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.
SaniForce Solutions

Graco’s Complete Line of Sanitary Pumps

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

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

<table>
<thead>
<tr>
<th>Model</th>
<th>2150e</th>
<th>3000e</th>
<th>4000e</th>
<th>3150</th>
<th>4150</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max Flow Rate</td>
<td>Up to 140 gpm (530 lpm)</td>
<td>Up to 140 gpm (530 lpm)</td>
<td>Up to 140 gpm (530 lpm)</td>
<td>Up to 130 gpm (492 lpm)</td>
<td>Up to 90 gpm (341 lpm)</td>
</tr>
<tr>
<td>Max Fluid Pressure</td>
<td>100 psi (7 bar, 0.7 Mpa)</td>
<td>100 psi (7 bar, 0.7 Mpa)</td>
<td>100 psi (7 bar, 0.7 Mpa)</td>
<td>120 psi (8 bar, 0.8 Mpa)</td>
<td>120 psi (8 bar, 0.8 Mpa)</td>
</tr>
<tr>
<td>Max Pumpable Solids</td>
<td>1/4 in (6.4 mm)</td>
<td>2.6 in (66 mm)</td>
<td>3.8 in (96.5 mm)</td>
<td>2.6 in (66 mm)</td>
<td>3.8 in (96.5 mm)</td>
</tr>
<tr>
<td>Viscosity Range</td>
<td>Up to 25,000 cps</td>
<td>Up to 15,000 cps</td>
<td>Up to 15,000 cps</td>
<td>Up to 15,000 cps</td>
<td>Up to 15,000 cps</td>
</tr>
<tr>
<td>Wetted Section Options</td>
<td>FG, HS, PH, 3A</td>
<td>LP</td>
<td>LP</td>
<td>LP</td>
<td>LP</td>
</tr>
</tbody>
</table>
Transfer a broad range of viscosities from fruit juices and pizza sauce to caramel and peanut butter.

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

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

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

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

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<table>
<thead>
<tr>
<th>SaniForce 2150e AC Motor</th>
<th>SaniForce 1040e AC Motor</th>
<th>SaniForce 1040e BLDC Motor</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.5 in sanitary flange or 65 mm DIN 11851</td>
<td>1.5 in sanitary flange or 40 mm DIN 11851</td>
<td>1.5 in sanitary flange or 40 mm DIN 11851</td>
</tr>
<tr>
<td>3, 5, or 7 HP Motor</td>
<td>2 HP Motor</td>
<td>2.2 HP Motor</td>
</tr>
<tr>
<td>Flow rates of 140 gpm (530 lpm)</td>
<td>Flow rates of 35 gpm (132 lpm)</td>
<td>Flow rates of 35 gpm (132 lpm)</td>
</tr>
</tbody>
</table>

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**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

Pump Finish
- Cast 316 SST
- 125 Ra electropolished finish

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

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

Sanitary flange inlet and outlet connections

<table>
<thead>
<tr>
<th></th>
<th>515</th>
<th>1040</th>
<th>1590</th>
<th>2150</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size</td>
<td>1.0 in (25.4 mm) sanitary flange connections</td>
<td>1.5 in (38 mm) sanitary flange connections</td>
<td>2.0 in (50 mm) sanitary flange connections</td>
<td>2.5 in (63.5 mm) sanitary flange connections</td>
</tr>
<tr>
<td>ID</td>
<td>0.96 in (24.3 mm) manifold ID</td>
<td>1 in (25.4 mm) manifold ID</td>
<td>1.5 in (38.1 mm) manifold ID</td>
<td>2 in (50.8 mm) manifold ID</td>
</tr>
<tr>
<td>Flow</td>
<td>16 gpm (61 lpm)</td>
<td>Flow rates of 40 gpm (151 lpm)</td>
<td>Flow rates up to 90 gpm (340 lpm)</td>
<td>Flow rates up to 150 gpm (568 lpm)</td>
</tr>
</tbody>
</table>

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

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

Common Materials

<table>
<thead>
<tr>
<th>Personal care</th>
<th>Meat &amp; Poultry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cosmetics</td>
<td>Fruit filling materials</td>
</tr>
<tr>
<td>High care food ingredients</td>
<td>Ice cream varigates</td>
</tr>
</tbody>
</table>
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

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

Common Materials
- Dairy
- Yogurt
- Cottage cheese

Common Materials
- Medical creams & lotions
- Organic reagent
- Blood products
- Bio pharmaceuticals
- Alcohol & Solvent Transfer
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

### Common Applications
- Fluid transfer and supply of low to medium viscosity fluids
- Food-related applications
- Cosmetic applications

### Common Materials
- Fruit juice concentrates
- Cream candy fillings
- Ice cream variegates
- Cosmetics
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® Electrical Drum Pumps**

**Variable speed electric motor options**

**Washdown motor available on progressive cavity models**

**Sanitary 1.5 in sanitary flange fluid connection**

**FDA 316 stainless steel pump housing**

**High pressure progressive cavity rotator/stator pump**

**Variable speed electric motor options**

**Sanitary 1.5 in sanitary flange fluid connection**

**FDA 316 stainless steel pump housing**

**High volume stainless steel centrifugal impeller**

<table>
<thead>
<tr>
<th><strong>SaniForce Electric Centrifugal Drum Pump</strong></th>
<th><strong>SaniForce Electric Progressive Cavity Drum Pump</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Can handle up to 1,000 cps</td>
<td>Can handle up to 100,000 cps</td>
</tr>
<tr>
<td>Flow rates up to 35 gpm (132 lpm)</td>
<td>Flow rates up to 7 gpm (26 lpm)</td>
</tr>
<tr>
<td>Quick knock down pump for easy cleaning</td>
<td>Quick knock down pump for easy cleaning</td>
</tr>
</tbody>
</table>

**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
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
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
**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*

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**Common Applications**

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

**Common Materials**

<table>
<thead>
<tr>
<th>Tomato paste</th>
<th>Cosmetics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peanut butter</td>
<td>Jams and jellies</td>
</tr>
<tr>
<td>Icing and frosting</td>
<td>Caramel</td>
</tr>
<tr>
<td>Toothpaste</td>
<td>Corn syrup</td>
</tr>
</tbody>
</table>

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**Inflatable Seal Features**

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

Exhaust routed away from food product

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

Evacuate up to 99% of material

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

Common Materials
- Tomato paste
- Peanut butter
- Icing and frosting
- Toothpaste

Common Materials
- Cosmetics
- Jams and jellies
- Caramel
- Corn syrup
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.

- Available in both wall-mount and cart-mount
- Ideal for use with open-head drums
- Stainless steel lower is compatible with a variety of chemicals
- Supports multiple guns
- Each package comes standard with five different spray tips
**GRACO PUMPS**

A Complete Line of Chemical Transfer Pumps

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

<table>
<thead>
<tr>
<th>Model</th>
<th>Material</th>
<th>Connection Size</th>
<th>Maximum Flow Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Husky™ 205 Polypropylene</td>
<td>Polypropylene</td>
<td>1/4 in (6.3 mm)</td>
<td>5 gpm (19 lpm)</td>
</tr>
<tr>
<td>Husky 205 PVDF</td>
<td>PVDF</td>
<td>1/4 in (6.3 mm)</td>
<td>5 gpm (19 lpm)</td>
</tr>
<tr>
<td>Husky 307 Polypropylene</td>
<td>Polypropylene</td>
<td>3/8 in (9.4 mm)</td>
<td>7 gpm (26 lpm)</td>
</tr>
<tr>
<td>Husky 515 Polypropylene</td>
<td>Polypropylene</td>
<td>1/2 in (12.7 mm)</td>
<td>15 gpm (57 lpm)</td>
</tr>
<tr>
<td>Husky 515 PVDF</td>
<td>PVDF</td>
<td>1/2 in (12.7 mm)</td>
<td>15 gpm (57 lpm)</td>
</tr>
<tr>
<td>Husky 716 SST</td>
<td>SST</td>
<td>3/4 in (19.1 mm)</td>
<td>16 gpm (61 lpm)</td>
</tr>
<tr>
<td>Husky 1050 Polypropylene</td>
<td>Polypropylene</td>
<td>1 in (25.4 mm)</td>
<td>50 gpm (189 lpm)</td>
</tr>
<tr>
<td>Husky 15120</td>
<td>1-1/2 in (38.1 mm)</td>
<td>120 gpm (454 lpm)</td>
<td></td>
</tr>
<tr>
<td>Husky 2200</td>
<td>2 in (50.8 mm)</td>
<td>200 gpm (757 lpm)</td>
<td></td>
</tr>
</tbody>
</table>
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*

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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