



# SaniForce® 2.0

## A Complete Sanitary Pump Line



*protect your* **PROCESS**

Diaphragm Pumps | High Sanitation | Piston Pumps | Drum Pumps | Drum Unloaders

PROVEN QUALITY. LEADING TECHNOLOGY.

# CLEANLINESS SAFETY

## SaniForce Solutions

### Graco's Complete Line of Sanitary Pumps

*protect your* **PROCESS**

The new SaniForce line saves you **time and money** by pumping the most difficult materials – quickly and safely!

#### SaniForce Equipment:

- Air-operated double diaphragm pumps
- Electric-operated double diaphragm pumps
- Electric-operated drum pumps
- Piston transfer pumps
- Drum and bin unloaders



|                               | 515                         | 1040                        | 1040e                         | 1590  | 2150                        |
|-------------------------------|-----------------------------|-----------------------------|-------------------------------|---|-----------------------------|
| <b>Max Flow Rate</b>          | Up to 15 gpm (57 lpm)       | Up to 40 gpm (151 lpm)      | Up to 35 gpm (132 lpm)        | Up to 100 gpm (379 lpm)                               | Up to 150 gpm (568 lpm)     |
| <b>Max Fluid Pressure</b>     | 100 psi<br>(7 bar, 0.7 MPa) | 120 psi<br>(8 bar, 0.8 MPa) | 70 psi<br>(4.8 bar, 0.48 MPa) | 120 psi<br>(8 bar, 0.8 MPa)                           | 120 psi<br>(8 bar, 0.8 MPa) |
| <b>Max Pumpable Solids</b>    | 3/32 in (2.38 mm)           | 1/8 in (3.2 mm)             | 1/8 in (3.2 mm)               | Ball - 3/16 in (4.8 mm)<br>Flapper - 1/4 in (31.8 mm) | 1/4 in (6.4 mm)             |
| <b>Viscosity Range</b>        | Up to 5,000 cps             | Up to 10,000 cps            | Up to 10,000 cps              | Up to 15,000 cps                                      | Up to 25,000 cps            |
| <b>Wetted Section Options</b> | FG                          | FG, HS, PH                  | FG, HS, PH                    | FG, HS, PH, 3A  | FG, HS, PH, 3A              |



|                               | 2150e                       | 3000e                       | 4000e                       | 3150                        | 4150                        |
|-------------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| <b>Max Flow Rate</b>          | Up to 140 gpm (530 lpm)     | Up to 140 gpm (530 lpm)     | Up to 140 gpm (530 lpm)     | Up to 130 gpm (492 lpm)     | Up to 90 gpm (341 lpm)      |
| <b>Max Fluid Pressure</b>     | 100 psi<br>(7 bar, 0.7 Mpa) | 100 psi<br>(7 bar, 0.7 Mpa) | 100 psi<br>(7 bar, 0.7 Mpa) | 120 psi<br>(8 bar, 0.8 MPa) | 120 psi<br>(8 bar, 0.8 MPa) |
| <b>Max Pumpable Solids</b>    | 1/4 in (6.4 mm)             | 2.6 in (66 mm)              | 3.8 in (96.5 mm)            | 2.6 in (66 mm)              | 3.8 in (96.5 mm)            |
| <b>Viscosity Range</b>        | Up to 25,000 cps            | Up to 15,000 cps            |
| <b>Wetted Section Options</b> | FG, HS, PH, 3A              | LP                          | LP                          | LP                          | LP                          |

# ETV ERGONOMICS

Transfer a **broad range of viscosities** from fruit juices and pizza sauce to caramel and peanut butter.

## SaniForce Unloaders:

- Move material faster
- Increase efficiency
- Improve processes
- Pump high viscosity materials



|                            | Centrifugal Drum Pump   | Progressive Cavity Drum Pump | 2:1 Piston Pump           | 6:1 Piston Pump           | 5:1 Piston Pump           | 12:1 Piston Pump           |
|----------------------------|-------------------------|------------------------------|---------------------------|---------------------------|---------------------------|----------------------------|
| <b>Max Flow Rate</b>       | Up to 35 gpm (132 lpm)  | Up to 7 gpm (26 lpm)         | Up to 1.5 gpm (5.7 lpm)   | Up to 4 gpm (15 lpm)      | Up to 14 gpm (53 lpm)     | Up to 8.5 gpm (32 lpm)     |
| <b>Max Fluid Pressure</b>  | 43 psi (0.4 MPa, 3 bar) | 87 psi (0.6 MPa, 6 bar)      | 250 psi (17 bar, 1.7 MPa) | 600 psi (41 bar, 4.1 MPa) | 400 psi (28 bar, 2.8 MPa) | 1200 psi (83 bar, 8.3 MPa) |
| <b>Max Pumpable Solids</b> | Not recommended         | 1/4 in (6 mm)                | 1/8 in (3.2 mm)           | 1/8 in (3.2 mm)           | 1/4 in (6.4 mm)           | 1/4 in (6.4 mm)            |
| <b>Viscosity Range</b>     | Up to 1,000 cps         | Up to 50,000 cps             | Up to 50,000 cps          | Up to 100,000 cps         | Up to 100,000 cps         | Up to 100,000 cps**        |



|                            | Piston Pump Elevator      | Diaphragm Drum Unloaders                            | Piston Drum Unloaders                   | Diaphragm Bin Evacuation                            | Piston Bin Evacuation                   |
|----------------------------|---------------------------|---|---|---|---|
| <b>Max Flow Rate</b>       | Up to 14 gpm (53 lpm)     | Up to 150 gpm (568 lpm)                             | Up to 14 gpm (53 lpm)                   | Up to 300 gpm (1135 lpm)                            | Up to 56 gpm (212 lpm)                  |
| <b>Max Fluid Pressure</b>  | 400 psi (28 bar, 2.8 MPa) | 120 psi (8 bar, 0.8 MPa)                            | 1200 psi (83 bar, 8.3 MPa)              | 120 psi (8 bar, 0.8 MPa)                            | 1200 psi (83 bar, 8.3 MPa)              |
| <b>Max Pumpable Solids</b> | 1/4 in (6.4 mm)           | Ball = 1 in (25.4 mm)<br>Flapper = 2.5 in (63.5 mm) | 1/8 to 1/4 in (3.2 to 6.4 mm)           | Ball = 1 in (25.4 mm)<br>Flapper = 2.5 in (63.5 mm) | 1/4 in (6.4 mm)                         |
| <b>Viscosity Range</b>     | Up to 50,000 cps          | Up to 100,000 cps                                   | Up to 2,000,000 cps with priming piston | Up to 100,000 cps                                   | Up to 2,000,000 cps with priming piston |

\*Actual performance may vary by application  
\*\*When mounted on drum unloader or bin evacuation system

# DIAPHRAGM

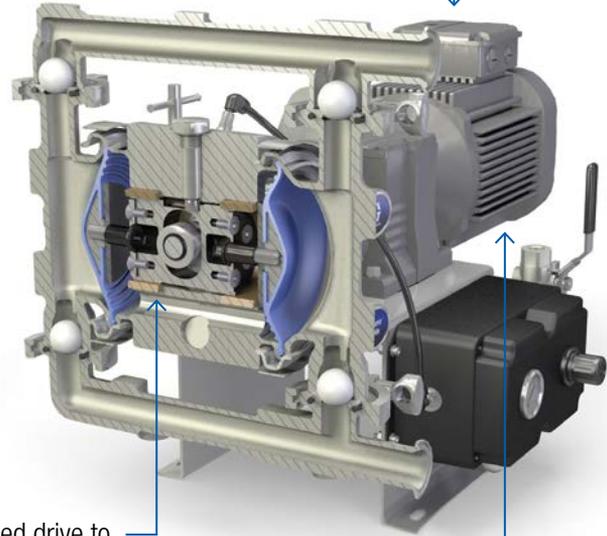
## SaniForce® e-series 1040e & 2150e

### Electric-Operated Double Diaphragm Pumps

Graco's SaniForce e-Series pump will help you achieve all of these objectives!

- Patented technology **eliminates unnecessary pump failures** from clogged lines or closed valves
- Energy efficient electric drive **reduces energy consumption up to 5x** compared to traditional air-operated diaphragm pumps
- Seal-less diaphragm pump design **eliminates leaking and failures** due to run-dry pump conditions
- Electric-operated pumps create a **quieter and cleaner work environment** over air-operated pumps

Electric drive to reduce energy consumption and accurately meter fluid



Patented air charged drive to reduce pulsation on fluid outlet and stalls under pressure

AC or brushless DC motor options



\*Available in cart mount and stand alone options

| SaniForce 2150e AC Motor                  | SaniForce 1040e AC Motor                  | SaniForce 1040e BLDC Motor                |
|---|---|---|
| 2.5 in sanitary flange or 65 mm DIN 11851 | 1.5 in sanitary flange or 40 mm DIN 11851 | 1.5 in sanitary flange or 40 mm DIN 11851 |
| 3, 5, or 7 HP Motor                       | 2 HP Motor                                | 2.2 HP Motor                              |
| Flow rates of 140 gpm (530 lpm)           | Flow rates of 35 gpm (132 lpm)            | Flow rates of 35 gpm (132 lpm)            |

### Stop Harboring Bacteria!

Graco's overmolded PTFE/EPDM diaphragms improve wear, durability and cleanability – making SaniForce diaphragm pumps one of the easiest to clean in the market.

- Improve wear and diaphragm life with no exposed diaphragm plate on the fluid side
- Longer diaphragm life in moderately abrasive applications that still require PTFE
- Available on the SaniForce 515, 1040, 1040e, 1590, 2150, 3150, 4150, 3250 and SaniForce



# SaniForce® FG-Series 515, 1040, 1590 & 2150

## Easy to clean and sanitize pump for food and beverage applications

- Designed for rigorous, continuous use with quick knockdown design for easy cleanability and sanitation
- Ideal for applications requiring high flow rates and portability



**Graco Air Valves are durable, reliable and easy to repair!**

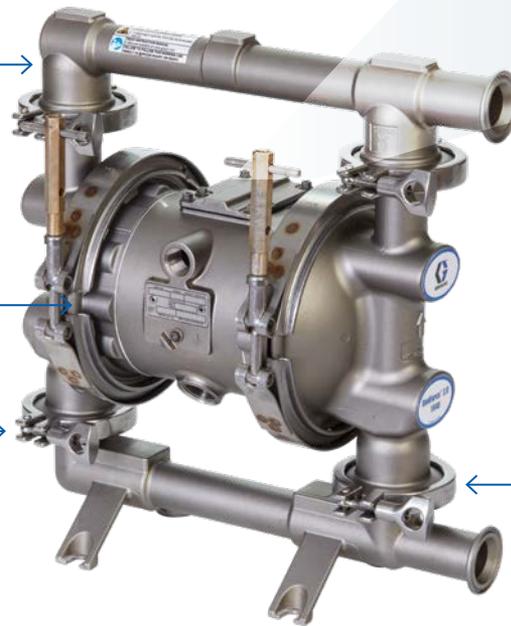
- Increase durability and reduce repair time with fewer moving parts
- Three-way pilot valve for non-stick operation
- Externally serviceable for quick, inexpensive repairs

Pump Finish

- Cast 316 SST
- 125 Ra electropolished finish

Bolt-through and overmolded diaphragm options available

Fluid contact areas are all FDA-compliant and meet CFR Title 21



Sanitary flange inlet and outlet connections



| 515  | 1040                                       | 1590                                       | 2150   |
|--|--|--|--|
| 1.0 in (25.4 mm) sanitary flange connections | 1.5 in (38 mm) sanitary flange connections | 2.0 in (50 mm) sanitary flange connections | 2.5 in (63.5 mm) sanitary flange connections |
| 0.96 in (24.3 mm) manifold ID                | 1 in (25.4 mm) manifold ID                 | 1.5 in (38.1 mm) manifold ID               | 2 in (50.8 mm) manifold ID                   |
| Flow rates of 16 gpm (61 lpm)                | Flow rates of 40 gpm (151 lpm)             | Flow rates up to 90 gpm (340 lpm)          | Flow rates up to 150 gpm (568 lpm)           |

### Common Materials

- Concentrated fruit juices
- Sauces, pastes and starches
- Wine
- Jams and jellies
- Edible oils

# SANITARY

## SaniForce® HS-Series & LP-Series

### High Sanitation (HS) Pumps

- Increase durability and reduce repair time with fewer moving parts
- Three-way pilot valve for non-stick operation
- Externally serviceable for quick, inexpensive repairs
- 32 Ra electropolished finish



High Sanitation

### Large Particle (LP) Pumps

- Built to handle solids up to 3.8 inches (96.5 mm) in diameter
- Easy cleaning and sanitizing with fewer clamps and rotatable stand
- Durable pump construction handles particulates and abrasives without damage to the pump
- 3 and 4 inch sizes available in both air and electric operated models



Large Particle

Flapper Check



#### Common Materials

Personal care  
Cosmetics  
High care food ingredients

#### Common Materials

Meat & Poultry  
Fruit filling materials  
Ice cream varigates

# SaniForce® 3A & PH-Series

## 3-A Approved Pumps

- Single piece manifold reduces clamps and areas for food and bacteria to hide for easier cleaning
- Increase durability and reduce repair time with fewer moving parts
- Externally serviceable for quick, inexpensive repairs
- Leak sensors installed with optional control box
- 32 Ra electropolished finish



3A Approved

## Pharmaceutical (PH) Pumps

- Single piece manifold reduces clamps and areas for food and bacteria to hide for easier cleaning
- Increase durability and reduce repair time with fewer moving parts
- Externally serviceable for quick, inexpensive repairs
- 20 Ra electropolished finish
- USP Class IV Approved



Pharma Grade

### Common Materials

Dairy

Yogurt

Cottage cheese

### Common Materials

Medical creams & lotions

Organic reagent

Blood products

Bio pharmaceuticals

Alcohol & Solvent Transfer

# PISTON

## SaniForce® Piston Pumps

### Move the most difficult materials

Graco's powerful line of piston pumps move extremely difficult materials when others cannot. SaniForce piston pumps have fluid pressures up to 1,200 psi (83 bar) and are ideal for low to medium viscosity materials.

- Air motors improve serviceability, increase efficiency and offer a lower cost of ownership
- Quick knockdown lowers are made with corrosion resistant stainless steel for long-lasting durability

Advanced air motor technology →



SaniForce® 2:1 and 6:1 fit standard drum bung port →



**FDA-Compliant Shroud**  
Removable, wash down safe, FDA-compliant shroud lets you easily access the air valve



**All SaniForce Piston Pumps have Quick Knockdown Lower for Fast and Easy Cleaning!**



Self-priming and run dry designed for medium viscosity transfer ←

← Available in double ball priming piston designs

|                          | SaniForce 2:1                     | SaniForce 6:1                  | SaniForce 5:1                   | SaniForce 12:1                   |
|--------------------------|-----------------------------------|--------------------------------|---------------------------------|----------------------------------|
| <b>Maximum Viscosity</b> | Up to 50,000                      | Up to 100,000                  | Up to 100,000                   | Up to 100,000 cps                |
| <b>Maximum Flow Rate</b> | Up to 1.5 gpm (5.7 lpm) at 60 cpm | Up to 4 gpm (15 lpm) at 60 cpm | Up to 14 gpm (53 lpm) at 60 cpm | Up to 8.5 gpm (32 lpm) at 60 cpm |
| <b>Length</b>            | Standard and long lengths         | Stubby, drum and bin lengths   | Stubby and drum lengths         | Stubby length only               |

|                            |   |
|----------------------------|---|
| <b>Common Applications</b> | Fluid transfer and supply of low to medium viscosity fluids |
|                            | Food-related applications                                   |
|                            | Cosmetic applications                                       |

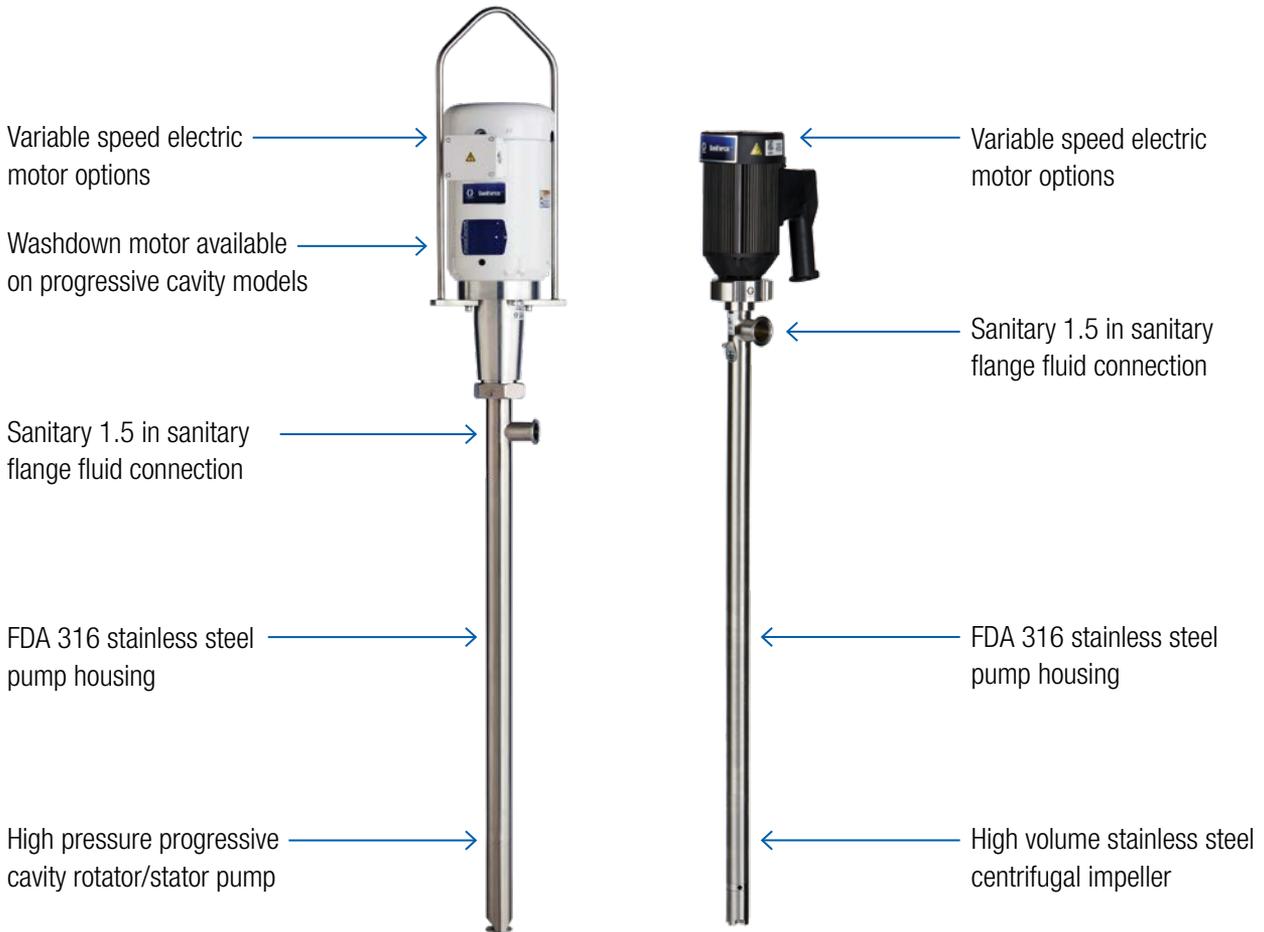
|                         |                          |
|-------------------------|--------------------------|
| <b>Common Materials</b> | Fruit juice concentrates |
|                         | Cream candy fillings     |
|                         | Ice cream variegates     |
|                         | Cosmetics                |

# ELECTRIC

## SaniForce® Electrical Drum Pumps

Reduce downtime with quick knockdown SaniForce centrifugal and progressive cavity drum pumps featuring easy sanitary flange connections and a simple design.

- **Operational flexibility throughout facility** - with electric pump operation, simply plug in the pump to transfer material in minutes
- **Easy mobility** - lightweight design allows all operators to move pumps between drums to increase output



| SaniForce Electric Centrifugal Drum Pump | SaniForce Electric Progressive Cavity Drum Pump |
|--|---|
| Can handle up to 1,000 cps               | Can handle up to 100,000 cps                    |
| Flow rates up to 35 gpm (132 lpm)        | Flow rates up to 7 gpm (26 lpm)                 |
| Quick knock down pump for easy cleaning  | Quick knock down pump for easy cleaning         |

**Common Applications**

Fluid transfer and supply of low to medium viscosity fluids. Ideal for most food, beverage, cosmetic, or personal care applications

**Common Materials**

- Fruit juice concentrates
- Edible oils
- Distilleries
- Condiments & dressings

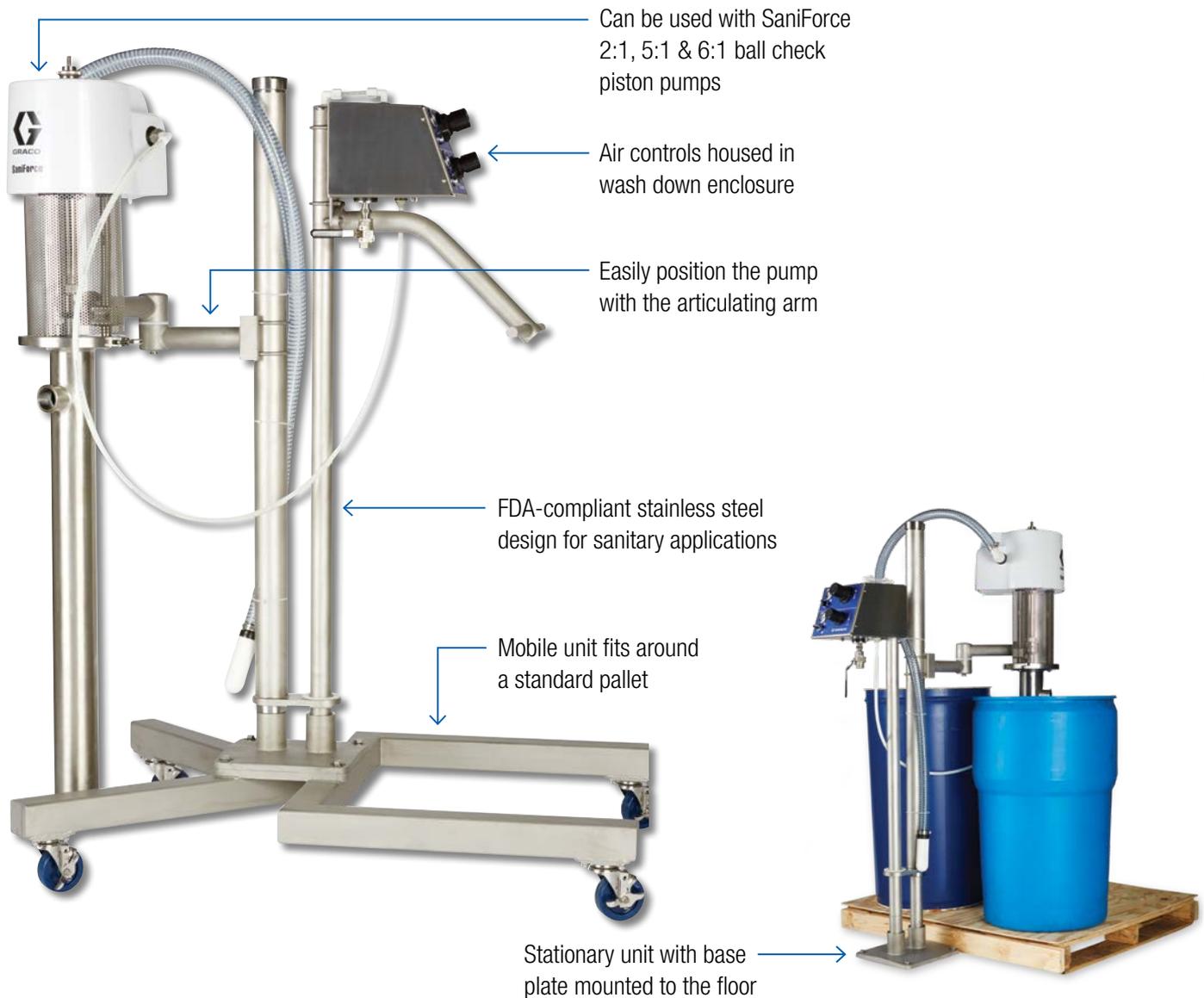
# ELEVATORS

## SaniForce® Elevators

### Stop unloading containers manually

The SaniForce Elevator is ideal for small to medium sized companies that currently unload less than two containers per hour by either scooping or dumping.

- Designed to lower pumps into and lift pumps out of drums, bins, and totes
- Flow rates range from 1.5 to 14 gpm (5.7 to 53 lpm), depending on which SaniForce piston pump is used



#### Common Applications

Fluid transfer and supply of medium viscosity fluids. Ideal for most food, beverage, cosmetic, or personal care applications

#### Common Materials

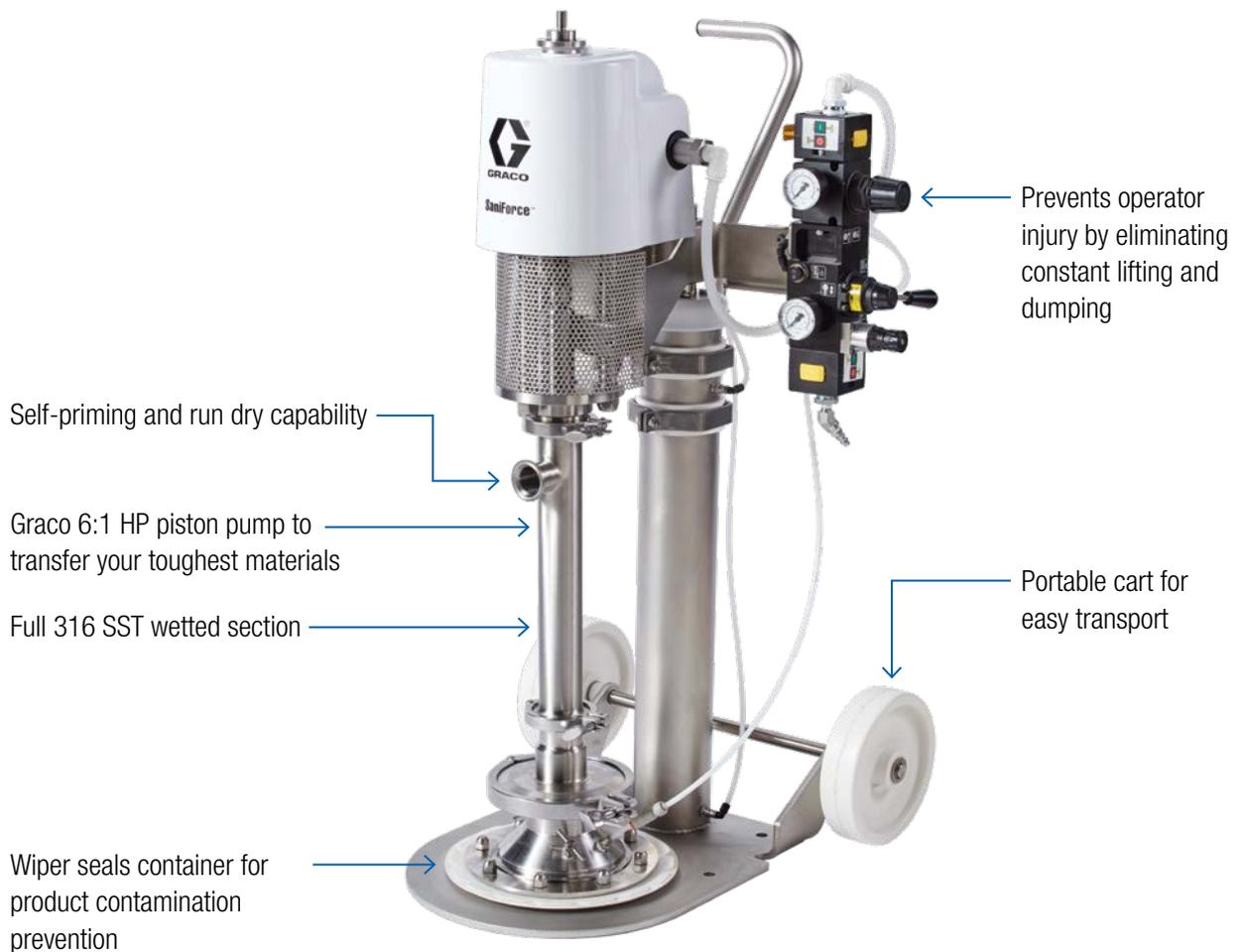
Fruit juice concentrates  
Cream candy fillings  
Condiments & dressings  
Flowable lotions & cosmetics

# UNLOADING

## SaniForce® Pail Unloaders

### Evacuate up to 99% of material

- Designed for quick disassembly, and is portable with stainless steel construction
- One size follower plate and seal to accommodate 5 or 7 gallon pails
- Prevents injuries from lifting and dumping material out of containers



### Common Applications

Fluid transfer and supply of medium to high viscosity fluids. Ideal for most food, beverage, cosmetic, or personal care applications

### Common Materials

Icing, frostings & fondants  
Caramels & chocolate  
Fruit Paste & fillings  
Cosmetics

# UNLOADING

## SaniForce® Drum Unloaders

**Need to transfer 1,000,000 cps\* materials? No problem!**

Graco's SaniForce drum unloaders can evacuate medium to high viscosity products from their original 55-gallon (208 l) containers, without diluting the material.

Remove the food and work safety issues associated with manual scooping.

\*Only applies to priming piston drum unloaders



New safety lock for loading/unloading drums

Automated controls remove unnecessary worker interaction and automate the unloading process

Batch dispense available with connection to scale or flow meter

Sanitary flange clamps for quick disassembly

Available in double ball or priming piston designs

One size follower plate and seal to accommodate **straight-sided AND tapered drums**

### Inflatable Seal Features

- FDA-compliant inflatable ram plate seal
- Faster change-out of empty containers
- Up to 99% evacuation rates



### Common Applications

Unload medium to high viscosity products, up to 2,000,000 cps\*, from 55-gallon containers without diluting the material

### Common Materials

Tomato paste

Peanut butter

Icing and frosting

Toothpaste

Cosmetics

Jams and jellies

Caramel

Corn syrup

# UNLOADING

## SaniForce® Bin Evacuation Systems (BES)

**The cleanest way to unload materials without introducing airborne bacteria!**

Save time and money in your facility by unloading materials up to 2,000,000 cps efficiently from 300-gallon (1,135 l) “bag-in-bin” containers – eliminating manual scooping or bin dumping.

Complete bin unloading saves money and provides better process control while removing the need for costly booster pumps.

Fluid outlet piping for easier installation

**Evacuate up to 99% of material**

Exhaust routed away from food product

Inflatable seal creates better seal for improved evacuation without the crevices and fasteners of a wiper seal

**Inflatable Seal**



**SaniForce BES  
with Piston Pumps**



### Common Applications

Evacuate viscous products from their original 300-gallon containers without dilution

### Common Materials

|                    |                  |
|--------------------|------------------|
| Tomato paste       | Cosmetics        |
| Peanut butter      | Jams and jellies |
| Icing and frosting | Caramel          |
| Toothpaste         | Corn syrup       |

# CLEANING

## Hydra-Clean® Pressure Washer

Gas or electric can't be used? Choose the air-driven or hydraulic Hydra-Clean pressure washer for your cleaning solution.

Ideal for cleaning and sanitizing food, beverage and pharmaceutical processing facilities, Hydra-Clean pressure washers can be used with hot or cold water, detergents or strong chemical solutions.



# GRACO PUMPS

## A Complete Line of Chemical Transfer Pumps

Graco pumps are a dependable, easy-to-service solution for CIP applications.



**Husky™ 205 Polypropylene**

1/4 in (6.3 mm) connection

Max flow: 5 gpm (19 lpm)



**Husky 205 PVDF**

1/4 in (6.3 mm) connection

Max flow: 5 gpm (19 lpm)



**Husky 307 Polypropylene**

3/8 in (9.4 mm) connection

Max flow: 7 gpm (26 lpm)



**Husky 515 Polypropylene**

1/2 in (12.7 mm) connection

Max flow: 15 gpm (57 lpm)



**Husky 515 PVDF**

1/2 in (12.7 mm) connection

Max flow: 15 gpm (57 lpm)



**Husky 716 SST**

3/4 in (19.1 mm) connection

Max flow: 16 gpm (61 lpm)



**Husky 1050 Polypropylene**

1 in (25.4 mm) connection

Max flow: 50 gpm (189 lpm)



**Husky 15120**

1-1/2 in (38.1 mm) connection

Max flow: 120 gpm (454 lpm)



**Husky 2200**

2 in (50.8 mm) connection

Max flow: 200 gpm (757 lpm)

# APPLICATIONS

## Application Overview

Transfer options available for low to high viscosity materials from food to personal care to pharmaceuticals.

- > **FOODS:** Low to high ingredients including juices and flavored drinks, salad dressings & condiments, sauces, edible oils, snack food flavorings, frostings, beer & wine, caramels & chocolate syrups, jams & fruit fillings, tomato paste, peanut butter, and more



- > **DAIRY:** Yogurt, cottage cheese, ice cream ingredients

- > **MEAT and POULTRY**



- > **PERSONAL CARE:** Lotions & creams, cosmetics, and high care food



- > **PHARMA:** Medical creams & lotions, organic reagent, blood products, bio pharmaceuticals, alcohol, and solvent transfer



*protect your* **PROCESS**

All written and visual data contained in this document are based on the latest product information available at the time of publication. Graco reserves the right to make changes at any time without notice.

Call today for product information or to request a demonstration.  
**800.328.0211** or visit us at [www.graco.com/sanitary](http://www.graco.com/sanitary)

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