

# Nordson EFD Solutions:

Advanced Fluid Packaging Systems for Fluid Formulators



more info

**Nordson**  
EFD

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## Introduction

*We understand the challenges facing today's fluid formulators, especially in advanced electronics, life science, and automotive assembly markets.*

Your high-tech, high-value assembly fluids manufacture tomorrow's innovative, high-value products. That's why Nordson EFD keeps improving upon its already impeccable production and quality control processes.

We designed our Optimum cartridge and syringe barrel systems with unique elements that bring fluid packaging and dispensing processes to a higher level of precision, repeatability, and reliability. We used Computational Fluid Dynamics software to develop syringe barrels and cartridges that fill quickly and smoothly without turbulence or trapped air.

For you this means faster, more consistent fills in packaging that emphasizes the quality of your product. End users benefit from more consistent, precise dispensing results with virtually no fluid waste.

EFD delivers fluid packaging solutions for tomorrow's advanced manufacturing processes.



*"The quality of the packages that we put our products in matters, and that's why we use EFD syringes and cartridges."*

**- DYMAX CORPORATION**

## Optimum Quality Standards

Nordson EFD adheres to highly controlled manufacturing procedures, maintenance schedules, and quality specifications in the production of Optimum components. We also maintain stringent quality control inspections throughout the entire manufacturing process, including incoming resin inspection before production starts.

All components are produced in our own silicone-free facilities in the USA. No silicone mold-release agents are used in the precision molding process or at any other time during the production of our dispensing components. Optimum components are also certified for industrial use. They are rated to 100 psi (6.9 bar) operating pressure and 100° F (38° C) operating temperature.

All EFD dispensing components are stored in anti-static bags to protect against contamination. Package labels include lot numbers for complete process control and traceability.

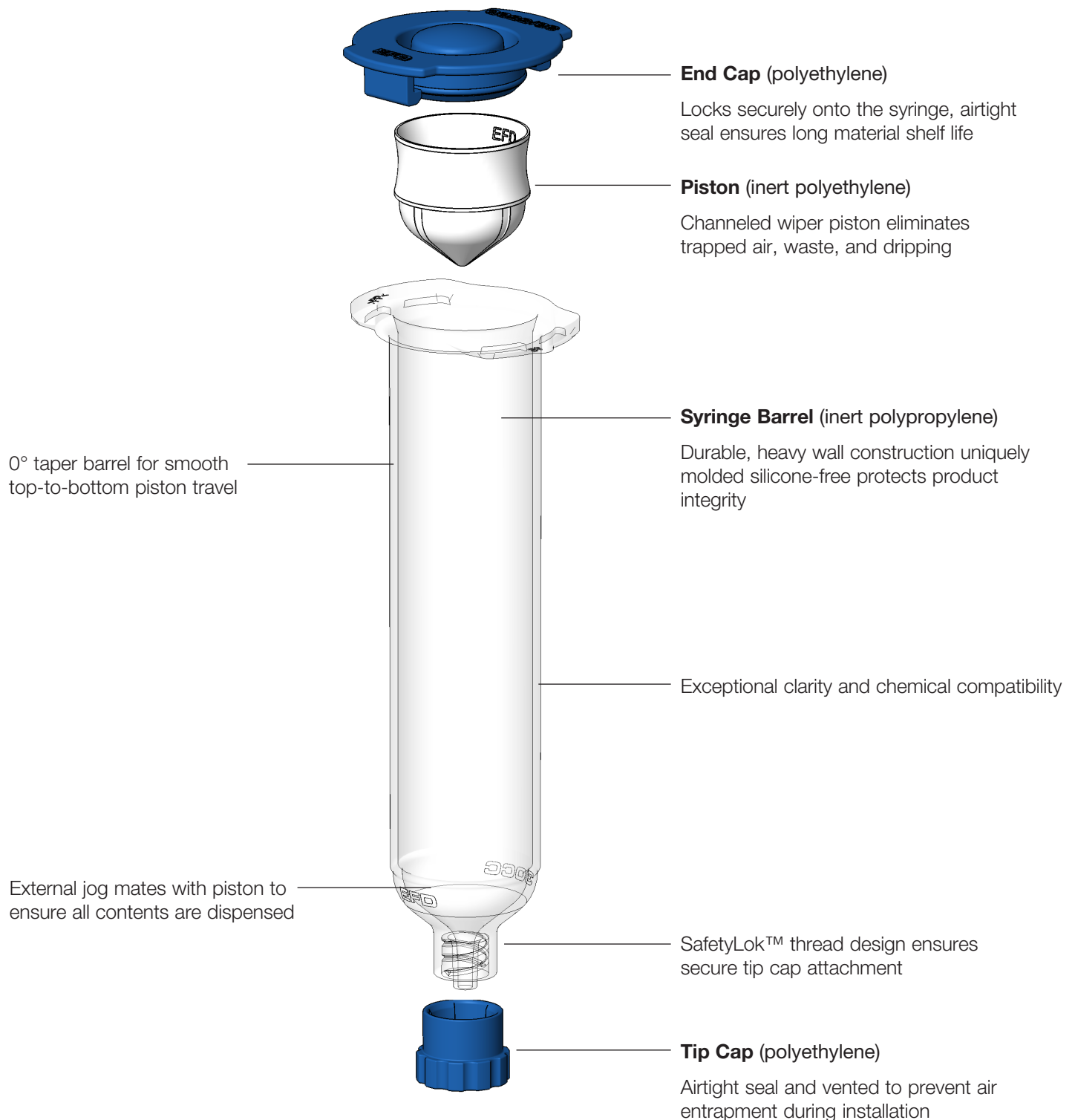
Optimum components are always available in conveniently packaged quantities. Syringe barrels, cartridges, pistons, and caps can be packaged separately, or pre-assembled in any configuration that will help you improve efficiency.



# Syringe Barrel Systems

## Optimum Syringe Barrel Systems

Optimum syringe barrel systems feature our patented, precision-molded Zero Draft™ syringe barrels, SmoothFlow™ pistons, end caps, and tip caps. Each patented component has been designed as part of a complete, integrated system that improves yields and reduces costs by producing the most accurate, repeatable fluid deposits possible.



# Syringe Barrel Systems



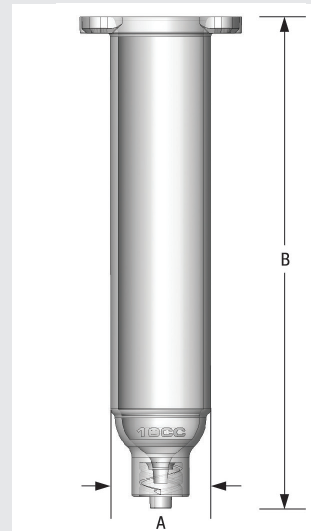
## Optimum Syringe Barrels

Optimum syringe barrels are molded from a proprietary polymer with exceptional strength, clarity and chemical compatibility.

The internal profile ① ensures smooth, unimpeded laminar flow, without turbulence or dead zones that could trap air. The thick dome area ② supports drop strength. A tapered internal luer ③ at the outlet minimizes fluid shear during filling and dispensing.

Optimum syringe barrels are available in clear, UV-blocking amber, and light-blocking black configurations in 3cc, 5cc, 10cc, 30cc, and 55cc capacities.

The 70cc syringe barrels are our largest size. They allow production lines to run longer with fewer fluid changeovers, reducing downtime. These barrels are ideal for electronic applications such as underfill, potting, and conformal coating.



### OPTIMUM SYRINGE BARRELS

Size	MOST FLUIDS Clear Barrels	UV/Light Block* Amber Barrels	Opaque Black	QTY
3cc	7012073	7012084	7012090	(1000)
5cc	7012095	7012102	7012108	(1000)
10cc	7012113	7012123	7012129	(1000)
30cc	7012135	7012144	7012148	(1000)
55cc	7012154	7012159	7012163	(500)
70cc	7365016	7364912	—	(500)

Note: Sets are available in clear for most fluids; transparent amber for UV- and light-sensitive materials (\*less than 12% visible light from 550 nm or less); and opaque black for complete light blockage.

### BARREL DIMENSIONS

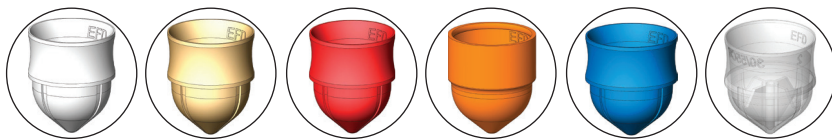
Size	A	B
3cc	11.1 mm (0.44")	73.0 mm (2.88")
5cc	14.3 mm (0.56")	68.3 mm (2.69")
10cc	19.1 mm (0.75")	88.9 mm (3.50")
30cc	25.4 mm (1.0")	115.9 mm (4.56")
55cc	25.4 mm (1.0")	173.0 mm (6.81")
70cc	25.4 mm (1.0")	213.1 mm (8.39")

Note: This data is typical and does not constitute a specification.



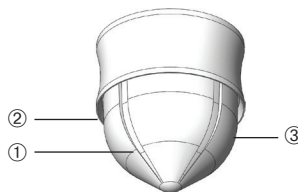
[www.nordsonefd.com/1kOptimum](http://www.nordsonefd.com/1kOptimum)

# Syringe Barrel Systems



Molded from inert polyethylene, these patented SmoothFlow pistons are inserted into syringe barrels to prevent air tunneling of viscous fluids and to provide easier, safer handling of low viscosity liquids.

Unique pistons have precision molded channels ① that prevent air entrapment, along with a smooth radius ② that reduces fluid shear during filling. The precise geometry of the piston ③ mates perfectly with the precise geometry of the barrel to eliminate material waste at the end of the dispense.



**Note:** Syringe barrels with pre-installed pistons are available for bottom filling.

OPTIMUM PISTONS							
Size	White SmoothFlow	Beige SmoothFlow	Red SmoothFlow	Orange Flatwall	Blue LV Barrier	Clear Flex	QTY
3cc	7012167	7012171	7012169	7012322	7014603	7362321	(1000)
5cc	7012173	7012177	7012175	7012324	–	7362318	(1000)
10cc	7012179	7012183	7012181	7012326	7014601	7029356	(1000)
30/55/70cc	7012185	7012189	7012187	7012328	7014599	7029552	(1000)

\*Clear Flex pistons are molded from LDPE (low-density polyethylene).

## Optimum Pistons

**Available in six styles:**

**White** SmoothFlow wiper pistons are used with most fluids.

**Beige** SmoothFlow pistons are loose-fitting and used with air-entrapped fluids.

**Red** SmoothFlow pistons are tight-fitting and used with mechanical dispensers.

**Orange** Flat-walled pistons have a looser fit to prevent “bouncing” when dispensing stringy, air-entrapped fluids.

**Blue** LV Barrier pistons are for cyanoacrylates and very low viscosity fluids.

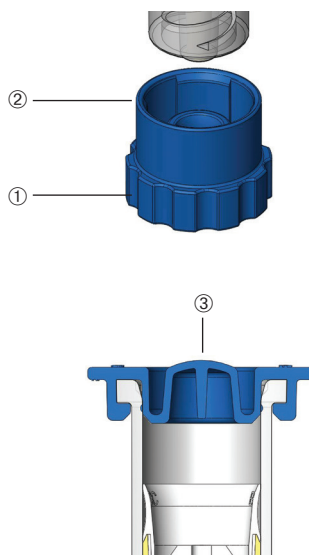
**Clear** Flex pistons are flexible and reduce “bouncing” in viscous fluids while maintaining excellent wall-wiping.



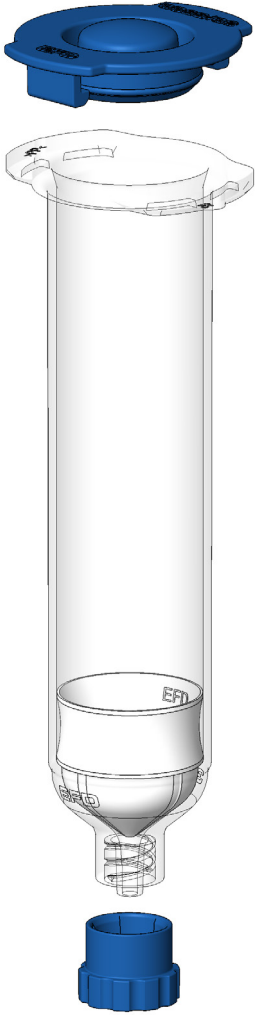
Tip caps have a large knurled gripping surface ① for easy installation and removal, and are vented ② to keep air from entering the fluid. End caps feature a convenient pushbutton ③ that produces a snug, air-tight seal.

**Note:** Syringe barrels with pre-installed tip caps are available for top filling.

OPTIMUM END AND TIP CAPS			
Snap-on end caps provide tight seal.			
Size	Blue	Green	QTY
3cc	7012191	–	(1000)
5cc	7012193	7012769	(1000)
10cc	7012195	7012768	(1000)
30/55/70cc	7012197	7012767	(1000)
Twist-on tip cap seals syringe barrel.			
Size	Blue	Green	QTY
One size	7012199	7012201	(1000)



## Optimum End and Tip Caps



Nordson EFD syringe barrel kits provide the most convenient and reliable way to package fluids. Each kit contains 500 or 1,000 complete sets of syringes, pistons, tip caps, and end caps. White SmoothFlow wiper pistons and blue end and tip caps are standard. Other colors are available.

The kit box is divided into four sections. Each section contains 250 complete sets, packaged in anti-static bags. Individual bags are sealed with tamper-evident seals.

- Simplify handling and control distribution to filling stations
- Reduce waste and loss of individual components — EFD kits are organized in boxed sets
- Easily manage inventory and order placement
- Anti-static bags protect components from dust and other contaminants
- Easily track parts by lot numbers that are placed on each component bag

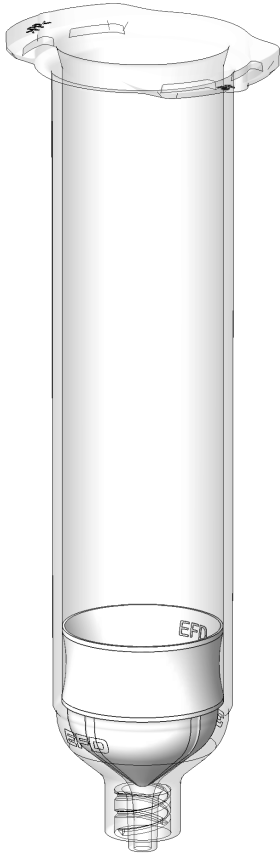
OPTIMUM SYRINGE BARREL KITS				
Size	MOST FLUIDS Clear Barrels	UV/Light Block Amber Barrels	Opaque Black Barrels	QTY
3cc	7012078	7012087	7012092	(1000)
5cc	7012100	7012105	7012110	(1000)
10cc	7012120	7012124	7012132	(1000)
30cc	7012141	7013612	7012151	(1000)
55cc	7012157	7012161	7013610	(500)

**Customized kits are available upon requests.** Contact EFD.



# Syringe Barrel Systems

## Optimum Syringe Barrels with Pre-Installed Pistons



The option to purchase pre-installed pistons for clear, amber, and black syringe barrels provides considerable value. Pre-installed pistons save labor and prevent dust or debris from entering the syringe under the piston.

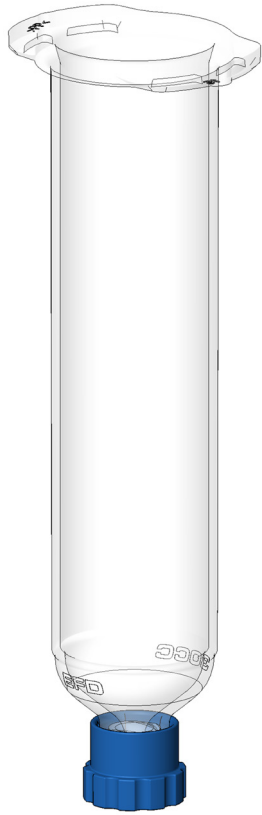
Each kit contains 500 or 1000 sets with the piston pre-installed in the syringe all the way to the bottom for added convenience. This eliminates process time by allowing operators to bottom-fill with less chance of air or contaminants entering the fluid during packaging.

**OPTIMUM SYRINGE BARREL / PISTON KITS**

Size	MOST FLUIDS Clear Barrels /Piston Kits	UV/Light Block Amber Barrels /Piston Kits	Opaque Black Barrels /Piston Kits	QTY
3cc	7012080	–	7012093	(1000)
5cc	7013613	–	–	(1000)
10cc	7012121	7012125	7012133	(1000)
30cc	7012142	–	7012152	(1000)
55cc	7013611	–	–	(500)

White SmoothFlow wiper pistons are standard. Other colors are available.

# Syringe Barrel Systems



The option to purchase pre-installed tip caps for clear, amber, and black syringe barrels provides considerable value for fluid formulators who top-fill. With the tip cap pre-installed with the right amount of torque, operators receive syringe barrels ready to be filled. It eliminates a step.

## Optimum Syringe Barrels with Pre-Installed Tip Caps

OPTIMUM SYRINGE BARREL / TIP CAP KITS				
Size	MOST FLUIDS Clear Barrels /Tip Cap Kits	UV/Light Block Amber Barrels /Tip Cap Kits	Opaque Black Barrels /Tip Cap Kits	QTY
3cc	7013811	7361972	–	(1000)
5cc	7013810	7026760	7015971	(1000)
10cc	7013809	7015349	7015971	(1000)
30cc	7013808	7015350	7015348	(1000)
55cc	7013807	–	–	(500)

Blue tip caps are standard. Other colors are available.



Nordson EFD's disposable Unity™ HiTemp™ syringe barrels provide a cost-effective alternative to syringes commonly used in pneumatic dispensing of hot melt adhesives. The barrels are compatible with Nordson's Unity IC Series and Unity PURJet™ 30 dispensing systems and other standard industry hot melt dispensers.

### Features and Benefits

- Proprietary materials maintain integrity at high temperatures for up to eight hours
- Disposability reduces downtime and maintenance costs with better cost of ownership compared to standard metal syringes
- Reliable, repeatable hot melt adhesive dispensing at up to 180° C

#### UNITY SYRINGE BARREL

Size	HiTemp (125° C)	Extreme HiTemp (180° C)	HiTemp Tapered	Qty/Box
30cc	7360474	–	7363795	1000
30cc	–	7360472	–	500

#### END AND TIP CAPS

Size	Tip Cap White Extreme HiTemp	–	End Cap Blue Unity	Qty/Box
30cc	7360317	–	7363886	1000

#### UNITY ADAPTER ASSEMBLY

Size	0.9 m (3 ft) Hose	1.8 m (6 ft) Hose	Qty/Box
30cc	7362348	7362347	1

Adapter assemblies sold individually.



Nordson EFD Optimum Class VI syringe barrels and dispensing components are made from 100% United States Pharmacopeia (USP) Class VI virgin resin to simplify process validation for medical manufacturers.

**Note:** These components are not manufactured in a clean room environment.

### Features and Benefits

- Enhanced biocompatibility for medical use
- Ease of process validation for regulatory approvals
- Market-leading traceability for documentation requirements
- Ability to sterilize to ensure a bacteria-free product

CLASS VI COMPONENTS				
Size	Class VI Clear Barrels	Class VI Clear Pistons	Class VI Clear End Caps	Qty/ Box
3cc	7364592	7364604	7364610	1000
5cc	7364593	7364605	7364611	1000
10cc	7362189	7362151	7364612	1000
30cc	7362190	7362152	7364613	1000
55cc	7362190	7362152	7364613	1000
CLASS VI TIP CAPS				
–	7364591	–	–	1000

Optimum Class VI pistons are designed for use with Class VI barrels only.  
1,000 quantity part numbers come double-bagged to reduce the risk of contamination in clean rooms.



Nordson EFD's Optimum ECO dispensing components are manufactured from sustainably-sourced polyethylene and feature a bio-based content rating of 94% to 96%. This eco-friendly system helps meet corporate sustainability initiatives by using raw resins derived from sugarcane stock versus byproducts of the petrochemical industry.

### Features and Benefits

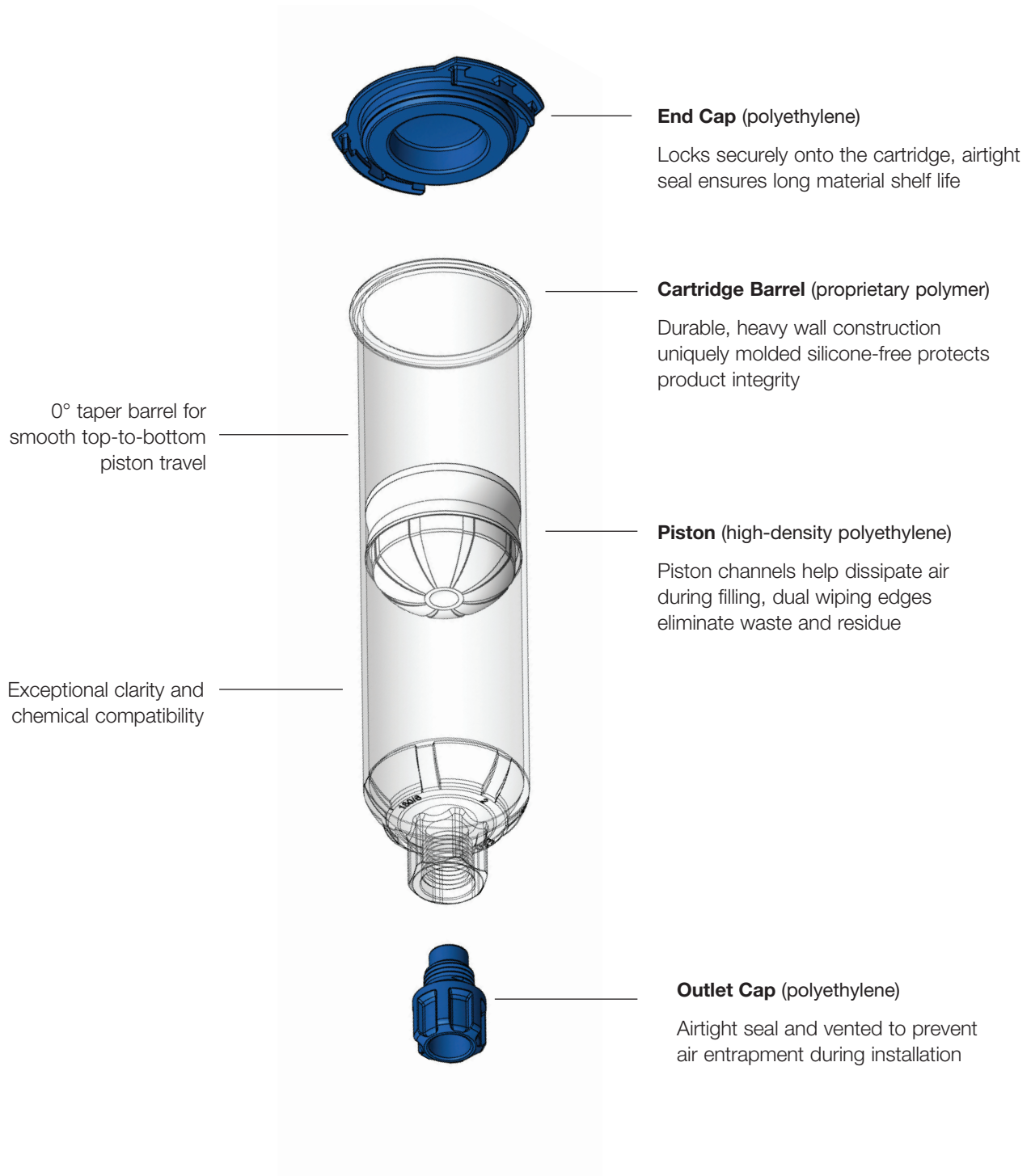
- Eco-friendly components are made from renewable resources
- Minimize consumption and greenhouse gases, reducing carbon footprint
- Barrel transparency allows operator to see fluid level
- Superior freezing properties for premixed fluids compared to standard polypropylene barrels

ECO COMPONENTS				
Size	ECO Natural Barrels	ECO Natural Pistons	ECO Natural End Caps	Qty/Box
3cc	7364681	7364695	7364703	1000
5cc	7364682	7364696	7364704	1000
10cc	7364683	7364697	7364705	1000
30cc	7364684	7364698	7364706	1000
55cc	7364685*	7364698	7364706	1000
ECO TIP CAPS				
–	7364680	–	–	1000

\*Includes 500 syringe barrels.  
Optimum ECO pistons are designed for use with ECO barrels only.

## Optimum Cartridge Systems

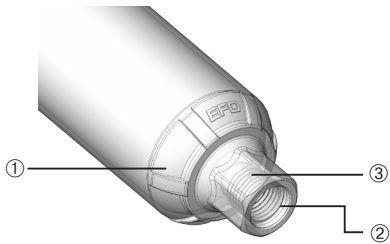
Optimum cartridge systems feature our patented, precision-molded Zero Draft™ cartridges, pistons, end caps, and outlet caps. Each component has been designed as part of a complete, integrated system that improves yields and reduces costs by producing the most accurate, repeatable fluid deposits possible.



Optimum cartridges are molded from a strong, clear FDA- and RoHS-compliant polymer, with ZeroDraft walls that maintain consistent internal diameters for smooth piston travel.

Strong molded ribs ① around the cartridge outlet prevent splitting when installing fittings or nozzles. Precision threads and a tapered counterbore ② at the 1/4" NPT outlet ensure a secure, leakproof seal during packaging and shipment. A sturdy hex ③ molded around the outlet fits into a matching orifice on the cartridge retainer for fast, tool-free installation of fittings and nozzles.

Optimum cartridges are available in clear, UV-blocking amber, light-blocking black, and white configurations. Capacities include 2.5 fl oz (75 ml), 6 fl oz (180 ml), 12 fl oz (360 ml), 20 fl oz (600 ml), and 32 fl oz (960 ml).

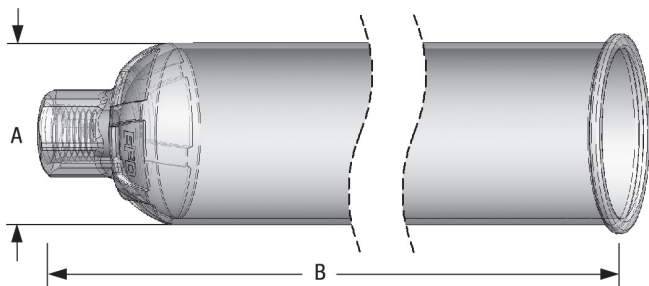


OPTIMUM CARTRIDGES					
Size	Clear	White	Amber	Black	QTY
2.5 fl oz (75 ml)	7012392	—	7012393	7012394	250
6 fl oz (180 ml)	7012401	7026679	7012402	7012403	250
12 fl oz (360 ml)	7012410	7028389	7012411	7012412	250
20 fl oz (600 ml)	7012417	7028362	7012737	7013879	100
32 fl oz (960 ml)	7014092	7028393	7014093	7014095	100

Sets are available in clear for most fluids; transparent amber for UV and light-sensitive materials (\*less than 12% visible light from 550 nm or less); opaque black for complete light blockage; and white for better frozen temperature resistance.

CARTRIDGE DIMENSIONS			
Size	A	B	
2.5 fl oz (75 ml)	43.2 mm (1.70")	98.8 mm	(3.89")
6 fl oz (180 ml)	43.2 mm (1.70")	181.5 mm	(7.15")
12 fl oz (360 ml)	43.2 mm (1.70")	314.3 mm	(12.38")
20 fl oz (600 ml)	68.3 mm (2.69")	249.7 mm	(9.83")
32 fl oz (960 ml)	68.3 mm (2.69")	346.4 mm	(13.69")

Note: This data is typical and does not constitute a specification.

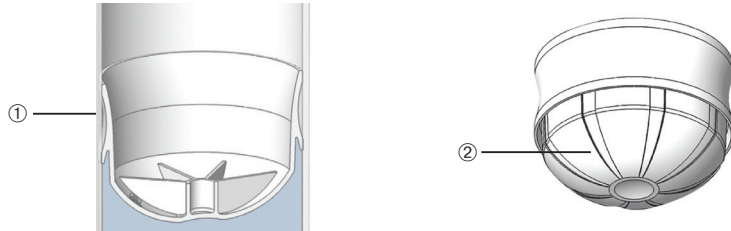


# Cartridge Systems

Optimum cartridge pistons are precision molded from high-density polyethylene. Their consistent fit ① perfectly matches cartridge walls to prevent blow-by and leakage during filling and shipment.

Unique dome shape and recessed channels ② on the bottom of the piston help dissipate air during the filling process, reducing or eliminating the need to centrifuge.

**Note:** Cartridges with pre-installed pistons are available for bottom filling.



## OPTIMUM CARTRIDGE PISTONS

Part #	Size	Color	QTY
7012420	2.5, 6, 12 fl oz (75, 180, 360 ml)	White	250
7362086	2.5, 6, 12 fl oz (75, 180, 360 ml)	Blue	250
7012422	20, 32 fl oz (600, 960 ml)	White	100

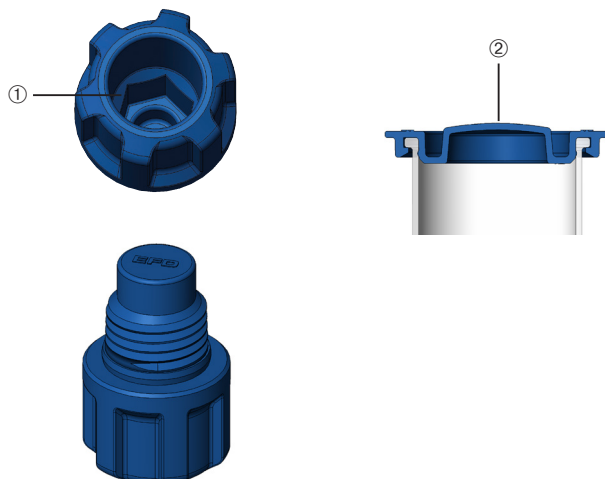
Blue pistons have a smaller leading edge wiper. The looser fit reduces dripping or stringing during the dispensing of very thick fluids and the color makes it easy to see the piston position inside the cartridge.

## Optimum Cartridge Pistons

Threaded, self-venting outlet caps keep air from being introduced into the fluid and have a hex recess ① for automated installation.

End caps have a flexible pushbutton ② that allows air to escape when snapped onto the cartridge and ensures an air-tight seal to keep material fresh and prevent leaks during shipment.

**Note:** Cartridges with pre-installed outlet caps are available for top filling.



## OPTIMUM CARTRIDGE END CAPS

Part #	Size	Color	QTY
7012424	2.5, 6, 12 fl oz (75, 180, 360 ml)	Blue	250
7012426	20, 32 fl oz (600, 960 ml)	Blue	100

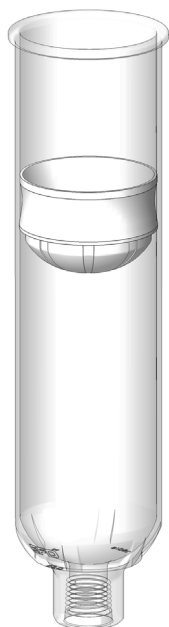
## OPTIMUM CARTRIDGE OUTLET CAPS

Part #	Size	Color	QTY
7012428	All	Blue	250

## Optimum Cartridge End/Outlet Caps



## Optimum Cartridges with Pre-Installed Pistons



The option to purchase pre-installed pistons provides considerable value. Pre-installed pistons save labor and prevent dust or debris from entering the cartridge under the piston when bottom filling.

Each kit contains 250 or 100 sets with the piston pre-installed in the cartridge all the way to the bottom for added convenience.

OPTIMUM CARTRIDGES / PISTON KITS				
Size	Clear /Piston	White /Piston	Amber /Piston	QTY
2.5 fl oz (75 ml)	7012395	–	–	(250)
6 fl oz (180 ml)	7012404	7029561	–	(250)
12 fl oz (360 ml)	7012413	–	–	(250)
20 fl oz (600 ml)	7012418	7029562	7012738	(250)
32 fl oz (960 ml)	7014096	–	–	(100)

White pistons are standard. Customized kits are available on request. Contact EFD.

# Cartridge Systems



## Optimum Cartridge Retainer Systems

Optimum cartridge retainers are molded from high-tensile, clarified resin that permits easy visual monitoring of fluid levels. Large textured ribs provide an ergonomic grip for cap installation.

Retainer caps feature locking tabs that snap securely into detents on the retainer body with an audible click. A push-in air line connector on top of the cap eliminates the need for bayonet connectors.

*"EFD is our favorite vendor to deal with – fast, professional, and top notch products."*  
– Contract Packager

RETAINER SYSTEMS			
Retainer Systems*		Retainer Bodies	
Part #	Size	Part #	Size
7012430	2.5 fl oz (75 ml)	7013857	2.5 fl oz (75 ml)
7012433	6 fl oz (180 ml)	7013858	6 fl oz (180 ml)
7012436	12 fl oz (360 ml)	7013859	12 fl oz (360 ml)
7012439	20 fl oz (600 ml)	7013860	20 fl oz (600 ml)
7013899	32 fl oz (960 ml)	7013900	32 fl oz (960 ml)
Retainer Cap Assemblies			
Part #	Size		
7012531	2.5, 6, 12 fl oz (75, 180, 360 ml)		
7012532	20, 32 fl oz (600, 960 ml)		
Retainer Cap O-ring Kits (2/pkg.)			
Part #	Material	Size	
7014373	Buna	2.5, 6, 12 fl oz (75, 180, 360 ml)	
7026914	EPR	2.5, 6, 12 fl oz (75, 180, 360 ml)	
7014372	Buna	20, 32 fl oz (600, 960 ml)	
7026916	EPR	20, 32 fl oz (600, 960 ml)	
7026917	Viton	20, 32 fl oz (600, 960 ml)	

\*Note: For retainer systems with 100 psi and 15 psi regulators, contact EFD. The retainer cap O-rings are available in three different materials. Please select the one most compatible with your fluid. Standard O-ring material is Buna.

## Two-Component (2K) Dispensing Components



Nordson EFD's 2K product line includes static mixers, cartridge systems, and meter mix valves for reactive two-component adhesives & sealants such as epoxies, urethanes, silicones, and acrylics.

Our ISO 9001:2015 certified mixing solutions include two mixer geometries: Spiral and Square. Using proprietary flow simulation technology to improve the material flow path design and element wedges, the square OptiMixer™ Series 480 delivers better mix quality in a 20% shorter length, without impacting other performance factors.

Two-component cartridge systems range from 1.0 to 1500mL capacities. The breakthrough, two-component u-TAH® Universal Cartridge looks identical to standard caulking cartridges, yet delivers the most effective, highest-quality dispensing in the industry.

It is the only cartridge system that maintains accurate ratio control and fits into existing 1/10th gallon or 310mL caulking guns. The u-TAH Universal eliminates the need for end users to purchase expensive special-purpose dispensing guns.

Nordson EFD also offers disposable dual syringes and static mixers that provide controlled mixing and placement of two-part epoxies, adhesives, sealants, gels, pastes, and compounds used in a range of DIY home improvement, automotive, health and beauty, and dental applications.

Contact EFD at 800-556-3484 or [info@nordsonefd.com](mailto:info@nordsonefd.com) or visit our website at [nordsonefd.com/2Ksystems](http://nordsonefd.com/2Ksystems) for more information. For part numbers visit our [2K Product Brochure](#).

# Filling Systems



EFD filling systems provide a fast, neat and easy way to transfer greases, silicones, and other non-pourable fluids from cartridges and bulk containers into 3cc, 5cc, 10cc, 30cc, 55cc, and 70cc syringe barrels.

Manual filling systems are a cost-effective way to eliminate trips to the refilling station and keep production lines running smoothly.

Barrel filling stations are available in sizes 2.5 fl oz, 6 fl oz, 12 fl oz, 20 fl oz, and 32 fl oz (75 ml, 180 ml, 360 ml, 600 ml, and 960 ml) cartridges.

## Features and Benefits

- See-through design allows maximum amount of material usage per cartridge
- Fast and accurate filling
- Accommodates 3cc to 70cc syringes
- Small footprint allows easy positioning of multiple units
- Prefilling syringes increases productivity and reduces labor costs

## Atlas Syringe Filling Systems

### 7022446 922BL Filling System

2.5 fl oz (75 ml) cartridge. Comes complete with 0-100 psi (0-7.0 bar) regulator and gauge, retainer and cap assembly with toggle switch, fittings, stand, cartridge with plunger and 5cc, 10cc, and 30/55/70cc syringe barrel fill level plugs.

### 7022447 926BL Filling System

6 fl oz (180 ml) cartridge. Ships with the same parts as the 922BL.

### 7022445 920BL Filling System

12 fl oz (360 ml) cartridge. Ships with the same parts as the 922BL.

### 7013568 Filling System

20 fl oz (600 ml) cartridge. Ships with the same parts as the 922BL.

### 7013901 Filling System

32 fl oz (960 ml) cartridge. Ships with the same parts as the 922BL.



## 1/10 Gallon Caulking Tube

Filling systems make it simple to transfer silicones and other materials supplied in 1/10 gal cartridges to 3cc, 5cc, 10cc, 30cc, 55cc, or 70cc syringe barrels without waste, mess or air bubbles.

### 7022452 940BL 1/10 Gallon Caulking Tube

Comes complete with 0-60 psi (0-4.1 bar) regulator and gauge, retainer and cap assembly with toggle switch, fittings, stand, and 3cc, 5cc, 10cc, and 30/55/70cc size syringe barrel fill level plugs.

Choosing and implementing the best possible fluid packaging and dispensing solutions starts with access to the best possible resources. Here are some to get you started:



## Application Videos

Visit our Video Gallery to access 150+ application, how-to, and product videos. See EFD solutions in action.

**Watch Videos:** [videos.nordsonefd.com](https://www.nordsonefd.com/videos)



## What Our Customers Say

Find out how Nordson EFD helps manufacturers improve their processes every day — see what our customers have to say.

**Our Customers Know Best:** [www.nordsonefd.com/Testimonials](https://www.nordsonefd.com/Testimonials)



## Expert Recommendations

Knowledgeable Nordson EFD fluid application specialists have, on average, more than 10 years of experience helping customers find the right solutions.

**Request Expert Advice:** [www.nordsonefd.com/Advice](https://www.nordsonefd.com/Advice)

**Follow our Blog:** [www.nordsonefd.com/Blog](https://www.nordsonefd.com/Blog)



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