Kenco, Inc.

GRAVITY FLOW ORDER PICKING SYSTEMS

INSTALLATION INSTRUCTIONS

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KENECO FLOW RACK
INSTALLATION INSTRUCTIONS

RECEIPT OF SHIPMENT

Please inspect all equipment immediately upon arrival for damages or shortages. Any damage which occurred during shipment must be reported to the carrier by the customer and a claim must be filed. Before your rack is assembled, check the number of packages received against the Bill of Lading to ensure the shipment is complete. Also, make sure the components you have received match the components on the Keneco parts list. **Keneco components must be stored indoors prior to erection, exposure to rain and moisture may cause rust on some steel components.**

Most Keneco shipments will include an 18" by 24" layout drawing. This will have exact information pertaining to your particular order. Some additional or different components may be included in the drawing that are not described in these installation instructions.

Components: Keneco flow racks are shipped unassembled and consist of some, but not necessarily all, of the following basic components:

Vertical Frames	Shelf Clips
Sway Braces	Shelf Supports
Angle Braces	Bolts & Nuts
Shelf Frames	Kenrail Tracks
Roller Runways	Guides
Pallet Rack Adaptors	Track and Guide Clips

See Page 6 for familiarization of the above listed components.

Warning – some components may have sharp edges, wear gloves and eye protection while installing.

Erection Procedures:

A) The floor should be relatively level and capable of sustaining the load to be placed on it. Snap a chalk line on the floor to locate the base line of the equipment per the layout (floor plan) and start erecting the vertical framework perpendicular to this line. (See Page 10, Figure 1)

B) For standard Keneco flow rack sections: (See Page 6)
Stand up vertical frames and bolt the sway brace and angle brace to the vertical frames using the 3/8" dia. x 1" nuts and bolts supplied and make finger tight. Do not tighten these bolts until an entire group of sections is erected with the bottom shelf frame in position. At that time, plumb the first upright with a builder's level, and proceed to tighten the nuts and bolts in each section. Vertical frames may be 1 or 2 pieces depending on the depth of the flow rack. If 2 pieces, they must be bolted together with the 3/8" dia. X 1" long nuts and bolts provided.

C) For Keneco shelf frames attached to pallet rack made by others:
See layout drawing provided. There are a variety of attachment methods. If adaptor strips or channels are included, they should be installed first. They are either tek screwed or bolted to pallet rack. The bottom of adaptor **must** rest on the floor.

D) Shelf Clips / Shelf Supports: (see Page 10, figure 2a and Page 11, figure 2b)
Depending on the application, the shelf frames are attached to the vertical frames by using either the Keneco Shelf Clip or the Keneco Shelf Support (or both). The Shelf Clip is a flat steel clip that is inserted in slots on the sides of the upright posts. The Shelf Clip allows for ¾" vertical shelf adjustment. The Shelf Support is a ¾" diameter steel cylinder that has a set screw which is tightened to clamp the Shelf Support to the upright post. The Shelf Support allows for infinite vertical shelf adjustment.

Standard Models 60 and 90 require 4 Shelf Clips/Supports per shelf frame, Model 120 and 144 require 6, Model 180 and 240, 8 per shelf frame. In special applications this may vary and the accompanying Keneco parts list indicates the quantity of shelf Clips/Supports per shelf frame. Shelf Clips/Supports are generally attached to each vertical post of the vertical frame. See the Layout drawing to see if the installation requires Shelf Clips, Shelf Supports or a combination of the two. The front Shelf Clip/Support for the bottom shelf frame is usually set 3" up from the floor. The location of the rear Shelf Clip determines the slope of the shelf frame and will vary with the slope required and the depth of the unit. The usual procedure is to check out the slope of one bottom shelf frame to insure proper flow of the particular carton before establishing the proper rear shelf support location. The balance of the shelf supports are installed with predetermined spacing. This spacing is based on the carton height + 1" or more for clearance + shelf thickness (3-3/4" for standard shelves).

Shelf supports must be tightened a minimum of ¼ turn, after the screw is made finger tight, with the open-end wrench provided. Shelf Clips require no tools to install.

E) Shelf Frames: (See Page 7, diagram #1)
Shelf frames are shipped either welded (one or two piece construction) or knocked down (bolted). If shelf frames are shipped knocked they must be assembled before they are installed in the vertical frames. See page 7 for KD shelf assembly.

Shelf frames are manufactured with a notch in each side member near the front of the frame, which engages the Shelf Clip/Support.

As mentioned previously, the bottom shelf frame should be installed first in each section. The remaining shelf frames required for each section can be placed upon the bottom shelf frame, then raised one by one starting with the top shelf frame and set upon the shelf supports. Be sure to push the shelf frame forward so the Shelf Clip/Support engages the notches in the shelf frame side members. Shelf frames over 144" deep are manufactured in 2 pieces and are required to be bolted together with 2 – 5/16" dia. x ¾" long bolts and nuts. The bolting should take place after the shelves are in position in the rack.

F) Kenrail tracks and guides: (See Page 12, Figure 3 and 4)
Tracks and guides are attached to the shelf frame with the same plastic track and guide clips. These clips are snapped into the bottom of the track and guide. The best procedure is to place the clip about 2 inches from the end of the track or guide with the finger tab facing the end of the track or guide, and snap in so that the two outer tabs engage. Use your hand or channel lock pliers to snap the clip until it engages completely. Once the clip is snapped in properly it can be moved easily along the track or guide.

After the clips are installed, the tracks and guides should be placed upon the shelf frames in the quantities required but not fastened down.

The final step of installation is the sizing of runways. With the Keneco system the runways can be sized either by using the carton itself of by pre-measuring the carton.

For installation with one size carton, add 5/8" to the carton width to give you the center to center dimension of the guides. If this dimension does not add up to a ½" increment, increase the dimension to the next highest ½" increment. (eg. Carton width 12" + 5/8" = 12-5/8" – use 13" center to center of guide). With a tape measure and starting on the left side of the shelf frame at the front of the rack, make marks using the center to center dimension. Proceed and mark the rear of the shelf frame starting from right side of the shelf frame as you face the rack. Install guides using the mark as the center of the guide by pulling the plastic clip forward with fingers or channel lock pliers and engaging the stud of the clip in the hole in the front and rear members of the shelf frame. On larger installations, a template can be cut to fit between the guides instead of measuring.

For varying size cartons, either measure the carton widths and proceed as above or place the carton itself in the runway at the rear of the shelf and allow approximately 5/16" clearance between the carton and the guide. Attach the guide and let the carton roll down the runway to the front of the shelf and proceed to do the same at the front of the rear. It is best to have two men setting runways, one at the front and one at the rear of the rack.

For installations without guides, allow 2" or more between cartons.

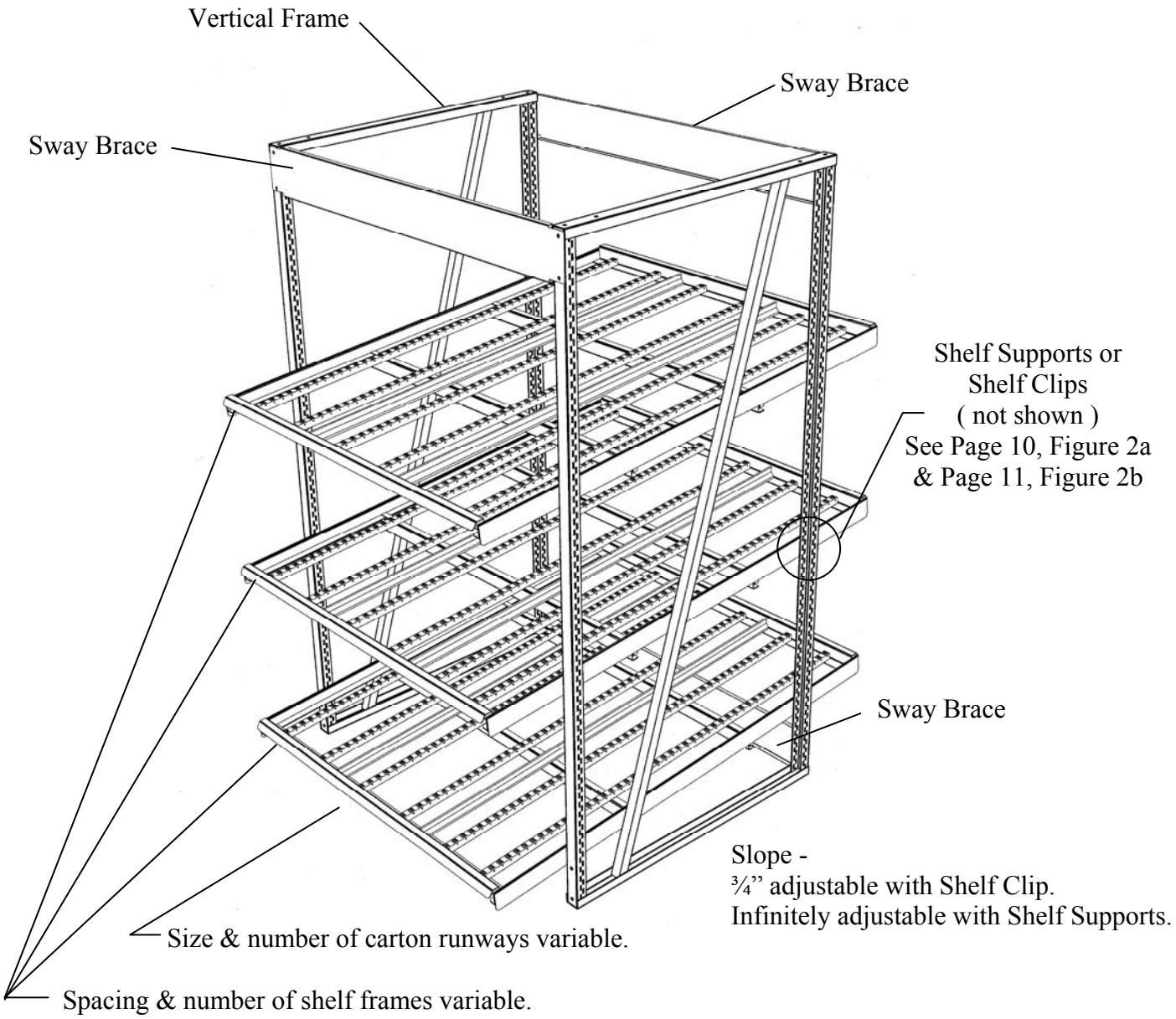
Kenrail tracks are installed by engaging the plastic clip in the same manner as the guide. The tracks should be set approximately 2" from the center line of the guide for cartons up to 12" and approximately 3" or more for cartons over 12" in width. Wide cartons with soft bottoms may require an intermediate piece of Kenrail for proper support. Depending on the type of carton or tote, some testing should be done to determine the best setting of tracks in relationship to the guide.

Roller runways are simply placed in shelf frame. No attachment is normally needed. Bolts may be provided to restrict lateral movement within the shelf.

G) As a final check, see that all nuts and bolts are tightened.

H) Notes:

1) Flow racks over 144" deep will include 3 track and guide clips per piece of track and guide for attachment in the middle.
2) Useable shelf frame width = 2-1/2" less than section width.
3) Knuckled shelf frames: A hardboard or galvanized tray is provided which drops into the knuckled portion.



STANDARD KENECO FLOW RACK SECTION

KNOCKED DOWN SHELF FRAME ASSEMBLY

The Keneco knocked down shelf can be assembled with the shelf side members installed on the upright frames or the shelf can be assembled outside the rack and installed as a complete unit. (see diagram #1)

SHELF FRAME COMPONENTS

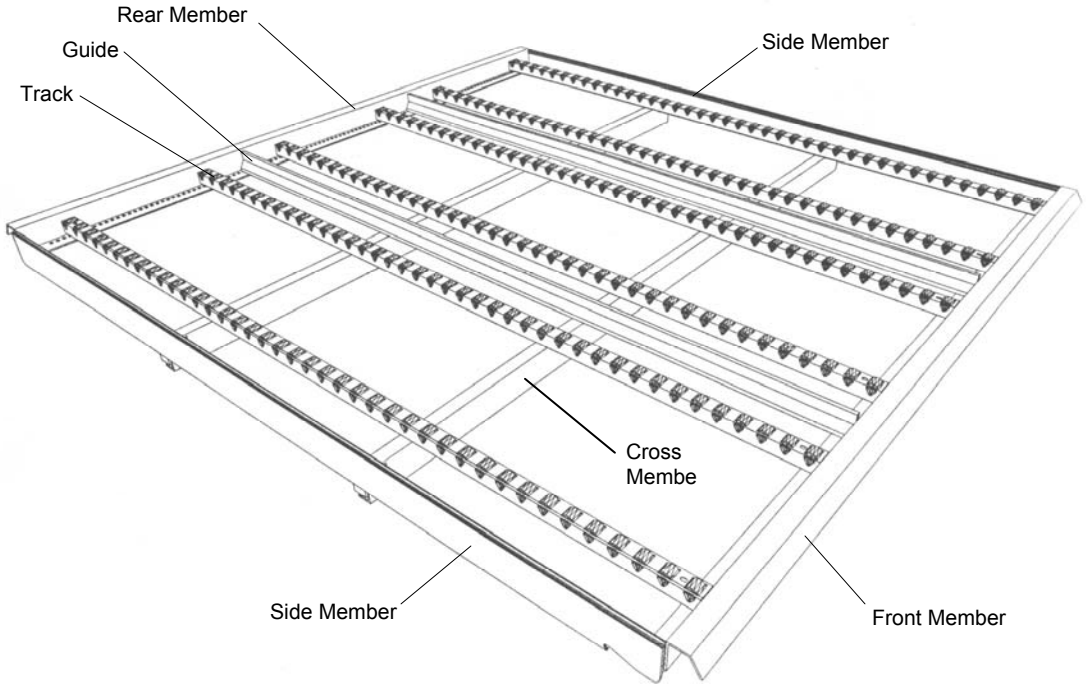


Diagram #1

SIDE MEMBER TO FRONT AND REAR MEMBER CONNECTION

The side member is connected to the front and rear members at the four corners using one 5/16" x 3/4" bolt with flanged locknut at each corner. Front and rear members sit on top of the side member. Insert the 5/16" x 3/4" bolt up through the bottom of the hole at the end of the side member through the hole at the end of the front and rear members. Attach the flanged locknut and hand tighten. (see diagram #2)

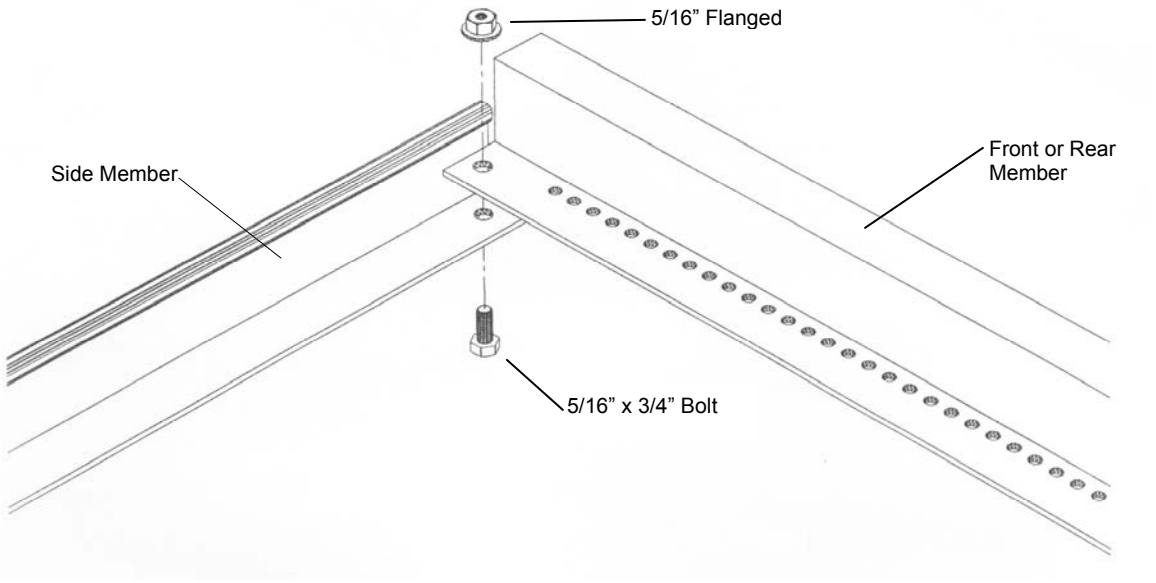


Diagram #2

CROSS MEMBER CONNECTION

The cross members are connected to the side members with a 5/16" x 3/4" bolt with flanged locknut. The cross member is placed against the side member so that the hole in the cross member lines up with the hole in the tab on the side member. Hand tighten nuts. (see diagram #3) The number of cross members per shelf varies depending on the length of the shelf.

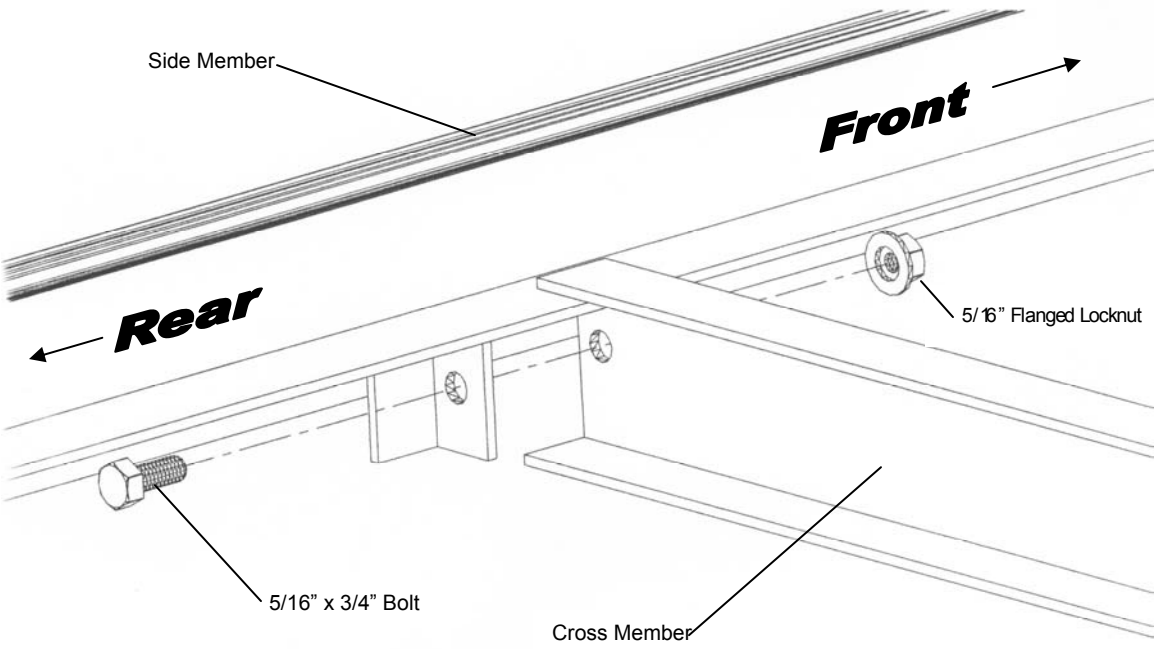


Diagram #3

FINAL ASSEMBLY

Shelf frames must be square before nuts are fully tightened. Measure the shelf frame diagonally from corner to corner. When these dimensions are equal the shelf is square. Fully tighten all nuts.

STRAP ATTACHMENT

Depending on shelf load capacity and width, some shelf frames have a reinforcing strap that ties the front member to the first cross member. The strap is an 11 gauge by 1" wide flat piece of steel with holes at each end. After the shelf has been fully assembled, center the strap on the inside of the shelf, from the front member to the first cross member. Attach the strap to the front member with a 1/4" x 3/4" bolt and locknut, bolted through the center hole on the bottom of the front member, up through the hole at the end of the strap. Tighten nut. Use the included 1/4" x 3/4" tek screw to attach the other end of the strap to the first cross member. (see diagram #4)

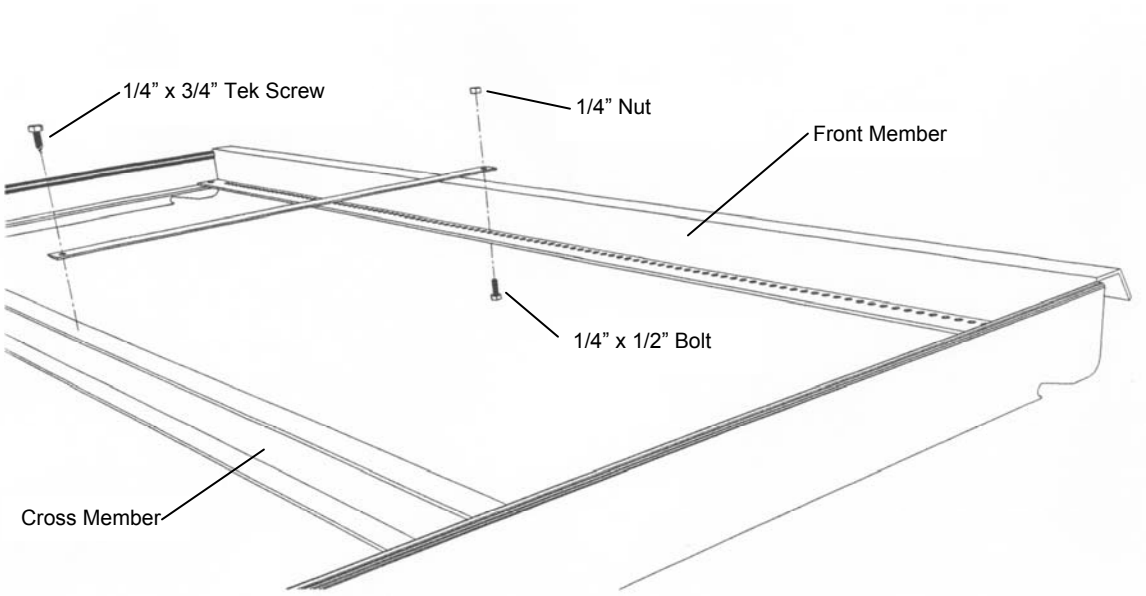
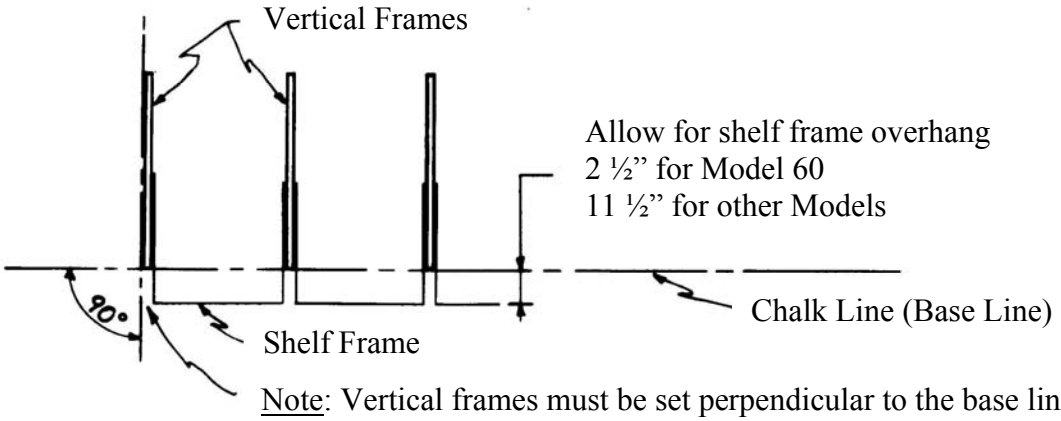


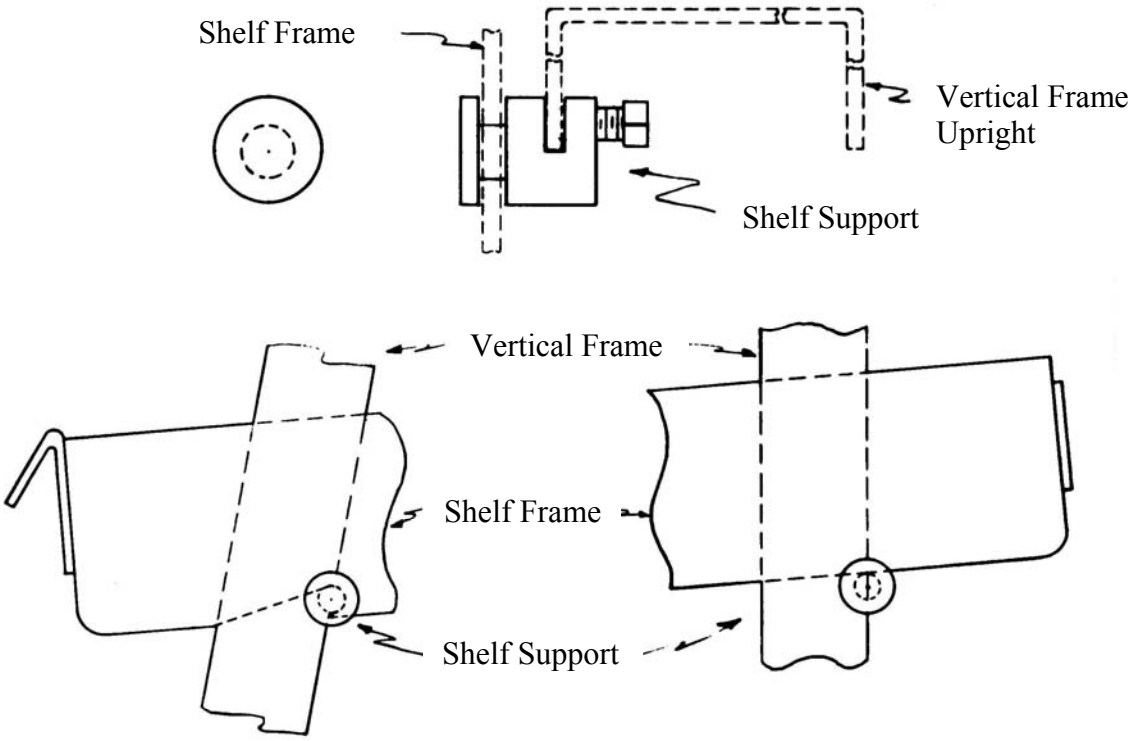
Diagram #4

Figure 1.



Note: Vertical frames must be set perpendicular to the base line in order for the shelf frames to go into place properly.

Figure 2a.



Front Shelf Support Application

Rear Shelf Support Application

Figure 2b.

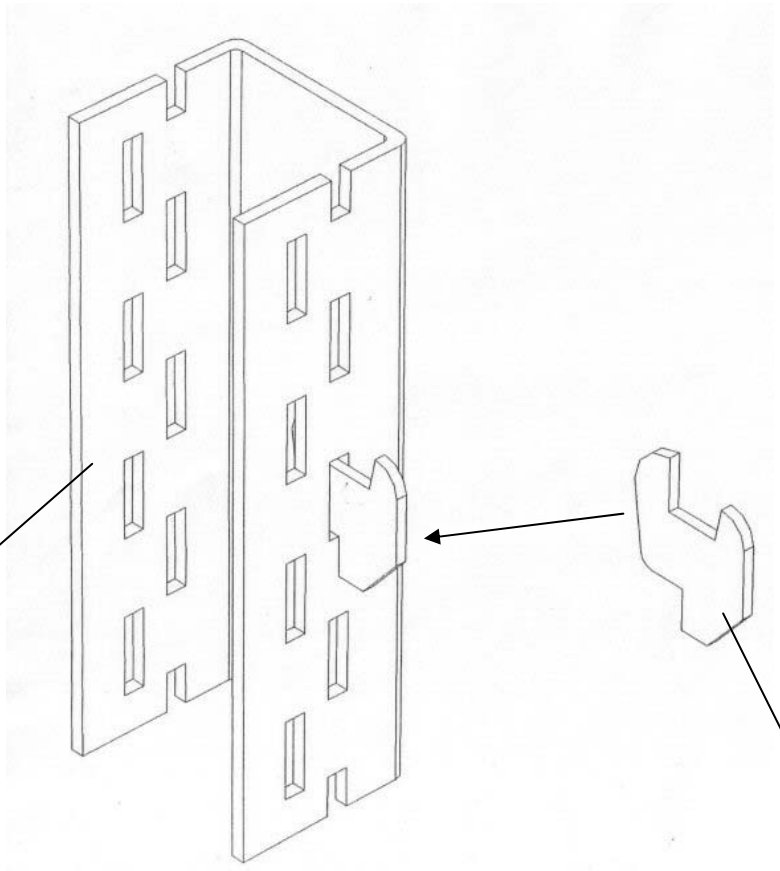
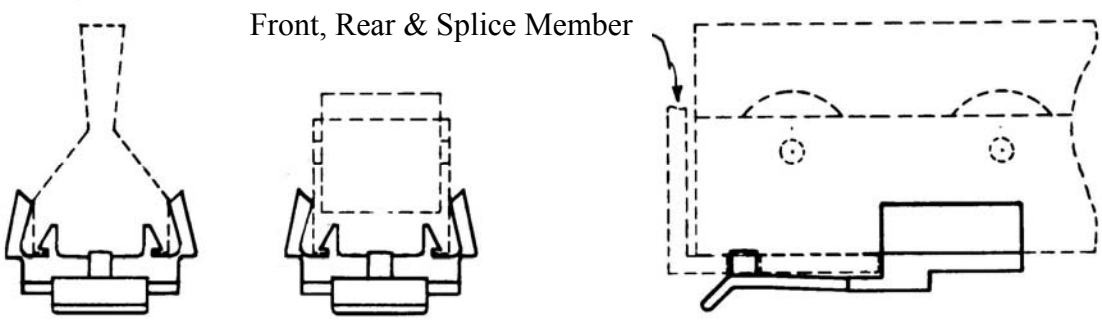
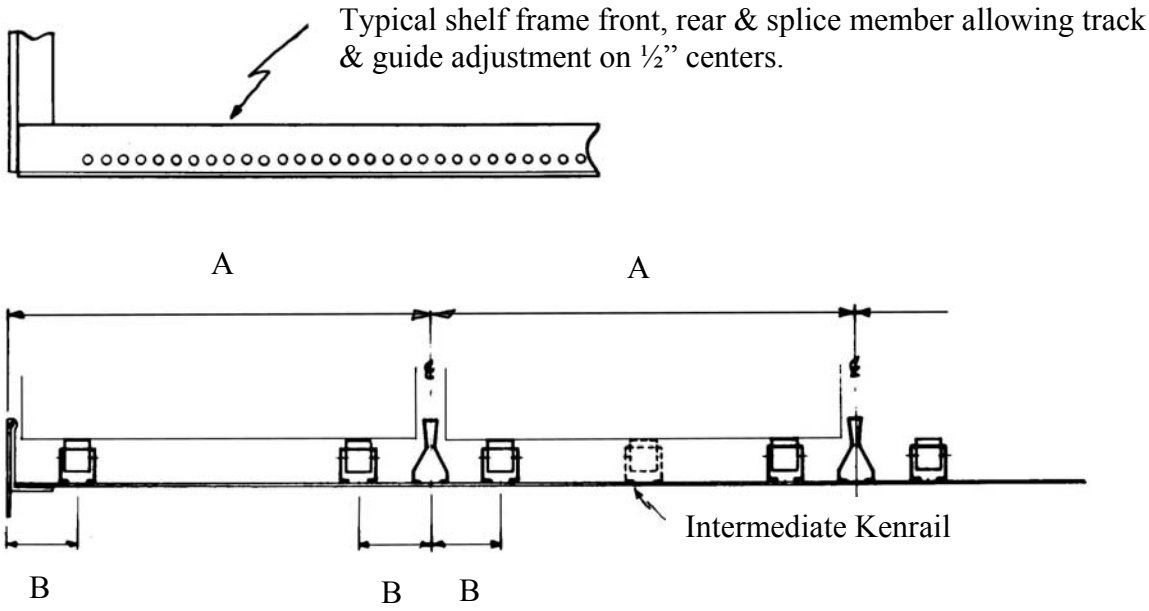


Figure 3.



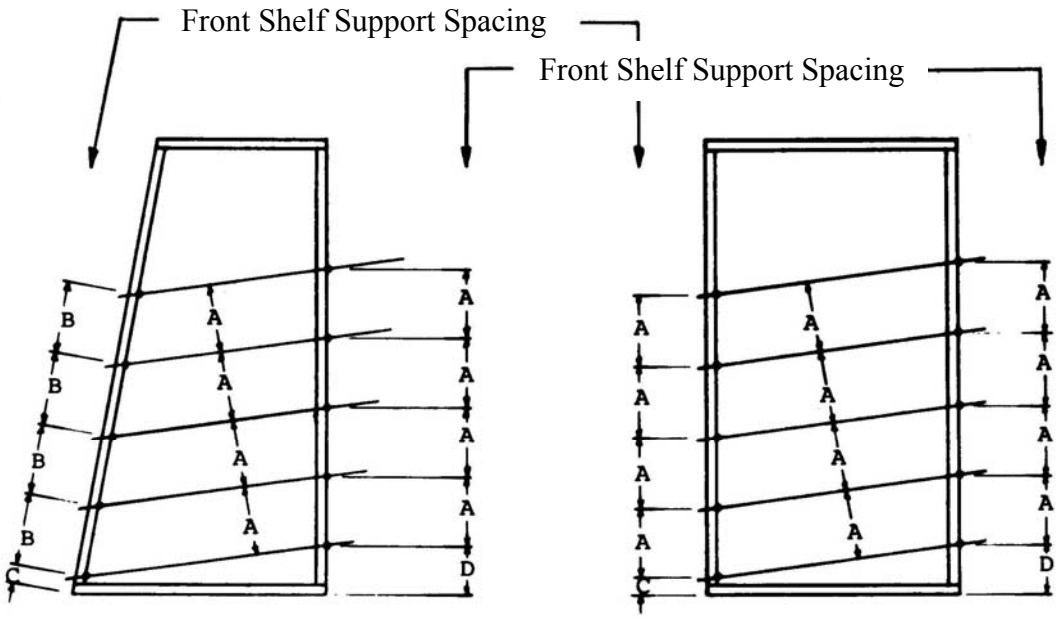
Guide Track Track & Guide Clip

Figure 4.



A = Carton width + 5/8" (if not ½" increment, increase to next highest ½" dim.)
B = Approximately 2" for cartons 12" wide or less.
Approximately 3" for cartons over 12".

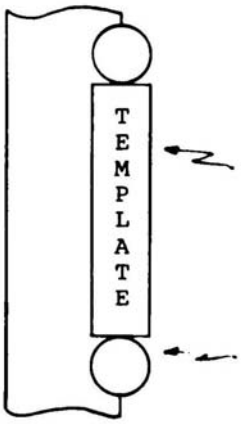
Figure 5.



No Layback Model

A = Maximum Package Height + 3-1/4”
B = A x 1.035 (See Chart)
C = 3” Minimum
D = 7” For Model 60
11” For Model 120
13” For Model 144
16” For Model 180
21” For Model 240

Note: All Dimensions measured to top of shelf support.



Template Length
= A, B, C, or D Minus ¾”

Shelf Support

A	x 1.035 =	B
9"	x 1.035 =	9-1/4"
10"	x 1.035 =	10-3/8"
11"	x 1.035 =	11-3/8"
12"	x 1.035 =	12-3/8"
13"	x 1.035 =	13-1/2"
14"	x 1.035 =	14-1/2"
15"	x 1.035 =	15-1/2"
16"	x 1.035 =	16-1/2"
17"	x 1.035 =	17-5/8"
18"	x 1.035 =	18-5/8"
19"	x 1.035 =	19-5/8"
20"	x 1.035 =	20-3/4"
21"	x 1.035 =	21-3/4"