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a-dec

A-dec DV Dry Vacuum

Installation Guide

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Product Models and Versions Covered in This Document

Models	Versions	Description
DV5/DV7/DV10/DV12	n/a	Dry vacuum

86.0891.00 Rev B

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Before You Begin

CAUTION Local regulation requires licensed plumbers and electricians to install utilities. All plumbing and utilities must conform to prevailing local codes.

- Verify the electrical and hose connections.
- Verify voltage is within specifications, including the confirmation of good ground,

Electrical Specifications		DV5	DV7	DV10	DV12
Electrical Supply	Voltage	200-240 VAC	200-240 VAC	200-240 VAC	200-240 VAC
	Phases/Frequency	1 phase / 60 Hz	1 phase / 60 Hz	1 phase / 60 Hz	1 phase / 60 Hz
Motor Nameplate Rating	hp	1.7	1.7	3.4	3.4
	kW	1.3	1.3	2.5	2.5
Amperage	Full Load Amps	9.8	15	17	17
	Minimum Circuit Breaker Rating (Amps)	20	20	30	30
Minimum Wire Gauge		12	12	10	10

  - Acceptable voltage range is 200-240 VAC. Voltage outside of that range will require a buck-boost transformer that provides an incoming voltage adjustment of +/- 10%.

Model	Size	Transformer p/n
DV5/DV7/DV12/DV19	2.5 KVA	E0275

  - Ensure Intake, Drain, drip leg and Exhaust hoses are long enough to reach the offices connection points. Build out office piping as needed or ensure a professional plumber is available.

NOTE Do not trim the Exhaust hose. All other hoses can be trimmed to size.

- Evaluate the room's air flow and overall temperature to maintain the recommended 40-104 degrees Fahrenheit. Make adjustments or recommendations if out of range.

Recommended Tools

- Level
- Pipe wrench
- 3/8" hex driver
- Hose clamp wrench (included with vacuum)
- Hose cutting tool
- 9/16" socket and ratchet
- Phillips head screwdriver
- PVC pipe glue

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Site Specifications and Sizing Information

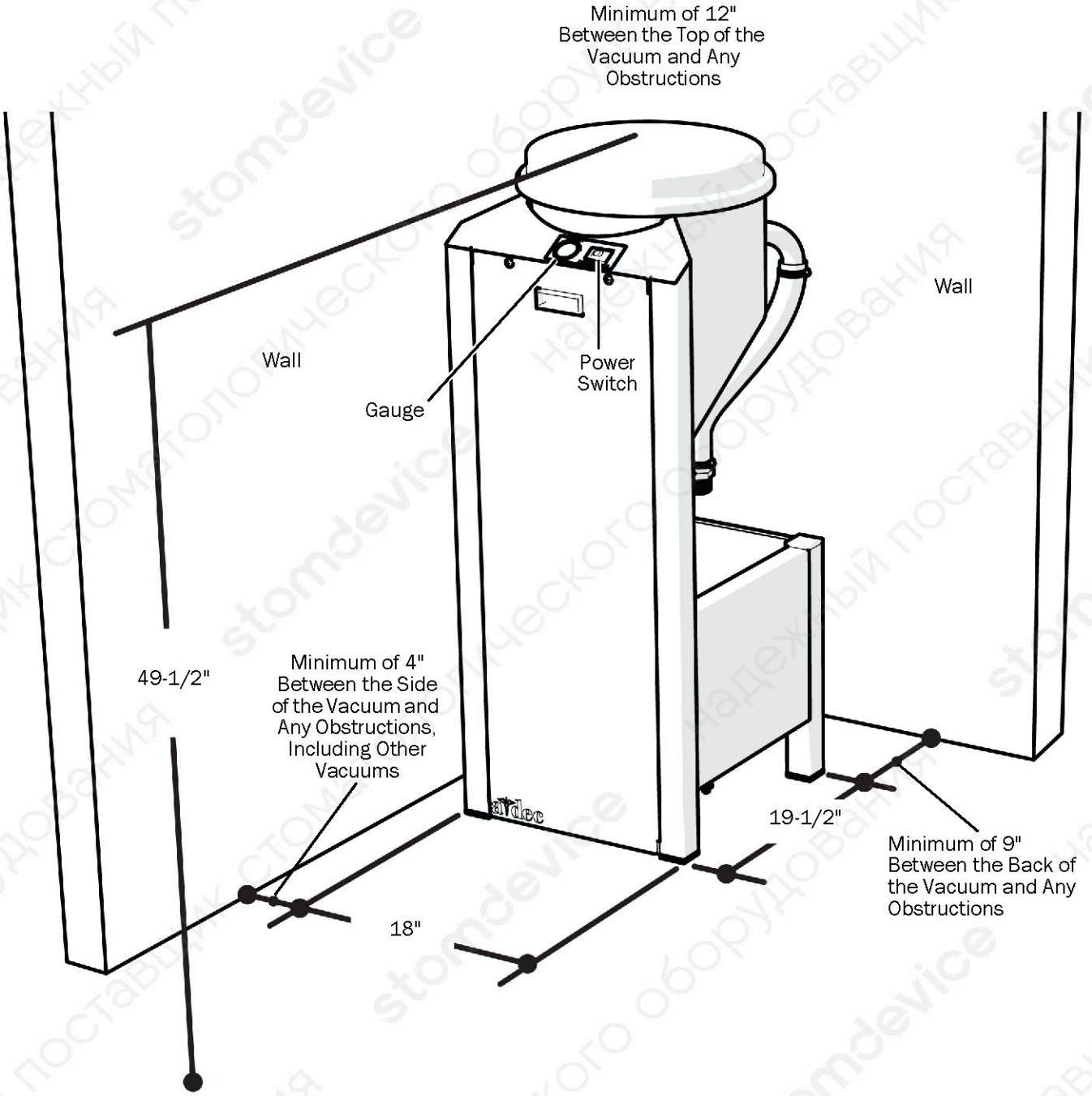
Model	Max Users	CFM @8"Hg	Set "Hg
DV5	5	35	10
DV7	7	57	10
DV10	10	74	10
DV12	12	92	10

Model	Dims - WxDxH Installed	Weight Installed	Dims - WxDxH Packaged	Weight Packaged	Sound db(A) Max	Sound db(A) Average	BTU/Hr Max
DV5	18 x 19-1/2 x 49-1/2"	152 lbs	24 x 31 x 55"	183	62.8	57.4	5,700
DV7	18 x 19-1/2 x 49-1/2"	152 lbs	24 x 31 x 55"	183	70.0	57.4	6,800
DV10	18 x 19-1/2 x 49-1/2"	191 lbs	24 x 31 x 55"	214	63.2	58.3	8,700
DV12	18 x 19-1/2 x 49-1/2"	191 lbs	24 x 31 x 55"	214	70.5	58.3	10,436

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Vacuum Dimensions

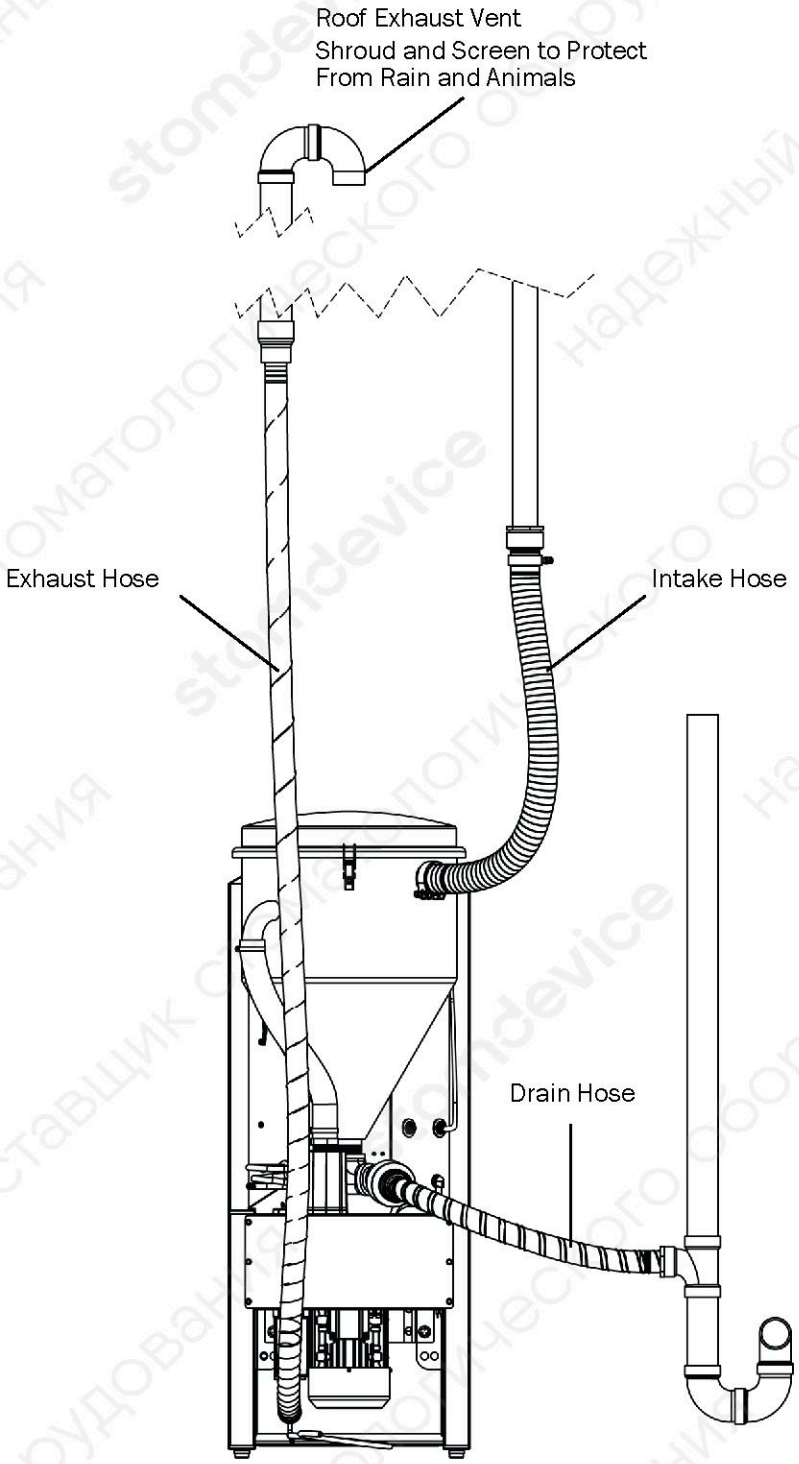


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Single Vacuum Installation Examples

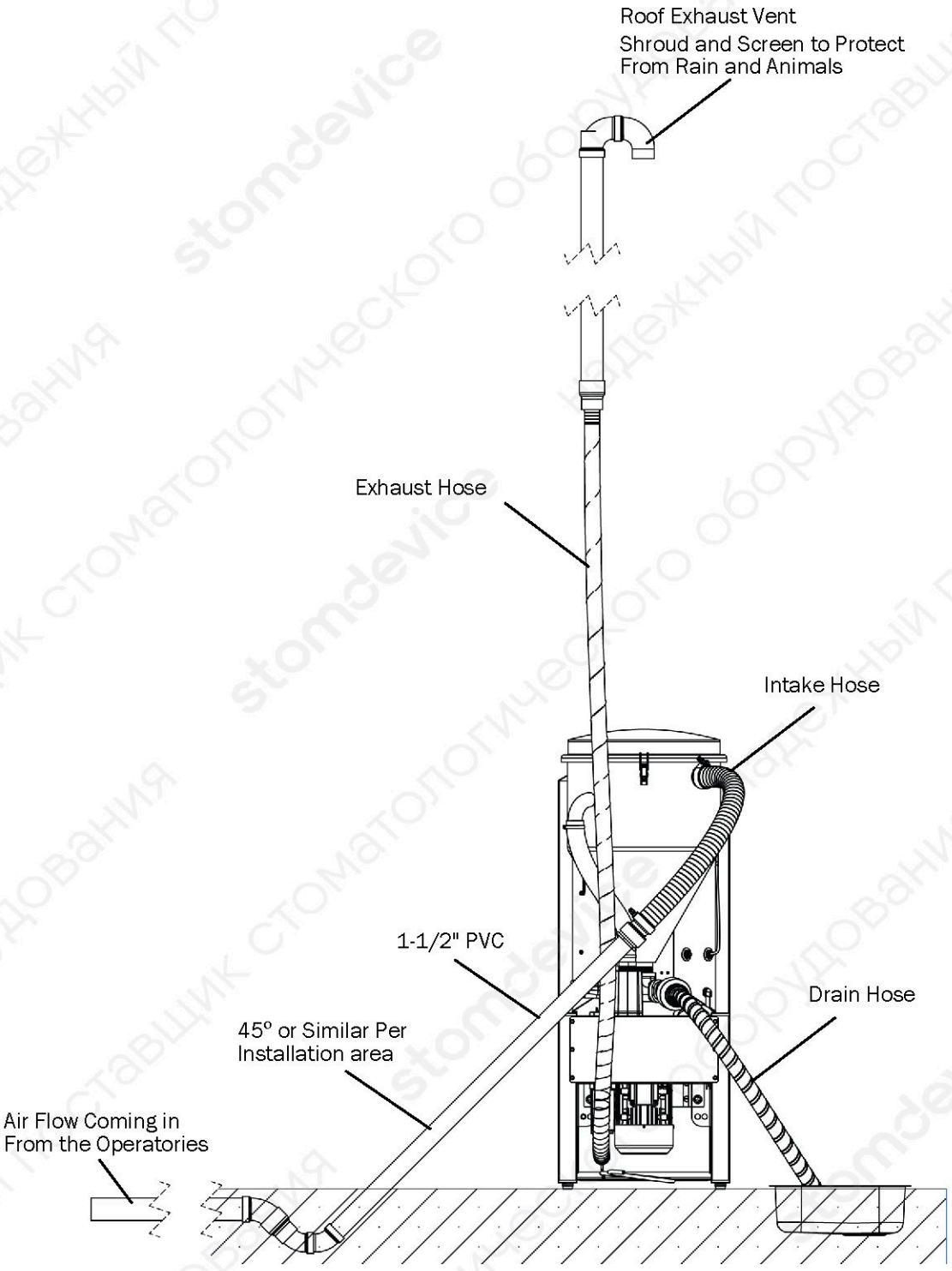
Overhead Installation Example



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Below Grade Installation Example



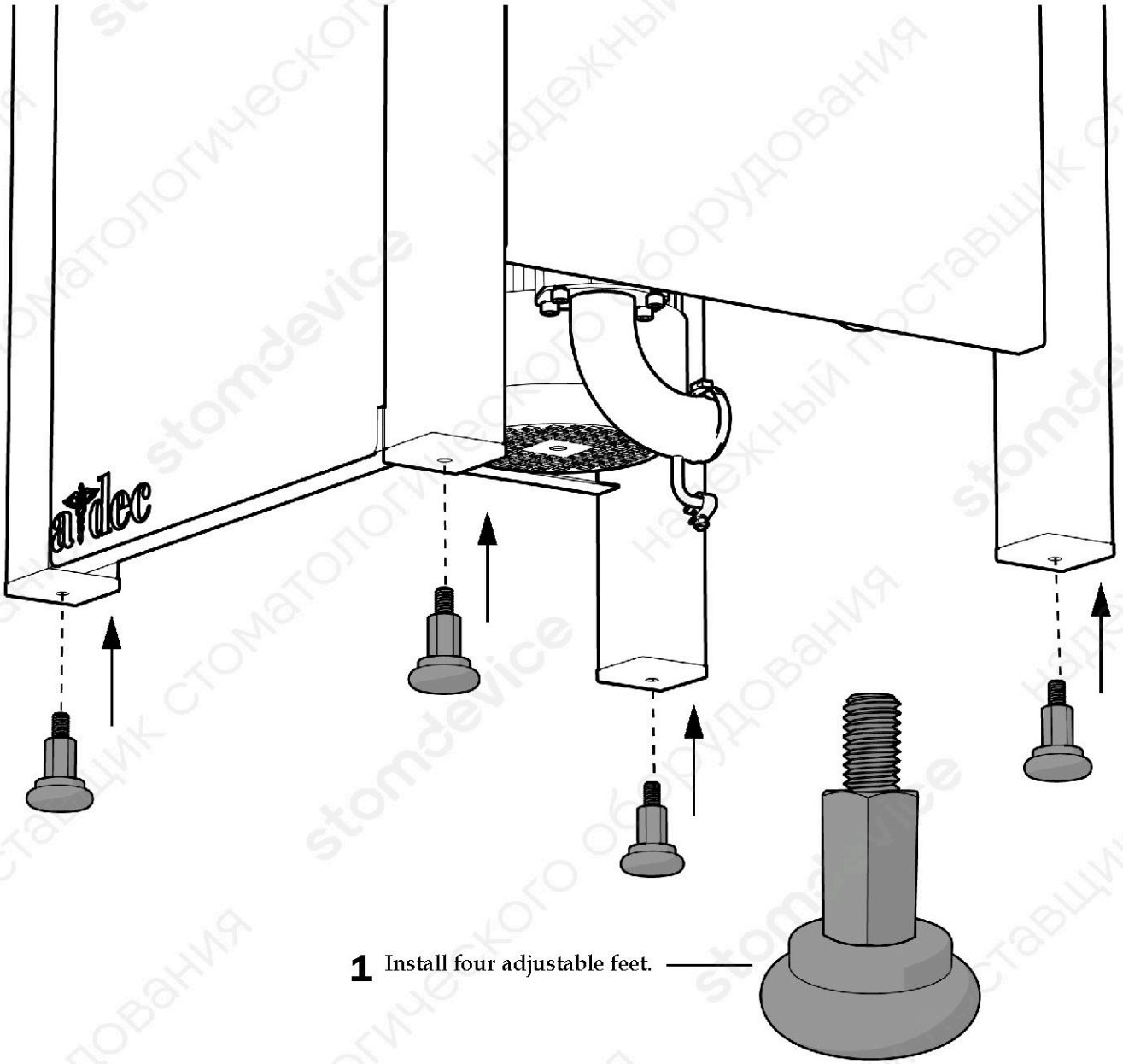
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Install a Single Vacuum

WARNING Ensure that there is at least 1" of clearance between the vacuum and the floor to provide adequate air flow.

Install the Feet

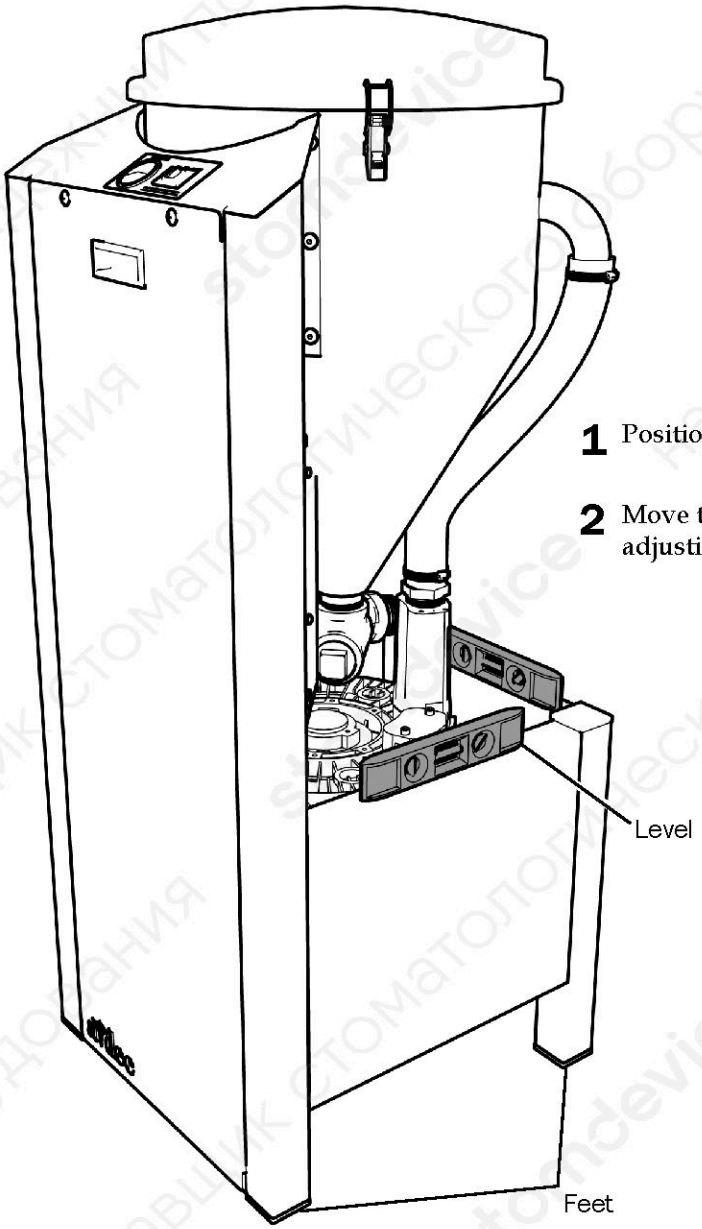


1 Install four adjustable feet.

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Place and Level the Vacuum



1. Position the vacuum and place a level on the top of its side.
2. Move the level from side to side and front to back while adjusting the height of the feet until the vacuum is level.

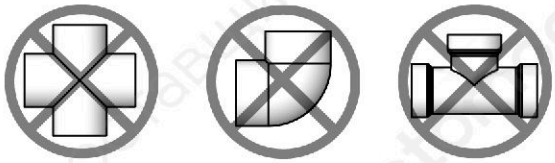
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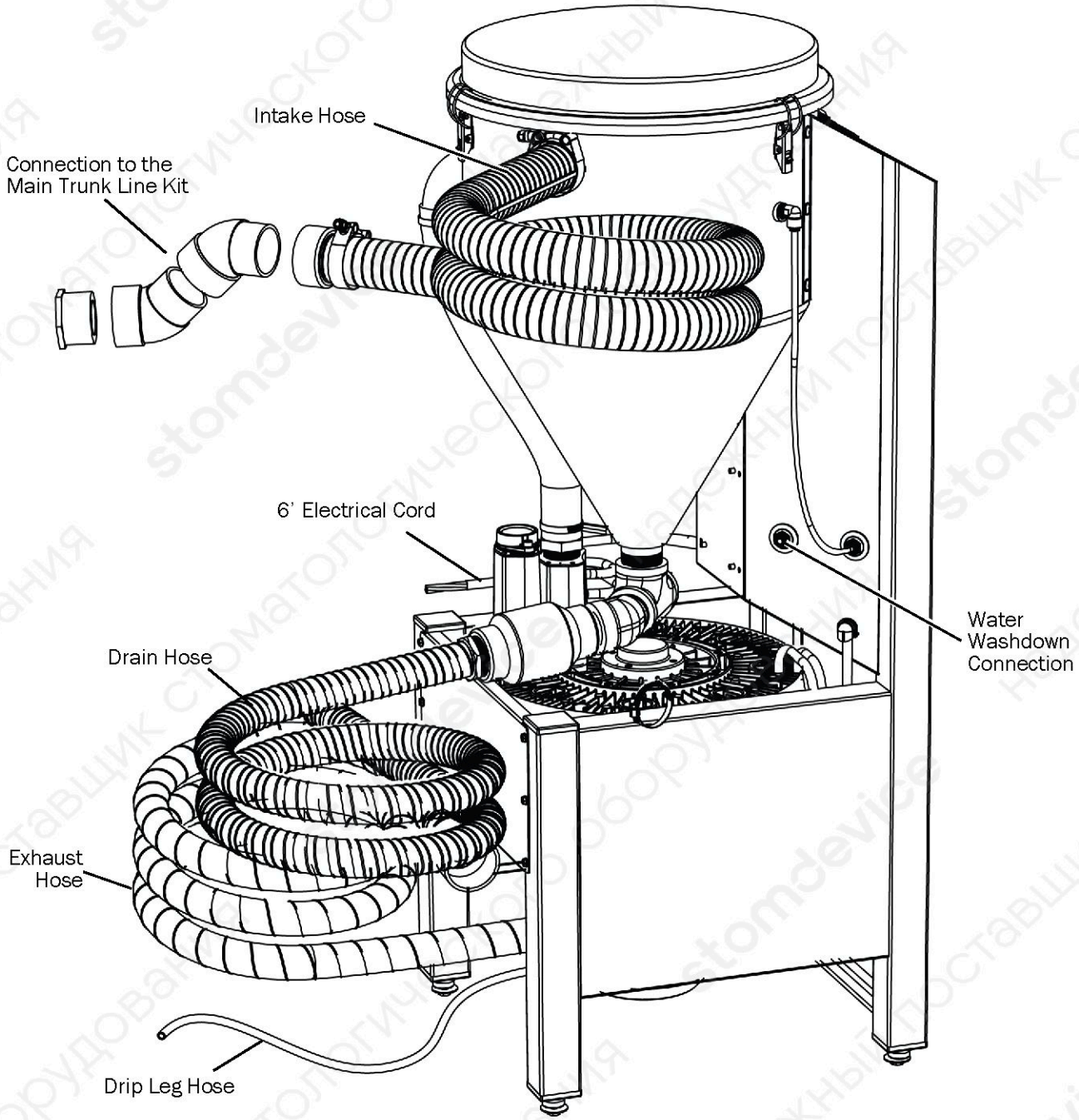
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Connect the Hoses to Plumbing

NOTE Do not use 4 -way cross, short elbow, or tee fittings for vacuum connections. For information about trunk line guidelines, see the *A-dec DV Dry Vacuum Pre-Installation Guide*, p/n 86.0896.00, available in the Resource Center at www.a-dec.com.

Do Not Use These Fittings



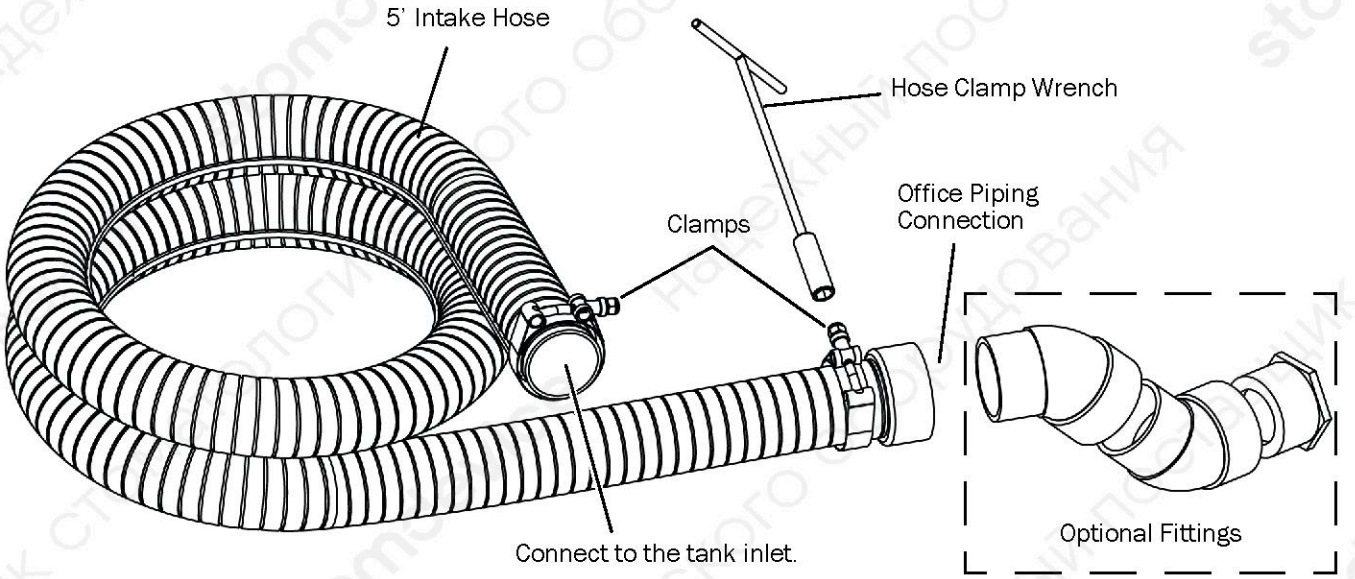


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Connect the Intake Hose to the Trunk Line

- Trim the Intake hose to fit the length needed.
- Do not let the Intake hose sag or have low spots.
- Support the hose if necessary.

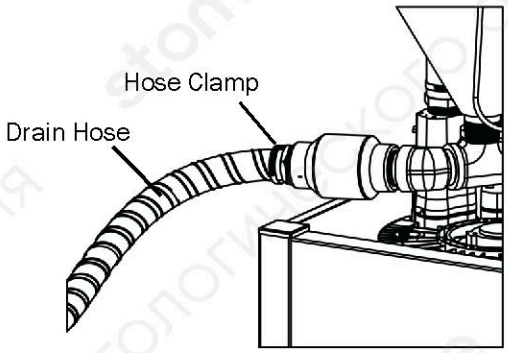


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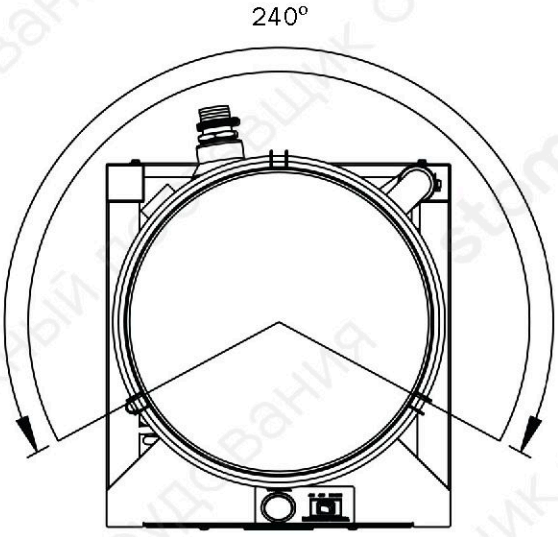
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Connect the Drain Hose to the Drain

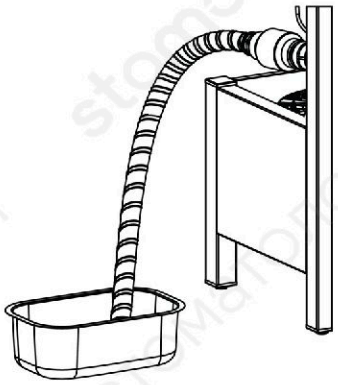
- Trim the Drain hose to fit the length needed.
- Do not let the Drain hose sag or have low spots.
- Support the hose if necessary.



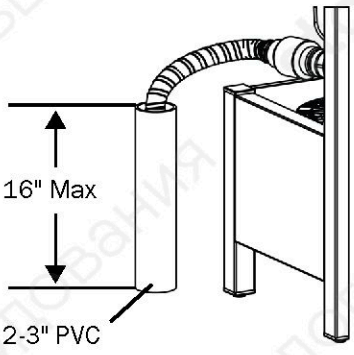
Connect the Drain Hose to the Vacuum



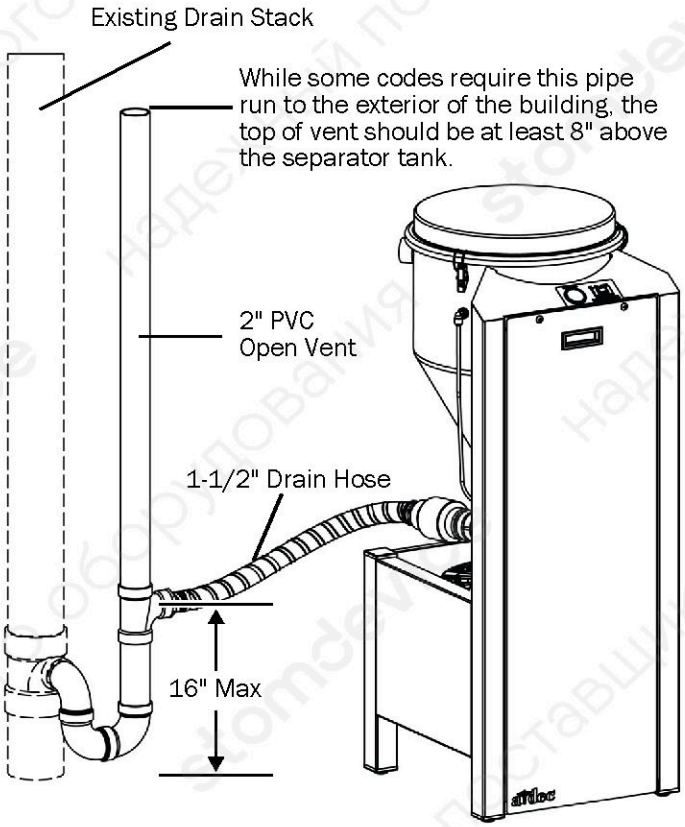
Drain connection can be rotated 240° to suit the installation.



Connect the Drain Hose to a Floor Sink/Drain



Connect the Drain Hose to a Pipe Stub with an Air Gap



Slope the Drain hose 1/2"/10' towards floor drain. An air gap is required. Traps in the drain piping must be no greater than 8" above grade.

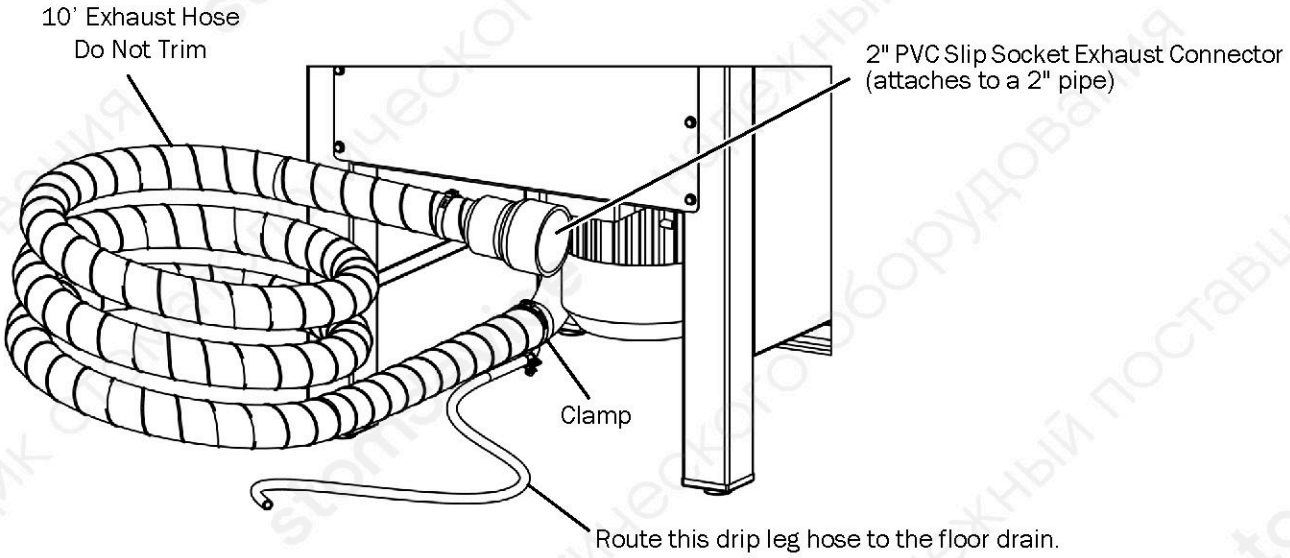
Connect the Drain Hose Directly to the Vent

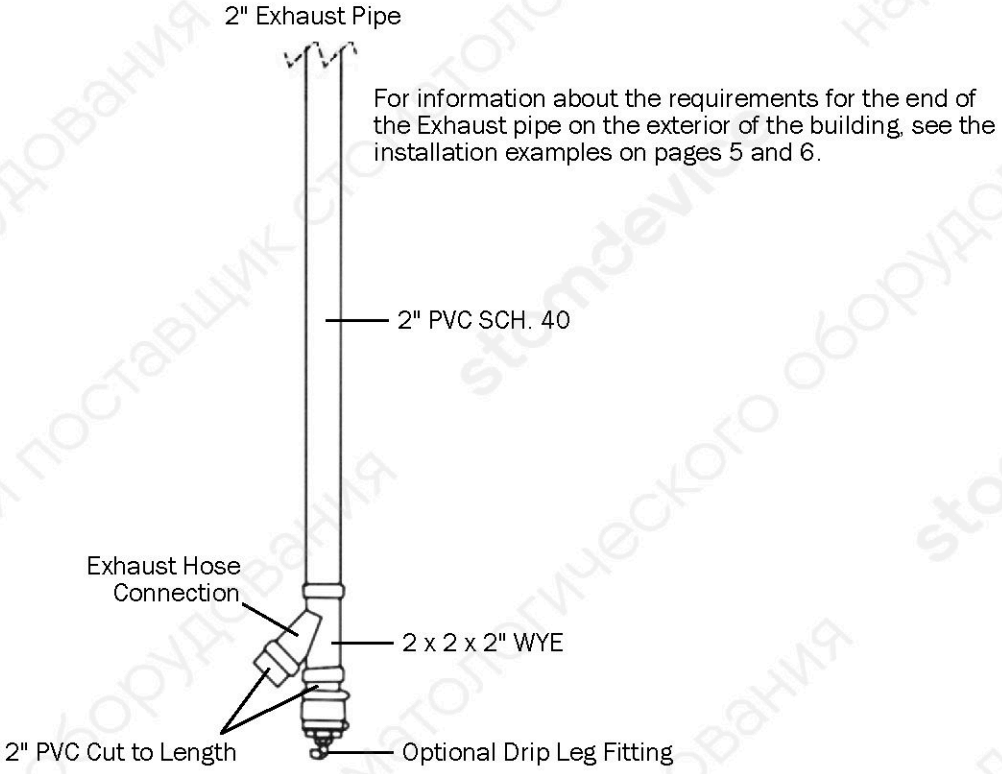
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Connect the Exhaust

- Do not trim the Exhaust hose. Install it at full length.
- Loosely coil the remaining Exhaust hose on the floor behind the vacuum pump to ensure the tubing will not kink.
- Must be vented outside per NFPA.
- Trim the drip leg hose for the best run to the floor drain.
- Route the drip leg hose to the drain so it is lower than the exhaust elbow. This prevents water from backing up into the vacuum.





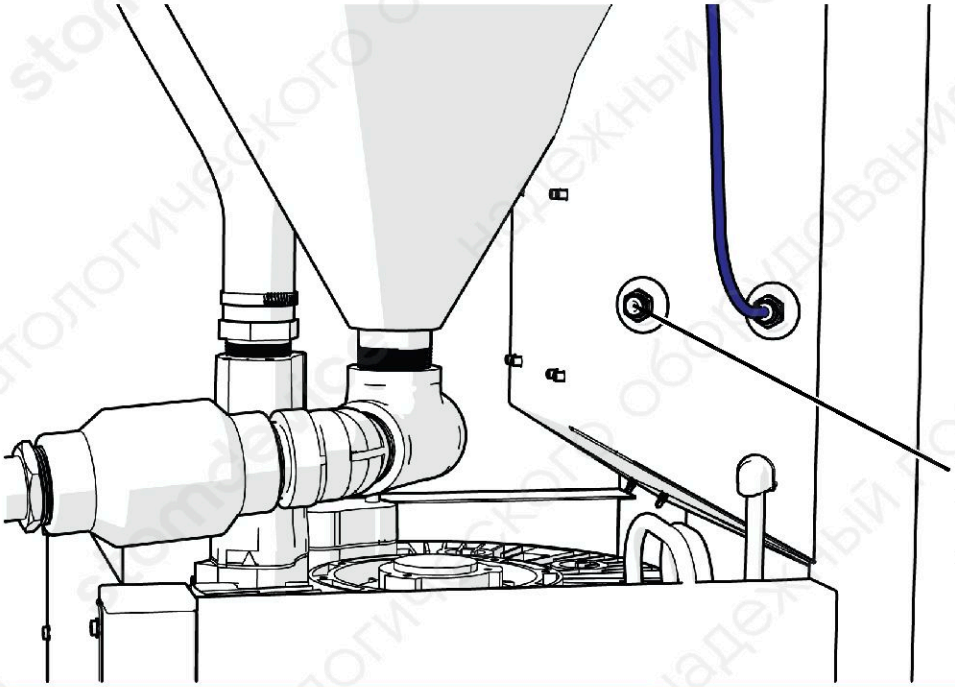
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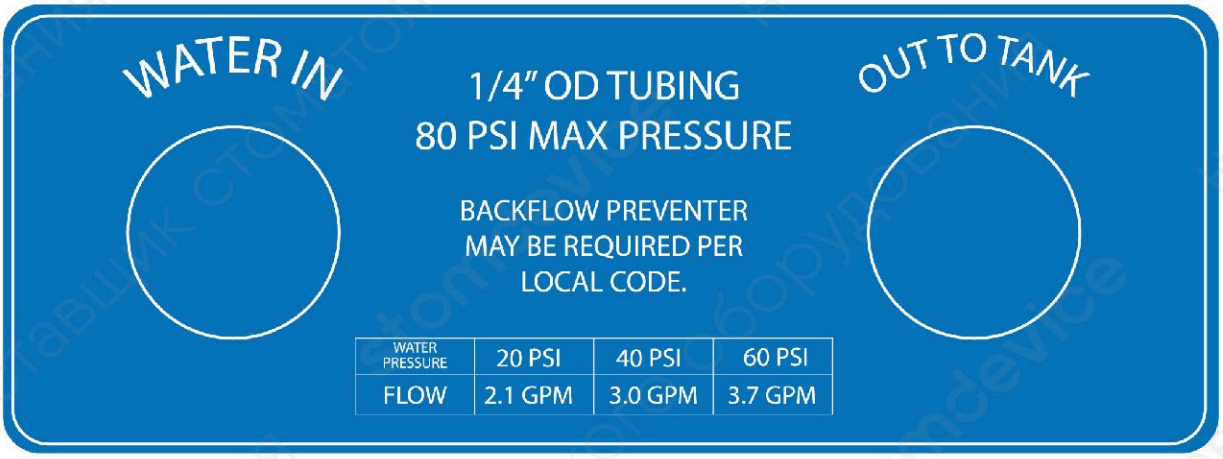
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Connect the Washdown Waterline

CAUTION Local regulation requires licensed plumbers and electricians to install utilities. All plumbing and utilities must conform to prevailing local codes.

- Connecting and using the washdown waterline system is required for endodontic clinics.
- A-dec recommends the optional washdown system in all dental clinics.





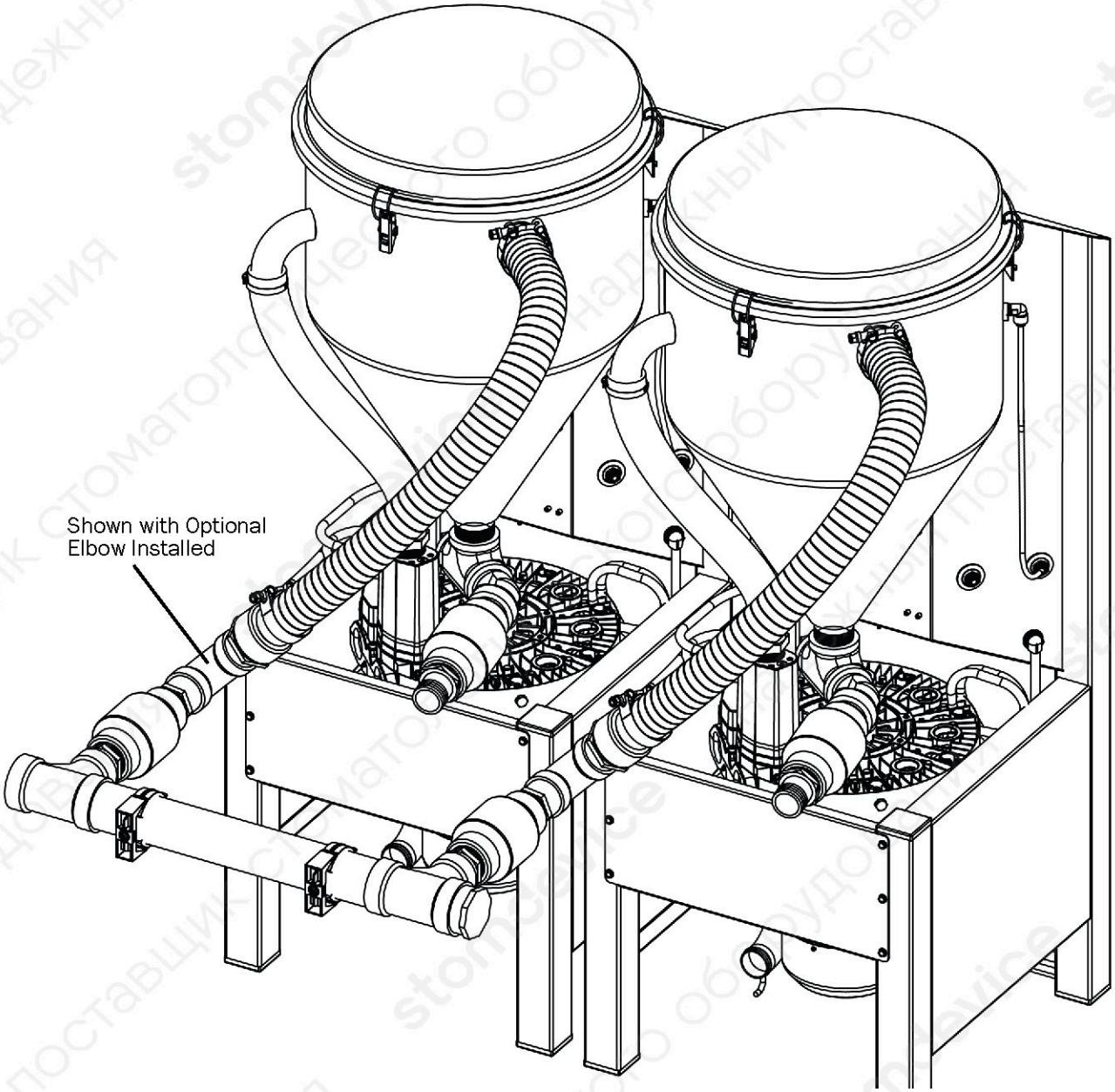
NOTE Depending on local codes, the water washdown connection may require a backflow preventer.

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Tandem Vacuum System Installation Examples (optional)

Below Grade Intake Installation Example



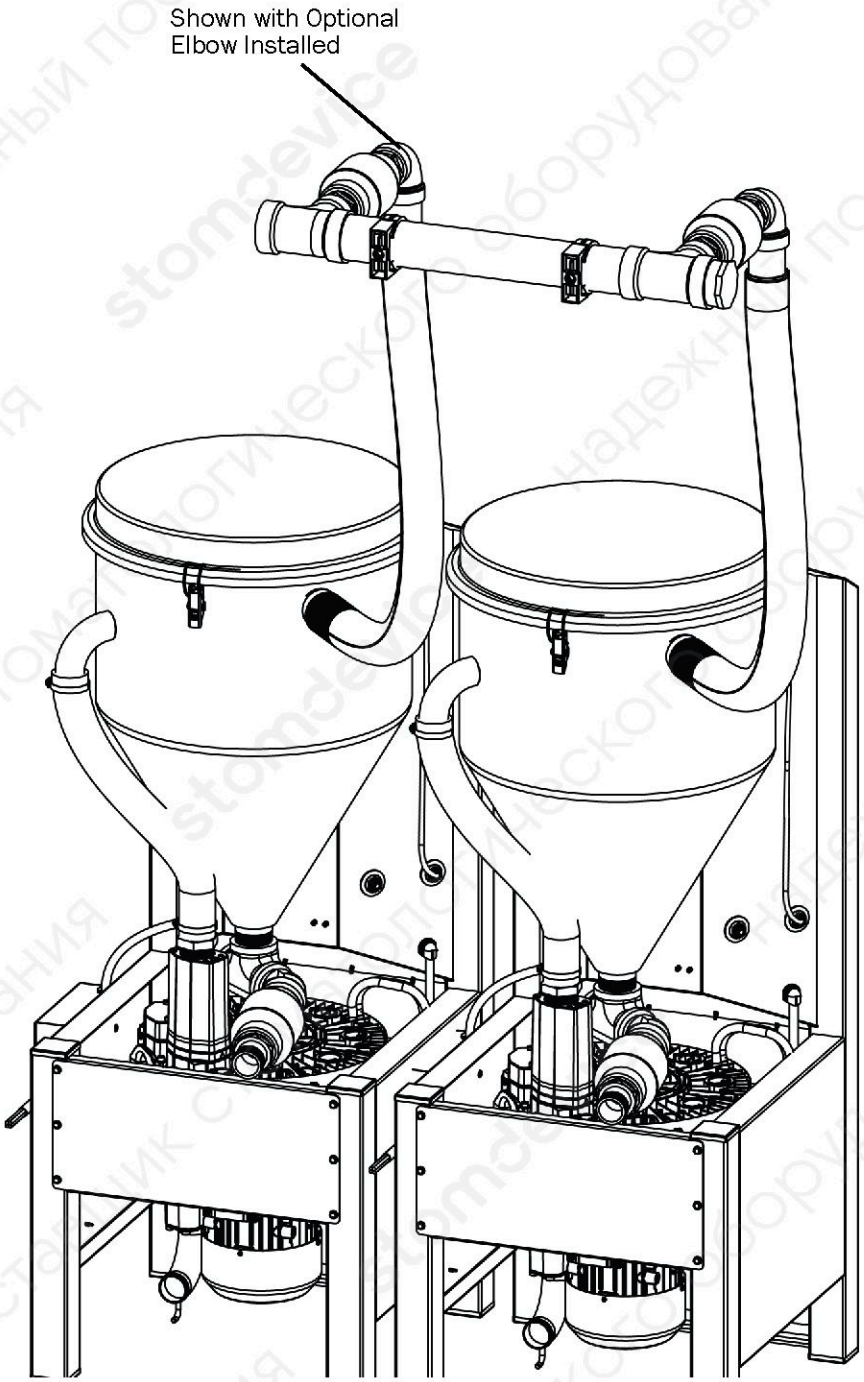
NOTE Trim Intake hoses so they have the shortest and smoothest run from the manifold to the tank inlet.

NOTE Level the vacuums to each other to ensure workloads are balanced properly.

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Overhead Intake Installation Example



NOTE Trim Intake hoses so they have the shortest and smoothest run from the manifold to the tank inlet.

NOTE Level the vacuums to each other to ensure workloads are balanced properly.

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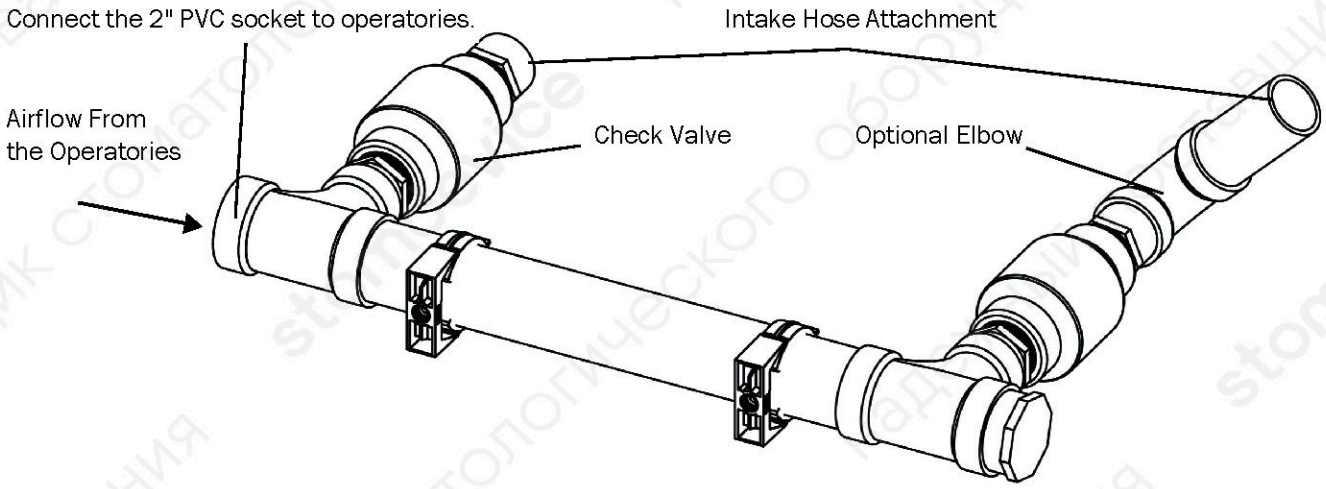
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Install a Tandem Vacuum System (optional)

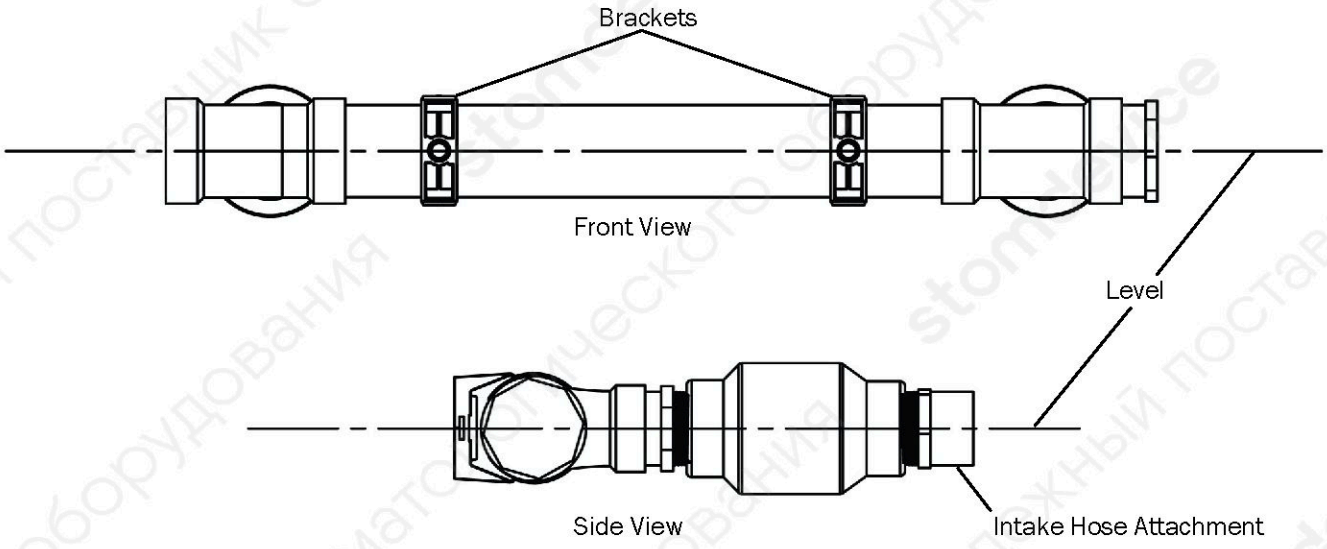
NOTE Tandem vacuums must be combinations of the same model vacuums. For connecting more than three vacuums, contact A-dec's Customer Service.

Build the Tandem Intake Manifold Assembly

- The parts for the Tandem intake manifold are included with Tandem vacuum orders. Adjust their installation according to the location's needs.
- Manifolds can be configured to accept air intake from either side. When assembling the manifold, ensure the check valves are installed correctly according to the markings on the manifold that indicate which side should be up, and an arrow indicating the airflow goes from the manifold to the vacuum.



Attach and Level the Intake Manifold Assembly



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Connect the Intake Hose to the Trunk Line

The instructions for connecting to the building are the same whether you're connecting the Intake hose from the tank inlet or a manifold.

For information on connecting the Intake hose from the manifold to the building, see "Connect the Intake Hose to the Trunk Line" on page 10.

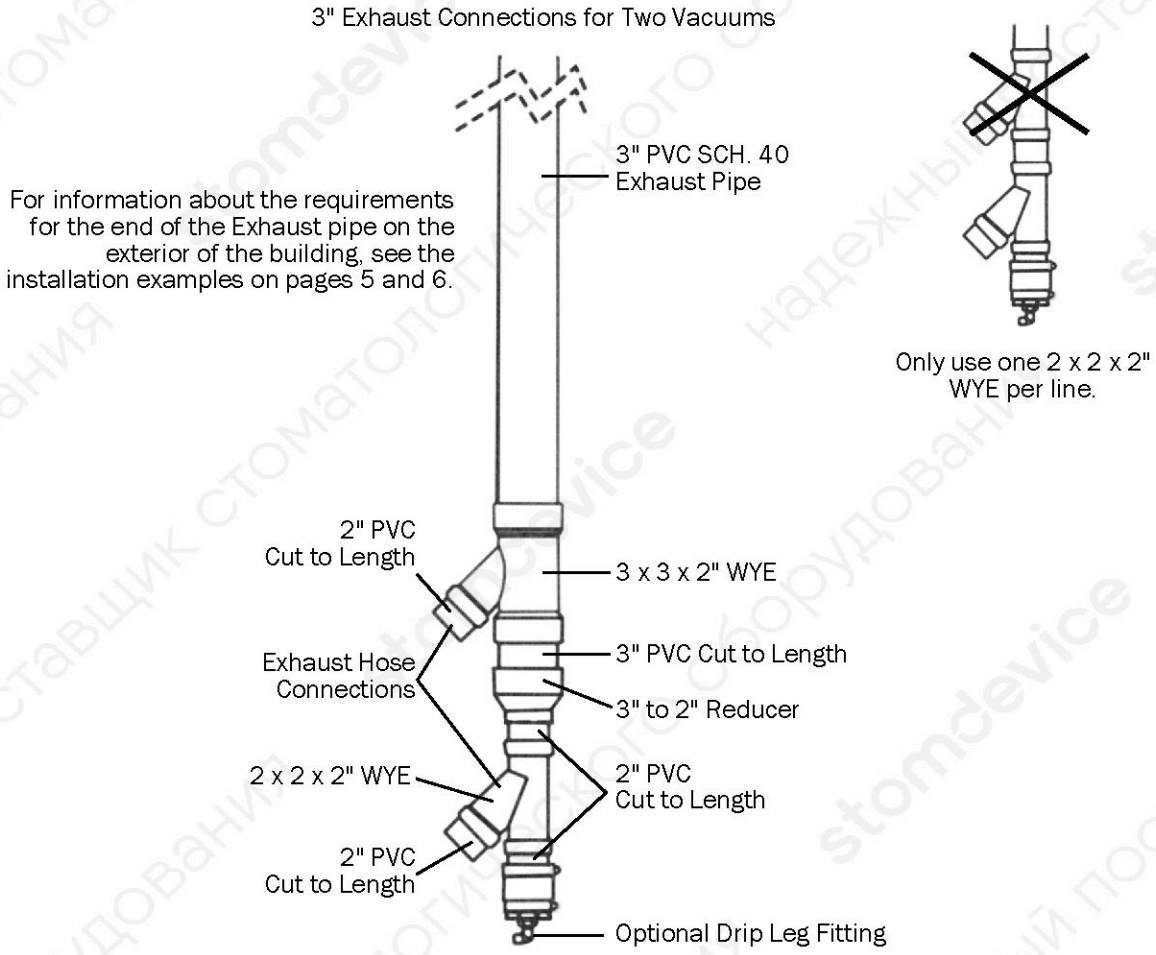
Connect the Exhaust Hoses

- Do not trim the Exhaust hose.
- Route the drip leg hose to the drain so it is lower than the exhaust elbow. This prevents water from backing up into the vacuum.

Connect the Exhaust Hose to Two Vacuums 17

Connect the Exhaust Hose to Three Vacuums. 18

Connect the Exhaust Hose to Two Vacuums



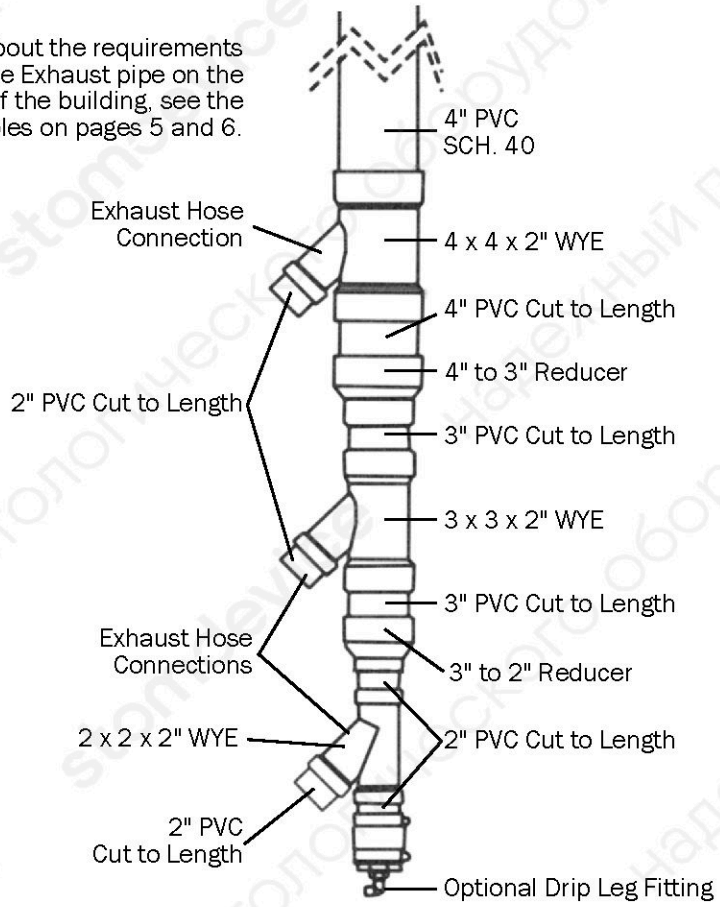
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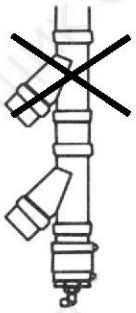
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Connect the Exhaust Hose to Three Vacuums

4" Exhaust Connections for Three Vacuums

For information about the requirements for the end of the Exhaust pipe on the exterior of the building, see the installation examples on pages 5 and 6.





Only use one 2 x 2 x 2" WYE per line.

Connect the Drain Hose to the Drain

For information on connecting the Drain hose from the separator tank to the drain, see "Connect the Drain Hose to the Drain" on page 11.

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Connect the Electrical

CAUTION Local regulation requires licensed plumbers and electricians to install utilities. All plumbing and utilities must conform to prevailing local codes.

Electrical Safety

- Follow NEC, NFPA 99C, and all local codes.
- Qualified personnel must install electrical wiring and outlets.
- Unit requires a dedicated (separate branch circuit only) 20 or 30 amp circuit.
- Unit requires an external disconnecting device which disconnects each live supply conductor.
- Never operate unit outside the specified voltage range 200-240 VAC.
- Do not use a buck-boost transformer.
- See "Site Specifications and Sizing Information" on page 3 for more electrical information.

WARNING Connect in accordance with NEC wiring methods and all local codes.

WARNING Do not attempt to operate the vacuum on voltage other than what is specified on page 3.

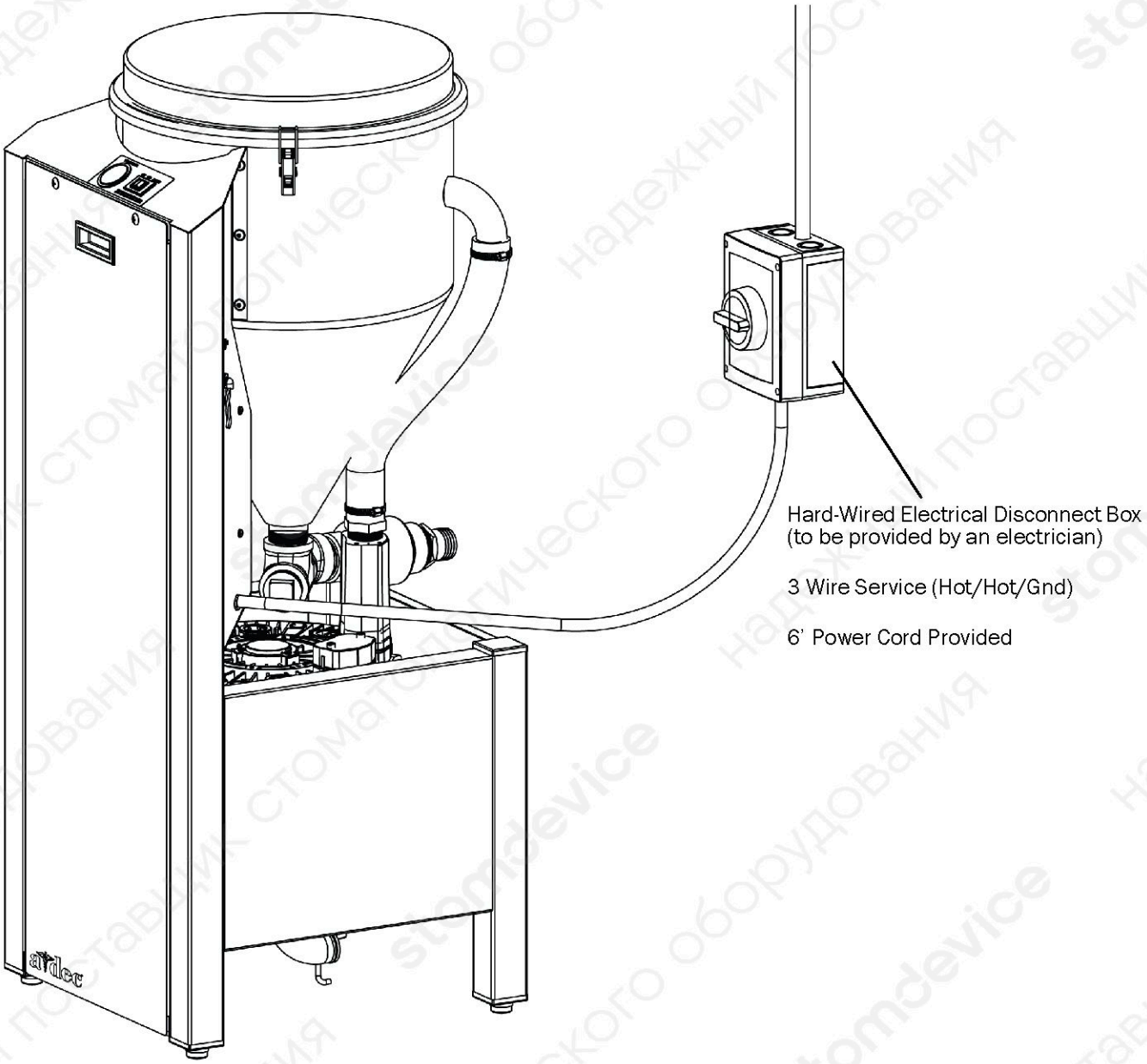
WARNING Only use the remote switch or the switch on the vacuum to operate the vacuum. Do not run/stop the vacuum by turning the main power on/off.

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Connect the Main Supply Wiring

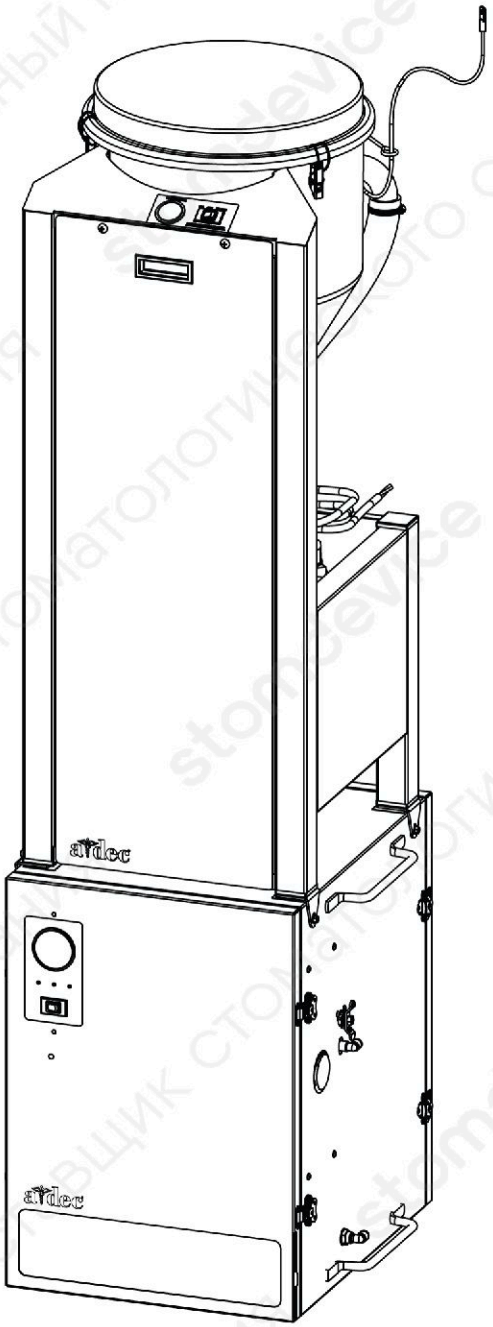
WARNING Electrical shock can occur if the vacuum is improperly grounded. The vacuum must be connected only to a supply mains with protective earth.



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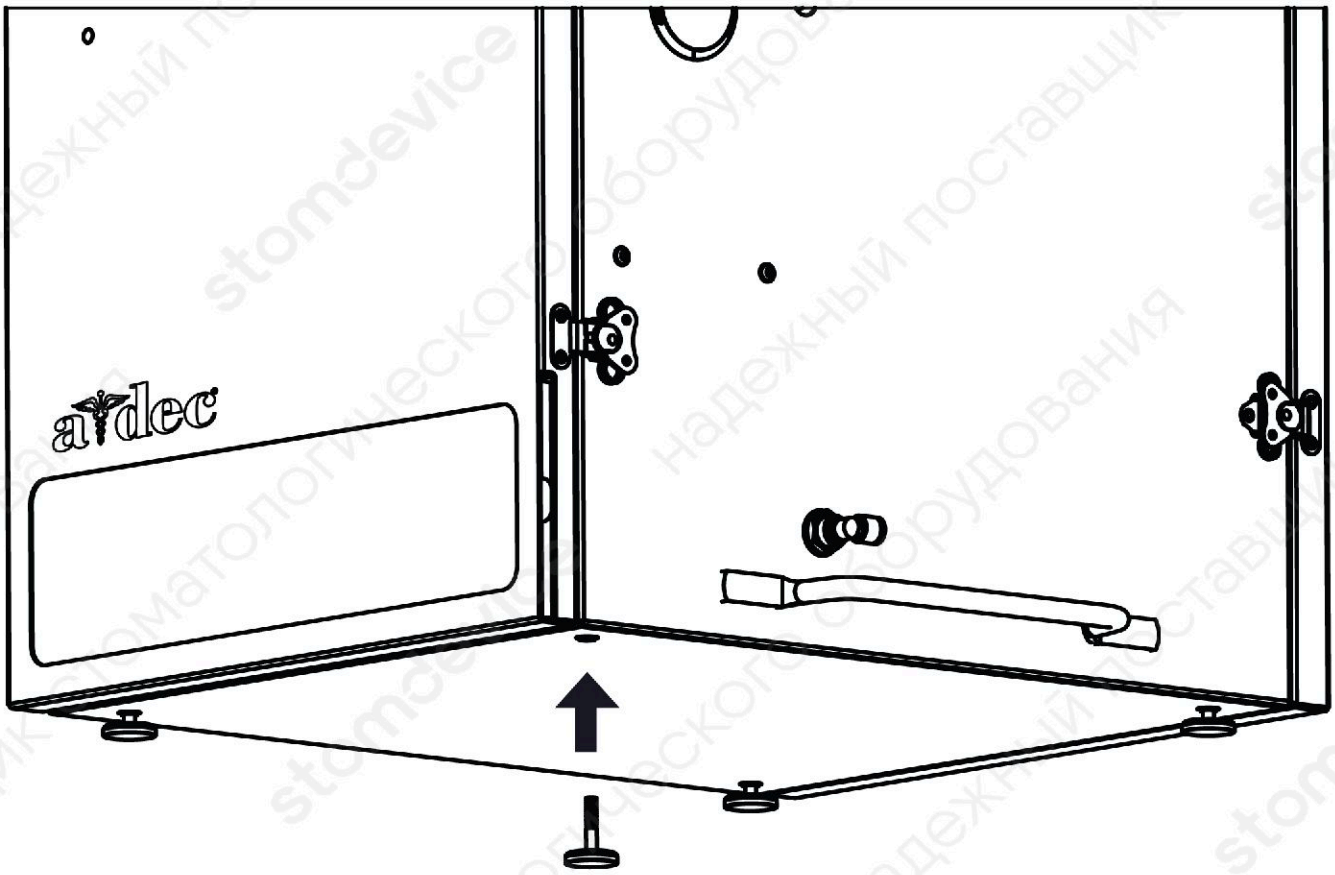
Install a Vacuum on Top of a Compressor (optional)

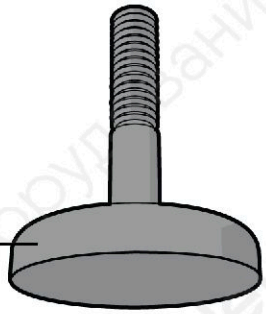


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Install the Compressor Feet



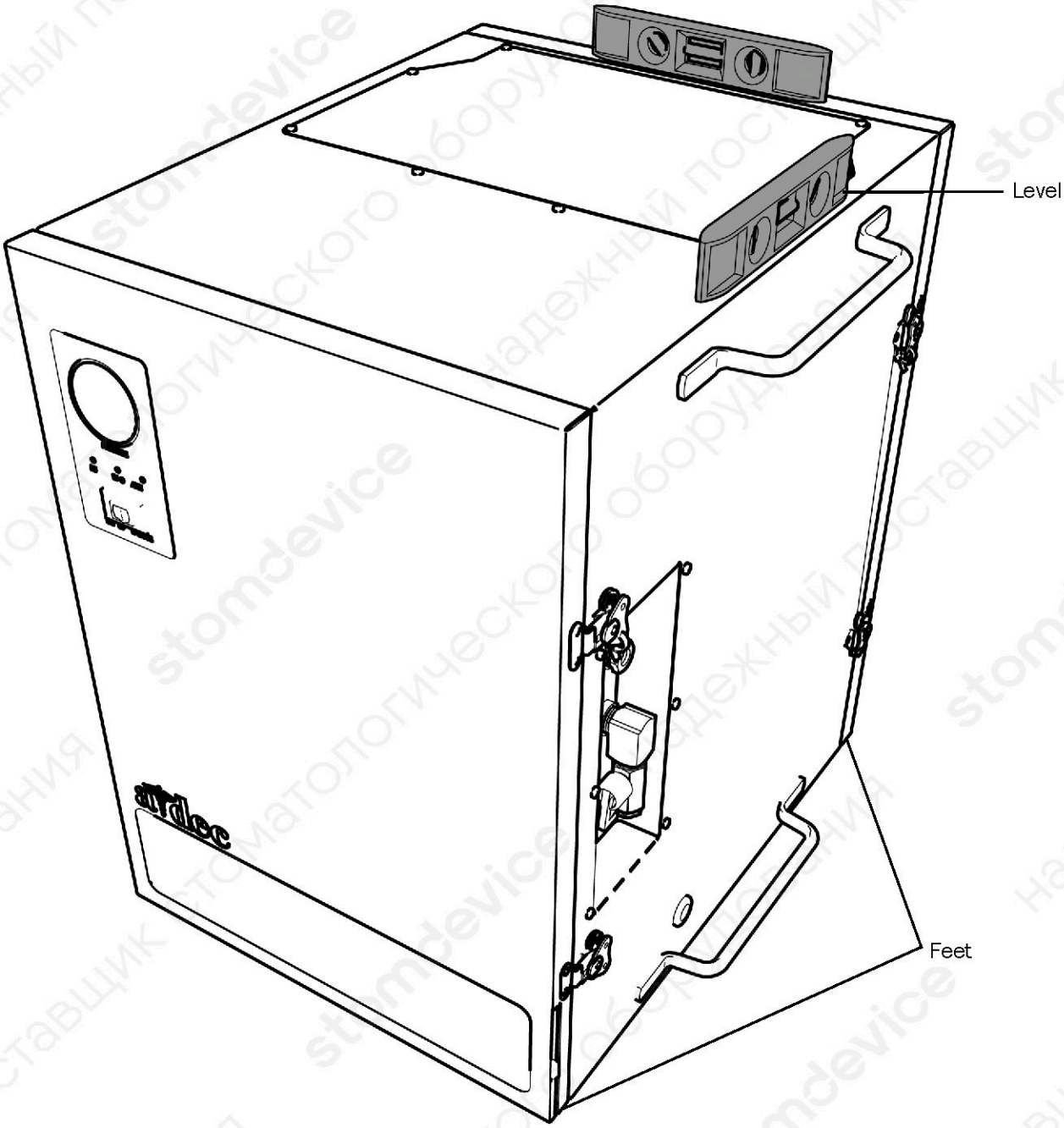


1 Install four heavy-duty feet.

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Level the Compressor

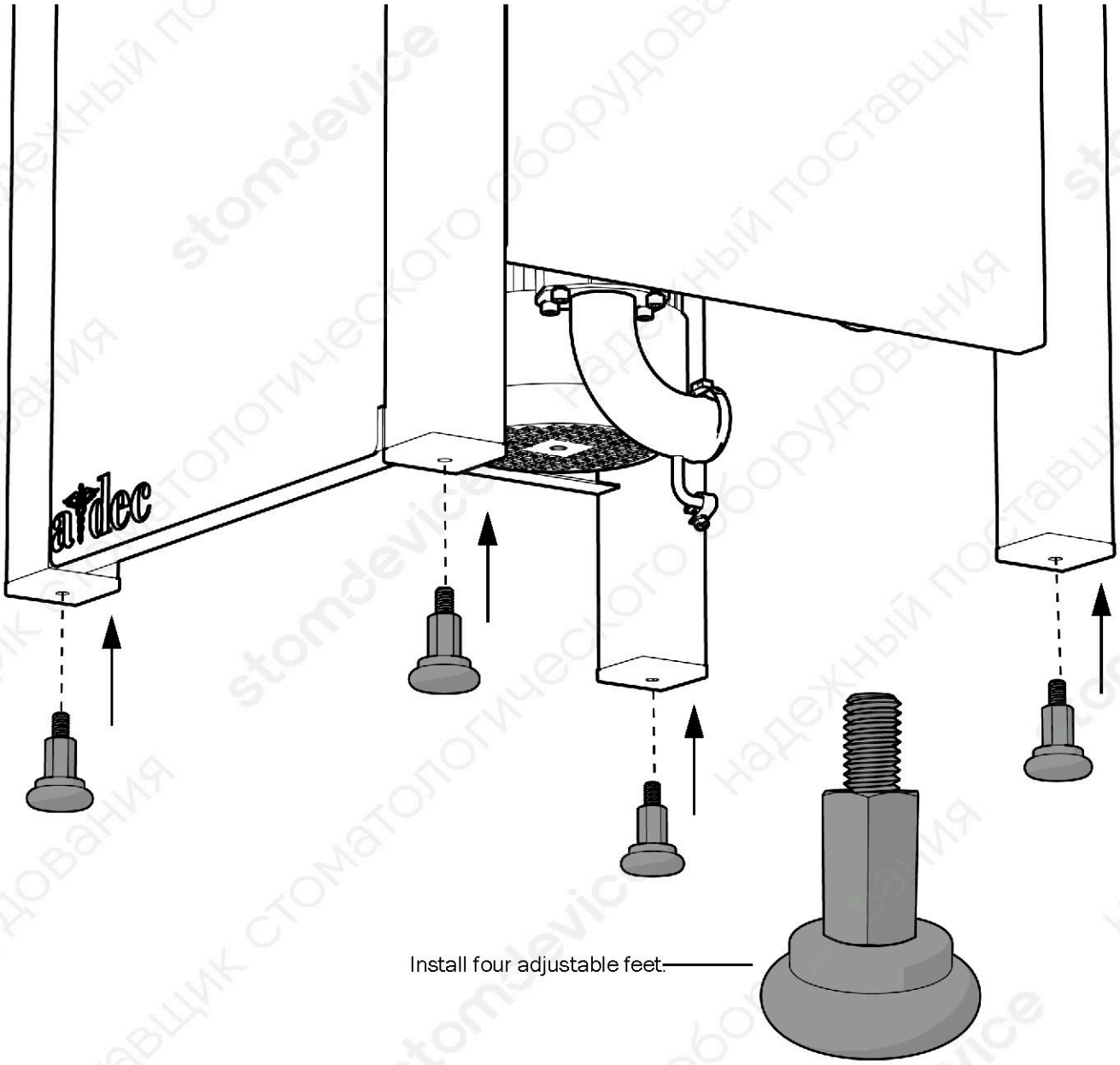


1. Position the compressor and place a level on the top of its side.
   For information about the minimum clearance needed around the compressor, see the *A-dec SC Air Compressor Installation Guide*, p/n 86.0890.00, available in the Resource Center at www.a-dec.com.
2. Move the level from side to side and front to back while adjusting the height of the feet until the compressor is level.

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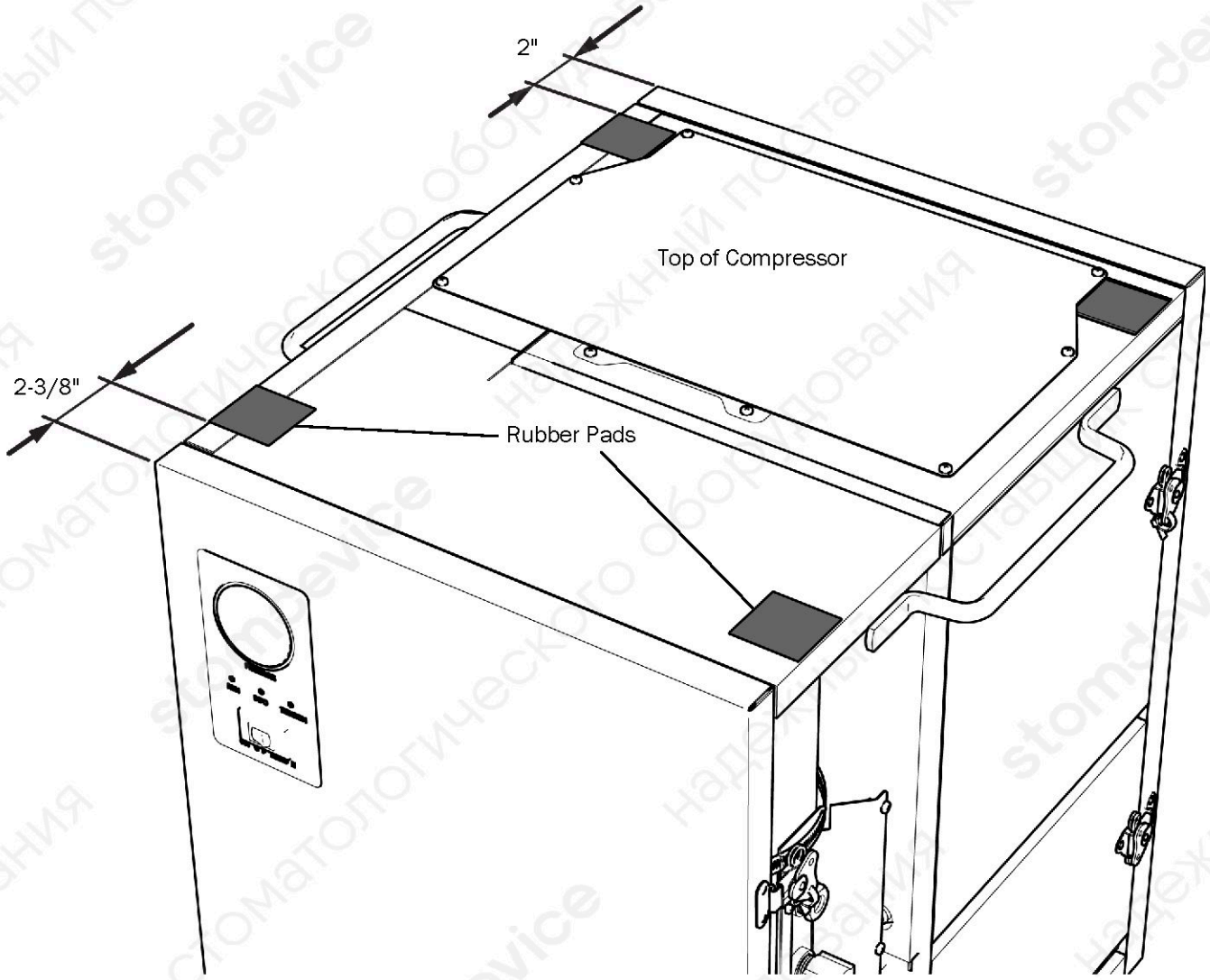
Install the Vacuum Feet



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Install the Rubber Pads



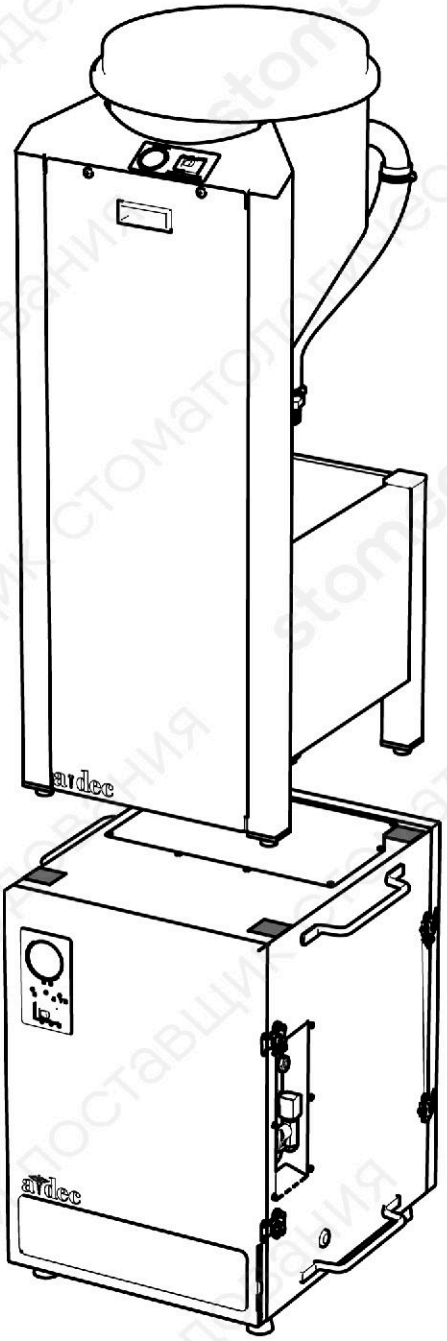
1. Install two rubber pads 2-3/8" from the front of the compressor and aligned with the sides.
2. Install two rubber pads 2" from the back of the compressor and aligned with the sides.

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Lift the Vacuum on Top of the Compressor

WARNING It takes two people to place the vacuum on top of the compressor.

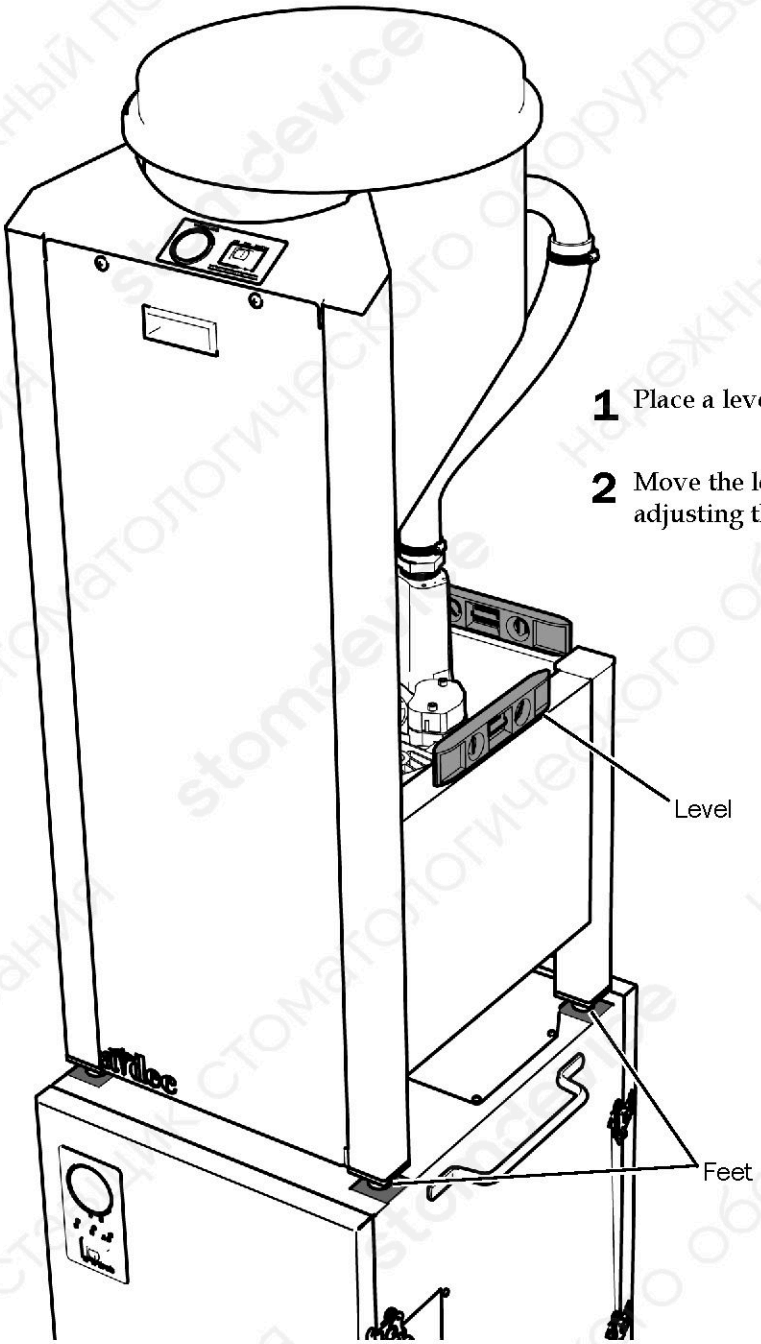


1 Place the vacuum on the rubber pads on top of the compressor.

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Level the Vacuum

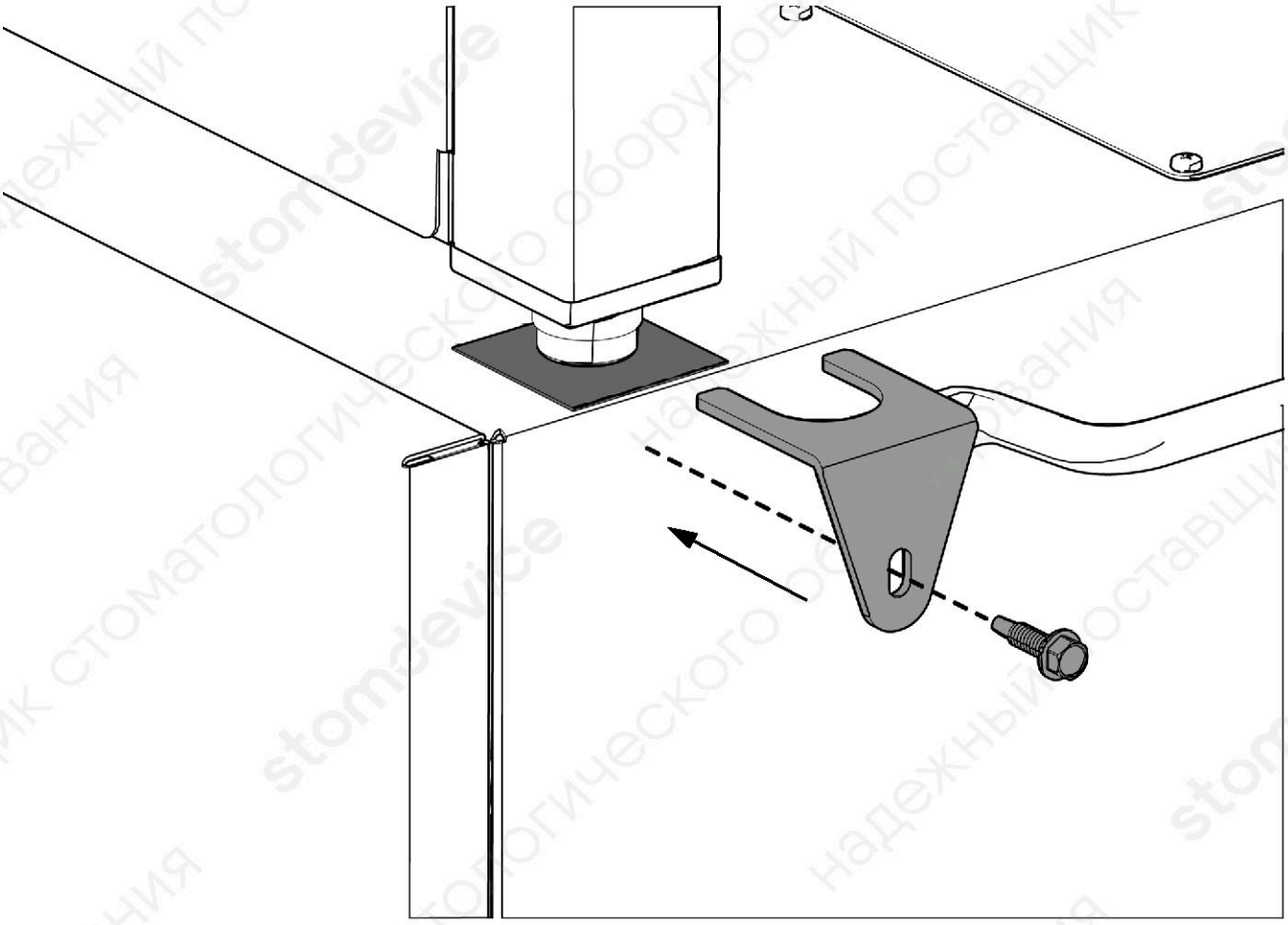


1. Place a level on the top of the vacuum's side.
2. Move the level from side to side and front to back while adjusting the height of the feet until the vacuum is level.

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Secure the Vacuum to the Compressor



1. Slide the bracket over the foot of the vacuum.
2. Use a 3/8" hex driver and self-drilling screw to attach the bracket to the compressor.
3. Repeat the steps for the other vacuum feet.

Connect the Compressor and Vacuum

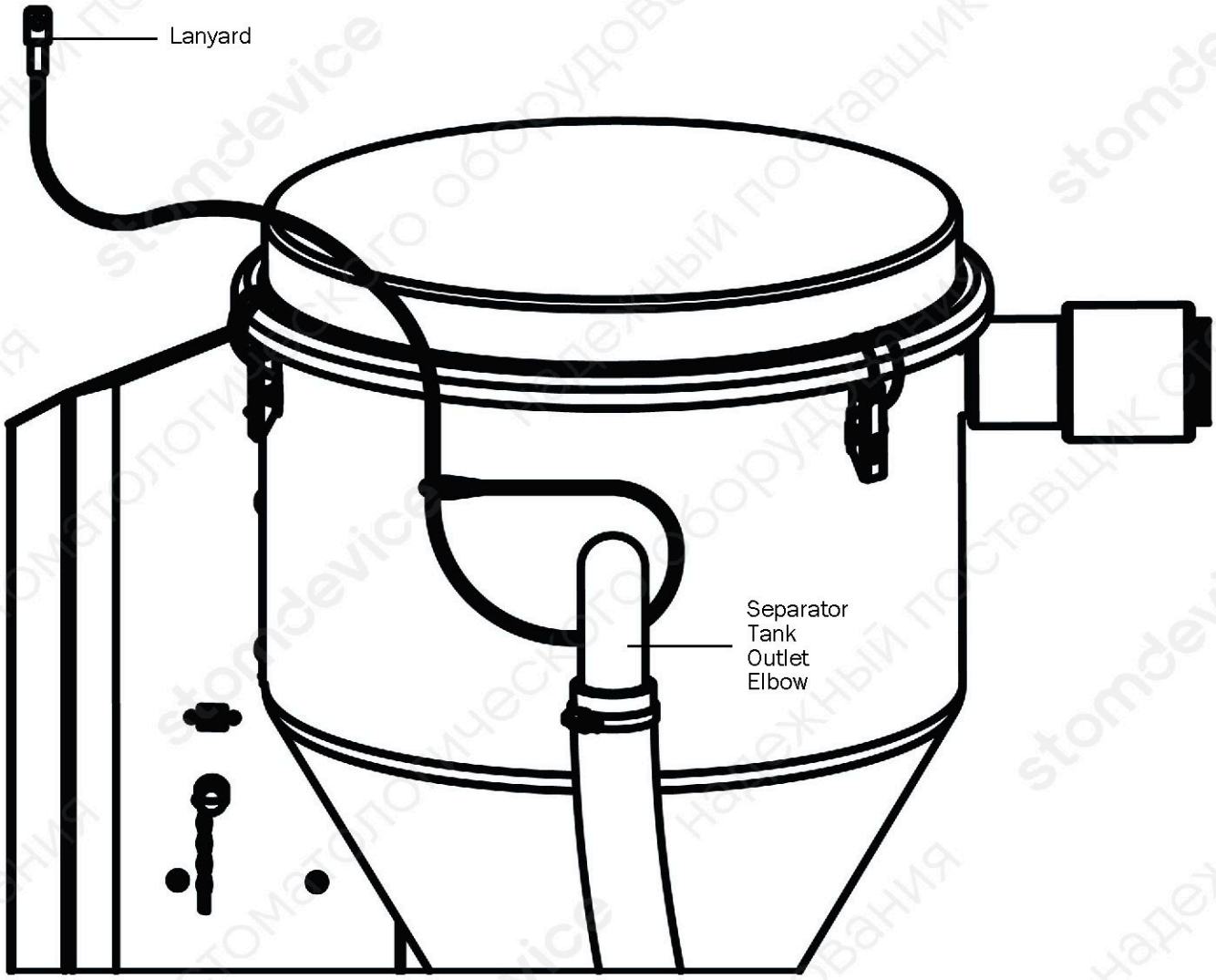
For information on connecting the compressor and vacuum, see the following information:

- **Compressor** - See the *A-dec SC Air Compressor Installation Guide*, p/n 86.0890.00, available in the Resource Center at www.a-dec.com.
- **Vacuum** - See pages 9 through 13 of this document.

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Install the Lanyard



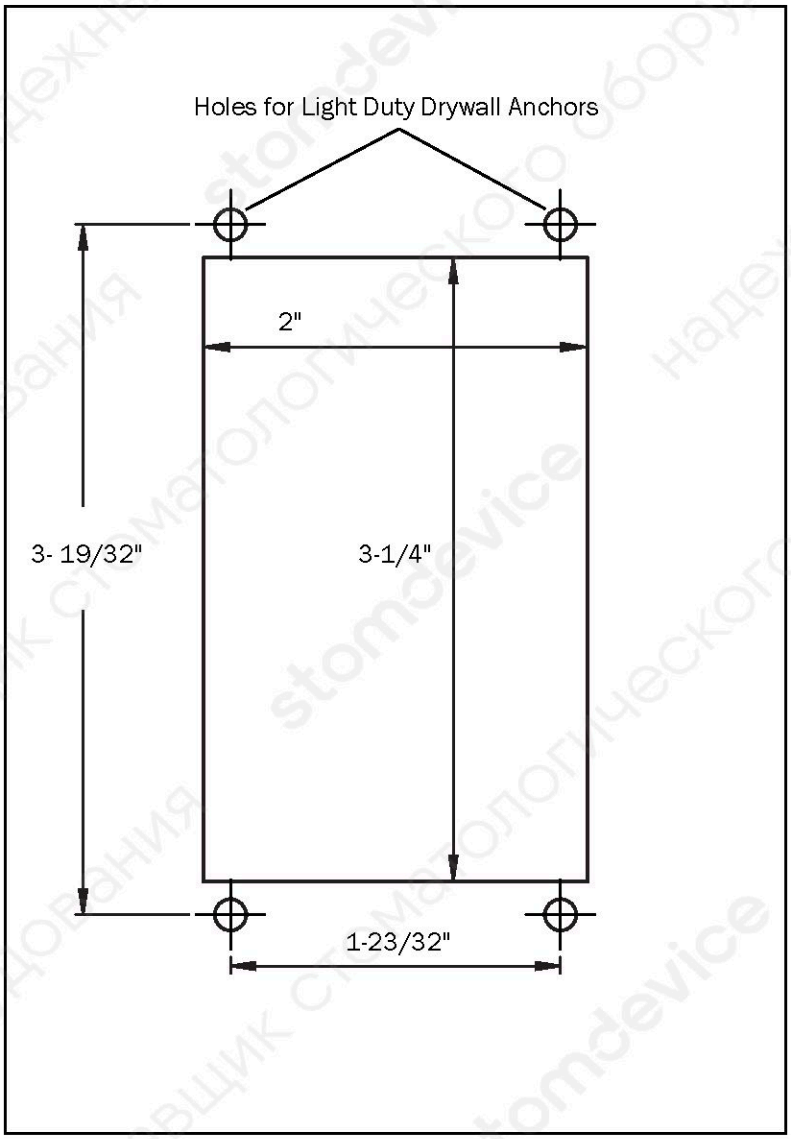
1 Tie the lanyard around the separator tank outlet elbow.

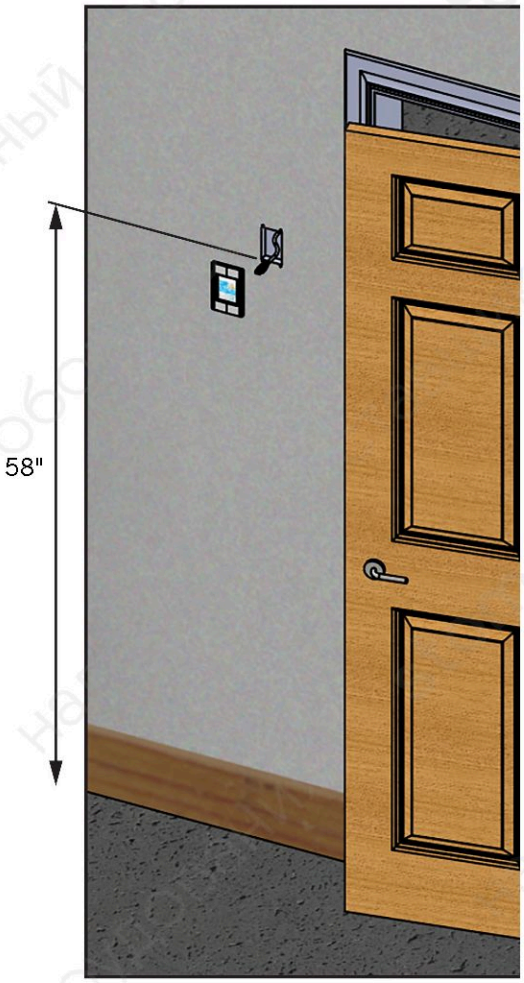
2 Secure the other end of the lanyard into a wall stud or drywall anchor.

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Install Smart Shield Touchscreen and LED Push-Button Controls

Prepare the Location for the Smart Shield Touchscreen



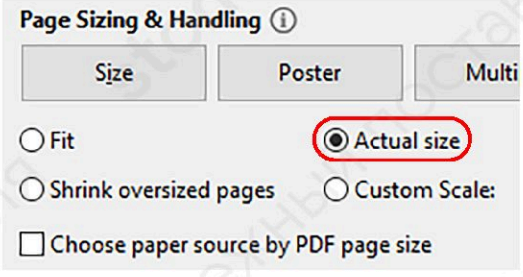


1 To mark the installation location, print this page, then cut out the template.

NOTE To ensure the template prints to scale, from the **File** menu in Acrobat Reader, select **Print**, then **Actual size** under **Page Sizing & Handling**.

NOTE The anchor holes may not be needed if the opening is sized accurately and the friction from the hole can hold the Smart Shield touchscreen.

To access this menu option, in Acrobat Reader, select the **File** menu then **Print**.

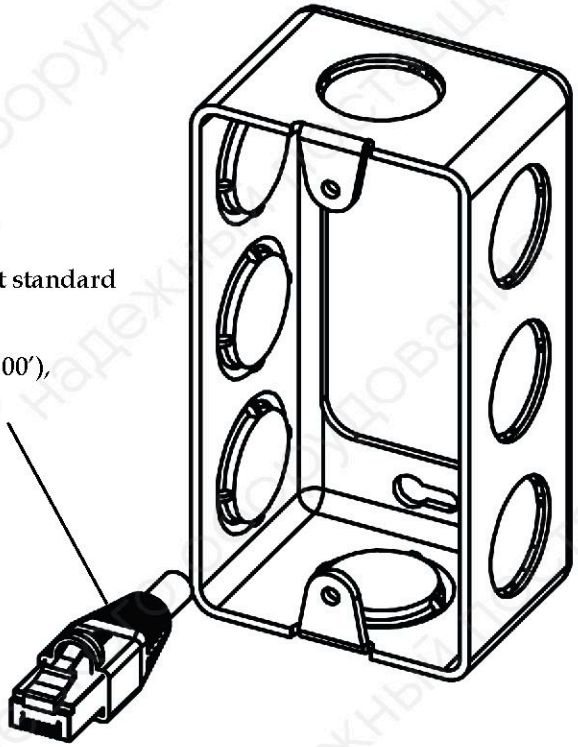


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Connect the Smart Shield Touchscreen

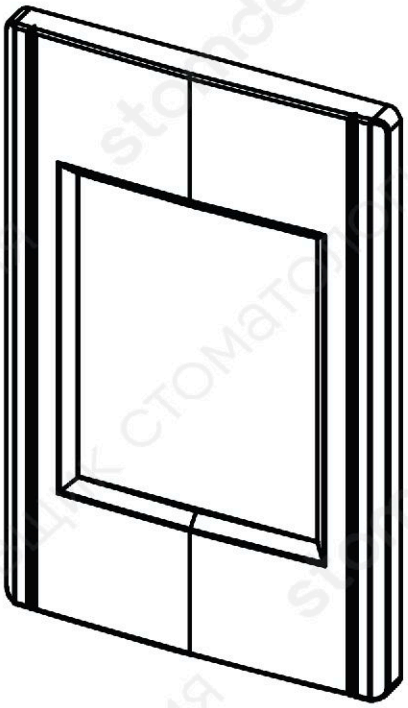
Connect the Smart Shield Touchscreen in the Dental Office



1 Mount the Smart Shield touchscreen in a Hubbell Raco 8670 single gang box.
The Smart Shield touchscreen does not fit standard single gang vertical wall boxes.

2 Connect to the Smart Hub router (up to 100′), CAT5 or better. Power over the Ethernet.

NOTE Do not run the CAT5 cable in line with the power conduit.

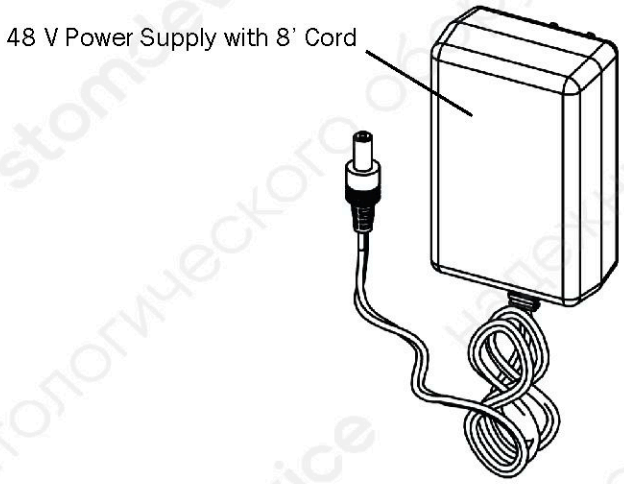


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Connect the Smart Shield Touchscreen in the Mechanical Room

NOTE Use a surge protector with the Smart Shield touchscreen power supply.

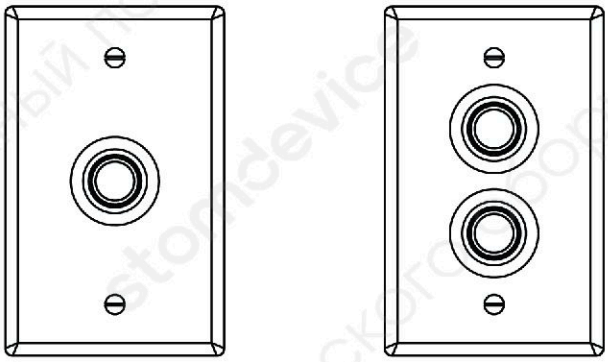


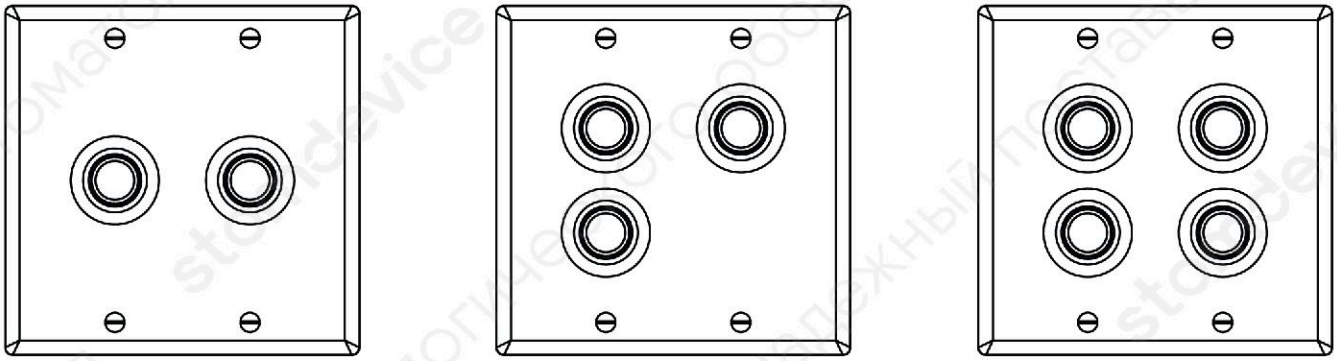


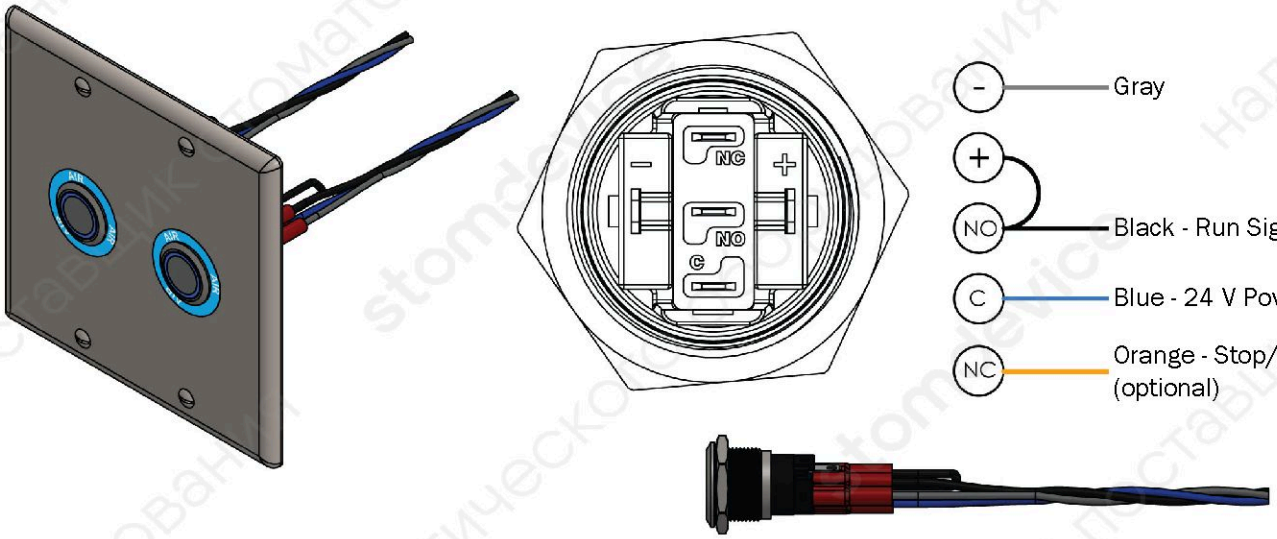
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Connect the LED Push-Button Controls





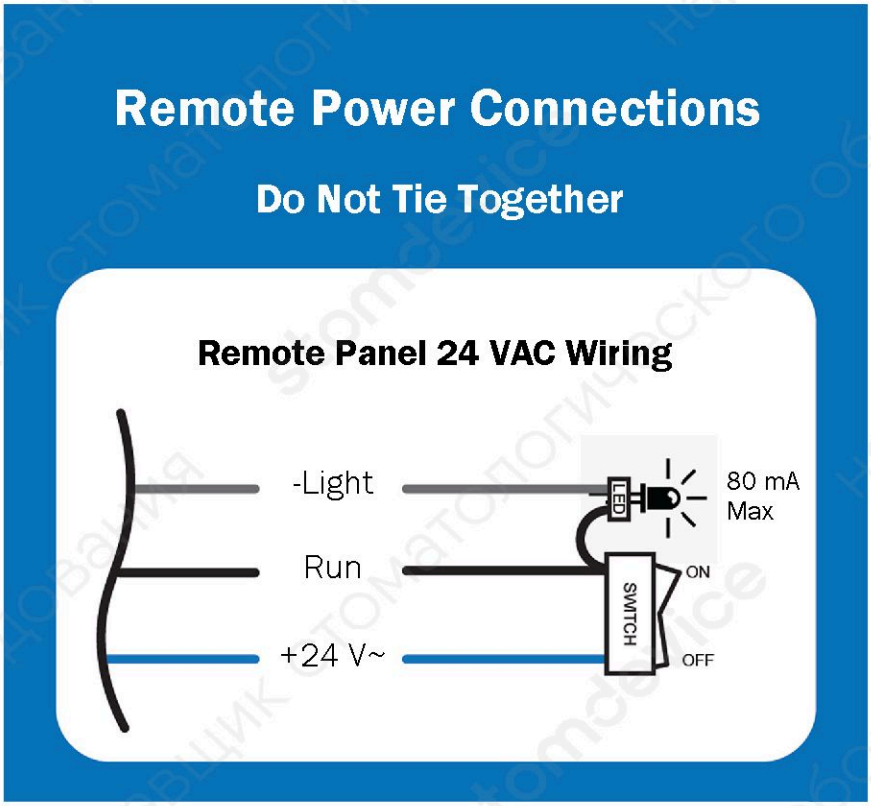


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Mechanical Room 24 V Competitive Cross Reference

Mfg/Wire	A	B (Light)	C
A-dec	Blue +24 VDC	Gray -Lamp	Black Run Signal
Air Techniques	Yellow	Brown	Orange
Midmark	Blue	White	Red
Dental EZ	Black	Brown	Yellow
Matrix	Red	Blue	White
Apollo	Blue	White	Red
Tech West	Blue	White	Red



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Initial Startup Checklist



WARNING This system can start automatically without warning.

- Inspect unit for any visible signs of damage that may have occurred in shipment or during installation.
- Verify the electrical connection attachments, and that incoming line voltage is between 200 VAC and 240 VAC.
- Activate main disconnect switch or circuit breaker.
- Turn on the vacuum, and ensure unit starts. If not, refer to "Status Lights" on page 36.
- Check the gauge on the front of the vacuum for proper vacuum level. For the proper setting, see the **Set "HG** column in the table in "Site Specifications and Sizing Information" on page 3.
- Check that all of the HVEs and SEs have proper suction.
- Check for leaks in all connections and the piping system.

Turn off the vacuum.

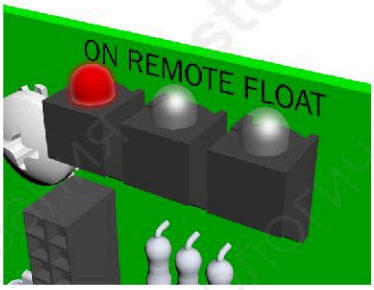
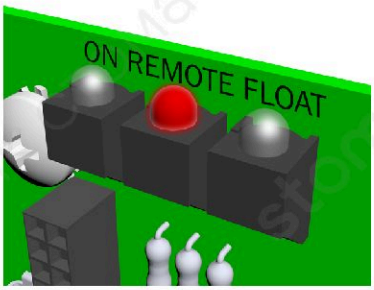
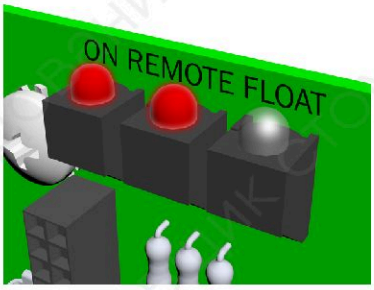
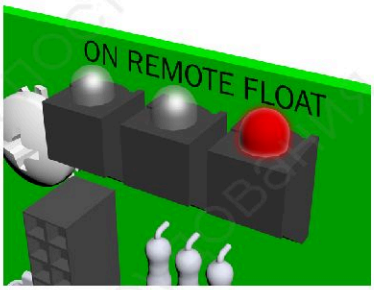
- **Optional** - Verify washdown operation begins 45-60 seconds after turning off the vacuum. Listen for the solenoid to open the water line and look at the drain check valve to confirm that the water is draining.
- Verify the Drain hose flows cleanly and has no low spots to trap debris.
- If remote buttons or a touchscreen are in use:
  - Switch the rocker to the remote position.
  - Verify the system turns on /off with remote switches or trouchscreen.
- If the system uses remote monitoring, call A-dec Customer Service to confirm it is reporting.

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Status Lights

Status lights are located on the circuit board and explain how the vacuum is currently working. To access the status lights, remove the service panel from the front of the vacuum. If you are having an issue and these status lights do not help resolve your issue, contact A-dec Customer Service.

Status Lights on the Internal Circuit Board	Mean This ...
	The vacuum has been turned on at the local switch, and is running.
	The **Remote** switch to the vacuum, either the Smart Shield touchscreen or the LED Push-Buttons, has been enabled from the local switch. The **On** signal is not detected from the **Remote** switch, so the vacuum is not running.
	The **Remote** switch to the vacuum, either the Smart Shield touchscreen or the LED Push-Buttons, has been enabled from the local switch. The **On** signal is detected from the **Remote** switch, so the vacuum is running.
	The **Float** switch is on, which stops the vacuum because water has filled up the separator tank. The vacuum starts 10 seconds after the water level has dropped enough to turn the **Float** switch off, then this light turns off.

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Regulatory Information and Warranty

For required regulatory information and the A-dec warranty, see the *Regulatory Information, Specifications, and Warranty* document (p/n 86.0221.00) available in the Resource Center at www.a-dec.com.

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86.0891.00 Rev B
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