

CENTRAL VACUUM SYSTEMS

Installation Guide



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Your machine

Model number: _____

Serial number: _____

Date of purchase: _____

GENERAL INFORMATION

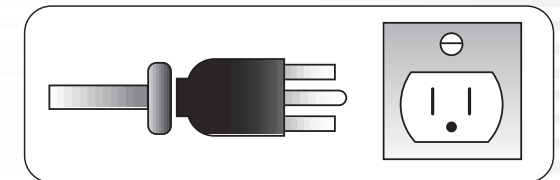
Important electrical information

- Your central vacuum cleaner was designed to operate with alternating current (110/120 V, 60 Hz).
- Connect your appliance on an electric circuit in compliance with the specifications indicated on the vacuum cleaner nameplate.
- **ATTENTION! Model 4000 operate with 220 volts (12 A).**

Grounded for your safety

For your safety and protection, this central vacuum cleaner is equipped with a three-prong plug on the power cord (see illustration). It must be plugged into a properly grounded and polarized three-prong receptacle. If the receptacle you intend to use will not accept the three-prong plug, or if you are not sure the receptacle is properly grounded, you should have a properly grounded three-prong receptacle installed according to the National Electrical Code by a qualified electrician.

DO NOT UNDER ANY CIRCUMSTANCES BEND OR REMOVE THE ROUND GROUNDING PRONG FROM THE PLUG IN ORDER TO MAKE IT FIT A TWO-PRONG RECEPTACLE.



Appliance installation

- Avoid placing objects on your machine. Make sure that nothing blocks or penetrates the ventilation openings of the motor.
- The machine should be installed in an area where the temperature does not exceed 40° C.

Appliance maintenance

- Cleaning of the canister should generally be done every three or four months.
- The filter can be washed with soapy water.

Troubleshooting

If suction decreases:

- Clean the filter by hand-shaking it. Certain dust particles may block the filter more easily than others (ex. Gyproc dust).
- Empty the canister.
- Check all the rubber gaskets inside the covers of the wall outlets.
- If the two motors stop, re-start them by pressing the reset button.

Caution

- Never use vacuum without filter.
- Never use vacuum to suck water.
- It is recommended to check the carbon brushes after five years of use (domestic use).

PLANNING

Tools Required

Steel Tape Measure • Phillips Screw Driver • Wire Cutters • Keyhole Saw Hammer • Chisel • Wire Coat Hanger • 2 1/2" Hole Saw • 1/2" Electric Drill

If you don't have a 1/2" drill and intend to rent one from a tool rental store ask for a "Right-Angle drill". This type of tool will save drilling time and allow you to work in very tight spaces.

Planning

Each inlet kit contains a sufficient number of fittings to complete most installations. Some installations, however, may require additional fittings. As our installation shows, there are instances where either a 45° Ell or a sweep 90° could be used. Remember, it requires two 45° Ells to form a 90° elbow.

Maximize your fittings, because, should you need another 90° Ell to complete the installation, you might only have one 45° Ell left, leaving the installation incomplete.

Study the instructions thoroughly and study the illustrations of the various options available for the installation of your system.

After you have planned your system, count all components in your kit to ensure that you will have sufficient parts and fittings for the completion of the installation.

Inlet valves may be installed in more than one location to service the area you wish to cover from any one inlet valve. Study the diagrams and choose the method that best suits your requirements.

Power Unit Location

In selecting the power unit location the following points should be carefully considered.

Install the power unit as far away from the living area as possible so that normal activities can be carried out with as little noise as possible coming from the power unit while vacuum cleaning is in progress. This also insures that there is no recirculation of dust in the living area.

An ideal location for the power unit would be the garage where the unit's inlet valve will come in handy when you wish to vacuum your car and changing the filter will be easier. Other suitable locations can also be found in a basement, basement crawl space, furnace room, under weather-proof sun deck, laundry room, carport or any ventilated storage area.

Typical two story residence showing proposed location for power unit.

In condominiums and townhouses even a closet with louvered doors will serve as a very suitable out-of-the-way location. Should the layout of the premises not permit any of the above suggested locations away from the living area, mufflers are available for most models to significantly reduce power unit noise.



Wiring (110V/60 cycles)

The power unit is an electrical appliance and its location should be near an electrical power outlet. If there is no existing outlet available, a separate grounded circuit should be installed. Check the unit's specifications for the proper power supply requirements.

Caution: Do not overload circuit!

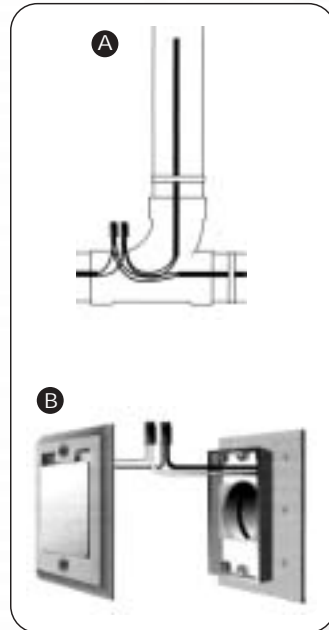
ATTENTION! Model 4000 operate with 220 V (12 A).

Low voltage wiring

Your kit contains a special jacketed wire (18/2 low voltage wire) which complies with all electrical codes in any area.

The method of splicing the wire from inlet valve to the main line may be subject to varying electrical codes depending on the area in which you are located. Check with the prevailing electrical codes in your area.

Two of the most common methods of wire splicing are "T-Splicing" or "Looping". "T-Splicing" (**diagram A**) means the low-voltage wire is spliced at the tees, and "Looping" (**diagram B**) consists of looping the low-voltage wire from inlet valve to inlet valve and joining the wires at the inlet valves. The latter is generally preferred as this method makes repairs easier, even when walls are boarded in, to any unravelling of connections or breaks possibly caused when wire was stripped.



Inlet Valve Locations

These can be installed either on the floors or in the walls, as per our mounting plate installation diagram.

This process may require two persons. One person should hold the end of a 30' steel tape, a string or the actual 30' hose at the proposed inlet valve location while the other will determine the furthest reach of the 30' length.

If a blueprint of the premises is available, the use of a 7 1/2" string will be of great help in determining the Inlet valve locations, as most blueprints are drawn to a 1/4" scale.

Simply lay the string from the proposed Inlet valve location into every corner of the areas you intend to reach from that particular inlet.

The end of the hose should reach both floor and ceiling to enable you to vacuum your draperies and blinds.

In doing so, consider the location of furniture, cabinets, beds and pocket doors as they may impede the free movement of the 30' hose.

Repeat this procedure until you are absolutely sure that the most effective locations for all Inlet valves have been chosen.

The advantage of locating the Inlet valves in inside walls is that it affords you almost a 60" diameter and that the wall in which the branch pipe will be located does not contain insulation material.

Check the walls in which the inlet valves are to be mounted for possible obstructions between studs, by tapping with your finger or a hard instrument along the wallboards until it sounds hollow. Mark this location and continue this procedure until all Inlet valve locations have been firmly established.

Also keep in mind that staircases are more conveniently vacuumed from the top downward. Therefore, an Inlet valve should be located close enough to the bottom of a staircase so that the hose reaches the upper step comfortably. This way the hose is always behind you and doesn't get into the path of the work area.

Now proceed with the installation of the branch lines from the Inlet valve to the intended main line location.

A word of caution

Now that you have learned about the most common installation techniques, here is a word of caution about the most important aspects of a built-in system.

Fitting and valves!

The importance of quality fittings, fittings that have been designed to last, must never be underestimated. Therefore, when selecting the materials and fittings for your system, bear in mind that, after the entire system has been installed and fully concealed, fittings and pipes are inaccessible.

Subsequent repairs to concealed sections become an very expensive proposition, leaving absolutely no room for second guessing as to the quality of materials used. The low quality grade of just one fitting may jeopardize the life of the entire system, no matter how good the installation itself is. Always remember, a system is only as good as its weakest part. As independent test lab reports have conclusively shown, some competitor's products have tested 41% weaker, 25% lighter and bend out of shape under heat simulation. **Beware of low quality imitations and insist on Hayden fittings and valves for best quality and value!**

Don't jeopardize your system by trying to save pennies on the installation.

EXISTING CONSTRUCTION

From the attic down

In order to find where to drill the holes for the branch lines into the plates, establish a reference point for the Inlet valve by measuring from the center of the intended inlet valve location to the nearest corner of the room in which the inlet is to be located. Find this corner from the attic by peeling back the insulation to expose the top plate.

Measure the same distance you measured below from where the top plates form that corner (**illustration 1**). You should now be in a straight vertical line directly above the Inlet valve location. Remember whether you measured your reference point from the inside or outside corner.

Drill a 2 1/2" hole into the center of the top plate. After you have completed this, you can visually re-check, with the use of a flashlight, that the space between the studs is free of obstruction.

As our illustration shows, you will be working in a confined space with very little head room. Use any number of extension drill bits to enable you to get to the intended location of the inlet valves (**illustration 2**).

Measure and cut pipe from the plate to Inlet valve hole below and feed pipe through hole into space between wallboard.

It is important that you have all the necessary tools with you in the attic to save you avoidable trips through the small access openings, through which attics are commonly accessible (**illustration 2**).

If, due to lack of adequate vertical space, the entire length of pipe can't be inserted in one piece, then shorter sections can be cut and glued together with the use of couplings and fed into the hole in the top plate section by section until it reaches the inlet valve opening.

Note:

IT IS EXTREMELY IMPORTANT TO VERIFY THAT THE WALL DOES NOT CONTAIN ANY ELECTRICAL CONDUCTORS WHICH MAY INTERFERE WITH THE DRILL BIT.



Illustration 1



Illustration 2

Follow steps 5 through 9 of the mounting plate installation diagram for the installation of mounting plates and Inlet valves.

YOU ARE NOW READY FOR THE INSTALLATION OF THE MAIN LINE.

The main line connects the entire system from the inlet valves to the power unit. It carries the low-voltage wire along its entire run. During the layout process you checked carefully for possible obstructions along the intended run, such as double joists, ducts, electrical wiring or water lines. By-pass these obstructions as per our illustrations.

Glue main line fittings to the exposed branch pipes above the plates. Make sure each fitting points in the direction of the power unit. Measure and cut the pipe lengths for the main line and glue into hubs of fittings leading from branch to branch. Apply glue to both ends of the pipe and to the inside of the hub then twist pipe into hub until firmly seated. Glue will set instantly.

Fasten low-voltage wire to pipe run with cable ties approximately every 6' and at each Ell. This will prevent drooping, possible damage to wire insulation or ripping. Electrical tape may be used if double-wrapped around wire and pipe. For the proper way of splicing, refer to the section on wiring.

The finished installation in the illustration shows an air vent obstructing an intended branch line (**illustration 4, dotted line**).

A 45° wye can be advantageously utilized to by-pass this and similar obstructions by installing the wye into the main line further downstream.

The use of a 45° wye will save you the additional installation time of two extra fittings.

The 180° "loop" shown is further explained in **illustration 11**.

From basement up

Simply reverse the procedure of the branch line installation, as your main run will be located below instead of above the inlet valves. When the main run is installed between, or on the underside of the floor joists, the risers and drops can be concealed in a variety of ways.

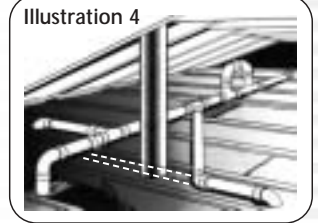


Illustration 5



Illustration 6



Illustration 9

Cold air returns, crawlspaces and the underside of staircases will serve as accessible spaces, through which the main run can pass.

"B-Vent" shafts can also be used to bring the main run from one story to the next (**illustration 6**). Consult your local building code first, as in some cases metal pipes must be used for "B-Vent" installations.

It is important that the low-voltage wire be fastened to the branch line as it must be fed through at the same time as the pipe.

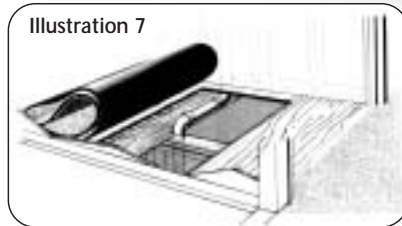
Install all the branch lines in the same manner, making sure that enough length of the branch line pipe protrudes above the plate for connection to the main line fittings.

Gaining access to pipe run through carpeted floor

Pull carpet from tackstrips. Roll back carpet and carpet padding to expose the area under which you intend to run the pipe. Pull out all nails in this area with which the underfloor has been fastened to the floor joists. Using a portable circular skillsaw, cut along the nail holes, along the center of the floor joists, setting the blade so it cuts completely through the underfloor. At each end of both cuts, cut at right angles to these cuts until the uncut portion of the floor can be completely lifted out, leaving an opening that allows you to work freely between the floor joists. After you have completed your work, insert the cut-out panel back into the opening and nail down into joists; preferably at a slight angle towards the center of the joists to avoid missing the joists. Spread the carpet padding back into place and stretch the carpet back onto the tackstrips.

With all the branch lines connected to the main line continue to install the main line to the power unit using pipe straps at approximately 8' intervals.

Connect pipe and low voltage wire to power unit. Plug power unit into a nearby receptacle.



YOUR CENTRAL VACUUM IS NOW OPERATIONAL.

NEW CONSTRUCTION ROUGH-IN

Main system installation

The ideal time to install the system is before dry-walling. We recommend to hold off the installation until all furnace ducts and plumbing rough-in are completed, as it is easier for you to work around these ducts and plumbing lines than for the sub-trades to work around you. Ideally, the main run should be run along the center of the house from the basement up.

As the location of the furnace is usually in the center of the house with the heating ducts branching out from there, your main run could easily be installed along these

ducts. Your system's main run will then be concealed at the same time as furnace ducts and plumbing-lines are boxed-in and covered.

TRY TO COORDINATE SUB-TRADES AS MUCH AS POSSIBLE.

If your home is being built by a contractor, be sure to inform him of your intentions, as this is an ideal time to request the installation of a separate circuit to insure sufficient power supply for your system.

The rough-in installation is much simpler and faster than the previously described installation for finished construction, as the entire working area is still fully exposed and readily accessible.

For the inlet valve installation follow steps 3 and 4 of the mounting plate installation diagram. When you are ready to install the power unit, follow the same power unit "hook-up" procedure as per previous section.

When the rough-in is completed, leave sufficient L.V.T wire and pipe protruding near the intended power unit location so that the final connection to the power unit can be made easily and quickly without creating extra work when power unit is installed.

On the top surface of the inlet kit boxes you will find a plaster guard and a mounting plate template. Simply cut along the dotted lines and use the template to scribe the exact opening for the mounting plate.

In order to prevent construction debris from entering the installed mounting plate, firmly push plaster guard into mounting plate as per illustration 3 of the mounting plate.

The increased use of 2x3 wood and metal studs in north american construction methods demands fittings compatible with these building industry standards. Our 2021 HXS has been specifically designed for such purposes.

The 2021 HXS differs from the "short 90° Ell" in that it has only 1/4" hubs at the mounting plate end and features a pipe spigot at the other end. The vacuum pipe can be slid over and glued to the spigot as the outside diameter of the spigot corresponds with the inside diameter of the vacuum pipe.

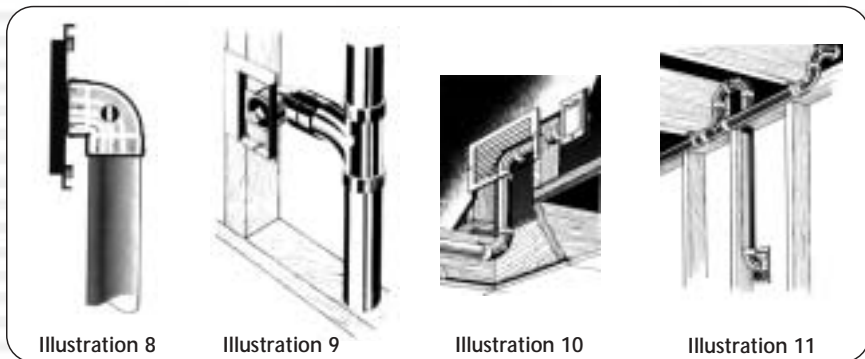
Simply glue to back of the mounting plate as you would any other fitting.

The 2021 is not included in kits, but is available from your dealer.

Second story inlet take-off from attic to basement drop.

A) For confined wall space. Although not included in a kit, this special short tee is available from your dealer for 2" x 4" and 2"x 3" stud walls.

B) If space is available, use the fittings as shown in this diagram.



Both fittings are included in kits.

Make sure that the main-to-branch loop is always above and not below mainline as dust and dirt will collect in the bottom of a loop.

Cold air return ducts

Remove sheet metal to expose the required working area between floor joists.
Remove air return grille nearest to the Inlet valve location.

Drill 2 1/2" O hole horizontally through stud utilizing the air-return opening for access.

Pull sufficient wire up so that it reaches the inlet valve.

Cut length of vertical tubing so it projects into grille opening. Seat into hub of the 90° EII below.

Slip 90° EII over exposed upper end of vertical tube in the direction of inlet valve location.

Cut length of horizontal tubing to size (from hub of 90° EII into hub of 90° EII that protrudes from rear of mounting plate).

Push wire and horizontal tubing through hole into stud and secure wire temporarily outside the inlet valve opening. Glue 90° EII to mounting plate at a 90° angle (so it points in the direction of hole in stud).

Pull wire through mounting plate and insert mounting plate into opening in wall with a tilting motion (as per illustration 7 of T31 MP installation diagram). Push assembly over tubing. This can be best achieved by using one hand to push against the 90° EII in the grille opening while the other hand steadies the mounting plate.

Connect wire to lugs on inlet valve. Re-install grille and sheet metal cover.

Fully concealed installation

Make sure to consult your local building code before drilling the 2 1/2" IZI holes for your pipe run into floor joists. The building code will specify what distances from the

edges of the floor joists you will be able to drill without impairing the bearing strength of the joist member.

The Hayden 90° Sweep Tee must be turned completely on its side (90° to its axis) and connected and glued to branch from inlet. After installation is complete the underside of the floor joists may be completely covered.

For the do-it-yourselfer. Turn the 90° sweep tee 45° to its own axis.

Insert 1 1/2" length of pipe into the upper hub of the sweep tee, slip 45° EII over exposed part of the 1 1/2" pipe and connect to branch from inlet (illustration 13).

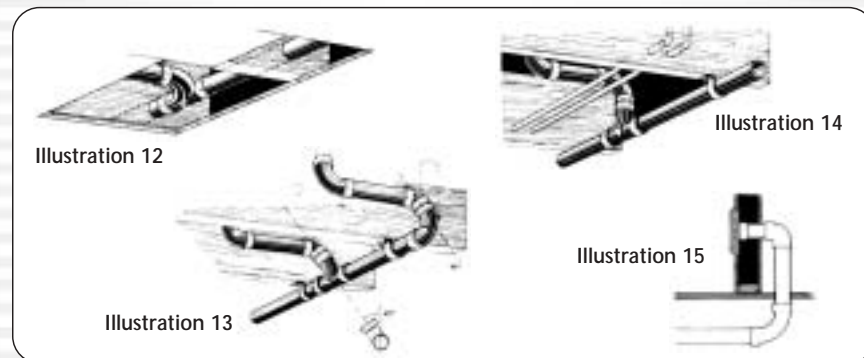
Turn the 90° sweep tee straight up and join 90° EII by inserting a 1 1/2" length of pipe.

The 90° EII must be turned 90° to the sweep tee.

Use the increments on adjoining hubs to achieve an accurate 90° angle.

Connect and glue to branch from inlet (illustration 14).

FINISHED CLOSET INSTALLATION (illustration 15).



INSTALLATION OF A SUPERVALVE

Although the installation is very similar to the conventional inlet valve we recommend that you study the installation diagram carefully prior to the installation and follow the steps as shown.

A few important points should be observed particularly where they pertain to existing construction. Before proceeding to splice into an existing circuit always make sure that the circuit is switched off! Wiring must always be connected COLOR to COLOR, GROUND to GROUND, with approved electrical wire and wire connectors only. Do not overload the circuit into which the supervalves will be spliced. A hole of

approx. 5/8" in diameter must be drilled in the plate close to the pipe, so that the electrical wire can be easily pulled through. Affix the included wall clip as per instructions to hold the assembly in place while wiring is connected to the inlet valve.

For new construction: A 15 A circuit should be dedicated to the inlet valves. You may prefer to consult an electrical contractor to install the electrical wire run while he is still on the building site.

Floor installation - Vinyl or Lino

Cut hole (2 3/8" by 4 3/8") into floor at desired location and screw mounting plate from below to underside of floor. Connect tube to mounting plate with a short 90° Ell (stock no. 2004-HXH).

Connect low-voltage wire to lugs on Inlet valve and screw Inlet valve into place (**illustration 1**).

Floor installation - Carpeting

Connect coupling (stock no. 2010-HXH) to mounting plate. Insert a 1" sleeve of tube (shown as dotted line) between coupling and short 90° Ell. Connect to tube. Repeat step "B" of fig. 1 (**illustration 2**).

New construction - Wall rough-in

Cut 2 1/2" hole dead center through bottom plate and floor with the edge of the hole 1/4" from stud. Push tube through opening from below. Nail # 1041 mounting plate at desired height with plaster guard facing room. Push tube through opening from below. Connect tube with a short 90° Ell to mounting plate, using the increments for proper 90° alignment.

Bend low-voltage wire behind mounting plate, leaving enough length to permit future connection to lugs on the Inlet valve. Strap low voltage wire to tubing with cable ties.

A temporary cardboard dust cover is available to prevent construction debris entering the installed system. The dust cover may be imprinted with the name or corporate logo of the installing company (**illustration 3**).

New construction - Utility by-pass

Install mounting plates at desired location, slip a short 90° Ell over the spigot projecting from the back of the mounting plate. Use the 45° increments on back of mounting plate and line up with the 45° increment on the short 90° Ell for true 45° alignment.



Illustration 1



Illustration 2



Illustration 3

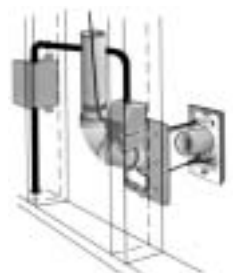


Illustration 4

Insert a 2 1/4" pipe sleeve and slip into a 45° Ell (stock no. 2008-HXH) again using the 45° increments for proper 45° alignment. Insert pipe into upper hub of 45° Ell. Repeat step "B" of fig. 1 (**illustration 4**).

Existing construction - Finished wall

Cut mounting plate along dotted line with hacksaw or score with razor knife and break flange off. Using the raised edge of mounting plate as template, scribe exact opening on wall and cut opening (**illustration 5**).

Location of Inlet valve

To drill pilot hole, first establish the location of your inlet valve. To find an unobstructed section in wall (between studs), tap with your finger on wallboard until it sounds hollow. Using a 1/8" drill bit, drill a pilot hole right through floor directly below the selected location and as close to the baseboards as possible. Insert a coat hanger wire or equivalent into hole so that it projects below floor boards. From underneath floor, measure from coat hanger to center of 2" x 4" plate, allowing for thickness of baseboard and wall covering. Drill 2 1/2" hole directly in the center of 2" x 4" (**illustration 6**).

Connecting to Mounting Plate

Slip short 90° Ell over projecting spigot at back of mounting plate. Grasp mounting plate between forefinger, middle finger and thumb. Tilt mounting plate top first upward into wall opening until completely inside wall (**illustration 7**).

Pull towards you until mounting plate fits snug into opening, and secure it firmly in place with the use of the metal wall clip, as shown in inset of **illustration 8**.

Connect low-voltage wire to lugs on back of inlet valve. Hold entire assembly in place with a coat hanger wire while twisting the Inlet valve onto the mounting plate. Do not glue, as rubber seal ring provides maximum air-tightness. Line up mounting-screw holes and screw Inlet valve to mounting plate (**illustration 9**).



Illustration 5



Illustration 6

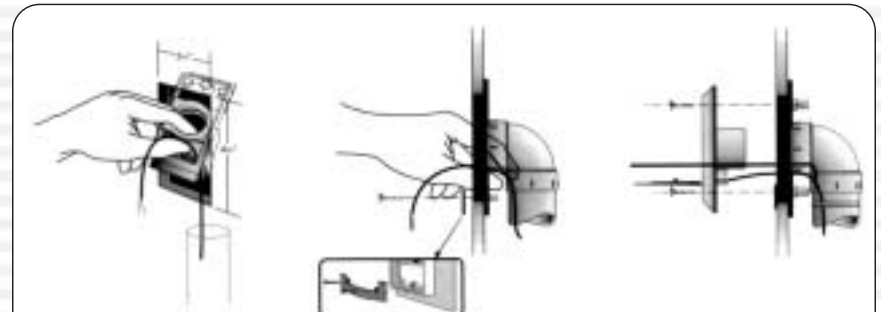


Illustration 7

Illustration 8

Illustration 9

NOTE:

The use of the 90° EII (stock no. 2004-HXH) is for 4" walls, while the special short 90° EII (stock no. 2021-HXS) should be used for 3" walls.

MOUNTING PLATE

Floor installation - Vinyl or Lino

Cut hole (2 3/8" by 4 3/8") into floor at desired location and screw mounting plate from below to underside of floor. Connect tube to mounting plate with a short 90° EII (stock no. 2004-HXH).

Connect low-voltage wire to lugs on Inlet valve and screw inlet valve into place (illustration 1).

Floor installation - Carpeting

Connect coupling (stock no. 2010-HXH) to mounting plate. Insert a 1" sleeve of tube (shown as dotted line) between coupling and short 90° EII. Connect to tube. repeat step "B" of fig. 1 (illustration 2).

New construction - Wall rough-in

Cut 2 1/2" hole dead center through bottom plate and floor with the edge of the hole 1/4" from stud. Push tube through opening from below. Nail # 1041 mounting plate at desired height with plaster guard facing room. Push tube through opening from below. Connect tube with a short 90° EII to mounting plate, using the increments for proper 90° alignment.

Bend low-voltage wire behind mounting plate, leaving enough length to permit future connection to lugs on the Inlet valve. Strap low-voltage wire to tubing with cable ties.

A temporary cardboard dust cover is available to prevent construction debris entering the installed system. The dust cover may be imprinted with the name or corporate logo of the installing company (illustration 3).

New construction - Utility by-pass

Install mounting plates at desired location, slip a short 90° EII over the spigot projecting from the back of the mounting plate. Use the 45° increments on back of mounting plate and line up with the 45° increment on the short 90° EII for true 45° alignment. Insert a 2 1/4" pipe sleeve and slip into a 45° EII (stock no. 2008-HXH) again using the



Illustration 1



Illustration 2



Illustration 3



Illustration 4

45° increments for proper 45° alignment. Insert pipe into upper hub of 45° EII. Repeat step "B" of fig. 1 (illustration 4).

Existing construction - Finished wall

Cut mounting plate along dotted line with hacksaw or score with razor knife and break flange off. Using the raised edge of mounting plate as template, scribe exact opening on wall and cut opening (illustration 5).

Location of Inlet valve

To drill pilot hole, first establish the location of your inlet valve. To find an unobstructed section in wall (between studs), tap with your finger on wallboard until it sounds hollow. Using a 1/8" drill bit, drill a pilot hole right through floor directly below the selected location and as close to the baseboards as possible. Insert a coat hanger wire or equivalent into hole so that it projects below floor boards. From underneath floor measure from coat hanger to center of 2" x 4" plate, allowing for thickness of baseboard and wall covering. Drill 2 1/2" hole directly in the center of 2" x 4" (illustration 6).

Connecting to Mounting Plate

Slip short 90° EII over projecting spigot at back of mounting plate. Grasp mounting plate between forefinger, middle finger and thumb. Tilt mounting plate top first upward into wall opening until completely inside wall. Pull towards you until mounting plate fits snug into opening, and secure firmly in place with the use of the metal wall clip, as shown in inset of illustration 8.

Connect low-voltage wire to lugs on back of Inlet valve. Hold entire assembly in place with a coat hanger wire while twisting the Inlet valve onto the mounting plate. Do not glue, as rubber seal ring provides maximum air-tightness. Line up mounting-screw holes and screw Inlet valve to mounting plate.

Note:

The use of the 90° EII (stock no. 2004-HXH) is for 4" walls, while the special short 90° EII (stock no. 2021-HXS) should be used for 3" walls.

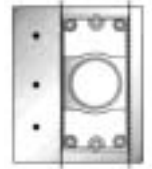


Illustration 5



Illustration 6



Illustration 7

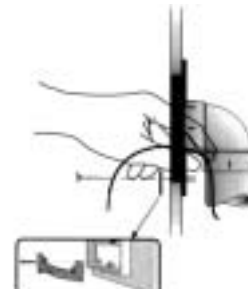
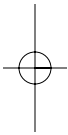


Illustration 8



Illustration 9



Dust DC Care

Dust Care division of BVC
Smyrna Ga. 30080