

# CARTONFLO®

Live Storage of Cartons  
For Rapid, Efficient Order Filling



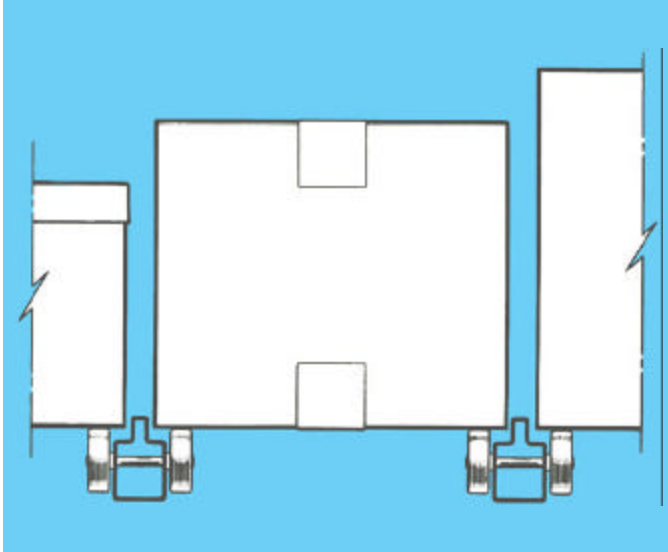
Saves Space  
Speeds Picking  
Reduces Error  
Protects Product  
Improves Inventory Control



**KORNYLAK CORPORATION**

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## A Simple Concept

All cartons of the same item are stored single file on wheel rails. As the front carton is removed, the remainder of the column moves forward by gravity. Loading is done at the rear permitting simultaneous order picking and stock replenishing without cross-traffic.

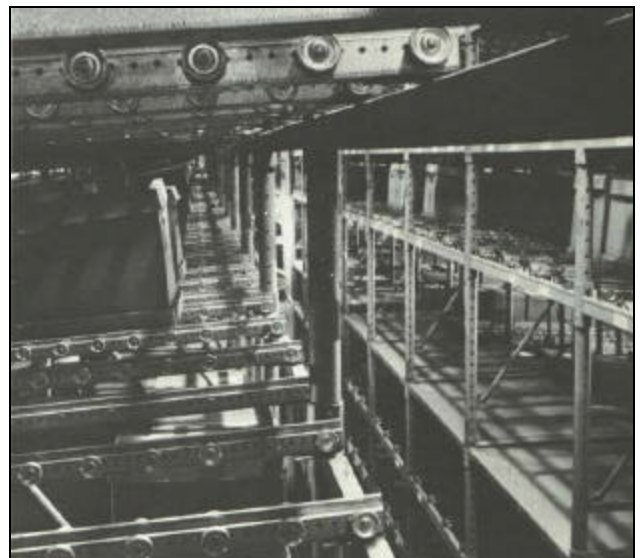
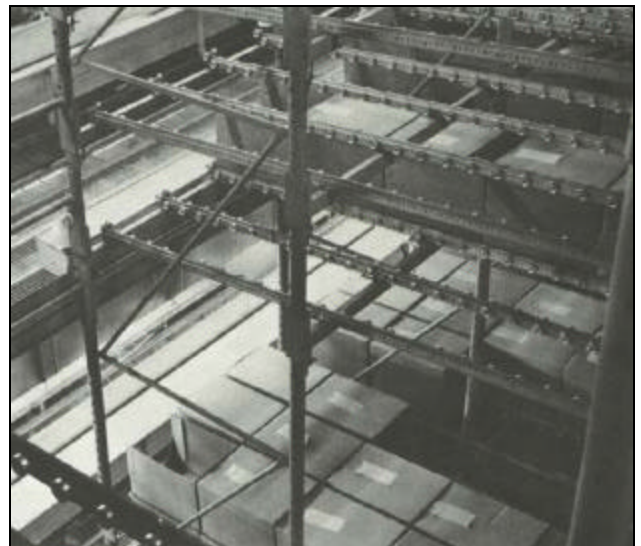
Flat bottom items such as cartons, packages, tote boxes, palletized materials, and others may be stored on a Cartonflo. The compact 'one-of-each-item' front permits the order filler to pick up to 20 different items without moving a step. And, because Cartonflo is adjustable to accommodate any package size, style, or weight, and can be readily increased or decreased in size, or dismantled and relocated, you get the flexibility essential to meet changing requirements.

## With Many Benefits

- Up to 65% savings in space
- All items easy to find
- Up to 400% faster order filling
- Spoilage & obsolescence reduced by first-in first-out storage
- Less floor congestion,  
No cross-traffic
- Product protected from damage
- Easier inventory control
- Neater plant
- Fewer errors



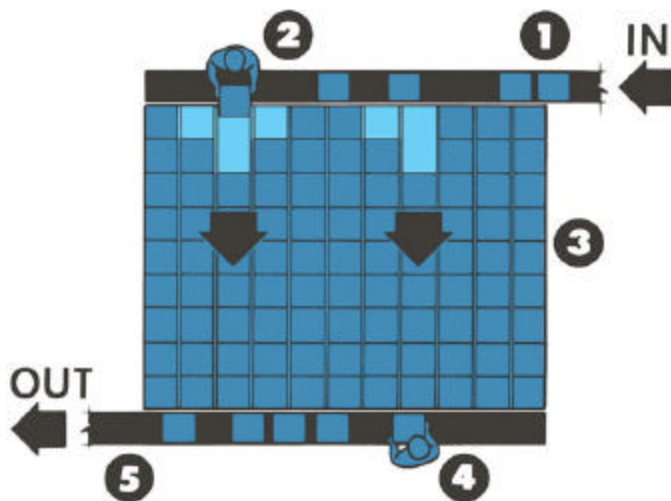
An award winning Cartonflo installation speeds order filling for a famous publisher



1 million draperies order picked from a 3 floor level Cartonflo system.

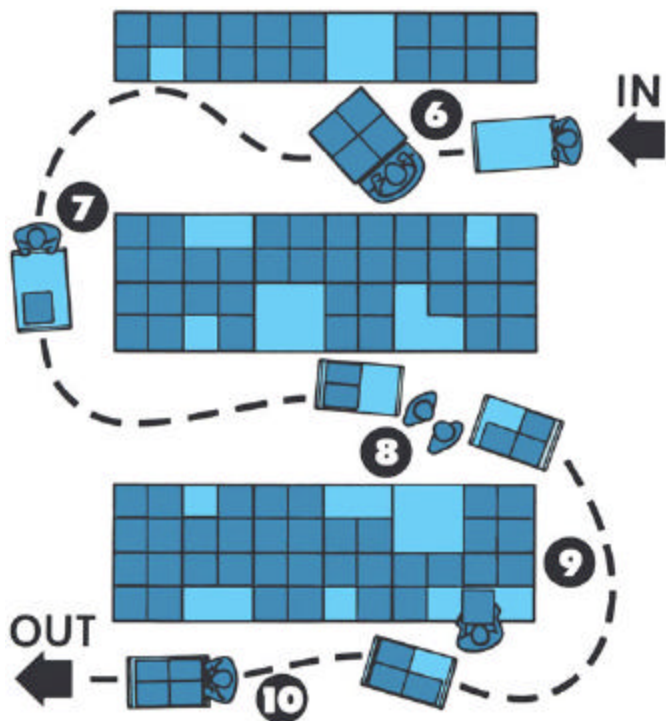


### Rapid efficient picking with CARTONFLO



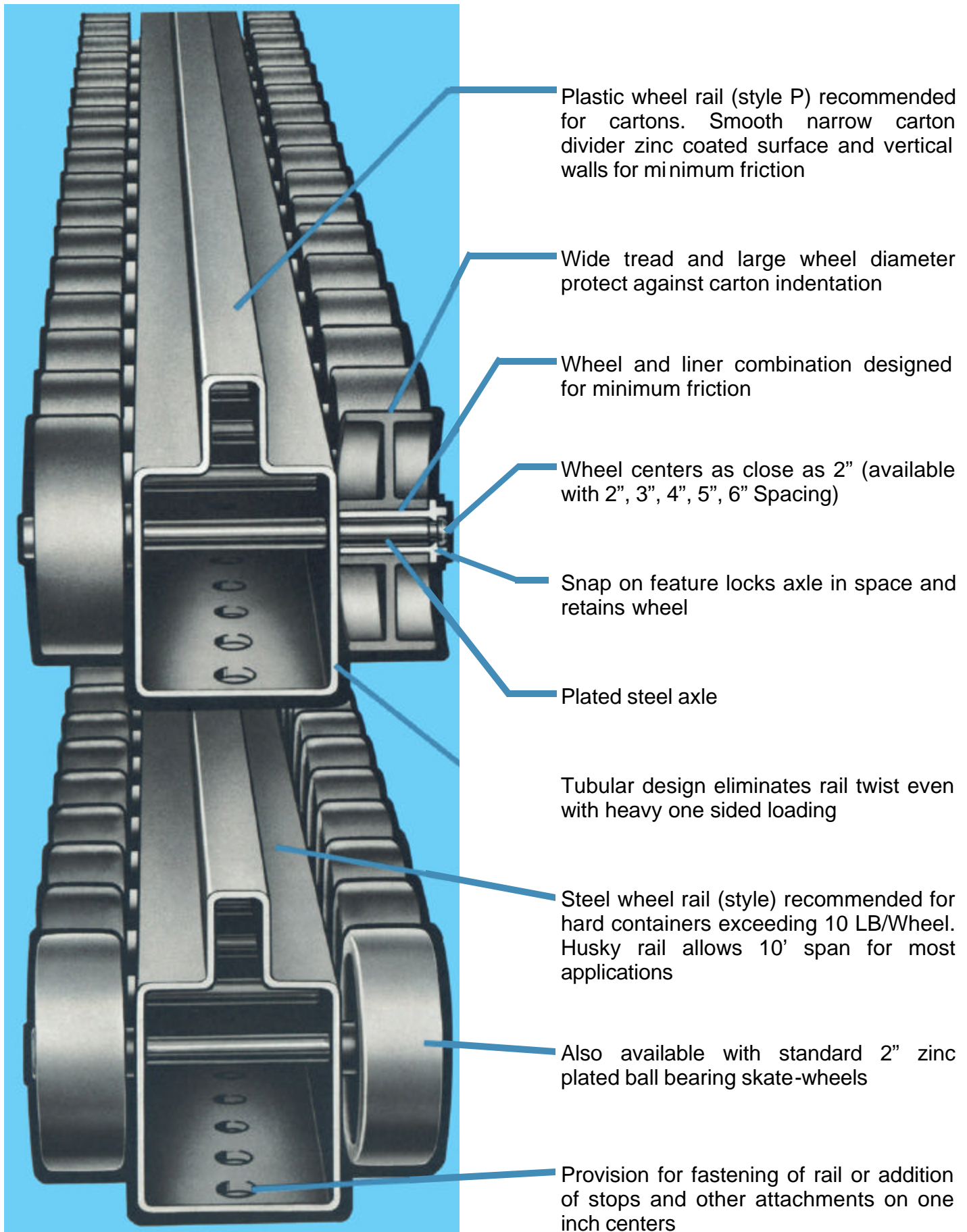
- 1 Cartons flow to rack on conveyor from production or from reserve storage.
- 2 Replenishment of rack is rapid.
- 3 Inventory is protected from dirt and damage. High cube storage saves space, adds neatness and order to the warehouse. Shortages are easy to spot.
- 4 Picker works rapidly with less effort. Items are easy to identify and find. Very little walking. No distractions.
- 5 Picked items are placed effortlessly on conveyor and move immediately to a waiting truck or consolidation area.

### A few of the problems CARTONFLO eliminates



- 6 Hazardous and time wasting cross traffic when stock replenishing fork trucks interfere with stock pickers.
- 7 Stock pickers walk great distances to cover full product line.
- 8 Distractions and interruptions of work.
- 9 Extravagant use of floor space.
- 10 Excessive manual handling.

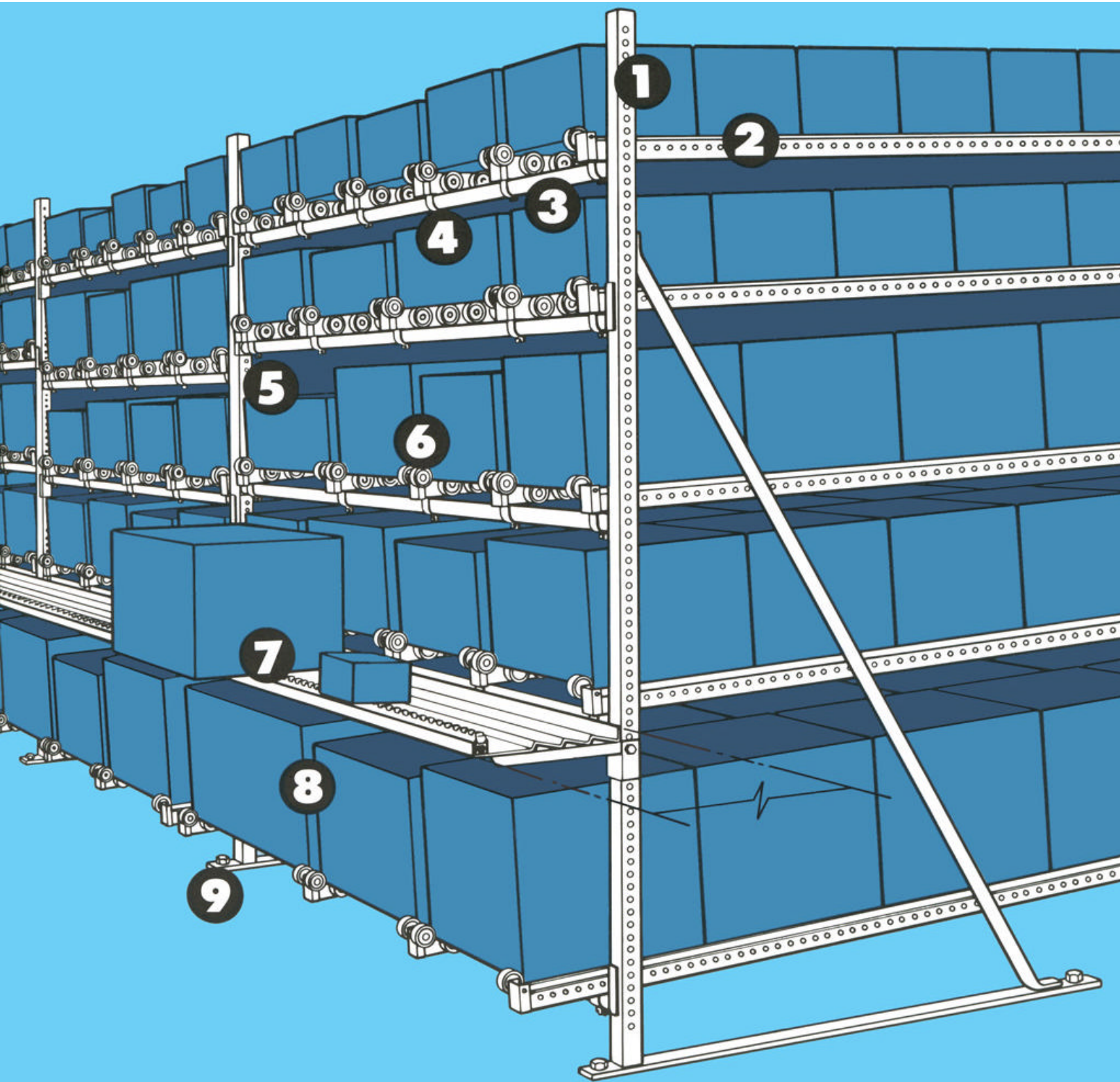
# BETTER BY DESIGN\*



\*Patented U.S. and Abroad



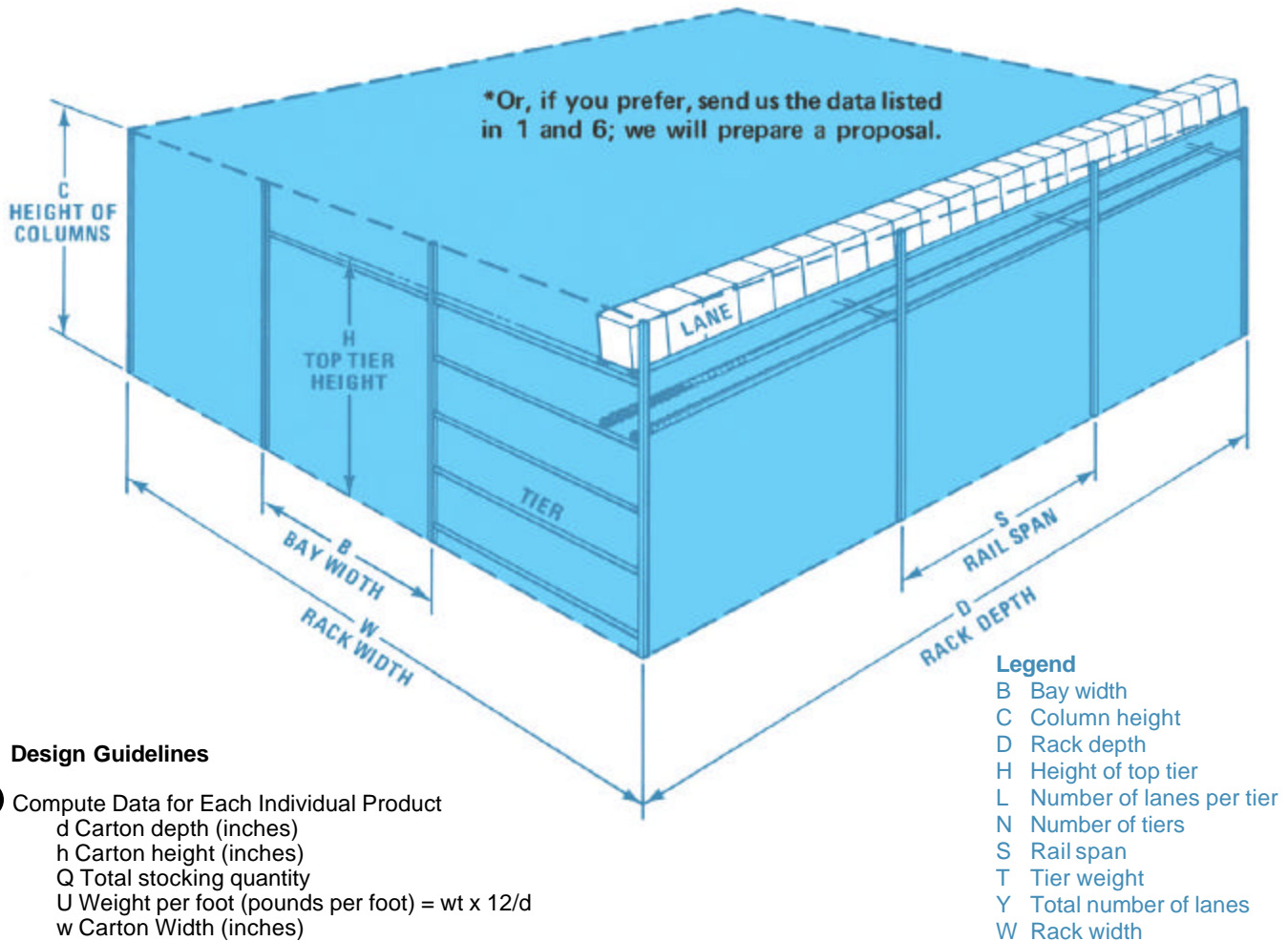
# A Rugged, Efficient, Easy to Install Live Storage Rack For Rapid, Low-Effort Stock Picking.



- ① Uprights can be spaced to match desired wheel-rail and cross beam spans
- ② Long span heavy duty wheel rails less structure to buy and erect
- ③ Long span cross beams allow more efficient use of the cube
- ④ Quick clamping adjustments to suit carton widths
- ⑤ Cross beams are individually adjustable

- ⑥ Wheel stop front for low effort picking
- ⑦ Zipflo conveyor (optional) allows quickest disposal of carton. Height adjustable, no loss of vertical carton space
- ⑧ Layer of cartons below conveyor adds to save space efficiency
- ⑨ Foot pads provided for lagging

# To design your CARTONFLO\*



## Design Guidelines

- 1** Compute Data for Each Individual Product

  - d Carton depth (inches)
  - h Carton height (inches)
  - Q Total stocking quantity
  - U Weight per foot (pounds per foot) =  $wt \times 12/d$
  - w Carton Width (inches)
  - wt Gross carton weight (pounds)
  - X Total stocking depth (feet) =  $Q \times d/12$
- 2** Make a Comparison Graph of All X Values

These compared values may show that approximately 20% of the products make up 80% of the flow. They can be used to establish the working rack depth D (feet) and the total number of required lanes Y.

As shown in the following example, for a selected rack depth of 30 feet, Y=2 of product no. 1, 4 of product no. 2, 1 product no. 3, etc.

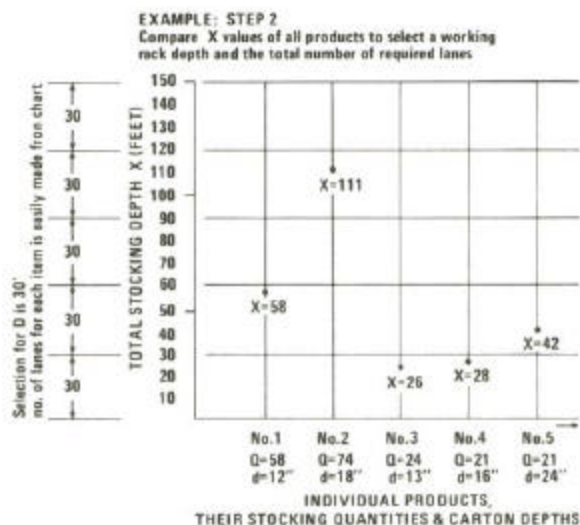
Note: Rack depths of 10 to 40 feet are most popular.
- 3** Normally Top Tier Height H (inches) at Front of Rack is 72". (Bottom of carton at picking face)

Other heights may apply to suit space conditions or special picking arrangements.
- 4** Number of Tier N =  $\frac{H}{[h \text{ of tallest carton on tier} + 6"]}$
- 5** Number of Lanes per Tier L=Y/N

The information derived above should now be checked against actual building condition as follows: (a floor plan is recommended)
- 6** Record Data on Floor Space, Obstructions, Product Flow, Loading and Unloading Areas

  1. Floor area
  2. Building column locations
  3. Miscellaneous information
    - a. limited ceiling heights, sprinklers, etc.
    - b. floor obstructions
    - c. utility areas, etc.
    - d. aisles
- 7** Check the Building Specs to Verify that Desired Working Rack Depth D from Step 2 is Valid, Considering Loading and Unloading Areas as Well as Floor Lines as Mentioned in Step 6.

If D is not compatible, go back to Step 2 and refigure to suit.





- 8 Rack Width W**  
is equal to the width of all the cartons on one tier plus 2" clearance per carton.  
ie.,  $W = [\text{average carton width} + 2"] \times L$

CONDITION: The calculated W must be less than its space limitation in the building (between columns or obstructions, etc.) If not, the system must be broken down into smaller racks.

- 9 Height of the Rack Column C**  
is equal to the top tier height plus one inch per foot of rack depth D (a conservative allowance for the pitch of all the rails).  
ie.,  $C = H (\text{inches}) + [D \times 1] (\text{inches})$   
CONDITION: C + height of tallest carton on top tier + 2" clearance must be less than the ceiling limitations in that area of the rack. If not, a compromise between the track depth, top tier height and number of tiers must be refigured from Step 2

- 10 Rail Span S**  
Using maximum unit carton weight U  
NOTE: The selected value must be divisible into the working rack depth D (Step 2).

Table 10	
Max. "U" From Step 1 (Allowable load) lbs/ft	Rail Span "S" (Feet)
6	14
9	12
16	10
48	7
75	6
130	5
206	4
364	3

- 11 Tier Weight T**  
represents the total load acting on the rail cross-beam and is a function of maximum carton weight, rail span and the number of lanes in the bay.  
ie.,  $T = U \text{ max.} \times S \times [\text{desired number of lanes in bay}]$

- 12 Bay width B**  
NOTE: Bay width must be divisible into rack width W (Step 8).

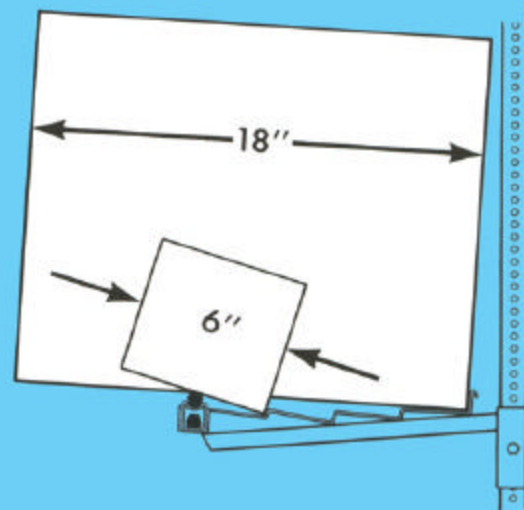
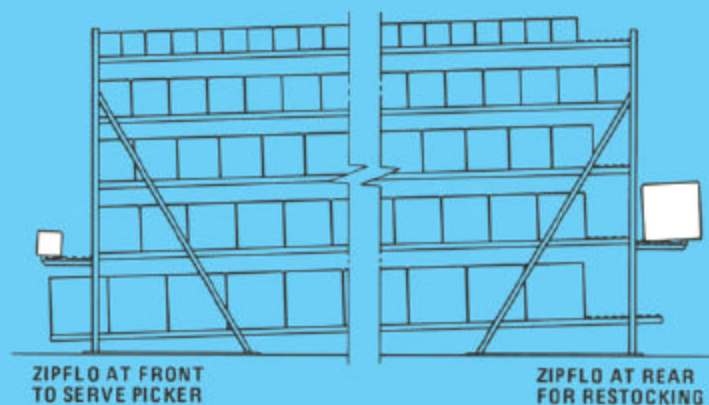
Table 12		
Max. "T" From Step 11 (Allowable load) LBS		Bay Width "B" (inches)
Standard	Heavy Duty	
1445	1826	24
963	1217	36
723	913	48
484	610	60
336	424	72
247	311	84
189	238	96
149	188	108
121	153	120

- 13 Rail Style & Wheel Spacing**  
Standard Cartonflo rails are available with wheels mounted on one or both sides, spaced at 2", 3", 4", 5", and 6" centers. The proper wheel spacing is one which is less than 1/3 of the length of the shortest box to be stored. In special cases, where the bottom surface of the item is hard and flat, the spacing can be increased to a dimension less than 1/2 of the item length. When determining wheel spacing, check the wheel loading table below to be sure that the load per wheel does not exceed the recommend

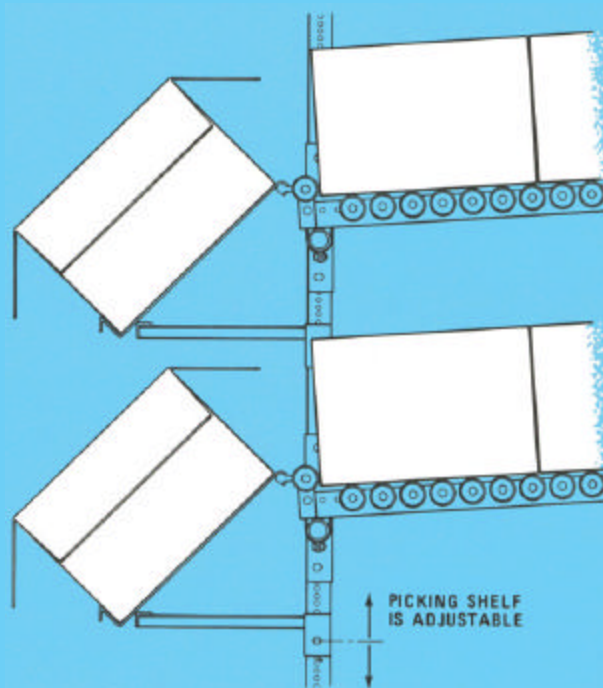
Style of Rail	Capacity Per Wheel (lbs.)		
	Ctns. Dry	Ctns. Humid	Hard Surf'd. Items
2" Plastic Wheel	10	5	25
2" Steel Wheel	8	4	50
1 1/2" Steel Wheel*	5	2	25

\* Recommended for special applications only.

## Zipflo Conveyor

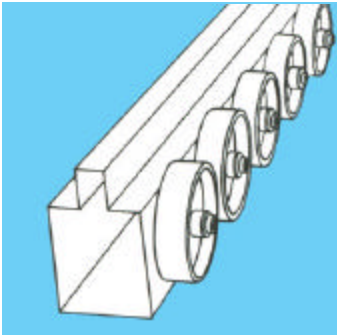


## Tilt Front Picking Shelf

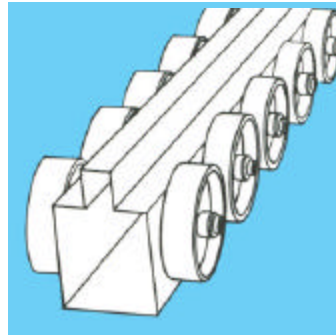
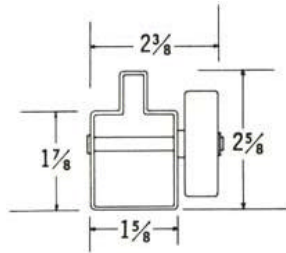


# CARTONFLO

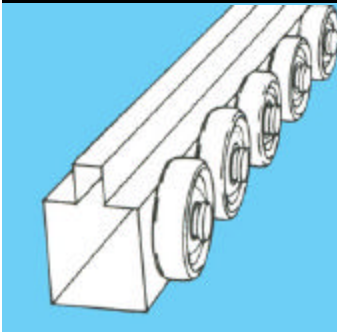
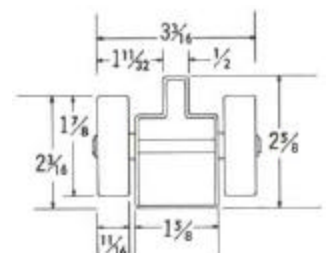
## COMPONENTS



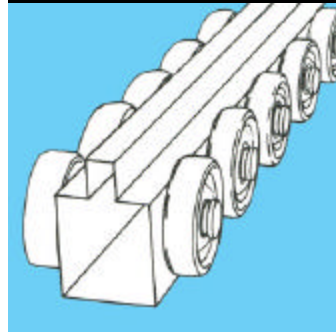
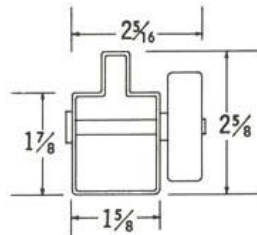
Single Plastic Wheel



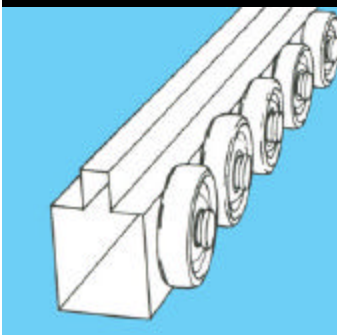
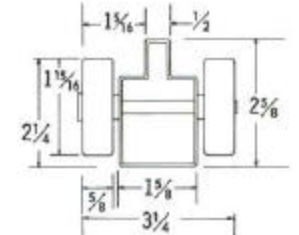
Double Plastic Wheel



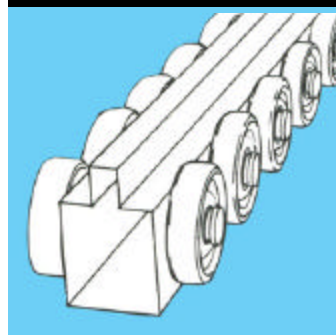
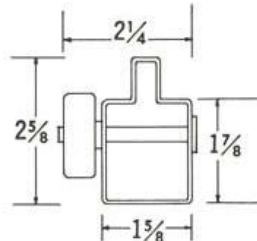
Single 2" Steel Wheel



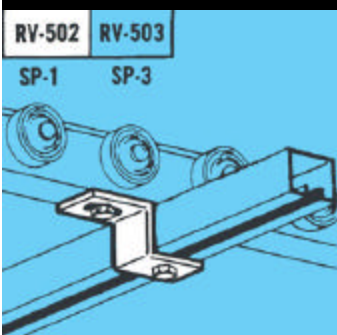
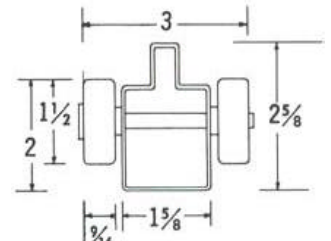
Double 2" Steel Wheel



Single 1 1/2" Steel Wheel

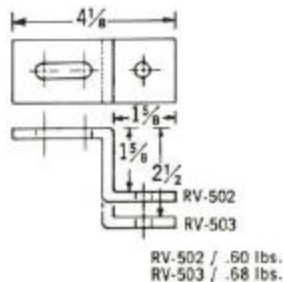


Double 1 1/2" Steel Wheel

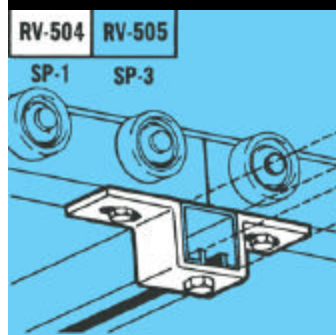


RV-502 RV-503  
SP-1 SP-3

Rail 'Z' Bracket

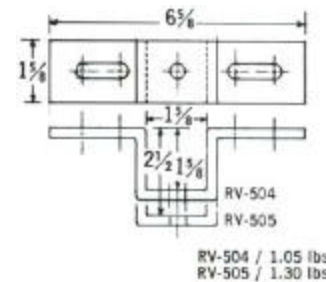


RV-502 / .60 lbs.  
RV-503 / .68 lbs.

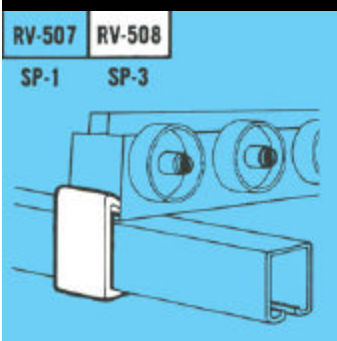


RV-504 RV-505  
SP-1 SP-3

Rail Splice Connector

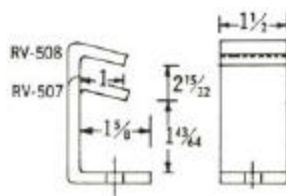


RV-504 / 1.05 lbs.  
RV-505 / 1.30 lbs.

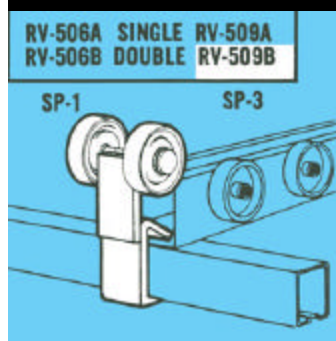


RV-507 RV-508  
SP-1 SP-3

Rail Rear Clamp

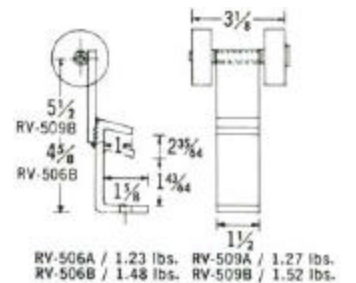


RV-507 / .55 lbs.  
RV-508 / .60 lbs.



RV-506A SINGLE RV-509A  
RV-506B DOUBLE RV-509B  
SP-1 SP-3

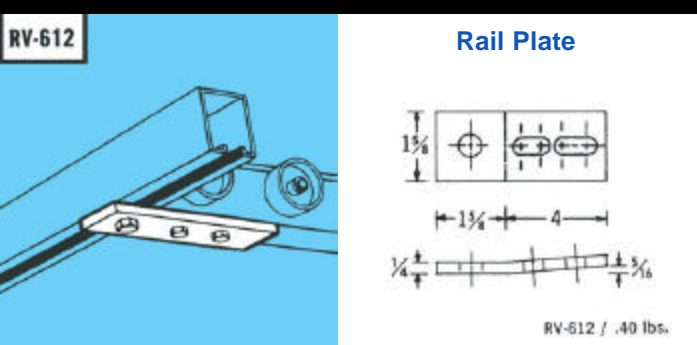
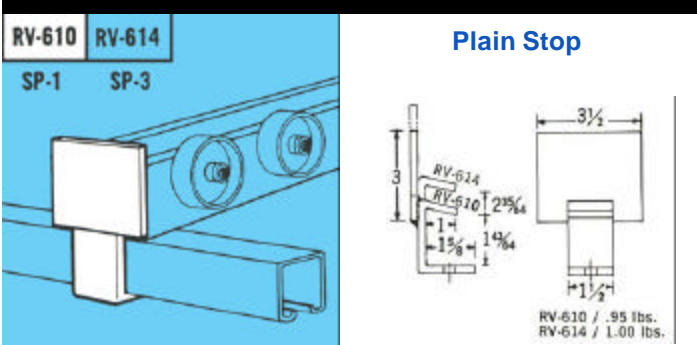
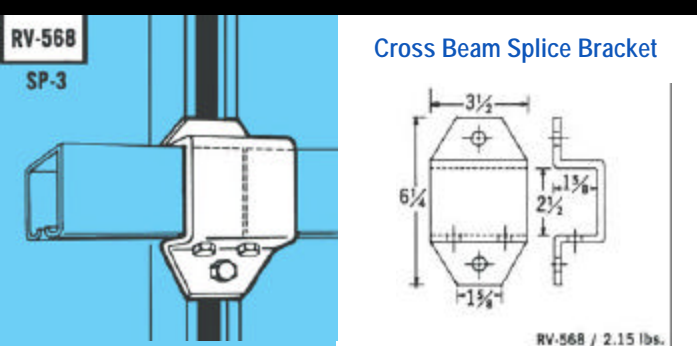
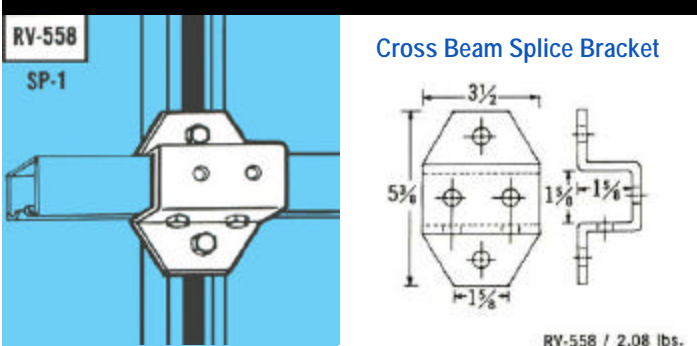
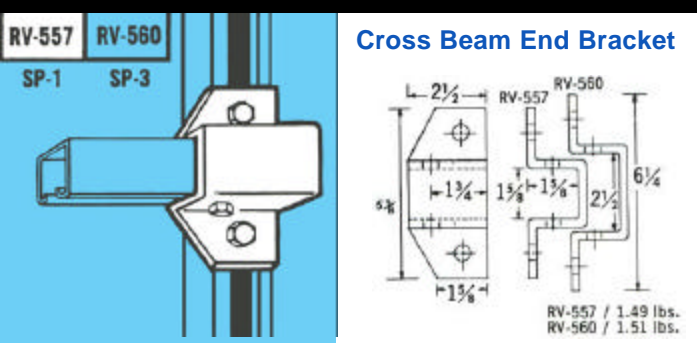
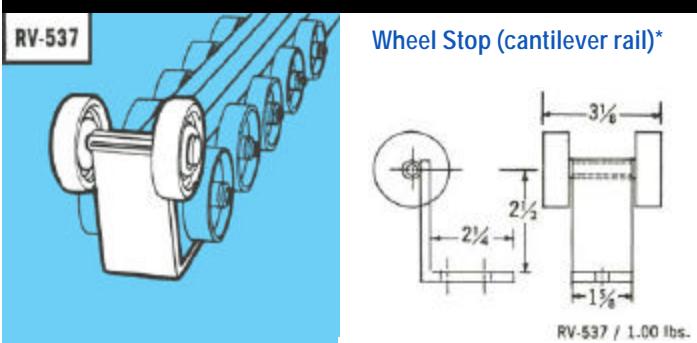
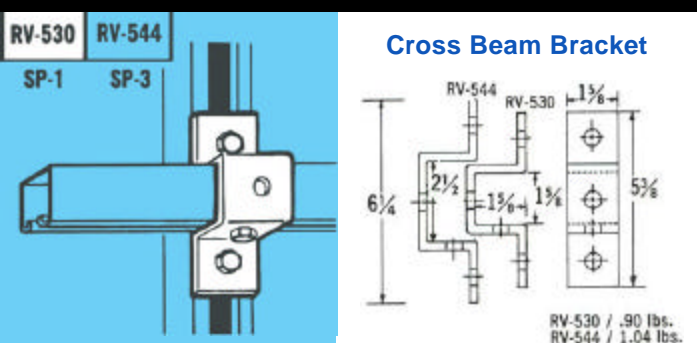
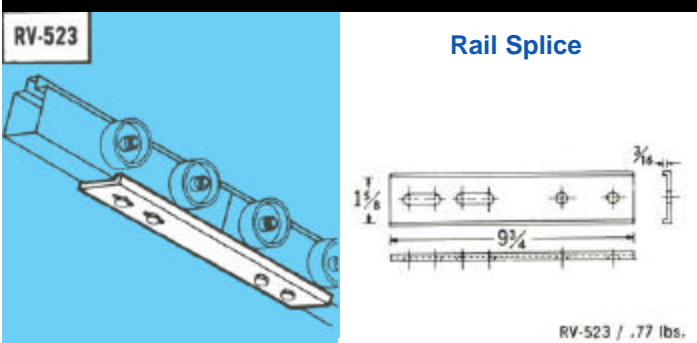
Rail Clamp and Wheel Stop\*



RV-506A / 1.23 lbs. RV-509A / 1.27 lbs.  
RV-506B / 1.48 lbs. RV-509B / 1.52 lbs.



# Cartonflo Components



Weights For 10' Sections of Versarail					
Centers	2"	3"	4"	5"	6"
Single Plastic	23 lbs.	21 lbs.	20 lbs.	19.5 lbs.	19 lbs.
Double Plastic	25	22.5	21.5	20.5	20
Single 2" Steel	35 lbs.	28 lbs.	26 lbs.	24 lbs.	23 lbs.
Double 2" Steel	47	37	32	29	21
Single 1 1/2" Steel	28 lbs.	24 lbs.	23 lbs.	21.5 lbs.	21 lbs.
Double 1 1/2" Steel	36.5	30	27	25	24

# CARTONFLO

## Greater Design Flexibility

Cartonflo rail spacings, tier heights and rail pitch are fully adjustable to accommodate a wide variety of carton sizes, styles and weights. Racks are easily increased or decreased in size and can be quickly dismantled or relocated to meet changing requirements. Cartonflo's heavy duty members handle maximum weights over the full standard 10-foot span under most conditions, eliminating the need for intermediate supports that would complicate adjustability.

Tubular design prevents the Cartonflo rail from twisting under unequal loading, and the built-in row divider eliminates the need for separate guides or uprights. The vertical wall of the divider reduces carton friction to a minimum and provides positive row separation. The bay width (up to 10 feet between uprights) further assures maximum design flexibility.

## RELATED EQUIPMENT catalogues on request

### Conveyors

Horizontal, vertical, overhead, heavy-duty and light compact conveyors. Chainless metal belt, chain, rotating cable, gravity and powered wheel. Complete systems include transfers, loaders, accumulation and controls.



**Armorbelt II**  
with central control

### Live Storage

Handles standard slatted pallets, skids, slip sheets and drums. No need for slave pallets or runners. Complete systems with stackers, conveyors and mezzanines. Thousands of proven successful installations by the inventors of pallet live storage.



**Palletflo**  
high bay with stacker



**Transwheel**  
powered and free turning

### Components

Add quality and technology to your system. A full line of multi-directional wheels, speed controlling wheels, retarders, snap-in wheels, all plastic anti-friction skate wheels and a variety of conveyor elements.

### Insulation Panels

High speed production lines to produce metal, plastic and paper skinned wall and roofing panels. Complete facilities for production line testing before shipping.



**Foamboarder**  
manufacture building panels

**Manufactured by**