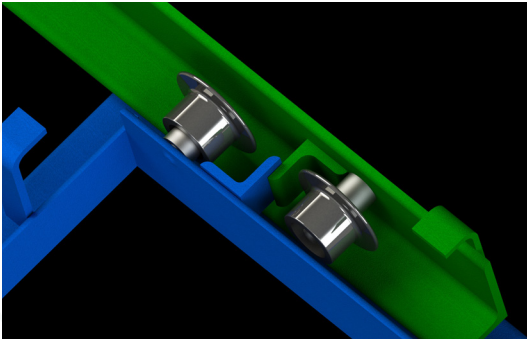


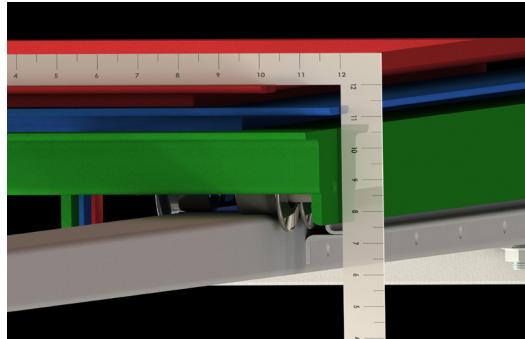
PUSHBACK GENERAL

PUSHBACK GENERAL FEATURES AND BENEFITS



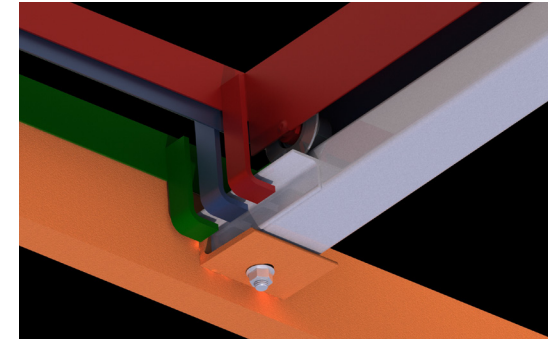
LINKED CARTS

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 lodged at the back of a lane, release, and travel in an uncontrolled manner to the load end, spilling the load. The resulting potential for damage to product, and more importantly, personal injury, is obvious. No pushback product is complete without this important safety feature.



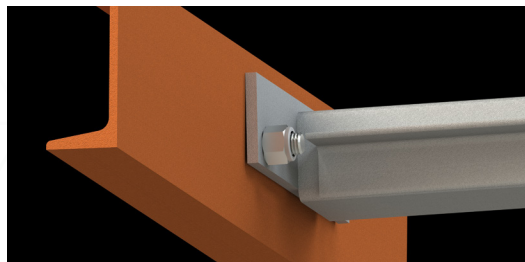
LOW PROFILE

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.



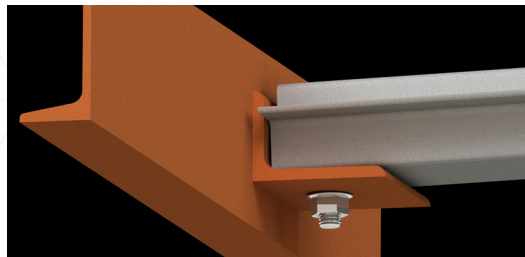
LIFT-OUT PROTECTORS

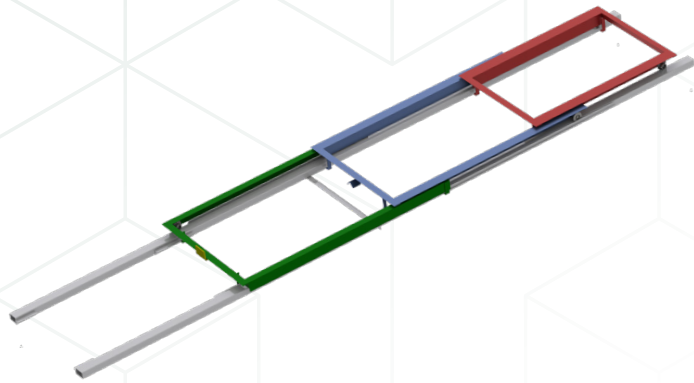
Each cart is equipped with lift-out protectors, which prevent accidental dislodgment of a cart by the fork lift operator.



SIMPLE DESIGN & EASE OF INSTALLATION

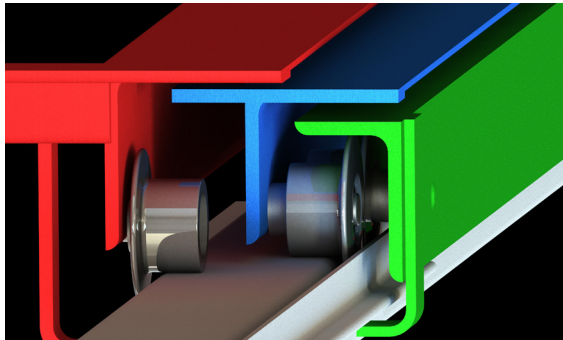
The Steadiflo design allows for easy installation, with wheels pre-installed from the factory and simple drop-in rail design that requires rack attachment at the front and rear only.





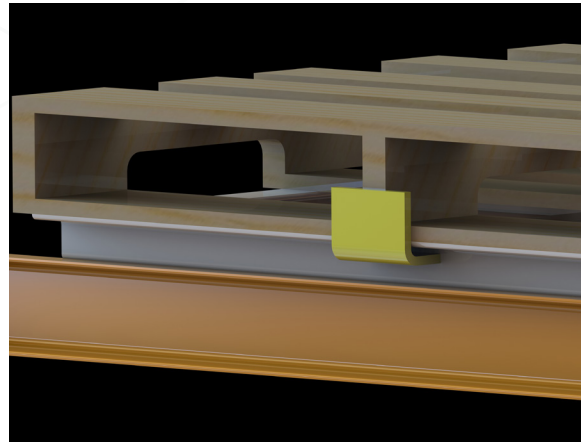
HSS RAIL

(Hollow Structural Steel) This is a strong, durable rail that is impact resistant and will not trap debris. The HSS rail is available in various wall thickness to provide flexibility in design.



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 up to 1,400 lbs. per wheel.



MULTI PURPOSE PLATE

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

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

End Stop – The push plate, which is situated on the lowest cart and protrudes 3/4" above the highest cart, acts as a safety stop to prevent 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.

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

PUSHBACK

QUESTIONS AND ANSWERS

HOW MUCH SLOPE DO THE RAILS HAVE?

The system utilizes a slope of 3/8" per foot, or just a little less than two degrees. For example, a standard 4 deep lane for 48" deep pallets would have 6" of slope. This slope ensures that empty carts will always return to the front of the lane if accidentally pushed back by the operator. In most cases the total slope is less than the lift clearance above the pallet at the load end, and therefore, does not affect the number of storage levels.

DO I NEED SPECIAL FORKLIFTS?

No. There are systems installed with counterbalance, reach, deep reach, swing reach and even clamp trucks.

WHAT SIZE OF AISLE DO I REQUIRE?

Aisles should be sufficient to allow an operator to square up to the pallet without turning into the rack. Usually this is 6" more than the truck manufacturers' minimum aisle requirement.

HOW MUCH PUSH IS REQUIRED BY THE FORKLIFT?

Approximately 4% of the total weight being pushed back, not counting the pallet on the forks of the truck i.e. 2,000 lbs on a 6 deep would require 400 lbs of force to load. This is well within the capabilities of most lift trucks. We have several installations of six deep in freezers with reach trucks.

WHAT ARE THE SPACE REQUIREMENTS?

The following are general rules of thumb

- Vertical level to level of beams
For 2, 3 & 4 deep pushback - pallet height + 12"
For 5 & 6 deep pushback - pallet height + 14"
- Rack depth
(# of pallets deep X (pallet depth + 2")) + 2"
(i.e., 102", 152", 202", 252", and 302" for a 48" deep pallet for 2/3/4/5/6 deep)
- Beam Width
Single wide bays - pallet + 8"
Double wide bays - (pallet x 2) + 16"

WHAT ABOUT TEMPERATURE RESTRICTIONS?

We have installations that range in temperature from +50 to -50 degrees Celsius, including blast freezers.

HOW DIFFICULT IS IT TO LOAD AND UNLOAD?

Experience has shown that most operators are completely efficient within a half day. Many operators state that pushback is easier to load and unload than standard pallet rack. Operating instructions are sent with each system.

PUSHBACK

QUESTIONS AND ANSWERS

WHAT ABOUT MAINTENANCE?

There is no required maintenance. Bearings are permanently lubricated.

CAN YOU ACHIEVE FIFO WITH PUSHBACK?

Contrary to popular belief, it is easy to achieve first-in first-out with pushback racking. The key is to configure your system to ensure that each product (SKU) utilizes multiple lanes. If each product has three or four lanes of pushback, the operator simply ships out the oldest lane first.



HOW DOES 3D PUSHBACK COMPARE TO THE COMPETITION?

- 3D has one of the lowest profiles in the market. Our 5 and 6 deep lanes are half the height of most other systems. This height difference results in extra lift clearance and future load height flexibility – it may also allow an extra pallet level.
- Our pushback system is equipped with several key safety features that others do not offer - linked carts, lane full indicators, pallet stops and cart lift-out protectors are all standard features.
- 3D assembles the carts before we ship them, including attaching shafts and wheels to the carts at our facility. We also only mount to the front and rear beams and do not need to mount to the internal beams. This results in faster and less expensive installations.
- We have some of the strongest wheels and shafts in the industry – the wheels are rated at 1,400 lbs and the 5/8" solid steel shafts that are welded to the cart.
- We offer 2 to 6 deep pushback to best suit the layout and application. Many others manufacture only 2 and/or 3 deep lanes. We also can produce many non-standard designs depending on the application, such as steel sheet or mesh covered carts, heavy duty lanes and level carts.



PUSHBACK

ELEVATION CALCULATOR

By following this simple 4 step process to calculate the level to level, beam heights, clear height required and lift height required, you will know whether a system will fit into the area you have available. If you have any questions or special considerations please do not hesitate to contact 3D Storage Systems for assistance with any of these calculations.

Depth of Pushback	Equipment Height	Slope of system
2 Deep	4.8125"	3"
3 Deep	5.375"	4.5"
4 Deep	6"	6"
5 Deep	6.75"	7.5"
6 Deep	7.6875"	9"

**Based on standard design 40"F X 48"D GMACHEP pallet 3,000lbs maximum*

STEP A - LEVEL TO LEVEL (TOP OF BEAM TO TOP OF BEAM)

Example: 48" load height – 4 deep

* Always round up to the next module, if calculation does not divide evenly into the "module" or adjustability of the rack system.

** 1" of space is sufficient when the front frame of the racking system is 6" deeper than the length of the pallet (i.e. 54" front frame with a 48" pallet depth).

	Sample	Insert
Load Height	48"	
+Equipment Height	+6"	
+Internal Beam Size	+5"	
+Space (1" is sufficient**)	+1"	1"
= level to level	*= 60" L/L	= L/L

STEP B - CALCULATING BEAM LEVELS

Example: 4 Deep pushback, 4 levels high, 48" load height

Based on the calculation in 'Step A' we know 48" load height will equal 60" L/L with a 4 deep pushback. Generally the top of the first level beam will be at 8" unless you are floor mounting in which case it would be 3". Therefore at 4 levels high we would have beam levels at 8", 68", 128" and 188".

PUSHBACK

ELEVATION CALCULATOR

STEP C - CALCULATING CLEAR HEIGHT REQUIRED

Example: 4 Deep pushback, 4 levels high, 48" load height

Based on the calculation in 'Step B' we know where the top beam level would be, which in our sample calculation is 188".

	Sample	Insert
Top of top beam	188"	
-Top of beam to bottom of rail	- 2.75" (standard)	- 2.75"
Load Height	+48"	
+Equipment Height	+6"	
+Slope	+6"	
+ Space (2" is sufficient)	+2"	+2"
= Clear Height	= 247.25"	=

STEP D - CALCULATING LIFT HEIGHT REQUIRED

Example: 4 Deep pushback, 4 levels high, 48" load height

Based on calculation "B" we know are top beam level would be 188".

	Sample	Insert
Top of top beam	188"	
-Top of beam to bottom of rail	-2.75" (standard)	- 2.75"
+Equipment Height	+6"	
+Lift	+8"	+8"
= Lift Height	199.25"	=