



Central Vacuum System

INSTALLATION MANUAL

Installing a central vacuum system is a straightforward do-it-yourself project that doesn't require special tools or skills. Read the instructions thoroughly before you begin. Take your time and follow the instructions carefully. Make sure you have chosen the right installation location and that you are not cutting into any hidden electrical wires or plumbing.

This kit contains all the materials required to install the vacuum system including the Vaculine fittings. Vaculine fittings are manufactured to exacting standards to provide positive seals, easy installation, and superior airflow characteristics.

Plan Ahead!

Planning is the key to the successful installation of a central vacuum system. Strive to obtain a balance between the best locations for the inlet valves and the practicality of servicing these locations. Always fully consider the implications before you cut into a wall.

Recommended Tools

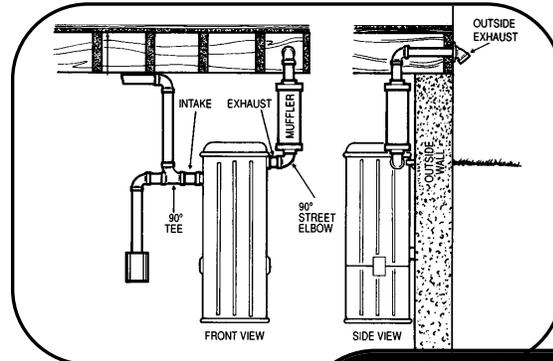
- 1/2" (1.3 cm) Right Angle Heavy Duty Electric Drill
- Battery Drill
- 2-1/4" to 2-9/16" Self Feed Drill Bit
- 1/4" (6.4 mm) Masonry Drill Bit
- Common Hacksaw or Small Handsaw with 18 teeth per inch blade or 2" PVC Pipe Cutter
- Mitre Box
- Pocket or Utility Knife
- Steel Tape Measure
- Screwdriver (Slot and Phillips)
- Electrical Tape or Duct Tape
- Tie Wraps
- Wire Coat Hanger
- Hammer and Nail Puller
- Side Cutters
- Wire Connectors for #18 (1.00 mm) wire
- Flashlight
- Drywall Saw
- Wire Stripper
- Crimping Tool



Planning the Central Vacuum System

HOW TO DETERMINE LOCATION FOR POWER UNIT

The power unit can be located in the garage, basement, utility room, or any other area that is dry and remote enough that living areas will not be affected by the sound of the electric motor. Preferably install the unit on an outside wall away from heat-producing units such as an incinerator, water heater, dryer, etc. (DO NOT INSTALL POWER UNIT IN ATTIC.) The unit must be mounted within three feet of an electrical outlet. Electrical specifications of the power unit should be checked to avoid overloading the circuit. The unit should be mounted so that it is out of the way, but still accessible for emptying.



Helpful Hint

Vacuums must breathe—do not enclose them! If the unit is to be located in a closet or utility room, it must be vented. Louvered doors fulfill this purpose. A muffler can be used to minimize noise.

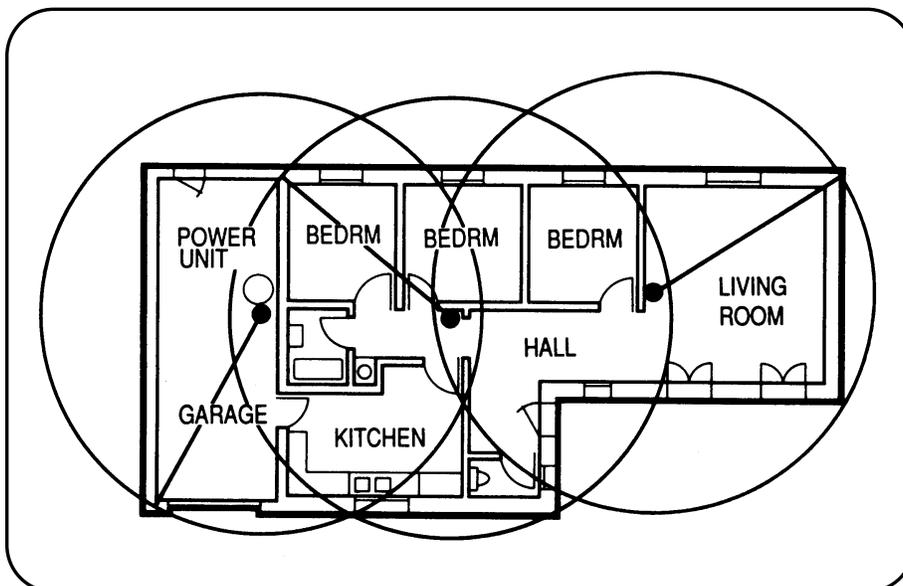
HOW TO DETERMINE LOCATIONS FOR INLET VALVES

Inlet valves are usually located on inside walls in hallways, near doorways, archways, and near the bottom of staircases. These locations provide the maximum area of cleaning coverage with a minimum number of inlet valves—frequently making it possible to clean three or four rooms from one valve. The hose must be able to reach every corner of the house and go around furniture to get there.

After locating inlet valves, use a 30 foot (9.5 m) length cord (our standard hose length) or a piece of string to scale if working with blueprints, to be sure all areas of the house can be cleaned from selected inlet valve loca-

tions. If an electrical beater brush is to be used now or in the future, the inlet valve should be located within five feet of an electrical outlet. Turbine driven beater brush heads do not require electricity and thus allow more flexibility when choosing inlet valve locations.

It is preferable to plan on using wall inlet valves; however, the same inlet valve can be placed in the floor if tubing cannot be installed in the wall. For basements, garages, and other areas where tubing is exposed, utility valves are used. They are installed easily, directly into our standard tubing.



Helpful Hint

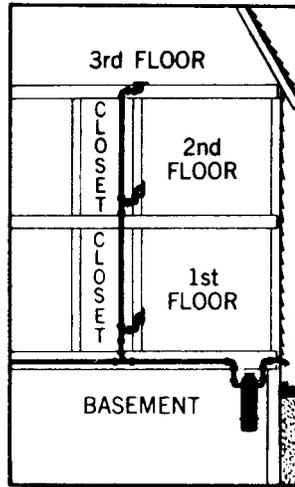
When determining locations for inlet valves, make sure the hose can reach all areas of the house including closets, ceiling corners, and walls. Allow sufficient slack in the cord to get around furniture.

Helpful Hint

Venting considerations: 1) do not vent into a wall, a ceiling, or a concealed space of a building or structure; 2) avoid venting to patios and entranceways.

Planning the Central Vacuum System (Continued)

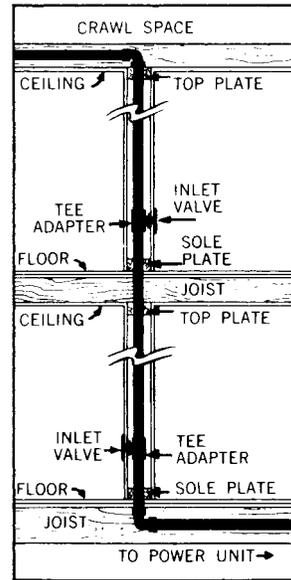
HOW TO PLAN THE TUBE SYSTEM



The amount of airflow that reaches the hose is dependent on the efficiency of the tubing system layout. Lines are to be kept as straight as possible. Tight 90-degree fittings are to be used only at inlet valve locations and sweep 90-degree fittings used in all other applications.

1. 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. Alternatively, the trunk line could 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 location of the power unit.



Multi-Story Houses

While roughing in tube lines during construction is comparatively simple, existing two- and three-story houses present special installation situations that require careful planning before installation is started. In a two-story house, sometimes it is preferable to run a trunk line directly into the attic or crawl space. From this point, branch lines can be run across the attic to partitions and down within partition walls to inlet valves. Tube lines carrying dirt upward should never exceed one-story. If dirt must be lifted higher than one-story, run at least eight feet (2.4 m) of tubing horizontally between the two floors.

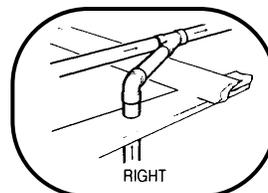
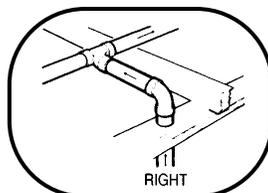
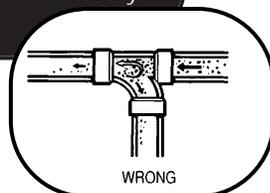
There are several methods of gaining access to the second floor or the attic including installing the tubing in a closet, in the wall beside the soil pipe, inside the cold air return, or in a partition wall (be sure to avoid switches, wiring, and other obstacles).

2. 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. When possible, use 45-degree fittings to avoid sharp corners. Airflow direction should always be considered when installing branch lines.

Helpful Hint

When planning the tubing system, avoid gravity drops! 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.



Planning the Central Vacuum System (Continued)

HOW TO CUT AND CEMENT PVC TUBING AND FITTINGS

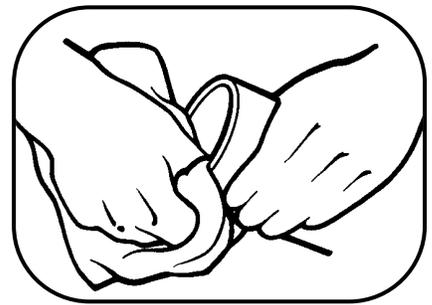
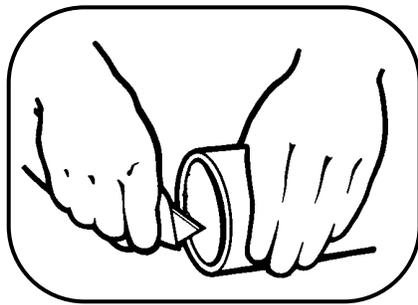
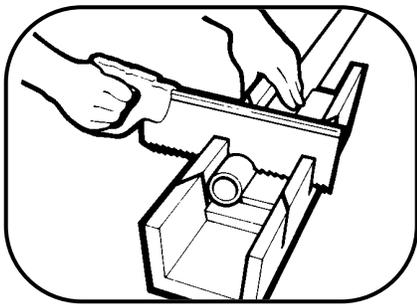
Measuring: Measurements should be taken from the base of the pipe-stop, which is on the inside of the fitting hub. As each section of tubing is cut, it should be dry fitted before the next measurement is taken.

Cutting: The tubing must be cut as straight and square as possible. A miter box should be used if available. All rough edges must be removed with a utility knife or coarse sandpaper.

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.

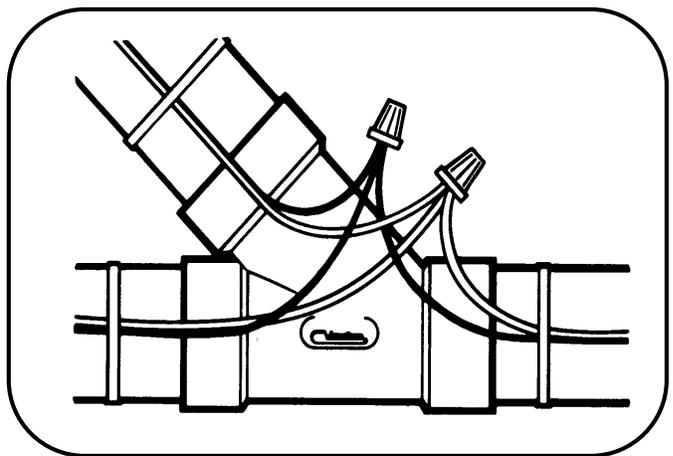
Gluing: PVC solvent cement actually welds the fitting to the tubing. A chemical reaction permanently joins the

molecules from each surface to produce an airtight seal. Before cementing, both the tubing and the fitting must be free of PVC burrs, dirt, and grime. The components should be wiped with a clean cloth if necessary. Cement should only be applied to the tubing because 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. The tubing should be inserted all the way into the fitting and twisted a quarter turn to evenly distribute the cement. All excess cement should be removed with a rag. The glue should be allowed to set for several hours before the vacuum system is used.



LOW VOLTAGE WIRE

Every power unit has an on/off switch that is activated by completing a circuit at the inlet valves. The power unit is turned on by simply inserting the hose in the inlet valve. To facilitate this, low voltage wire must follow the tubing system. At the junction of a branch line and the trunk line, the wires must be spliced together. 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. With wire ties, attach the wire to the tubing at least every four feet. If using Lexan inlet valves, do not loop wires at valve locations. Only one pair of wires can be hooked up to these valves.



How to Install the System

Step 1 INSTALLATION OF THE POWER UNIT - NEW & EXISTING HOMES

The power unit should be mounted on an outside wall to minimize the length of the exhaust line. Mount the unit at a height that will provide convenient access to the dirt receptacle, or about 6 feet (1.8 m) from the floor to the top of the wall-mounting bracket which holds the power unit. For proper ventilation and access, the wall-mounting bracket must be at least 14" (355 mm) from ceiling and 14" (355 mm) from a side wall.

To mount on a masonry wall, use the wall-mounting bracket as a template to locate two holes on a mortar joint or on the surface of a cement block. Drill the two marked holes 1" (25 mm) deep using a 1/4" (6.4 mm) masonry drill bit.

To anchor, insert a 1/4" (6.4 mm) plastic anchor in each hole. Secure the mounting bracket to the wall with two 1" No. 12 (7.5 x 25 mm) sheet-metal screws.

In anchoring to a wood or plaster wall, locate the wall-mounting bracket on a stud. Securely anchor bracket to stud with two No. 14 x 1 1/2" (7.3 x 38 mm) screws through the two vertical holes.

Hang Power Unit and Install Exhaust Line

The manufacturer recommends that a muffler be installed with all power units. Mufflers are sold separately. Install the muffler vertically in the exhaust line within the building, and extend the exhaust line outside.

The connection of the intake line and wiring to the power unit will be completed after the balance of the system is installed

.Electrical Requirements

All Vacuflo Power Units are supplied with a power supply cord for connection to a grounded receptacle. All wiring must meet local codes. Warning: When using the system, electric shock might occur if used on a wet surface.

Grounding Instructions

This appliance must be grounded. If it should malfunction or breakdown, grounding reduces the risk of electric shock by providing a path of least resistance for electric current. This appliance is equipped with a cord having an equipment-grounding conductor and grounding plug. The plug must be plugged into an appropriate outlet that is properly installed and grounded in accordance with all local codes and ordinances.

WARNING!

Electric shock is a risk when the equipment-grounding conductor is improperly connected. Check with a qualified electrician or service person if you are in doubt as to whether or not the outlet is properly grounded. Do not modify the plug provided with the appliance—if it will not fit the outlet, have a proper outlet installed by a qualified electrician. This appliance is for use on a nominal 120-volt circuit. Make sure that the appliance is connected to an outlet having the same configuration as the plug. No adapter should be used with this appliance.

Helpful Hint

Probe for obstructions by inserting a sufficient length of tubing into the wall before cutting the inlet valve hole.

Step 2 INSTALLATION OF INLET VALVES - EXISTING HOMES

The hole in the wall for the inlet valve should be located between studs—clear of obstructions such as plumbing, wiring, heating ducts, etc. NOTE: Minimum stud depth for sufficient clearance of the adapter elbow is 2 3/4" (70 mm).

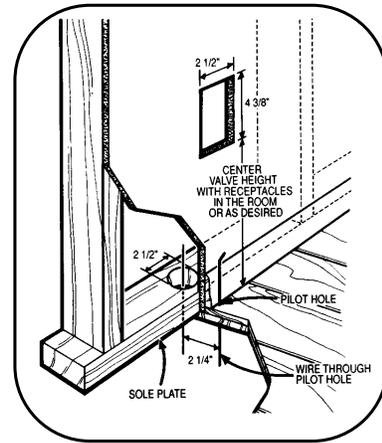
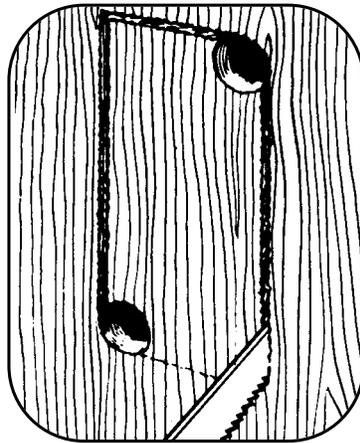
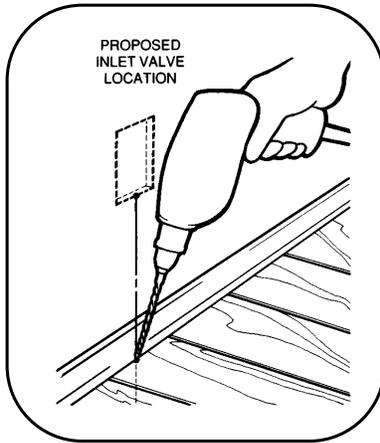
Determine the exact location of an inlet valve and locate a point on the floor directly below vertical center of the desired location. For appearance, the height of the inlet valves should be centered with the height of electrical receptacles. Drill a small pilot hole (against the wall) through the flooring and sub-flooring. The straight section of a wire coat hanger cut at an angle makes a good pilot hole drill bit. (Be careful not to snag carpeting.)

From beneath the floor, this pilot hole will serve as a guide point from which you can measure over approximately 2 1/2" (63 mm) to locate and drill a 2 1/4" (57 mm) diameter hole in the center of the sole plate.

Before cutting the 2 1/4" x 3 3/4" (57 mm x 95 mm) hole in the wall for the inlet valve, drill the 2 1/4" (57 mm) diameter hole up through the sole plate. Using a flashlight, inspect the interior of the wall to make sure there are no obstructions. It is also advisable to probe for obstructions by inserting a sufficient length of tubing into the wall **BEFORE** cutting the inlet valve hole.

How to Install the System (Continued)

Step 2 INSTALLATION OF INLET VALVES - EXISTING HOMES (CONTINUED)



Having determined that there are no obstructions in the wall, cut a hole 2 1/4" (57 mm) wide by 3 3/4" (95 mm) tall for the inlet valve.

Tape low voltage wire to the end of a sufficiently long piece of tubing and pass it up from beneath. Leave approximately 10" (250 mm) of wire beyond the end of the tube to permit easy wiring of the inlet valve. When the main trunk line is overhead, tubing can also be passed down to inlet valve locations in the wall.

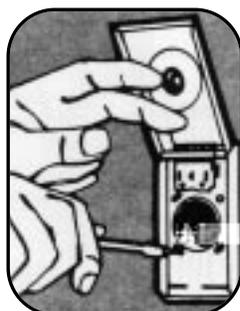
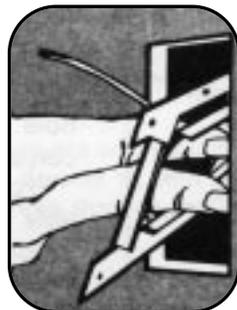
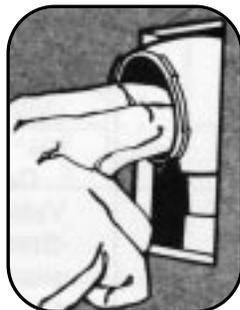
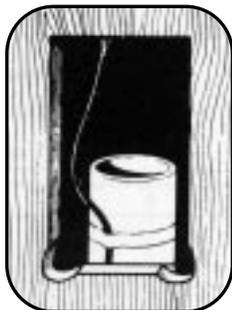
Apply adhesive to the adapter elbow stem and insert adapter elbow through the wall opening and into the tube. After putting the wire through the top oval hole of the mounting plate, insert mounting plate diagonally through the wall opening with the four bent tabs facing adapter elbow. Line up slots on the mounting plate with

tabs on adapter elbow; then rotate mounting plate into an upright position. Be sure approximately 6" (150 mm) of #18-2 (1.00 mm) solid wire is through the top oval hole of the wall-mounting plate.

Split wires at least 1" (25 mm), then strip 3/8" (10 mm) insulation from each wire. Insert stripped wires into the two holes on switch on the back of the inlet valve. Press firmly to engage.

Be sure gasket is in place on inlet valve stem before inserting into adapter elbow.

Secure inlet valve into place with the four screws provided. Be sure inlet valve covers the hole on all sides and is straight. Do not over tighten screws. Snub down lightly. Be sure the inlet valve lid opens and closes freely.



Helpful Hint

Do not over tighten the screws that attach the inlet valve to the mounting plate. If a whistling noise develops during operation, slightly loosen the screws.

How to Install the System (Continued)

Step 3 SPECIAL SITUATIONS - EXISTING HOMES

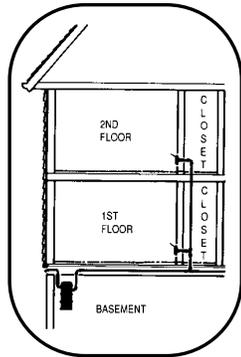
Closet Wall Installation of Inlet Valve

If obstructions make it impossible to run vertical tube lines through partition walls, the best and easiest alternative is to go through the insides of closets. This works especially well when a closet on the second floor is directly above a closet on the main floor.

Drill a horizontal pilot hole through the center of a suitable inlet valve location. Probe for hidden obstructions with a bent piece of coat hanger. With the pilot hole as a center, drill a 1 1/2" hole through both sides of the wall. Using a keyhole saw, cut a hole 2 1/4" (57 mm) wide by 3 3/4" (95 mm) long in the outside and inside wall. (See drawing below.)

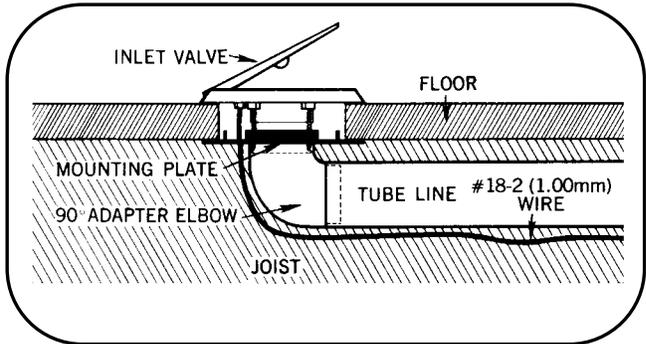
From Inside the Closet

Feed the low voltage wire through the top hole of the mounting plate then through the wall to the other side. Attach the 90 adapter to the mounting plate. Secure mounting plate flange to the inside wall with screws to hold this part temporarily in position. Install a valve extension through the wall into the 90 adapter insuring that the flange is at least 1/4" inside of the wall and that the screw holes are lined up squarely. Glue this valve extension into the 90 adapter. Allow glue to set - then install wire into valve and insert valve into valve extension and secure with screws. Drill a 2-1/4" - 2-9/16" hole below the 90 adapter and connect PVC to trunk line.

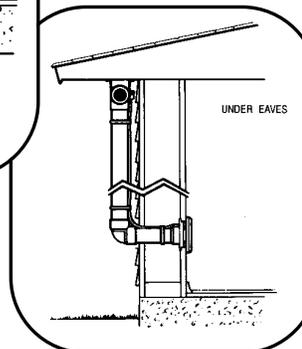
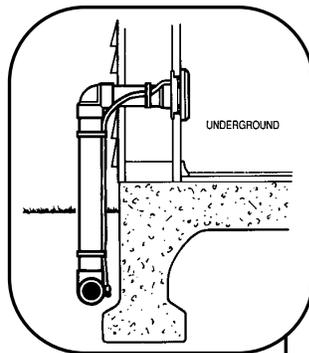
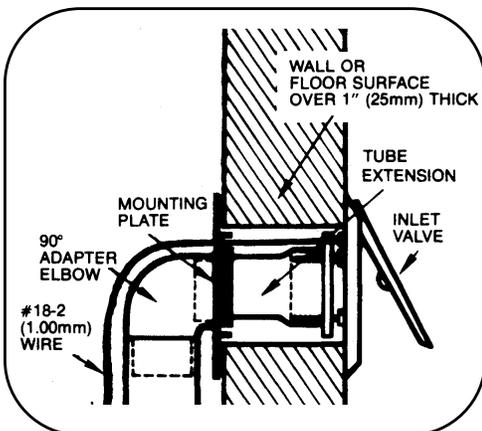


Floor Installation of Inlet Valve

While the normal installation of inlet valves is in partition walls, occasionally one must be installed in the floor. In this case, the location for the inlet valve should be about two inches from the wall and not in a high traffic area. As with wall installations, use a pilot hole drill to make sure the location is clear of obstructions below. Cut a hole that is 2 1/4" (57 mm) wide by 3 3/4" (95 mm) long. Attach mounting plate to 90° adapter elbow. Assemble inlet valve as shown on page 6. Facing wall, valve should open to the left for ease of use.



In the case of linoleum or uncovered floors, the mounting plate will be installed from below. If the floor is carpeted, cut a hole in the carpet with a utility knife and slip the untrimmed mounting plate under the carpet. Fasten the mounting plate to the floor with screws. If a wall or floor is over 1" (25 mm) thick, use inlet valve stem extension #5018. Shorten extension to fit. The flange on the extension should be 1/4" (6 mm) below the surface to insure a proper fit of the valve.



Helpful Hint

For houses with flat roofs and slab floors, inlet valves are installed in exterior walls and branch lines are run outside the house. The tubing system can be run underground or under the eaves of the house.

How to Install the System (Continued)

Step 4 INSTALLATION OF INLET VALVES - NEW CONSTRUCTION

Helpful Hint

Take measurement from floor to bottom of electrical box. Add 1-7/8" to get Center Point of Vac Mounting Plate.

Vertical tube lines and low voltage wiring for inlet valves are roughed in while the house is in the framing stage.

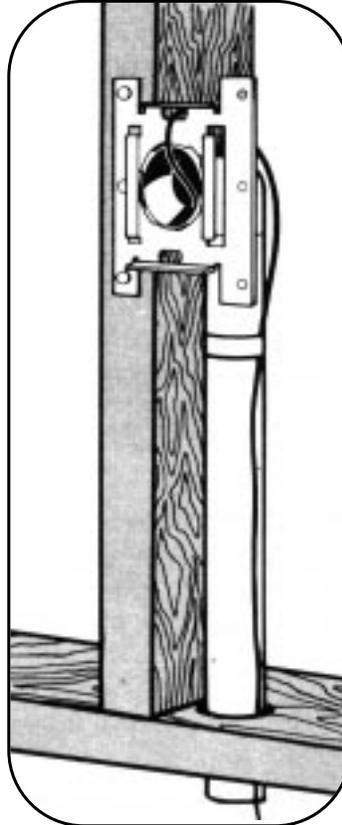
After selecting the location for an inlet valve, drill a 2 1/4" (57 mm) hole in the center of the plate next to the stud. Cement sufficient tubing to adapter elbow for riser or drop to extend 3" (76 mm) beyond the plate. Assemble the mounting plate to the adapter elbow with plaster guard tabs facing forward.

Insert tubing through the hole in the plate and nail the mounting plate to the front of the stud, with the adapter elbow next to the stud. For appearance, inlet valve height should be the same as electrical receptacles in the room.

Bring approximately 10" (250 mm) of low voltage wire through the top oval hole of the mounting plate and double it back into the adapter elbow. Also allow approximately 2 feet (.6 m) of wire beyond the plate. Press the red plaster guard insert firmly into the face of the mounting plate between the tabs.

After the walls are finished, the inserts will be removed before installing the valves. After the house is finished, complete the system following the applicable portions of these instructions.

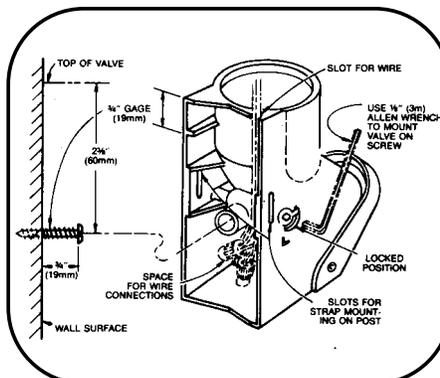
Happy vacuuming!



Step 5 SPECIAL SITUATIONS - NEW & EXISTING HOMES

Installation of Inlet Valves

For walls 1/4" (6 mm) thick or less, the rubber gasket seal on the inlet valve stem should be moved forward to the front groove to insure a proper seal. A slot is provided 3/8" (10 mm) from the end of the stem in order that it may be sawed off with a standard hacksaw. If the inlet valve will not cover a hole in the wall in a new or existing installation, an inlet valve trim plate (ivory #5007 or brown #5008) is available. The trim plate fits behind the valve and covers any oversized hole up to 1/2" (13 mm).

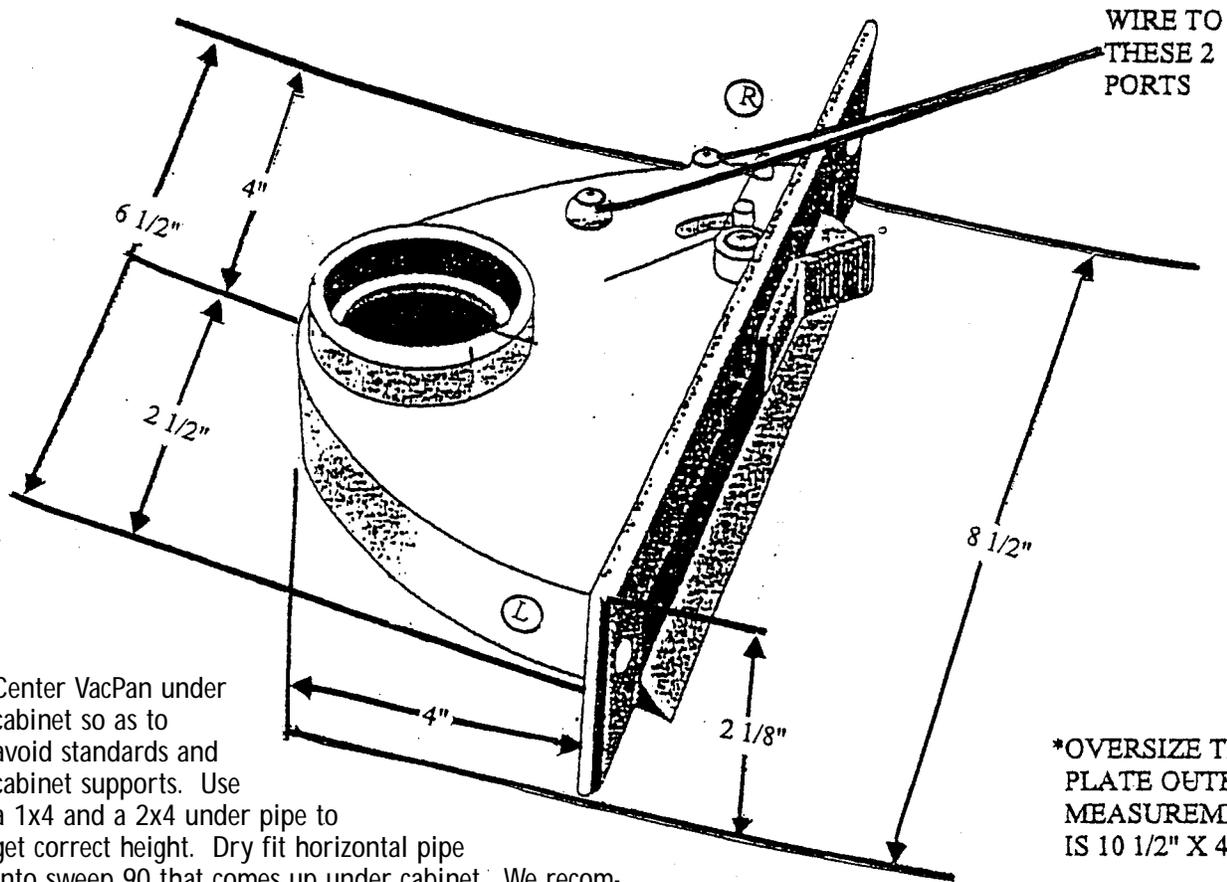
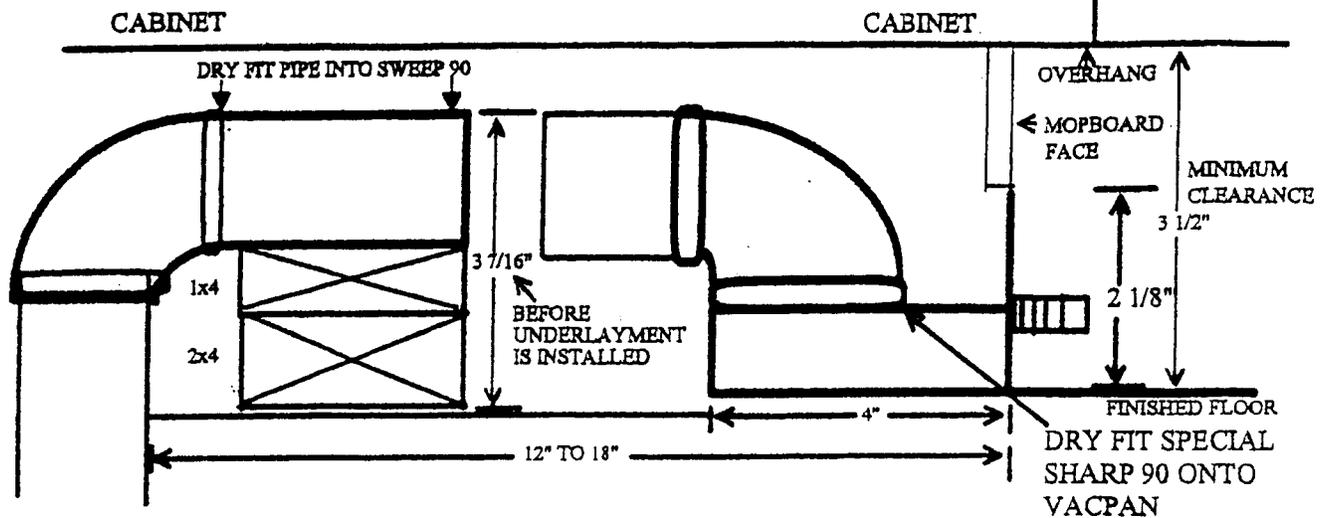


Installation of a Utility Valve

A utility valve is used next to the power unit or in basements, garages, and other areas where tubing is exposed. To install, put the screw provided with the valve into the wall (using an anchor if necessary) until it protrudes 3/4" (19 mm). Check 3/4" (19 mm) with the gauge on the back of the valve. Connect wiring to low voltage wire-leads in valve, and push connections into space provided. Using a 1/8" allen wrench, change valve to the unlocked position, place over the screw, and turn to "L" for locked position. If not snug, remove valve and adjust screw slightly.

How to Install the System (Continued)

Step 5 SPECIAL SITUATIONS - NEW & EXISTING HOMES (CONTINUED)



Center VacPan under cabinet so as to avoid standards and cabinet supports. Use a 1x4 and a 2x4 under pipe to get correct height. Dry fit horizontal pipe into sweep 90 that comes up under cabinet. We recommend having cabinet people put a false bottom in this cabinet. Pipe opening is **not** centered to opening in mopboard. Measure 4" to right side of center and 2-1/2" to left of center, 6-1/2" width x 1-3/4" height over all. If installation of VacPan is only possible from front of mopboard, cut opening 6-1/2" x 3-1/2" and use oversized trim plate.

*OVERSIZE TRIM PLATE OUTER MEASUREMENT IS 10 1/2" X 4"

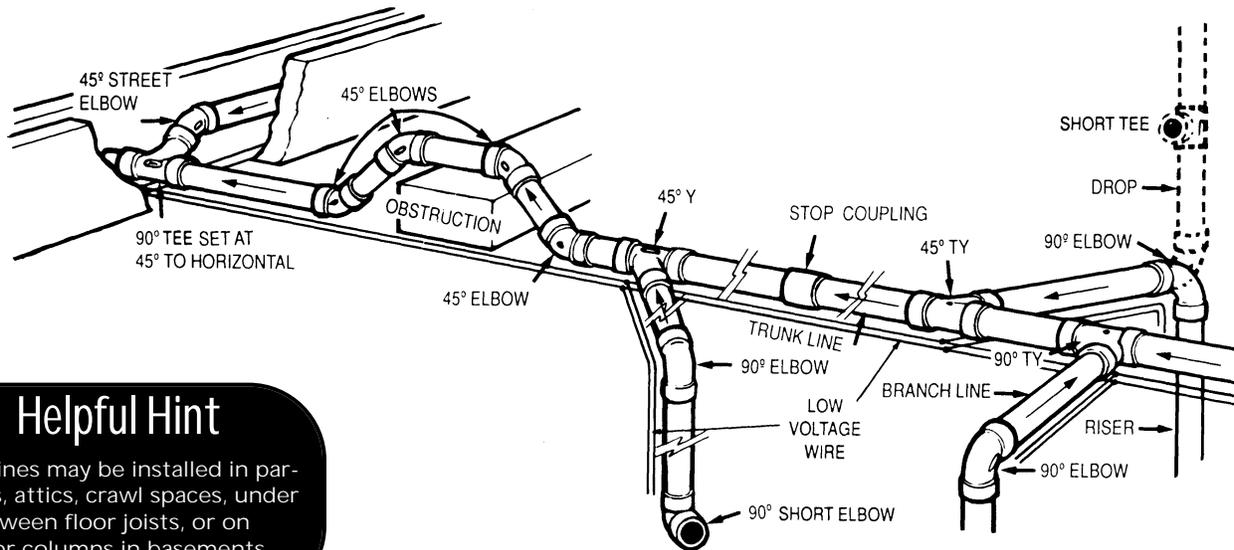
How to Install the System (Continued)

Step 6 COMPLETION OF TUBING SYSTEM (NEW AND EXISTING HOMES)

With the inlet valves installed, start at the most distant valve and extend the trunk line toward the power unit. Connect branch lines to trunk with 90-degree TYs, being careful to have directional flow toward the power unit.

Note: Never drop a branch line directly out of the bottom of a trunk line because this will provide a pocket

for dirt to drop into. Always run a branch line out of the side or top of the trunk line. No. 18-2 (1.00 mm) low voltage wire follows tubing from each inlet valve. Junctions or splices using wire connectors (check local code) are made at each branch or TY. Tape the wire to the tubing or staple it to the joists. At the power unit, connect the wires to the low voltage terminals.



Helpful Hint

Tube lines may be installed in partitions, attics, crawl spaces, under or between floor joists, or on walls or columns in basements.