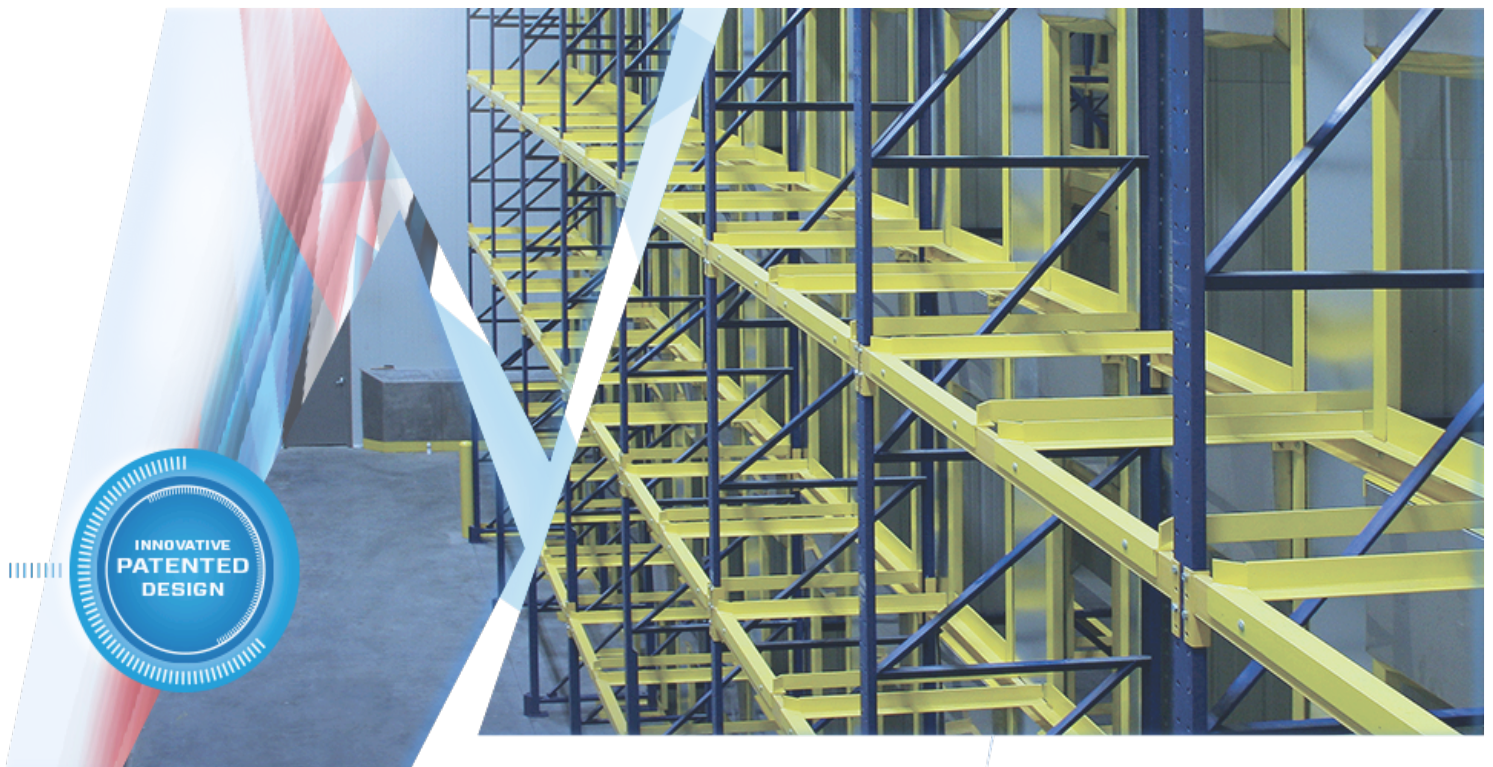




QUICKFREEZE®

Operations & Maintenance Manual





OPERATIONS AND MAINTENANCE MANUAL

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For product or service inquiries please call:
260-424-2151
or by email: Sales@QuickFreeze.com



OPERATIONS & BEST PRACTICES

QF+ SYSTEM BASICS

QF+ uses patented technology to pull air through each pallet allowing heat to escape as quickly as the product allows for fast, consistent and predictable freezing.

Airflow will always take the path of least resistance. **The QF+ System operates by blocking all airflow paths except through the pallet, in between the spacers.**

Any other openings will inhibit the system's performance, **so it is crucially important that the proper stacking and loading protocol is followed.**

Virtually any performance shortcomings can be attributed to improper and inconsistent pallet stacking and loading.



COMPONENTS

- **Swing Seal:** Because of differing heights of product, a swing seal was incorporated into the QF+ design. As product is loaded into the position, the top product pushes the swing seal into the plenum. Airflow above the product is successfully prevented by properly engaging the swing seal.
- **Vertical Seals:** The vertical seals run vertically along each side of the swing seals. The loaded pallet needs to be pushed back all the way until the product is resting against both the right and left vertical seals. This ensures that there are no gaps for air to come in around the sides of the pallet.
- **Pallet Guide:** The pallet guides are present for all non-floor positions and ensure that the pallet is loaded so the swing seal is in the center of the pallet.
- **Floor Guides:** The floor guides are for floor positions only and ensure that the product is loaded so the pallet is centered to the swing seal and vertical seals.

PALLET STACKING REQUIREMENTS

Stacking the spacer properly is one of the most important aspects to ensure the QF+ system operates to it's full capacity.

- **Pallet Selection**

- Use high-quality, sturdy pallets that are not broken or able to carry the full weight of the product.

- **Product Placement**

- The pallet needs to be stacked so that when it's loaded, the product cases are flush with the vertical seals from top to bottom.
- Pallets that are leaning, tipping, or not flush to the seals create air gaps. Quality spacers should help minimize leaning and tipping.

- **Spacers:**

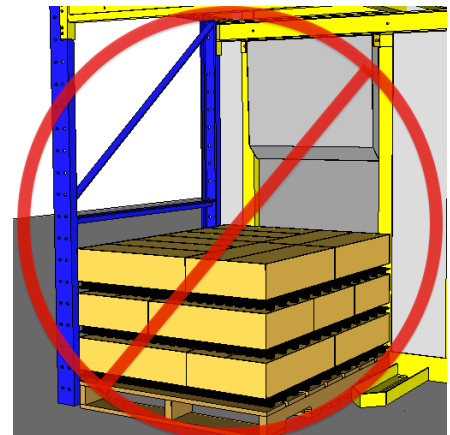
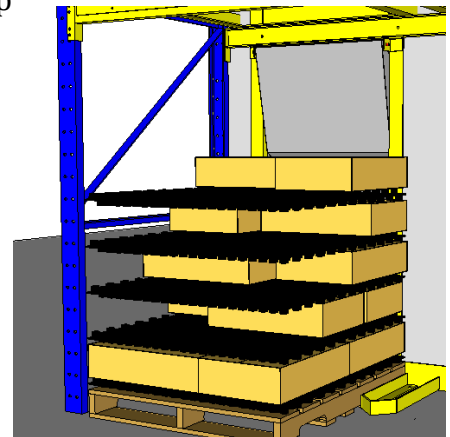
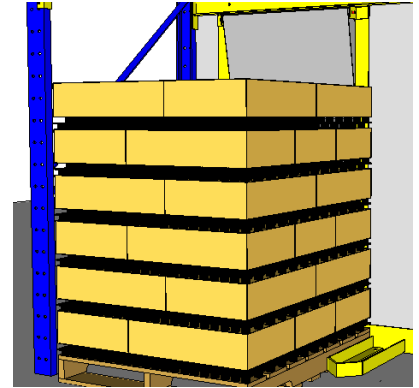
- The product needs to be separated with good quality spacers that are not crushed so that air can flow in between the cases.

- **Obstruction Removal:**

- Shrink wrap needs to be removed so air can move through the pallet.

- **Product Height Range:**

- The swing seal allows for a 16" range from minimum product height to maximum product height.
- As long as the top of product hits BOTH the swing seal and vertical seals, the product is within the acceptable height range.
 - If it doesn't hit the swing seal, it's too low and needs to be loaded differently. (If a skid is used in the middle of a stack, ensure the skid is shrink wrapped so air doesn't move through it.)
 - If the pallet is loaded too high, it will hit the swing seal, but not the vertical seals. It will need to have product removed so there are no air gaps.

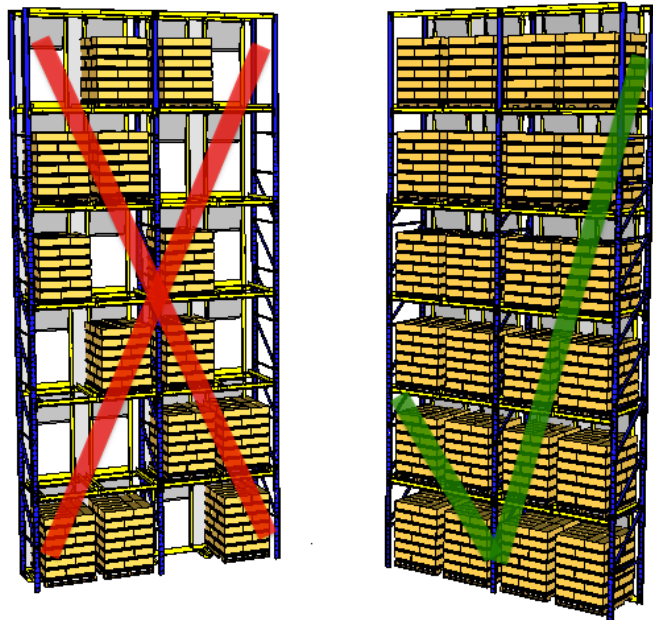




PALLET LOADING REQUIREMENTS

Properly stacked pallets need to be loaded properly into the positions.

- **Completely Pushed In:** The stacked pallets need to always be pushed all the way back so that the “wall of product” is touching the swing seal and vertical seals.
- **No Vacancy Zones:** Each zone must be fully loaded to work properly. The fans operate per zone and are set to pull a certain amount of air through the system. Remember that air always takes the path of least resistance so just one empty pallet position in a zone presents a huge opening for airflow. In a nutshell, empty pallet positions are always a NO-GO.
- **Zone Planning:** Based on the zone layout at your facility, plan the loading accordingly. Reference the submittal for your QF+ system that details where each zone is and how many pallet positions are available. Incorporate the QF+ system's unloading schedule with the next round of freezing product in mind; it could make sense to unload only a few positions as a time to ensure that the zone is always full when trying to freeze product).





MONTHLY VISUAL INSPECTION

A basic monthly visual inspection is recommended. Simply look for items that may hinder the system's performance. Contact Tippmann Engineering with any questions or concerns.

Below are recommendations of specific items to look for.

- Check for debris, like shrink wrap, in the fans and remove.
- Inspect the swing seals to ensure the hinge working properly allowing full range of movement. If there are any swing seals that are stuck in one position, are hanging off the hinge, or other noticeable inconsistency, contact Tippmann Engineering for assistance in remediation.
- Look for any racking and/or wall deformities if there have been any accidental collisions during operations. Replace any loose bolts.



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