

DYNAMIC STORAGE PRODUCTS



3D STORAGE SYSTEMS has grown to become one of the largest producers of dynamic storage systems in North America. 3D and its' team have a long track record of developing cost effective solutions for our customers.

With over 50 years of design, marketing and manufacturing experience in dynamic storage products, 3D began offering a wide range of flowrack and pushback products in 1992. Our expertise in developing solutions that are customized to the type of product to be stored, the environment, and the function of the system makes 3D unique in the typically "hardware only" market.

The simplicity of the patented designs, together with our superior safety features and rugged structural steel construction has resulted in successful installations worldwide. Our solutions have been implemented in small warehouses and in large facilities exceeding one million square feet. Many users of 3D products have done so in multiple locations which is testimony to the products' ease of use and durability.



U.S. Patent # 5393188
Canadian Patent # 2098433

Our sales representatives and dealers are trained to ask questions that enable our experienced staff to develop a custom designed solution for our customers. This means developing a system that reflects inventory characteristics, picking requirements, and optimizes the physical layout.

Combining high occupancy rates, low handling costs, and efficient cube utilization has become the signature of our proven design team. Professional CAD drawings and technical information support each proposed solution. Careful attention to cost justification is a key component in all of our proposals.

Once ordered, our project managers will coordinate closely with our plant and all subcontractors to ensure structure stability, operating ease, and safety of your system. We manufacture our products with pride and an emphasis on quality control.

3D and our network of authorized dealers will arrange for the installation of our products as well as monitor the schedule and quality of all components delivered to your facility.

Satisfied customers lead to repeat sales, a credo 3D not only believes in, but also relies on.

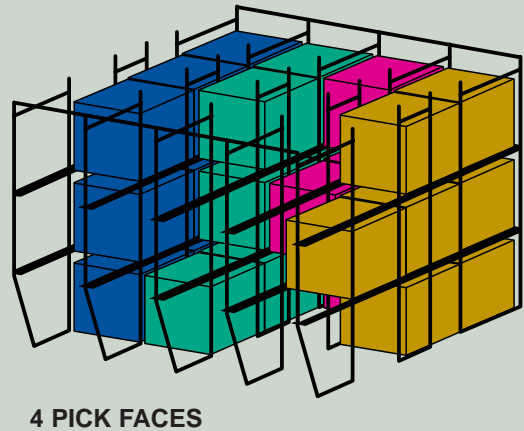
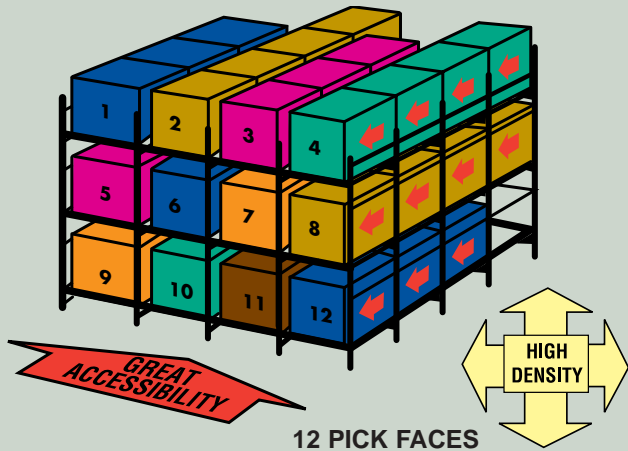


Steadiflo Pushback Storage – Using your warehousing space to the maximum.

INCREASED DENSITY – Today’s challenge in warehousing is to store an ever increasing number of pallets, with an ever increasing number of products in a fixed storage space. These two factors pull in opposite directions. Pushback storage increases the pallet count, while offering many more pick faces than traditional high density storage systems.

	FLOOR STORAGE OR DRIVE-IN	STEADIFLO
Typical occupancy	50-60%	85-95%
Handling costs	High	Low
Number of pick faces per tower	One	# Levels
Random storage all levels	No	Yes
Stock rotation	Rotate towers	Rotate lanes
Rack/Product damage	High	Low
Number of products applicable	Few	Many
Efficient bottom level case pick	No	Yes

PUSHBACK ACCESSIBILITY – All 12 lanes and pallets are accessible from the aisle...ALL THE TIME!



Steadiflo Pushback **90%** Utilization of pallet positions

Drive-in Honeycombing **60%** Utilization of pallet positions

WHEN DOES PUSHBACK APPLY? When the average number of pallets per product exceeds five, a pushback system is easily justified. The higher the number, the deeper the lane is feasible (usually 3 lanes per product minimum). These multiple lanes allow rotation to achieve first-in/first-out. Steadiflo pushback systems can be configured to attain up to 100% more pallets stored than standard pallet racking and equal or greater increases over poorly occupied drive-in or floor storage configurations.

SYSTEM FLEXIBILITY – 3D Steadiflo is available in 2, 3, 4, 5 and 6 deep styles and can be arranged as back to back islands or stand alone bays. Number of levels high restricted only by lift truck reach. No special fork trucks are required. Pushback systems are fully operational in freezers, coolers and high temperature environments.



▲ 5 deep pushback floor mounted



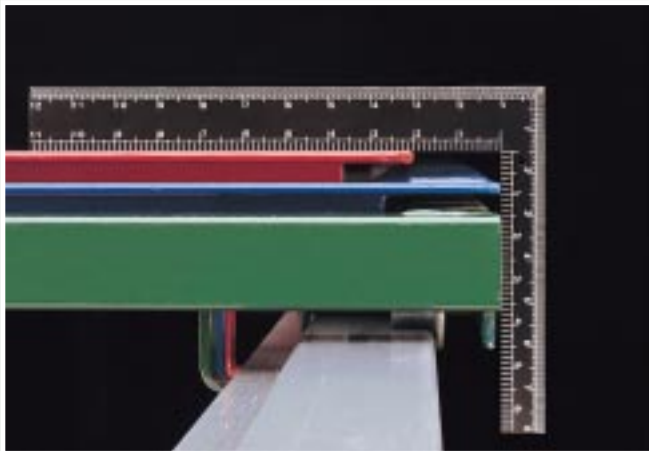
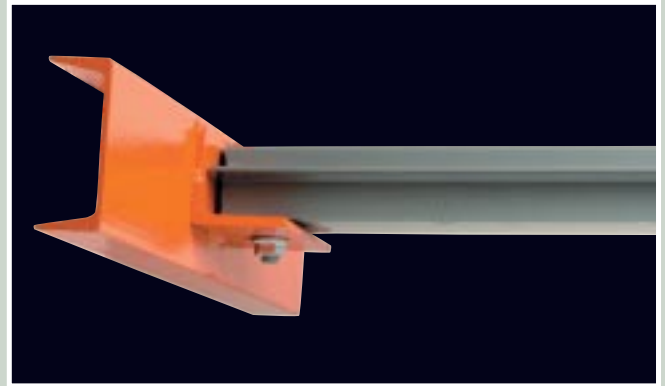
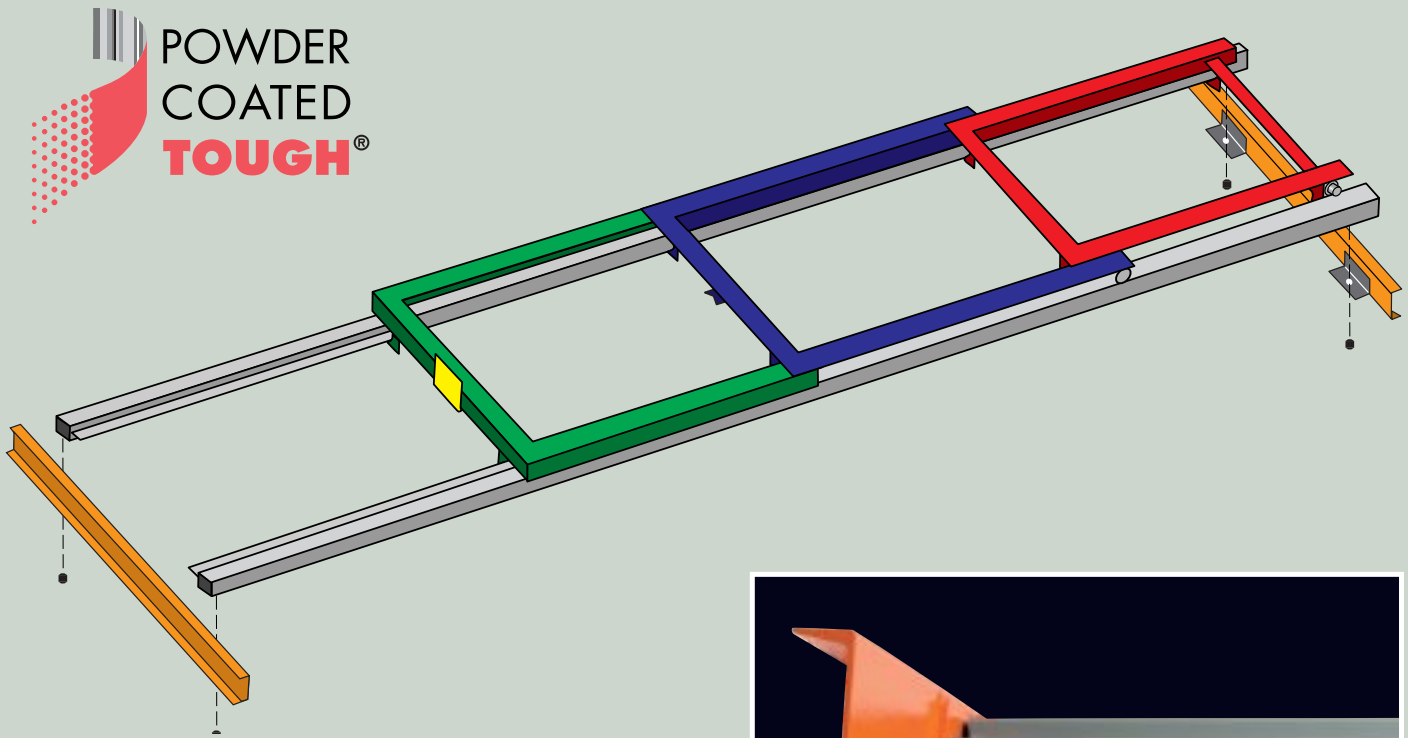
▲ Floor storage with pushback above



▲ First level – flowrack / second level – carton flow / pushback above

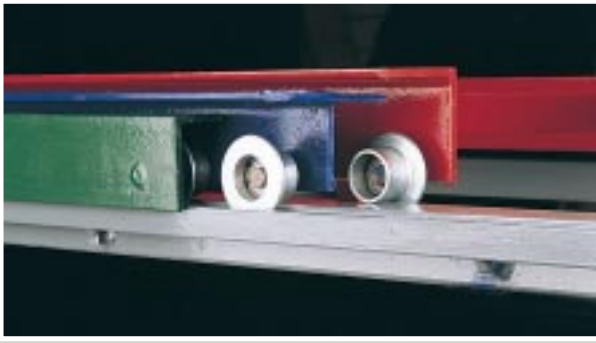
Steadiflo Pushback – Features and Benefits.

3D Storage Systems uses a unique design that provides trouble free operation as well as extensive built-in safety features. Structural steel construction ensures long life in tough warehouse environments.



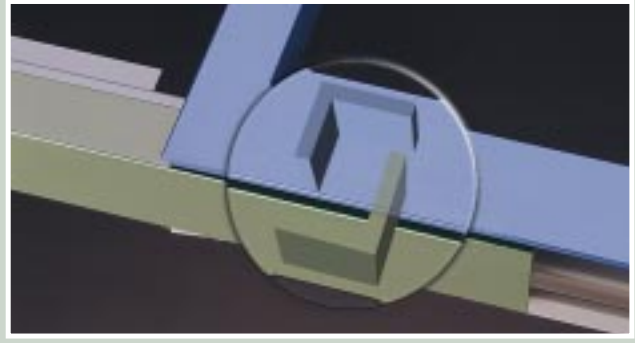
LOW PROFILE

Steadiflo has a lower profile than other cart type systems. This allows for extra lift clearance and may even mean the difference of an extra level.



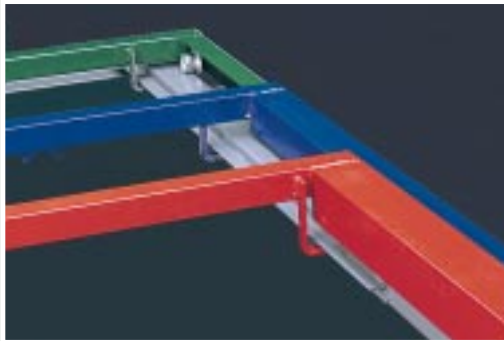
FLANGED STEEL WHEELS

Our wheels are manufactured from solid steel and are equipped with heavy duty bearings. Sturdy 5/8" shafts are welded to the carts and are oversized to withstand shock loading, capacities of up to 1,400 lbs. per wheel.



LINKED CARTS

Carts are linked when extended, eliminating the possibility of single pallet hang-ups. Without this feature, it would be possible for a pallet to become temporarily lodged at the back of a lane, release, and travel in an uncontrolled manner to the load end, spilling the load. The resultant potential for damage to product, and more importantly, personal injury, is obvious. No pushback product is complete without this important safety feature.



LIFT-OUT PROTECTORS

Each cart is equipped with lift-out protectors, which prevent accidental dislodgement of a cart by the fork lift operator.

MULTI PURPOSE PLATE / SAFETY STOP

Height Gauge – When loading a pallet, the operator knows that if the load is high enough to clear the safety stop, then the pallet will not prematurely move the awaiting cart.

Strip-Off Stop – If, after placing a pallet, the operator has his forks in an improper tilt position, the safety stop will catch the bottom of the pallet and “strip” it off his forks.

End Stop – The safety stop, which is situated on the lowest cart and protrudes 3/4" above the highest cart, prevents pallets from shifting beyond the front load beam.

Push Plate – Pushing on the plate with the last pallet being inserted into the lane ensures proper placement on the rails as well as guaranteeing safe clearance of the cart.

Lane Full Indicator – The operator can tell if a lane is full by the absence of the safety stop. If it is not showing at the front, the last cart has been loaded and there is a pallet on the rails – a full lane.

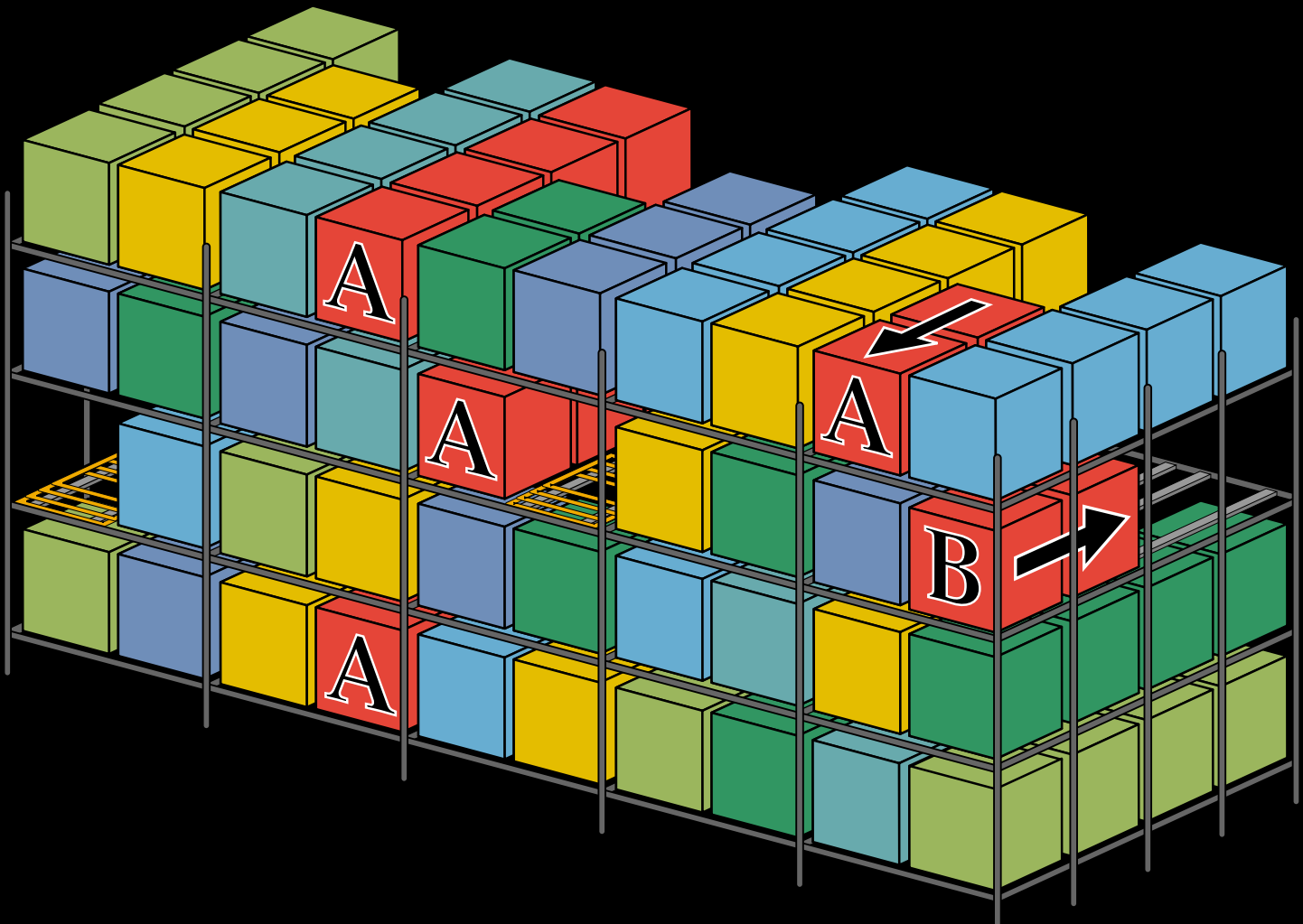




3 KEYS TO SUCCESSFUL PUSHBACK APPLICATIONS

1. FIRST-IN FIRST-OUT STOCK ROTATION
2. HIGH OCCUPANCY
3. RANDOM STORAGE

These three keys can easily be implemented by following these simple rules.



RULE # 1

Select products to be stored that have at least 3 times the lane depth in average pallets in inventory

Most storage facilities have products that range from one pallet per item up to many pallets per item. The average amount of storage per item should be used to select optimum lane length.

The table shown will yield occupancy rates of 80% – 90%. The higher the number of lanes per product the higher the occupancy rate.

RULE # 3

When retrieving loads for shipping or for use within the company, be sure to pick from the oldest part lane first

Picking from the oldest part lane, (as shown in Red A) will automatically rotate your stock while

freeing up empty lanes for general availability. This will result in no more than one part lane, per lot code.

This procedure will ensure FIFO Stock Rotation (First in – First Out).

RULE # 2

Never replenish a partially filled lane with a new lot code of the existing product or a different product

As a result of rule number 1 there is a minimum of three to five lanes available for any one product. Therefore, when a new lot code is introduced, a new lane (as depicted in Red B) is selected so as to not block access to an existing lot code (as depicted in Red A).

RULE # 4

Use random storage to minimize honeycombing. This will enable you to maximize your storage facility

Random storage in any of the lanes that become available will allow the storage requirement for any item to grow and shrink as necessary. Fixed locations would require storage to be preset for every item at its peak. Exceptions could be made for bottom level case picking with fixed locations.

PALLETS PER PRODUCT	LANE DEPTH
1 – 4	STANDARD RACK
5 – 8	2 DEEP PUSHBACK
9 – 12	2 – 3 DEEP PUSHBACK
13 – 16	3 – 4 DEEP PUSHBACK
17 – 20	4 – 5 DEEP PUSHBACK
OVER 20	5 – 6 DEEP PUSHBACK





▲ 5-deep back-to-back pushback

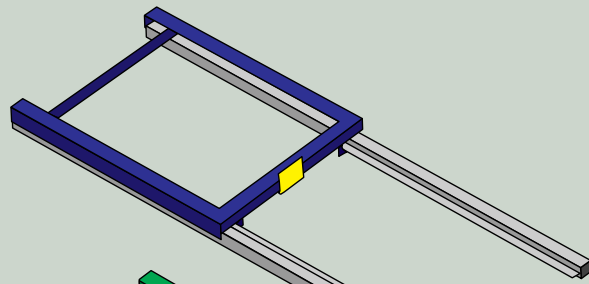


▲ Pushback above floor storage

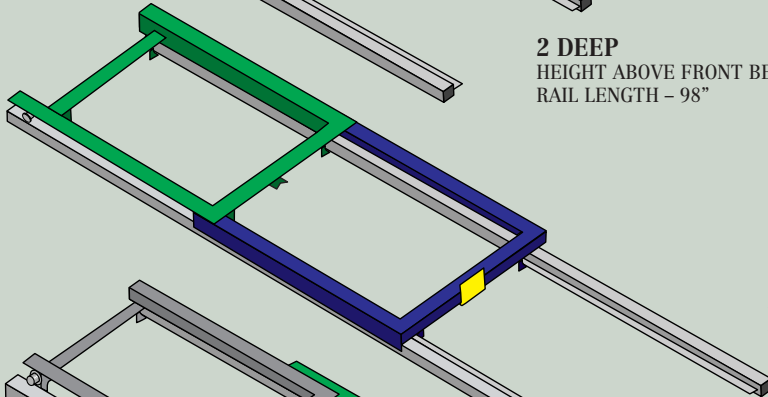


▲ Accepts a wide variety of products

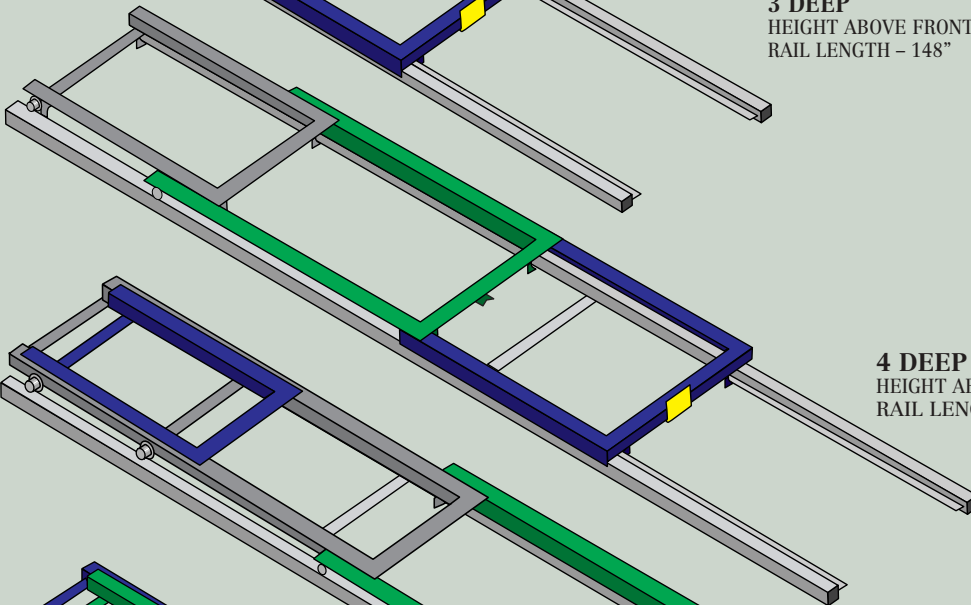
Steadiflo Pushback – Flexible layout options for all of your warehousing needs.



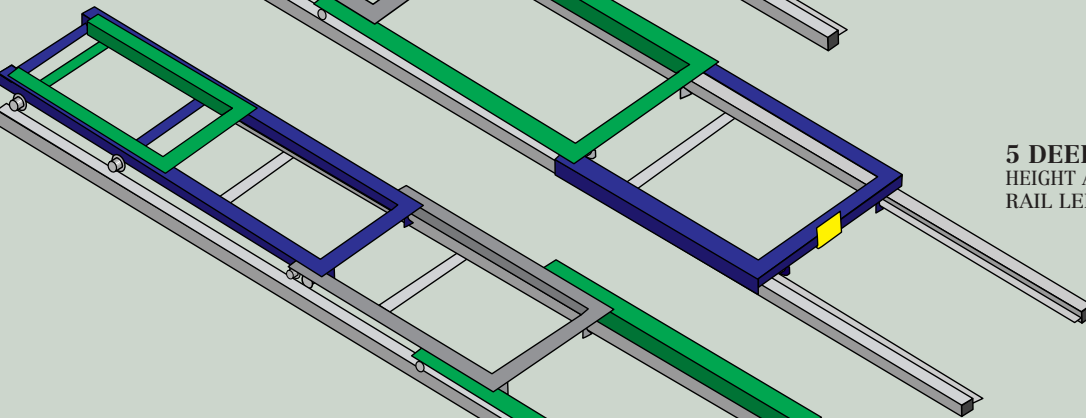
2 DEEP
HEIGHT ABOVE FRONT BEAM – 1³/₄"
RAIL LENGTH – 98"



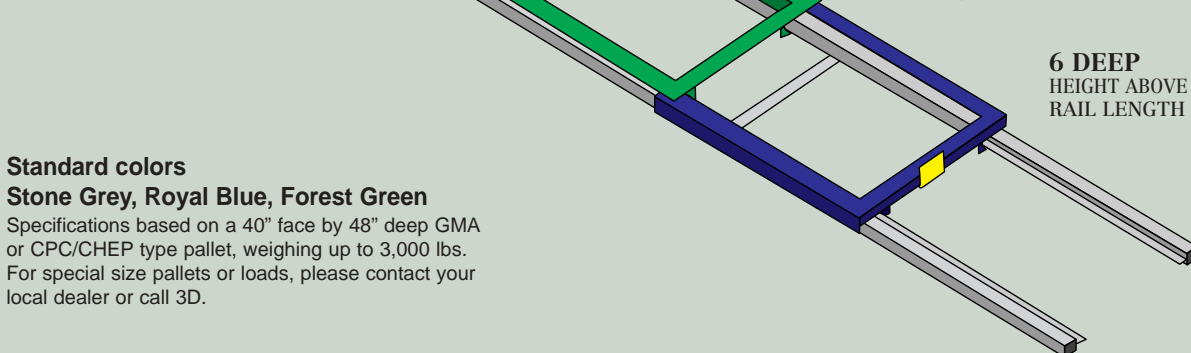
3 DEEP
HEIGHT ABOVE FRONT BEAM – 2³/₄"
RAIL LENGTH – 148"



4 DEEP
HEIGHT ABOVE FRONT BEAM – 3¹/₄"
RAIL LENGTH – 198"



5 DEEP
HEIGHT ABOVE FRONT BEAM – 4"
RAIL LENGTH – 248"



6 DEEP
HEIGHT ABOVE FRONT BEAM – 4³/₄"
RAIL LENGTH – 298"

Standard colors

Stone Grey, Royal Blue, Forest Green

Specifications based on a 40" face by 48" deep GMA or CPC/CHEP type pallet, weighing up to 3,000 lbs. For special size pallets or loads, please contact your local dealer or call 3D.

Pallet Flow



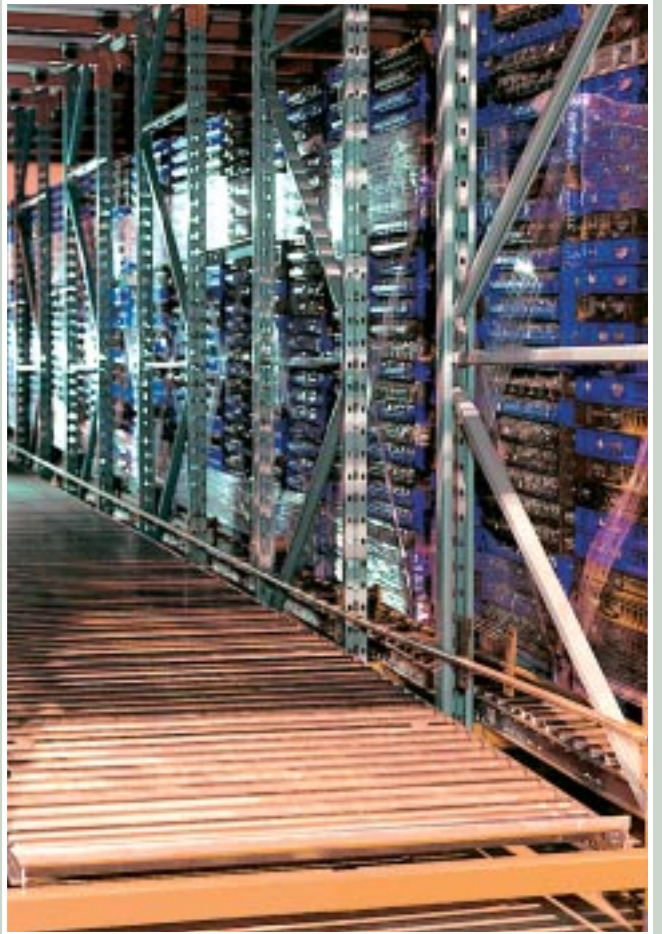
▲ Deep lane pallet flow with wheels in a single-double-single configuration for standard GMA/CHEP pallets



▲ Skatewheel flowrack being used for pallet picking and pallet return on the 2nd level of a pick module



▲ Heavy duty deep lane pallet flow



▲ Roller flowrack for special pallets and loads

Components for Every Flow Storage Application

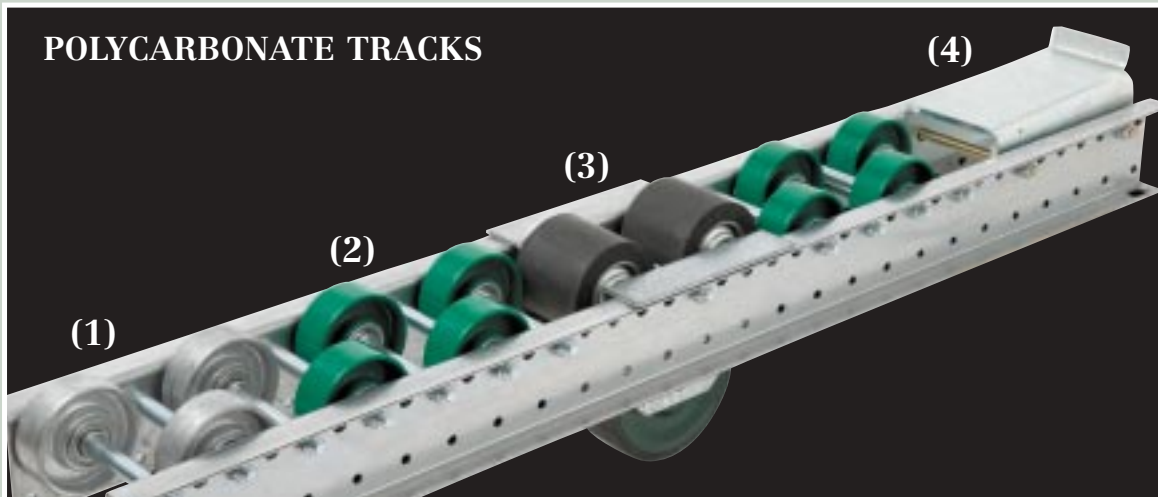


SKATEWHEEL TRACKS – Typically used in two or three deep picking systems either in single runs or double staggered runs as shown here. The steel wheels are constructed of 15 gauge material and are load-rated at 150 pounds. Wheels are mounted at 1 1/2” centers when double staggered, and 2” or greater when used in single lines. Channel supports are constructed of 1”x 3”x 1” 12 gauge galvanized steel channel. Ramp stops and anti-rollback devices are standard.

STEEL ROLLERS – Rollers range in size from 1.9” to 2.5” in diameter and 4” to 56” BFR (between frame rails). Rollers ensure stability as well as providing large load bearing capacity and support for



special pallets, steel containers or plastic totes. Channel supports are constructed of 1” x 3” x 1” 12 gauge or 1.5” x 4” x 1.5” 10 gauge galvanized steel channel depending on the application.



(1) IMPACT WHEELS – Cast zinc impact wheels are typically placed in the first 12” of the lane to provide superior resistance to damage from pallet impact.

(2) POLYCARBONATE WHEELS – These 2.875” diameter wheels have steel ball bearings and are typically configured on 2” or 3” centers. Wheels are load-rated at 150 pounds. These wheels are most commonly used for GMA or CHEP pallets and are generally mounted in a three track configuration with the center track containing speed controllers. The special polycarbonate formula is suited to wide temperature ranges and is resistant to impact.

(3) INDIRECT MOUNTED BRAKES – Our indirect brakes provide a superior braking surface with increased friction, using two rubber coated contact rollers.

(4) PALLET STOPS – Our stops are constructed from structural steel, enabling them to withstand impacts from heavy pallets and forklift abuse. The stops are manufactured with a gentle ramp slope that brings the loaded pallet to a stop in a smooth and controlled manner.

Carton Flow, Carton Pushback, Tote Storage

OUR HEAVY DUTY CARTON FLOW SKATEWHEEL BEDS OFFER:

- Reduced pick paths
- Enhanced FIFO
- Increased pick slot locations
- Improved picking efficiencies
- Retrofitting of existing rack



FEATURES AND BENEFITS:

- Superior abuse resistance, virtually impossible to damage
- Carton size and weight flexibility, eliminates the need to re-profile
- Smooth flowing ball bearinged steel wheels means less slope required
- Welded one piece frame, powder coated tough for long lasting life
- Highly durable 1/4" diameter steel shafts – provides impact resistance.
- An impressive overall load rating of 50 lb. per square foot
- Heavy duty wire dividers aid in product separation and flow control



▲ Carton flow with lane dividers



▲ Carton pushback with pallet picking below



▲ Carton flow with tilt shelf

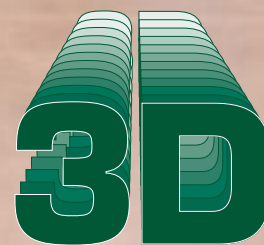
▼ Carton pushback



TOTE STORAGE

- Small item storage system
- 24-54 totes per bay
- Captured locking tote
- Dust and debris protection
- 75 lb. capacity per tote
- Adapts to existing racking





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Authorized Dealer

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