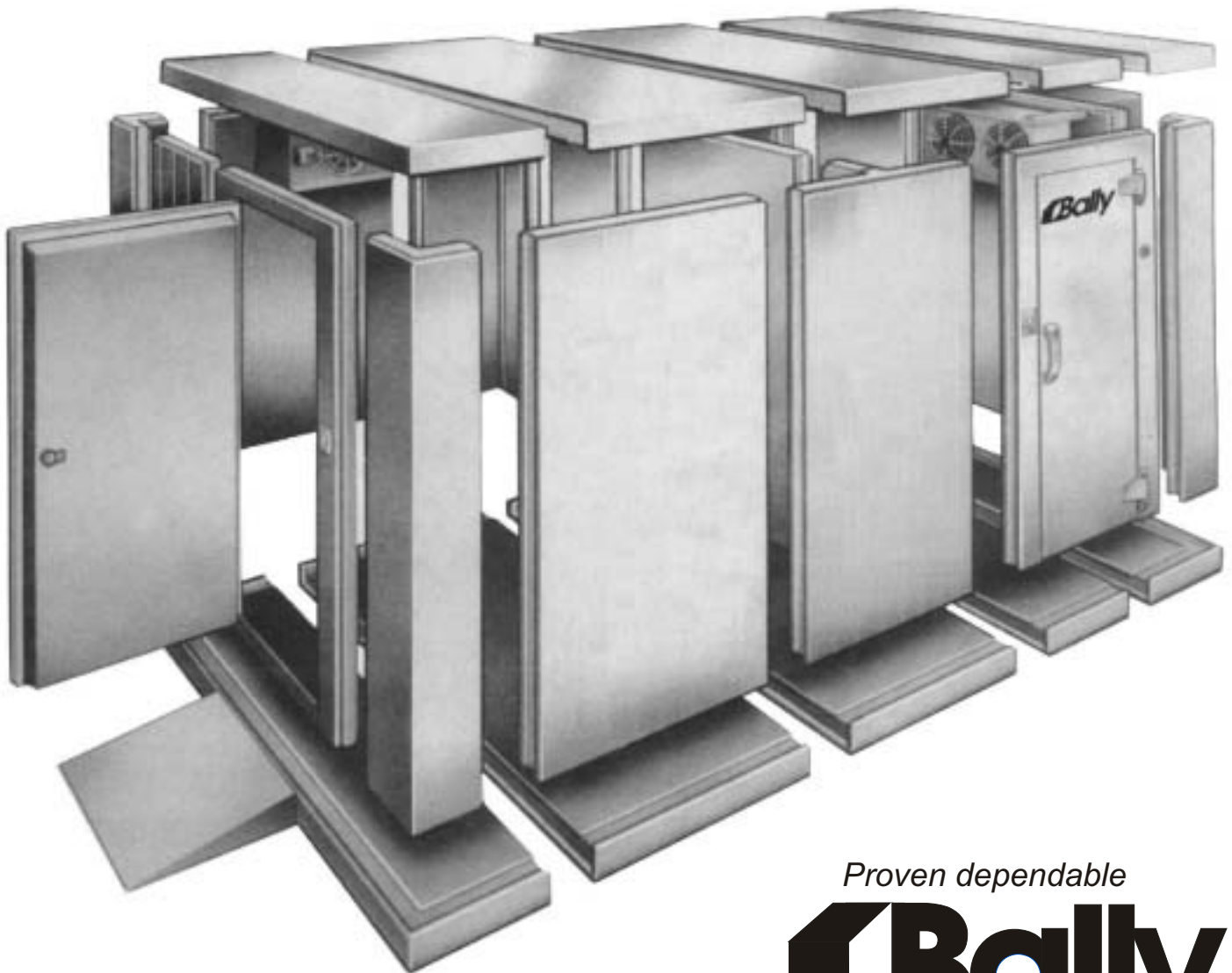


# INSTALLATION MANUAL

## Bally pre-engineered walk-in coolers/freezers



*Proven dependable*

**Bally**  
REFRIGERATED BOXES, INC.™

# Index

## Part One: Installing the Bally Walk-in

1. Introduction.....	3
2. Operation of Bally speed-loks.....	3
3. Preventing vapor leaks.....	4
4. Walk-ins with screeds.....	5
5. Walk-ins with single-span ceilings and Bally floor panels.....	5
6. Installing the walk-in floor.....	5
7. Erecting walk-in vertical panels.....	6
8. Installing Bally floor-type door.....	7
9. Completing panel assembly for walk-ins with Bally floor panels.....	7
10. Assembly of Bally panels to insulated concrete floors.....	8
11. Installing a floorless type Bally door.....	9
12. Completing panel assembly for walk-ins without Bally floor panels.....	10
13. Attaching floor anchors.....	10
14. Installing multi-compartment walk-ins.....	11
15. Making holes for refrigeration tubing and electrical lines.....	12
16. Making electrical connections to entrance doors and vapor-proof light.....	13
17. Installing metal hood over pressure relief port.....	13
18. Making electrical connections to pressure relief port.....	13
19. Installing walk-ins outdoors.....	13
20. Interior ramp.....	13
21. Final checks on installation.....	14

## Part Two: Installing Interior Accessories

1. Erecting adjustable cantilevered shelving.....	15
---	----

## Installation information

Please fill in the spaces below and retain this manual for easy reference.

Purchaser's name and address: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Date installed: \_\_\_\_\_

Name of installer: \_\_\_\_\_

Installer's phone number: \_\_\_\_\_

Walk-in serial number (from plate above door): \_\_\_\_\_

Refrigeration system model numbers and serial numbers: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Notes: \_\_\_\_\_

**For immediate service, call BMIL International Parts and Service Hotline: 1-212-898-9699**

# Part One: Installing the Bally walk-in

## 1. Introduction

- A. Before attempting to install the Bally walk-in, review this instruction and any others supplied with the shipment. A plan view showing proper location of all panels is enclosed with this manual. Before placing any panel into position, check the plan view for location.
- B. When building is delivered, check the packing list and make sure that all component parts are included in the shipment. Before signing the bill of lading, inspect all items in case it's necessary to file claims with the shipper.
- C. Do not substitute for the hardware and material specified in this manual. Make sure to have the right equipment and manpower on hand to unload the truck. A forklift or high jack can be helpful if the shipment includes heavy steel or refrigeration equipment. Also be sure to have all the proper tools required for assembling the walk-in.
- D. The most important requirement for erection of this walk-in is to have a level floor. Otherwise, it's impossible to make sure that the panels will align correctly and be plumb and level.
- E. For future reference, make sure there is a record of the original order number and a list of all serial numbers for the walk-in and refrigeration systems. This will make it easier to order any replacement parts that may be needed.
- F. Whenever walk-ins are to be installed where concrete is curing or tile is being set, it is important to provide adequate ventilation. Concrete and tile grout release hydrogen while curing, which can damage the finish of Bally panels.
- G. Timesaving tip: As the panels are unloaded, sort them by type--ceiling, floor, vertical, corner, etc. This will save you time locating different types of panels when the actual assembly of the panels takes place.

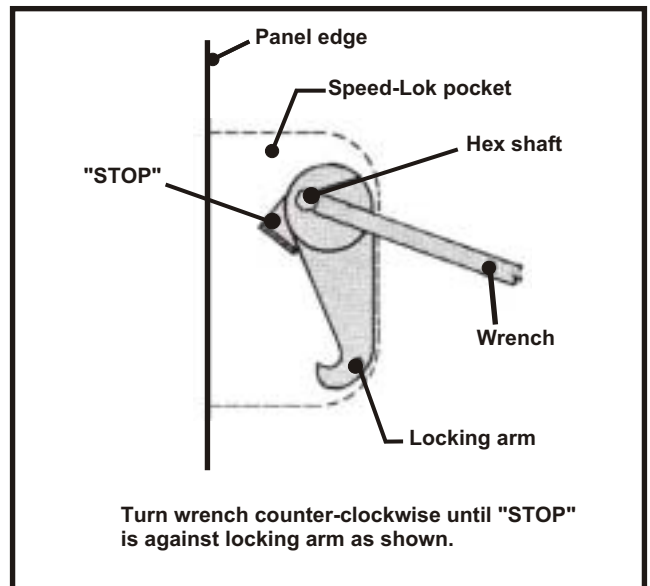


Fig. 2

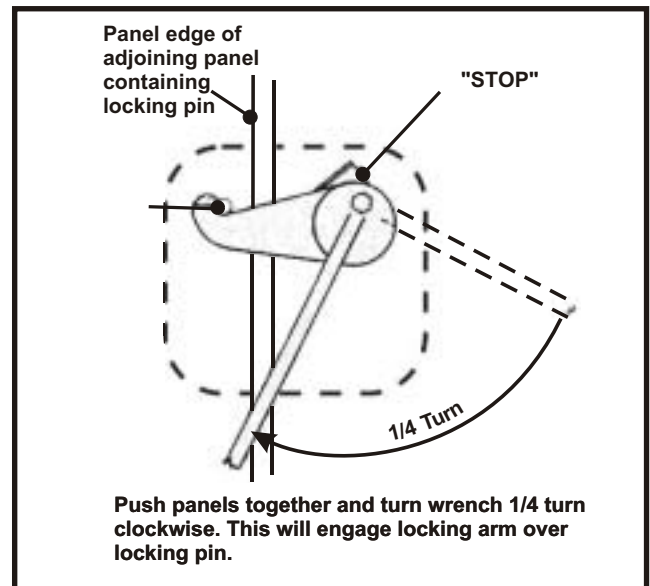


Fig. 3

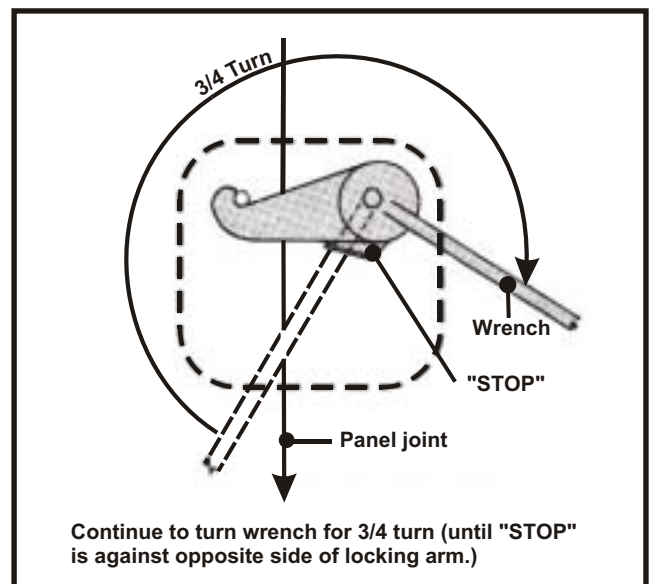


Fig. 4



Fig. 1

## 2. Operation of Bally Speed-Lok

- A. Before attempting to erect any prefab panels, familiarize yourself with the operation of the locks. Study the illustrations and instructions shown in fig. 2, 3, and 4. Note: If the locks are located in a corner so that the wrench cannot be positioned as shown, perform the locking operation in steps, repositioning the wrench between steps.

*To unlock the locks, turn wrench counter-clockwise one complete turn.*

## B. Replacing broken or stripped locks

1. When a lock “snaps”, the panel containing the lock must be slid away from adjacent panels in order to obtain adequate working space.
2. Position the lock wrench on the hex rod and turn clock-wise until the locking arm protrudes as shown in Fig. 5.
3. Place your hand near the bend in the wrench as shown in Fig. 5 and use a lift-up motion (direction of arrow). This will produce a clamping action on the hex rod. While doing this, pull forward until the rod is free of the panel. The locking arm will then drop free.
4. Hold the new locking arm in position. Make sure the hook of the arm faces in the proper direction. See Fig. 6.
5. Insert the new hex rod into the lock hole. Care must be taken to insert the notched end of the rod. The end to be inserted has a notch located 1” from the end. This notch acts as a stop so the rod will not be inserted too far.
6. Align the hex rod with the hex hole of the locking arm.
7. When the rod is properly aligned, gently tap it until the notch stops against the locking arm.
8. Replace and refasten the panel in its original position.

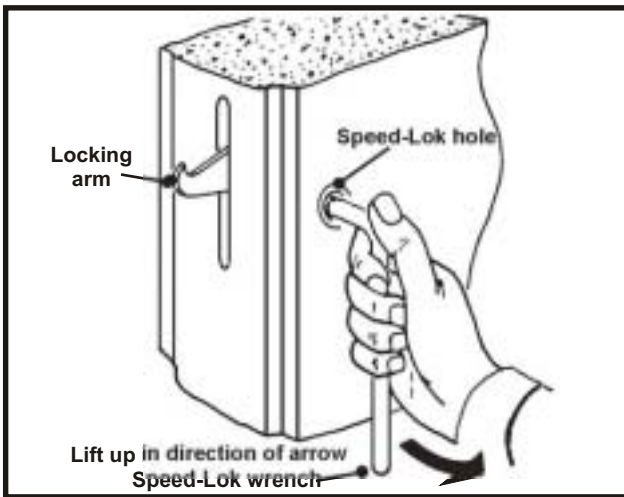


Fig. 5

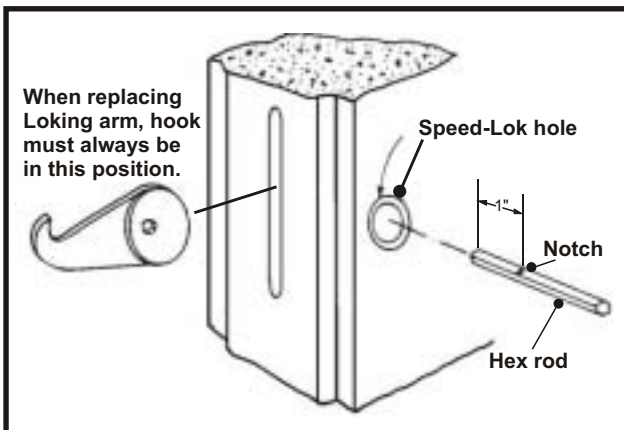


Fig. 6

## 3. Preventing vapor leaks

- A. Because they are molded in massive steel fixtures, modular panels are square and dimensionally accurate. In most installations, therefore, they will seal effectively against vapor leaks. However, in some unusual cooler applications, minor vapor leaks may occur. The leaks can occur if the panels follow slab variations or if the building in which the walk-in is installed settles. If the internal temperature is cycled periodically, the expansion and contraction of building materials will cause enough movement to allow some vapor penetration.
- B. Unfortunately, internal dripping does not always occur directly across from the vapor leak. Locating a leak can therefore be troublesome. In order to avoid time-consuming search procedures, caulk the exterior junction of three or more panel joints. See Fig. 7. Most leaks caused by settlement will be at these points.
- C. All wall penetrations should be sealed. This includes any protruding clips or hangers installed in panel joints. See Fig. 8.
- D. Use either industrial-grade or silicone caulking. When silicone is used, sealed areas must be cut open whenever the panels are to be disassembled for relocation or enlargement.

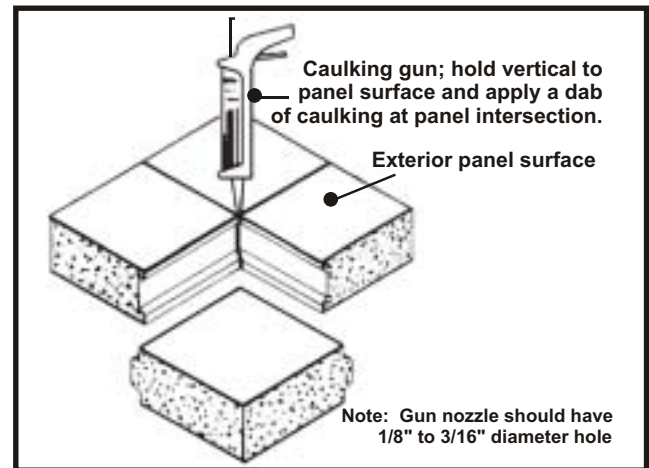


Fig. 7

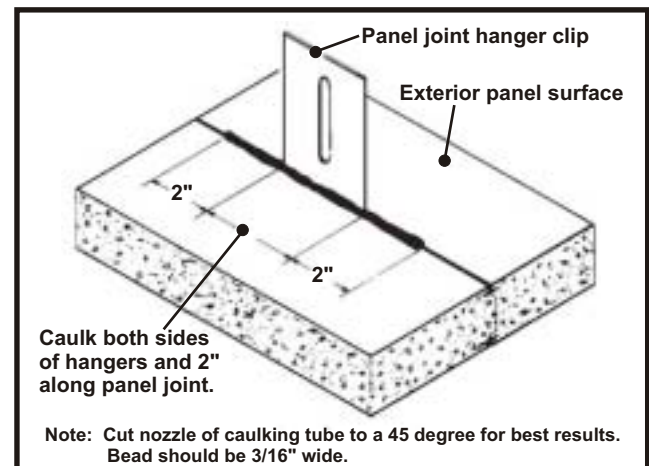


Fig. 8

#### 4. Walk-ins with screeds

- A. If any part of your walk-in employs screeds, lock the screeds to the bottoms of the vertical panels before placing any panels. Follow the walk-in assembly instructions in Section 10. For anchoring instructions, see Section 13.

#### 5. Walk-ins with single-span ceilings and Bally floor panels (If your walk-in is without floor panels, skip to Section 10.)

- A. Walk-ins erected near existing building walls must be positioned with minimum 2" clearance to allow for air circulation and prevent possible condensation on the exterior surface of the walk-in.
- B. If the walk-in floor must bear heavy loads, the entire underside of each floor panel must be supported. If this is necessary, refer to fig. 9, which shows an optional method for leveling the floor and providing a sand-filled base.

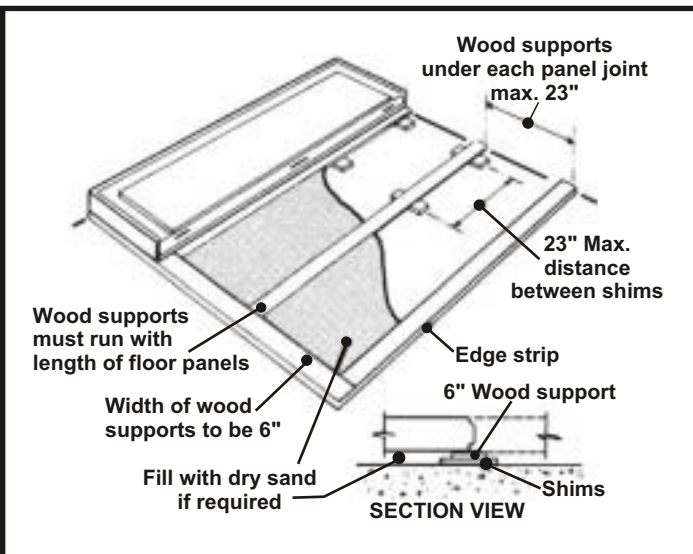


Fig. 9

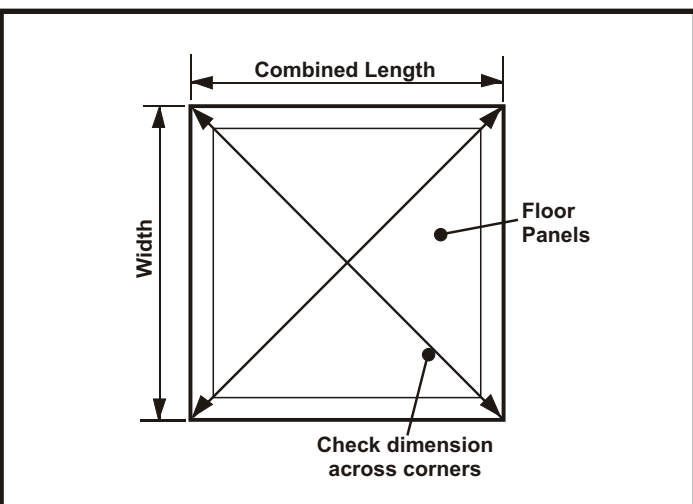


Fig. 10

- C. Mark the outside perimeter of the walk-in on the building floor. Check the area for squareness by measuring across the corners. See Fig. 10. Find the high point of this area, using a 48" spirit level. The entire walk-in floor must be level from this point. On walk-ins larger than 10' x 10', a transit or builders level should be used.

#### 6. Installing the walk-in floor

Note: check the Bally plan view for proper panel location.

- A. Place a 23-1/2" wide floor end panel along the outside mark designated for the walk-in. Be sure the panel is a floor panel. All floor panels have extra-heavy-gauge metal on the interior for extra strength. Again, make sure panel is level to high point of concrete slab. See Fig. 11.

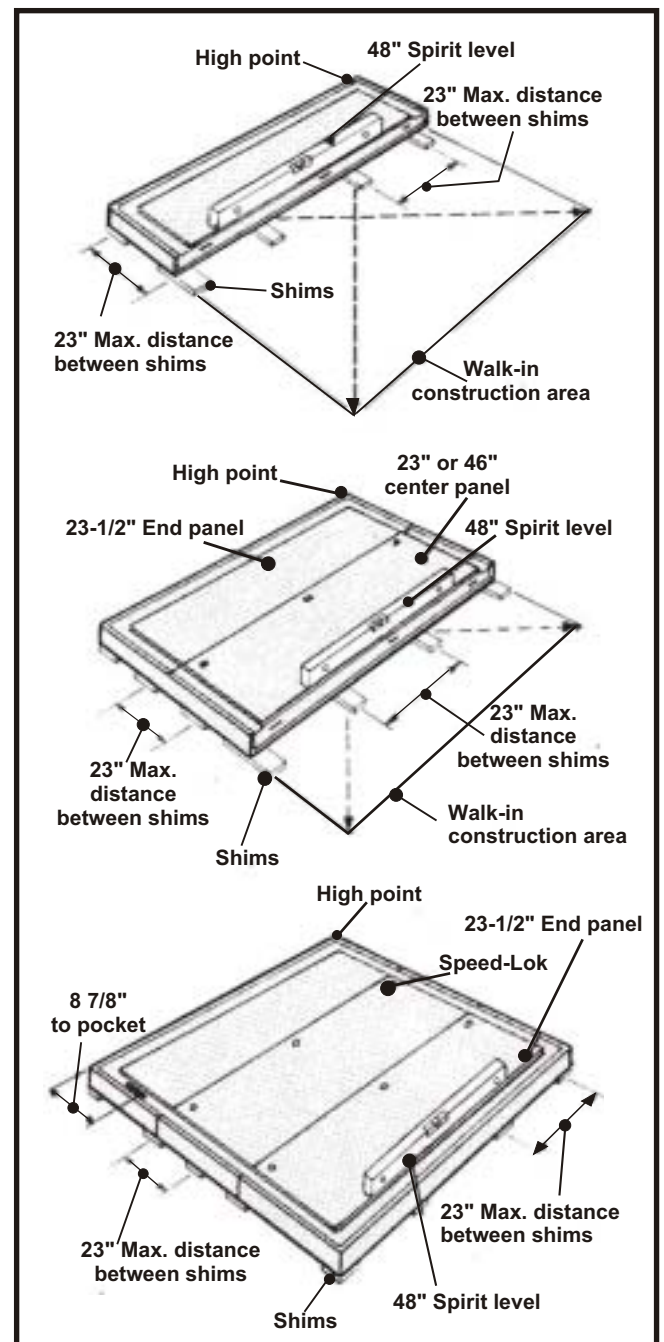


Fig. 11

- B. Install shims (such as cedar shakes) under corners and across panel joints as needed to ensure proper support and levelness of panel. Be sure the shims are not more than 23" apart at any given point under the panel. This is done in order to support the panel properly and eliminate any potential sagging.
- C. Continue to install floor panels as per plan view, locking each panel to its adjoining panel. Make sure to keep ends of panels even with one another. Continue until all floors are assembled. Again check them for levelness and squareness. (Adjust if necessary.)
- D. To prevent sagging or twisting of the door panel, place shims under the floor panels directly beneath the framing position of the door panel, as shown in Fig. 12. Also place additional shims, equally spaced, along the door frame area.

- C. Next, erect the vertical panel called for by the plan view to the right of the corner panel. Make sure to align the tops of the panels. (See Fig. 13.) This will help to insure that the panels remain plumb and level. Lock these panels together in the fully engaged position (except for the locks to the floor panels). Turn the locks to the floor panels to "engaged position" only. A quick and accurate way to check for correct alignment is to measure the distance from the edge of the ceiling to the nearest vertical panel joint. This measurement must be 11-1/2"; it must be maintained at every joint to assure proper assembly of the walk-in. (See Fig. 17.)
- D. Next, install the panel to the left of the corner as per the plan view. Lock these panels together, then partially engage the floor locks.

## 7. Erecting walk-in vertical panels

- A. Determine the critical areas to find a starting point. On smaller walk-ins the most critical area is the door location. This section of the walk-in must be perfectly plumb and square to insure proper operation of the door.
- B. Begin by erecting the 12" x12" vertical corner panel nearest the critical area. Note that the Speed-Lok holes must always be on the left-hand side when facing the interior of the panel. See Fig. 14.

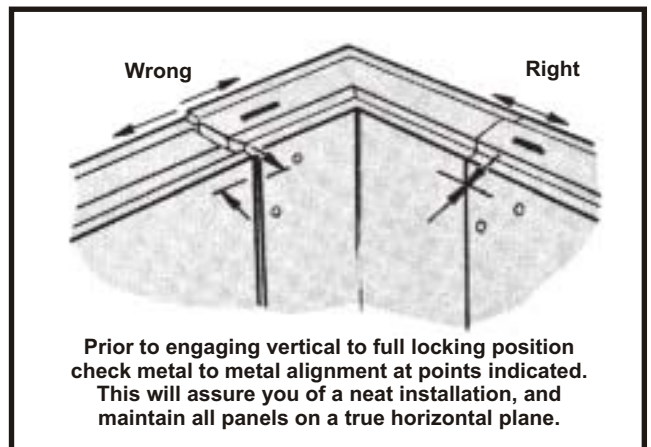


Fig. 13

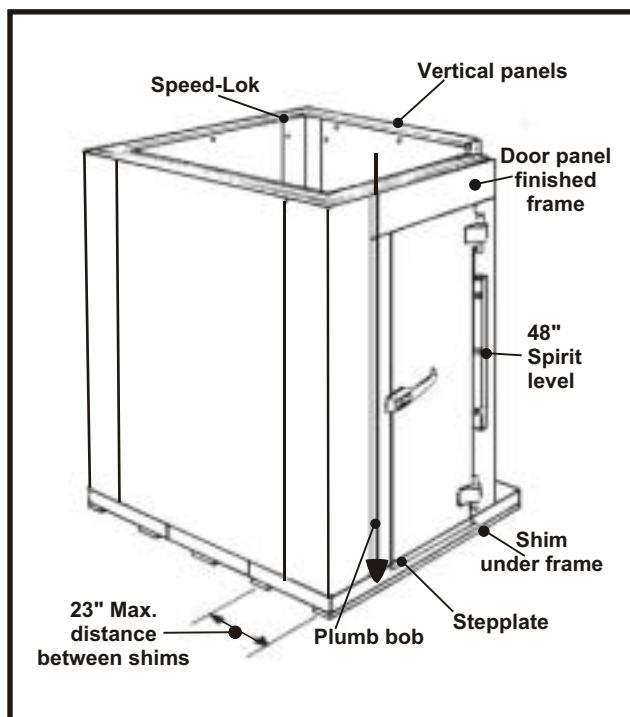


Fig. 12

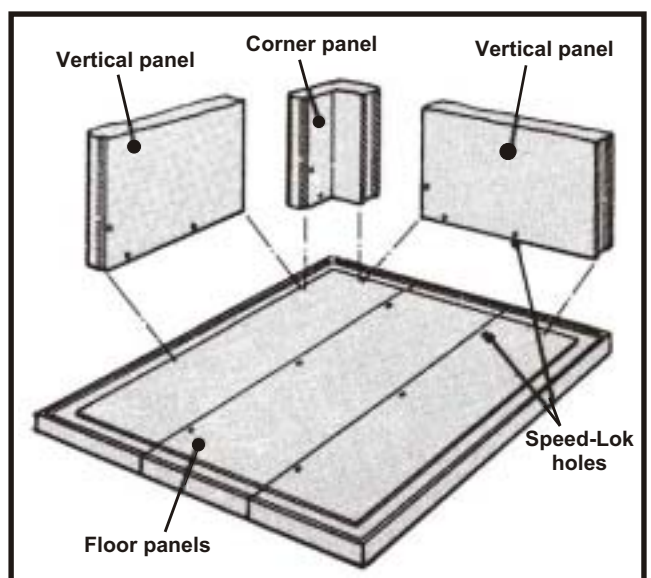


Fig. 14

- E. Continue erecting vertical panels in both directions, checking panels for alignment and overall dimension. When enough vertical panels have been set to allow installation of the first ceiling panel, begin assembling the ceilings. See Section 9 for method of installing remaining vertical and ceiling panels. Also check panels for plumb with a 48" spirit level. Adjust if necessary to maintain a plumb and level condition. (See Fig. 15.)

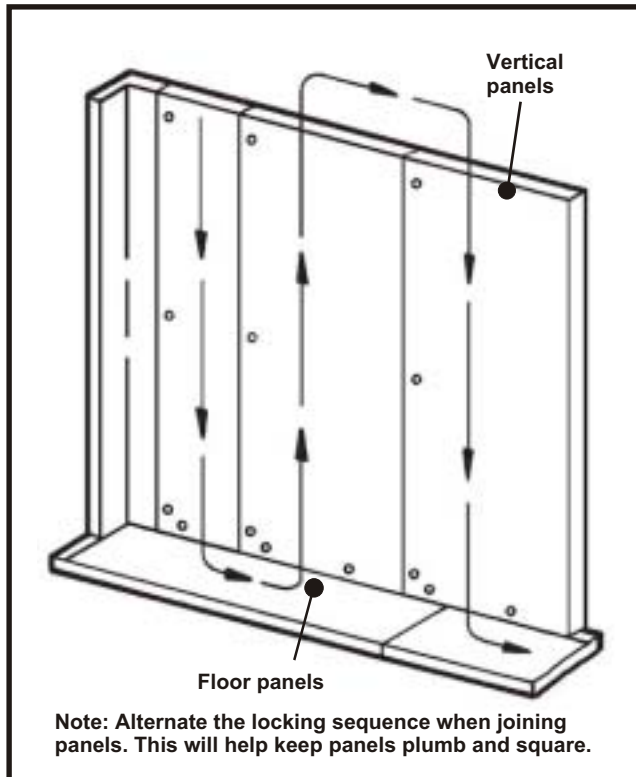


Fig. 15

## 8. Installing Bally floor-type door

- A. Set the hinged entrance door panel into position as was done with the other vertical panels. (Door panels contain blocking and/or braces to prevent twisting during shipment. Do not remove these until the door is fully locked into position.)
- B. Hold a 48" spirit level on the face of the door panel. When the door panel is plumb, lock it to the adjacent panel. It is very important that the door panel be plumb and square. If not, the self-closing door will not seal properly, causing leaks when the box is refrigerated.
- C. Check the plumb of the door by using a 48" spirit level. For better accuracy, use a plumb bob. Both sides of the door frame must be perfectly plumb.

## 9. Completing panel assembly for walk-ins with Bally floor panels

- A. Continue to follow the plan view carefully; this is critical for proper assembly and possible future expansion. The Bally plan view will show the end ceiling panels and the location of hooks and pins. (See Fig. 16.)
- B. Set the first ceiling panel in place on top of the vertical panels as per the plan view. Align all exterior edges of the ceiling with the installed vertical panels. A quick and accurate way to check for correct alignment is to measure the distance from the edge of the ceiling to the nearest vertical panel joint. This measurement must be 11-1/2"; it must be maintained at every joint to assure proper assembly of the walk-in. (See Fig. 17.)

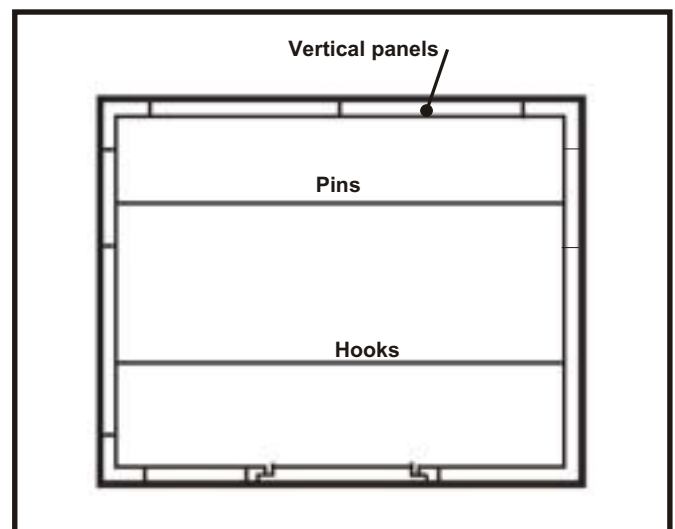


Fig. 16

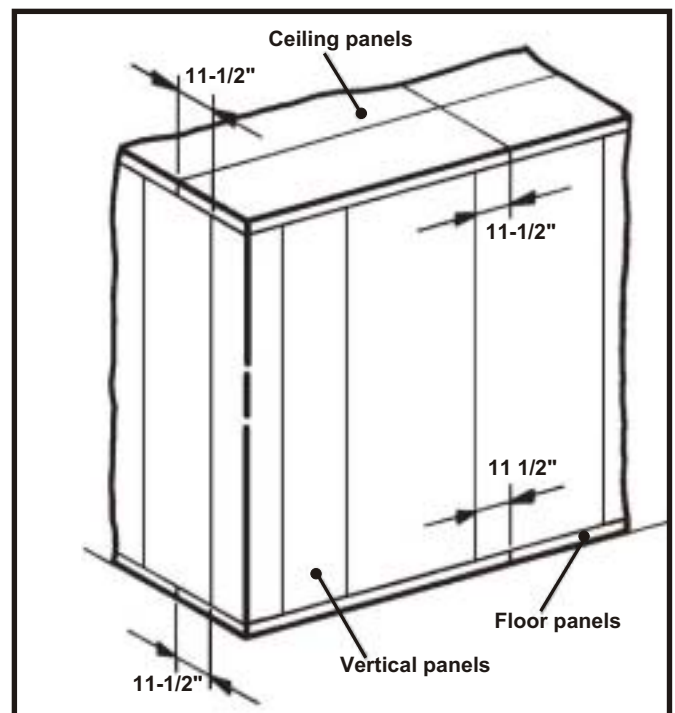


Fig. 17

- C. Once the ceiling panel is set properly, lock the wall-to-ceiling locks in the fully engaged position. Again, using alternating locking sequence will help keep building square and dimensionally accurate.
- D. Continue erecting wall and ceiling panels in this manner until all panels have been installed.
- E. The last two panels to be set must be the fourth vertical corner and then the end ceiling panel. If the 11-1/2" measurement has been maintained, the end ceiling panel will fit correctly in place. If not, adjust for proper alignment.
- F. When all panels have been erected, fully engage all floor-to-vertical locks and recheck to make sure every lock has been fully engaged.
- G. Secure the door stepplate to the walk-in floor. With the door open, use a 3/16" diameter bit to drill through the prepunched holes of the stepplate. Secure the stepplate with #12-24 self-tapping flathead screws. See Fig. 18.

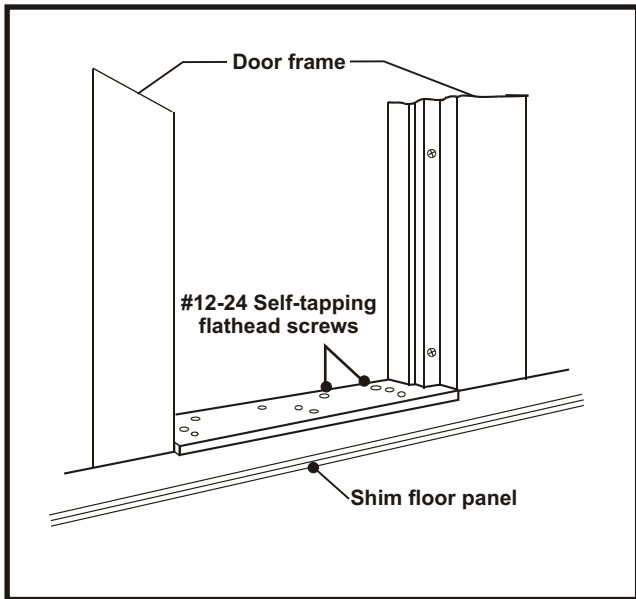


Fig. 18

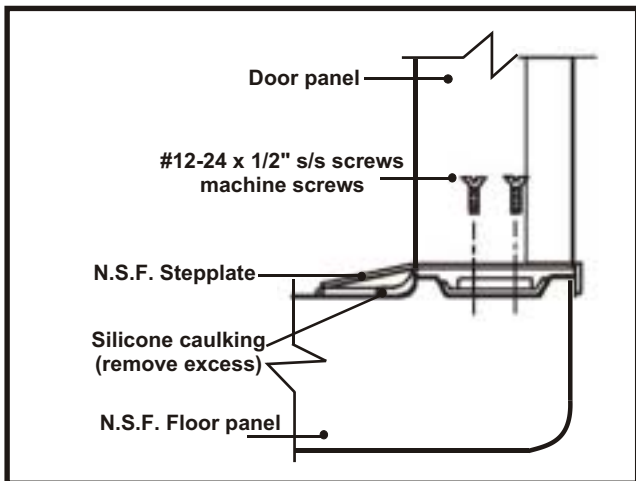


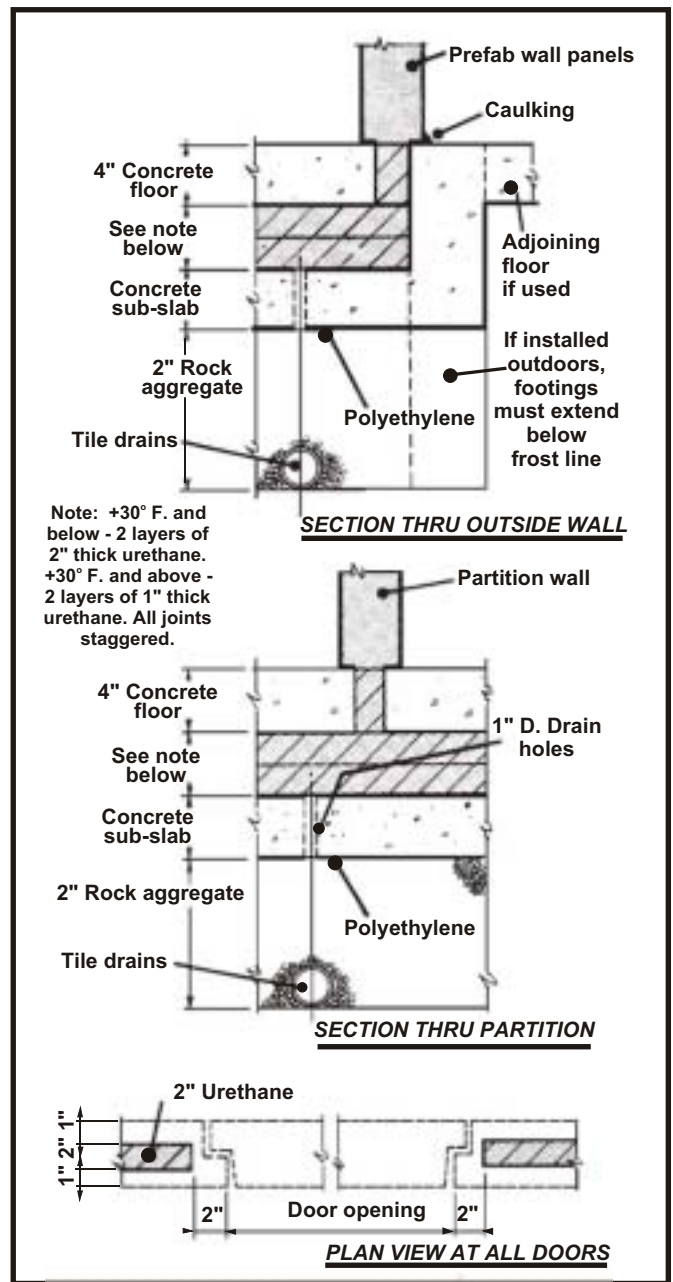
Fig. 19

Note: For NSF-listed walk-ins with curved-radius floor panels, the stepplate must be correctly installed to comply with NSF requirements. (See Fig. 19.) Follow these steps:

1. Remove the stepplate from the door assembly after drilling the holes as specified in section G above.
2. Place a bead of silicone on all interior edges of the stepplate.
3. Reinstall stepplate to floor channel and to walk-in floor as described in Section G above.
4. Remove excess silicone.

## 10. Assembly of Bally panels to insulated concrete floors

- A. Read this section completely before continuing with the installation. Fig 20 illustrates construction recommended by Bally for floors of this type.



Note: +30° F. and below - 2 layers of 2" thick urethane. +30° F. and above - 2 layers of 1" thick urethane. All joints staggered.

Fig. 20



- B. Mark the outside perimeter of the walk-in on the building floor, and check for squareness as in section 5.
- C. Using a transit or builder's level, locate the highest point along the perimeter.
- D. Determine the most critical area of the walk-in, using the method explained in Section 7.
- E. Position the first 12" x 12" vertical corner panel so the outside of the panel is flush with the perimeter line. Shim the corner to be level with the high point of the perimeter. (Cedar shims or board urethane make good shimming materials.)
- F. Position a vertical panel to the right and left of the corner panel (as per plan view) and flush with the perimeter line. See Fig. 21. Once these panels have been aligned properly, fully engage all vertical-to-vertical locks.
- G. Level these panels to the perimeter high point and check for plumb with a 48" spirit level. (Panels over 10' in height should be checked for plumb with a plumb bob. This will insure a much more accurate alignment. See Fig 22.)
- H. As each panel is installed, check to make sure it's plumb and level. If the panel is not plumb, shim to adjust for plumb. Making the same check down the panel's leading edge shows whether it's level along the top or not. If it's not. Adjust it.
- I. Continue installing verticals in this manner, periodically checking to make sure that panels remain plumb and level. Refer to Fig. 15. (Staggered locking sequence.)

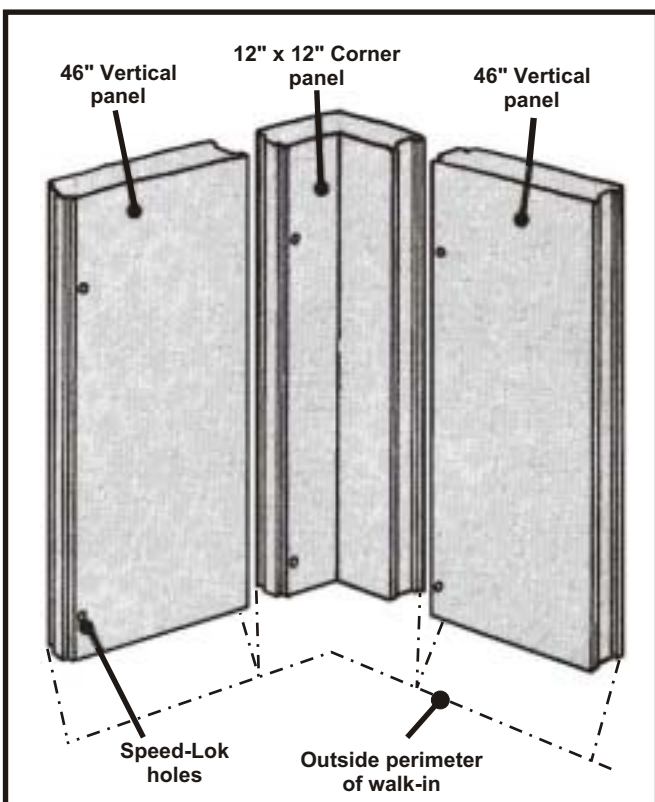


Fig. 21

- J. When enough vertical panels are set to accept the installation of the first ceiling end panel, begin assembly of the ceiling panels. See Section 12 for method of installing remaining vertical and ceiling panels.
- K. With installation complete, caulk the bases of the vertical panels where they meet the concrete floor. See fig. 23.

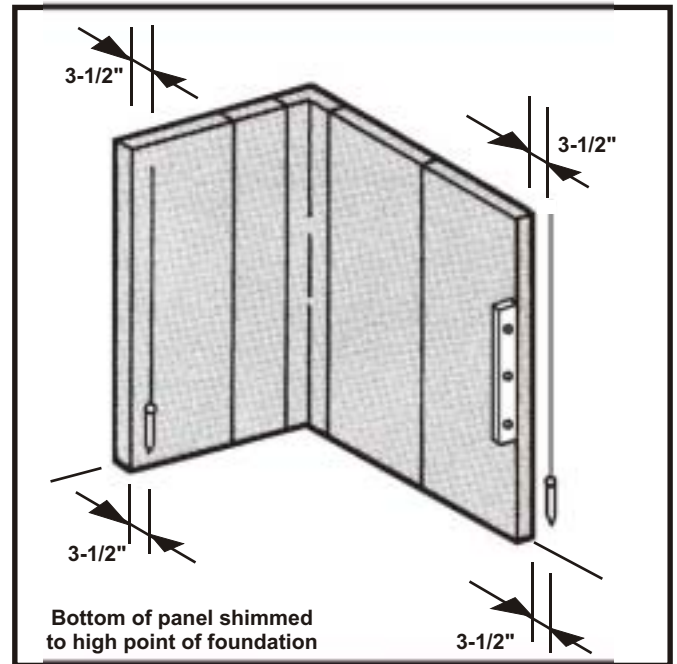


Fig. 22

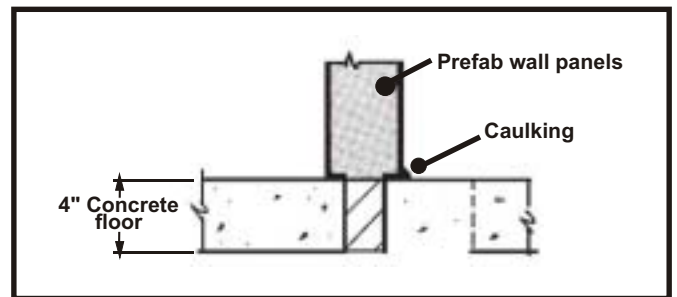


Fig. 23

## 11. Installing a floorless-type Bally door

- A. When erecting a door panel for an installation on a concrete floor and without Bally floor panels, it is necessary to provide a cutout in the concrete floor. The size of the cutout required for a hinged entrance door is shown in Fig. 24.
- B. Set the door panel into position as was done with the other vertical panels and let the door stepplate extend down into the chipped-out hole. Fully engage locks to adjacent panels, using the method described in Section 8, B. Do not fill with concrete around door anchor until installation is complete and door has been checked for proper alignment and seal.

Note: Door applications without steppplate do not require a cutout in concrete floor. These doors are shipped with a steel strap welded to the bottom of the frame. This strap must be removed prior to installation.

- C. Shim as required to make the door section level with the adjoining vertical panels. See Fig. 25.

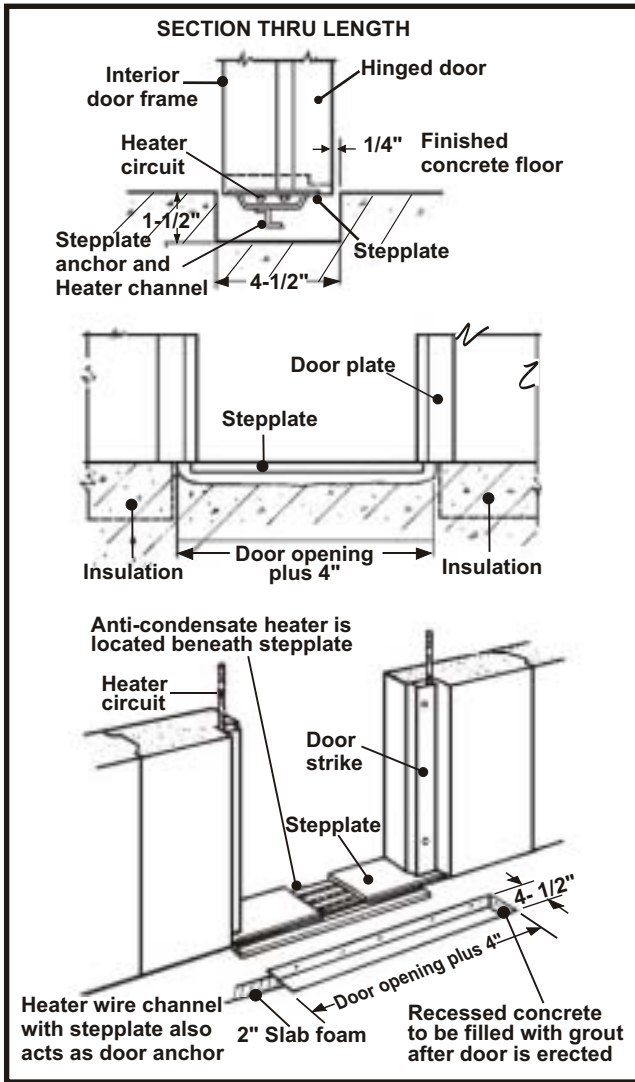


Fig. 24

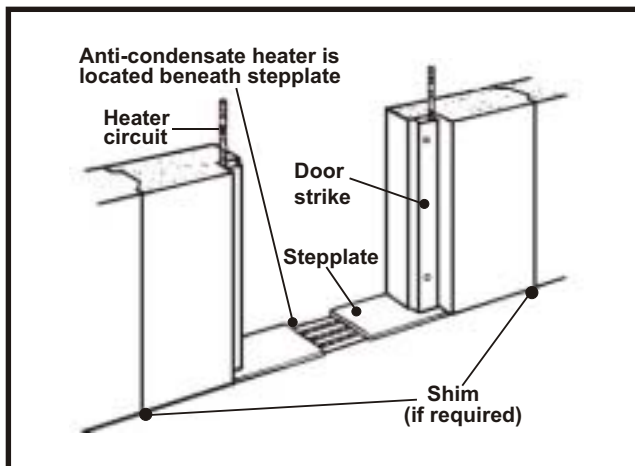


Fig. 25

## 12. Completing panel assembly for walk-ins without Bally floor panels

- A. Set the 23-1/2" or 46-1/2" ceiling end panel in place on top of the installed vertical panels, as per plan view. Align the ceiling panel with the verticals as was described in section 6. Once the ceiling panels are set properly, lock the wall-to-ceiling locks in the fully engaged position. Continue erecting wall and ceiling panels in this manner until all panels have been installed. A quick and accurate way to check for correct alignment is to measure the distance from the edge of the ceiling to the nearest vertical panel joint. This measurement must be 11-1/2"; it must be maintained at every joint to assure proper assembly of the walk-in. (See Fig. 17.)

The last two panels to be set must be the fourth vertical corner and then the end ceiling panel. If the 11-1/2" measurement has been maintained, the end ceiling panel will fit correctly in place. If not, adjust for proper alignment.

- B. When all panels have been erected, recheck to make sure every Speed-Lok has been engaged, check overall dimensions to perimeter lines and fasten to concrete with attachments supplied.
- C. After installation is complete, use a silicone caulk between the outside vertical panels and the concrete floor.
- D. If this is an outdoor installation, install grout seal as shown in Fig 26. Caulk top edge of seal as indicated.

## 13. Attaching floor anchors

- A. Be sure the walk-in is square and plumb before beginning anchor installation. On indoor installations, all panels may be installed before any anchors are attached. Because wind is a factor in outdoor installations, it is recommended that anchors be attached every 10' during installation.

WA-1 and WA-2 anchors are used for most

- B. installations without floors. Steps C through F show the installation method for these anchors. If your installation requires screeds, follow the instructions below, but attach the panels. In this case, locate the anchors to the vertical panels above the screeds, as shown in steps C through F. If your floor plan calls for exterior anchors, Skip to Step G. See Fig. 27.

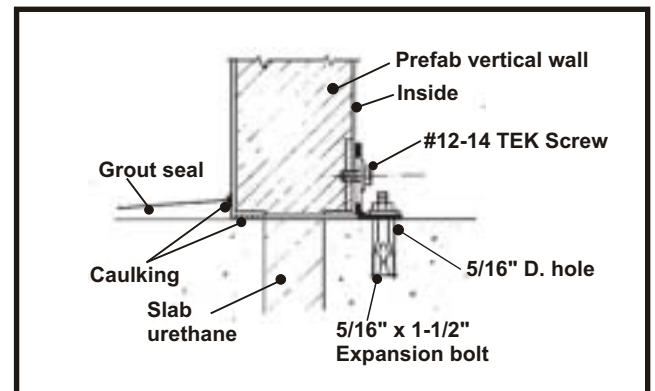


Fig. 26

- C. Center the first anchor (type WA-2) on the joint between any corner and the adjoining vertical panel. Through each 1/4" d. hole in the longer leg of the anchor, fasten the anchor to the vertical panel with a #12-14 Tekscrew.
- D. Through each 3/8" d. hole in the short leg of the anchor, drill a 5/16" d. X 2" deep hole into the concrete floor to accommodate a 5/16" d. X 1-1/2" lockbolt. Tap in the lockbolt and tighten the nut.
- E. Move to the next joint between verticals. Fasten the next anchor (type WA-1), using the same technique described in steps C and D above.
- F. Proceed in this manner around the wall, installing WA-2 anchors between corner and vertical panels, and WA-1 anchors between two verticals, between verticals and door panels, and at the centerline of each 46" wide vertical.
- G. For walk-ins requiring anchors on the outside of the wall, begin by centering a WA-4 anchor on the joint between any corner and the adjacent vertical. Attach the anchor to the concrete floor as described in Steps C and D above. See Fig. 27.
- H. Move to the next joint between verticals. Using the same technique as before, fasten a WA-3 anchor to the floor and vertical panels, but center the anchor on the vertical joint above.

- I. Proceed in this manner around the wall, always installing anchors to correspond to vertical panel joints and the centers of 46" verticals. Use WA-4 anchors between corners and verticals and WA-3 anchors at all other anchoring points.
- J. For walk-ins with 5" thick floor panels and exterior anchors, follow Steps G through above but substitute WA-5 for WA-3 and WA-6 for WA-4.

## 14. Installing multi-compartment walk-ins

See Fig. 28

- A. Two types of partitions may be provided. The difference is in the vertical panel where the partitions butt against the outside walls. The type most commonly used is called "breaker" construction. See Fig. 29. This type is used when partitions are located in the center of 23" or 46" wide vertical panels. An alternative construction method (see Fig. 30) may be used in lieu of breaker panels. Installation methods for both types are as shown below.

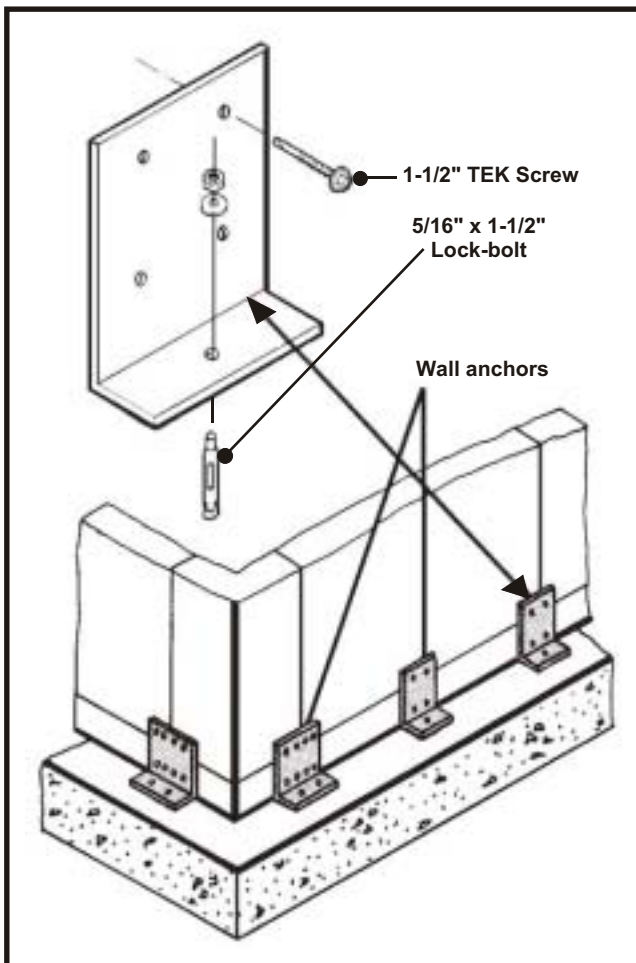


Fig. 27

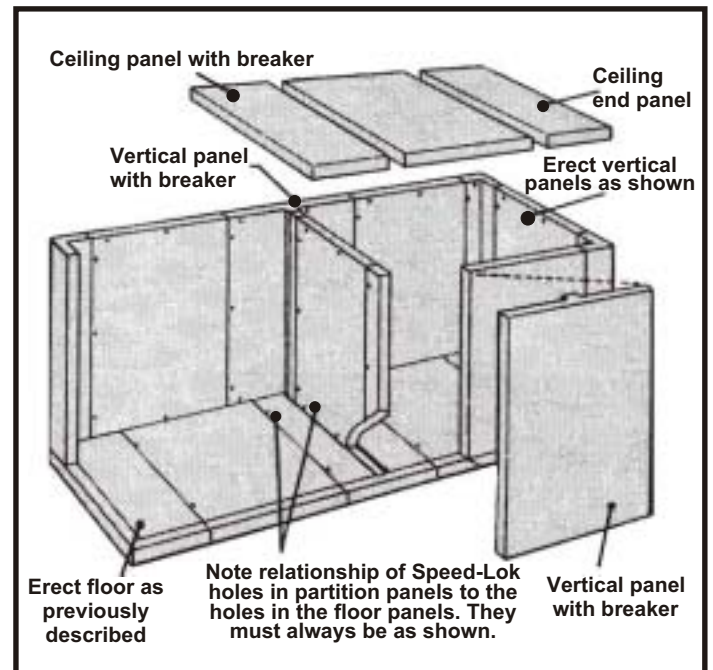


Fig. 28

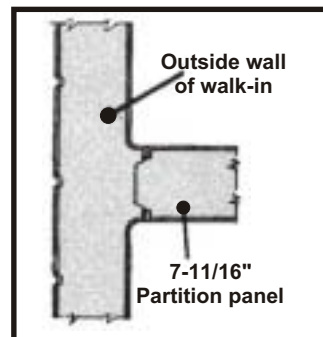


Fig. 29

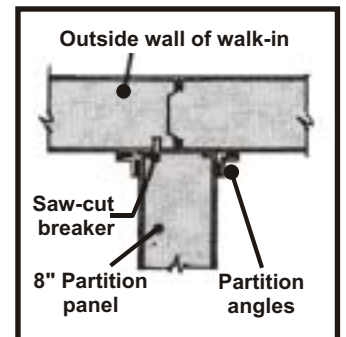


Fig. 30

- B. Partition panels under 12' high are the only Bally vertical panels which do not have exterior "V" grooves spaced on 5-3/4" centers. Whenever erecting a walk-in with two or more compartments, be careful not to install a partition panel in place of a wall panel. (Note: All vertical panels up to and including 106" do NOT have "V" grooves on the exterior.)

Assemble the floor as explained in Section VI, but

- C. make certain that the floor panel with the breaker strip is positioned as shown on the plan view. Also, be sure that all floor panels are positioned as shown on the plan view so that lock access holes are properly located.

Note: For freezer/coolers without floor panels, a breaker strip must be provided in the floor beneath the partition, as shown in Fig. 31. This strip will prevent sweating caused by temperature differences between compartments.

Note: If the partition is constructed as shown in Fig. 30 no locks secure the partition to the outside wall. Consequently, the partition must be held or propped up until ceiling panels are installed. On this type of installation, a saw-cut breaker must be installed in the ceiling and in the perimeter wall panels to prevent thermal conductivity. See Fig. 30.

Erect one outside wall of the walk-in past the location of the partition, making sure that the outside wall panel

- D. has a breaker strip where the partition will butt against it.

Check the plan view to see which side of the partition wall must contain the lock access holes. (This is very important. If the partitions are not installed properly, the locks in the partition panels will not line up with the locks in the ceiling panels and assembly will be impossible.)

- E.

Lock the appropriate 7-11/16" partition panel (P-1 which is tongue and groove and P-2 which is double tongue) together with the required adjacent partition vertical panel and set the assembled panels into position. (Check plan view to identify the correct partition panel.)

- F.

- G. Continue erecting partition panels until the entire partition is installed.

- H. Starting at the partition, continue installing vertical and ceiling panels, using the method described in Section 7 F.

## 15. Making holes for refrigeration tubing and electrical lines

- A. When a remote refrigeration system is used, it will be necessary at the job site to make holes for refrigeration and electrical lines. There are several areas on the walk-in panels where holes should not be cut. See Fig. 32.

- B. After installation, use permagum to caulk around the electrical and refrigeration lines. Caulk both the interior and exterior gaps.

- C. Condensation in electrical junction boxes is caused by warm vapor passing from the exterior to the interior of the walk-in through electrical conduit lines. This problem can be eliminated by installing a seal-off fitting in the conduit line where it passes through the wall. Install the fitting as shown in Fig. 33 and fill it with sealant.

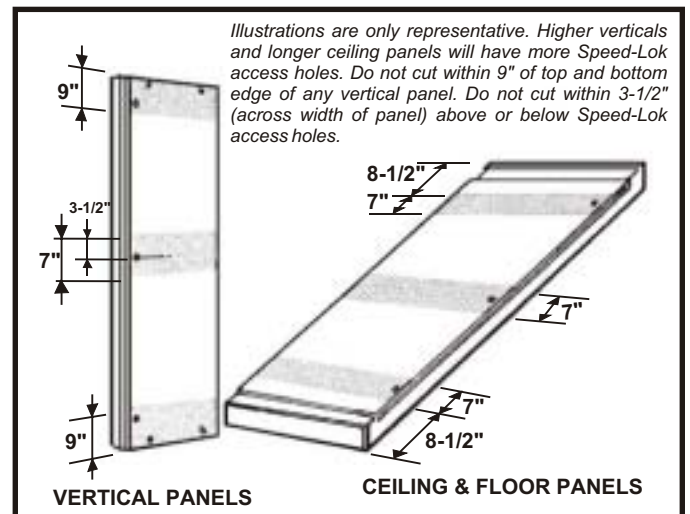


Fig. 32

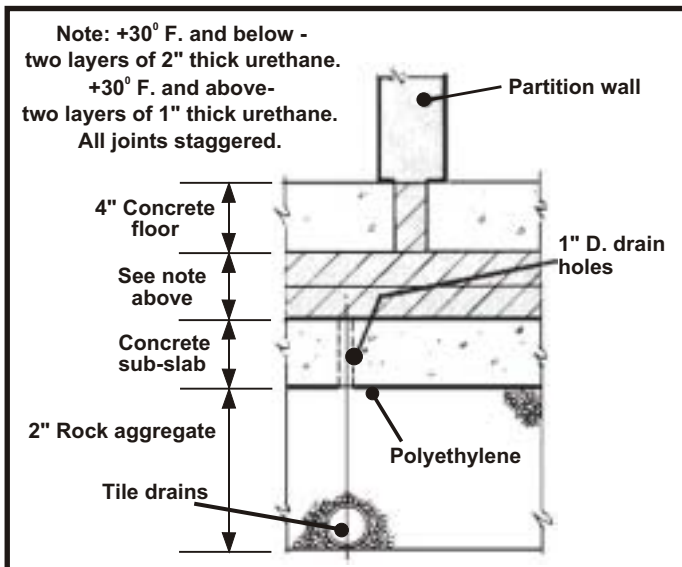


Fig. 31

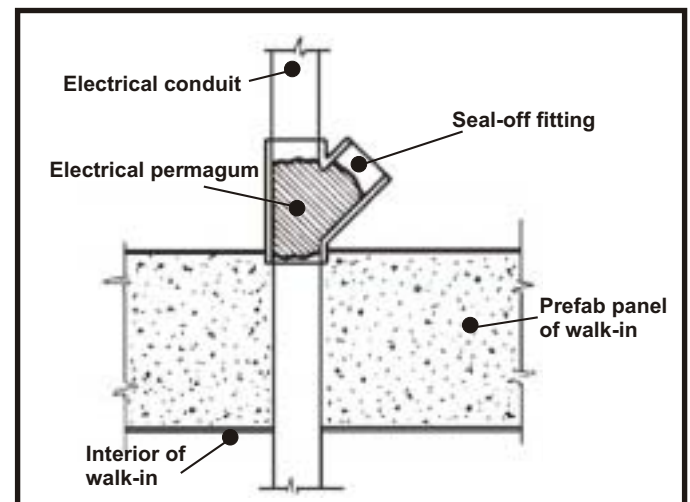


Fig. 33

## 16. Making electrical connections to entrance doors and installing vapor-proof light

- Electrical connections to the walk-in doors are made at the top interior of each door panel. Remove the socket plate to expose the wire connections in the junction box.
- Remove the short wire "pigtails" and connect the service at the wire nuts, through the hole provided in the junction box. Refer to serial tag for proper electrical characteristics. Insure that the electrical service is properly grounded.

Note: Do not turn on power to door section until after the refrigeration system has been started. (See Fig. 34)

- Remount the vapor-proof light assembly after all connections have been made.

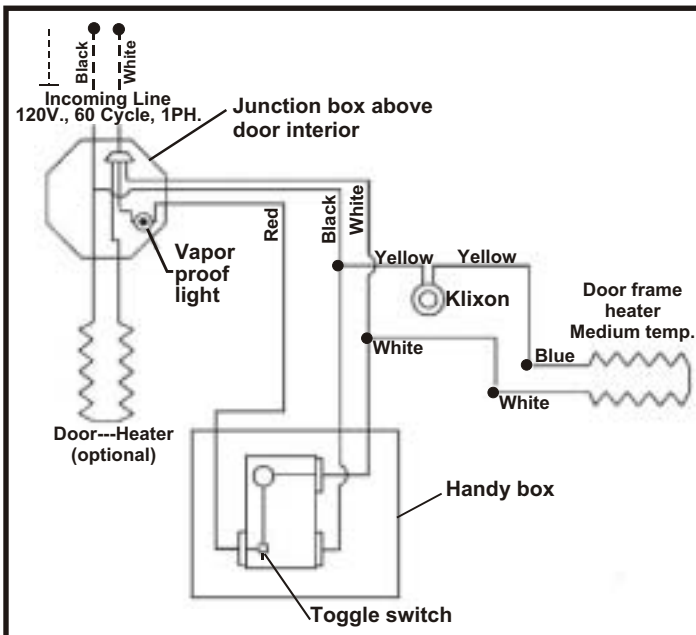


Fig. 34

## 17. Installing metal hood over pressure relief ports (freezers only)

- Align hood above pressure relief port.
- Insert Tek-screws through the pre-drilled holes in the hood flange. See Fig. 35.

Note: Pressure relief port hoods are installed on outdoor walk-ins only.

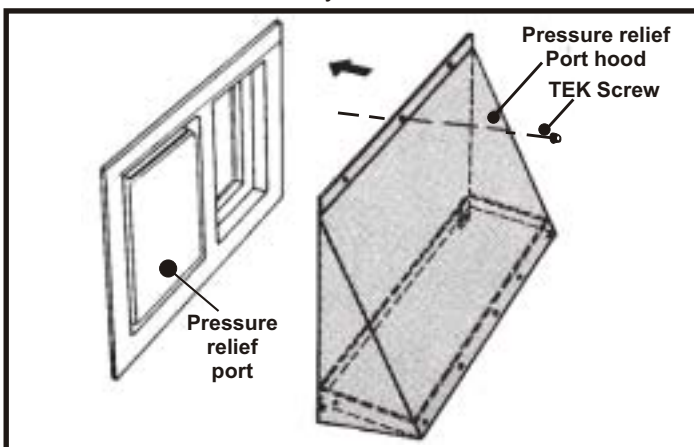


Fig. 35

## 18. Making electrical connections to pressure relief port

- If the walk-in has a pressure relief port, connect the electrical line to it. (See Fig. 36)

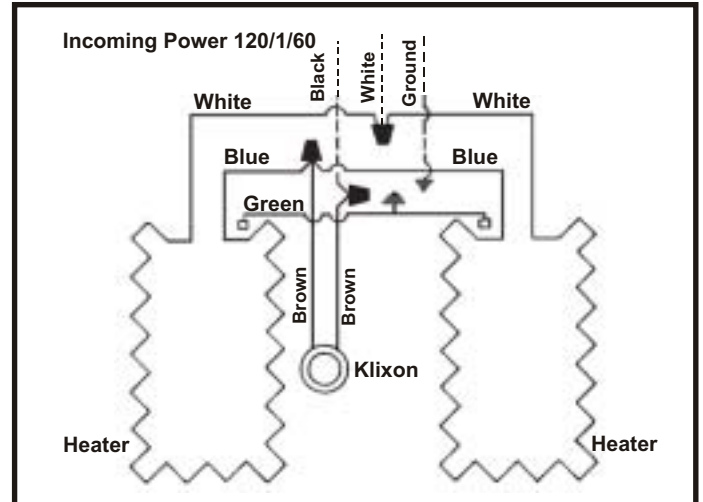


Fig. 36

## 19. Installing walk-ins outdoors

- All outdoor walk-ins must be protected against the weather by a roof of some type. See instruction Manual IM 276-90 if Bally is providing an aluminum roof.
- Hinged entrance doors to be installed outdoors are supplied with rain shields, which are installed at the tops of the doors. Install the shields at the job site as shown in Fig. 37.

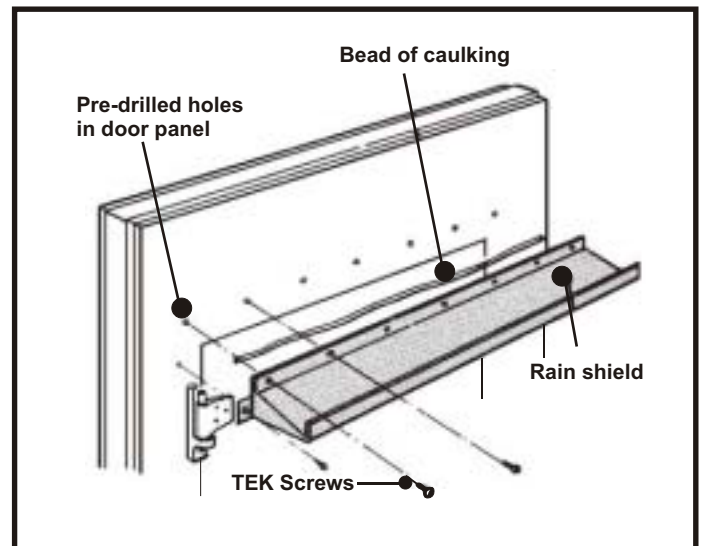


Fig. 37

## 20. Interior ramp

- This ramp, which slopes at 7-1/2 degrees, is made of stainless steel mounted on a high-density foam base.
- Before using the ramp, fasten it securely to the floor panels, using #12-24 screws

- C. Secure the stepplate to the ramp while the door is open. Use a 3/16" d. Bit to drill through the prepunched holes in the stepplate and into the ramp. Secure with #12-24 self-tapping flathead screws. See Fig. 38.

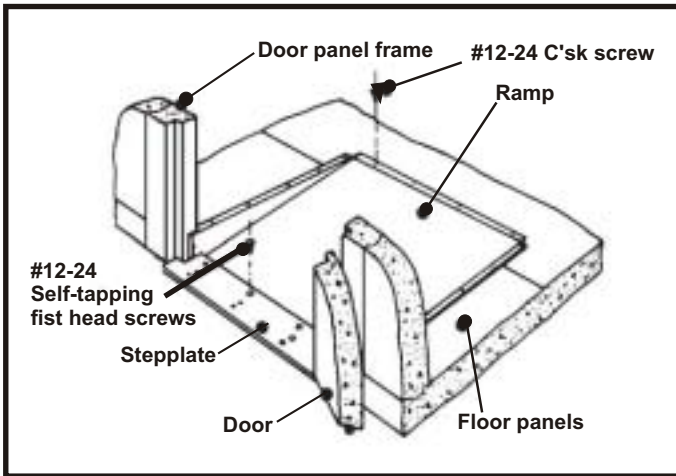


Fig. 38

## 21. Final installation checks

- A. Check all electrical connections.
- B. Make sure the vapor-proof light operates properly.
- C. Make sure the anti-condensate heater around the outside edge of the door (if applicable) and around the opening of the door panel are operating. Do the same with the pressure relief port. Feel the metal surfaces at these locations; if they are warm, the heaters are operating.
- D. The 24", 30", 34" and 36" hinged walk-in doors are self-closing. Do not tamper with the self-closing, spring-loaded hinges. The spring compression is factory-set and does not require adjustment. If doors do not close completely by the action of the hinges, check the door for proper operation. Refer to the door installation "10 Commandments" checklist, which is taped to the door when delivered.
- E. Cover all the lock holes with plug buttons. For walk-ins with exterior access holes, fill the holes with caulk before placing the plug buttons.

## Part Two: Erecting adjustable cantilevered shelving

- A. A plan view is included with each walk-in; the plan view includes a shelf layout. Study it carefully before attempting installation.

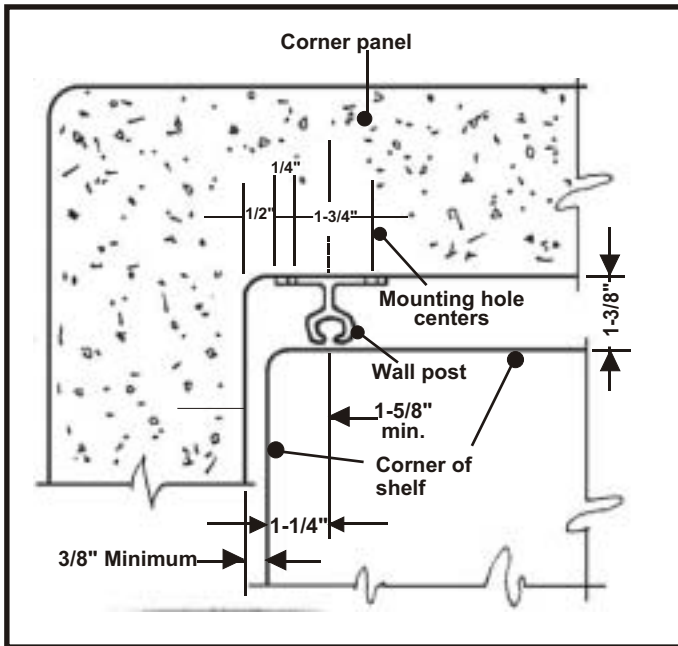


Fig. 39

- B. Installing wall posts

1. Starting at a corner, position the post as shown in Fig. 1, which shows minimum dimensions from corner). Keep the post tight to the ceiling (This will leave the bottom of the post 3/4" short of the floor for ease in cleaning.) On a true vertical line, drill through the prepunched holes of the post into the metal of the vertical wall. Use a 3/32" d. bit on aluminum and a 7/64" d. bit on galvanized or stainless steel.

Note: Drill all holes. Do not punch unless using a punch of the kind shown in Fig. 40. Install screws in every hole in post.

2. Place the ceiling bracket into the slot in the wall post and push the bracket up against the ceiling panel. Note that the flange of the bracket is positioned toward the shelf. The bracket must be perpendicular to the wall. Mark all holes and drill holes the same size as the holes for the posts. Attach bracket using four #8 x 1/2" long sheet metal screws. See Fig. 41 for parts identification and Fig. 42 for mounting position.

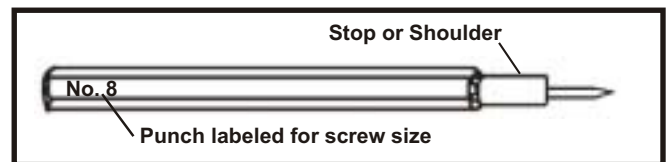


Fig. 40

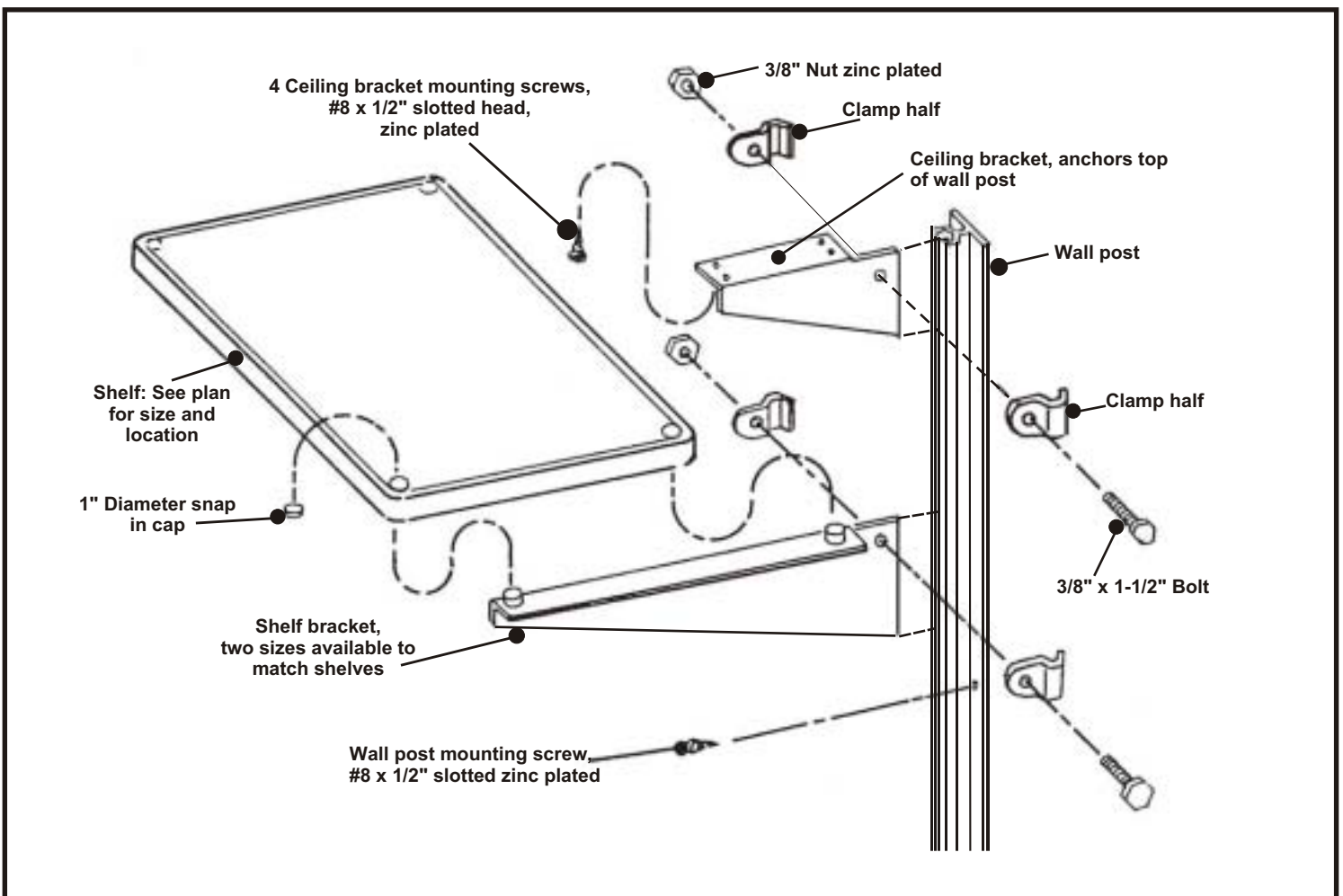


Fig. 41

3. Determine position of second shelf post. See Fig 43

### C. Installing shelf and ceiling support clamps.

The same clamps are used on the ceiling bracket and the shelving bracket. See Fig. 41. The clamp has two identical halves which sandwich brackets and wall posts. See Fig. 44. Clamp the ceiling bracket at each wall post using 3/8" d. X 1-1/2" long body bolts.

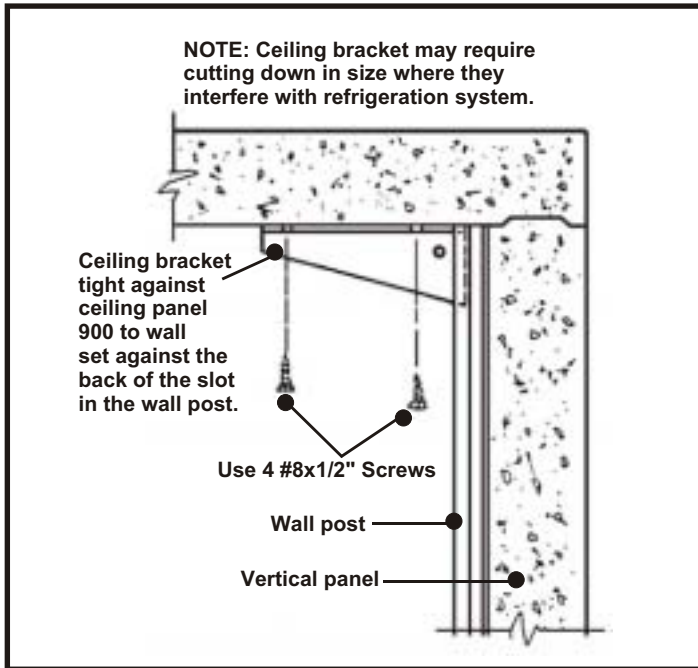


Fig. 42

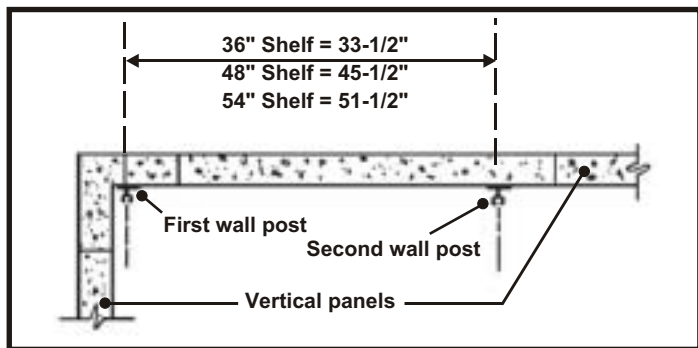


Fig. 43

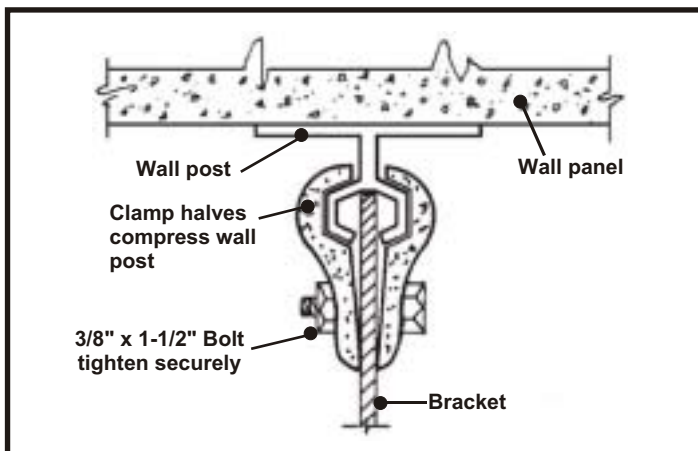


Fig. 44

### D. Installing shelf brackets

1. Select the proper size bracket to match depth of shelf. Determine the desired height. The top of the bracket must be positioned 2" below the top of the shelf. Secure the shelf bracket to the wall posts using the same type of clamp used to fasten ceiling brackets to wall posts.

2. Install all shelf brackets in the same manner, keeping tops of brackets level for each tier. (Shelf heights may also be staggered if desired.)

3. Tighten all shelf clamp bolts.

### E. Installing shelves

1. Each shelf bracket has two nylon projections. Position the shelf so the openings in each corner of the shelf fit over the projections.

2. Install closure caps.