PALLET RACK GUIDE

E<u>Cisco-Eagle</u>

STYLES, TYPES AND APPLICATIONS

shop talk

cisco-eagle.com/palletracks

EFFICIENT & SAFE STORAGE SYSTEMS How to build a better warehouse

Not all rack is the same. We'll work with you to meet your critical requirements and load factors to make sure you get an efficient rack system that helps your warehouse function better. Whatever your needs or load type, you can count on us to help you design a stable, safe and space-efficient solution.

–Jodie, Employee-Owner Since 2023, Account Executive





Visit www.cisco-eagle.com/guides for more informative guidebooks



Better Pallet Rack Usage

This is a common sense guide to specification, styles, accessories and usability. You will find quick, useful information on racks and how you can use them more efficiently. If you have questions about specifying your racks correctly, how to use them more effectively, how to make them safer, contact us for fast assistance.

Inside the guide	
Selective vs. dynamic	3
Rack Tips: Difficult Loads	4
Rack Tips: Decks and Load Styles	4
Rack Tips: High-Bay Systems	5
Rack Tips: Inspecting Your Racks	5
Rack Tips: Pallet Racks & Fire Prevention	6
SK2000 Selective Rack	7
SK3000 Structural Selective Rack	8
Selective Rack Accessories	9
Specialized Rack Loads	10
Carton Flow Selective Racks	11
How to Configure Selective Racks	12
Selective Racks Worksheet	13
Pushback Rack Systems	14
- Worksheet	15
Drive-in & Drive-Through Racks	16
- Worksheet	17
Pallet Flow Systems	18
- Worksheet	19

RACK TYPES: SELECTIVE VS. DYNAMIC How to balance selectivity and storage density needs

Selective Rack: 100% access to all pallets—but with lower storage density

Selective rack is easily the most versatile choice—it provides 100% selectivity to every pallet position. Lets you easily change the storage mix. However, selective rack requires an aisle for every row, and has lower storage density than pushback or drive-in racks. It's the most common pallet storage racking type in the world. Ideal for faster moving product in most warehouse applications.

Drive-In racks: last-in-first-out picking with excellent storage density, lower selectivity

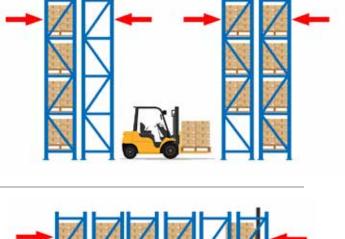
Drive-in racks are "last-in, first-out" systems with reduced selectivity, and excellent product density. Ideal for items that have longer life in storage, and don't require immediate access. Often used for cold storage applications where every inch of expensive space is critical. Drive-in & drive through systems are ideal for items with a longer life in storage that don't require immediate access.

Pushback: last-in-first-out with good storage density, medium selectivity, more versatility

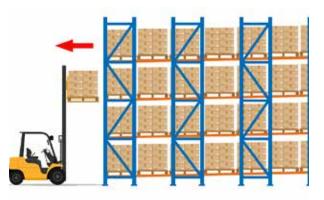
When forklifts unload pushback racks, the next pallet rolls to the front of the bay; when loading, pallets are pushed back in a last-in, first-out storage scheme. You can place a different SKU on every level. Pushback systems require angled pitch, which consumes vertical space, and are denser than selective, but not as dense as drive-in systems.

Pallet flow: first-in, first-out; great storage density with less selectivity and reduced handling costs

Pallet flow systems offer the greatest storage density. Depths are limited only by facility size; store a single SKU per lane. Once loaded, product rotation is automatic, as pallets flow to picking aisles. Flow systems offer automatic "first-in, first-out" product rotation. Because only two aisles are necessary, aisle space can be reduced by 75%. Fewer fork lifts, operating fewer hours, and consuming less fuel can accomplish the same handling function.







PALLET RACK TIPS A GUIDE TO STORING DIFFICULT, BULKY AND LONG LOADS



Many companies need to store specialized loads, such as rolls, dies, tubes, fragile items and more. With the right hardware and design, almost anything can be safely and efficiently stored.

RACK DECKING LOAD GUIDE

Rack loads aren't just simple weight vs. structure. The dimensions, shape and size/density of the load also factor in.

Weight vs. load placement for rack decking

Knowing the weight and type of load that will sit on a wire deck is vital. Below are some of the most common loading scenarios with descriptions and examples of each.

Universally distributed loads

As defined by ANSI 26.2, universally distributed loads are "any static load evenly distributed over the entire surface on the rack deck independent of the support system."

The load needs to rest over all the support channels and the majority of the deck surface and come within 2" of the front and rear load beams to achieve the full capacity rating.



Line load Here, the bulk of the weigh rests on the wire, instead of the channel supports, which can cause the decking to deform—and potentially to fail.

Storing rolls and reels

Rolls, reels and other spooling loads can be stored on pallet racks. To accomplish this, special reel pockets are placed on the upright and then fitted with a horizontal bar. Rolled items like film, wiring, cables or paper are placed on the bar, and can be dispensed. The capacities for these racks must be understood, since the loads are dynamic. Reel pockets have capacities (calculated per pair) that must be taken into account.

Long item storage

Many long items can be better stored on cantilever than pallet racks, but there are applications where pallet rack fits better in the storage strategy of your facility. We've done projects, for instance, where long rolls of film or fabric can't be stored on cantilever arms because the arm would dent fragile materials and full support is needed. You may already have pallet racks and want to adapt them to store longer loads. Pallet racks can be adapted with relative ease for these applications.

Mis-load types

- A line load distributes its weight in a concentrated line, which may place full load pressure on decking. In the example below, the weight rests on the wire instead of the channel supports, which may cause the decking to deform and fail.
- Any load not uniformly distributed over the entire surface of the decking section is a **concentrated load**. When you have multiple pallet sizes stored in the same rack system, you may have imbalances.
- **Point loads** are any load that has its weight concentrated on individual points versus uniformly distributed.





Concentrated load All of the weight of this pallet is placed in the center of the deck, putting the entire load on 2 of the 4 support channels.

Point load Above: This bulk container has 4 feet resting on the deck. All the points sit only wire mesh, causing deflection and potential failure.

PALLET RACK TIPS

Loading & Unloading Tall Racks



Loading and retrieving pallets from tall bays can be problematic, resulting in dangerous load drops or damage. It's difficult because drivers can't see the load or the rack beam.

- Drivers may not be able to tell if the tines are lined up correctly on the pallet when their forks enter it, making it possible to bump or shift.
- When depositing a pallet at height, it's not easy to tell if it's positioned to rest both front and back on the beams or centered correctly.
- Rack capacities are based on evenly-distributed loads, so it's important that the pallets are square and centered.

What can you do to reduce risks?

Load the rack with adequate clearances

Load your racks with acceptable tolerances above and to the sides of each pallet and the frames. You should have 10° head clearance between the top of load and the bottom of the beam above it.

Add technology to help drivers see

Technology is only an enhancement to training. It can't prevent accidents on its own, but can help drivers see and understand the situation better. Options include cameras that let drivers see the load and beam, laser tine guides, tine leveling alarms and more.



Install product/pallet fall protection systems

If forklift drivers bump a pallet and knock it—or a pallletized carton or other load—off, then protective systems like safety netting, straps, back beams/bars or wire panels can stop the fall and help prevent damage and injuries.

How to Inspect Pallet Rack

To prevent accidents, regularly inspect your pallet racks for damaged components. In general, split welds, rust and dents should always be noted. The rack must be straight, plumb t and should be bolted to the floor to achieve its full capacity.





Upright frames and base plates

Damaged uprights should always be addressed—by replacement or repair. Install post protectors for economical protection. Check the footplates for damage as well as for missing floor bolts, dust or floor cracks.

Load beams



Deflection is often caused by overloading, but could also be the result of a beam that was damaged in some other way. Whatever the cause, that beam should be checked, and potentially replaced if the deflection is outside acceptable tolerance. Also check

the beam for dislodged connectors or bolts.

Deformed struts or braces

Struts are the horizontal steel bars that connect two upright posts. Braces are the diagonal steel that connect struts. If either is bent, it's an indication of issues with loading, impacts or capacity.

Rack environment & usage

Make sure the rack isn't being overloaded or loaded with unbalanced loads that can stress it past its capacity rating. Aisle clutter is a frequent cause of rack collisions (and subsequent collapses) and should be avoided.

PALLET RACK TIPS

Pallet rack beam capacities are pretty simple. They're rated per pair for evenly distributed, properly-positioned loads. But upright capacities are more complex because their capacity is calculated on vertical beam spacing. The largest vertical gap dictates the capacity, so be aware of tall loads, which can stress a rack more than a squat, heavy loads because extra beams act as lateral support. Get these factors right, and your rack will be safe and stable. If you need help, call us today.

-Alfredo, Employee-Owner - Systems Integration Systems Integration Project Manager



RACKS, FLUE SPACE, LOAD SPACING & FIRE PREVENTION

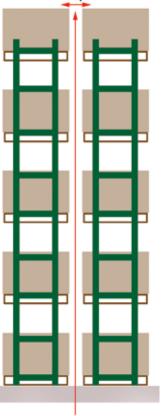
Flue spaces are clear vertical lines of sight from the floor up to the ceiling within rack storage areas. The National Fire Protection Association (NFPA) requires that pallet rack flue space should remain clear at all times so that any fires can successfully vent up rather than out, allowing sprinkler systems to activate faster.

Send flames up, not out

The vertical rise of flames also helps slow fire spreading horizontally through a rack system, which can cause more damage and burn longer than if a fire rises.

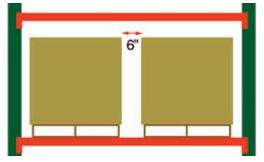
What can you do to help reduce issues with flue space obstruction?

- Leave adequate space between pallet loads. NFPA requires 6" horizontal flue space between loads. A 92" beam allows for two pallets with 6" between them and 3" between each pallet and the frames on either side.
- 2. Make sure your pallets and loads are the right size for the depth of your rack. You should allow the pallet to hang over the back beam in a double row, and maintain adequate longitudinal flue space between rows.



Flue Space

Don't obstruct the space between rows



- 3. Make sure the space between rack rows is adequate. Row spacers are frequently installed to produce precise longitudinal flue space, as they make certain there is enough space between rows.
- 4. Use wire or perforated decks. Solid decks or particle boards don't allow flames to escape up, and also impede sprinklers.
- 5. Don't let forklift drivers push the back of the pallet too far into the flue space between back-to-back rack rows. Make sure your pallet loads are not too deep for your rack system. You can also install back beams, nets or safety straps that don't allow push-through.

According to NFPA, American fire departments respond to an estimated average of 1,210 fires in warehouses every year. Because fire suppression systems affect rack structure design and geometry, your system must be carefully planned.

SELECTIVE RACK SYSTEMS IMPACT-RESISTANT SK2000 SELECTIVE RACKS

Longer-lasting & impact-resistant

Safer and stronger than conventional pallet rack, SK2000 fully enclosed tubular racks have 44 times more torsional strength than open back racks. Seamless, fully welded structural tubing increases durability, cleanliness and structural integrity.



Beams: 3-rivet connection & channel rib strength

- Beams are seamlessly welded, high-strength structural steel tubing with no ledges or cracks to catch pallets or trap moisture/debris.
- 1/16" stiffening ribs built into the beam face for strength
- Exclusive safety clip and stiffening rib design resists disengagement from the upright. Engages with an audible snap.

Fully enclosed uprights

The industry's only 100% tubular rack, with greater resistance to torsional forklift impact than open-back roll formed columns. Utilizes a tapered keyhole connection slot, interchangeable with several other rack systems, and allows 2" vertical beam adjustments.

See Steel King Upright Frames



Thousands of preconfigured pallet racks

cisco-eagle.com/fullracks

We can help you build standard racks, racks with wire decking, safety netting, security cages and integrated carton flow. Let's solve your storage problems.

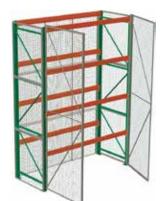


Racks with wire decking included.

> Pallet racks with safety nets included



Pallet rack with integrated carton flow tracks on lower beam levels.



Pallet rack with wire back panels and security cages.



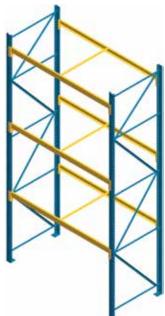
STRUCTURAL SELECTIVE RACK

For videos and more, visit www.cisco-eagle.com/structural

Structural rack is used for a variety of dynamic storage applications, but can also be used in selective racking, if the situation warrants—typically in areas where forklift collisions and abuse are more likely, for very heavy loads, washdown areas and more. See the table below or call us for guidance.

- Built with hot rolled structural channel steel, for difficult industrial environments.
- Popular in harsh-duty applications like freezers, coolers, and distribution facilities
- C-channel construction makes it easier to clean and wash down than roll form racks
- Beam connectors constructed of heavy 5-gauge steel plates, featuring a wrap-around design
- Upright frames are punched on 4" vertical centers. Beam connector clips specially punched allow for vertical adjustablility in 2" increments





Compare: roll form vs. structural for selective rack applications

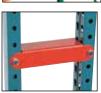
Factor	Structural Racks	Roll-Form Racks
Overall strength	Very strong with welded connections, heavier steel and higher capacities	Excellent for standard warehousing applications
Impact resistance	Bulkier construction offers improved resistance, but this depends on foot plate weld strengths	Fully enclosed tubular uprights are more impact resistance than open back alternatives
Washdown capabilities	Because structural has open, c-channel construction, it's easier to wash down for clean, food and similar operations	Can be washed, but not as easily as c-channel structural racks
Capacity	Higher capacities than roll-form. Beam ties are usually added to increase capacity. Bolted connections add strength to structural systems	Capacities typically lower than structural racks
Cost	Typically more expensive	Typically less expensive
Weight	Heavier than roll-form	Lighter than structural
Shipping costs	More costly to ship due to weight	Less costly to ship due to lighter weight
Outdoor use	Used more often outdoors (is easier to galvanize)	Can be used outdoors, but is less typical
Installation	Due to bolt connections, structural is costlier and slower to install	Faster installation due to teardrop connections
Flexibility	Offers fewer available accessories. More difficult to adjust beam levels. Structural is used for more types of racks (pushback, drive-in, etc)	More flexible due to a range of accessories. Easier beam adjustment

PALLET RACK ACCESSORIES

Supports and spacers



Pallet Supports: For pallets not deep enough to fit on standard rack frame depths. Use two per pallet position.

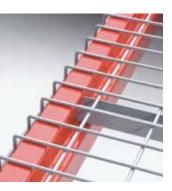


Frame Spacers: Keeps space between rack rows and pallet overhang uniform. Frames up to 120" tall, use 2 per frame; 144" to 216" tall, use 3 spacers

Pallet rack wire decking

cisco-eagle.com/wiredecks

Wire decking provides visibility, easier product handling, pallet stability and ventilation. Tough wire construction with underlying metal supports is strong and stable. Meets applicable fire safety codes.



Column Protectors

All uprights should be guarded against forklift collision damage. Steel guards, poly guards and other types are available. The type needed depends on your application, forklift type and other factors.



Protect rack from falls, pilferage

Reduce product spills and increase security by installing wire mesh panels and gates on your rack. Contact us for assistance retrofitting your racks with this protection system. Security enclosures with swinging gates help guard inventory—pallets, casepick inventory or other bulky items



Rack safety netting protects people, product

cisco-eagle.com/racknet

Reduces the chances of falling inventory from damaging itself, other product or anyone standing beneath. Rack nets are configured by total pallet weight, fall trajectories, impact velocities & weight distribution—they're meant to withstand a specific impact.



Rack safety straps help reduce "push through" damage

cisco-eagle.com/rackstrap

Help reduce pallets & loads from pushing into flue space or falling into work areas. Add as many straps as necessary to each bay for securing your goods. Helps enforce flue space for fire prevention. Installs with simple teardrop connectors and no tools.



Shop Whether it's wire decks that help support pallets and loads, frame guards that deflect forklift hits, safety

netting that catches falling loads or pallets, pull-out shelves that prevent ergonomic problems or other accessories, we can help you find ways to make your rack work better for you.

–Jeremy, Employee-Owner Since 2006 Ecommerce Manager

Cisco-Eagle 9 • www.cisco-eagle.com/palletracks • Toll-Free: 888.877.3861



SPECIALIZED RACK APPLICATIONS

HEAVY-DUTY DIE RACKS

Store dies, motors, jigs, fixtures and more

Die racks feature a solid metal shelf design allowing die placement anywhere along the shelf, and can accommodate a variety of die sizes. Shelf design allows dies to slide on or off a shelf for easy access and storage.



OVER-DOCK-DOOR RACKS

Utilize dead space above your dock doors



Utilizes space above dock doors to store empty pallets & other light loads neatly and safely without occupying valuable floor space. This is frequently wasted space you can reclaim for these types of lighter loads.

PALLET RACKS FOR ANY APPLICATION

- Narrow aisle & very narrow aisle racks: the space between aisles is minimized in these systems, reducing aisles up to 40%.
- **Mobile aisle racks:** in these systems, rack sections move on floor mounted rails to open up access aisles. This is a very high-density storage system.
- **Specialty storage racks:** can be built to store odd sized and specialty loads such as tires, furniture, bar stock odd components, long parts, oddly-balanced loads, vehicles, super-heavy-duty loads and more.



CARTON FLOW PALLET RACK

For videos and more, visit www.cisco-eagle.com/cartonflow







Dedicated flow storage

Pallet racks are frequently converted into gravity flow storage. It's done with lower levels where order pickers can access pick faces. Upper levels are left for pallet and bulk storage operations.

- Gravity skatewheel shelves
- Gravity roller shelves
- Traditional plastic wheel shelves
- · Accessories such as knuckle-overs, extended lanes, and more



Carton flow saves tons of space and makes picking faster,

but it also reduces wasted motion. Order pickers can walk as far as 12 miles a day. This much walking makes them tired, more error-prone and less productive. Goods-to-person lets them spend more time doing productive work like picking and packing.

–Jason, Employee-Owner Since 2020, Account Executive

FLOW STORAGE & PALLET RACKS

Mounting considerations

A common gravity flow application is to mount shelves of flow storage on pallet rack so you can mix & match gravity flow and bulk pallet storage in the same structure.

What rack types?

Most carton flow types work in tubular (roll-form) or structural racks. Teardrop and bolt-connection frames usually have the right mounting openings for carton flow. When you are using rack beams to support the tracks, the amount of adjustability relies on the available beam spacing—the more adjustable, the better. You can adjust the flow storage pitch by offsetting front and rear beams.

Beam ties are recommended for wider beams to reduce bowing. Beam heights of 3.5" minimum are recommended. For double deep racks, intermediate supports may be required for both capacity and to increase structural integrity.

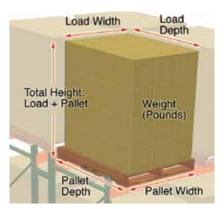
SELECTIVE RACK SPECIFICATION

shop



Understanding your load—its dimensions, weight and its basic shape—will make sure you get the right pallet rack. This guide can get you started, but you can call us for help on your pallet rack layout, design or specification project.

-David, Employee-Owner Since 2010 Web Sales and Service



Determine pallet & load factors

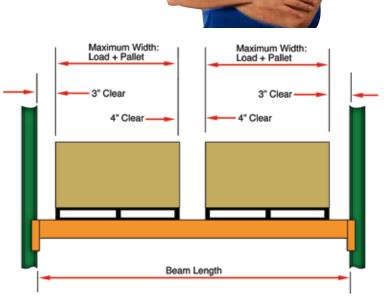
- 1. Determine the load depth, load width, load height and weight of the largest load you'll be storing.
- 2. To determine width & depth, measure the load. Use the larger of the two dimensions.
- 3. To determine height, add the height of the load and the height of the pallet together for the total.
- 4. Load weight should include the pallet and reflect the heaviest pallet stored in the rack.

Determine rack depth

5. Determine front-to-back depth of your upright: Subtract 6" from your pallet depth. Example: Your pallet is 40"W x 48"L. Subtract 6" from 48". You will need uprights at least 42" deep to accommodate this load.

Determine beam width & capacity

- 6. To determine beam width (2 pallets per beam): Multiply the load width x2 and add 12". Example: Load width is 42". 2 x 42" = 84"+12"=96" beam length. If required, round up to the next highest beam length.
- 7. See <u>standard beam sizes</u> for some of the available beam widths. We're not limited to those sizes.
- 8. Check beam capacity to ensure the beam can carry your load. Beam capacities are listed per pair for evenly-distributed loads.



Determine upright height

- 9. Multiply the number of pallets high stored minus one pallet x 10". Example: if you're storing 4 pallets high, then multiply $3 \times 10^{\circ} = 30^{\circ}$
- 10. Multiply the number of pallets stored minus one pallet by the overall load height. Include pallet height in the overall load height. Example: Overall load height of 50", 4 pallets high, minus one pallet. 3 x 50" =150".
- 11. Add the two numbers (30" + 150"=180" in this case). This number is your minimum upright height. Be certain your ceiling is adequate to store the pallets you need.

Notes for upright height design

- 12. The 10" between pallets allows for beam depth and space to lift and remove the pallet.
- 13. Make sure you have enough space left between load height of uppermost pallet and overhead obstructions. This is called clear ceiling height, which is measured as the distance from the floor to the bottom of the lowest obstruction minus 10".

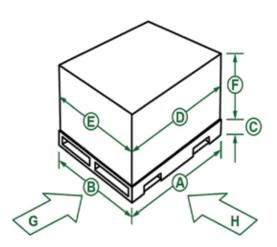
SELECTIVE RACK WORKSHEET

Fax: 972-406-9577 • Email: 24hours@cisco-eagle.com • Call: 888-877-3861

Ignore questions you can't answer-we'll walk you through the process and make it easy!

About you

Name:	
Company:	
Phone:	
Email:	



Pallet & load factors

Length - Pallet (A):	Load (D):	_ (inches)
----------------------	-----------	------------

Width - Pallet (B): _____ Load (E): _____ (inches)

Height - Pallet (C): _____ Load (F): ____(inches)

Total (pallet + load) height: _____

Weight - pallet + load totals (lbs.):

Minimum: _____ Maximum: _____ Average: _____

Loading direction: \Box (G) or \Box (H)

Pallet Type:

□ GMA □ Block □ Single □ 9-Point □ Slave □ Other If other, send drawing or sketch dimensions.



Facility factors

Building status (circle): New or Existing

Building dimensions

Width:	(feet) • I	Length: _		(feet)	
Clear ceiling heig	ht:	(feet)	*below lo	west obstruc	tion
Storage tempera	ture:				
Storage condition	ns:□Dry C	⊐ Cooler	□ Freezer		
Ruilding oolum	20				

Building columns

Outside dimensions: _____ (inches)

Column centers:	(feet)

Column bumper size: _____ (inches)

Describe any other obstructions or special conditions, including sloped floors, special machinery, etc:

Rack specifications

Rack type - 🗆 Tubular or 🗆 Structural

Lowest load - \Box Floor or \Box Beam

" Days "Tallots/ bay "Tallots flight	#Bays:	#Pallets/bay:	#Pallets high:
--------------------------------------	--------	---------------	----------------

Rows: \Box Single \Box Double \Box Both

Rack options

□ Pallet supports □ Pallet stop beams

 \Box Decking: circle wire, solid, other \Box Row spacers

□ Wall ties □ Upright protectors

 \Box Guard rails at row ends \Box Safety nets

PUSHBACK RACK SYSTEMS



- Store pallets 2-5 deep while retaining easy access to a variety of SKUs. Store one SKU per pallet position—more selective than drive-in or flow
- · When front pallet are removed, pallets roll to the front of the rack
- If you have are multiple stored products with more than 5 pallets per SKU, then pushback racks are an excellent storage method that can save space without compromising selectivity



- Interlocking, color coded carts help prevent dangerous jamming and costly product damage. Also allows easier product identification
- 4-sided, heavy-duty, robotic welded structural cart for smooth rolling and longterm durability

Pushback rack gives you 90% more product storage than selective and 400% more selectivity than drive-in systems. If your load works in a last-in-first-out (LIFO) inventory rotation, it's the best compromise between density and access.

-Christine, Employee-Owner Since 2003 Account Executive

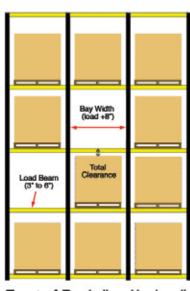


For videos and more, visit www.cisco-eagle.com/pushback

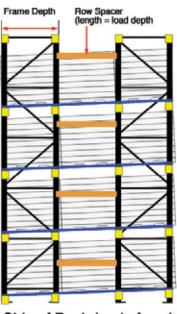
Pushback carts



Carts are critical because jams are both dangerous and expensive. The best carts are built for longer term performance and require less maintenance. Pallets are placed by forklift on nested carts riding on inclined rails. Each pallet is then pushed back by subsequent pallet loading, exposing the next cart. When a pallet is removed at the front position, pallets on carts behind it to roll gently to the front of the rack.



Front of Rack (load/unload)



Side of Rack (end of row)

PUSHBACK RACK WORKSHEET

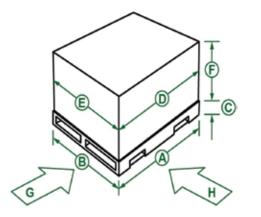
Fax: 972-406-9577 • Email: 24hours@cisco-eagle.com • Call: 888-877-3861

Ignore questions you can't answer - we'll walk you through the process and make it easy!

About you

Name:	 	
Company:		
Phone:		
Email:		

Pallet & load factors



Length - Pallet (A):	Load (D):	(inches)
----------------------	-----------	----------

Width -	Pallet (B):	Load (E):	(inches)

Height - Pallet (C): _____ Load (F): ____(inches)

Total (pallet + load) height:

Loading direction: \Box G or \Box H

Weight - pallet + load totals (pounds):

Minimum: _____ Maximum: _____ Average: _____

Pallet Information

#Bottom Deck Boards: _____

Width: _____ Thickness: _____ (inches)

Pallet Type: □ GMA □ Block □ Single □ 9-Point □ Slave □ Other

If other, send drawing or sketch dimensions.

Facility factors

Building status: circle - New or Existing

Building dimensions

Width:	(feet) •	Length:	(feet)
Clear ceiling height	:	(feet)	*below lowest obstruction
Storage temperatu	re:		

Storage conditions: □ Dry □ Cooler □ Freezer

Building columns

Outside dimensions: _____ (inches)

Column centers: _____ (feet)

Column bumper size: _____ (inches)

Describe any other obstructions or special conditions, including sloped floors, special machinery, etc:

Rack factors

All dimensions in inches unless noted.

#Bays wide: ;	#Pallets per bay:		
#Pallets deep:	#Pallets high:		
Bay width: Up	oright - depth:	height:	
Clear width for outrigger tr	ucks:		
Double front posts; hei	ght:		
Lowest load is on: 🗆 Floor 🛛 Beam			
Is floor load double stacked	d?□Yes □No		

DRIVE-IN & DRIVE THROUGH STORE 75% MORE PALLETS THAN SELECTIVE RACKS





Drive-in systems are the champions of last-in, first-out high density storage. Everything is loaded and picked from the front pick faces of the rack system.

Your forklift drivers will pull the first pallet layer, and drive directly into the rack structure for the ones behind it. Because they use the entire cube, we do a ton of drive-in racks in frozen storage areas.

-Colin, Employee-Owner Since 2014 Account Executive



For videos and more, visit www.cisco-eagle.com/drivein

When to specify drive-in systems

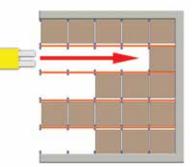
Drive-In Rack is used to store many pallets of a similar SKU or product. Since it's last-in-first-out, it's suited for items where inventory rotation is less important. It's ideal for bulk, cold storage applications and other high-density needs. It's also good for seasonal items that move quickly in and out of your inventory. Use it when you have a large amount of similar items that can be stored in a single pallet position. Because forklifts drive directly into the rack, they are subject to more abuse than any other racks.

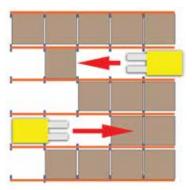
Drive-in racks

Drive-in rack systems allow a lift truck to enter the rack from one side to deliver or retrieve pallets in a last-in, first-out operation, as pallets are loaded back to front for maximum storage density.

Drive-through racks

Drive-through racks allow a lift truck to enter the rack from either side. Loads are supported by rails attached to upright frames, and lift trucks are driven between uprights to access pallets. This allows either LIFO or FIFO storage.





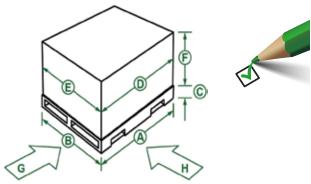
DRIVE-IN/DRIVE-THRU WORKSHEET

Fax: 972-406-9577 • <u>24hours@cisco-eagle.com</u> Ignore questions you can't answer - we'll walk you through it.

About you

Name:
Company:
Phone:
Email:

Pallet & load factors



Length - Pallet (A):	Load (D):	_ (inches)
----------------------	-----------	------------

Width -	Pallet (B):	Load (E):	inches)
wiuui -	Pallet (D).		IIICHES/

Height - Pallet (C): _____ Load (F): ____(inches)

Total (pallet + load) height: _____

Loading direction: $\Box \Box \Box$ or $\Box H$

Weight - pallet + load totals:

Minimum: _____ Maximum: _____ Average: _____

Loading direction: \Box C or \Box H

Pallet Information

#Bottom Deck Boards: _____

Width: _____ Thickness: _____ (inches)

 Pallet Type:

 □ GMA
 □ Block
 □ Single
 □ 9-Point
 □ Slave
 □ Other

If other, send drawing or sketch dimensions.

Forklift Factors

Mast width:
Guard Height:
Overall width:
Max. width w/load:
Max. lift height: (ft.)



Facility factors

Dimensions

Width: (feet)	• Length: (feet)
Clear ceiling height:	(feet) *below lowest obstruction
Temp.: Conditions	: 🗆 Dry 🗆 Cooler 🗆 Freezer
□ New facility □ Existing	g facility
Building columns	
Outside dimensions:	(inches)
Column centers:	(feet)
Column bumper size:	(inches)
Describe any obstructions	or special conditions:

Rack factors

Drive in, single entry Drive-in, double entry
□ Drive-through □ Sanitary design
#Bays wide: #Pallets per bay:
<pre>#Pallets deep: #Pallets high:</pre>
Vertical load spacing:
Bay width: Upright - depth: height:
Clear width for outrigger trucks:
Double front posts height:
Lowest load is on: 🗆 Floor 🛛 Beam
ls floor load double stacked? □ Yes. □ No

PALLET FLOW RACKS

For videos and more, visit www.cisco-eagle.com/palletflow



shop talk

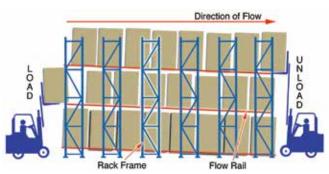
Pallet flow is ideal firstin, first-out high-density storage for perishable and time-sensitive loads. It packs in 100% more pallets in the same space compared to selective racks. We've installed systems across every



industry, customized exactly to customer needs in applications from food to manufacturing buffer areas.

-Christine, Employee-Owner Since 2015 Account Executive





The best solution for high-density applications where product rotation is critical to order fulfillment

Flow racks consist of two elements: a static rack structure and dynamic flow rails. The flow rails are a track/roller system set at a decline along the length of the rack. Flow rails allow loads to move by gravity from the loading end to the unloading end. Each flow lane includes self-energized speed controllers (brakes) to gently control the speed of movement within the flow lanes.

Ideal for raw materials receiving and storage, work-in-process, buffer storage, finished goods, order picking, & cross docking.

As a load is removed, the loads behind it move forward to the unloading position. Rack depth is limited only by the facility size and forklift capability. Flow storage solutions are used in situations where storage density and inventory rotation are priorities.

Reduced handling, labor & equipment

Pallet flow reduces the number of forklifts needed in an operation. Fewer lifts, operating fewer hours, can accomplish more. With only two aisles (loading or unloading), traffic is more orderly, employees are more efficient and overall productivity is better.

Flow rack specification information

- Flow racks allow a single SKU per lane, since only one pallet is accessible. If selectivity is more important, you may need a different system
- Load type is critical. You must know the size, shape and weight of all loads. These directly affect pitch and roller speed
- Flow rack is frequently used in pick module applications, in conjunction with conveyors, carton flow and mezzanines
- Full rollers generally don't need lubrication. However, in extreme conditions (salt, moisture, corrosives, dust), lubrication may be needed. Note these conditions in your specification request

PALLET FLOW WORKSHEET

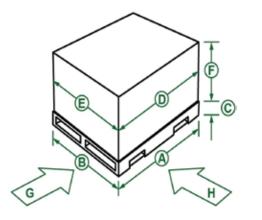
Fax: 972-406-9577 • Email: 24hours@cisco-eagle.com • Call: 888-877-3861

Ignore questions you can't answer - we'll walk you through the process and make it easy!

About you

Name:
Company:
Phone:
Email:

Pallet & load factors



Length - Pallet (A):	_ Load (D):	(inches)
----------------------	-------------	----------

Width -	Pallet (B):	Load (E):	(inches)
---------	-------------	-----------	----------

Height - Pallet (C): _____ Load (F): ____(inches)

Total (pallet + load) height: _____

Loading direction: \Box G or \Box H

Weight - pallet + load totals:

Minimum: _____ Maximum: _____ Average: _____

Loading direction: \Box C or \Box H

Pallet Information

#Bottom Deck Boards: _____

Width: _____ Thickness: _____ (inches)

Pallet Type:

 \Box GMA \Box Block \Box Single \Box 9-Point \Box Slave \Box Other

If other, send drawing or sketch dimensions.

Facility factors

Status: 🗆 New facility 🗆 Existing facility
Dimensions
Width: (feet) • Length: (feet)
Clear ceiling height: (feet) *below lowest obstruction
Temp.: Conditions: \Box Dry \Box Cooler \Box Freezer
Storage temperature:
Building columns Outside dimensions: (inches)
Column centers: (feet)
Column bumper size: (inches)
Describe any obstructions or special conditions:
Rack factors All dimensions in inches unless noted.
#Bays wide: #Pallets per bay:
<pre>#Pallets deep per bay: #Pallets high:</pre>
Bay width: Upright - depth: height:
Clear width for outrigger trucks:
Double front posts height:
Lowest load is on: 🗆 Floor 🛛 Beam
Is floor load double stacked? \Box Yes \Box No