

Solution Guide

# Efficient Order Consolidation





# Introduction

**To pick, pack and ship orders quickly and efficiently, many warehouse and distribution centers leverage a zone picking strategy (e.g., parallel picking, zone picking, wave picking). Zone picking strategies require one critical step before packing — order consolidation.**

Order consolidation is the process of matching items picked from different warehouse areas or zones and combining them into one order box, tote or pallet. A consolidation buffer stores partial orders and buffers them temporarily before packing. Once all items needed for the order arrive, the consolidation buffer retrieves them in the correct sequence and transports the items to the packing area.

Also, consolidation buffers are used in the shipping area, where the system buffers finished orders (mostly cartons) temporarily between packing and shipping and provides them just-in-time and in the correct order (sequence) when needed.

Consolidating picked items into individual orders — while more efficient in terms of maximizing labor productivity in a zoned warehouse — can often take up considerably more floor space, labor and capital. That's because most order consolidation systems are comprised of either static, shelf-based systems that take up an enormous amount of space, or highly automated sortation systems that are not cost effective. This guide reviews how the Kardex Remstar order consolidation buffer solution increases productivity, saves floor space and provides sequenced just-in-time delivery to alleviate packing and shipping bottlenecks.

# Consolidation buffer

**While order consolidation is a key element to a successful zone picking strategy, it doesn't have to eat up valuable floor space or come with a multi-million-dollar investment. There's a middle ground.**

To quickly and accurately consolidate orders before shipping, the high density Vertical Buffer Module (VBM) Kardex Compact Buffer can be used as the foundation for a consolidation system. Kardex Compact Buffers offer a great balance of cost, space and productivity to store waiting items for pairing up with additional items prior to packing or shipping.

## Automated solutions

Designed to maximize capacity and manage items in a compact footprint, using the Kardex Compact Buffer within an order consolidation process requires up to 80% less floor space than a traditional consolidation system. The Kardex Compact Buffer can be used in a semi-automated or fully automated process, supporting a variety of order consolidation requirements.

To complete the consolidation buffer system, the Kardex Compact Buffer is combined with Kardex Java Machine Interface (Kardex JMIF) software. Kardex JMIF connects to the warehouse host system, enabling the entire order consolidation process. Kardex JMIF manages the partial order totes within the Kardex Compact Buffer, while the host system manages the orders. Using associated attributes allows Kardex JMIF to notify the host system when all order totes for an order have arrived in the consolidation buffer system. The host system then calls for the completed order to be retrieved and sent to packing.

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### VBM Box

The VBM Kardex Compact Buffer Consolidation Buffer handles industry standard totes in the dimensions 600 x 400 mm and 640 x 440 mm. Kardex recommends using the especially for the Kardex Compact Buffer developed Kardex VBM Boxes. They flexibly divide and quickly adapt at any time using transverse and longitudinal dividers. These totes provide automated material flow through sequential just-in-time retrieval of customer orders. Additionally, they easily connect with conveyor systems or automated guided vehicles (AGVs).

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# Order consolidation process

The consolidation buffer system is comprised of a Kardex Compact Buffer with Kardex JMIF software. The system can work as a semi-automated or fully automated process.

## Semi-automated consolidation buffer

- Individual items picked from multiple zones within a facility arrive at consolidation in reusable totes via conveyor or pick cart.
- Upon arrival at consolidation, an operator scans the tote's license plate. Directed by the Kardex JMIF software, the operator moves the tote into the Kardex Compact Buffer and confirms placement by pressing the confirmation button.
- The operator then turns back to the consolidation arrival point to scan and move the next partial order tote into a location within the Kardex Compact Buffer as directed by the Kardex JMIF software.
- The process continues and the consolidation buffer system holds multiple partial orders until remaining items arrive. Directed by the Kardex JMIF software, multiple totes for one order are stored in close proximity within the Kardex Compact Buffer for easy retrieval.
- When all items for the order are stored in the consolidation buffer, the host system directs Kardex JMIF when to retrieve the order. The Kardex JMIF software retrieves and delivers the partial order totes in a sequence as directed by the host system to the operator. The operator retrieves the partial order totes and delivers them to packing and shipping.

## Fully automated order consolidation

A fully automated order consolidation solution is much the same process but requires no manual intervention. Using a standard conveyor connection, partial order totes flow into and out of the Kardex Compact Buffer seamlessly.

- Individual items are picked into reusable totes within multiple zones in a facility. These partial orders travel directly from the pick zone to a consolidation area via conveyor or AGV technology.
- Upon arrival at consolidation, a mounted scanner is used to identify the partial order tote by reading its license plate.
- The Kardex JMIF software asks the Kardex Compact Buffer to temporarily store the partial order tote in the best possible place (optimized storage) and the tote is routed directly to the storage location within the unit without any human intervention.
- When all items for the order are stored in the consolidation buffer, the host system directs Kardex JMIF when to retrieve the order. The Kardex JMIF software retrieves and automatically delivers the partial order totes via conveyor in a sequence as directed by the host system to packing and shipping.

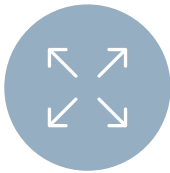


# Benefits of the consolidation buffer

Implementing a consolidation buffer solution to manage the order consolidation process will increase productivity, save space, support packaging and alleviate shipping bottlenecks.



Increased productivity due to reduced searching, waiting or idle time



High storage capacity in a small footprint



Sequenced delivery of order totes support packaging requirements (such as heavy items packaged first)



Just-in-time delivery of orders to streamline packaging/shipping and alleviate congestion and bottlenecks



Intuitive connection to customer host systems and transparent inventory management