



**INSTALLATION MANUAL**



## INSTALLATION MANUAL

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# Introduction

## Planning and Installing Your CentralVac Built-In Cleaning System

The CentralVac Built-in Cleaning System is designed and built for years of use. Protect your investment by reading these instructions all the way through. This will give you a basic understanding of the system and you will know what to look for as you plan and complete your installation.

You can install the system yourself if you have some remodeling or construction experience. A typical installation takes about one weekend. If you are ever in doubt about part of your installation, contract with a professional.

## Planning Tips

The secret to a successful installation is planning. Plan everything on paper before you start cutting holes in your walls.

You should check the entire home, noting wall and basement construction details, such as joist direction, location of heating ducts, plumbing, etc. This will help you determine the best path for the tubing system and the best location for the power unit. Tubing can run overhead, in the basement, and up into partition walls to inlet valves. It can also run inside a wall to a crawl space or attic, and from this point over to partition walls and down to the inlet valves.

Use a map wheel where blueprints (w/scale) are available.

One final tip to remember when planning, you can never have a power unit that is too big, or have too many inlets in your home!

## Planning and Installation Overview

1. Determine the location for the Power Unit and Canister.
2. Determine the locations for the Inlet Valves.
3. Determine the location and path for the Tubing System.
4. Gather the tools and materials.
5. Install the Power Unit and Canister.
6. Install the Inlet Valves.
7. Install the Tubing System.
8. Test the System.

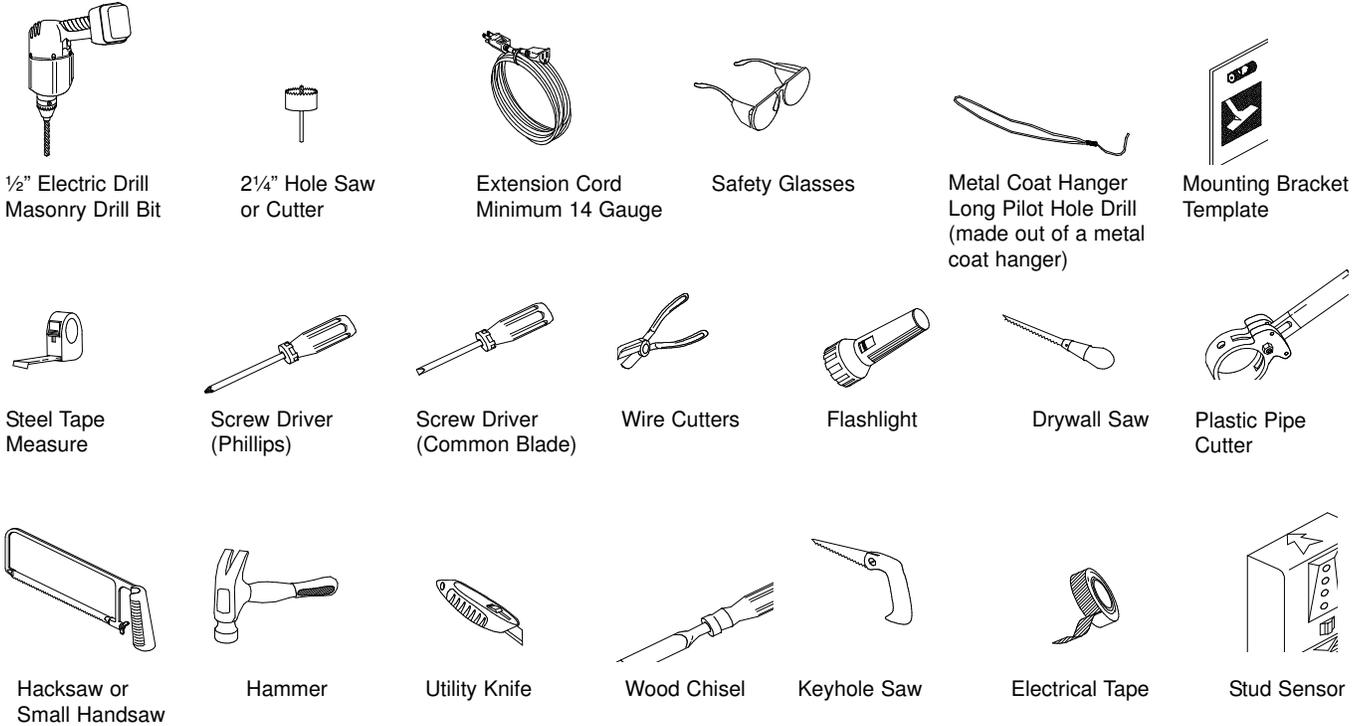
## Safety Rules

- Protect your eyes whenever you are working around power tools and construction debris - Wear Safety Glasses.
- Be careful when drilling to check for electrical wiring and plumbing.
- Check your local Building Code for any regulations governing any of the phases of your installation.
- Use common sense.
- If you are in doubt about any portion of the installation, call a professional to have it done for you.

### **Warning**

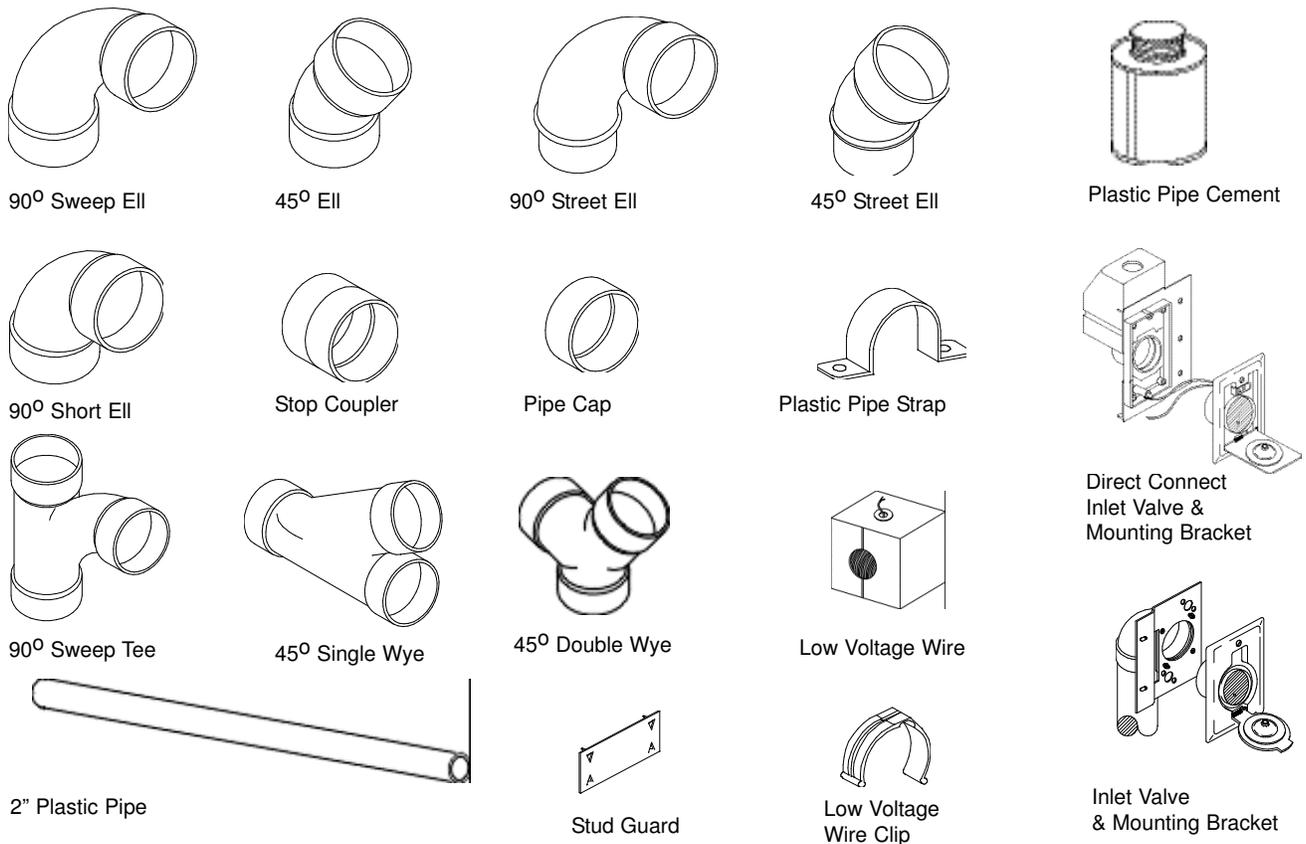
**Before drilling any holes or making cuts in walls or floors, take extreme care to determine the locations of electrical wires, plumbing or other obstructions that could create a hazard.**

# Tools



Note: We recommend the 1/2" Dewalt Right Angle Drill #DW-124 and the Milwaukee 2 9/16" Self Feeding Bit #48-25-2561 for drilling tubing holes.

# Materials



# Planning the Installation

## Determine the Size of the Power Unit

There is not a simple formula for choosing the correct size power unit for your cleaning system. If you live in a high altitude area (5,000 to 7,000+ ft. above sea level), you may need to move to the next larger size power unit, or go with a double motor unit.

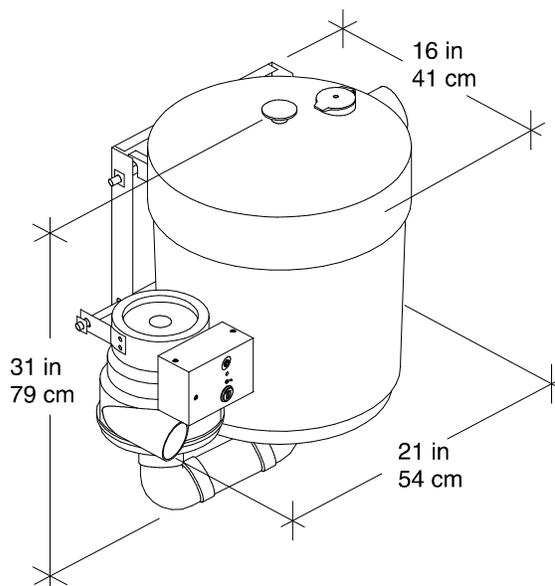
Remember, you can never have a power unit that is too big, or have too many inlets in your home!

Area to be Cleaned (sq. ft.)	Recommended Power Unit
7,000+	CVS-16DP
up to 7,000	CVS-11DP
up to 6,000	CVS-07DP
up to 5,000	CVS-16
up to 4,000	CVS-11
2,000 or less	CVS-07

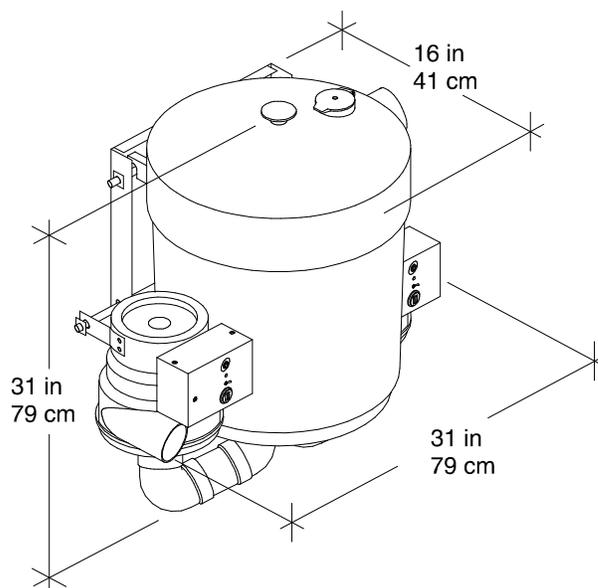
## Determine the Location of the Power Unit

The power unit and canister will mount in the basement, garage, utility room, or other remote area, preferably on a firm, outside wall away from heat-producing units, such as a boiler, water heater, dryer, etc.

- Locate the power unit away from the general living area.
- Do not install the power unit in the attic.
- Do not locate the power unit close to a source of extreme heat (i.e., water heater) or in an area with high ambient temperature (i.e., attic, furnace room).
- It is important that you also plan the installation of an exhaust tube to the outdoors if ventilation is not adequate. It is usually best to exhaust out the rear of the house avoiding patios, windows, and entrance areas.
- Locate the power unit in an accessible area for ease in changing the paper bag filter and periodically cleaning the cloth bag filter.
- Locate the power unit within 4 feet of a grounded electrical outlet. The power unit requires a 120 VAC power source with sufficient capacity to service the unit.
- Do not use extension cords.
- If the power unit is located in a closet or a small utility room, make sure the area is well-ventilated (i.e., with door louvers).
- The power unit has an auxiliary inlet for a garage, basement, utility room, etc. However, installing a separate inlet is the preferred method. It is more convenient to use a hose with an inlet valve which uses a low voltage control circuit to start and stop the power unit automatically, than to use the auxiliary inlet which must be switched on and off manually.



Single Motor Power Unit



Double Motor Power Unit

### **WARNING**

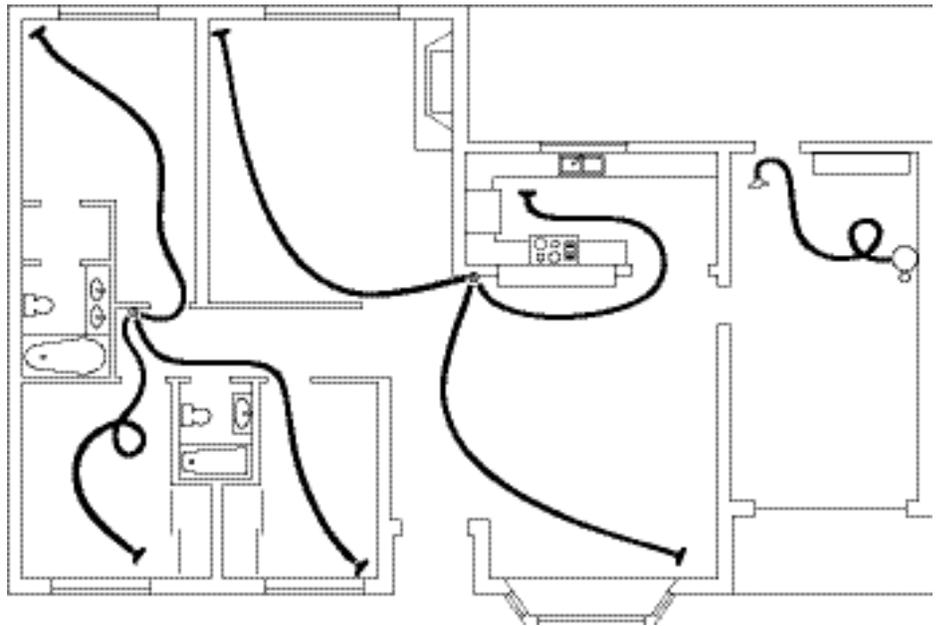
**THE POWER UNIT MUST NOT BE MOUNTED IN A HIGH AMBIENT TEMPERATURE AREA SUCH AS ATTIC, FURNACE ROOM, ETC. IF NECESSARY, PLEASE CONSULT FACTORY.**

# Planning the Installation

## Determine the Locations of the Wall Inlets

Inlets are usually located centrally in the house in hallways, near doorways and near the bottom of stairways. It is important to overlap areas covered from each inlet valve to assure thorough cleaning of the entire home. Inlet valves placed in halls and near doorways provide the maximum amount of cleaning coverage from the minimum number of valves frequently making it possible to clean three or four rooms from one inlet. Valves in these locations are seldom if ever obstructed by furniture placement. An inlet located near the bottom of the stairway permits easy, convenient cleaning of the stairwell and surrounding areas.

- Start with the area of the house farthest from power unit and tentatively select an inlet location that will provide maximum cleaning coverage.



- If possible, locate the inlet close to an electrical outlet, to be able to use electric power heads.
- Using a 30 foot length of cord, check to be sure all adjacent areas of the house can be cleaned from this location.
- Allow sufficient slack in cord to provide for furniture placement and wall offsets. Be certain all areas can be cleaned including walls and ceilings.
- Mark the location of the first inlet valve and proceed toward the power unit, locating additional inlet valves until all parts of the house can be comfortably reached with the hose.

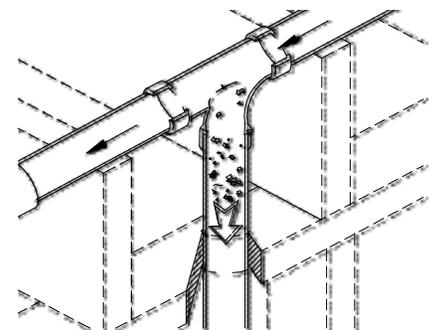
It is preferable to plan on using wall inlets, however, the same inlet can be placed in the floor if tubing cannot be installed in the wall. Wall inlets should be installed to match the height of electrical outlets.

# Planning the Tubing System

## Airflow Rules

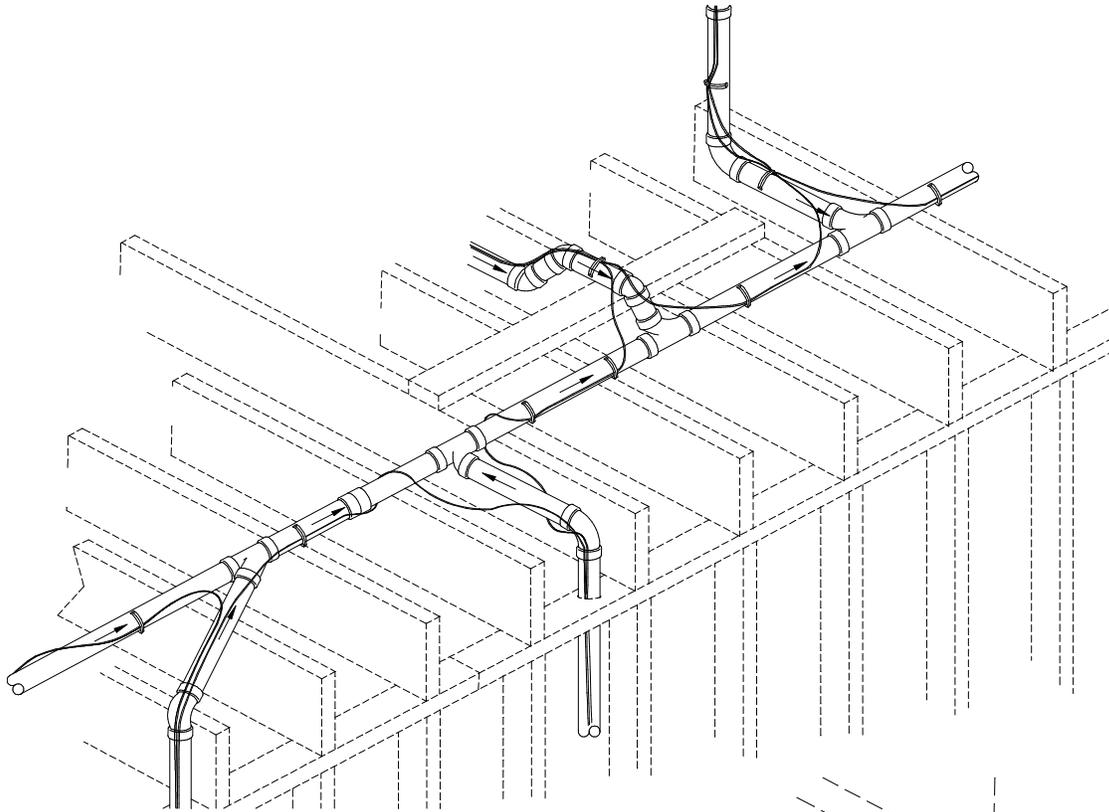
- 90° Sweep Tees should always be installed in the direction of air flow toward the power unit.
- 90° Sweep Tees should never be installed with the sweep pointing down, because the dirt will fall to a lower level, and not be carried to the power unit.
- 90° Short Tees should be installed only on inlet valves.
- Use no more material (tubing, fittings, etc.) than is necessary. Less tubing and fittings means more performance.
- It is important to have a sealed system. Cut and glue your pvc joints carefully.
- The total distance from the power unit to the furthest inlet should be less than 200'.
- The length of the exhaust pipe should be less than 30'.
- A slight amount of slope toward the power unit will help your system carry dirt and debris and avoid plugs.

- Use only CentralVac 2" plastic pipe. Do not use any other type. CentralVac plastic pipe is much thinner and lighter, .06" wall thickness, and is designed for vacuum applications.
- A branch line located directly below an overhead trunk line will accumulate dirt due to the effects of gravity. The result will be a pile of dirt at the base of the inlet valve every time it is opened.



Correct direction for Sweep T

# Planning the Tubing System



The amount of airflow that reaches the hose is dependent on the efficiency of the layout of the tubing system. Lines are to be kept as straight as possible.

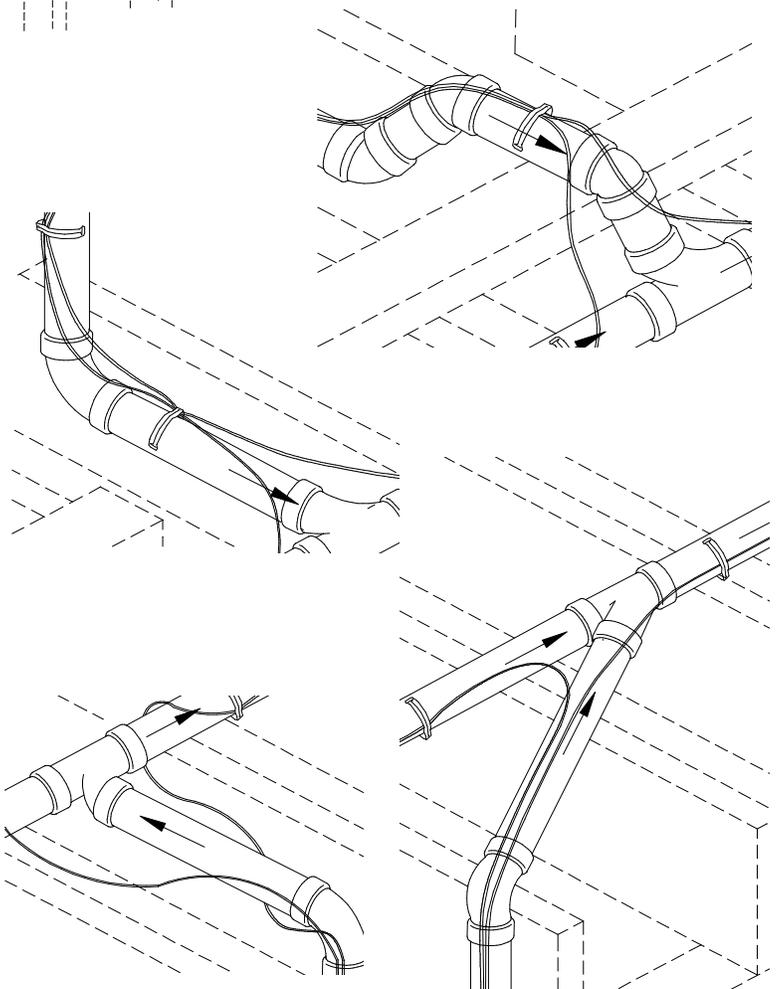
## The Trunk Line

The trunk line connects the furthest inlet valve to the power unit. All other inlet valves will be serviced by branch lines flowing into the trunk line. If the basement is unfinished, the trunk line is best run beneath the joists in the basement ceiling. The upper floors can be serviced through closets, cold air return ducts, or in partition walls. The trunk line could also run straight up to the attic and service the floors beneath by branch lines dropping through closet ceilings or partition walls. The location of the trunk line will greatly depend on the construction of the house and the location of the power unit.

## Branch Lines

Branch lines join the remaining inlet valves to the trunk line. As with the trunk line these lines should be kept as straight as possible. Forty-five degree fittings should be used to avoid sharp corners when possible. Airflow direction should always be considered when installing branch lines.

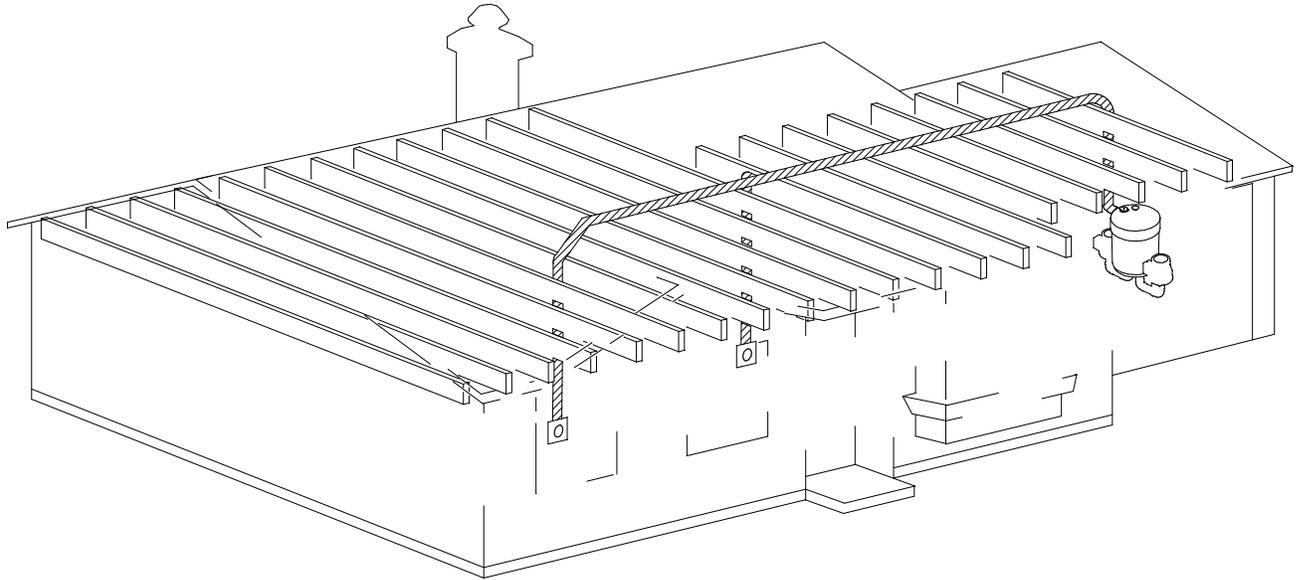
A branch line located directly below an overhead trunk line will accumulate dirt due to the effects of gravity. The result will be a pile of dirt at the base of the inlet valve every time it is opened. To avoid this situation the illustrated techniques should be used.



# Tubing System Planning Examples

## The Ranch Style House

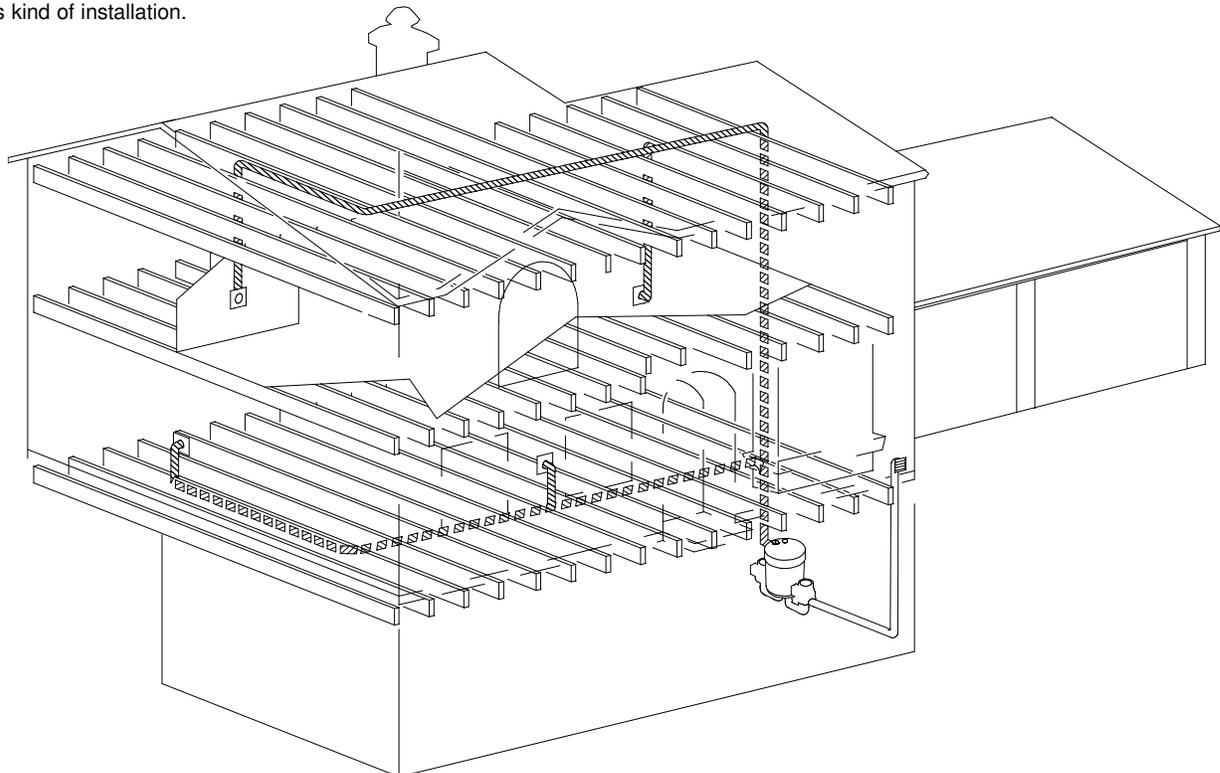
Here the power unit is mounted in the garage. The intake and exhaust tubing, the only exposed tubing in the installation, runs up the garage wall and into the attic. The trunk line runs horizontally through the attic from the power unit to the farthest inlet location, branch lines spread throughout the attic, connecting the trunk line to the inlet tubing. Each inlet tube is threaded vertically through an inside wall. The inlets located in hallways, next to doorways, and in large rooms, provide maximum access to all cleaning areas.



## The Two or Three Story House

In this installation, the power unit is mounted in the basement, conveniently located for shop use and messy cleaning jobs. The intake tubing runs up the basement wall and connects to the main trunk line, which runs along the unfinished basement ceiling. Two first-floor inlets are connected to the trunk line by vertical inlet lines through interior walls. In the center of the house, a vertical branch line runs from the basement trunk line, through stacked closets, up into the attic. A second trunk line runs across the attic and two branch lines connect to inlet lines, which are dropped down through upstairs interior walls.

The double-trunk line system is commonly used in two or three story houses. Finding the "Key" to an accessible vertical area is the most important step in this kind of installation.

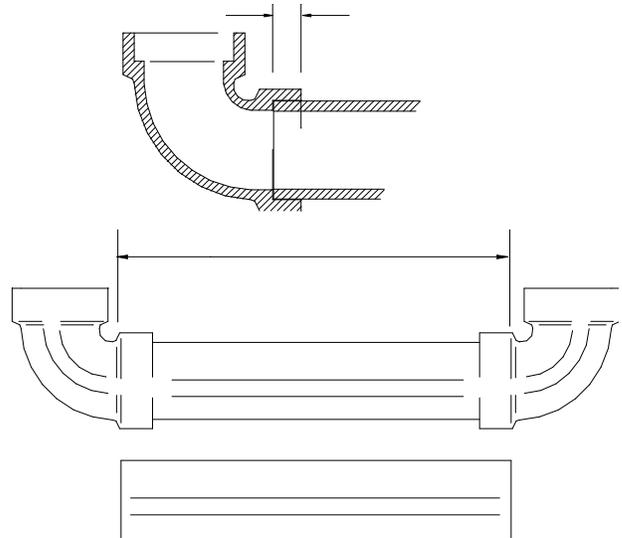


# Installing the Tubing System

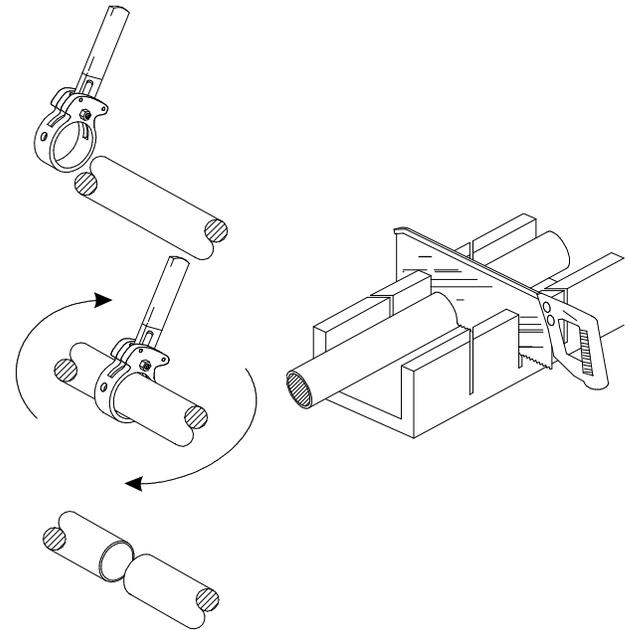
## Cutting and Cementing PVC Tubing and Fittings

### *Measure Twice, Cut Once*

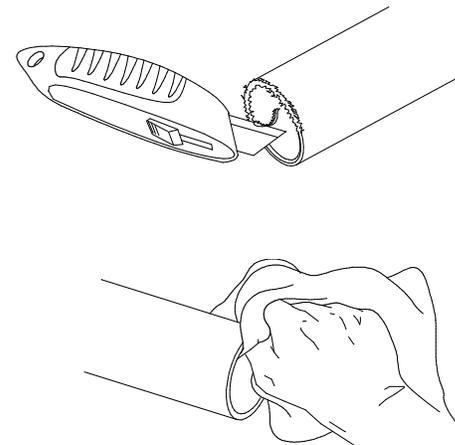
1. **Measuring:** Measurements should be taken from the base of the pipe-stop on the inside of the fitting hub when sizing tubing. As each section of tubing is cut, it should be dry fitted before the next measurement is taken.



2. **Cutting:** The tubing should be cut as straight and square as possible. A plastic pipe cutter or a miter box can be used. All rough edges must be removed with a utility knife or coarse sandpaper.

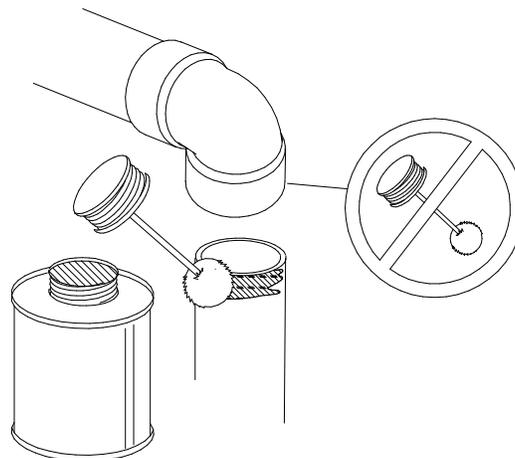


3. **Dry Fitting:** Once all the pieces are cut they should be dry fitted to check for correct fit. The markings on the fittings can be utilized to assure proper alignment.
4. **Cleaning:** Before gluing, both the tubing and the fitting must be free of plastic burrs, dirt and grime. The components should be wiped with a clean cloth if necessary.



# Installing the Tubing System

5. **Gluing:** Plastic pipe cement actually welds the fitting to the tubing. A chemical reaction permanently joins the molecules from each surface to produce an airtight seal.
6. Plastic pipe cement should be applied only to the tubing. Cement applied to the fitting will be pushed ahead and create a rough bead on the inside of the fitting. This bead will reduce airflow and could cause a clog.
7. The tubing should be inserted all the way into the fitting and twisted a quarter turn to evenly distribute the cement.
8. All excess cement should be removed with a rag. The joint is ready for handling in 15 minutes. The cement should be allowed to set for at least four hours before the vacuum system is used.



## Low Voltage Wire

One of the greatest benefits of a central vacuum system is that the power unit is turned on and off at the inlet valve. The power unit is activated at the inlet valves by simply inserting the hose into the inlet valve.

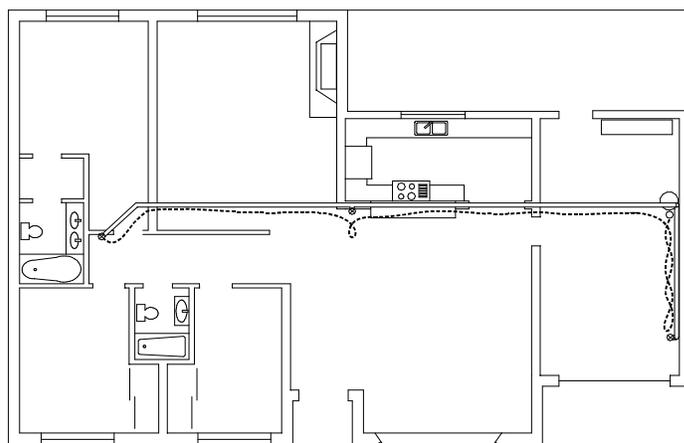
To facilitate this, low voltage wire must follow the tubing system. Each inlet valve must be able to activate the machine independently of the other valves. There must be an uninterrupted route from each inlet valve to the power unit. The wire should be attached to the tubing with a wire clamp at least every four feet.

There are (2) wiring methods which are acceptable, looped and home run.

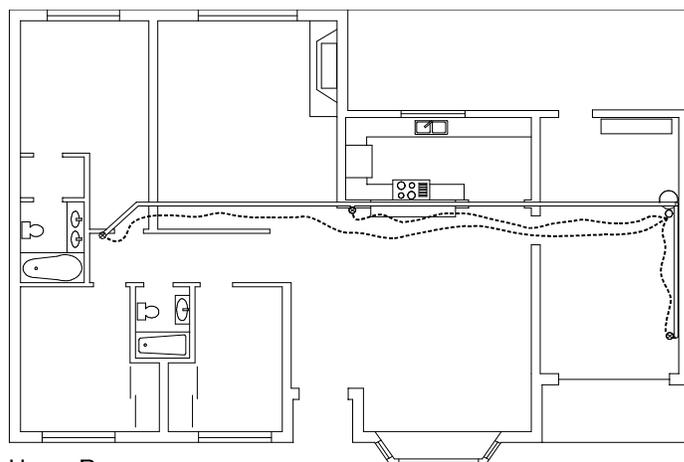
**Looped:** Set up wire spool at system location area. Pull wire through drilled holes to the furthest inlet location. This is also your trunk line path. Tie off on mounting plate. Start at the next furthest inlet to system. Grab main wire line and pull over to inlet location through drilled holes and tie off at mounting plate. Continue in this manner until all inlets are wired.

**Home Run:** For each inlet, one piece of wire is run from each inlet to the system location. If you have (3) inlets, then you will have (3) wire ends to tie together at the system.

You can also do a combination of the two methods. The wire can be pulled before, during, or after the pipe installation. The most popular way seems to be before pipe installation in new construction and during pipe installation in existing construction.



Looped



Home Run

# Installing the Power Unit

Each single & double motor power unit is provided with a mounting bracket and mounting hardware.

**Included:** Mounting bracket, canister hanger rod, power unit(s) hanger rod, wood screws, tinnerman nuts, PVC fittings and pipe (cut to size), canister bumper.

1. Locate a wall stud at the desired vacuum system power unit location, adjacent to an electrical outlet if possible. If a wall stud is not available, and the mounting bracket must be attached to wallboard, use at least four holes in the mounting bracket with suitable screws and anchors to secure.
2. Level the mounting bracket and attach to the stud using wood screws provided, or to wallboard as described above. The recommended height from the floor to the top of mounting bracket is 36 inches. (Figure 1)
3. Slide a tinnerman nut on one end of canister hanger rod approximately 1/2 inch from the end. (Figure 1)
4. Slide the canister hanger rod through the upper hole on one side of mounting bracket, continue until rod projects through the hole on the other side of bracket. Slide a tinnerman nut on the end of the rod to secure. (Figure 1)
5. Insert the power unit hanger rod through the lower holes in the mounting bracket. (Figure 1)
  - A) On single motor systems allow excess rod length to project to the side where the power unit is desired.
  - B) On double motor systems, center the hanger rod in the mounting bracket.

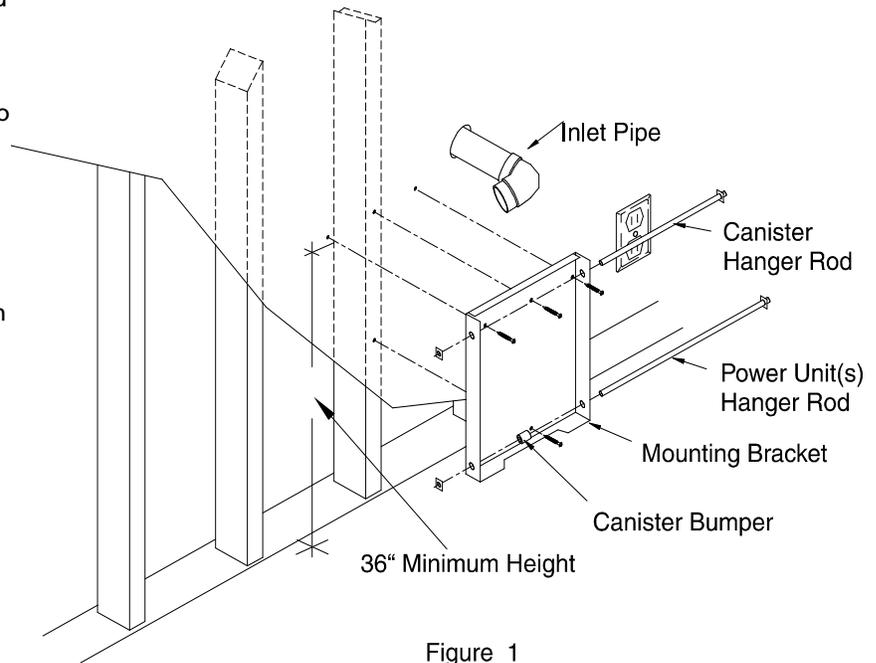
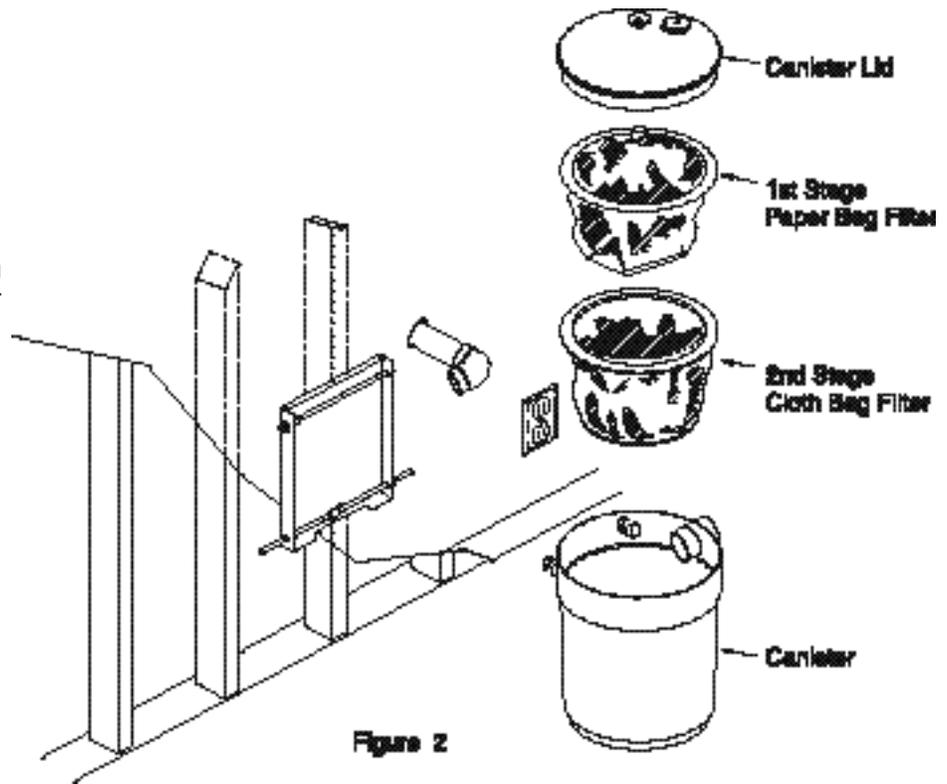


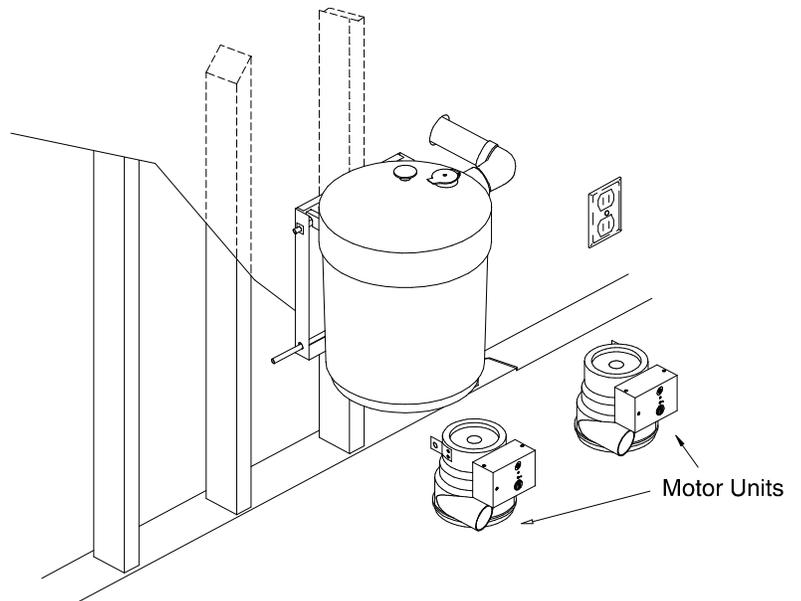
Figure 1

# Installing the Power Unit

- Slide the rubber bumper on the power unit hanger rod. Position the bumper in the center of the rod so the canister will rest on the bumper. (Figure 2)
- Place the 2nd Stage Cloth Bag Filter, and the 1st Stage Paper Bag Filter in the Canister. Place the lid on the canister. (Figure 2)



- Hang the canister on the canister hanger rod. (Figure 3)



# Installing the Power Unit

9. Slide on the power unit(s), and place a tinnerman nut on each end of the power unit hanger rod . (Figure 4)

10. Pipe the power unit to the canister using the cut to size PVC pipe and fittings provided.  
Dry fit the parts before you glue them.  
Do not glue the fittings to the power unit or the canister, this will make it easier to repair or replace your power unit.  
A street ell (in & out) is fitted to the canister inlet. A street ell is fitted to the inlet of the power unit. (Figure 4)

11. Pipe the inlet pipe to the canister. Do not glue the fittings or pipe to the canister. (Figure 4)

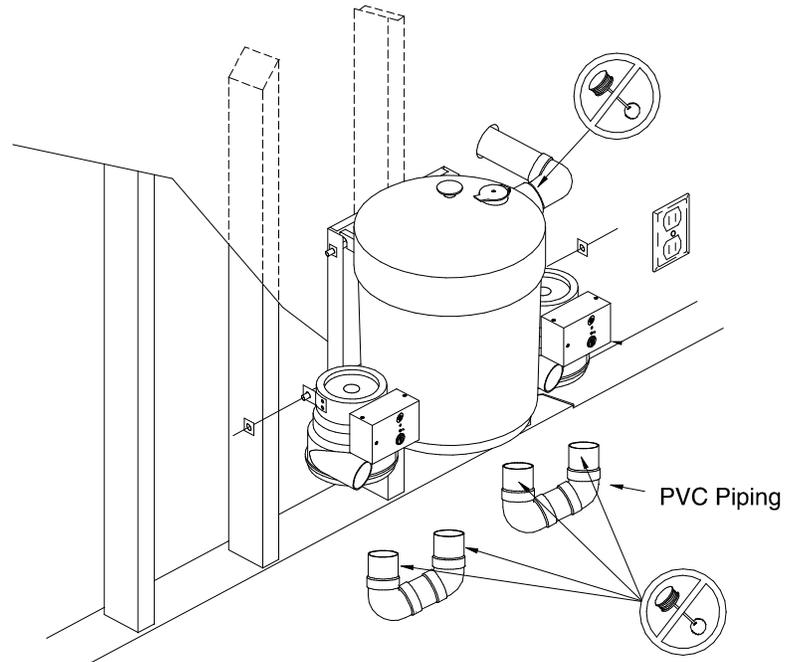


Figure 4

12. Wire the low voltage control wire, taking care to keep the polarity between the low voltage control box(s) as illustrated in Figure 5 & 6. Left terminal to left terminal, right terminal to right terminal. The low voltage control wire can be run behind the canister.

Low Voltage Control Wire to Inlets

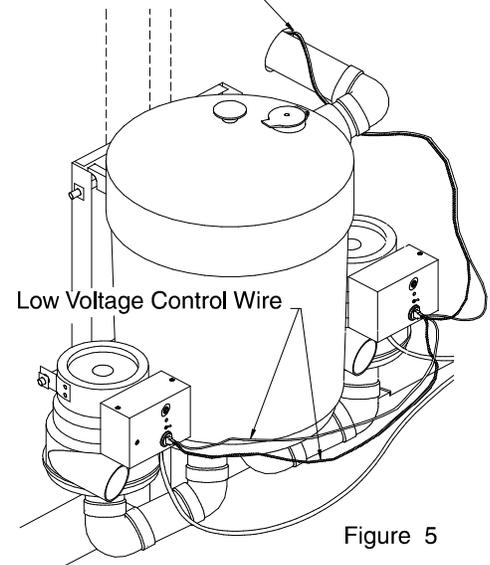


Figure 5

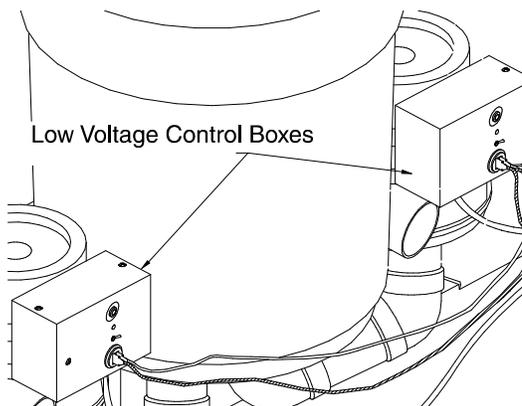


Figure 6

# Installing the Power Unit

13. Plug the power unit(s) into a dedicated grounded electrical outlet(s). (Figure 8)

Dedicated Grounded Outlet

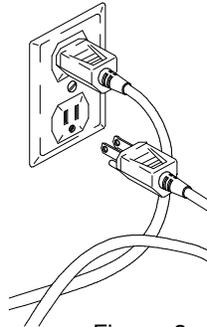


Figure 8

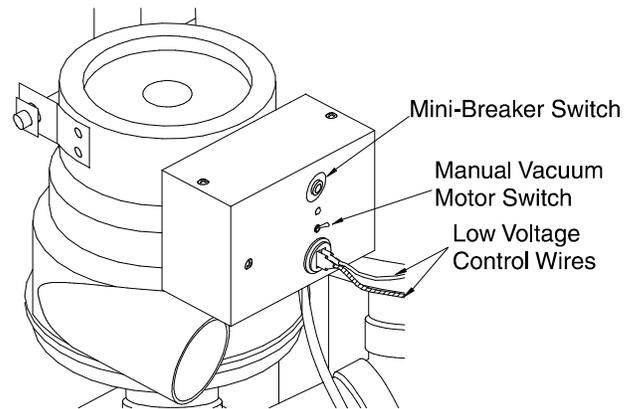


Figure 7

# Installing Inlet Valves in Existing Homes

## Installing Wall Inlets

1. Determine as closely as possible the desired location of the inlet valve. You should use a stud finder or drill a  $\frac{3}{4}$ " inspection hole to avoid drilling into the bottom of a stud or other "inner-wall" obstruction.
2. Drill a small pilot hole in the floor directly below the proposed valve location. A straight length of coat hanger wire, cut at an angle, makes a good pilot hole drill bit, but be careful not to snag carpeting. Leave the pilot bit or a straightened length of coat hanger wire through this pilot hole to serve as a locator and guide point.

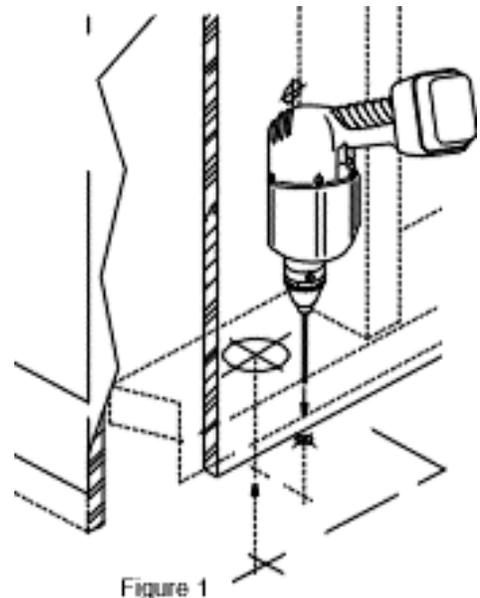


Figure 1

# Installing Inlet Valves in Existing Homes

3. From beneath the floor, measure over from the pilot hole to locate the center of the sole plate.

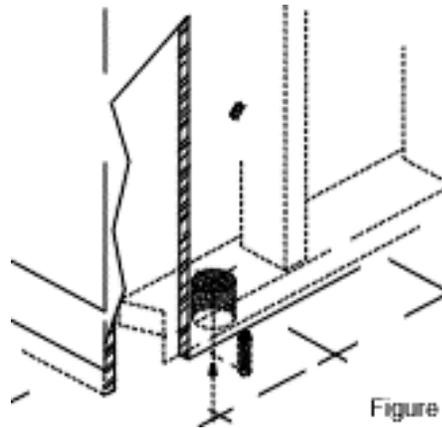


Figure 2

4. Drill a 2 1/4" diameter hole through the center of the sole plate. Using a flashlight or probe, inspect the interior of wall to be sure there are no obstructions.

**Note:** The opening you are going to cut in the wall for the inlet valve should be located between studs, clear of obstructions such as plumbing, wiring, heat ducts, etc. Minimum stud width for sufficient clearance for inner wall mounting bracket assembly is 2 3/8".

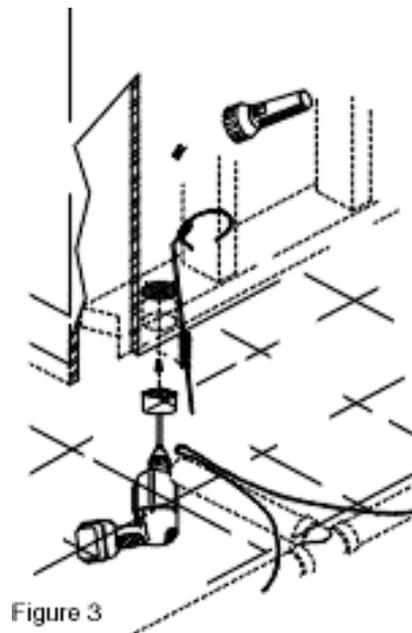


Figure 3

5. Cut the nailing tab off of the mounting bracket with a hacksaw. If you are going to install the inlet in the floor, don't cut the nailing tab off. You can use the nailing tab to attach the mounting bracket to the stud.

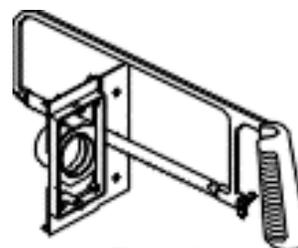


Figure 4

# Installing Inlet Valves in Existing Homes

6. Use the mounting bracket template (or the raised edge of the mounting bracket) to trace an exact opening on the wall (about the same height as an electrical outlet).
7. Cut the horizontal cuts first, to be sure there are no obstructions, with a keyhole or drywall saw. Then cut the vertical cuts.

**Note:** Be exact in cutting the opening as there is very little overlap on the mounting bracket.

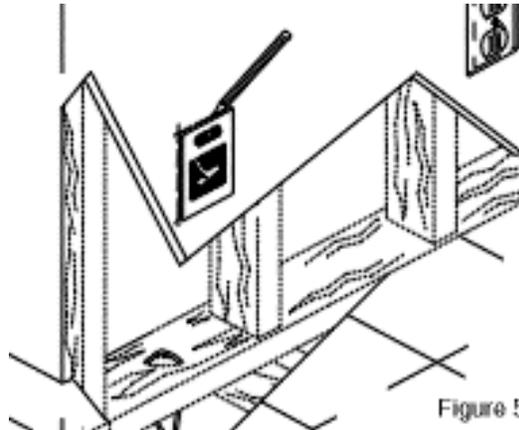


Figure 5

8. Glue a 90° short elbow to the mounting bracket.
9. Feed a loop of low voltage wire from the basement, you can use a coat hanger to pull it up, and through the wire guide hole on the mounting bracket.

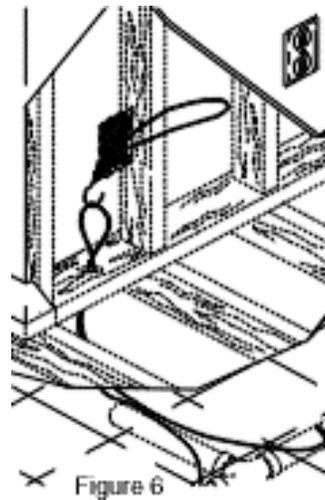


Figure 6

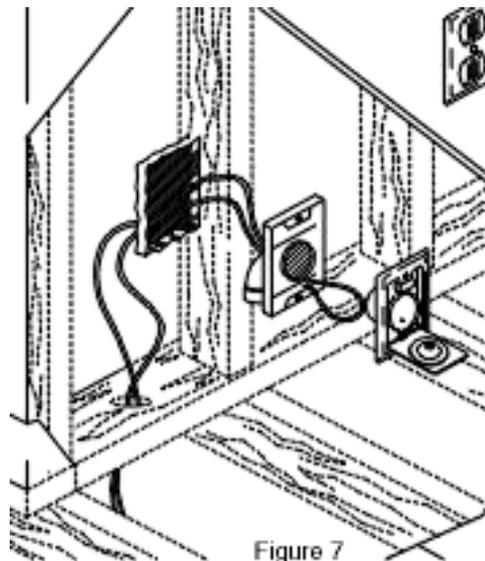


Figure 7

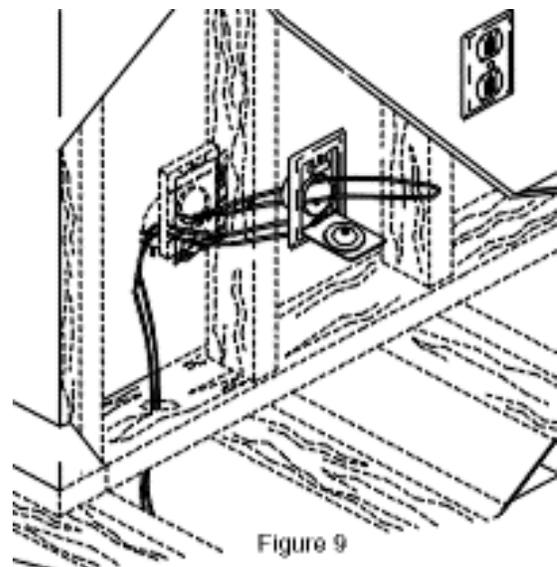
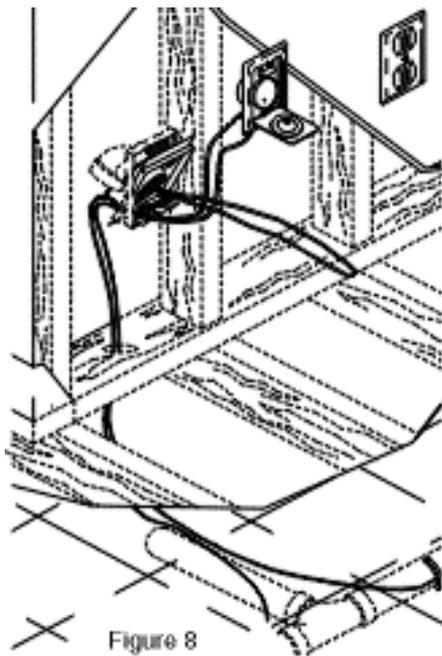
# Installing Inlet Valves in Existing Homes

- Strip the low voltage wire and wire it to the inlet valve as shown.

## Wiring the Low Voltage Control Wires

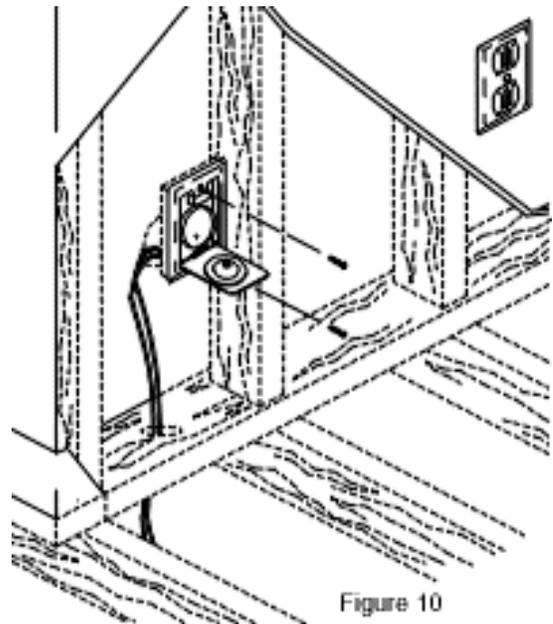


- Insert the assembled short elbow and mounting bracket through the wall cutout hole as illustrated. You can use a short bent length of coat hanger to hold the assembly from dropping into the wall.
  - Once the mounting bracket is completely inside wall cavity, pull the mounting bracket so that it fits the hole.
  - Push the inlet valve onto the short bent length of coat hanger wire and push it onto the mounting bracket.
- Note:** Mount the inlet valve so that it pulls down to open.

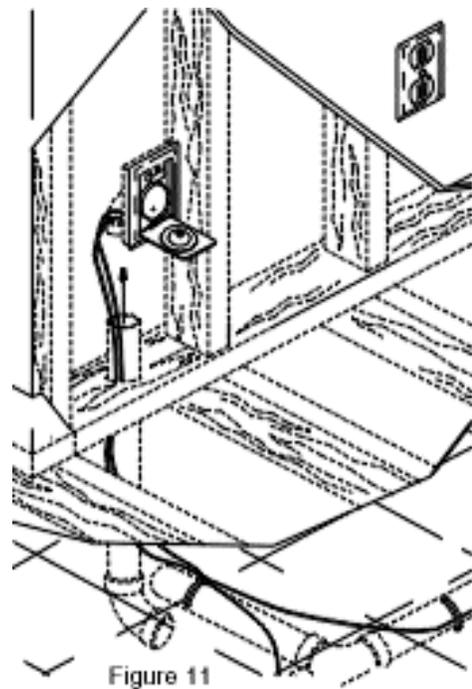


# Installing Inlet Valves in Existing Homes

14. Insert and tighten the inlet valve mounting screws to pull the assembly together. Adjust the inlet valve for perfect vertical alignment, and tighten both inlet valve mounting screws.



15. Glue the outside of the end of the correct length of tubing and push it up through the sole plate hole, into the short 90° elbow. Twist the tubing as it makes contact to help guide it into the elbow.

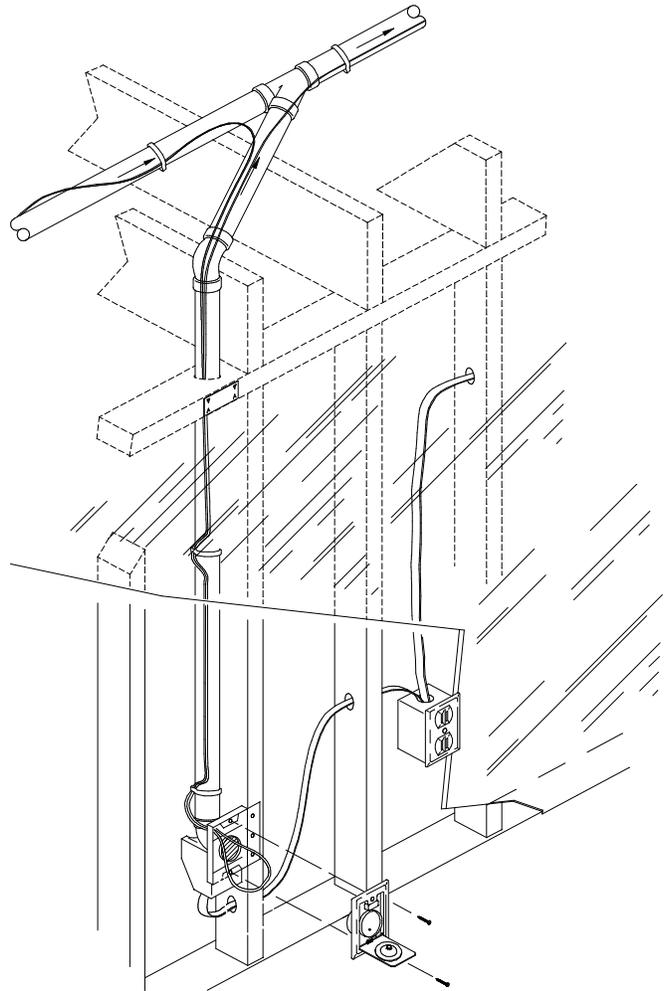


# Installing Inlet Valves in New Construction

Wall inlet valves are easy to install in new construction before the drywall is hung.

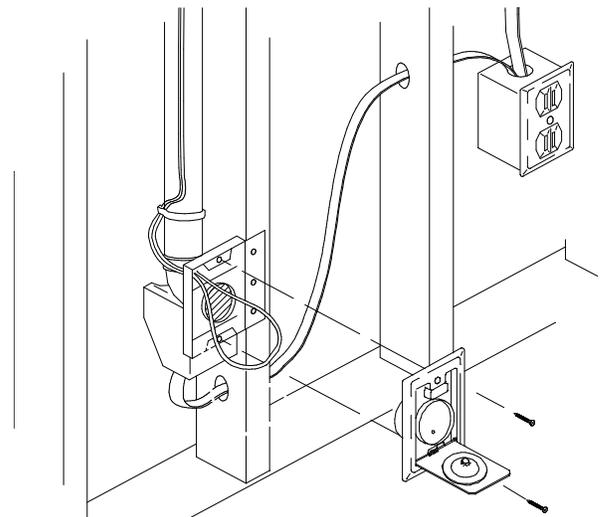
## Before Drywall

1. Attach the mounting plate to the stud at the same height as the electrical outlets.
2. Drill a 2 1/4" hole in the header plate, with the hole aligned with the center of the mounting bracket.
3. Push the tubing through the hole in the header.
4. Glue the 90° short elbow into the mounting bracket and tubing.
5. Pull the low voltage wire, and clamp to the tubing with wire clips.
6. Put a nail guard on the header to protect from drywall screws being driven into the installation.
7. If you are using a direct connect hose, have a qualified electrician wire the 120 volt power.
8. Place a plaster guard over the mounting bracket.



## After Drywall

9. After the drywall is finished, remove the plaster guard.
10. Wire the inlet valve to the low voltage control wire.  
**Note:** Mount the inlet valve so that it pulls down to open.
11. Have a qualified electrician wire the 120 volt power.
12. Insert and tighten the inlet valve mounting screws to pull the assembly together.  
Adjust the inlet valve for perfect vertical alignment, and tighten both inlet valve mounting screws.

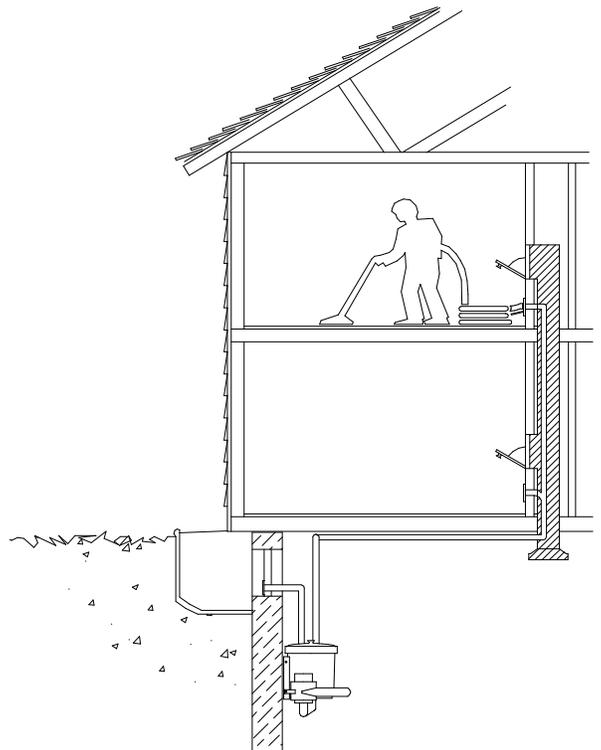
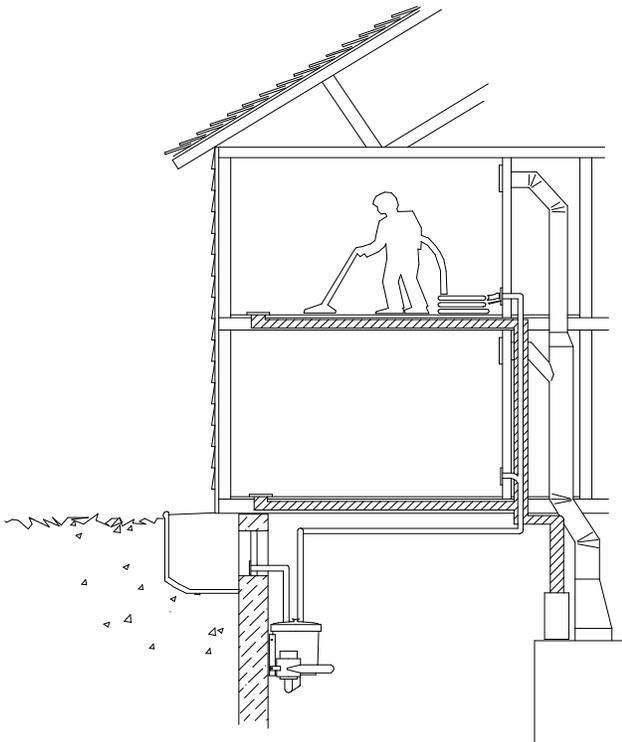
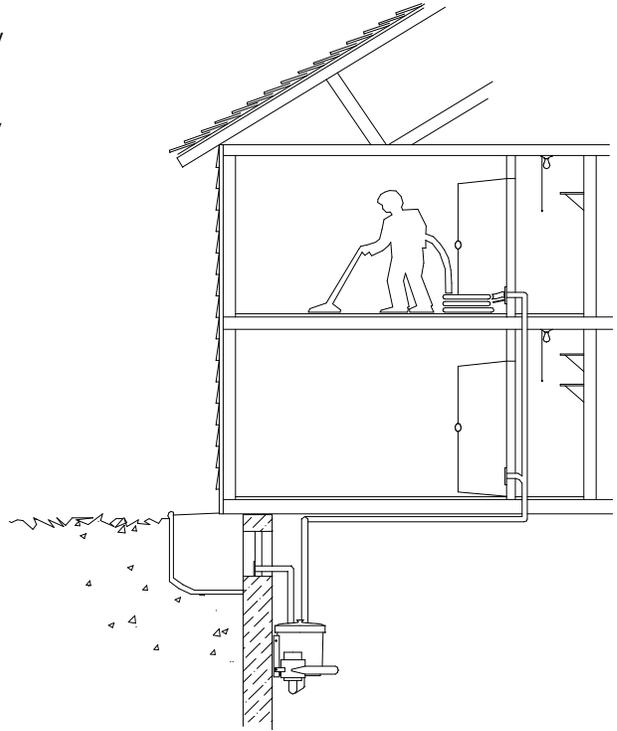
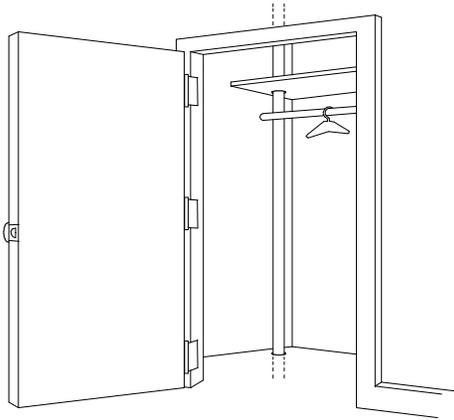


# Alternative Installation Ideas

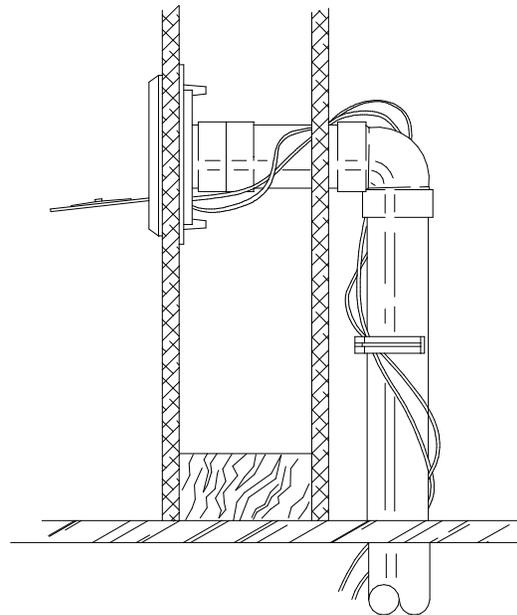
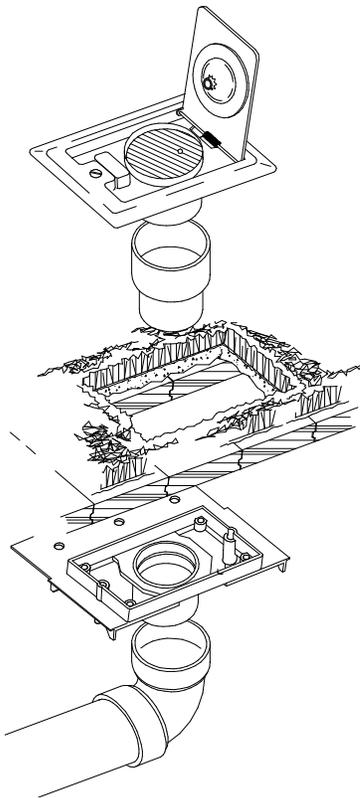
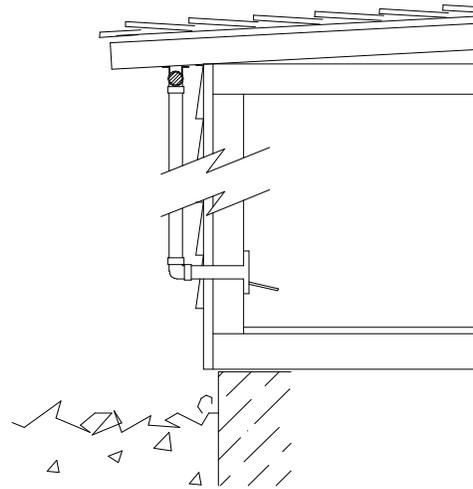
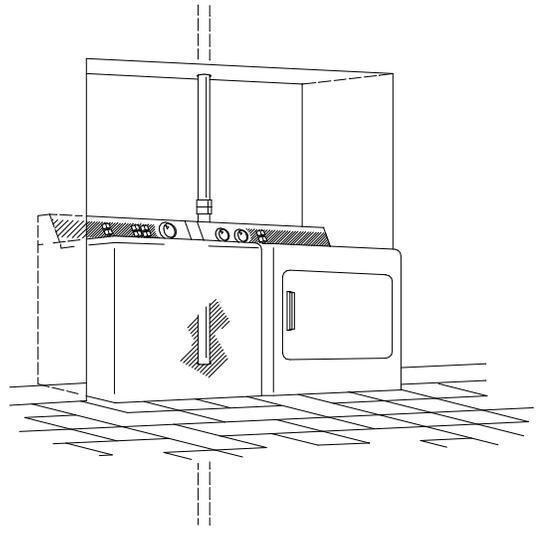
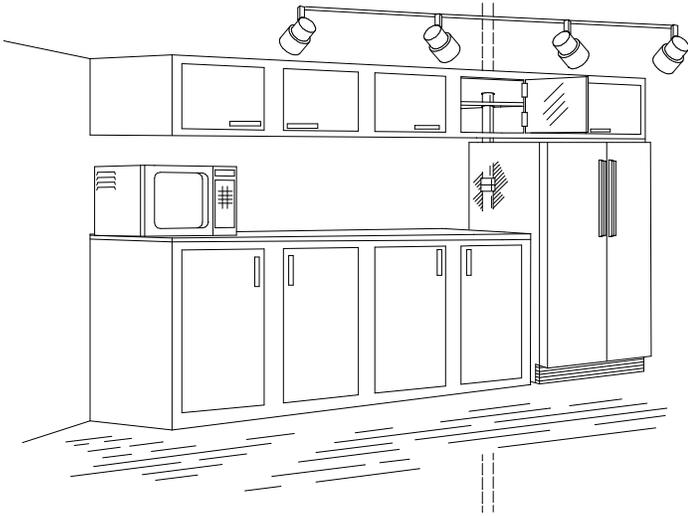
## Through a Closet

If obstructions make it impossible to run vertical tube through partition walls, the best and easiest alternative is to go through closets, particularly when a closet on the second floor is directly above a closet on the main floor. The tube will be exposed in the closet, but that may be the only way to run pipe to the inlet.

You can install tubing coming up through the floor inside a closet, cold air return, a laundry chute, or other access path. Be creative, there is usually a way to get tubing to an inlet.



# Alternative Installation Ideas







The information in this manual is subject to change without notice. Please check [www.centralvac.com](http://www.centralvac.com) for the latest information.

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Revision Date: 03-01-10

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