

# Bilco Basement Door Installation Instructions



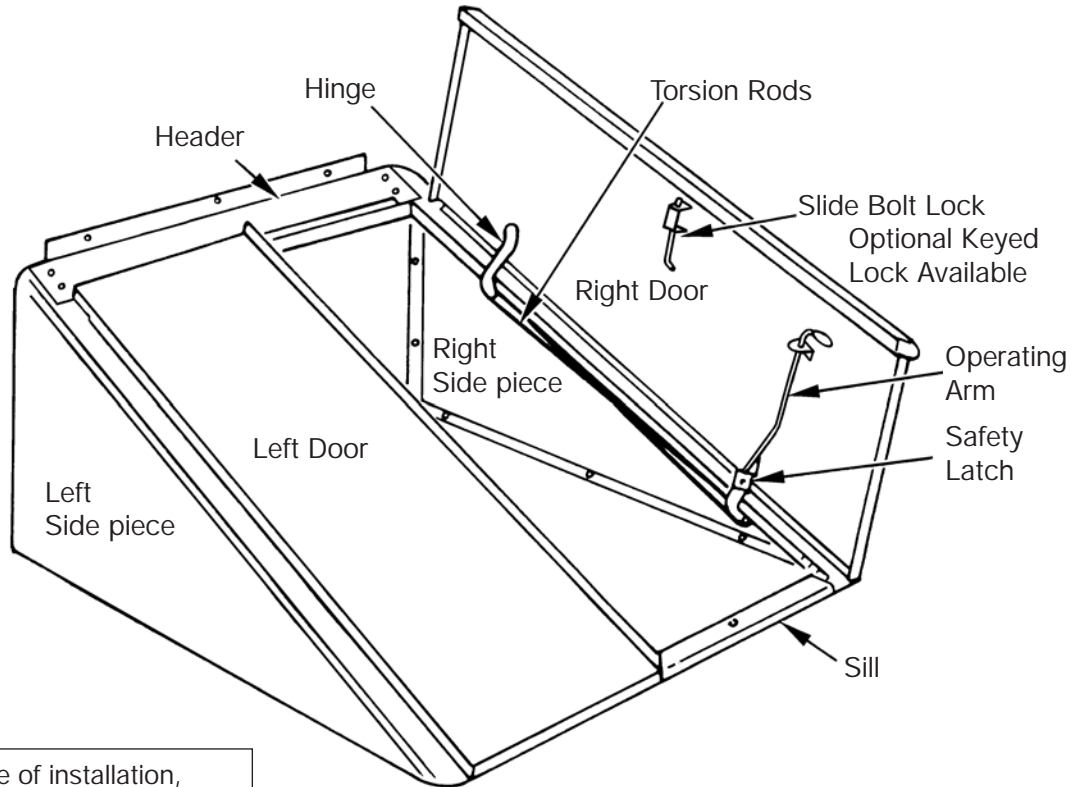
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## About These Instructions

It may be helpful to you to look through this entire folder before proceeding with the detailed assembly and installation instructions. If the installation is on new construction, you will find information and stairwell dimensions on page 7. If modifications are required, the information on page 6

will be helpful. On pages 4 and 5 are photographs of actual installations which should also be of interest and assistance to you. The names of the various parts referred to in the instructions are indicated below.



Depending upon the type of installation, some or all of the following will be required:

Hammer and Nails	Circular Saw
Sledge Hammer	Level
Masonry Chisel	Tape Measure
Shovel and Trowel	Electric Drill
7/16" Wrench	Wheelbarrow
Flatblade Screwdriver	Work Gloves
1/4" Carbide Masonry Drill Bit	Safety Goggles

### **CAUTION**

When the doors are open for access, the area should be personally guarded to prevent anyone from falling down the stairs. Doors should be closed and locked when not in use.

### **KEEP OFF DOORS TO AVOID INJURY**

Surface may be slippery. In extreme conditions steel in the summer sun can become hot and cause injury. White enamel or other light color finish paint will reflect sunlight and reduce the temperature of the metal. **KEEP OFF DOORS**

# For new construction or replacing wooden door where new concrete capping is required

**CAUTION:** The Bilco basement door will shed water in all normal conditions only when installed and caulked in accordance with these instructions. If there are no rain gutters above, a diverter must be installed to prevent roof water from flowing directly onto the Bilco basement door.

Points of particular importance are in **RED** OR **BOLD** face type.

**1** If this is a replacement installation requiring a new concrete cap, first remove top 3" to 4" of deteriorated masonry to permit pouring the cap without increasing the height of the present top step. Or, roughen the top of wall with hammer and chisel to ensure good bond between old and new masonry. Build a simple wood form as shown in #1 ensuring that the form is level and square. The top of the new concrete capping should be a little higher than the surrounding grade. **A height of at least 4" is desirable.**

**2** The Bilco basement door consists of six parts (the names of the parts are on page 1) plus a set of four torsion rod door operators, and the hardware packed with this instruction sheet. Attach header to side pieces with four round head bolts. The header must rest on top of the side pieces, with heads of bolts above and nuts below. Tighten bolts with wrench to complete header installation. **IMPORTANT: Caulk vertical seams between header and side pieces as shown in #2A.** Attach sill to side pieces using two flat head bolts as shown in #2B. It is essential that the heads of bolts are on outside with nuts inside.

## \*Hardware

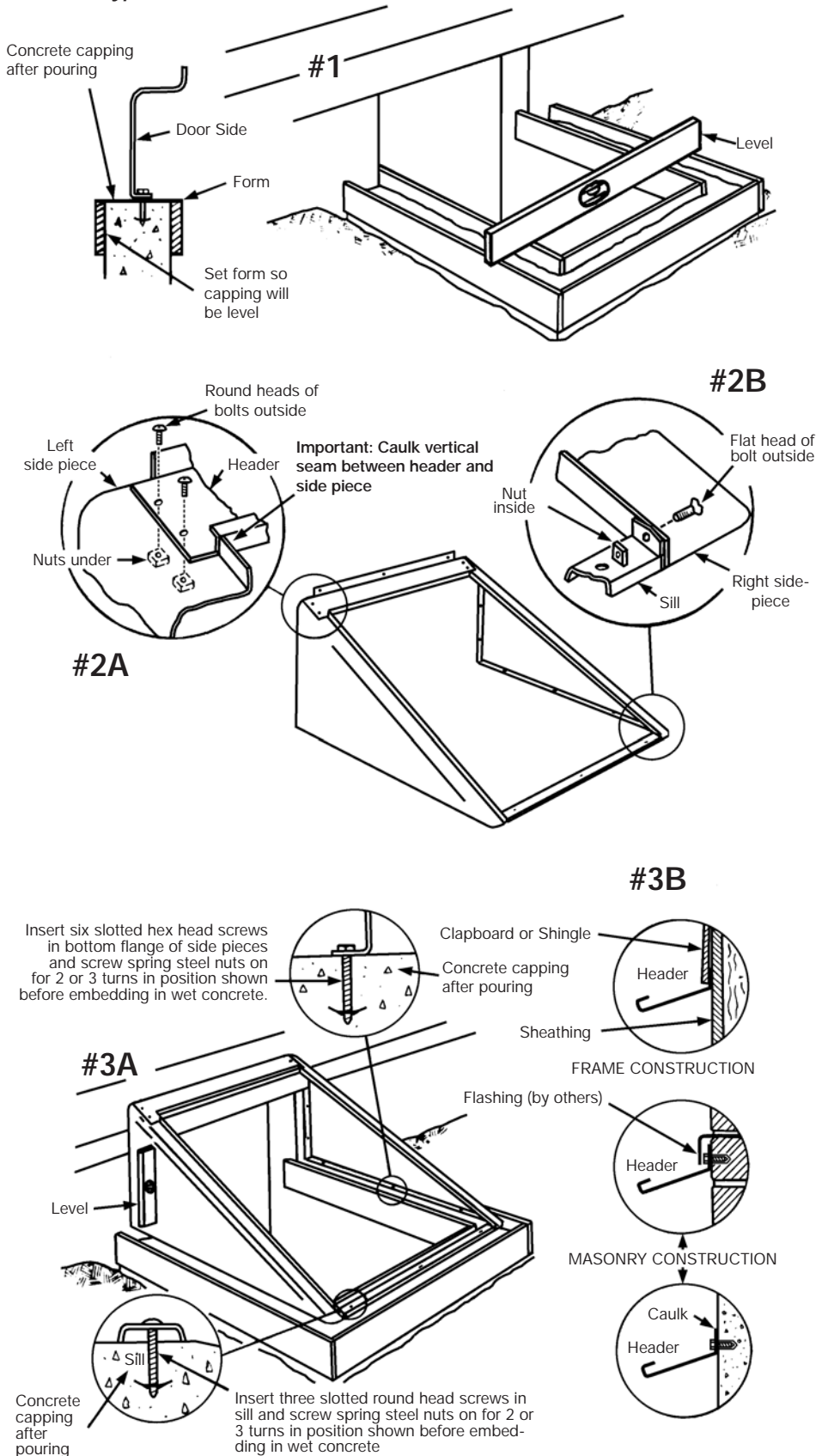
- 4 1/4" x 1/2" round head bolts and nuts
- 2 1/4" x 1/2" flat head bolts and nuts
- 4 5/16" x 1-1/4" hinge pins with cotter pins
- 6 1-1/2" slotted hex head screws
- 3 2" slotted round head screws
- 9 spring steel nuts
- 9 plastic shields
- 4 rubber bumpers
- 1 vial lubricant

**NOTE:** If installation is with new concrete capping, plastic shields are discarded. If capping is in place, spring nuts are discarded.

**3** Move assembled frame into place over capping form as shown in #3A. Position frame exactly as it will be when capping is poured by blocking it up temporarily so bottom of side pieces are at the same height as the top of the inside form board. **All parts of the Bilco basement door rest on top of the concrete capping and must not be buried in it.** Place a level against side piece and check plumb. Square door by measuring diagonals and shifting frame until equal and level frame to ensure proper operation. Fasten header by nailing to sheathing or securing to masonry with 1/4" x 1-1/4" flat head machine bolts and shields, obtainable at your hardware store.

**IMPORTANT:** If this is a replacement installation on a home with siding, be sure to cut away the siding in accordance with instructions on page 4.

Place the 1-1/2" slotted hex head screws in holes in side pieces and 2" round head screws in sill. Screw a spring steel nut on the bottom of these about three turns. Metal ears on the spring nuts should be on underside as shown in the detail.



**4** Install right door by holding it vertically over the right side piece. Position the door so that the door hinges will fit into the hinge brackets that are welded onto the side piece. Line up the holes in the hinges with the hinge pivot holes in the brackets. Insert the 5/16" x 1-1/4" hinge pins and cotter pins. Install the left door in the same manner.

**CAUTION:** A safety latch has been provided on the lower hinge of each door to prevent the doors from being blown or knocked shut. Disengage the safety latch by lifting the operating arm while at the same time closing the door. (Close the left door first.) Care is necessary at this time as the doors are being operated without the assistance of the torsion rods.

**5** Check alignment. If bottom edges of doors do not form a straight line, **move lower end of unit to right or left to correct. Rereck frame to insure that it is level and plumb.** Secure with bracing. Open doors. Coat top of wall with bonding agent. Mix concrete. Pour capping and close doors to recheck alignment. Be sure capping is level to prevent water accumulation around base of door frame. After concrete hardens remove forms and tighten all screws. **Caulk all around the exterior of the frame where it meets the masonry.** Waterproof outside of wall at capping joint.

**IMPORTANT!** An interior door at the bottom of the steps is required to prevent heat loss and reduce condensation.

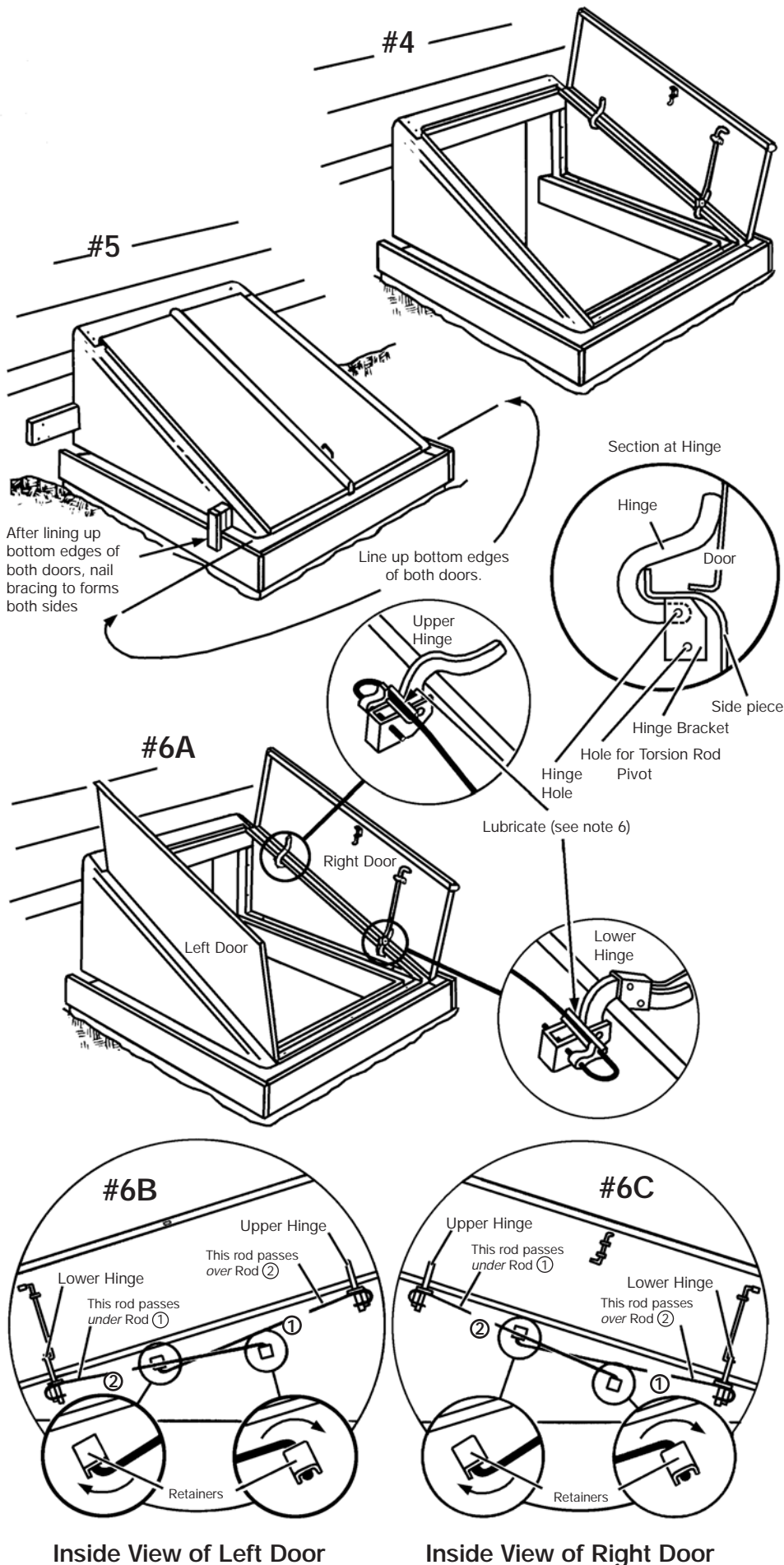
**6** With the Bilco basement door now solidly anchored, the torsion rods should be installed. There are four torsion rods. Two are marked ① and two others are marked ②. These markings can be found on the plastic components of the rods. Each door panel requires one ① and one ② torsion rod.

**Before installing rods, apply lubricant to plastic components** per sketch included with packet containing lubricant vial.

Open both doors so safety latches are engaged.

**To install torsion rods on the left door:** Refer to #6B. Insert the hooked end of the ① rod into the upper hinge bracket through the hole as shown in the diagram. Insert the "L" shaped end of the rod UP into its retainer. Insert the hooked end of the ② rod into the lower hinge bracket and insert the "L" shaped end of the rod DOWN into its retainer BEING SURE THIS ROD PASSES UNDER THE ① ROD. The pressure of one rod on the other keeps both rods in place.

**To install torsion rods on the right door:** Refer to #6C. Insert the hooked end of the ① rod into the lower hinge bracket through the hole as shown in the diagram. Insert the "L" shaped end of this rod UP into its retainer. Insert the hooked end of the ② rod into the upper hinge bracket and insert the "L" shaped end of the rod DOWN into its retainer BEING SURE THIS ROD PASSES UNDER THE ① ROD. The pressure of one rod on the other keeps both rods in place.



# Replacing a wooden door when concrete is level and in good condition

Remove wooden doors. Mix a small batch of concrete to patch any holes in the present concrete caused by anchors which had held the old door in place.

Assemble the frame of the Bilco basement door in accordance with instruction **2** on page 2. Move the assembled frame into place, being sure it is centered properly over stairwell. Mark on the siding with a pencil the exact shape of the back of each side piece. Slide frame away and connect these marks with a straight line. Cut through siding only as shown in photo and remove to expose sheathing underneath. **Do not cut out shape of flange on header**, as this fits up under the siding.

Lift front of Bilco basement door frame to slip header up under siding, or if masonry construction, push header back tightly to building. Follow instructions **4** and **5** on page 3 for assembly of the unit. Open doors carefully, so as not to disturb alignment. **Be sure frame is level and square and side pieces are plumb and not toeing in or out.**

With a pencil, mark locations of all holes in side pieces and sill. Remove doors. Slide frame off stairwell.

Drill all holes 1-1/2" deep, using an electric drill with a 1/4" carbide tip masonry bit.

Insert plastic shields in all holes. Put frame into place, **check plumb, level and door alignment**, and bolt it down, using 1-1/2" slotted hex head screws in side pieces and 2" round head screws in sill. Install doors on frame. Caulk door according to instruction **5**, page 3. Install torsion rods according to instruction **6**, page 3.



## New home installation when concrete capping is not required

On new construction when the stairwell is poured to the full height and floated so the top surface is smooth (or when masonry wall is capped with 4" solid

blocks), the Bilco basement door can be installed in the manner shown above.

# Replacing a wooden door when sidewalls are sloping masonry in poor condition

**Note:** If sloping masonry sidewalls are in good condition and are structurally sound, return this door and install a Bilco model SLW door.

Remove wooden doors.

If sloping masonry sidewalls are of stone, brick, block, or poured concrete, they can usually be removed by striking them with a sledge hammer. Be sure to wear safety goggles. Usually more than 10 or 20 blows are required before the concrete starts to crack.

When a new concrete capping is required, as in this installation, assemble the frame of the Bilco basement door in accordance with instruction **2** on page 2. Move the assembled frame into place. Mark and cut siding as described and pictured on page 4.

Move assembled frame into place, **check plumb, level and door alignment** in accordance with instruction **4** and **5** on page 3.

Build a simple wood form (see **1** on page 2) and, using a mortar pan or wheelbarrow, mix a batch of concrete. Premixed sand and cement is available at most dealers who sell Bilco basement doors. (This installation used three bags.)

Insert hex head screws with spring nuts as described in instruction **3** on page 2.

Fill the form and float it with a trowel so that it is level. All parts of the Bilco basement door rest on top of the concrete capping, and must not be buried in it (see **5** on page 3).

Let the concrete cure for at least 24 hours. Engage the torsion rods as shown in instruction **6** on page 3.

## Painting the Bilco basement door.

The Bilco basement door is supplied with a uniform baked-on primer finish. After installation, **clean door thoroughly** and apply a finish coat of alkyd metal enamel in white or other light color to all metal surfaces inside and outside. A quart is sufficient for one finish coat, inside and out.

**DO NOT USE AN OIL BASE WOOD PAINT.**

## Important:

**Use rubber bumpers to protect door finish.** Please install the four rubber bumpers which are included in the homeowner's envelope attached to the operating arm on the left door. The bumpers cushion the doors against the side pieces when the doors are opened.



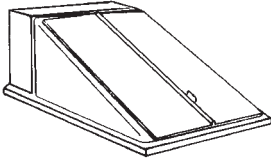
**Adjustments.** The Bilco basement door is carefully packed to withstand all normal shipping abuse. However, in instances when damage does occur, it is possible to make minor repairs and adjustments by following the directions on page 8. If you require additional information or assistance, please contact our customer service department (owner may wish to use the *Remarks* section of the postage-paid card in the envelope packed with the door). Your satisfaction is important to us.

The Bilco Company, P.O. Box 1203, New Haven, CT 06505, USA

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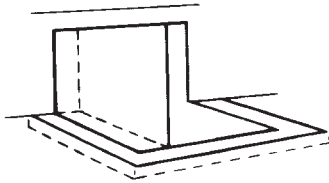
Website: [www.bilco.com](http://www.bilco.com) E-Mail: [bilco@bilco.com](mailto:bilco@bilco.com)

# Adapting the Bilco basement door to unusual conditions



## To increase length:

When added length is needed, extensions are available for Size C Bilco basement door. Easily assembled and installed, Bilco extensions are manufactured in 6", 12", 18", or 24" lengths. Two or more extensions can be mounted together if even more length is needed. Turn second extension around and bolt the two flanges together. Caulk between extensions and provide flashing against the house.



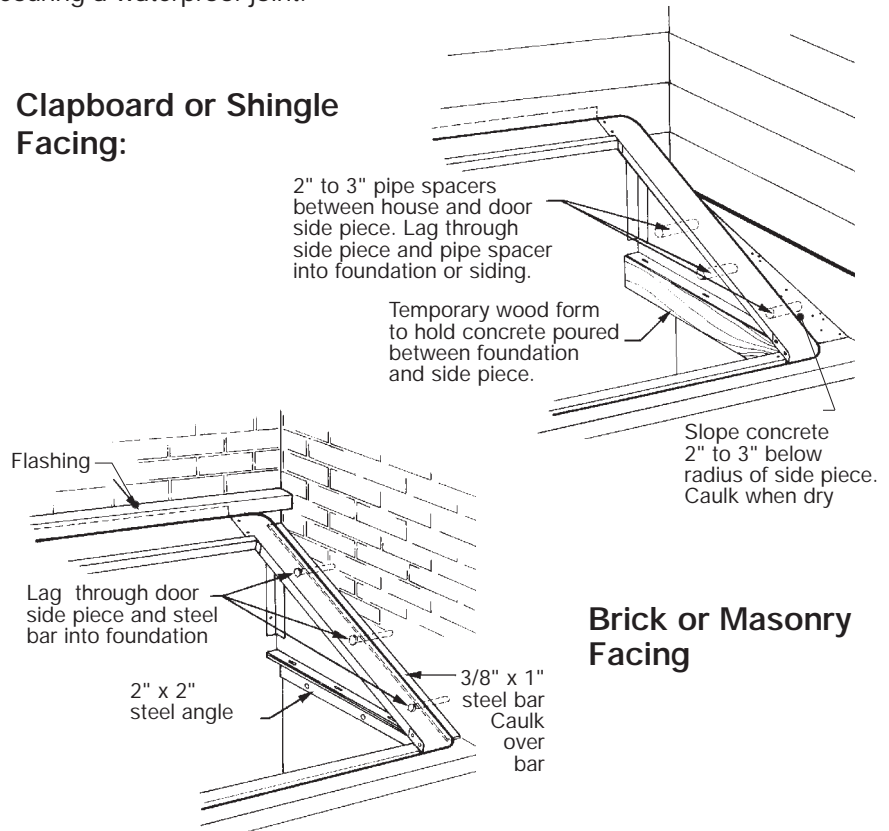
## When areaway is too short, narrow or wide:

If the opening is too narrow or too short, pour additional concrete to form a ledge along one side or the front. If the opening is too wide to allow fastening the 1-1/2" flanges on the Bilco basement door, make a simple form to build a ledge extending inside the opening the amount necessary. If the required width reduction is more than eight inches, build up a course of blocks inside.

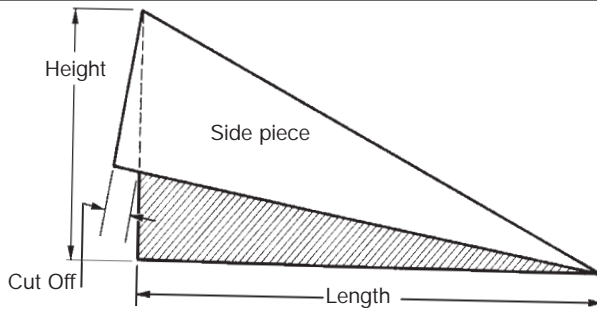
## When areaway is in a corner:

On a corner installation, it is best to install the side piece as far as possible from the masonry wall. Try to leave space for a broom, and have the concrete pitched forward to allow good drainage. Where the side piece must be anchored to the building wall, the following details show methods for securing a waterproof joint:

## Clapboard or Shingle Facing:



## Brick or Masonry Facing



Height	Size O		Size B		Size C		Size C 6" Ext.		Size C 12" Ext.		Size C 18" Ext.		Size C 24" Ext.	
	Length	Cut	Length	Cut	Length	Cut	Length	Cut	Length	Cut	Length	Cut	Length	Cut
24			63-1/4	0-3/4	70-5/8	1-1/4	77-1/8	0-7/8	83-1/4	0-3/4	89-1/4	0-3/4	95-1/4	0-5/8
28			61-5/8	2-1/8	69-1/8	2-3/8	75-3/4	1-7/8	81-7/8	1-3/4	88-1/8	1-5/8	94-1/4	1-1/2
32	56-7/8	1	59-5/8	3-5/8	67-3/8	3-1/2	74-1/8	3	80-1/2	2-7/8	86-3/4	2-5/8	92-7/8	2-1/2
36	54-1/2	3-1/4	57-1/4	5-1/8	65-3/8	4-3/4	72-1/4	4-1/4	78-3/4	3-7/8	85-1/8	3-5/8	91-1/2	3-3/8
40	51-5/8	5-1/2	54-5/8	6-7/8	63	6	70-1/8	5-1/2	76-3/4	5	83-1/4	4-5/8	89-3/4	4-3/8
44	48-1/4	8	51-3/8	8-3/4	60-1/4	7-1/2	67-3/4	6-3/4	74-5/8	6-1/4	81-1/4	5-3/4	87-7/8	5-3/8
48	44-1/4	10-7/8	47-3/4	10-7/8	57-1/8	9	65	8-1/4	72	7-1/2	79	6-7/8	85-3/4	6-3/8
52	39-1/2	14-1/4	43-1/4	13-3/8	53-1/2	10-7/8	61-7/8	9-3/4	69-1/4	8-7/8	76-3/8	8-1/8	83-3/8	7-1/2
56	33-5/8	18-1/2	38	16-1/2	49-1/4	12-7/8	58-1/4	11-1/2	66	10-3/8	73-1/2	9-3/8	80-3/4	8-5/8
60			31-1/4	20-7/8	44-3/8	15-1/2	54-1/8	13-5/8	62-3/8	12	70-1/4	10-7/8	77-7/8	9-7/8
64					38-3/8	18-3/4	49-1/4	16	58-3/8	14	66-5/8	12-1/2	74-5/8	11-1/4
68							43-5/8	19-1/8	53-5/8	16-1/4	62-5/8	14-1/4	71	12-7/8
72							36-5/8	23-1/4	48-1/8	19	57-7/8	16-3/8	66-7/8	14-5/8

Note: Below broken line ( ), cuts include Extension and side piece.

## Modifying the height and length:

The Bilco basement door can be raised to almost any height by cutting an angle from the side pieces of the door or extension as shown.

This is easily done with a hacksaw or an electric sabre saw, using an 18-teeth-per-inch blade. Since this will reduce the length, find the new length and the amount of cut-off on the chart. Allow 2 inches or more overlap at the areaway foundation to permit anchoring the sill.

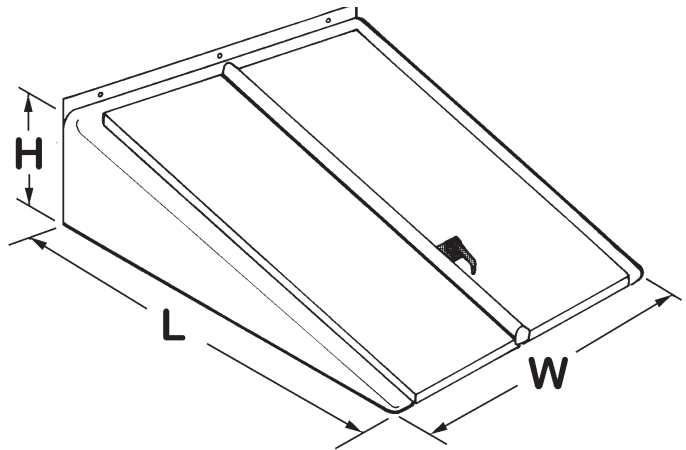
Build a form and pour concrete in stages to fill the triangular openings under the door. Prop the door in place before capping the foundation to assure a good fit. Removing the upper sill bolts will allow swiveling the sill to fit level on the foundation.

If modification results in door leaves that are oversprung, consult factory for replacement of torsion rods.

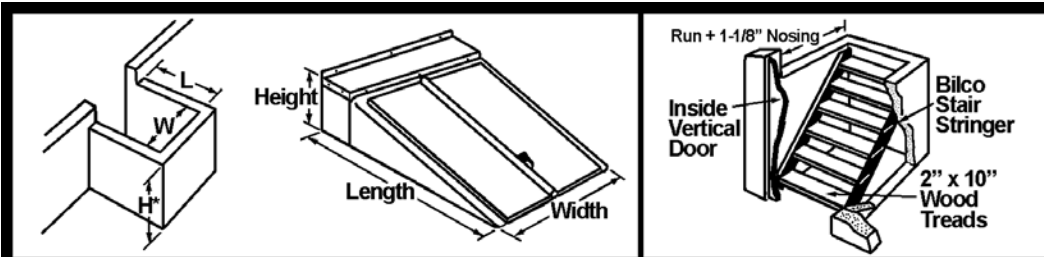
# Information and stairwell dimensions for new construction

The stairwell for the Bilco basement door should be built at the same time as the house foundation. If foundation and stairwell are poured concrete, build the stairwell to about the height of the proposed finish grade. Push Z-anchors or short pieces of reinforcing rods into wet concrete. This allows for pouring a 4" cement capping later. Waterproof outside of stairwell walls as you do the basement. If stairwell is masonry block, fill cores of block with paper before pouring cap, or cap the wall with solid 4" masonry blocks.

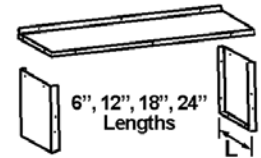
To construct stairwell to proper dimensions for various grade conditions, first determine the approximate height the grade will be above the finished basement floor. Then, refer to the construction guide below. Find the range in which this grade height falls. Read across to determine dimensions of the stairwell and the size and dimensions of the Bilco basement door and stair stringers to be used.



Size	Length	Width	Height
O	4'-10"	3'-11"	2'-6"
B	5'-4"	4'-3"	1'-10"
C	6'-0"	4'-7"	1'-7 1/2"
SL	3'-7 1/4"	4'-3"	4'-4"



**BILCO DOOR EXTENSIONS:** Available for Size C Door (only), these extensions increase the length to fit longer areaways. Horizontal top and two sidepieces are easily assembled and installed. Furnished in four sizes: 6", 12", 18" and 24". Complete with instructions and required hardware.

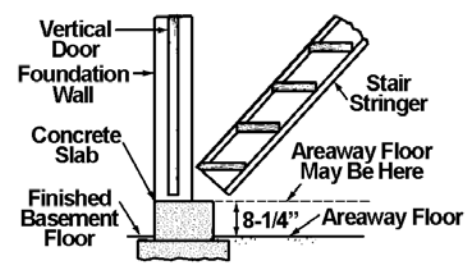


HEIGHT OF GRADE ABOVE FINISHED BASEMENT FLOOR WILL BE:	AREAWAY DIMENSIONS			STAIR STRINGER SPECIFICATIONS				
	BUILD AREAWAY TO THESE INSIDE DIMENSIONS (See Drawing Above)			USE THIS BILCO DOOR AND EXTENSION		STRINGER UNIT HAS 8-1/4" RISE, 8-3/8" RUN AND 1-1/8" NOSING		USE THESE BILCO STAIR STRINGERS AND EXTENSIONS (Size E Extension has 3-Tread Run)
	H*	L	W	Door Size	Extension Size	Run+ in Areaway	Treads in Areaway	
24" to 31"‡	33"	40"	44"	SL	None	26-1/4"	3	(Not Available)
32" to 39"	41-1/4"	40"	44"	SL	None	34-5/8"	4	SL
➔ 40" to 47" (See Note)	49-1/2"	40"	44"	SL	None	34-5/8"	4	SL
48" to 55"‡‡	57-3/4"	54"	40"	O	None	51-3/8"	6	O
56" to 64"‡‡	66"	60"	44"	B	None	59-3/4"	7	B
65" to 72"	74-1/4"	68"	48"	C	None	68-1/8"	8	C
➔ 73" to 80" (See Note)	82-1/2"	68"	48"	C	None	68-1/8"	8	C
73" to 80"	82-1/2"	80"	48"	C	12"	76-1/2"	9	O + E
➔ 81" to 88" (See Note)	90-3/4"	80"	48"	C	12"	76-1/2"	9	O + E
81" to 88"	90-3/4"	86"	48"	C	18"	84-7/8"	10	B + E
➔ 89" to 97" (See Note)	99"	86"	48"	C	18"	84-7/8"	10	B + E
89" to 97"	99"	93"	48"	C	24"	93-1/4"	11	C + E
98" to 106"	107-1/4"	104"	48"	C	24" + 12"	101-5/8"	12	C + SL
107" to 115"	115-1/2"	110"	48"	C	24" + 18"	110"	13	O + B

**STAIR STRINGER EXTENSION -- SIZE E:** Three-tread extension butts to bottom of standard stringer unit. Used with any size (O, B or C) Stair Stringer. Complete with hardware.

➔ **NOTE:** For basements more than 91" deep (finished floor to top of foundation wall) building a bottom step within the foundation wall opening (see drawing below) is recommended. The concrete step should extend 6" into stairwell.

**CAUTION:** Suggested construction allows minimum of 74" headroom. This is the recommended minimum.



\* Above Finished Basement Floor ‡ Maximum House Wall 85" ‡‡ Maximum House Wall 88" + Run plus 1-1/8" Nosing on Bottom Tread

# How to correct installation errors or repair minor damage\*

*\*The Bilco basement door is carefully and adequately packed to withstand all normal shipping abuse. This information is provided to show how easily minor repairs can be made, thus saving the builder or homeowner much unnecessary inconvenience.*

**Door not shedding water.** If your Bilco basement door does not shed water, look for and correct these installation errors.

1. **Header not properly caulked at side pieces.** Run a bead of silicone caulking along the small vertical seams between the header and side pieces (See **2** on page 2).
2. **Doors do not fully close.** Stand on steps and slowly close each door to see if the bottom flange of one or both is binding on the concrete. Chip away or rub down excess concrete with mason's stone so flange is not obstructed. Refer to instructions at right for adjustments if required.
3. **Masonry not high enough.** The masonry under the Bilco basement door should be 4" higher than the surrounding grade and concrete should be level so water cannot accumulate in front of the sill.
4. **Water seeping between steel and masonry.** The unit should be caulked all around the exterior where the steel and masonry meet, as well as where the unit joins the building wall. If side pieces have been buried in concrete, the unit should be removed and stairwell recapped so assembly rests on top.
5. **Blocked header channel.** Make certain channel is clear. Any blockage in this channel will cause water to overflow the header.

**NOTE:** To check your door, set garden hose on medium spray and direct it upward so water falls on the door to simulate rain.

**Doors Out of Alignment.** This is caused by failure to align the doors and square the frame as instructed. With doors closed, sight across bottom. Remove door that is higher than the other. Hold vertically with **top edge** on the ground as shown. Strike each hinge three or four solid blows with a hammer. This bends hinges in the direction of top of door, thus lowering it to line up with other door (see Figure 1). If additional adjustment is necessary, remove lower door, place lower end on ground and strike each hinge with a hammer. This bends the hinges in the direction of the bottom of the door, thus raising it to line up with other door.

**Doors Not Seated Properly.** If doors do not seat themselves properly or bounce slightly when in closed position, and bottom flanges of doors are not obstructed by concrete in front of sill, apply lubricant such as WD-40 to hinges and cams, then refer to **3** on page 2 and: (a) check for plumb, and (b) from below with door open three-quarters of the way, insert a screwdriver along side of hinge and pull door down on it to a point where you feel pressure of the screw driver relieving binding condition (see Figure 2).

**Hinge Damaged.** A hinge can be bent downward by mishandling during shipment or by someone trying to force the door closed without releasing the hold-open safety latch, and as a result the door does not fit properly on the frame. Such damage to a hinge can be identified by a bump on the top of the door. To correct, remove the door from the frame, place it on the ground with the hinge side up and step downward on the hinge to bend the pivot point back to its correct location. The other hinge on that door, which has not been damaged, can be used as a guide in bending the hinge back to the proper place (See Figure 3).

**Door Warped or Bent.** Place the end of the door on a block or bottom step of a nearby stairway, and step down on it with your foot. Door can be bent back to the original shape very easily this way, but when it's installed on the frame and supported all around it's extremely strong and will not bend during everyday use (see Figure 4).

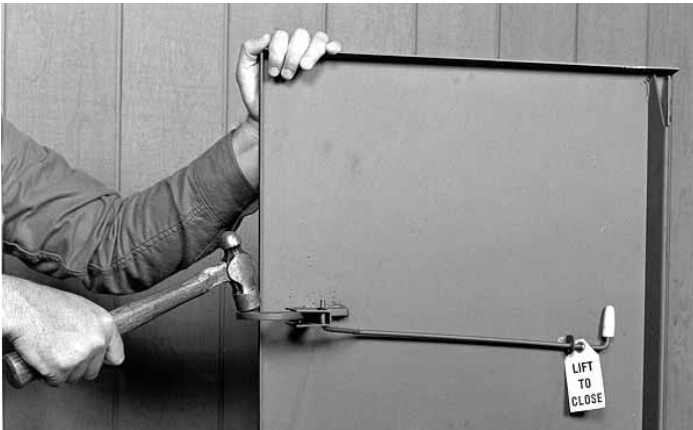


Figure 1



Figure 2



Figure 3



Figure 4