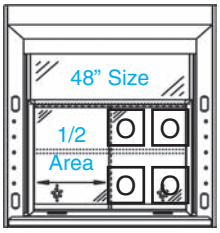
Jamestown Metal Products

Air Flow Chart

Bench Hood
Vertical Sash

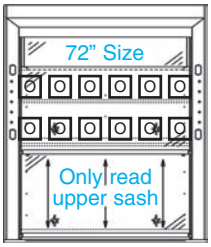


Bench Hood
Horizontal Sash



Horiz. sashes use 50% area of appropriate size hood. Use upper or lower row below to show this.

Walk-In Hood
Vertical Sash



Only use upper vert. sash opening to measure F.P.M.

Name : _____

Organization : _____

Date : _____

Location : _____

Room : _____

Fume Hood Model : _____

Size : _____

Sash : _____

Type : _____

Identification Number : _____

READINGS

F.P.M. Average :

Total F.P.M. - _____ **/** Total Readings - _____ **=** _____

Total C.F.M. :

F.P.M. Average - _____ **x** (*Sq. inches / 144) **=** _____

*Sash opening height x width

1 F.P.M. _____	3 F.P.M. _____	5 F.P.M. _____	7 F.P.M. _____	9 F.P.M. _____	11 F.P.M. _____	13 F.P.M. _____	15 F.P.M. _____
2 F.P.M. _____	4 F.P.M. _____	6 F.P.M. _____	8 F.P.M. _____	10 F.P.M. _____	12 F.P.M. _____	14 F.P.M. _____	16 F.P.M. _____

Each Area Approx. 12" x 12"

36" Hood | 48" Hood | 60" Hood | 72" Hood | 96" Hood

"Knock-Down" Overview / Bench Hood

A bold number system is used to follow the steps for assembly. A subscript system is also in place next to the various components throughout the manual to aid the reader in recognition of those components with a visual reference provided in the rear of this manual.

Care has been taken on the "strategical" presentation of assembly, shying away from the "tactical" assembly, as you can give instructions on how to go from point A to point B but there are many methods and preferences to this goal.

A component and check-off list has been provided, as the heading suggests, to inventory the shipped crate for completeness and to mark off the components as they are used to assure the hood is properly assembled.

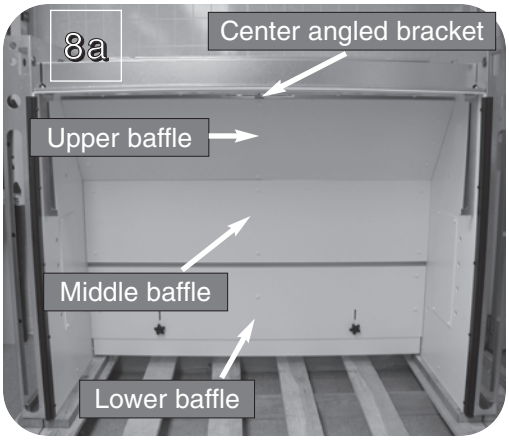
EXAMPLE

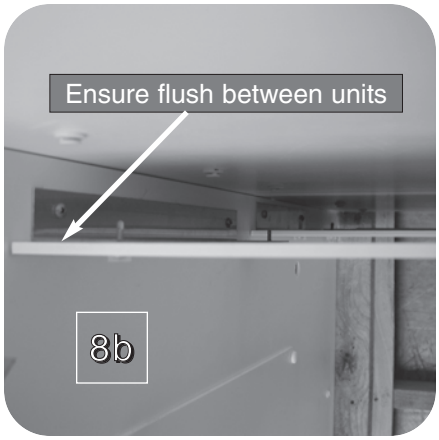
8. Using #10 x 3/4"[13a] screws with base[3] attachments, screw in the bottom, middle and lower baffle units to the center bracket supports and side bracket supports [8a]. Attach the center angled bracket[2]. Check that the baffle units are secure and flush against the bracket supports by visual inspection or physically feeling behind the baffles [8b].

*Paragraph number (**8.**) refers to corresponding picture box(s).

*Subscripts ([13a], [3], [2]) denote the component number on pages 27 & 28 for visual reference.

*Lettered outlined number ([8a], [8b]) signifies specific picture box.





Inventory & Check-off List

Pack List #1

- ☐ Upper baffle
- ☐ Middle baffle
- ☐ Lower baffle
- ☐ Back frame liner
- ☐ Observation glass / smoked
- ☐ Sash
- ☐ Side panels x 2
- ☐ Lower adjustable baffle

Pack List #2

- ☐ Axle rods x 2
- ☐ Lower airfoil
- ☐ Upper airfoil
- ☐ Ceiling Soffit (If included)

Pack List #3

- ☐ Fascia panel x 2
- ☐ End frame assembly x 2

Pack List #4

- ☐ Top frame assembly
- ☐ Back frame panels x 2

Pack List #5

- ☐ Counterweight / J-plate & insert

Pack List #6 # = JMP Part Number

- ☐ #10 x 3/4" screws[13a] x 50 #02300447
- ☐ #10 x 1/2" screws[13b] x 50 #02300443
- ☐ #8 x 1/2" screws[13c] x 20 #02300434
- ☐ U-Tapped clip[1] x 2 #02150414
- ☐ Screw base[3] x 50 (Integral with screw caps)
- ☐ Screw caps[6] x 50 / white #02750410 / black #02750409
- ☐ Viewpass bracket set x 2
- ☐ Center baffle support x 3
- ☐ Side baffle support x 6
- ☐ Nylon bolt and nut[10] x 1 #02750407
- ☐ Baffle knob & bolt[8] x 2 / knob #02450400 / bolt #02100415
- ☐ Center angled bracket[2] #40038408
- ☐ Plug caps, various[11] x 40
- ☐ Chain x 2 #02800493
- ☐ Sprockets[14] x 4 #02800427
- ☐ Spacer collar[7] 1/2" dia. x 4 #02800438
- ☐ Connecting chain link[9] x 4 #02800496
- ☐ Threaded chain connector[16] x 2 #02500496
- ☐ Rubber bumper / black[5] x 2 #02750413
- ☐ PVC pushpin[12] x 50 #02750490
- ☐ Sash stop[15] x 2 #40039200
- ☐ *Assorted electrical components
- ☐ *Assorted plumbing components

*Varies with options ordered.

"Knock-Down" Assembly

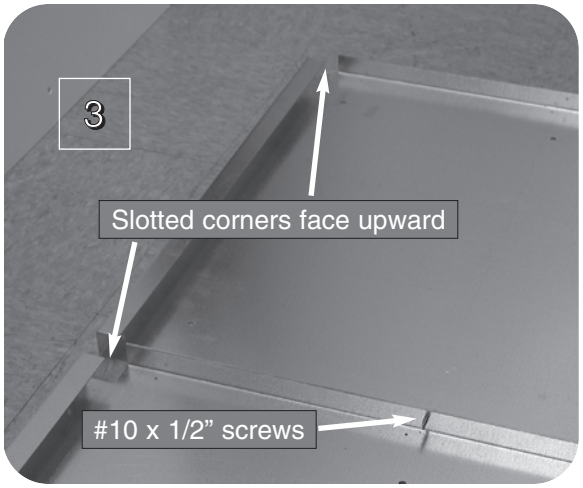
1. Set and level fume hood worktop and base cabinets per manufacturer recommendations.

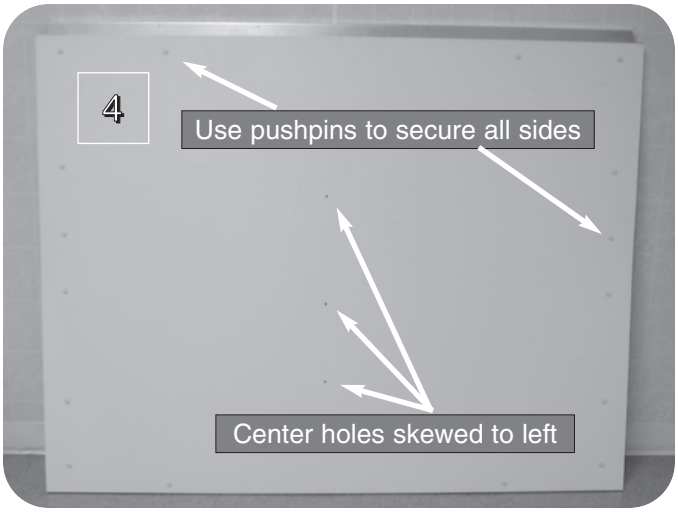
2. Place counterweight at rear of worktop such that the hanging holes are topmost and weight is leaning against the wall with smooth side of J-plate facing to the front.

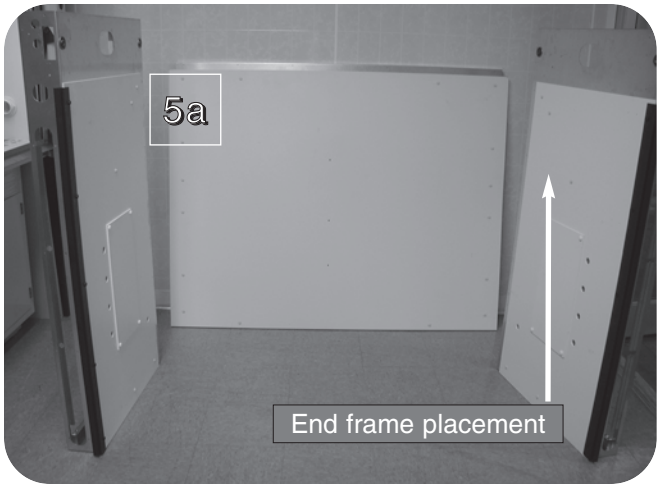
3. Attach the 2 back frame panels. The slotted corners are the top parts of the frame. Use #10 x 1/2"[13b] screws to attach.

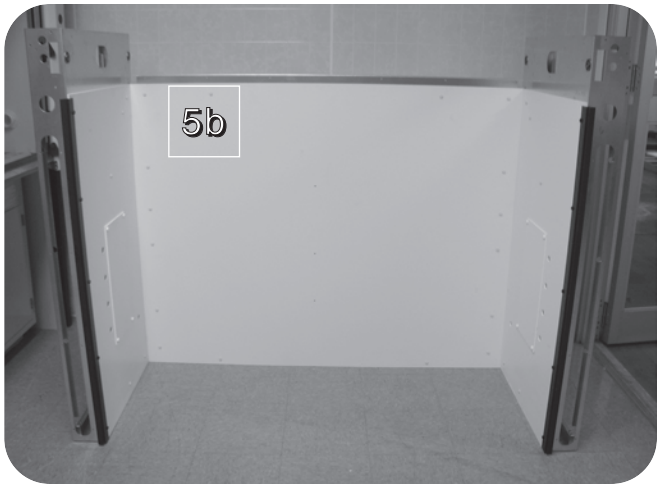
4. Attach the liner to the smooth side of the back frame panel. Line up the hole slots and use the PVC pushpins[12] to secure. Top of the back frame is with the center holes skewed to the left. Place the back frame against the wall in front of the counterweight.

5. Take the 2 end frames, liner inward - right side up, attach them to the back frame panel using #10 x 1/2"[13b] screws [5a]. You can use vice grips to hold the back frame and end frames in place to keep them stable to assemble [5b]. Use #10 x 1/2"[13b] screws to attach.







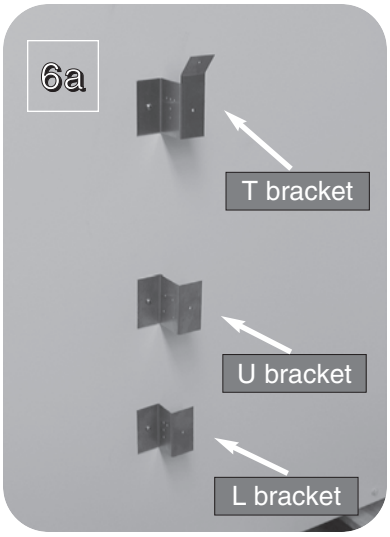


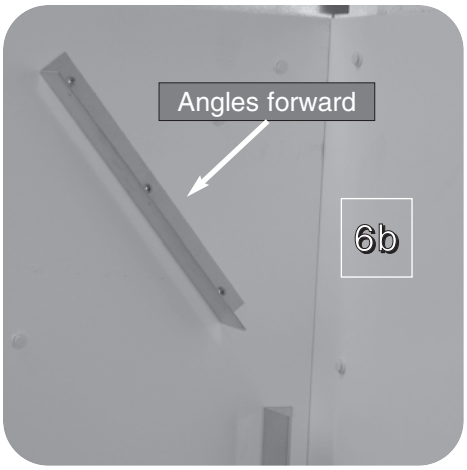
"Knock-Down" Assembly

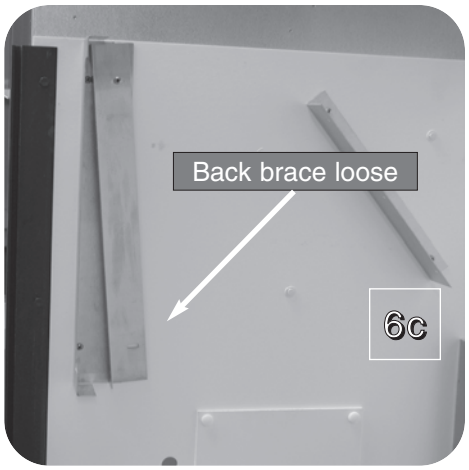
6. Assemble the baffle bracket supports. For side support use short 2 hole for the bottom, long 2 holes for the middle and 3 hole for angled top [6d]. For the center use the code punched center baffle brackets. T-punched bracket for the top portion, U-punched for the middle portion and L-punched for the lower portion [6a]. The reason for the offset holes is for the angled center bracket supports so when attached the holes are centerline with the hood. Then attach the side bracket supports for the viewpass glass [6c]. Only secure the back brace on the top loosely leaving the bottom hole free. This will provide easy insertion later on with the viewpass. #10 x 3/4"[13a] screws are to be used. Be sure to attach side supports with angle facing forward [6b].

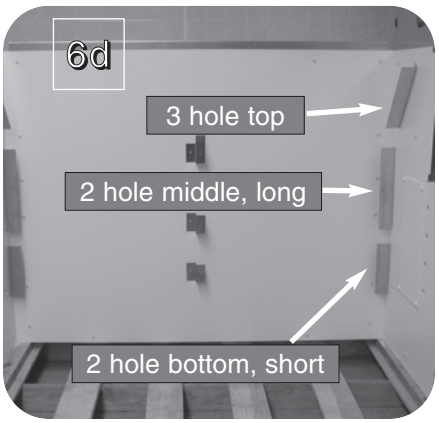
7. Assemble the lower baffle section. Use the lower baffle and lower adjustable baffle. Combine both units correctly using adjustable baffle knob and carriage bolt[8].

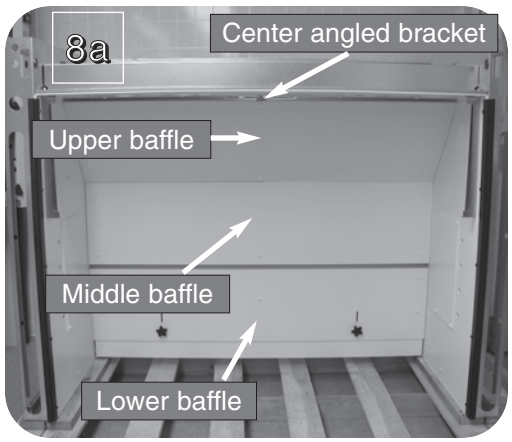
8. Using #10 x 3/4"[13a] screws with base[3] attachments, screw in the bottom, middle and lower baffle units to the center bracket supports and side bracket supports [8a]. Attach the center angled bracket[2]. Check that the baffle units are secure and flush against the bracket supports by visual inspection or physically feeling behind the baffles [8b].

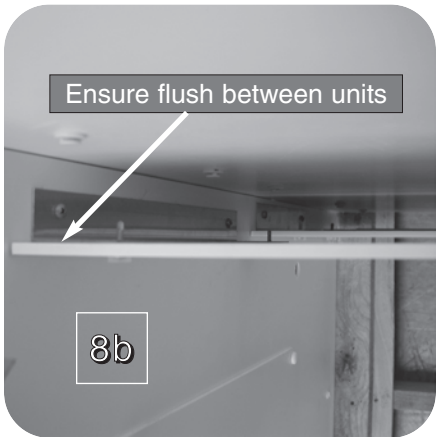








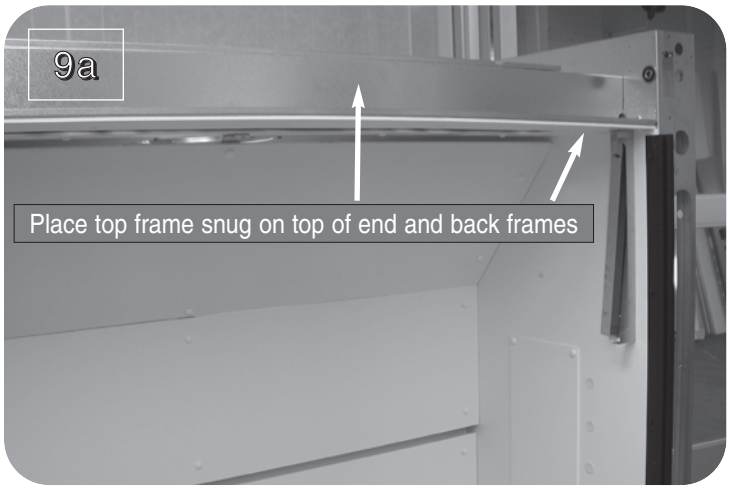


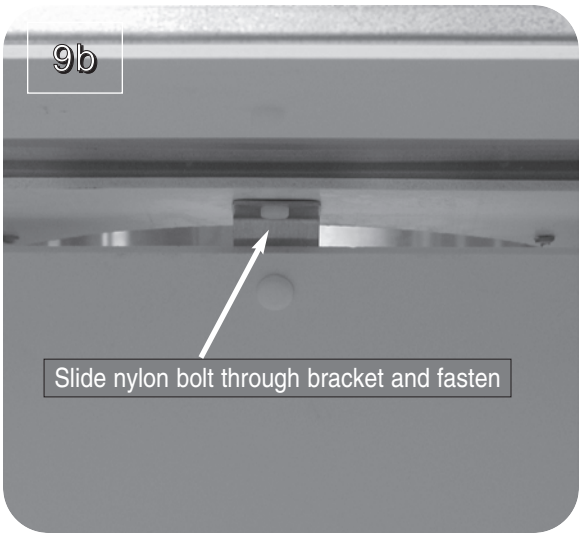


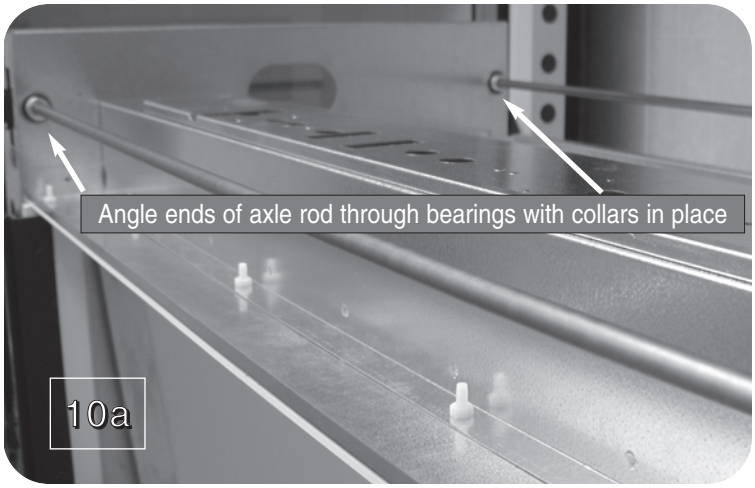
"Knock-Down" Assembly

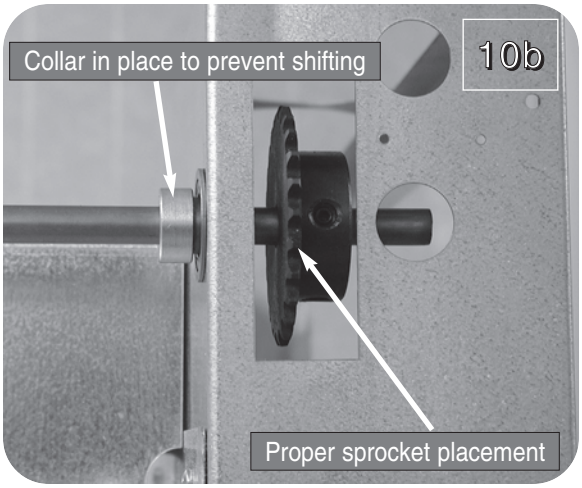
9. Place top hood portion into place with lightbox to front of fume hood [9a]. Around the sides and back of top frame use #10 x 1/2" screws[13b] to attach to back and end frame. After the top is secured use a white nylon bolt and nut[10] to attach the center angled bracket[2] to the fume hood top [9b].

10. Slip one end of the axle rod, angling it, through one of the side bearings[4] [10a]. Slip on 2 collar spacers[7] on the axle rod. Slip the rod through a little further to be able to get in the other end. In the process be sure to attach the sprockets[14] as they have to be in place just after the insertion of the axle rods. Be sure the sprocket teeth side are faced toward the interior of the hood [10b]. Position the axle rods so as to have even spacing from the rod ends to the outside of the end frame. Once everything is in place tighten down the collar spacers to keep the rods from shifting. Repeat the procedure with the back axle rod and components.





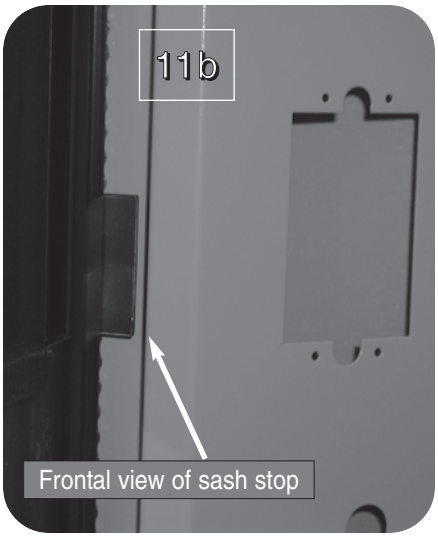


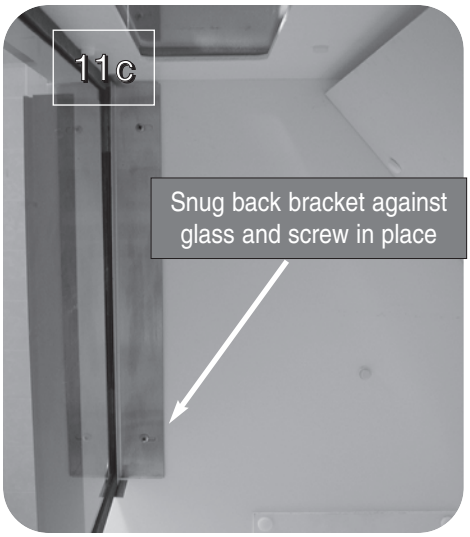


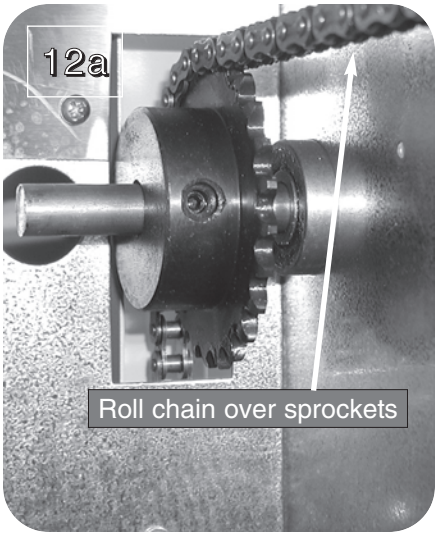
"Knock-Down" Assembly

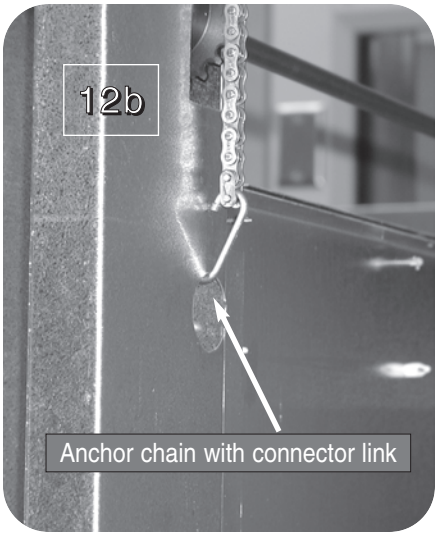
11. At the front of the end frames, insert the sash stop[15] into the vertical slot located approximately in the middle of the end frame assembly [11a]. Use #10 x 1/2"[13b] screws to fasten the sash stops. This prevents the sash glass from dangerously derailing from the sash track via the top [11b]. Place the smoked observation glass into the brackets by sliding in from the bottom. Tighten down the bottom back brace to secure in place [11c] using #10 x 3/4" screw[13a].

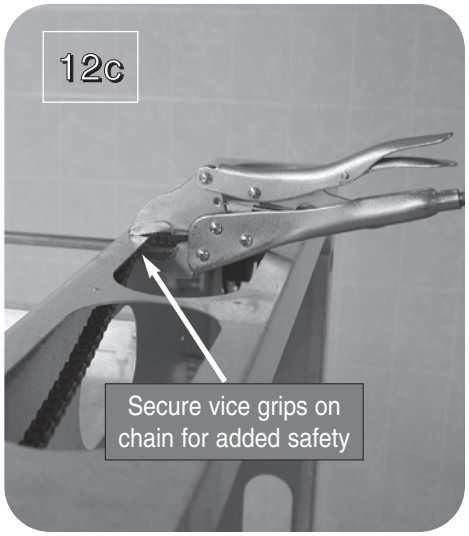
12. Now it is time to lay the chains in place. Roll each chain over the sprockets[14] [12a] and attach the threaded chain link[16] to the back end and secure to an opening, as shown in picture, to keep from rolling off the sprockets [12b]. For extra security for when you attach the sash glass, use the vice grips to anchor the chains as shown in picture [12c].







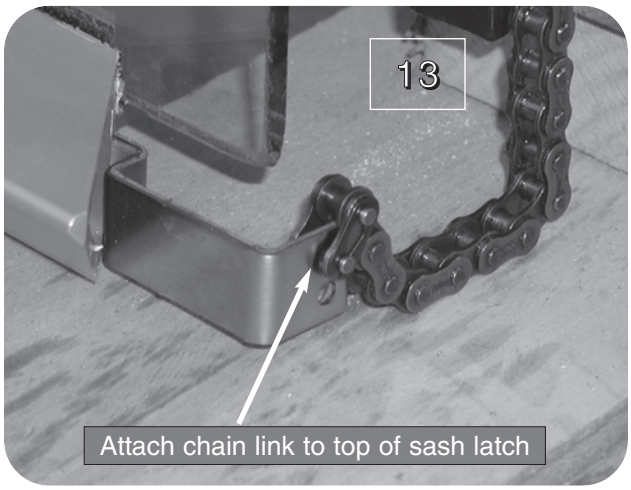


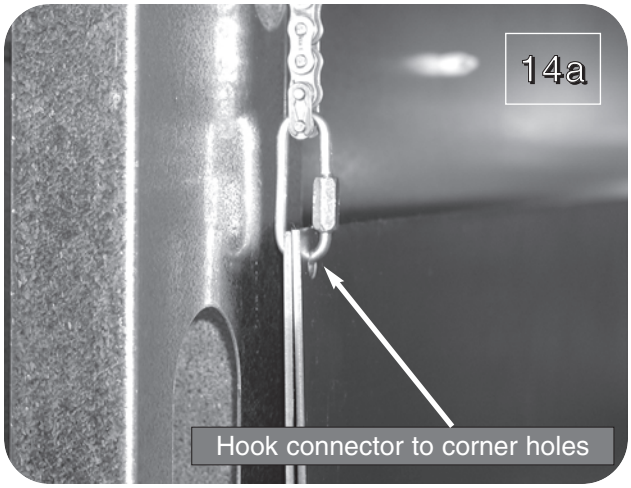


"Knock-Down" Assembly

13. Sash glass installation. Slide the hood forward with enough room to raise the sash glass into the black PVC track slot. Use something to support the sash from the bottom, a reliable and safe support, to give enough space to attach the chain end to the sash chain attachment point using the chain link connector[9] as shown in picture. Once the sash is attached it is time to connect the counterweight to the back end of the chain.

14. Once the sash is attached it is time to connect the counterweight to the back end of the chain. Lift the counterweight ends and attach the threaded chain connector[16] to the hole positions on the corners of the counterweight [14a]. Screw down the threaded chain connector to secure the counterweight to the chain assembly [14b]. You can now release the vice grips holding the chain in place and raise the sash to a clear position to move the hood back into place.

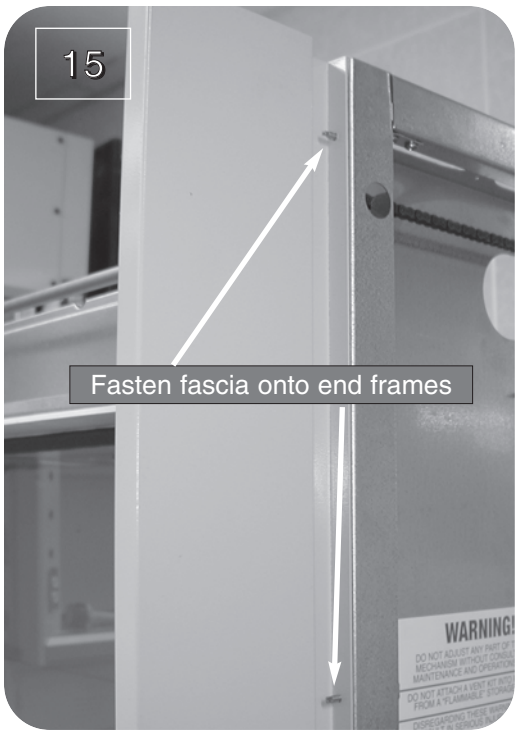


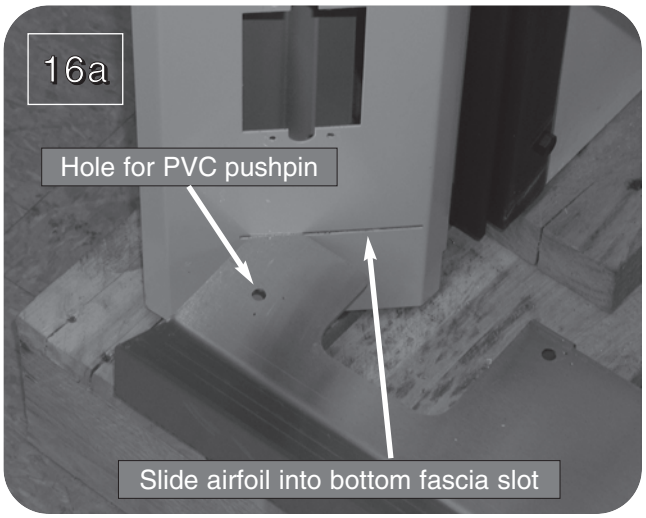


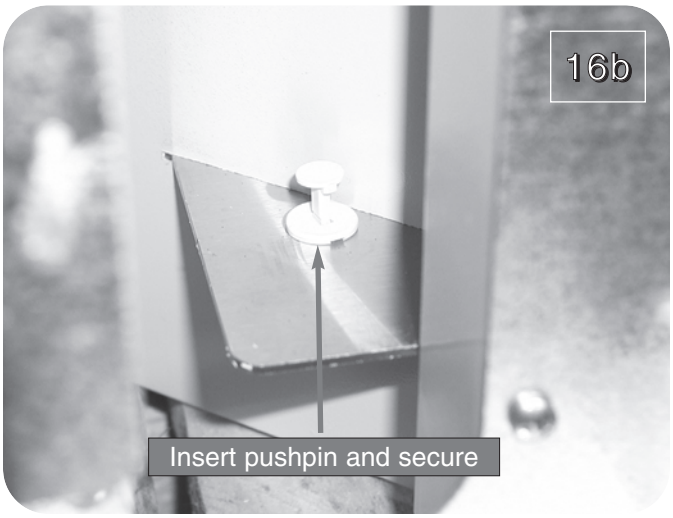
"Knock-Down" Assembly

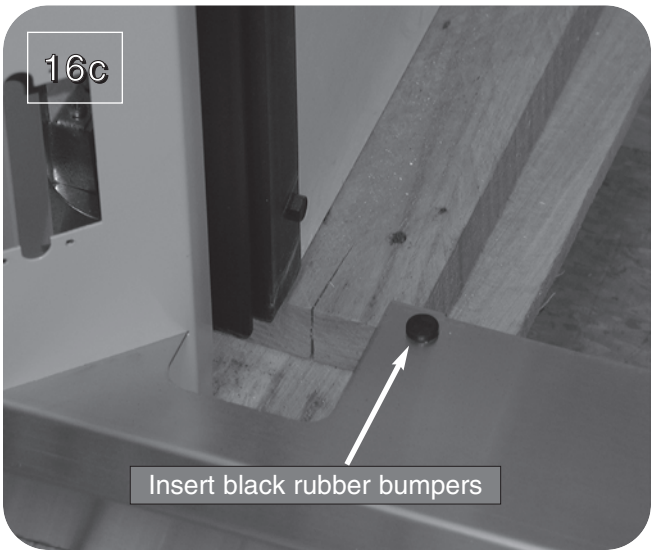
15. Put the fascias on securing the interior row first and then the exterior next with #8 x 1/2" screws[13c].

16. Once the fascias are in place, with the sash raised a few inches, slide the lower airfoil corners into the fascia slots provided until flush with the fascia face [16a]. Then from the interior of the end frames place a PVC pushpin[12] in to the hole provided and secure [16b]. Plug in the 2 black rubber bumpers[5] on the lower airfoil top [16c].



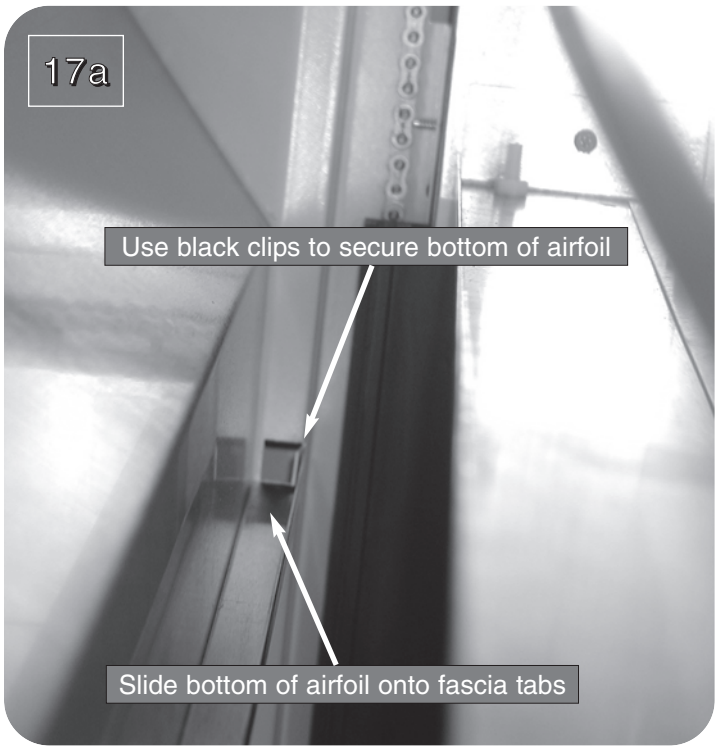


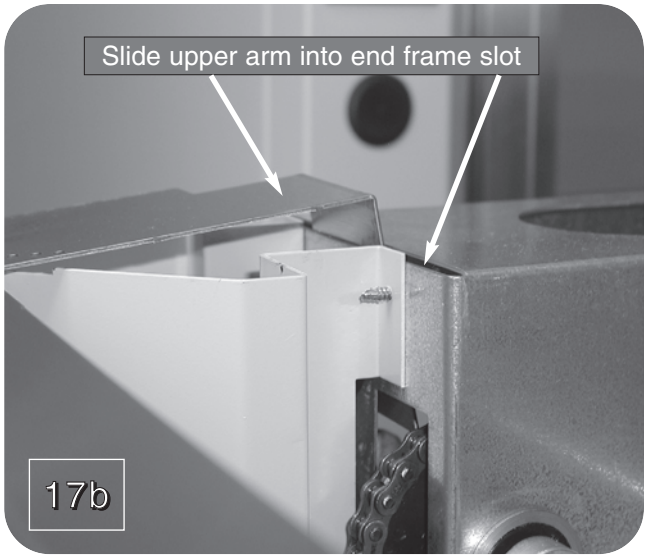


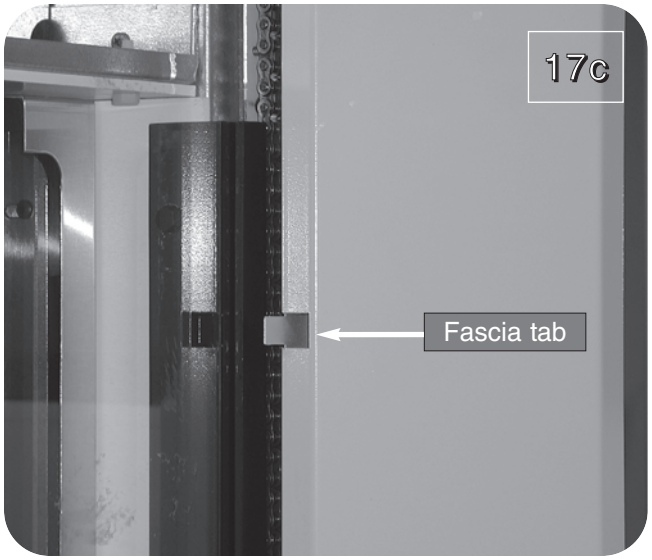


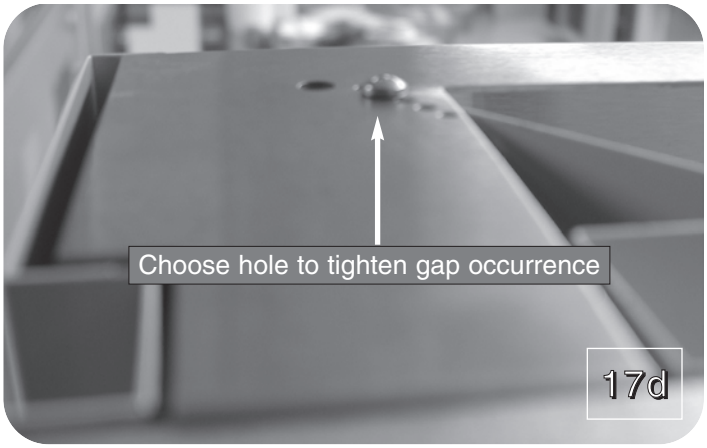
"Knock-Down" Assembly

17. Care should be taken on this next step to prevent fascia scratching. Slide the bottom part of the upper airfoil [17a] onto the tabs on the fascia [17c]. Keeping the bottom in place, bend the upper airfoil arms on the top to slide into the end frame slot as shown in picture [17b]. Secure the arms on the interior of the end frame with #8 x 1/2"[13c] screws. Use black clips[1] to attach fascia tabs to lower part of the airfoil [17a]. Scrutinize the airfoil sides to see if gapping is occurring between the airfoil and fascia. Choose one of the five holes on airfoil arm, using a #10 x 3/4"[13a] screw, to tighten any gap occurrences [17d].





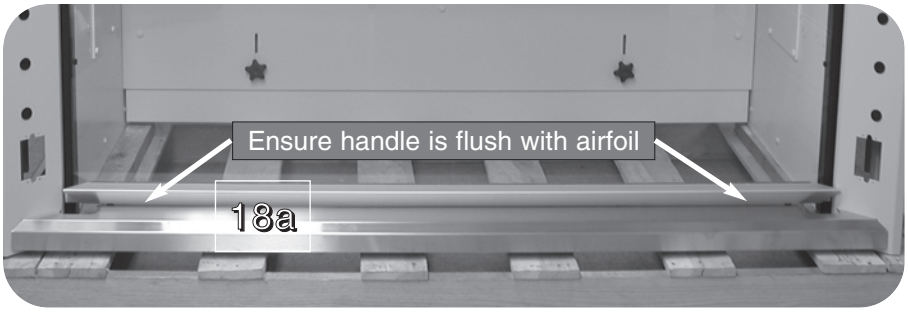


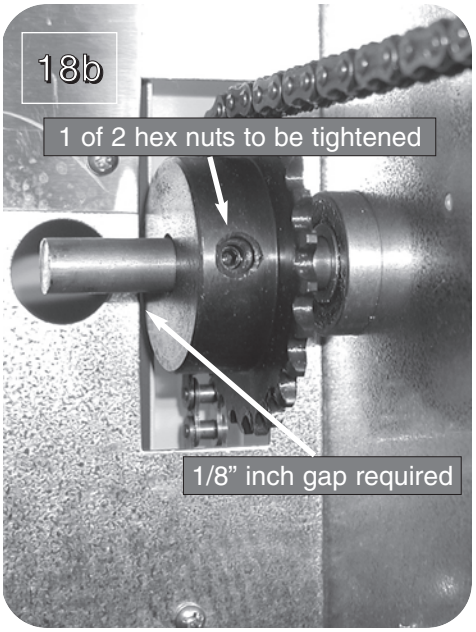


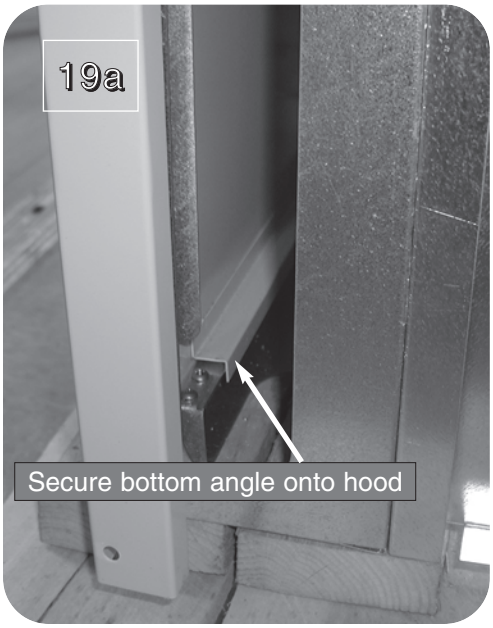
"Knock-Down" Assembly

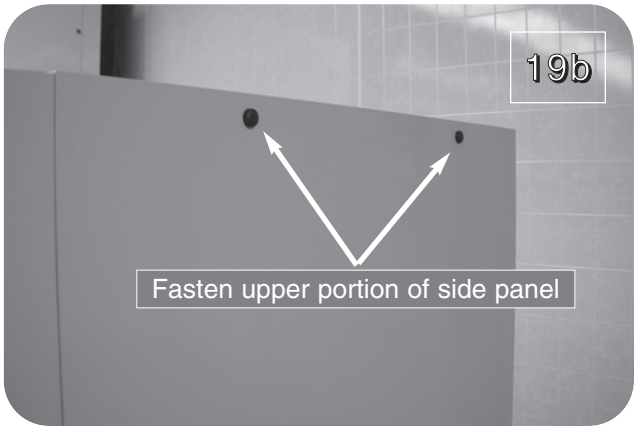
18. Level the sash glass by either raising the sash to sit flush against the sash stops[15] or lowering the sash to sit flush against the bottom airfoil [18a]. Tighten the sprockets[14] with a proper size allen wrench. Be sure to set the sprockets the proper distance prior to leveling the sash [18b]. The ends as shown should be approximately 1/8" of an inch from the side as shown in picture.

19. Using the bottom angle on the side panel cover, overlap to secure lower section onto hood [19a]. Screw in top portion with #10 x 3/4" screw[13a] with base[3] and then cover with cap[6] [19b].

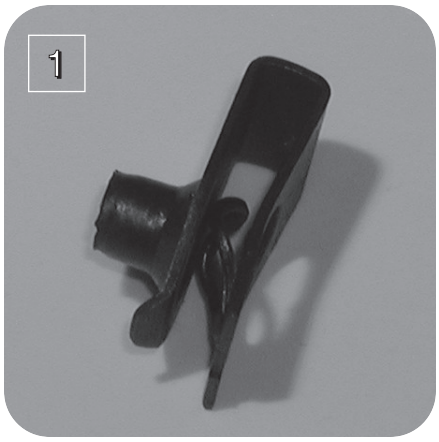




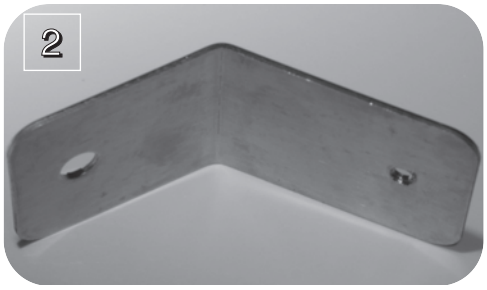




Component Diagram



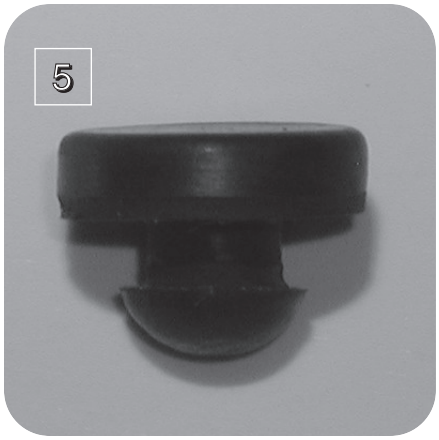
U-Tapped clip for upper airfoil



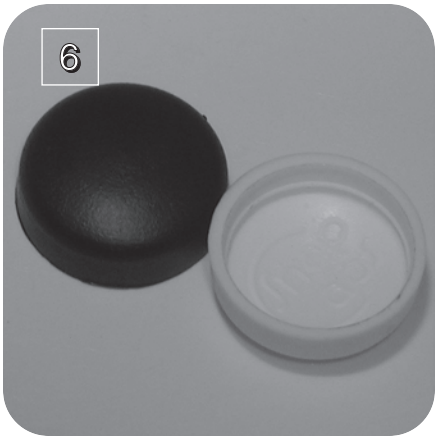
Center angled bracket

Screw base

1/2” Axle bearing

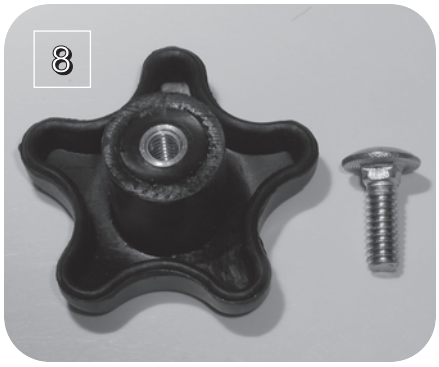


Rubber bumper

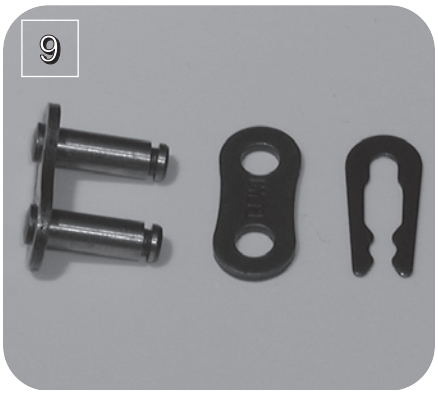


Various screw caps

1/2” Spacer collar

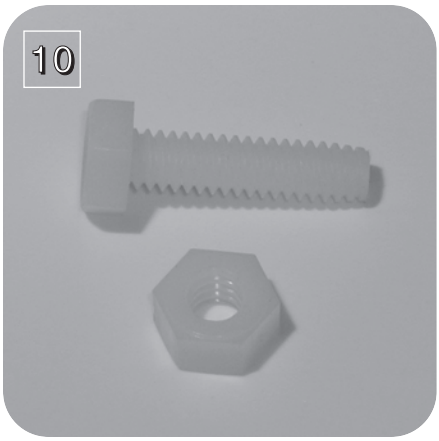


Adjustable baffle knob & bolt

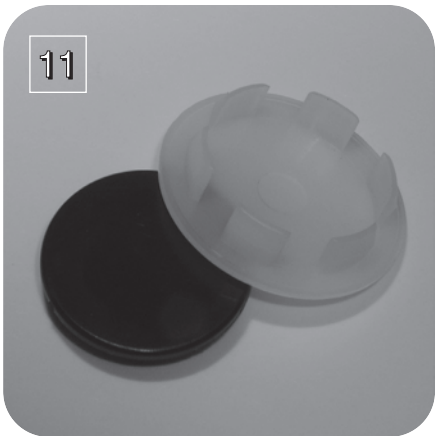


Connecting chain link

Component Diagram

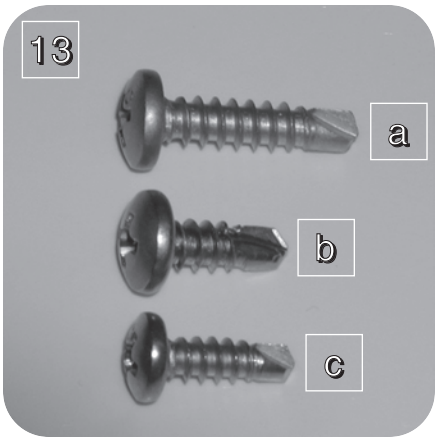


Nylon bolt & nut



Various plug caps

PVC Pushpin



Various screws
a) #10 x 3/4" Self Tapping
b) #10 x 1/2" Self Tapping
c) #8 x 1/2" Self Tapping

1/2" Axle rod sprocket

Sash stop

Threaded chain link