

Flow Rack Operation & Maintenance Manual



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ALL PERSONNEL WHO COME IN CONTACT WITH THE FLOOR RACK SHOULD READ THIS MANUAL CAREFULLY!

Operators of industrial lift trucks must be trained and certified per OSHA regulation 29 CFR 1910.178.

Keep this manual in a convenient location for future reference, retraining, and orientation of new users of the product.

Guide to symbols in this manual:



figure 1

DANGER is indicated by a red exclamation point within a red triangle, as shown in figure 1. These symbols denote situations which could cause damage, injury or death.



figure 2

CAUTION is indicated by a yellow exclamation point within a yellow triangle, as shown in figure 2. These symbols indicate situations which require an extra measure of your attention.



STEEL KING®

OPERATION INSTRUCTIONS

Loading Pallets



Pallets must be loaded and unloaded with the forklift squared up to the face of the rack – do not approach or withdraw at an angle.

When loading a flow lane, the pallet must be level and two (2) to three (3) inches above the wheels or rollers.



Position pallet into lane and slowly lower and tilt the pallet down on to the wheel/roller, ensuring the front of the pallet is flush with the front beam, until contact is made.



Tilt the pallet to release it from the forklift. As the pallet flows over the brake it will slow down.



Position and load the second pallet by following the procedures used on the first pallet. The pallet will stop at the wedge stop. The next pallet may be loaded.



Continue loading the pallets until the desired lane capacity is reached.



Unloading Pallets

When removing pallets from a lane, lift the pallet to a level position just high enough to clear the front beam, push the pallet back slightly to bump the pallet behind to help prevent any potential hang-ups, withdraw pallet at a slow constant speed.

As the first pallet is being removed from the lane, the following pallets will begin to flow.



When the pallet has been completely unloaded, the following pallet will continue down the conveyor and stop at the wedge stop.



If for some reason the next pallet or pallets are stuck and do not roll forward during the unloading, reload the pallet being removed and do not unload until the cause of the jam has been found and addressed. See Fault Finding section of this user manual for proper steps and safety precautions to use while addressing stuck pallets.



PALLET FLOW SAFETY

Your Flow Storage System is designed so that personnel do not have to enter the rack to operate the system. If a pallet becomes stuck in a lane and does not flow forward, an initial attempt should be made to free it without entering the rack. This can usually be accomplished by loading another pallet behind the stuck one. The additional line pressure is often enough to free the jam.

Entering the Rack

The Flow Storage System is a live storage system with heavy loads traveling through it under the force of gravity.

Under No circumstance should anyone attempt to enter the system or climb the structure while the system is in operation.



If access is necessary for either: inspection, maintenance or clearing a jammed pallet, the system must first be shut down and rendered safe.

If it becomes absolutely necessary to enter the rack for any reason, the following procedure should be used and should be adapted to suit prevailing conditions and risks:

- Remove all pallets from lane. This may not be possible if pallets are jammed or stuck, see procedures below to follow for situations involving jammed or stuck pallets.
- If climbing into the rack structure, federal, state or local safety codes require the use fall protection equipment at all times when working at elevated heights. Individuals should use all other appropriate safety equipment including safety goggles, hard hats, etc.
- Use “buddy” system; having someone stand at exit end of lanes, ensuring that no loads are removed from system in lanes adjacent to the lane being worked in.













Removing Jammed Pallets

The following procedure describes the general method of removing jammed pallets:

1. Only authorized personnel trained in the method of freeing jammed pallets should enter the racking system.
2. The truck aisles (both the entry and exit aisles) should be cordoned off around the blocked lane, and signs posted warning of the hazard and men working above.
3. Pallets in the lanes immediately adjacent to the jammed pallet should be removed by normal unloading procedure using a fork lift truck. Care must be taken during this operation as it may be possible that the jammed pallet may release.
4. Individuals, according to federal, state or local safety codes, must use fall protection equipment at all times when working at elevated heights. Also individuals should use all other appropriate safety equipment including safety goggles, hard hats, etc.



5. Access to the empty lane should be carried out by the use of an approved tower (i.e. ladder, etc.) or preferably an approved maintenance cage on a fork lift truck. 
6. The tower or fork lift truck and cage are to remain in position throughout the operation. 
7. Fill the empty lane with empty pallets to provide a walking platform or lay a portable propriety walkway over the rollers. These must be fitted in a manner to prevent movement. 
8. Entry to the gravity flow rack should always be from the side where pallets are loaded. 
9. On no account should the path in front of the jammed pallet be entered unless the pallet is physically restrained. 
10. On entry to the lane, the blockage should be inspected to determine the method of release. 
11. If the pallet can be released simply, this should be attempted from the safety of the empty lane. If the load has become jammed against the racking or pallet damage is noticed, it may require that the pallet be completely removed of product. Empty the contents of the jammed pallet onto a pallet in the adjacent empty lane prior to release. 
12. Jammed pallets on the extreme end lanes of the rack structure should be released by working from approved tower or maintenance cage on the outside of the rack structure. 

13. The procedure for releasing jammed pallets is :
 - a. Fasten proprietary webbing with quick release mechanism (50mm ratchet with 2m webbing with 5000Kg breaking strain) around the blocks of the two (2) pallets to the rear of the jammed pallet and around the nearest racking upright (subsequent pallets in the lane can be secured in the same manner if preferred albeit not essential).
 - b. Take up the slack of the webbing using the ratchet mechanism.
 - c. Empty the contents of the jammed pallet onto a pallet in the adjacent empty lane.
 - d. Site supervision should ensure all personnel are clear before jammed pallets are released and free to move. This includes people standing on the bed below having their hands in the path of the pallet above. 
 - e. Remove/release the jammed pallet.
 - f. Remove the quick release mechanism and draw the webbing from the pallets.
 - g. Allow subsequent pallets to travel to the front of the system.
14. On no account should further pallets be pushed into the jammed lane to release the blockage. 

MAINTENANCE PROCEDURES

Before performing any maintenance procedures, follow all proper steps described in “Entering the Rack.”



- User proper fall protection and safety equipment
- Unload entire lane
- Cordon off loading and unloading end

Lubrication

The Steel King SK3400 wheel and SK3400 full roller bearings are supplied pre-lubricated and generally do not require any additional lubrication during the life of the system. However, under certain extreme conditions where high levels of moisture, salt, other corrosives, or dust are present, periodic lubrication may be required. The average time between lubrications will vary from application to application.

Use a medium weight oil to lubricate the bearings. We recommend Mobil DTE 26 or equivalent. If there is moisture, ice, grit, or rust in the bearing, then use a light water displacing oil such as WD-40 to loosen the rust or grit and to drive out any moisture. Then lubricate with DTE 26.

Wheel or Roller Replacement

If a wheel or roller is damaged and needs to be replaced, use the following procedure:

1. Locate and loosen the bolt/shaft and lock nut with a wrench or socket.
2. Slide bolt out until the damaged wheel can be removed and replace wheel.
3. Re-tighten all hardware.

Brake Mount Assembly

The brake mount assembly is a self-contained unit that is pre-set at the factory and generally does not require any additional adjustments or maintenance during the life of the system. The brake is the most important safety

component in the system. A quick method to check if a brake is working properly is to watch a particular lane and watch the speed of the pallet.

The pallet should move through the lane at a steady speed. It should not speed up or slow down. If the pallet speeds up as it moves through the lane, it could mean that a brake is damaged. Pallets running too fast are a major safety concern, so every effort should be made to identify and correct the cause of this problem as soon as possible.

If a pallet slows down as it moves through the lane, it could mean that the brake has been jammed either through damage or because some debris is preventing the free movement of the brake rollers.

Another way to check for a malfunctioning brake is to listen to the sound that is emitted when the pallet is rolling over it. A properly functioning brake will emit no noise, or at most a low whirring sound. If a brake chatters, or emits a loud growling sound, it generally means that a pallet is moving too fast over the brake.

Brake Replacement

To remove a damaged brake and replace it with a new one, use the following procedure:

1. Remove the through shaft/bolt and lock-nut with a wrench or socket.
2. Slide the bolt out until the brake assembly can be removed.
3. Install new a brake in proper direction as indicated on brake, and re-tighten the hardware.

Pallet Separators

The pallet separators are designed to require minimal maintenance or adjustment during the life of the system. However, it is recommended that pallet separator function be checked on a monthly basis. This can be achieved with the system unloaded; following the safety guidelines previously noted, manually depress the separator sensor shoe and watch to make sure that the dual-pallet-stops raise above the level of the wheels. When the separator sensor shoe is released, the dual-pallet-stops should lower beneath the level of the wheels.

Once the function has been confirmed in the unloaded state, test a full pallet load to ensure proper operation.

FAULT FINDING

Stuck or Sticking Pallets

If the problem occurs at random throughout the system, it is likely to be the pallet at fault. If different pallets continually stick in the same location, it is likely to be the roller tracks at fault.

Possible causes:

- Incorrect pallet style has been entered into the rack.
- The pallet and/or its boards are damaged, warped or wet.
- An object or debris is lodged between the roller and pallet.
- The pallet is below the specified minimum weight.
- The pallet has been entered into the rack out of alignment and collided with the rack structure.
- The storage lane has a defective brake, wheel or roller.

Solution:

Inspect and clear pallet using procedure detailed in previous sections.

Pallets Advance in Mass (No Separation Between Pallets)

Possible causes:

- Pallets were entered into the storage lane at the exit face which is not permitted.
- Pallet being removed was lifted too high (max. lift 50 mm) prematurely releasing the separator paddle.
- The pallet weight is not within the permitted weight range.
- Incorrect pallets have been entered into the storage lane.
- Pallet or mechanical components are defective.

Solution:

Remove first pallet promptly; separation should function again.

Pallets Moving Too Fast

This fault **MUST BE** rectified immediately.

Possible causes:

- The pallet weight exceeds the maximum permitted.
- Incorrect pallets have been entered into the storage lane.
- The speed controllers (i.e. brakes) have a contaminated surface (i.e. water, oil, etc).
- There is a defect in the speed controller (i.e. brakes).

Solution:

- Check pallet weight, style and condition.
- Clean speed controllers (i.e. brakes) if contaminated.
- Replace defective speed controllers (i.e. brakes).

Lined area for notes or additional information.

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