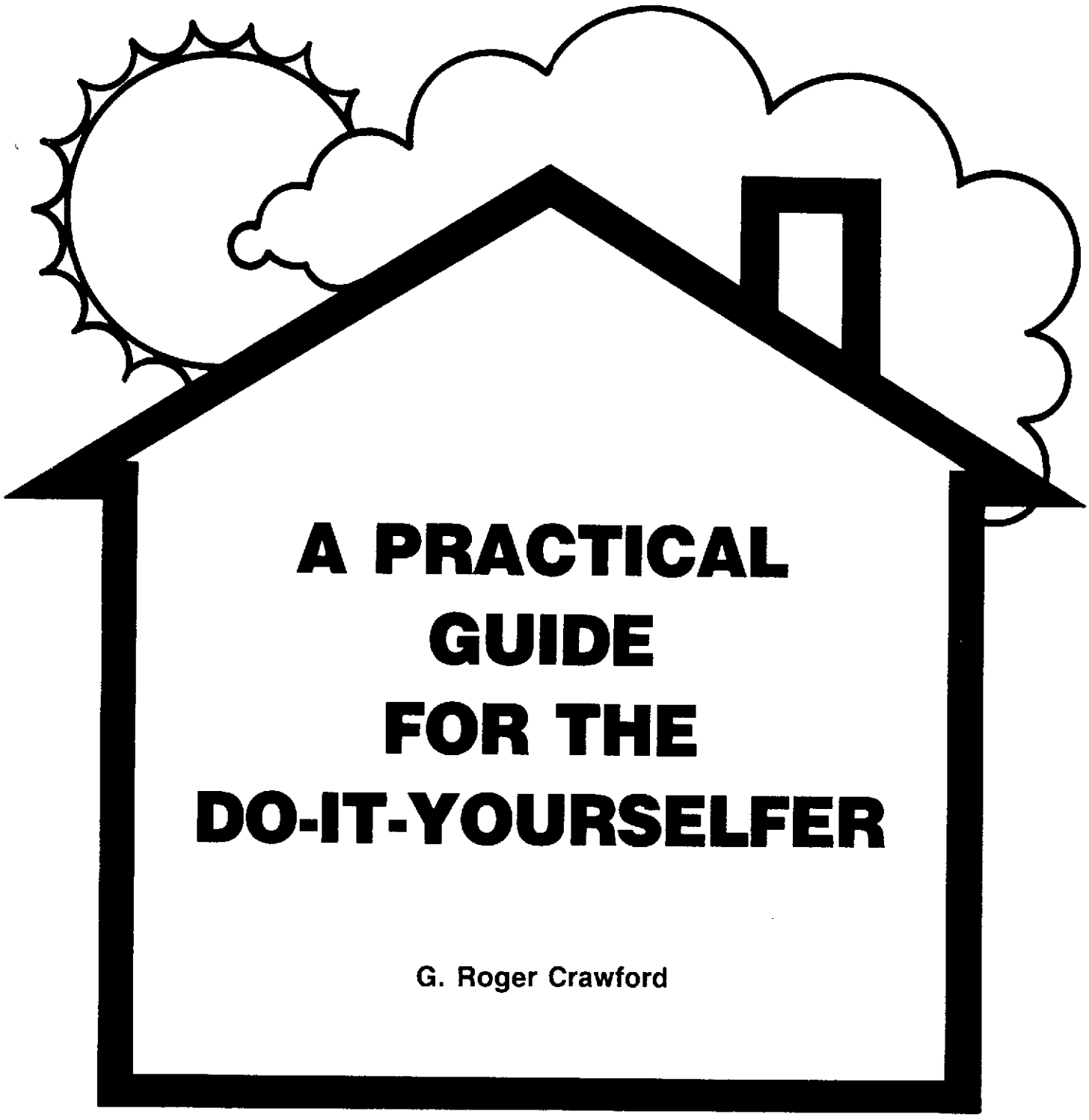
HOW TO INSTALL INSULATION IN THE WALLS OF YOUR HOME



A PRACTICAL GUIDE FOR THE DO-IT-YOURSELFER

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$2.95

INSPECTION

Prior to insulating, walls should be inspected for holes such as plumbing openings under sinks, wood rot, water leakage, weakened plaster, (usually water damage, mildew or water stains on the interior walls), condensation and poorly fastened sheetrock or sheathing. Pay particular attention to conditions of gutters and windows on houses with no roof overhang (eaves). You can still insulate, **but these problems must be corrected first.** Carefully inspect built-in bookcases, buffets and china closets that are located against outside walls. It is not common but occasionally these built-ins butt up against the outer sheathing of the house. If in doubt, make some careful measurements. In some older homes, exterior wall stud runs may be used as warm air or cold air return ducts. These must not be filled with insulation. They can be found from the interior and should be marked on the exterior. These ducts can be rerouted prior to insulating.

CAUTION: DO NOT INSTALL INSULATION IN STUD RUNS WHERE A HEAT PRODUCING DEVICE LIKE AN UNPROTECTED CHIMNEY, RECESSED LIGHT (BUILT INTO THE WALL WITH A GLASS COVER OVER THE BULB), FIREPLACE, BUILT-IN WALL HEATERS, ETC. MIGHT CAUSE SEVERE OVERHEATING! Look both inside and outside your home to determine these places to skip. While you are blowing, if a wall cavity seems to take too long to fill . . . STOP . . . go inside the house and determine where the insulation is going. There are a limited number of places that the blown cellulose can go if the wall cavity is open to another space. These are the possibilities: interior of house; furnace air ducts; attic; basement; area between first story ceiling and second story floor; under a stairway or stair landing; around a bathtub; up into the soffit. Remember, you are blowing insulation into a 6-sided box . . . inspect each (stud space) 6-sided box before filling it with insulation.

ADJUSTING THE INSULATION MACHINE FOR SIDEWALL WORK

There are several basic steps regarding adjustment of the TG 100 Blowing Machine which are important so as to avoid unnecessary delays and problems when insulating sidewalls.

PLUGGING OF THE INSULATION HOSE, BLOWER CHAMBER AND/OR REDUCER NOZZLE

There is an air adjustment at the base of the blowing machine hopper, (Figure A). This is a flat piece of metal which covers an air inlet opening. It pivots on a screw at one end and can be moved to open or close the air inlet.

When the air inlet is closed, a very thick mixture of insulation goes into the hose. Closing the air inlet down too far is the most common cause of frustrating and unnecessary plug-ups in the hose, blower chamber and reducer nozzle.

When the air inlet is completely open, a very thin mixture of insulation goes into the hose. This won't cause plug-ups, but it will take far too long to fill the cavity with insulation.

The desired setting will allow as thick a mixture of insulation as possible to go through the hose without causing plug-ups. To find the ideal setting, start with the air adjustment about ¾ open. If there are no calibration markings next to the air inlet, put a piece of tape next to it and make your own movement marks. Close it down about $\frac{1}{16}$ of its total movement at 30 second intervals while blowing insulation into the sidewall. (NOTE: Don't confuse the sidewall cavity filling up with a stoppage or plug-up due to too thick of cellulose mixture in the hose.) The insulation will stop flowing in both cases. To determine if the cavity is full, go to the next empty stud run and insert the nozzle into the hole. If the cellulose starts flowing again, then the previous cavity is probably full. At the first indication of a plug-up, open the air adjustment to the position it was at one step prior to the plug-up occurring. That is the setting which will give the optimal cellulose flow without causing plug-ups.

To make absolutely certain the cavity is full, insert a wire (such as a piece of a coat hanger) into the entry hole, probing in all directions. You should encounter firm resistance in all directions. If you do not encounter resistance, reinsert the nozzle (after clogging has been cleared) and continue to blow until you are certain the cavity is full.

HELPFUL HINT

If you have just completed insulating an attic and did not blow the hose empty to clear it of the thick insulation mixture used, expect a plug-up immediately upon starting a sidewall job with the reducer nozzle installed. Be sure to blow the hose empty of the thick attic insulation mixture by opening the air adjustment wide open before starting a sidewall job. Also, do not use more hose sections than necessary to reach from the insulation machine to the job area — 50' is most desirable.

STATIC ELECTRICITY

The cellulose passing through the hose can cause static electricity. This static can sometimes cause a minor shock as you are handling the hose during application. While this shock might startle you, it is not harmful.

WHERE TO DRILL HOLES

First . . . a word of caution about drilling holes in sidewalls. There are usually electrical wires in the walls of your home, although the chance of your drill bit cutting into them is very slight. For this reason, plus the fact that you may be standing on damp or wet ground while drilling outside, it is **very important** that your electric drill be grounded. Always use a grounded 3-wire extension cord or one of the double insulated drills with a plastic housing, handle and trigger.*

Always test all drilling and sidewall removal procedures at the *least* conspicuous area of your home until you are certain of the most desirable method for your situation.

There are three basic entry hole patterns which can be used when insulating existing residential sidewall cavities — one, two and three holes per story, as explained in the following instructions. The wall stud spacing is 16 inches from center to center, so the sideways spacing on all three patterns will be 16 inches. There are exceptions to this spacing, particularly around windows, doors and corners. The instructions cover methods of detecting and insulating these narrow non-standard cavities.

DETERMINING HOLE SIZE

As a general rule when drilling holes, use a drill bit $\frac{1}{16}$" smaller than the plug you decide to use. This will insure the plug will fit correctly.

ENTRY HOLE INFORMATION

The TG 100 Insulation Blowing Machine comes equipped with a standard 1" reducer nozzle (Figure B). This nozzle is capable of installing Cellulose Insulation into any wall cavity. The choice of entry hole size involves several considerations. You can install Cellulose Insulation much faster through a 2" or $2\frac{1}{8}$" hole. However, when using job techniques which may involve drilling through the outer siding material, many people prefer a small entry hole, for appearance's sake.

If you are removing siding or drilling from the inside through the lath and plaster or sheetrock, then a $2\frac{1}{8}$" entry hole should be used and omit the reducer nozzle, or use the 2" hose coupler or a Dyker 2" swivel nozzle (Figure D). The Dyker nozzle directs the flow of Cellulose Insulation for a more efficient pack against settling.

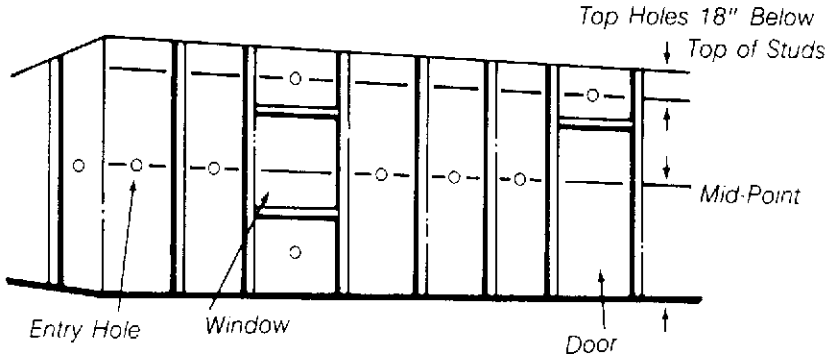
For more information about drilling through outer siding material, removing siding or drilling from the inside of your home, plus appropriate job techniques, tools and patching methods, see the section which begins on page 13.

* In the event you should drill into electrical wires when drilling an entry hole, it would be advisable to have an electrician check the situation before proceeding.

HOLE PATTERN #1: 1 HOLE PER STORY

(NOTE: See section on hole plugs. Plastic plugs are not available for 2⅛" holes.)

FIGURE H



In the first hole pattern, illustrated in Figure H, one 1½", 2", or 2⅛" diameter hole is spaced midway between the floor and ceiling on each story and above and below windows and doors. This pattern is used to minimize the number of points of entry for difficult exterior wall surfaces such as stucco, brick, asbestos (slate), or lath and plaster wall. **Insulation cannot be blown straight into a single hole per story with satisfactory results as the cellulose will not pack tightly enough at the most distant points of the cavity and settling will occur, leaving voids in the insulation.**

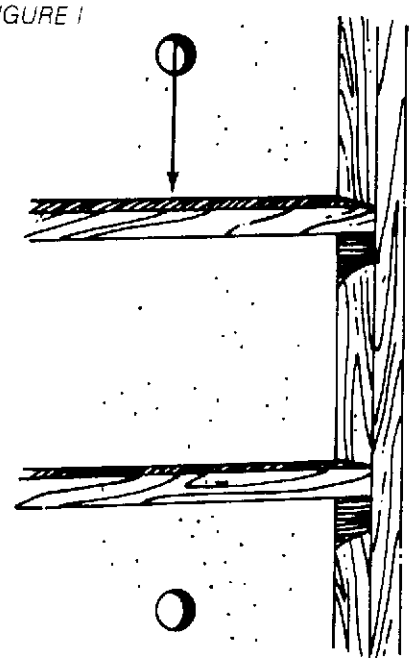
A four foot piece of clear flexible tubing (Figure C) should be slipped over the end of the reducer nozzle and secured with a hose clamp. The vinyl tubing can be folded or crimped to act as a shut-off valve. The vinyl tubing (smaller than the entry hole), is inserted through the entry hole and down to the floor plate and then withdrawn about a foot. If you cannot, after repeated attempts, insert the vinyl tubing to the plate (a 2x4 at the bottom of the wall), then there is probably a fire stop or cross brace present and you will have to drill an additional hole. You should also use the tip of the vinyl tubing as a sideways probe to determine the location of the wall studs. This will sometimes help you to locate narrow wall cavities which you otherwise might miss.

Stuff a rag loosely into the hole around the tubing to keep dust from blowing out into your face. Turn the insulation blower on with the remote switch to start the flow of material through the tubing to reach the lowest area of the wall cavity. When the flow temporarily stops, withdraw the tubing about 12 inches and the material will start to flow through the tube again. If you can hear the blowing machine, it will change pitch as the pressurization occurs. If you can't hear the machine, you can feel the material stop moving in the hose and see it stop moving in the vinyl tubing, sight glass or reducer nozzle if any of these are transparent. Continue withdrawing the tube in one foot stages until it is about 6 inches from being completely withdrawn. (NOTE: It is helpful to put a strip of tape around the vinyl tubing about 6 inches from the end so that you don't completely withdraw it and create a dust storm of insulation in your work area.) Now turn the blower off with the remote switch and let the pressure in the hose die down.

Repeat this procedure, however, this time insert the vinyl tubing upwards to the vicinity of the ceiling and repeat the withdrawal procedure in stages. When the last 6 inches of tubing are being withdrawn, almost withdraw and then reinsert the end of the vinyl tubing several times to make sure the area around the hole is fully packed with insulation. Turn the blower off and move onto the next hole. (NOTE: This technique may become unsuitable in temperatures below 20 degrees Fahrenheit because the vinyl tubing loses its flexibility and becomes too stiff.

CHECKING FOR FIRE STOPS, CROSS BRACES, AND STUD LOCATIONS

FIGURE I



In the one hole per story method, the inability to insert the vinyl tubing down to the floor could mean you are encountering wood blocking, fire stops, cross bracing or other obstructions. The following two hole patterns, two and three holes per story, involve blowing material straight into the cavity by inserting the reducer nozzle, 2" hose coupler or Dyker swivel nozzle directly into the hole and letting air pressure move the cellulose both down and up from the point of entry. Consequently, when blowing insulation straight into the entry hole, you have no way of knowing if there is some type of obstruction present within the wall cavity which will prevent the blown-in cellulose from completely filling the stud run. The following instructions explain how to get around this problem and do a nearly perfect job of insulating your walls.

ITEMS REQUIRED:

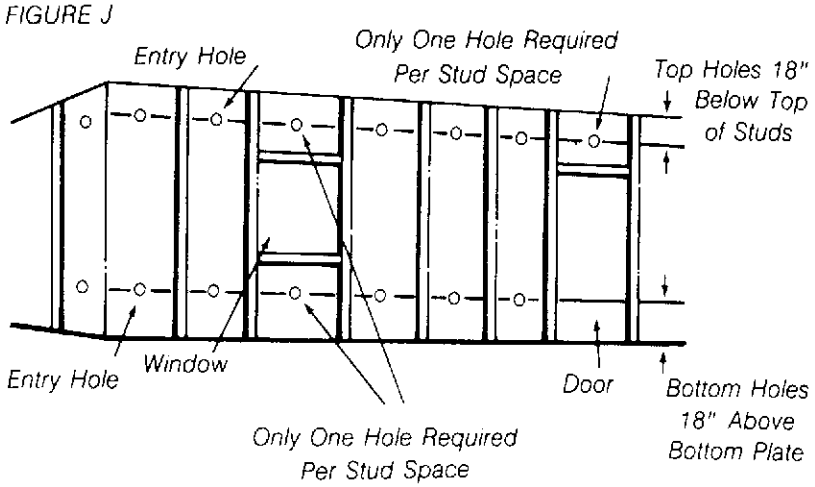
1. Measuring tape, electrician's fish tape reel or plumb bob.
2. Rubber gloves.

Depending on the size of the access hole used, you can use the measuring tape, electrician's fish tape reel or plumb bob. The electrician's fish tape is a spool of flat steel wire which electricians use to fish or pull electrical wire through metal conduits. It is also an excellent tool to use for probing an empty sidewall cavity for fire stops and cross braces, as well as for determining unusual spacing (anything other than 16 inches center to center) or 2x4's, especially around windows, doors and corners, as illustrated above (Figure I). The measuring tape can be used for access holes 2" or larger. The electrician's fish tape can be used for any size hole. Probe the stud cavity up, down and sideways to locate any obstructions which may be present and to determine the location of the stud walls. BE SURE TO WEAR RUBBER GLOVES WHEN PROBING THE CAVITIES. If the end of the fish tape hooks an electrical shock wire and you try to free it, you could get an electrical shock. This is unlikely, as the wires are insulated. However, by jerking on the fish tape, you could wear through the insulation of the wire, especially on old style "knob and tube" wiring. If the fish tape does get hopelessly hooked or snagged on an electrical wire, cut it off at the entry hole with a pair of wire cutters and stuff the end in the hole. Rebend the end of the fish tape and proceed as before. But, as a precaution, be sure to wear rubber gloves when probing the wall cavities.

HOLE PATTERN #2: 2 HOLES PER STORY

(For entry hole size, see the section on entry hole information Page 5.)

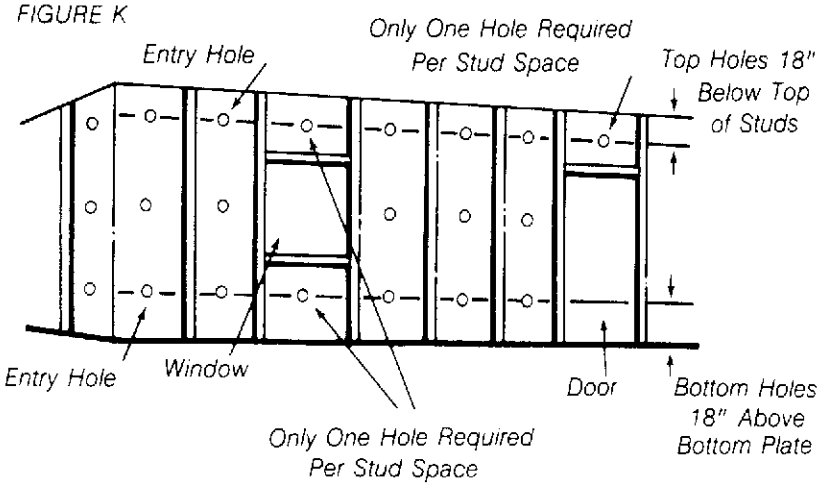
FIGURE J



Drill one hole about 1½ feet above the floor level and one hole about 1½ feet down from the ceiling level, as illustrated in Figure J. This pattern is used for blowing the insulation straight into the wall cavity and is usually used with wood lap siding when drilling through the siding without removing it. The air/insulation mixture spreads out from the point of entry and will satisfactorily pack the insulation into the cavity up to about 2½ feet in each direction from the point of entry. Blow the bottom hole first, then the top hole. Simply put the reducer nozzle, hose coupler or Dyker nozzle directly into the hole, start the insulation blower and let the insulation flow until it stops. (NOTE: Once the cavity is full, turn off the blower before the hose gets plugged.)

HOLE PATTERN #3: 3 HOLES PER STORY

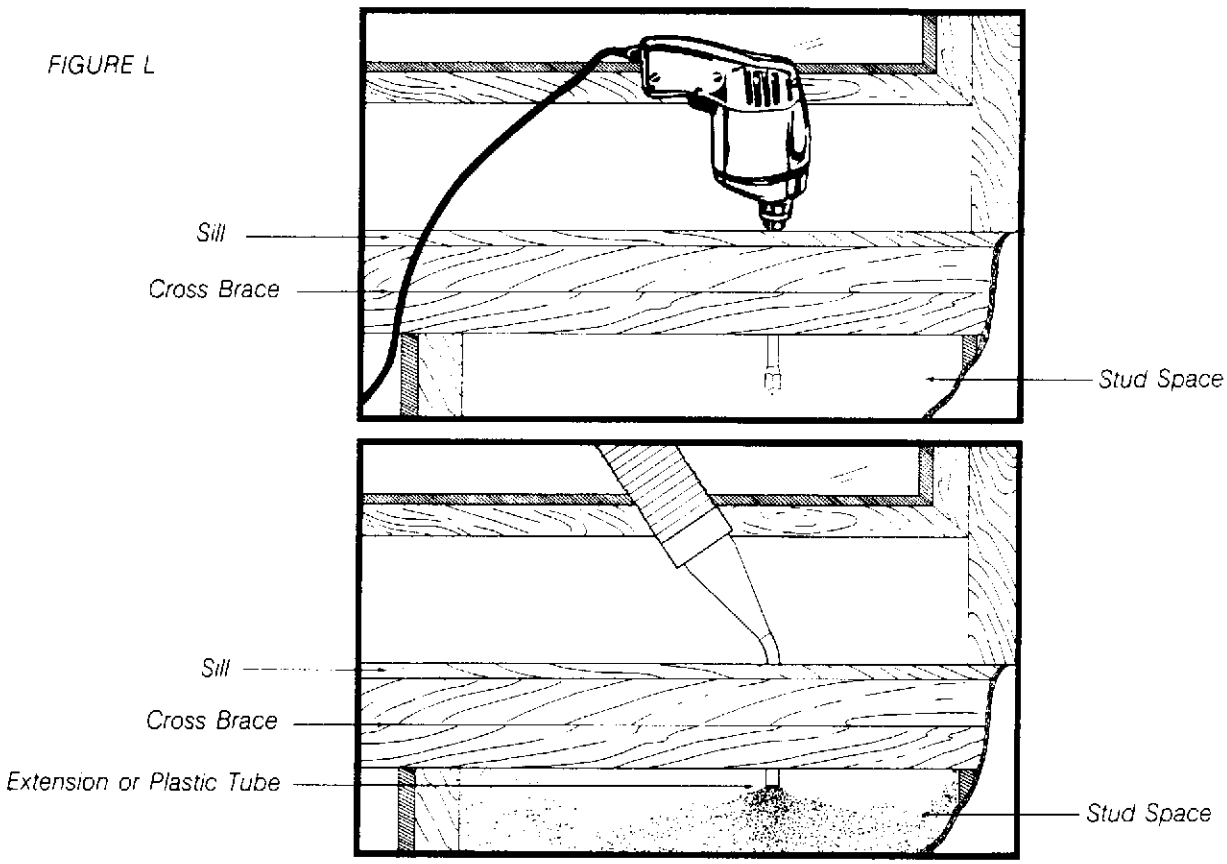
FIGURE K



Drill three 1" or 1¼" diameter holes per story, as illustrated in Figure K. The bottom hole is located about 1½ feet up from the floor level. The top hole is located about 1½ feet down from ceiling level and the center hole is located midway between the bottom and top hole. This pattern is similar to pattern #2, but is used when the wall cavity has some existing insulation or material present which would prevent a good spread of the blown-in insulation or where the cavity remaining is too narrow to use the tube method described in hole pattern #1. **The logic used in this instance is that by making more points of entry, the blown-in air/insulation mixture won't have to spread out as far from the entry point and therefore the likelihood of completely filling the cavity is improved.** Some examples of existing insulation or material which would suggest the use of hole pattern #3 are: backplaster — a layer of lath and plaster in the wall cavity; a layer of roofing felt dividing the cavity — you must blow insulation on both sides of the divider; or any existing blanket insulation over 1½" thick.

INSULATING BELOW WINDOWS

FIGURE L



There is a job technique which eliminates drilling any holes **below** the window into the wall cavity or cavities.

JOB PROCEDURE:

Raise the inner window. Drill two 1" or 1¼" holes (depending on the size of the reducer nozzle and plug size being used) down through the window sill. Locate the holes about halfway between the center of the window and the sides of the window opening, lined up where the window rests, as illustrated above (Figure L). You will need a longer than normal drill bit to reach the cavity. Usually, there is a ¾" board to drill through plus two 2x4's laid flat, (¾" + 1½" + 1½" = 3¾"), so you need a drill bit which extends at least 4" past the end of the drill. Next, using a tape measure or metal fishtape reel, probe down the holes you have drilled to find out where the wall studs are located below the window and whether the cavities extend all the way to the floor plate. Drill any extra entry holes which may be necessary. Next, temporarily plug one of the two entry holes with a hole plug and insert the reducer nozzle into the other hole. Blow insulation into the wall cavity until it is packed full, then remove the temporary plug and blow it into the second entry hole until it is packed full. Finally, apply a thin sealing coat of silicone or equivalent sealant around the sides of your wood hole plugs and tap them into place. Sand, fill, prime and paint the window sills to restore their appearance and to protect the wood from moisture.

Another method of insulating under the windows is to use the same method as you have used in the full height wall areas.

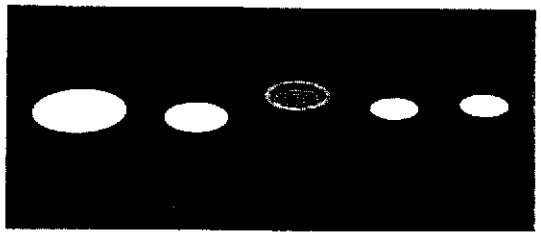
PLUGGING THE HOLES IN THE WALLS

Insulation hole plugs are made out of three materials: plastic plugs (paintable), wood plugs and foam plugs (usually polystyrene or urethane). The plug which is used in a particular job situation is dependent on the job technique being used as well as the wall surface which is being plugged. Plastic, wood and foam plugs are described below, their applicability discussed.

Always test all drilling and sidewall removal procedures at the *least* conspicuous area of your home until you are certain of the most desirable method for your situation.

PLASTIC PLUGS (Available for 1", 1½" and 2" holes)

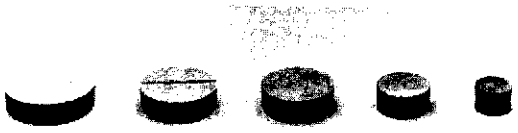
FIGURE M



Plastic plugs have ridges on the inside which grip the sides of the hole to prevent them from coming out. They fit almost flush with the wall surface and can be painted to match the siding. Plastic plugs can be used with wood-lap siding, fiberboard, asbestos (slate), aluminum, vinyl and steel siding when the job technique involves drilling the siding. The plugs have a thin flashing that extends out about ⅛" around the face of the plug. The entry holes are usually drilled about ⅛" below the siding overlap to minimize the chance of water infiltration from wind driven rain running down the siding. **(NOTE:** In areas of heavy rainfall, the plastic plugs should be installed with caulking to prevent leakage.)

WOOD PLUGS (Available for 1", 1½", 2", 2⅛" and 2½" holes)

FIGURE N



Wood plugs are slightly tapered so that they can be tapped into the hole and end up flush with the surface. They are made 1/32" larger than the hole for this purpose. Wood plugs are also used in conjunction with drilling through wood lap or fiberboard siding when the objective is to totally conceal the holes. The plug is tapped in a little beyond flush. The exterior patching plaster is applied and sanded flush. A second application of exterior plaster is sometimes required to match the siding. Wood plugs are sometimes used as a backer for patching plaster when the entry holes have been drilled through the interior wall of the house. The procedure is the same as just described for exterior patching and concealment of the holes.

FOAM PLUGS (Available for 1", 1½", 2" and 2½" holes)

Polystyrene or Polyurethane foam plugs are used exclusively as a backer for patching plaster when the entry holes have been drilled through the interior wall of the house. Foam plugs have the dual advantage of costing less than wood plugs and they do not absorb water from the patching plaster which means that you can sometimes get by with a single application of patching plaster.

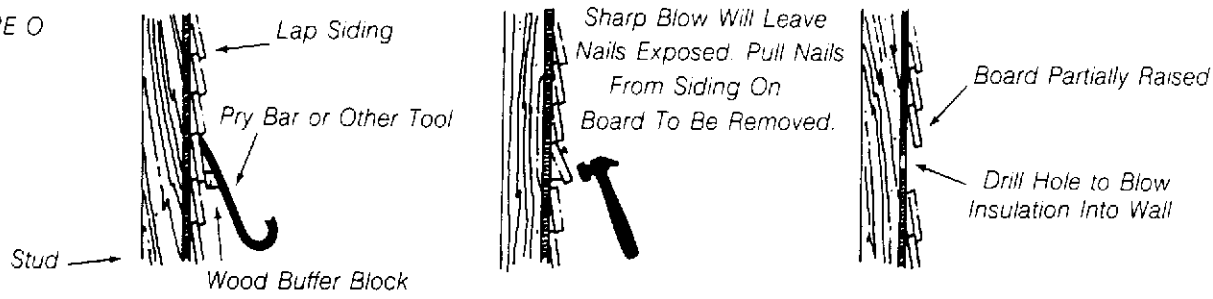
TYPES OF SIDING MATERIALS AND APPROPRIATE JOB TECHNIQUES, TOOLS AND PATCHING METHODS

WOOD SIDING

Several methods are appropriate for blowing insulation into walls covered with wood siding.

Most types of wood siding can be removed rather easily by the following procedure, illustrated below (Figure O).

FIGURE O



Always test all drilling and sidewall removal procedures at the *least* conspicuous area of your home until you are certain of the most desirable method for your situation.

1. Drive a small wide pry bar under the lower lip of the siding and pry it out far enough to allow the nail to be removed.
2. Use the same approach to remove the nail from the section above. Once all the nails are removed in this manner, the entire section can be taken out.
3. Fill the wall cavities using either the direct blow-in or tube injection method.
4. Replace and renail the siding section, using galvanized nails.

DRILLING AND PLUGGING

1. Drill the holes in the siding shadow line.
2. Fill the wall cavity using the one, two or three holes per story method.
3. Plug the holes with wood or plastic plugs. If the wood plugs are used, they must be tapped firmly into place, plastered, sanded, primed and painted. If plastic plugs are used, they can be painted to match the color of the siding.

STUCCO

Drill with a heavy duty carbide hole saw such as Relton with a carbide pilot bit through stucco and wire mesh or break through stucco with the rounded end of a ball-peen hammer and clip the mesh with a pair of wire nippers. Whichever method you use to go through the stucco, be sure to leave at least ⅛" clearance around the hole so that the wood drill bit does not contact the stucco. CAUTION: If you use a ball-peen hammer, you should wear safety glasses or goggles. Also be aware that the vibration from the pounding can cause cracks in the adjacent stucco or in the plaster of the inner walls. It doesn't happen often, but is a possibility, so periodically inspect the interior wall and the adjacent stucco when using the ball-peen hammer method of breaking through the stucco. Then drill the wood sheathing. The single hole per story and vinyl tube method is best for stucco as it minimizes the number of entry points. Patch the holes following the instructions on the following page or contract the repair to a stucco contractor.

INSTRUCTIONS FOR PATCHING HOLES IN STUCCO

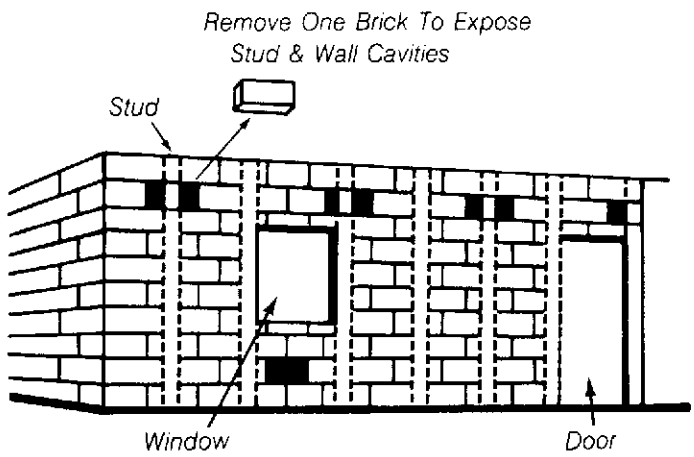
1. Cut squares or circles of 3.4 self-furring (SF) galvanized metal lath a little larger than the hole. Press in securely and make sure it is wedged tightly.
2. Fill almost flush with a mixture of one part "Huron" Type M Cement to three parts sand. (You can substitute a mixture of two parts Portland Cement to one part Mason Cement for the "Huron" Type M.) Make this mixture as thick as possible.
3. Let the patch set up. This is important to avoid color bleed-through to the surface of the final texture finish and to avoid a hairline shrinkage around the patch.
4. Apply texture finish — a mixture of two parts silica sand to one part white Portland Cement. To this add color pigment. The wet color will be darker than the dried color. A whisk is helpful in texturing this finish.

(NOTE: There are also quick-setting mortar products available such as "Akona Thermaseal" which contains fiberglass filaments and sets quickly. They are usually available in white and gray.)

BRICK

There is no need to bypass sidewall installation because the exterior wall surface is brick. Several excellent methods exist to insulate the sidewalls of brick homes.

FIGURE P



METHOD 1:

The single hole per story and tube injection method is particularly appropriate for brick. Use a motor chisel, either manual or in conjunction with an electric hammer or roto hammer to remove bricks which straddle studs. CAUTION: Be sure to wear safety glasses or goggles when chiseling mortar. You will have to make some careful measurements to determine the right bricks. This way you can gain access to two stud cavities by removing one brick, as illustrated above (Figure P). Be careful as you remove each brick to mark it so that you can replace the same brick into the opening from where it was removed. Using a flat chisel or punch you can usually tap a hole in the mortar around the brick you wish to remove. Continue punching out the mortar all around the brick until you can remove the brick. An extra long shank on your wood bit will be necessary to reach the wood siding of the wall cavity. There is an air space of ½" to 2" between the back side of the brick and the wall sheathing material on the outside of the wall stud cavity. DO NOT insulate this air space.

When the insulating is finished, replace the bricks in the same opening as they were originally. By using small pieces of wedge shaped wood you can align the brick correctly. Now you are ready to replace the mortar around these bricks. Purchase a premixed mortar mix from a building supply center. A premixed mortar needs only the addition of water.

METHOD 2: (Using 2 or 3 holes per story)

Using an 11/16" or 3/4" carbide drill bit, drill holes through the mortar joints where three bricks join, as illustrated in Figure P. After drilling through the mortar joint, use a wood drilling bit and drill through the exterior sheathing which is nailed to the studs. (NOTE: You will need an 11/16" or 3/4" wood bit which extends out from the tip of your drill about 7". That is 4" depth of brick and up to 2" dead air space and 1" for drilling through the wood sheathing = 7".) Next, attach the 5/8" mortar joint reducer nozzle (Figure E) on the end of a 2" to 1" standard sidewall reducer nozzle and insert the tip of it at least 1" into the actual stud cavity. Now lock the depth adjuster ring in place and you are ready to blow insulation into the wall cavity. You will have to open the air adjustment at the base of the insulation hopper wider than for standard sidewall blowing or you will plug up the 5/8" OD reducer nozzle. **DO NOT install any cellulose insulation in the dead air space between the back side of the brick and the sheathing (usually wood) on the outside of the actual wall cavity or severe moisture problems may occur.** When finished, fill the holes with fresh mortar patch in a caulking tube.

METHOD 3:

Obtain access to the wall cavity by drilling through the interior wall of the house. See directions for "Sheetrock or Lath and Plaster," page 17.

ASPHALT SIDING

There are two types of asphalt siding. Both types have a surface composition similar to roofing shingles.

The thin type of asphalt siding is about equal to a shingle in thickness. The technique for this type is to use a shingle knife and cut out squares of material across the center of each story. The single hole per story and tube injection method should then be used if possible. After insulating, install wood plugs and glue the cut-out squares of material back into place with clear silicone sealant. Be sure to seal the edges securely to prevent water infiltration.

The thick type of asphalt siding is bonded to 1/2" fiber board siding about 8" wide. A row or rows of this siding will have to be removed. The single hole per story and tube injection method should be used if possible.

REMOVAL PROCEDURE

Use a drift punch. (A drift punch is flat on the end for driving nails.) Punch the nails through the siding at the bottom and top.

After all the nails are punched through, gently pry the bottom of the shingle out with a flat wide pry bar. Place the siding in an upright position along with the foundation below the wall section from which it was removed.

Drill and insulate the wall cavity using hole pattern #1, #2 or #3, as appropriate. When finished, install wood plugs and reinstall siding.

Use 5-D aluminum common nails to reinstall the siding. The nail head covers the complete nail hole.

ASBESTOS (SLATE) SIDING

This type of siding breaks quite easily and should be handled carefully whether you remove it or drill through it. Be sure you have replacement siding available in the event of breakage. The single hole per story and tube injection method is preferable as it minimizes the number of holes. Job procedures follow.

REMOVAL

1. Use a flat head nail nipper (Figure F). Clip the heads of the nails at the top and bottom of the shingle to be removed. If the siding is blind nailed, (nailed to the sheathing at the top of the shingle with the nail head concealed by the next higher row of siding), then a nail slicing bar or hack saw blade must be used to cut these nails.
2. Remove the shingle and pull the remainder of the nails. Hang the shingle on the wall using a new nail through one of the bottom nail holes.
3. Drill into and insulate the wall cavity.
4. Replace and renail the shingle using galvanized nails and the same holes if possible.

CEDAR SHINGLE SIDING

This type of siding can be drilled and repaired by installing a wood plug tapped in further than flush. Then external spackling compound is applied and a comb is drawn through the soft spackling compound, grooving it to match the grooves in the shakes.

REMOVAL

Cedar shingles may be removed by cutting upward at a 45° angle at the top of the shingle with a razor blade knife, linoleum knife or shingle knife. You will have to make several cuts to get through the shingle. An alternate cutting method is to use a circular saw with the depth of cut slightly greater than the shingle thickness and the blade tilted for a 45° cut. Be sure to arrange the shingles along the foundation in the same order that you removed them so that everything matches when you reinstall them. It is advisable to use the single hole and tube injection method if possible to minimize the number of rows of shingles to be removed. After insulating, replace the shingles by holding them in place, drilling holes through the shingles and then securing them with new galvanized nails. (NOTE: Be sure to drill the shingles first or you may end up splitting them.

CEDAR SHAKES

Cedar shakes on the walls of your home make for an easy job of insulation. These shakes are usually very easy to remove which allows for entry into the walls wherever you wish. The type of nails used to fasten the shakes to the wall will determine how you remove the shakes. Many times these cedar shakes are installed using a nail with a very small head. By using a nail set (a punch like tool slightly smaller in diameter than the nail head) you can punch or drive the nails through the shakes into the wall. This will allow you to slip the shake downward and out from between adjacent shakes. This then makes it possible for you to drill an entry hole into the wall where you removed the shake. Shakes may be removed using the above procedure wherever you need an entry hole. If the shakes are nailed with nails with too large of a head to punch through you may pull the nails with a pry bar.

In order not to lose or misplace the shakes it is suggested that you tack the shakes just above where you removed them. It is not necessary to plug these entry holes after filling the cavity. Replacement of the shakes after insulating is accomplished by sliding or tapping the shake lightly with a hammer up into the place from where it was removed. Renail as required.

ALUMINUM, VINYL AND STEEL SIDING

There are many different types of aluminum, vinyl and steel siding which lock together in different ways. Before attempting to remove any of these, note what kind it is and if it can be replaced if a piece gets damaged. Three removal methods follow.

REMOVAL

1. Remove a corner piece on the fifth or sixth row of siding, up from the bottom.
2. Insert a screwdriver and pry down to unlock the siding at the corner. Once the corner is unlocked, the remaining section of siding can be unlocked by slowly peeling it down the length of the section.
3. Pull the bottom of the loosened section away from the wall and insert a precut wedge to hold it away.
4. Drill a hole through the sub-siding (sheathing) and install insulation into the cavity using the tube injection method.
5. After all the stud sections have been filled in this manner, return the siding to normal, locking it to the section below.
6. Replace corners or turn where necessary.

ALTERNATE REMOVAL METHOD

An alternative is to remove a row of the siding by reversing a plywood blade in a circular saw and cutting through the siding just under the overhang. The piece of siding can then be pulled down and removed. After insulating with the single hole per story and tube injection method, install a wood plug. Then reinstall the piece of siding. Seal the cut area with clear silicone after securing it with small galvanized nails that have colored heads which most closely match the siding. (NOTE: Be sure to use a nail punch and brad driver when reinstalling the siding so that you don't dent it.)

DRILL & PLUG METHOD

Aluminum, vinyl and steel siding can be drilled with a steel hole saw, then drill the wood or sheathing underneath with a wood bit to gain access to the cavity. After insulating, the entry holes are plugged with plastic plugs, painted to match the siding. **(NOTE:** Always drill in the shadow line immediately under the overhang of a row of siding. Use the one, two or three hole method as described earlier, whichever is appropriate.)

SHEETROCK OR LATH AND PLASTER INSULATING SIDEWALLS FROM INSIDE THE HOUSE

The best attitude with which to approach this job technique is to realize that you are going to make quite a mess inside your house and try to minimize it as much as possible. Precautionary suggestions include the following: remove small items from shelves; isolate mess to one room at a time by taping open doorways shut with poly plastic sheeting; cover rugs and furniture with poly; remove plants, pets, etc. from the work area.

You will have to drill at least one hole per stud run through the lath and plaster or sheetrock. This type of job is an ideal choice for Hole Pattern #1, if possible, minimizing the number of points of entry. If it is appropriate, two choices are possible for points of entry: behind the baseboard and halfway between the floor and ceiling. Drilling through the wall behind the baseboard eliminates the job of patching the holes in the wall, and is the preferred method. You will need a seven to eight foot length of vinyl tubing on the end of the reducer nozzle, rather than a five foot length, if insulating behind the baseboard. Use a carbide hole saw with a carbide tipped pilot drill to cut through either lath and plaster or sheetrock. DO NOT use a non-carbide hole saw or pilot drill or you will hopelessly dull it

when drilling the first two or three holes. When drilling the holes, don't try to hurry the drilling by leaning hard into the drill, especially with lath and plaster. You may flex the sheetrock or the lath and create cracks in the wall — more patching and repair work will be necessary. Let the hole saw do the work with a moderate amount of pressure. When you have finished insulating the wall, insert a foam plug or a wood plug as backer for the patching plaster. Try to push or tap the hole plug in as close to flush with the wall as possible so as to get by with one application of patching plaster. (NOTE: Patching plaster dimples or pulls in a little bit on thick applications which necessitates a second layer . . . also, leave the poly plastic sheeting on the floor until you have completed the patching and sanding and are ready to apply paint or wallpaper.)

DIVIDED AND PARTIALLY INSULATED WALL CAVITIES

There are a variety of poured, flexible, semi-rigid and rigid materials which you may encounter when you first drill into the wall cavity of your home. If the wall cavities are full of mortared bricks or poured concrete, you may as well not drill anymore holes. But if there is 1½" or more of air space left within the cavity then you can fill that space with blown-in cellulose insulation and thereby increase the insulation value of the wall. The single hole and tube injection method cannot be used for divided and partially insulated wall cavities — two or three holes per story will have to be drilled.

BACKPLASTER

Backplaster is a second wall surface located within the normal wall space dividing the cavity into two separate spaces. The backplaster layer is composed of lath and plaster with the laths running up and down. The laths are nailed to 1x2's which run across the cavity at the bottom, middle and top. The original reason for installing backplaster was to create two dead air spaces with some thermal storage mass attached. Backplaster is usually found about ¾" to 1" into the wall cavity. When you encounter backplaster while drilling through the wall from outside, stop, don't try to drill through it with your wood cutting drill bit. You will ruin it. Instead, switch to a carbide tipped hole saw the same size as your drill bit for wood. Take the pilot drill out of the hole saw as you will not need it for centering. Use the carbide tipped hole saw to cut through the lath and plaster to gain access to the wall cavity behind it. This cavity will usually be 2" to 2¾" deep, although it will occasionally be less than 2" if the builders located the backplaster layer right in the middle of the cavity. You will probably be using hole pattern #2. Be sure that the tip of the reducer nozzle or the tip of the shut-off (if you are using a 2" or 2⅛" hole) extends into the hole which you have cut through the backplaster. You don't want the air pressure which you are using to spread or pack the insulation into the wall to leak away before reaching the cavity.

After blowing the inner wall cavity full (between the inner wall and the backplaster), withdraw the tip of the nozzle and repeat the procedure in the outer cavity (between the outer wall and the backplaster). If the backplaster is located in the middle of the wall cavity, you will be able to insulate on both sides of it without any problems. If, however, the backplaster is located ¾ or ⅘ towards the outer or inner wall, you may have only partial success in filling the narrower cavity. The reason for this is that the backplaster sticking through the laths sometimes comes into contact with the wall sheathing and closes the narrow cavity down so the insulation cannot spread properly to all areas of the cavity. For this reason it may be advisable to use hole pattern #3 when you encounter this situation.

You may encounter other materials which divide the original wall cavity into two separate cavities — tar paper, newspaper, or other forms of insulation. The job techniques are the same in these situations as they are for backplaster. There is, however, one exception: You do not use a carbide tipped hole saw — a regular steel hole saw will suffice.