



Boost productivity, reduce labor in the

Transfer of Low-Viscosity Liquids

from shipping totes and liners

THE CHALLENGE OF DISPENSING LOW-VISCOSITY LIQUIDS

Low-viscosity liquids (less than 20,000 centipoise) constitute a large percentage of liquid products manufactured and consumed worldwide. Key markets in this category include food and beverage (oils, syrups and sauces), personal-care products (lotions, shampoos and liquid soaps) and chemicals/industrial liquids (inks, paints and coatings). While the markets vary, the shipping and transfer of these liquids is often accomplished through the use of rigid intermediate bulk containers (RIBCs) combined with disposable liquid liners. The RIBC and liner systems (typically 275 to 330 gallons in capacity) effectively contain the bulk liquids, providing transportability, while protecting the liquid product from outside contamination.



BEYOND BOUNDARIES™

While these liner systems provide many advantages, they are often difficult and unwieldy to manipulate during the filling

and dispensing of their contents. The result is frequent excessive handling by production operators as well as excess residual liquid inside the liner, which can't be retrieved during dispensing.

Dispensing operations are usually conducted in proximity to product filling lines, where the bulk liquid product is pumped from the RIBC liquid liners to manual or automated filling equipment. On these filling lines, the liquid product is dispensed into end-use packaging (tubes, bottles, jars and pouches). Liquid is usually pumped from the RIBC liners to the filling machines either with a floor-level drain in the RIBC or with the use of a positive displacement pump (screw or piston-type) housed in an extended tube that is inserted into the liner through a small gland fitment on the liner top.

It is during this dispensing process that production operators must often intervene by manually manipulating (lifting, pulling and tugging) the liners to prompt the liquid to flow toward the point of discharge. This common practice of liner manipulation poses significant ergonomic and safety risks to the operator, not to mention the excessive labor costs incurred to continually manage the dispensing process to ensure proper drainage of the liquid contents of the RIBC liner.

Furthermore, operators often resort to unsafe practices to improve gravity flow of the liquids during dispensing, such as inserting a pallet jack under the RIBC and tilting the RIBC toward the drainage port. Such practices pose serious safety risks to workers.

Lastly, despite the manual liner manipulation that may accompany liquid product dispensing, considerable residual liquid often remains in the liner, which is difficult or impossible to retrieve. Pockets of liquid often become trapped in the pleats and folds of the liner, resulting in undispensed product waste impacting profitability, while also posing a threat to the waste stream during disposal.

This white paper will compare the attributes of conventional form-fit liquid liners and air-assist liners with the new Xtrakt® LV system from ILC Dover.

THE DIFFERENCES IN LINER SYSTEMS

Conventional form-fit liquid liner systems for use in RIBCs are designed to closely conform to the interior cubical shape of the RIBC, but provide no mechanism to assist in gravity drainage of the liner contents.

Air-assist liners incorporate integrated air bladders, which when inflated, compress against the inner walls of the RIBC while applying inconsistent force against the liquid product contained in the liner. The bladders are positioned to guide the liquid product toward the liner discharge (drain) port in a repeatable way, with the goal of reducing residual product and minimizing the amount of manual manipulation often required with conventional form-fit liquid liners.

While air-assist technology is an improvement over the standard form-fit liner system in terms of reduced manipulation, these liners still require some level of handling during processing (i.e., lifting/pulling/situating of air bladders) to drain properly. Air-assist liners also require puncturing of the air bladders with a knife or other sharp object at the end of processing to remove the dispensed liner from the RIBC. Moreover, the residual product remaining in air-assist liners can be excessive due to the fact that liquid product can be trapped in pleats and folds often propagated near the liner-bladder intersections.

THE XTRAKT LV SYSTEM: HANDS-FREE, COMPLETE DISPENSE

The patent-pending Xtrakt LV system from ILC Dover has been developed for more efficient dispensing of low-viscosity bulk liquids, with less residual product. It features a form-fit liner system with an integrated sling system that automatically lifts and tilts the liner during dispensing when connected to the Xtrakt LV tensioning cart. The cart is 100% pneumatically operated, applying sufficient tension on the liner system to tilt the liner contents toward the bottom discharge port at an angle sufficient to effectively drain the entire contents of the liner.



HOW THE XTRAKT LV SYSTEM WORKS

THE XTRAKT LV SYSTEM CONSISTS OF:

- A form-fit liquid liner with an integrated film-lifting sling
- A mobile cart system with pneumatic controls that provide constant tensioning force on the liquid liner

FILLING

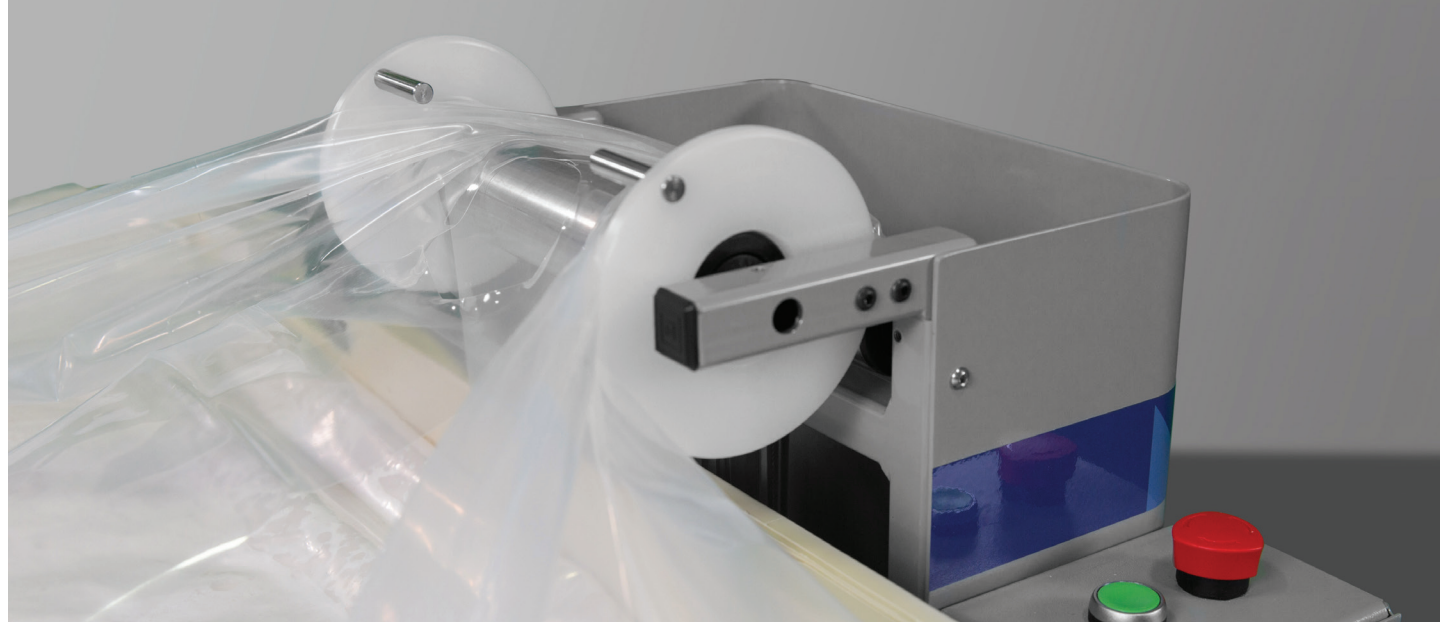
The Xtrakt LV liner is easily filled by connecting the filling hose to the top fill fitment of the liner, then placing the folded liner onto the RIBC floor. The liner discharge fitment is then secured to the RIBC drain using an integrated snap-on gland adapter provided with each liner. Once the filling starts, the liner automatically deploys, filling evenly from the bottom of the RIBC to the top, completely hands-free.

DISPENSING

When ready for dispensing, the Xtrakt LV liner system is adapted to bottom-discharge pumping apparatus typically found in most liquid filling line production facilities. The liner is typically mated to the pump using sanitary connections made at floor level. The Xtrakt LV cart is then pushed into position against the RIBC wall, and the liner-lifting sling is connected to the tensioning cable system located on the cart.

With the push of a button, the Xtrakt LV cart applies constant lifting tension to the liner sling, starting with a fully filled liner. As the liquid in the liner is dispensed from the RIBC, the liner is slowly lifted at an angle that promotes gravity flow of the liquid to the drain. Furthermore, at the end of the dispensing process, the tensioning system on the cart folds the outer edges and corners of the liner to ensure complete drainage, while also tensioning the top of the liner to prevent obstruction or clogging at the point of discharge.

Thus, the entire dispensing process is hands-free, with the liner contents completely draining through the dispense port. The elimination of operator intervention during the dispensing process by using the Xtrakt LV system significantly reduces the potential for back, shoulder and repetitive-stress injuries. Additionally, the Xtrakt LV system provides repeatable dispensing of low-viscosity liquids due to the consistent motion, angle and positioning of the Xtrakt LV liner during operation.



LIQUID LINER COMPARISON

Derived from the Xtrakt high-viscosity dispensing system, the new patent-pending Xtrakt LV system provides a completely novel approach to low-viscosity dispensing of liquid from RIBCs. The Xtrakt LV system is designed to eliminate the potential for trapped residual liquid during dispensing commonly found with conventional form-fit or air-assist liner systems.

The Xtrakt LV system routinely provides up to a 30% reduction in residual product remaining in the liner at the end of dispensing, compared to conventional air-assist liner systems. Additionally, air-assist systems are prone to random and poorly positioned bladder systems when inflated inside the RIBC, resulting in inconsistent amounts of residual product remaining in the liner at the end of dispensing. The Xtrakt LV system provides extremely predictable residual product results, since the system deploys, lifts and drains each liner the same way during each dispensing operation.

	XTRAKT LV LINER	CONVENTIONAL LIQUID LINER	AIR-ASSIST LINER
Residual (with no manipulation)*	Less than .05%	1% to 3%	1%
Marketed viscosity levels (cps)	1 to 20,000	1 to 20,000	20,000 to 150,000
Manipulation level during dispense	None	Very high	Medium

*Based on internal testing of 20k cps shampoo without manipulation of the liner

ECONOMICS FAVOR THE XTRAKT LV SYSTEM

Compared to traditional liquid and air-assist liners, the Xtrakt LV system offers significant time and cost savings through:



EFFICIENCY

The hands-free nature of the Xtrakt LV system enables employees to perform other tasks while product drains from liners.



IMPROVED SAFETY

The Xtrakt LV system is designed for hands-free liner filling and dispensing. The system allows totally unaided lifting and dispensing of the liner, and routinely dispenses to completion without any operator intervention.



BETTER ERGONOMICS, FEWER INJURIES


Eliminating worker intervention to manipulate the Xtrakt LV liner system eliminates the ergonomic encumbrance and potential for injury found with other form-fit or air-assist liners systems.



REDUCED RESIDUAL LOSS

The repeatable nature of the Xtrakt LV liner's dispensing results in extremely consistent and predictable residual contents at the end of processing, which cuts losses and increases product yields.

To request an evaluation and economic analysis of your particular application and costs, call us at **+1.800.631.9567** or visit our website at **www.ilcdover.com/xtrakt**.



Since 1947, ILC Dover has built a global reputation for out-of-the-box thinking that makes the seemingly impossible possible. Our engineered solutions solve our customers' most complex challenges through the creative and efficient application of flexible materials often integrated with advanced equipment and hardware.

We look beyond the boundaries of convention to help customers see what could be, and discover the extraordinary possibilities within everyday things. We are a diverse company serving many markets. We are dreamers, engineers, scientists and pragmatists — all dedicated to outperforming tradition to better mankind.

We apply our vast knowledge of materials, soft goods, film-based solutions and design to move the world forward, from advancing spacesuits for astronauts to developing solutions for NASA Mars missions to engineering lighter-than-air vehicles here on Earth. We continue to pioneer the use of flexible containment solutions to support advanced pharmaceutical and biopharmaceutical manufacturing, and we're revolutionizing the packaging and extraction of bulk liquids to enhance customer profitability and sustainability.

Additionally, we create quick-deploy systems that protect cities and critical infrastructure from floods, and design and manufacture advanced respirators to protect against a range of chemical and biological threats.

Every day, everything we do brings new solutions to light. Are you ready to take your vision beyond boundaries? *Let's talk.*



One Moonwalker Road
Frederica, DE 19946 USA
+1.302.335.3911
+1.800.631.9567
customer_service@ilcdover.com

www.ilcdover.com