SIMCO ION™

An ITW Company

NEUTRO-VAC® SD / DD / TD (HOOD SIZES 12”-126”) WEB CLEANING SYSTEM

INSTALLATION AND OPERATING INSTRUCTIONS

TABLE OF CONTENTS

1. SAFETY WARNINGS

PLEASE READ INSTRUCTIONS COMPLETELY BEFORE STARTING INSTALLATION

ALL INSTALLATION AND TROUBLESHOOTING OPERATIONS MUST BE PERFORMED BY QUALIFIED TECHNICAL PERSONNEL

This instruction manual uses symbols to identify dangerous situations as follows:

NOTE! – Statements identified with **NOTE** indicate precautions necessary to avoid potential equipment failure.

CAUTION – Statements identified with **CAUTION** indicate potential safety hazards.

WARNING – Statements identified with **WARNING** indicate potential serious injury hazards.

NOTE! – This equipment must be correctly installed and properly maintained. Adhere to the following notes for safe installation and operation:

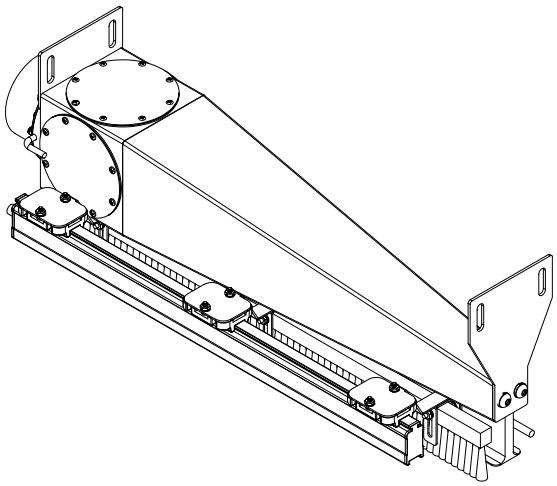
1. Read instruction manual before installing or operating equipment.
2. Only qualified service personnel are to perform installation and repairs.
3. This equipment must be installed and maintained as outlined in this manual. Disconnect and lockout all power before servicing this machine, unless instructions state otherwise. Turn off web drive equipment and remove web, if possible, before performing maintenance.
4. All equipment must be properly grounded, including the machine frame to which the equipment is mounted.
5. Do not pour alcohol or other solvents on static bars or soak static bars in alcohol or other solvents at any time or damage to the static bar may result.
6. To avoid a potential fire hazard caused by sparks in the dust collector, do not mix combustible materials such as buffing lint, paper, wood, dust, aluminum and magnesium with dust generated from grinding ferrous metals.
7. Do not operate system in close proximity to flammable liquids.
8. When the materials being collected by the system create the risk of fire or explosion, the appropriate collection system design must be used to comply with all material (NFPA) and local fire codes. An individual familiar with all the appropriate fire hazards, equipment, and codes should be consulted to ensure proper installation and compliance of the collection system.
9. Consult and comply with all National and Local Fire Codes and/or other appropriate codes when determining the location and operation of dust collection equipment.

2. DESCRIPTION

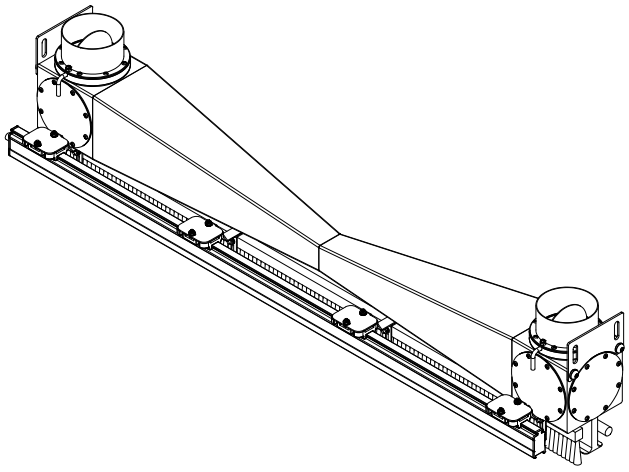
Simco-Ion's Neutro-Vac is a web cleaning and dust collection system that incorporates active static elimination, aggressive particle agitation and vacuum removal of debris to provide efficient cleaning of webs, sheets or parts.

Neutro-Vac SD / DD / TD hoods have a rugged, stainless steel welded air-tight construction that features adaptability for installation. The vacuum outlets may be configured to accommodate obstacles, such as machine frames, encountered during installation. The vacuum outlets also feature integrated flow dampers eliminating the need for blast gates in the ductwork system. The hoods come configured with a static bar, brush, and air bar. The static bar eliminates static on the cleaning target (web, etc.), while the brush and air bar work to remove debris. The vacuum hood intake slot then removes and collects the debris. For cleaning targets that are sensitive to contact, the brush may be removed. The static bar, brush, and air bar may also be reoriented on the hood for installation flexibility.

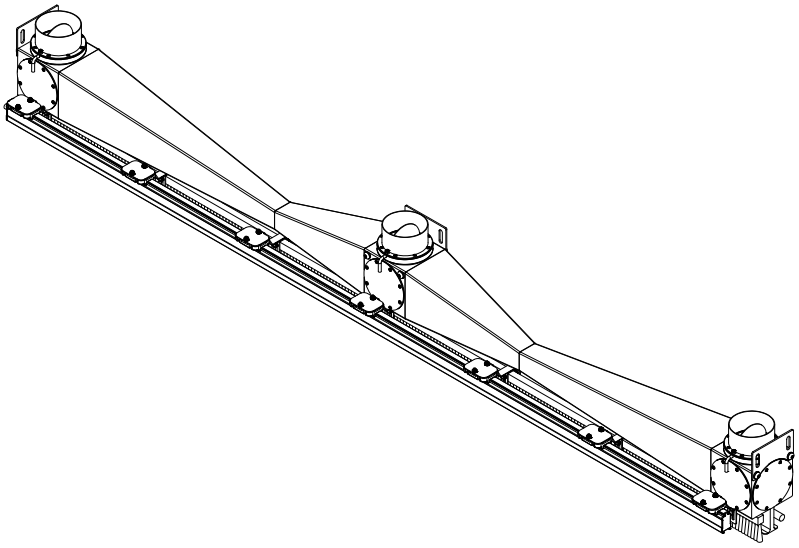
Neutro-Vac SD / DD / TD hoods use the IQ Easy line of static bars. These static bars may be powered by the Simco-Ion IQ Power Control Station which provides power and real-time monitoring of the static elimination function. These static bars may also be powered directly by an AC adapter, providing stand-alone operation. In this mode two LED indicators on the end of the IQ Easy static bar indicate operating status.



Neutro-Vac SD (Single Draft) (12" to 42", side draft shown)



Neutro-Vac DD (Double Draft) (48" to 84", top draft shown)



Neutro-Vac TD (Tripple Draft) (90" to 126", top draft shown)

3. SPECIFICATIONS

Vacuum System	Hood Vacuum	1.2 inches of water
	Hood Flow	3″ Outlet: 180 CFM 4″ Outlet: 320 CFM
Compressed Air	Pressure	5 psi minimum, 20 psi maximum
	Flow	0.25 SCFM per inch of intake slot (at 5 psi) 0.50 SCFM per inch of intake slot (at 10 psi) 0.75 SCFM per inch of intake slot (at 15 psi)
 **NOTE!** – Compressed air must be clean and dry. Hose and fittings must be of adequate size to provide required airflow.		
Static Bar	Voltage	24 VDC
	Current	0.75 A
 **NOTE!** – Static bar power provided by either IQ Power Control Station or AC adapter. Connection is by standard M12 electrical connector.		
Typical Operating Distance	1/4″ to 1/2″ (6 mm to 12 mm)	Dimensional Drawing
Dimensions (see Dimensional Drawings for additional specifications)	SD (Single Draft, 1 x Ø3″) 12″ to 24″	5001790
	SD (Single Draft, 1 x Ø4″) 26″ to 42″	5001791
	DD (Double Draft, 2 x Ø4″) 48″ to 84″	5001792
	TD (Tripple Draft, 3 x Ø4″) 90″ to 126″	5001793

4. INSTALLATION

Unpacking

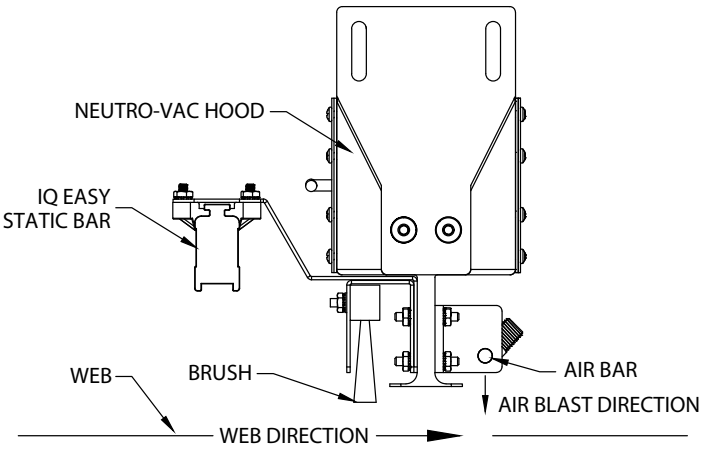
Carefully remove all equipment from its carton and inspect the contents:

- Check that the details on the packing slip correspond to the details of the product received.
- Check that the equipment is free from damage.
- If any damage has occurred during shipment, notify the local carrier at once. A report should also be forwarded to Simco-Ion, 2257 North Penn Road, Hatfield, PA 19440. See Section 9 of this manual for Return Shipment information.

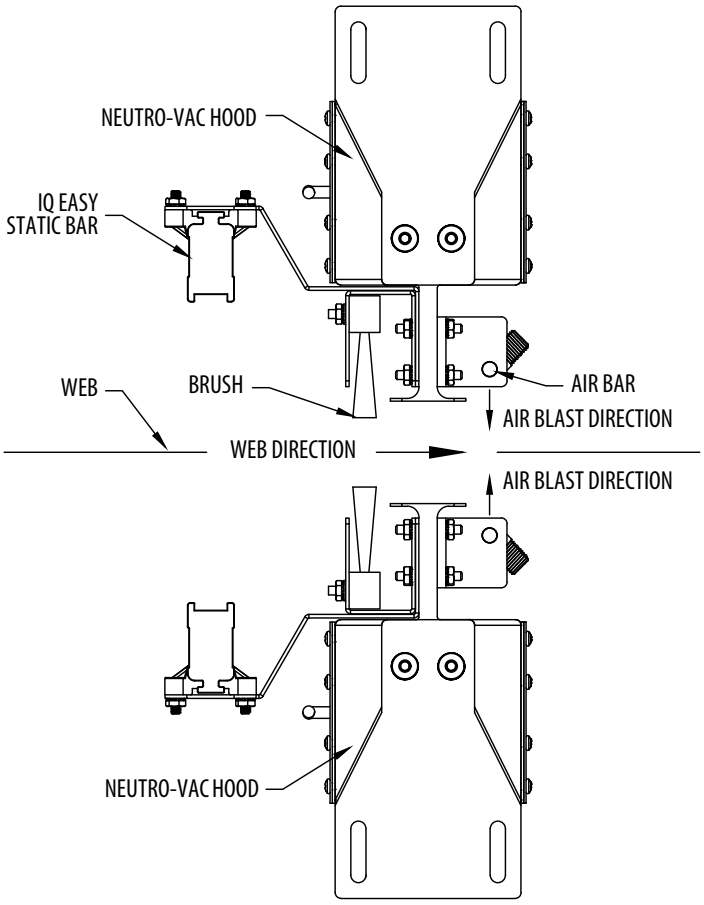
Hood Location

Locate hood(s) using the following guidelines:

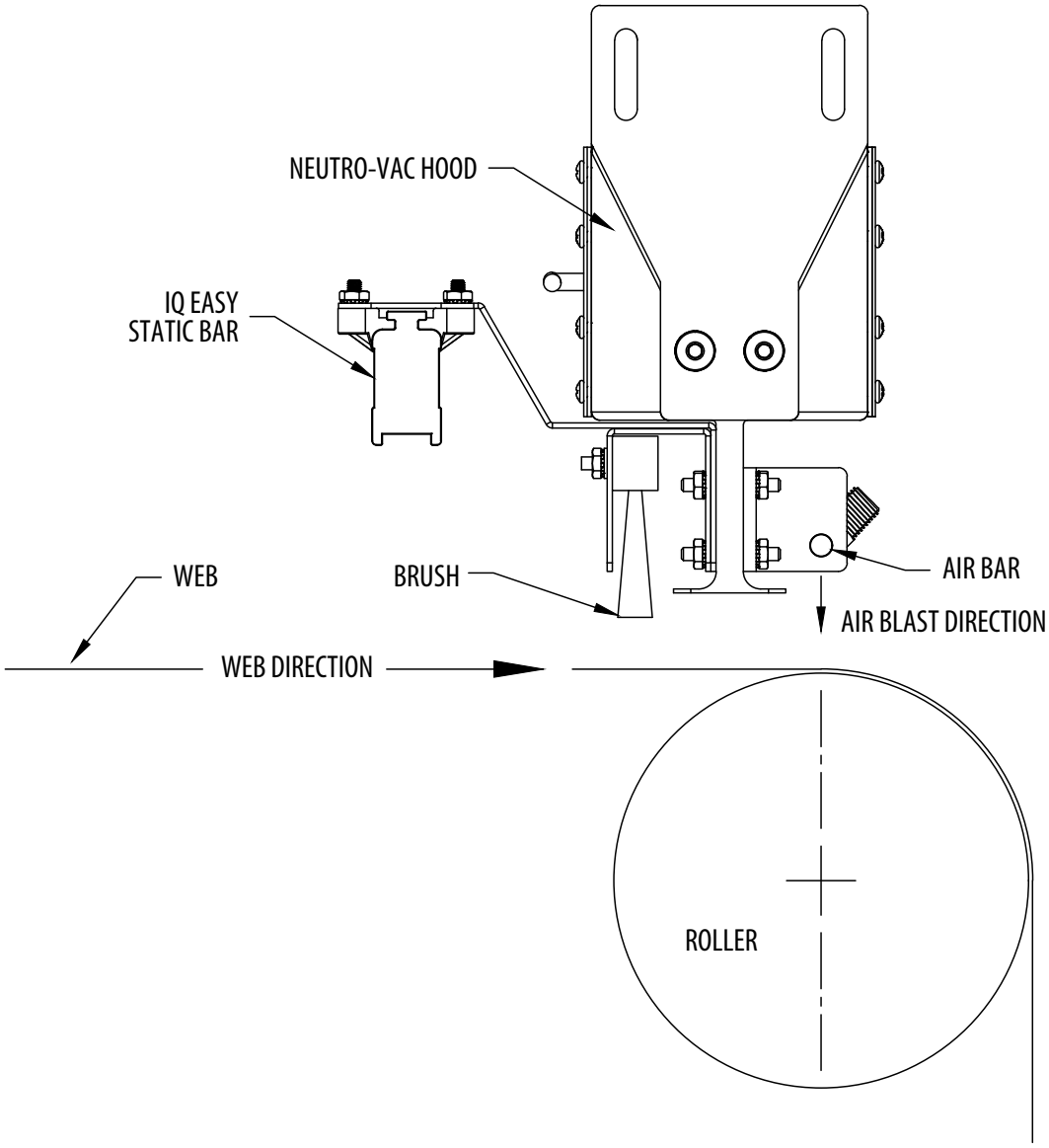
- Locate near non-crowned (constant diameter) roller.
- Web must maintain a fixed location with respect to machine frame (i.e. not near a take-up roller or a roller that swings).
- Web must maintain constant tension where the hood assembly will be installed.
- Do not locate static bar(s) on the hood directly over a roller.
- Web must be in free air near static bar for the static eliminator to work.



Typical One Hood Installation
(Note how web encounters static bar first)



Typical Two Hood Installation
(Note how web encounters static bar first)



Typical Hood and Roller Installation

NOTE! – It is critical that the direction of the surface to be cleaned encounter the static bar first, then the brush (if used), then the vacuum intake slot, and finally the blast from the air bar. This will ensure maximum efficiency and capture of debris.

Contact your Simco-Ion sales representative for assistance if you have any questions on the proper location of the Neutro-Vac hood assembly.

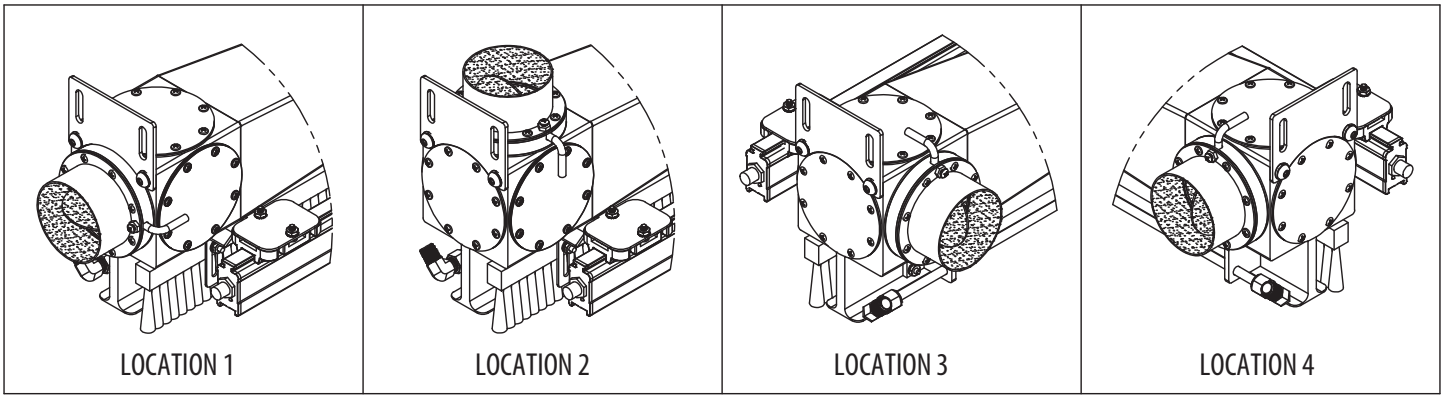
See figures above to determine how to locate the hood so the web passes in the correct direction. If your hood is not configured for proper installation, switch the accessories in the following steps:

1. Remove nuts securing mounting brackets to studs on hood intake slot.
2. Reverse order of accessories.
3. Replace nuts on studs to secure accessories.

NOTE! – If air bar bracket set screws were loosened or air bar removed from brackets, ensure air jet holes providing air blast are pointing directly (perpendicular) to the web before securing air bar in place.

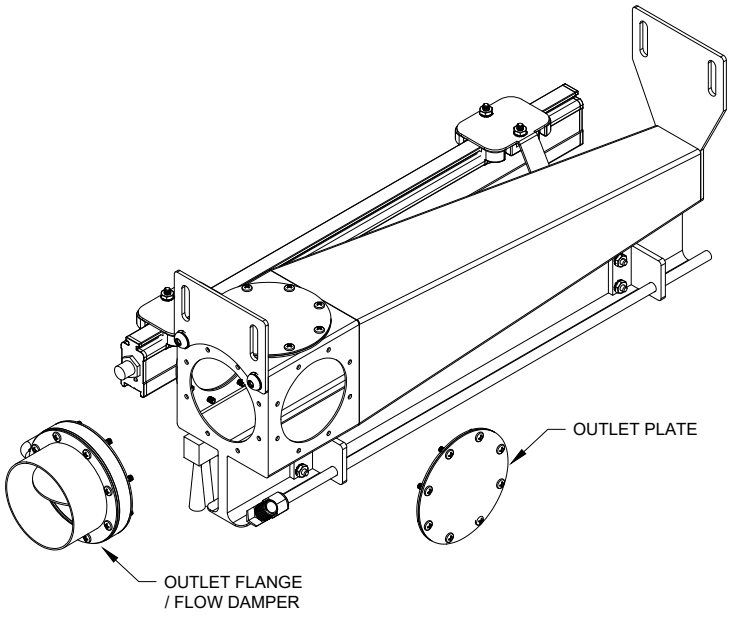
Vacuum Outlet Repositioning

If installation of the flexible vacuum hose is impeded by machine frame or other process equipment, the vacuum outlet may be repositioned on the hood.



Neutro-Vac Hood Outlet Locations

To reposition the outlet, first determine the desired location for the outlet / flow damper. In the example below, the outlet / flange has been removed from Location 1 and the outlet plate removed from Location 3.



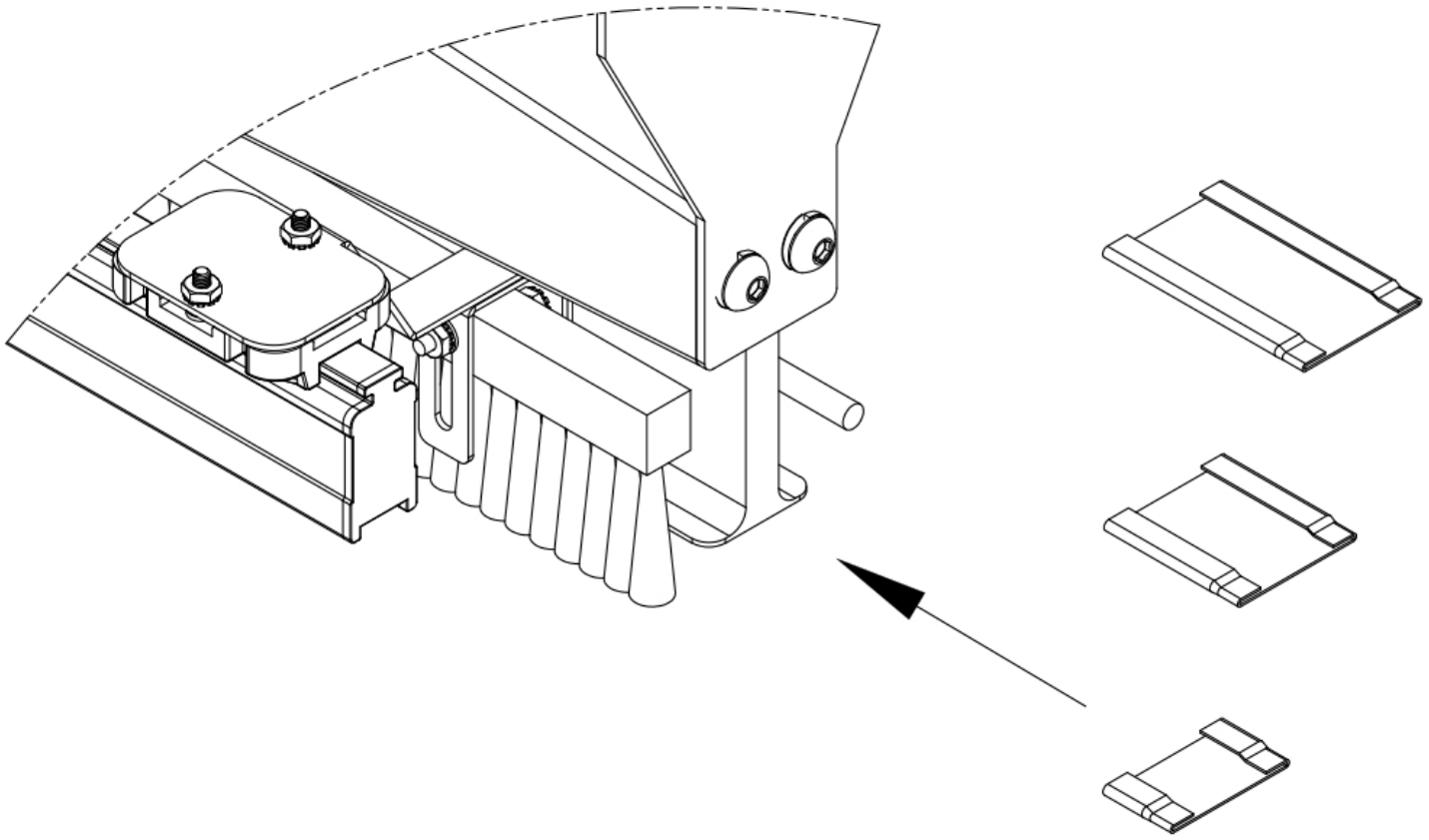
Vacuum Outlet Repositioning

1. Loosen the flow damper lock screw one turn.
2. Loosen the (8) screws securing the outlet flange / flow damper to the hood and remove the assembly (including the gasket) from the hood. Keep the assembly together during handling.
3. Loosen the (8) screws securing the outlet plate to the hood and remove the assembly (including the gasket) from the hood.
4. Reinstall the outlet flange / flow damper where desired, noting the position of the flow adjustment lever. Tighten screws evenly to remount the outlet flange / flow damper.

NOTE! – DO NOT over-tighten screws to prevent stripping. Repeat the process for the outlet plate.

Intake Shutter Installation

If the web is narrower than the intake slot, minor adjustment of the intake slot width can be made using the included intake shutters. Several sizes of intake shutters are included with the hood. To install, select the desired shutter and press-fit onto the flange of the intake slot.



Intake Shutter Installation

Hood Mounting

To mount the hood use brackets or build a sturdy sub-frame that will center hood over the web and allow adjustment of intake slot from 0" (touching web) to 1" from web. Typical operating distance between the slot opening and web is 1/4" to 1/2". To accomplish this, hoods are supplied with brackets having slotted adjustment holes. The Dimensional Drawing for your hood will provide you with the dimensions needed for mounting and approximate hood weight. The mounting frame must provide an electrical ground, or a separate ground connection must be connected to ensure proper operation of the system.

Vacuum System (Ductwork)

Each ductwork system is unique. The following are general guidelines for installation:

- **Locate the dust collector reasonably close to the Neutro-Vac hoods.** Vacuum levels decrease with length of ducting in a system. In general, a typical dust collector will provide adequate vacuum for up to 40 feet (12 meters) of ducting.

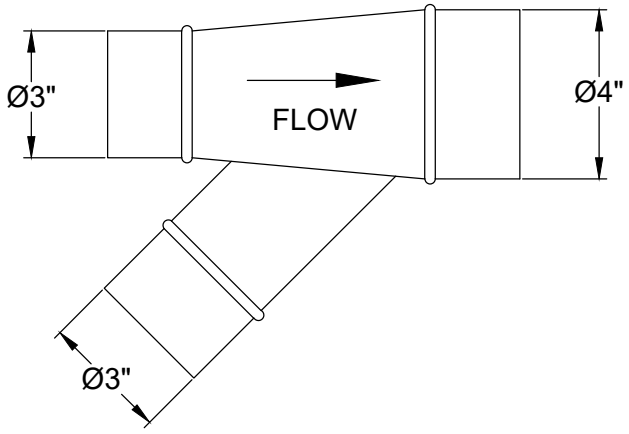
NOTE! – Maximum recommended length of duct between hood and collector is 40 feet (12 meter). Greater length of ducting must be evaluated.

- **Keep the length of flexible hose connecting the hood to the system short.** Flexible hose is particularly lossy with regard to vacuum under flow. Typically, the flexible hose is also the smallest diameter duct in the system, which is also lossy with regard to vacuum under flow. Secure the flexible hose with hose clamps to ensure sealing and prevent accidental disconnection.
- **Use smooth walled pipe and fittings for the ductwork system.** Smooth walled ducts and fittings minimize vacuum loss under flow.

  Where a "Y" is used to merge flow, keep the small diameter ducts short as possible, as the smaller diameter the duct, the greater the vacuum loss under flow.

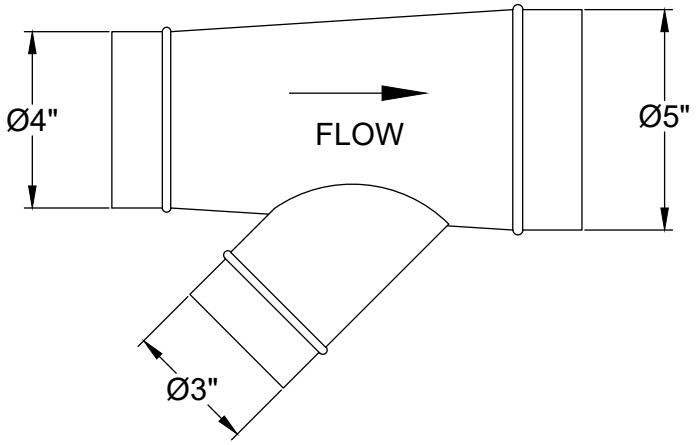
  Avoid sharp changes to direction of flow as this increases vacuum loss. Do not use short radius elbows or "T"s in ductwork.
- **Use only permissible "Y"s to merge flow.** "Y"s that merge flow must maintain a constant duct area where the area of the exit duct = the total area of the ducts entering. This provides uniform velocity inside the ducts and minimizes vacuum losses.

Permissible, Standard Y (to provide uniform flow)
3 x 3 x 4
4 x 4 x 6
5 x 5 x 7
6 x 6 x 8
7 x 7 x 10

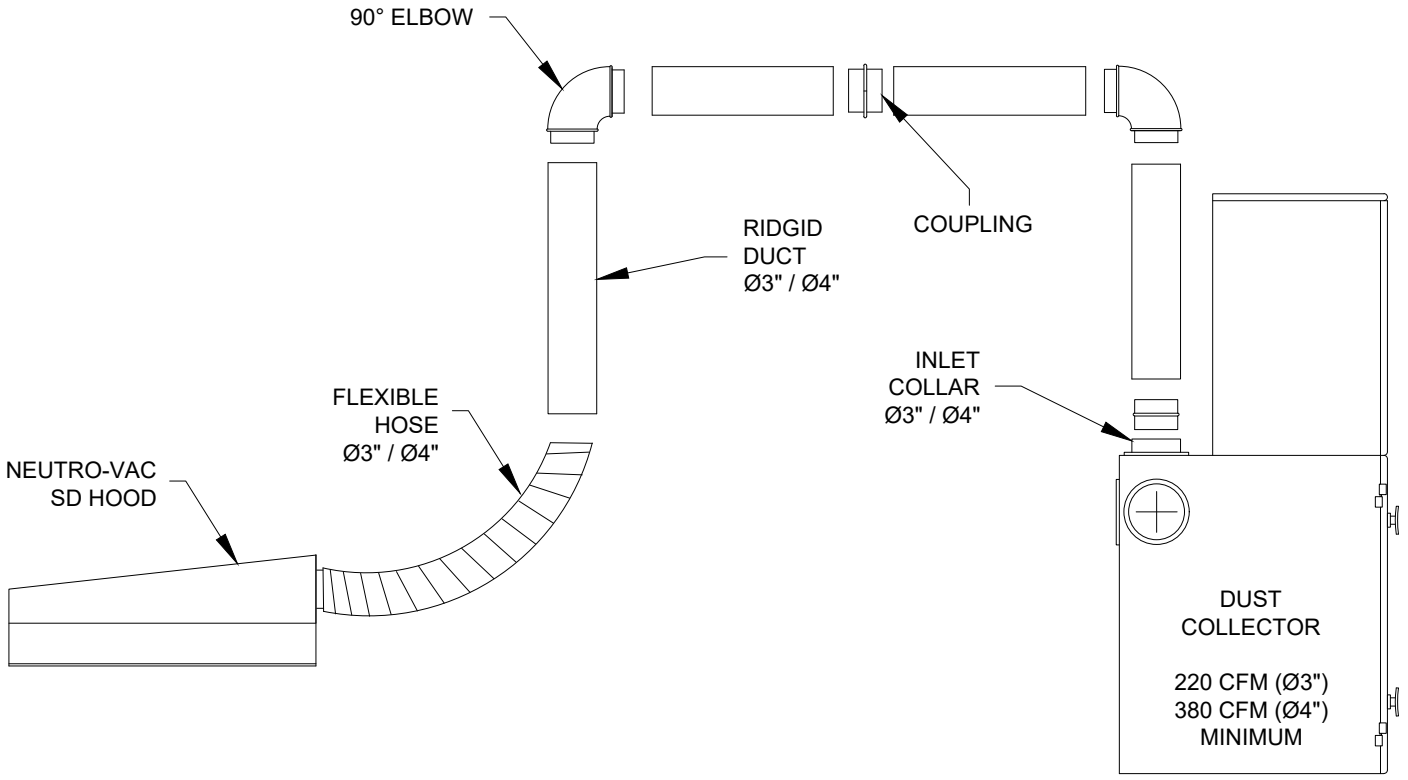


Example "Y" Equal Branches

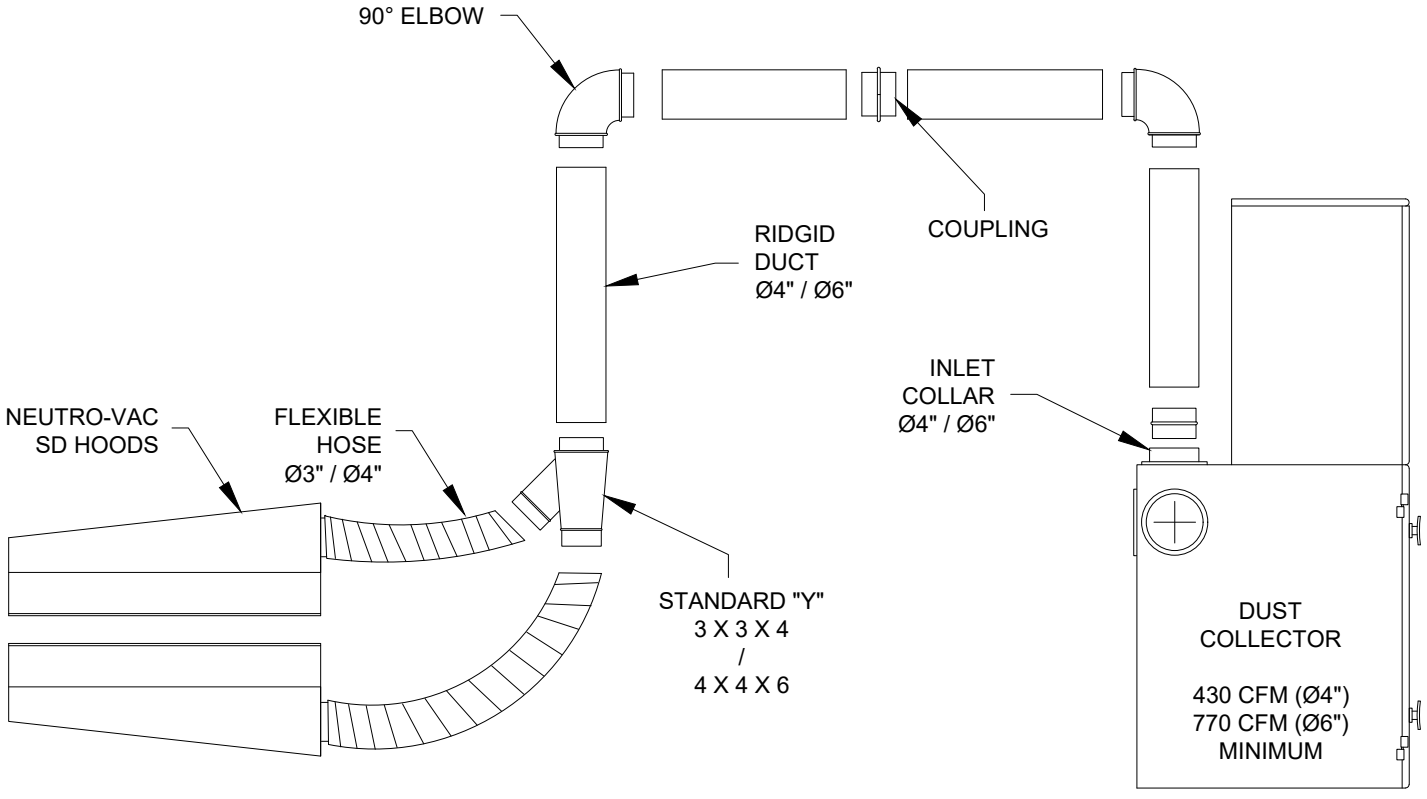
Permissible, Unequal Branch Y (to provide uniform flow)
3 x 4 x 5
4 x 5 x 7
4 x 6 x 7
5 x 6 x 8
7 x 8 x 10



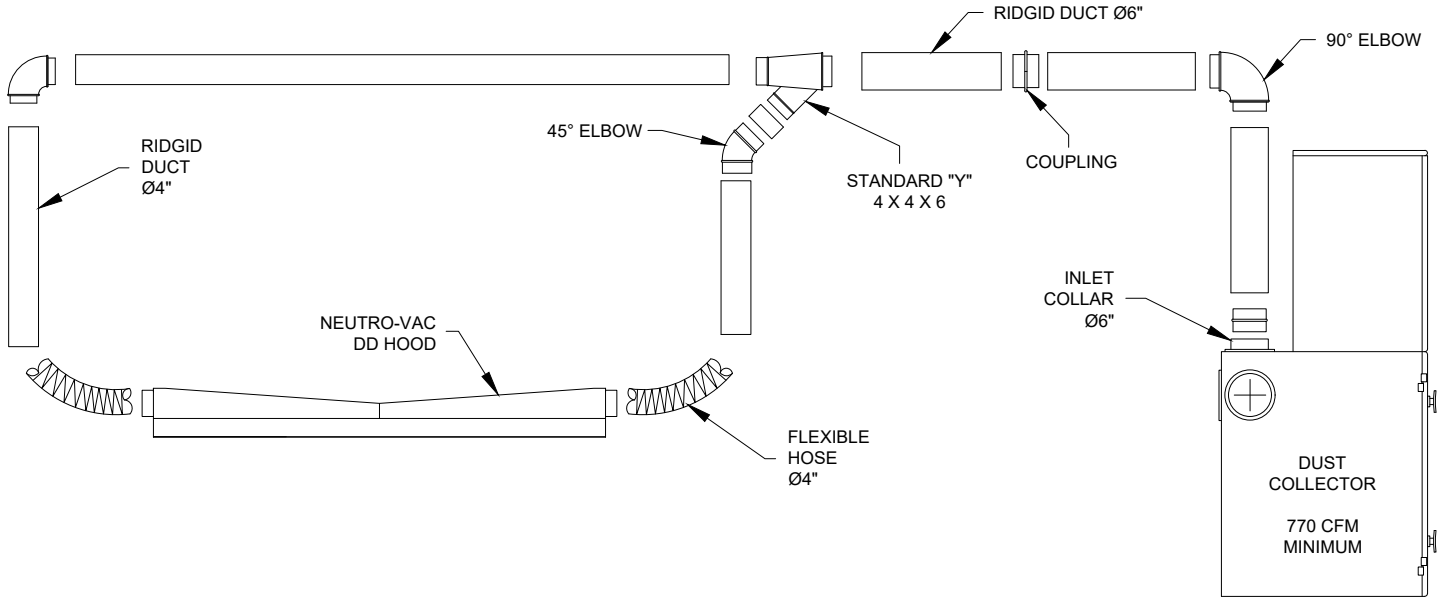
Example "Y" Unequal Branches



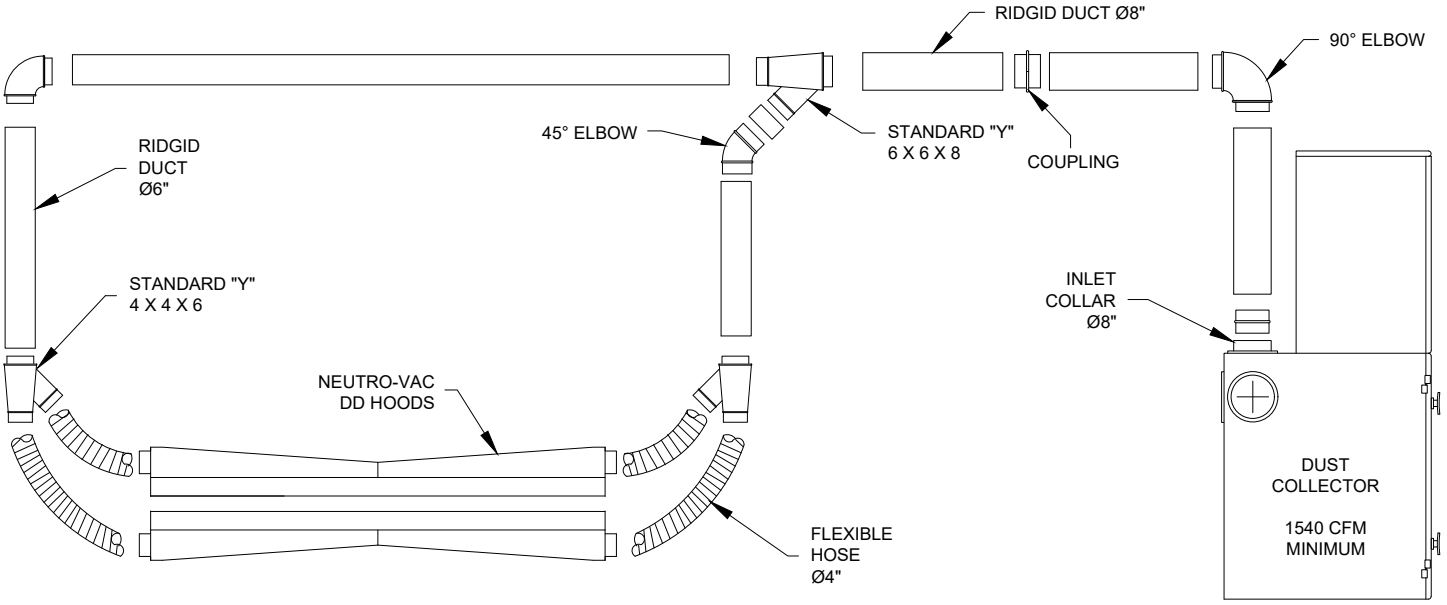
Example One SD Hood System



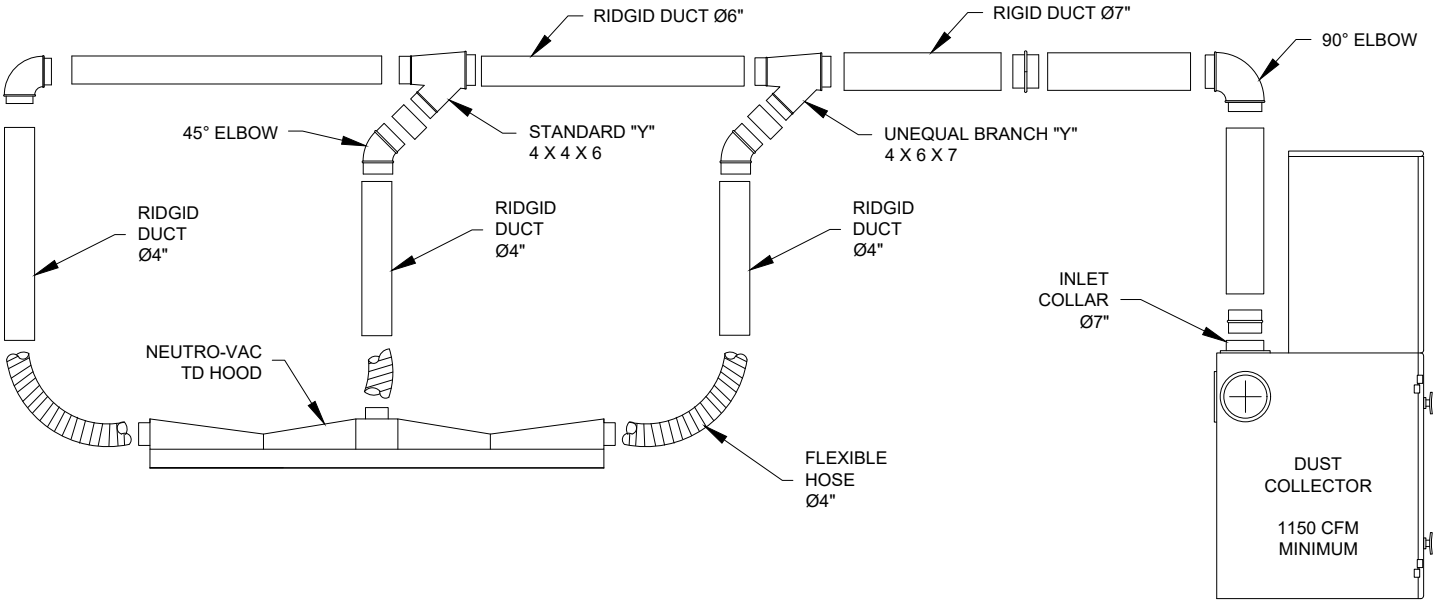
Example Two SD Hood System



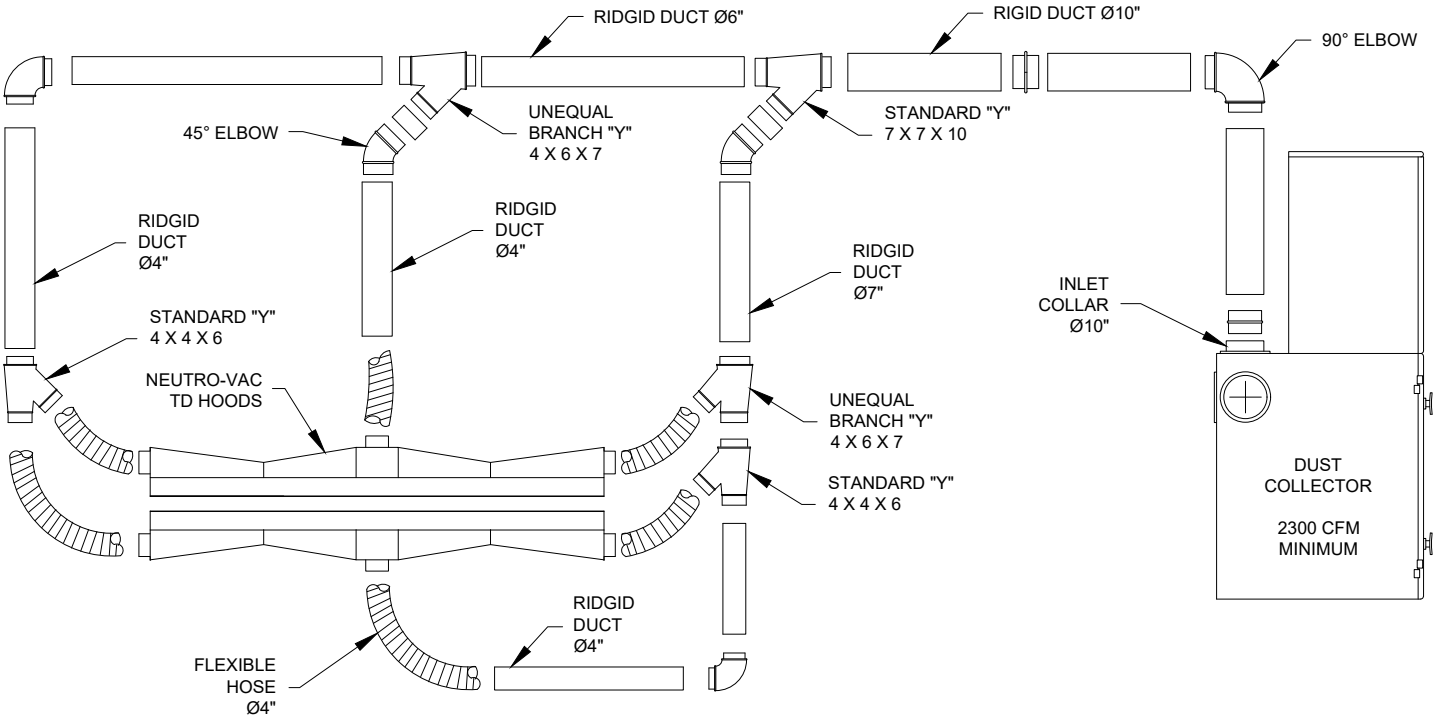
Example One DD Hood System



Example Two DD Hood System



Example One TD Hood System



Example Two TD Hood System

Dust Collector

Dust collectors are sized by capacity, both in CFM (cubic feet per minute) and in static pressure (inches of water). To determine the CFM of a Neutro-Vac SD / DD / TD system all that is needed is the outlet size and quantity of outlets.

Flow has been standardized based on the size of the outlet:

3” diameter outlet = 180 CFM
4” diameter outlet = 320 CFM

Total flow for a hood is determined by adding the CFM for all of the outlets.

Some examples:

If the One SD Hood System above had a 3” diameter outlet, the total system flow would be 180 CFM.

If the Two SD Hood System above had 3” diameter outlets, the total system flow would be 360 CFM.

If the One DD Hood System above had a 4” diameter outlet, the total system flow would be 320 CFM.

If the Two DD Hood System above had 4” diameter outlets, the total system flow would be 640 CFM.

Selecting a dust collector is largely based on the total system flow. The maximum flow (CFM) of the collector must be greater than the total system flow. This allows for vacuum losses due to the ducting and the required vacuum of the Neutro-Vac hood itself. A practical factor to use in dust collector selection is 1.2.

For example:

1. The Two SD Hood System, with two 3” diameter outlets have a total system flow of 360 CFM.
2. Multiply the flow (360 CFM) by the factor (1.2) yields 360 CFM x 1.2 = 432 CFM
3. The dust collector for this system should have a minimum flow of 432 CFM.

In this case, a dust collector with a rating of 500 CFM would be well suited for this Neutro-Vac system.

IQ Easy Static Bar

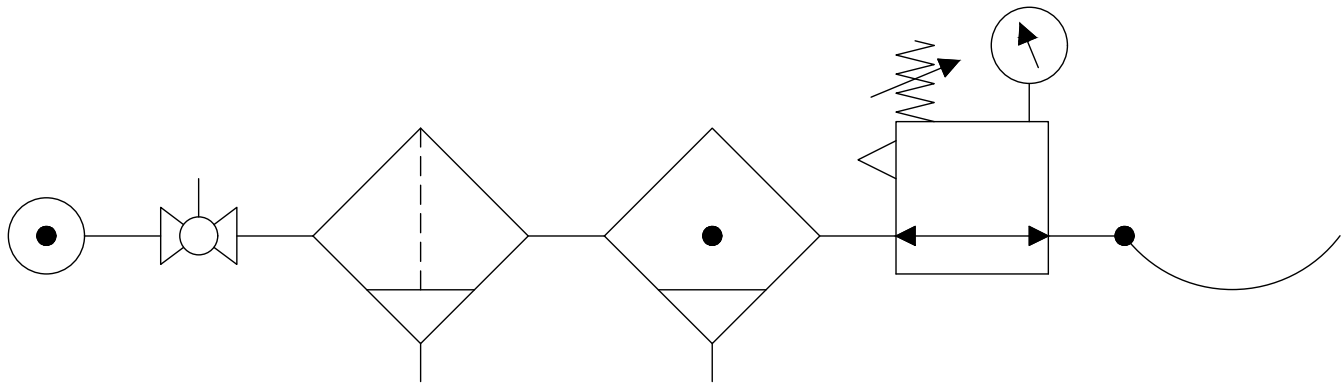
The IQ Easy static bar is powered through the sealed M12 connector on the end of the bar and can be powered by various sources.

- **Control Station**: The IQ Power Control Station provides the ultimate in static bar functionality. The Control Station supplies power, provides communication & control and even allows for interfacing with other Simco-Ion static control devices. Cables for connection are available in a variety of lengths and connector styles.
- **AC Adapter**: AC adapters are available to power the IQ Easy static bar. They come with a 15 foot (5 meter) cable with either straight or right-angle connection. Used with an AC adapter, the IQ Easy static bar provides “standalone” operation.
- **User Supplied Power**: The IQ Easy static bar may be powered with 24 VDC (0.75 mA) provided by the user. Several cables are available for connection from Simco-Ion

For further details, see the IQ Easy Static Bar instruction manual, 5201223.

Air Bar

The air bar must be supplied with clean, dry compressed air. The compressed air pressure must be regulated in the range of 5 to 20 psi. The recommended compressed air preparation equipment is shown below. Attention should be paid to capacity (SCFM) to ensure adequate flow for the air bar.

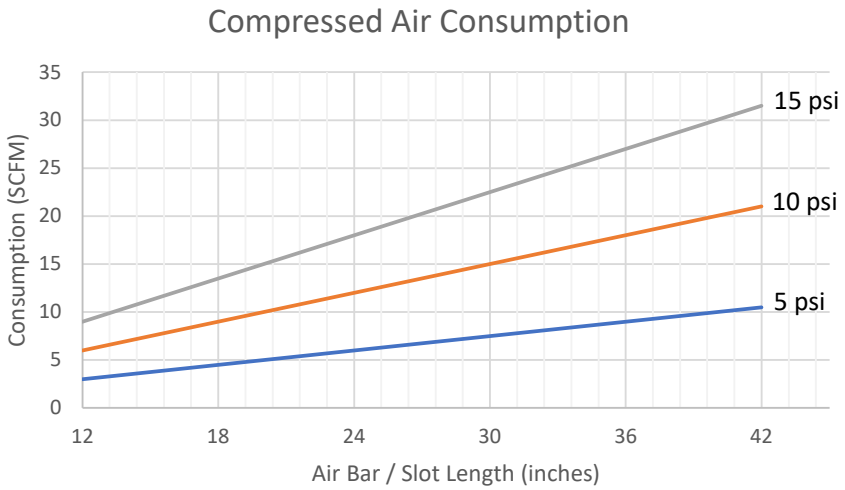


Compressed Air Preparation

The recommended tubing to hook up the air bars is polyethylene, polypropylene or nylon with a minimum of 100 psi working pressure. This tubing is recommended to provide a clean and safe connection between the air preparation components and Neutro-Vac hood. Use Table below to determine what size tubing and fittings

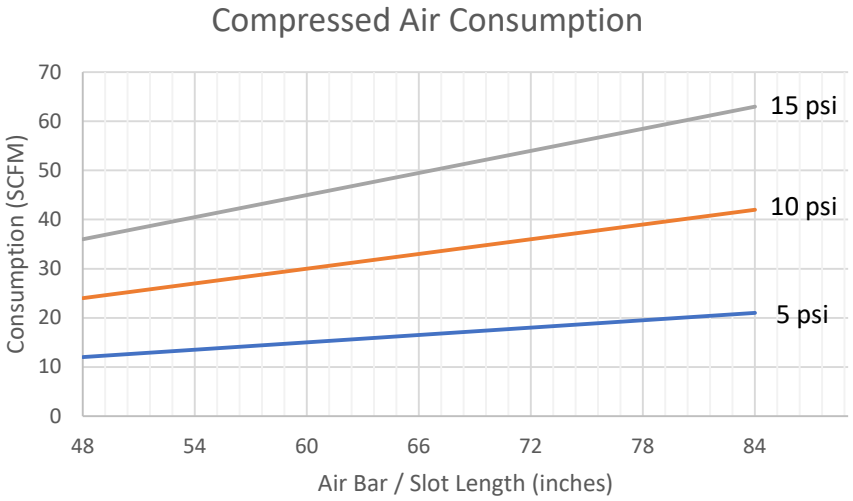
Hood Type	SD (12″ to 42″)
Pipe Fitting Size	1/4 NPT
Minimum Tubing I.D.	1/4″ (8 mm)

NOTE! – If the tubing or fitting is smaller than specified, airflow will be restricted, and performance will be impaired.



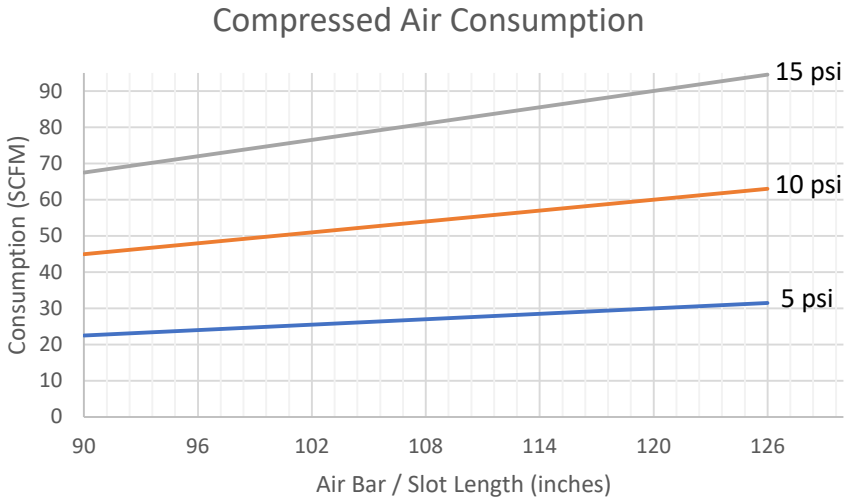
Hood Type	DD (48″ to 84″)
Pipe Fitting Size	1/2 NPT
Minimum Tubing I.D.	3/8″ (10 mm)

NOTE! – If the tubing or fitting is smaller than specified, airflow will be restricted, and performance will be impaired.



Hood Type	TD (90″ to 126″)
Pipe Fitting Size	1/2 NPT
Minimum Tubing I.D.	1/2″ (12 mm)

NOTE! – If the tubing or fitting is smaller than specified, airflow will be restricted, and performance will be impaired.

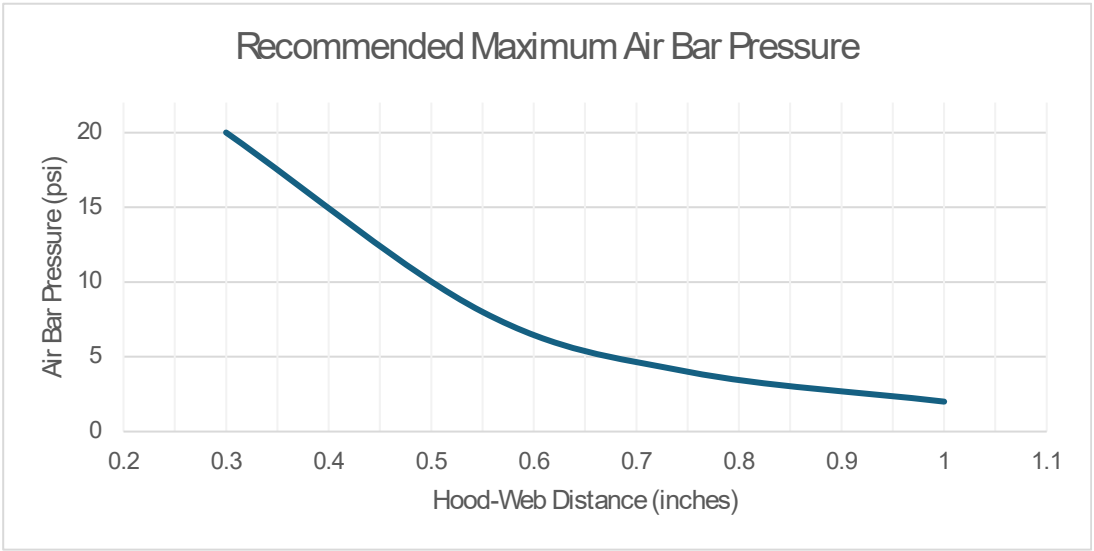


Hood Adjustment

Neutro-Vac hoods can be run with or without the included brush. Operating with the brush provides more aggressive cleaning, but the material being cleaned must tolerate contact. Operating without the brush allows cleaning of sensitive materials that cannot tolerate contact.

Contact Operation (cleaning with the brush): Hood(s) should be set with intake slot 1/4" (6 mm) from web. Adjust hood height using slotted holes in mounting brackets. The brush is mounted in a channel that may be moved up and down after loosening its mounting nuts. Adjust the brush so it makes very light contact with the web. Re-tighten mounting nuts. At this distance, the air bar pressure can be set to a maximum of 20 psi for the most aggressive cleaning.

Non-Contact Operation (cleaning without the brush): Hood(s) should be set with intake slot 1/2" (12 mm) from web. Adjust hood height using slotted holes in mounting brackets. At this distance, air bar pressure should be set to 5 psi. If more aggressive cleaning is desired and web tension allows, set intake slot 1/4" (6 mm) from web and increase air bar pressure to 10 psi. It may be necessary to increase hood-web distance or adjust the flow regulating damper for proper operation. The table below shows the maximum air bar pressure for different hood-web distances when operating in non-contact operation. Exceeding the recommended maximum air bar pressure may result in debris dispersing into the work area.

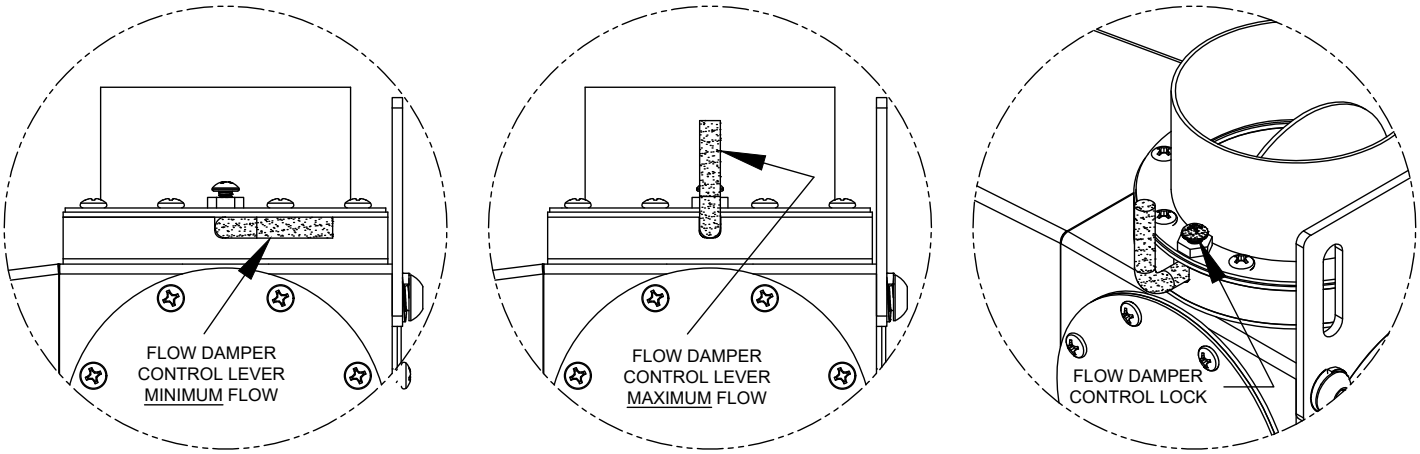


Air Bar Pressure

5. OPERATION

Once a Neutro-Vac system has been set up, operation consists of activating the dust collector, airflow to the air bar and turning on the static bar.

The vacuum flow through the intake slot may be adjusted using the integrated flow dampers at each outlet.



Flow Control

The flow damper at each outlet has a control lever that adjusts the angle of a plate in the outlet stream. The lever is in-line with the flow control plate. Adjusting the lever allows for reduction of excess vacuum or balancing the flow, outlet-to-outlet. Once set, the flow damper can be locked in place by tightening the flow damper control lock screw.

During operation, the function of the dust collector, condition of the compressed air filters and status of the static eliminating bar should be regularly checked to ensure satisfactory web cleaning.

Neutro-Vac Hood Assembly

WARNING – Disconnect and lock out power to the Neutro-Vac Web Cleaning System before performing all maintenance procedures unless otherwise instructed. Turn off web drive equipment and remove web (if possible) before performing maintenance

Weekly

- Examine intake slot of Neutro-Vac hood for even in-draft of air.
- Remove any obstructions in intake slot.

NOTE! – At regular intervals inside the intake slot there are small spacers welded in place. These spacers are located between the accessory mounting points. They maintain the intake slot spacing. Do not remove or damage the spacers.

- Examine air bar for even flow. Check regulator for proper pressure. Inspect compressed air filtration.
- Examine brush for proper condition and contact with web (if equipped). Adjust brush as necessary.
- Examine hardware for security, including flow dampers at each vacuum outlet.

Monthly

- Wipe exposed surfaces.
- Remove debris from non-exposed surfaces using compressed air.
- Perform static bar cleaning procedure. Clean the emitter points and the static neutralizing bar with a stiff bristle, non-metallic brush. To remove heavy soil, clean the static neutralizing bar using isopropyl alcohol. Be sure to allow the static bar to dry completely before applying power.

CAUTION – The emitters are sharp and can cause physical injury.

For further details on IQ Easy static bar maintenance, see instruction manual, 5201223.

Accessory Mounting

If it becomes necessary to remove the static bar, air bar, or brush for service, be sure to replace it in the correct location relative to the web.

1. The IQ Easy Static Bar must be mounted with its points facing the web and centered between mounting brackets. Secure the static bar with set screws in the mounting brackets.
2. When replacing the air bar, the air jet holes must be pointed directly at the web (perpendicular to its surface). Secure the air bar with set screws in mounting brackets.

Dust Collector Maintenance

Dust collectors must be serviced at regular intervals to ensure satisfactory Neutro-Vac operation. The interval will be determined by the dust loading of the items to be cleaned. For further details regarding the dust collector, see dust collector instruction manual.

7. TROUBLESHOOTING

NOTE! – Only qualified service personnel are to perform troubleshooting tasks.

PROBLEM	CAUSE	SOLUTION
Insufficient vacuum	Clogged intake	See "Remove any obstructions in intake slot" in Section 6 Maintenance
	Incorrect setting of flow damper on hood	Adjust and lock flow damper as per Section 5 Operation
	Clogged ducting / damaged ducting	Inspect ducting and remove blockage / repair ducting
	Clogged filter in dust collector.	Clean dust collector air filter as per manufacturer's recommendation
	Dust collector blower rotating backwards	Consult an electrician about correcting problem
Air bar not providing blow-off	Compressed air filters clogged	Service filters used in compressed air preparation
	Incorrect air pressure at air bar	Check and set pressure regulator used in compressed air preparation
Air bar providing uneven blow-off	Clogged air jets	Remove air bar and carefully clear air jets using a fine drill (#70 / Ø.028" / Ø.70 mm); clean air bar, tubing, and compressed air filters before resuming operation
Brush problems	Brush out of adjustment	Adjust brush in slotted mounting brackets
	Brush worn out	Replace brush
Static bar not eliminating static	Static bar needs cleaning	See "Perform static bar cleaning procedure" in Section 6 Maintenance
	Static bar malfunction	See Troubleshooting section in IQ Easy Static Bar instruction manual, 5201223

8. PARTS AND ACCESSORIES

Part Description	Part Number
3″ Diameter Flex Hose, White	4800380
4″ Diameter Flex Hose, White	4800391
Intake Shutter Kit (2 pieces each, 1″, 2″, 3″)	5052132
Neutro-Vac Brush, 0.010 Diameter Bristles	4672272
Static Bar Cleaning Brush	4670204
M12 Cables for IQ Easy Static Bar (straight connector) to Control Station (straight connector)	
5 meter [16.4 foot] Straight / Straight M12 Connector	5051791
10 meter [32.8 foot] Straight / Straight M12 Connector	5051792
20 meter [65.6 foot] Straight / Straight M12 Connector	5051793
30 meter [98.4 foot] Straight / Straight M12 Connector	5051794
M12 Cables for IQ Easy Static Bar (right angle connector) to Control Station (straight connector)	
5 meter [16.4 foot] Straight / Right Angle M12 Connector	5051796
10 meter [32.8 foot] Straight / Right Angle M12 Connector	5051797
20 meter [65.6 foot] Straight / Right Angle M12 Connector	5051798
30 meter [98.4 foot] Straight / Right Angle M12 Connector	5051799
AC Adapter for IQ Easy Static Bar in Standalone Mode, does not provide output	
5 meter (16.4 foot) cable w/ straight connector for bar, 120 VAC	5051608
5 meter (16.4 foot) cable w/ straight connector for bar, 230 VAC	5051609
5 meter (16.4 foot) cable w/right angle connector for bar, 120 VAC	5051610
5 meter (16.4 foot) cable w/right angle connector for bar, 230 VAC	5051611
M12 Cables with flying leads for user-supplied power to IQ Easy Static Bar with straight connector at bar end	
5 meter (16.4 foot)	5051606
10 meter (32.8 foot)	5051737
M12 Cable with flying leads for user-supplied power to IQ Easy Static Bar with right angle connector at bar end	
5 meter (16.4 foot)	5051607

9. WARRANTY AND SERVICE

This product has been carefully tested at the factory and is warranted to be free from any defects in materials or workmanship. Simco Ion will, under this warranty, repair or replace any equipment which proves, upon our examination, to have become defective within one year from the date of purchase.

The equipment being returned under warranty should be shipped by the purchaser to Simco-Ion, 2257 North Penn Road, Hatfield, PA 19440, transportation prepaid and insured for its replacement cost. Prior to returning any goods for any reason, contact Simco-Ion Customer Service at 215-822-6401 for a Return Authorization Number (RMA). This number must accompany all returned items.

This warranty does not apply when the equipment has been tampered with, misused, improperly installed, altered, has received damage through abuse, carelessness, accident, connection to improper line voltage, or has been serviced by anyone other than an authorized factory representative.

The warranty does not apply when Simco-Ion parts and equipment have been energized by other than the appropriate Simco-Ion power supply or generator, or when a Simco-Ion power supply or generator has been used to energize other than Simco-Ion parts and equipment. Simco-Ion makes no warranty, expressed or implied, nor accepts any obligation, liabilities, or responsibility in connection with the use of this product other than the repair or replacement of parts stated herein.

Information in this publication supersedes that in all previous published material. Specifications are subject to change without notice.

Simco-Ion

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