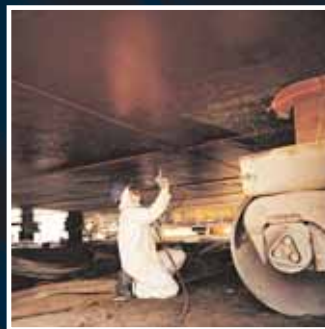
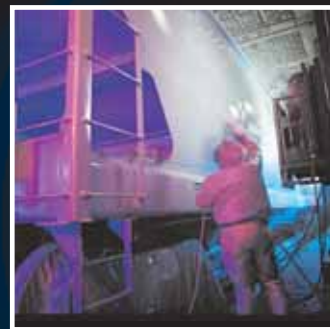


# PROTECTIVE COATINGS EQUIPMENT

buyer's guide and specifications



- *Applicators*
- *Pumps and Packages*
- *Proportioners*



PROVEN QUALITY. LEADING TECHNOLOGY.

# Catalog Reference Guide

Graco products can be found in the following catalogs:

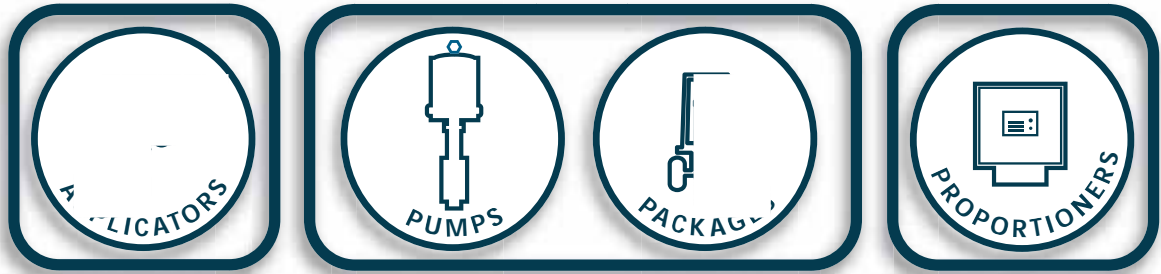
Title	Form Number
Accessories	303119
Finishing Equipment	303252
Process Equipment	300435
Sanitary Equipment	300299
Sealants and Adhesives Equipment	303254

## Graco Trademarks and Products

Graco catalogs are designed to provide you with a selection of equipment for use in our primary industries and applications. Below is a listing of our most commonly used trademarks and product names. Find the product you are interested in, then refer to the appropriate catalog(s). See each catalog's table of contents for more detailed information. For Technical Data Reference and Compatibility Charts, see form number 321123.

Name	Catalog(s)	Name	Catalog(s)
510 Gun	Protective Coatings	LSR™	Accessories
950 Series Sealant Gun	Sealants and Adhesives	Monark®	Finishing, Process, Protective Coatings, Sealants and Adhesives, Sanitary
8900 Proportioner	Sealants and Adhesives		
1:1 Extruder	Sealants and Adhesives	PlasmaCoat™ Rods	Finishing, Protective Coatings
2K Mix Manifold	Sealants and Adhesives	Plural Component Mix Gun	Protective Coatings
2K Monitor	Finishing, Protective Coatings, Sealants and Adhesives	PrecisionDose™	Sealants and Adhesives
		PrecisionFlo™	Sealants and Adhesives
AA Plus™ Gun	Finishing, Protective Coatings	PrecisionMix®	Finishing
AL Plus™ Gun	Finishing	PrecisionSwirl™	Sealants and Adhesives
Alpha™ Gun	Finishing	PrecisionView™ AMR	Finishing
Alpha™ Plus Gun	Finishing, Protective Coatings	Premier®	Finishing, Protective Coatings, Sealants and Adhesives
Bin Evacuation System (BES)	Sanitary	President®	Finishing, Process, Protective Coatings
Batch Dispense System™	Finishing		
Bulldog®	Finishing, Protective Coatings, Sealants and Adhesives	Pressure Pots	Accessories, Finishing
		ProBatch™	Finishing
Check-Mate®	Sealants and Adhesives	ProDispense™	Finishing
Color Change System™	Finishing	ProMix™	Finishing
CycleFlo™	Process	PRO™ Xs Electrostatic Guns	Finishing
Delta Spray®	Finishing	Regulus®	Finishing
Duo-Flo®	Sealants and Adhesives	Senator®	Finishing, Sanitary, Protective Coatings
Dura-Flo®	Finishing, Protective Coatings, Sealants and Adhesives		
DynaMite™ Dispense Valve	Sealants and Adhesives	Silver Plus™	Finishing, Protective Coatings
EnDure™ Dispense Valve	Sealants and Adhesives	Standard 2:1	Finishing, Process, Sealants and Adhesives
Falcon™	Finishing		
Fast-Flo®	Process	SuperCat™	Protective Coatings
Foam Cat®	Protective Coatings	Therm-O-Flow™	Sealants and Adhesives
Gear Meters	Finishing and Sealants and Adhesives	TRITON™	Finishing
		Triumph®	Finishing
Glutton®	Finishing	Tuff-Stack™	Accessories, Protective Coatings
High-Flo®	Finishing	Twistork™	Accessories
Husky™	Finishing, Process, Sealants and Adhesives	Ultra-Lite™ Flow Gun	Sealants and Adhesives
		Uni-Drum™ Bulk Supply System	Sealants and Adhesives
Hydra-Cat®	Finishing, Protective Coatings, Sealants and Adhesives	ValueMix™	Finishing
		Viscon™	Accessories, Finishing, Protective Coatings
Hydra-Clean®	Protective Coatings		
Hydra-Mate™	Sealants and Adhesives	Viscount®	Finishing, Protective Coatings
Imperial™	Finishing	Xtreme™	Finishing, Protective Coatings
Informer™	Finishing	Xtreme Seal Packings	Finishing, Protective Coatings
King®	Finishing, Protective Coatings		
LSA™	Accessories		

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# Graco Protective Coatings Equipment Solutions

Since the introduction of Graco's first airless sprayer in 1956, the pioneer in airless coatings solutions, Graco has developed innovative, high-quality products to improve productivity, reduce operating and maintenance costs, and spray the highest solids coatings in the harshest environments. This catalog is designed to take the guesswork out of selecting the right pump, spray package or proportioner for your protective coatings applications. Whether you're applying multiple-component coatings, transferring liquids, or fighting rust and corrosion, Graco is your single source for the high performance fluid handling equipment that gets the job done.

**Follow these steps to determine and select the ideal equipment solution to meet your protective coatings needs:**

## IDENTIFY PROTECTIVE COATINGS PROCESS

- Marine - Ships and Shipyards
- Military Vehicles and Equipment
- Offshore
- Steel Structures - Bridges
- Railcars
- Tanks and Pipe Coatings
- Farm Equipment
- Roofs
- Fire Retardants
- Other applications where corrosion is a problem

## DEFINE APPLICATION REQUIREMENTS

Establish the requirements for successful application based upon your process.

- Coating Materials
- Tip Size
- Pressure
- Length of Hose
- Flow Rate
- Productivity Requirements
- Number of Guns

## DETERMINE TECHNOLOGY LEVEL

Choose the correct technology for your application based upon your requirements.

- Use pressure and flow rate requirements to select an appropriate pump
- Bare pumps and complete spray packages available
- Type of applicator needed corresponds to pump or package selected
- Select a proportioner for plural component materials

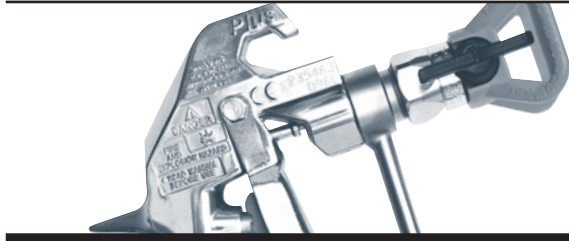
## SELECT EQUIPMENT SOLUTION

Choose the ideal protective coatings equipment solution based upon the technology deemed appropriate for your application.

- Applicators
- Pumps/Spray Packages
- Proportioners







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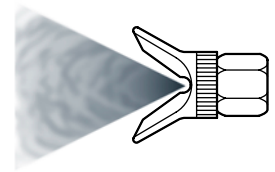
# Spray Finishing Technologies

## Flow Rate

Flow rate is the volume of material that can effectively be atomized through an applicator. It is typically referred to in ounces per minute (oz./min.) or grams per minute (g./min.)

### Airless – Silver Plus

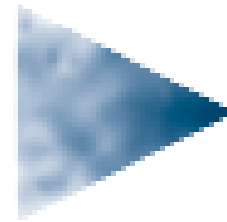
Airless atomization is accomplished by directing fluid under high pressure through a controlled orifice. Airless works best when used to quickly apply high volumes of coatings to large surfaces, such as bridges, storage tanks, or large sheets of metal. Airless is most often used to apply protective, rather than decorative coatings. Typical fluid pressures are up to 5000 psi at the gun.



Airless Atomization

### Air-Assisted – Alpha Plus

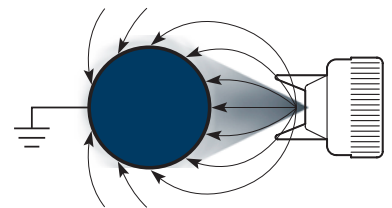
Air-assisted atomization is a hybrid application method that combines the hydraulic atomization method of airless with the atomization of air spray. The result is an atomization level between air spray and airless. This process is ideal for many finishing and coating applications that require high production levels and a relatively smooth finish, such as wood furniture topcoats, fabricated metal parts, and farm and construction equipment. Air-assisted atomization typically utilizes air pressures up to 35 psi and fluid pressures range from 250 to 4000 psi at the gun.



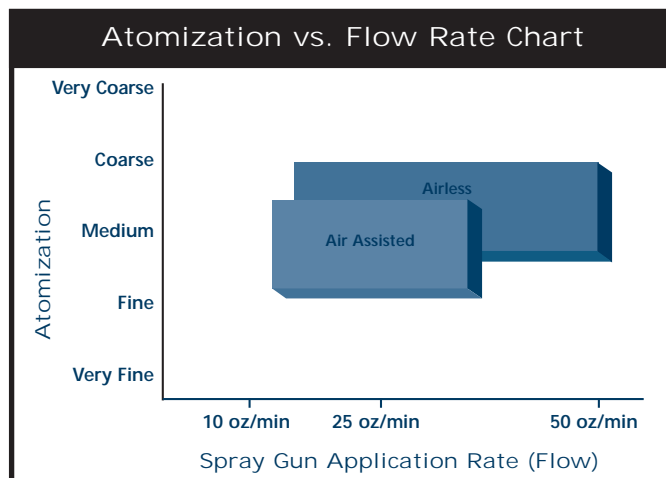
Air-Assisted Airless Atomization

### Air-Assisted Electrostatic – PRO Xs

Electrostatic technology can be applied to air spray, air-assisted and airless spray methods. Electrostatic applicators greatly reduce over-spray while providing better film coverage than non-electrostatic applicators. Electrostatics are commonly used in automobile, aircraft, heavy equipment manufacturing and metal finishing. Graco offers both air spray and air-assisted/airless electrostatic spraying equipment.



Air-Assisted Electrostatic Atomization



Relative Atomization and Typical Flow Rate Comparison of Atomization Methods

## 1

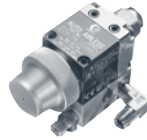
# Applicator Selection Guide



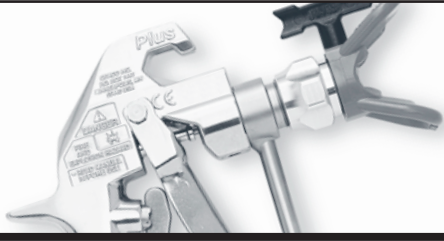
	Silver Plus	Model 510	Flex Plus	Contractor
<b>FINISH QUALITY</b>	Protective Coatings	Protective Coatings	Protective Coatings	Protective Coatings
<b>FLOW RATE RANGE</b>	0-128+ oz.	0-140+	0-128+ oz.	0-128+ oz.
<b>MAXIMUM FLUID PRESSURE PSI (bar, MPa)</b>	5000 (34.5, 345)	7400 (27.6, 276)	5000 (34.5, 345)	3600 (24.8, 248)
<b>TYPICAL APPLICATIONS</b>	Architectural & Industrial	Industrial	Architectural & Industrial	Commercial Residential
<b>PAGE NUMBERS</b>	10-11	12-13	14-15	16-17

# Applicator Selection Guide

1



	Heavy-Duty Texture	2K Mix	AL Plus Automatic	Alpha Plus	PRO Xs4 AA Smart
<b>FINISH QUALITY</b>	Protective Coatings	Protective Coatings	Protective Coatings	Protective Coatings	Protective Coatings
<b>FLOW RATE RANGE</b>	0-128+ oz.	0-128+ oz.	0-128+ oz.	0-75 oz.	0-75 oz.
<b>MAXIMUM FLUID PRESSURE PSI (bar, MPa)</b>	4000 (27.6, 276)	3000 (20.7, 207)	4000 (27.6, 276)	5000 (34.5, 345)	3600 (24.8, 248)
<b>TYPICAL APPLICATIONS</b>	Architectural & Industrial	Plural Component Industrial	Industrial	Architectural & Industrial	Industrial
<b>PAGE NUMBERS</b>	18-19	20-21	22-25	39-43	44-47



# Silver Plus™

## Manual Airless Spray Gun

### Features and Benefits

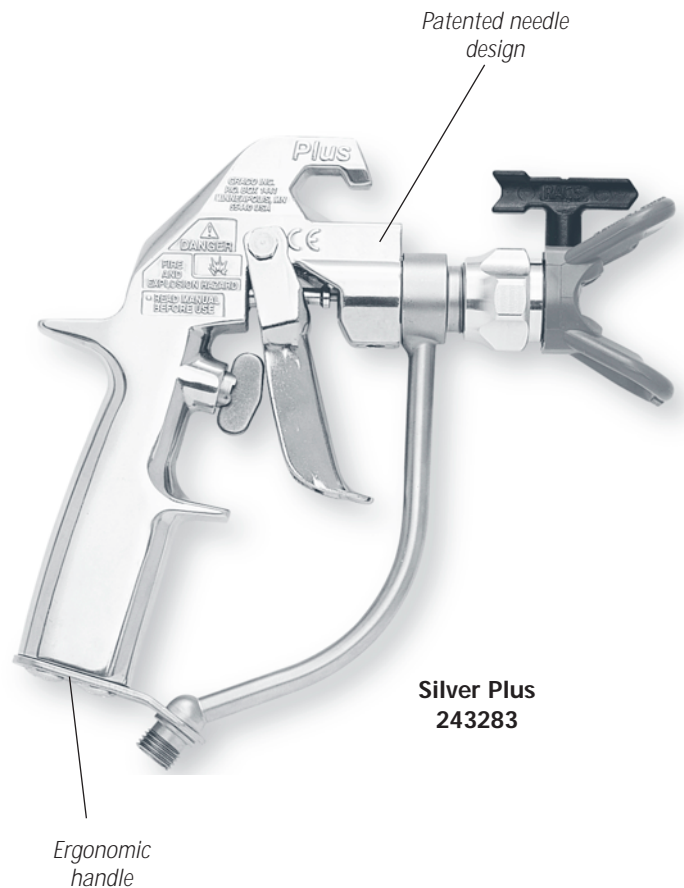
- Ergonomic handle reduces fatigue and increases comfort
- No adjustment needle makes for quick and easy repairs
- Patented needle design increases life

### Typical Applications

- Marine and shipbuilding
- Railcar manufacturing
- Offshore industry
- Structural steel and corrosion protection

### Typical Coatings Applied

- High solids epoxy primers and coatings
- High solids polyurethane coatings
- Architectural latex emulsion paints
- Coal tar epoxy primers
- Tank and pipe coatings and linings



# Silver Plus

## Manual Airless Spray Gun

### Technical Specifications

Maximum working pressure	5000 psi (34.5 MPa, 345 bar)
Weight without tip or guard	18 oz. (510 g)
Fluid orifice	All models (except 235462) 0.090 in. (2.3 mm) 235462 0.037 in. (0.94 mm)
Fluid inlet	1/4 npsm(m)
Maximum material temperature	120°F (50°C)
Sound pressure level*	78 dBA
Sound power level*	87 dBA
Wetted parts	Stainless Steel, Polyethylene, Polyurethane, Nylon, PTFE
Instruction manual	309092

\*Measured while spraying waterborne paint – gravity 1.36 through a 517 tip at 3000 psi (20.7 MPa, 207 bar) per ISO 3744.

### Ordering Information

- 243283 Silver Plus**  
With Reverse-A-Clean® (RAC) 5 Tip Assembly and 2-Finger trigger.
- 235464 Silver Plus**  
With Heavy-Duty (HD) RAC Tip Assembly, GHD617 SwitchTip™ and 2-Finger trigger.
- 238591 Silver Plus**  
With HD Tip Assembly, GHD525 SwitchTip and 4-Finger trigger.
- 235460 Silver Plus**  
With DripLess™ Flat Tip Guard and 2-Finger trigger. Spray tip not included.
- 235461 Silver Plus**  
With DripLess Flat Tip guard and 4-Finger trigger. Spray tip not included.
- 235462 Silver Plus**  
With DripLess Flat Tip guard and 0.037 in. (0.94 mm) pre-orifice for fine finish. Spray tip not included.
- 235474 Silver Plus Gun Repair Kit**

### Accessories

#### NYLON BRUSHES

Use to thoroughly clean the gun's fluid passages.

- 101891** 3/8 in. (9 mm) diameter
- 101892** 5/8 in. (16 mm) diameter

#### TOOLS

- 171147 Wrench**  
Fits all hexes on the gun.

#### HOSES AND SWIVELS

- 189018 Hose Swivel**  
Maximum working pressure: 5000 psi (34.5 MPa, 345 bar). 1/4 npsm(f) x 3/8 npt(f).

#### Whip Hose

Maximum working pressure: 5000 psi (34.5 MPa, 345 bar). ID 1/4 in. (6.3 mm). 1/4 npsm(fbe).

- 214912** 3 ft. (1.8 m)
- 214913** 6 ft. (1.8 m)

#### 243321 Silver Plus Gun Hose Kit

Includes Gun, RAC 5 SwitchTip, HandTite™ tip guard, 1/4 in. x 50 ft. (6.3 mm x 15.2 m) BlueMax airless hose and 3 ft. (0.9 m) whip hose.

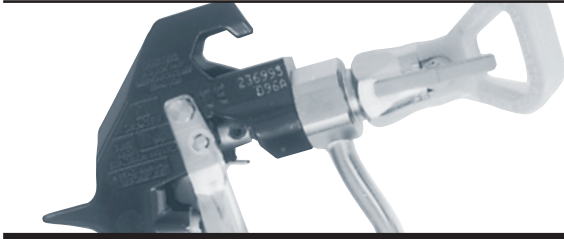
#### 239394 High Pressure SST Swivel/Filter

Maximum working pressure: 5800 psi (40.1 MPa, 401 bar). 1/4 npsm(m) x 1/4 npsm(f).

#### TIP GUARDS

- 220251 Flat Tip Guard**
- 222674 HD RAC DripLess Tip Guard**
- 237859 Performance Series RAC Guard**
- 239394 Filter/Swivel**
- 243161 HandTite Tip Guard**

1



# Model 510

## Manual Airless Spray Gun

### Features and Benefits

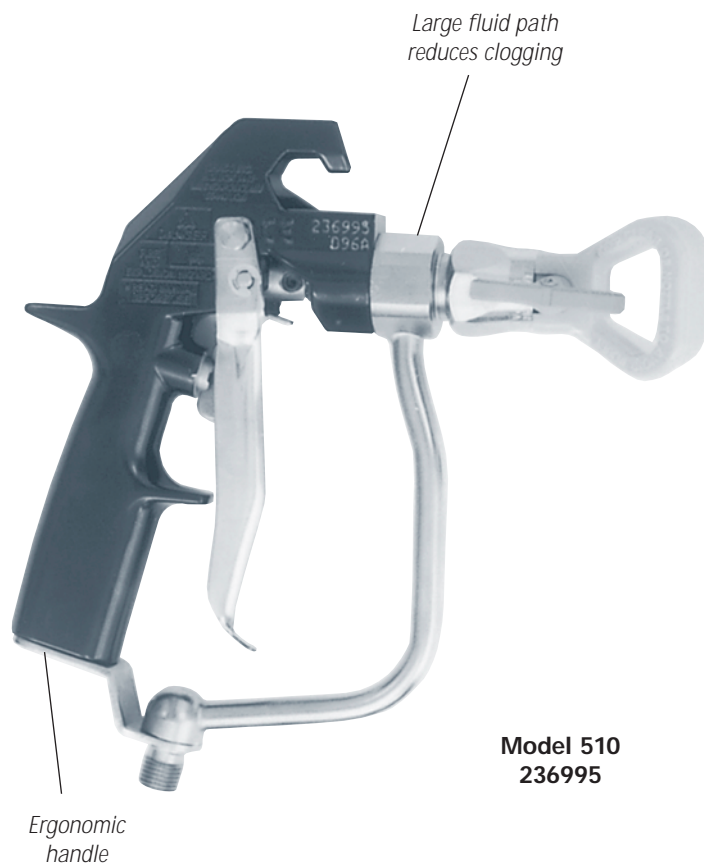
- No spring in the fluid path to clog with material
- Ergonomic handle reduces fatigue and increases comfort
- Patented needle design increases life

### Typical Applications

- Marine and shipbuilding
- Railcar manufacturing
- Offshore industry
- Structural steel and corrosion protection

### Typical Coatings Applied

- High solids epoxies
- High solids polyurethane coatings
- Fire retardant coatings
- Anti-fouling ship coatings
- Tank and pipe coatings



# Model 510

## Manual Airless Spray Gun

### Technical Specifications

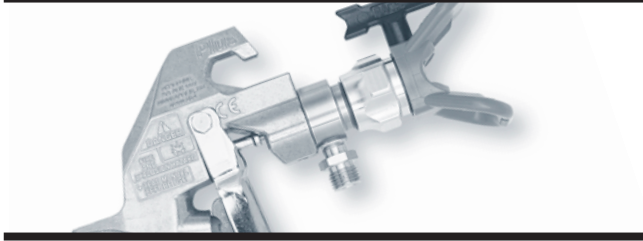
Maximum working pressure .....	7400 psi (51.0 MPa, 510 bar)
Fluid orifice size .....	0.090 in. (2.3 mm)
Fluid inlet size .....	1/4 npsm(m)
Fluid tube inside diameter size .....	0.245 in. (6.2 mm)
Weight (includes tip and tip guard) .....	25.7 oz. (729 g)
Length .....	8.25 in. (210 mm)
Height .....	8.0 in. (203 mm)
Wetted parts .....	Tungsten Carbide, 17-4ph Passivated Stainless Steel, Polypropylene, Polyethylene
Instruction manual .....	308438

### Ordering Information

**236995 Model 510**  
Includes a Heavy-Duty 510 RAC 5 Tip Guard and size 527 SwitchTip.

### Accessories

- 237398 Needle and Seat Kit Repair Kit**  
Fluid orifice size: 0.090 in. (2.3 mm).  
Comes standard with the Model 510 gun.  
Includes valve seat, gasket, needle, seal retainer and seal.
- 236987 Gun Hose Swivel**  
Maximum working pressure: 7400 psi (51.0 MPa, 510 bar). 1/4 npsm(f) x 1/4 npt(m).
- 237260 Optional Non-Diffused Needle and Seat Conversion/Repair Kit**  
Fluid orifice size: 1/8 in. (3.2 mm). Recommended only for use with mastics, sealers and other high viscosity materials which have fillers that cannot pass through the standard seat diffuser.
- 237162 HD RAC Tip Retainer**  
Maximum working pressure: 7400 psi (51 MPa, 510 bar). Fits guns with 7/8 in. (22.2 mm) thread. Included as part of 236995 Model 510 gun.



# Flex Plus™

## Manual Airless Spray Gun

### Features and Benefits

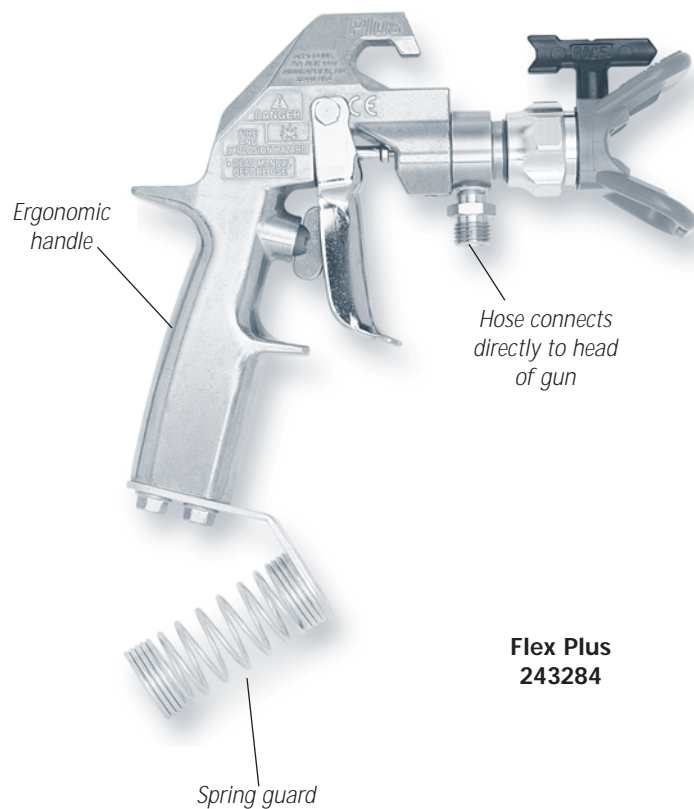
- Ergonomic handle reduces fatigue and increases comfort
- No adjustment needle makes for quick and easy repairs
- Patented needle design increases life

### Typical Applications

- Marine and shipbuilding
- Railcar manufacturing
- Offshore industry
- Structural steel and corrosion protection

### Typical Coatings Applied

- High solids epoxy primers and coatings
- High solids polyurethane coatings
- Architectural latex emulsion paints
- Coal tar epoxy primers
- Tank and pipe coatings and linings





# Flex Plus

## Manual Airless Spray Gun

### Technical Specifications

Maximum working pressure .....	5000 psi (34.5 MPa, 345 bar)
Fluid inlet .....	1/4 npsm(m)
Fluid orifice diameter .....	0.090 in. (2.3 mm)
Fluid outlet .....	7/8 in. -14 UNF
Weight (without tip or guard) .....	18.6 oz. (530 g)
Repair kit .....	235474
Instruction manual .....	308235

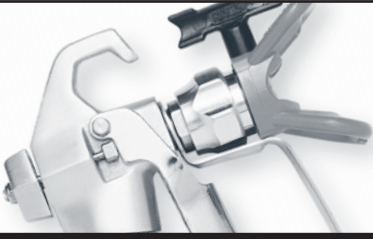
### Ordering Information

- 235458 Flex Plus Gun**  
Includes Flat Tip DripLess Guard and 2-Finger Trigger.  
Spray tip not included.
- 243284 Flex Plus Gun**  
Includes 517 RAC 5 SwitchTip, HandTite Tip Guard  
and 2-Finger Trigger.

### Accessories

- 243322 Flex Plus Gun Hose Kit**  
Flex Plus Gun with 517 RAC 5 SwitchTip and HandTite  
tip guard , 3 ft. (0.9 m) whip hose , 1/4 in. (6.3 mm) x  
50 ft. (15.2 m) airless hose.

1



# Contractor™

## Manual Airless Spray Gun

### Features and Benefits

- 2-Finger trigger and Comfort Grip™ form-fitted handle
- In-handle paint filter and built-in hose swivel
- Connection for top spraying performance
- Stainless steel gun fluid tube

### Typical Applications

- Commercial
- Residential
- Interior/Exterior

### Typical Coatings Applied

- Oil-based coatings
- Enamels
- Latex
- Blockfiller
- Elastomerics
- Epoxies
- Most common architectural coatings



**Contractor Gun  
243282**



# Contractor Manual Airless Spray Gun

## Technical Specifications

Maximum working pressure .....	3600 psi (24.8 MPa, 248 bar)
Fluid orifice diameter .....	0.125 in. (3.2 mm)
Fluid inlet .....	1/4 in. npsm(m) swivel
Fluid orifice diameter .....	0.125 in. (3.2 mm)
Fluid outlet .....	7/8 in. -14 UNF
Weight .....	19 oz. (540 g)
Repair kit .....	218070
Instruction manual .....	307614

## Ordering Information

- 243282 Contractor Gun**  
Includes 517 RAC 5 SwitchTip and HandTite tip guard.
- 179943 Optional 4-Finger Trigger**  
For 243282 Contractor gun.

## Accessories

### FILTERS

- 218131 Gun Filter Assembly, 50 mesh**
- 218133 Gun Filter Assembly, 100 mesh (149 micron)**
- 224455 Gun Filter Screen Element, 50 mesh (300 micron)**
- 224456 Gun Filter Screen Element, 100 mesh (149 micron)**

### TOOLS

- 171147 Wrench**  
Fits all hexes on the gun.

### Nylon Brushes

- Use to thoroughly clean the gun's fluid passages.
- 101891** 3/8 in. (9 mm) diameter
- 101892** 5/8 in. (16 mm) diameter

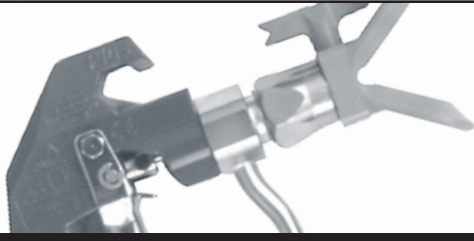
### HOSES AND SWIVELS

- 224457 Gun Hose Swivel**  
Maximum working pressure: 3600 psi (24.8 MPa, 248 bar). 1/4 npsm(f) x 1/4 npt(m).
- 243318 Contractor Gun Hose Kit**  
Includes Gun, RAC 5 SwitchTip, HandTite tip guard, 1/4 in. x 50 ft. (6.3 mm x 15.2 m) BlueMax™ airless hose and 3 ft. (0.9 m) whip hose.
- 243321 Contractor Gun Hose Kit**  
Includes gun, RAC 5 SwitchTip, HandTite tip guard, 3/8 in. x 50 ft. (9.5 mm x 15.2 m) airless hose and 3 ft. (0.9 m) whip hose.

### TIP GUARDS

- 220251 Flat Tip Guard**
- 222674 Heavy-Duty RAC DripLess Tip Guard**
- 237859 Performance Series RAC Guard**
- 239394 Filter/Swivel**
- 243161 HandTite Tip Guard**

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# Heavy-Duty Texture

## Manual Airless Spray Gun

### Features and Benefits

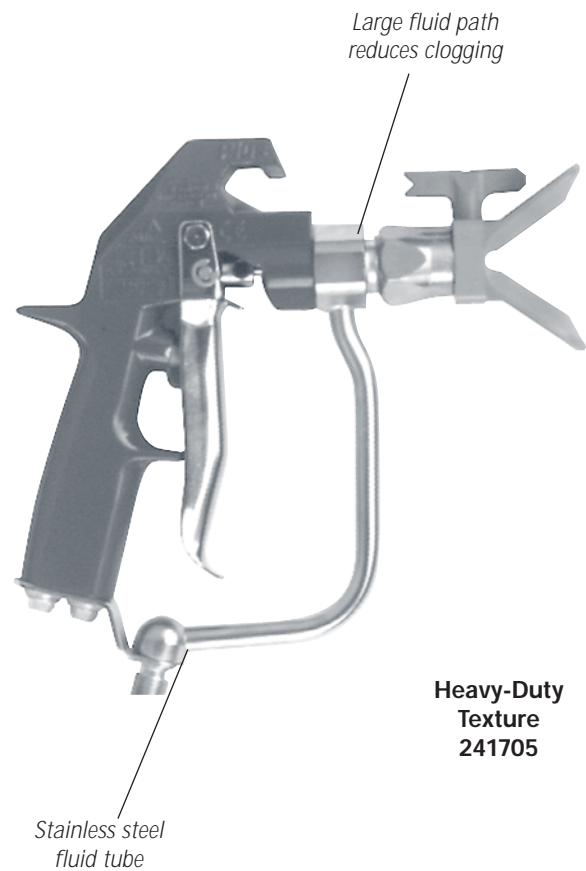
- Stainless steel fluid tube
- Large fluid passages for high-viscosity materials
- No spring in fluid passage to clog with material
- Patented needle design increases life

### Typical Applications

- Commercial
- Residential
- Marine and ship building
- Railcar manufacturing
- Structural steel and corrosion protection

### Typical Coatings Applied

- High solids
- Mastics
- Protective coatings
- Smooth textures





# Heavy Duty Texture Manual Airless Spray Gun

## Technical Specifications

Maximum working pressure .....	4000 psi (27.6 MPa, 276 bar) max.
Fluid orifice diameter .....	0.125 in. (3.2 mm)
Repair kit .....	237260

## Ordering Information

**241705 Heavy-Duty Texture Gun**  
With GHD631 spray tip and HD RAC tip guard.

## Accessories

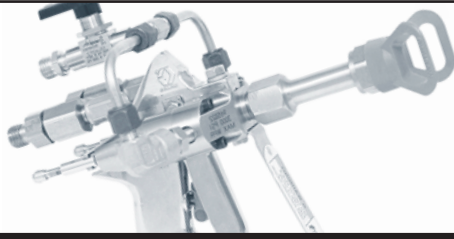
### Gun and Hose Kits

Include:

- 241705** Heavy-Duty Texture Gun
- 235462** Hose, 3/8 in. x 50 ft. (9.5 mm x 15.2 m), 3300 psi (22.7 MPa, 227 bar).
- 241338** Heavy-Duty Texture Gun and hose, 3/8 in. x 50 ft. (9.5 mm x 15.2 m), 3300 psi (22.7 MPa, 227 bar).
- 244925** Heavy-Duty Texture Gun and hose, 3/8 in. x 50 ft. (9.5 mm x 15.2 m), 5000 psi (34.5 MPa, 345 bar). With 1/4 in. x 3 ft. (6.4 mm x 0.9 m), 5000 psi (34.5 MPa, 345 bar) whip hose.

### Atomizer Kits

- 244052** **Texture Atomizer Kit** with Compressor Air Hose
- 244223** **Texture Atomizer Kit** without Compressor Air Hose



# Plural Component Mix

## Manual Airless Spray Gun

### Features and Benefits

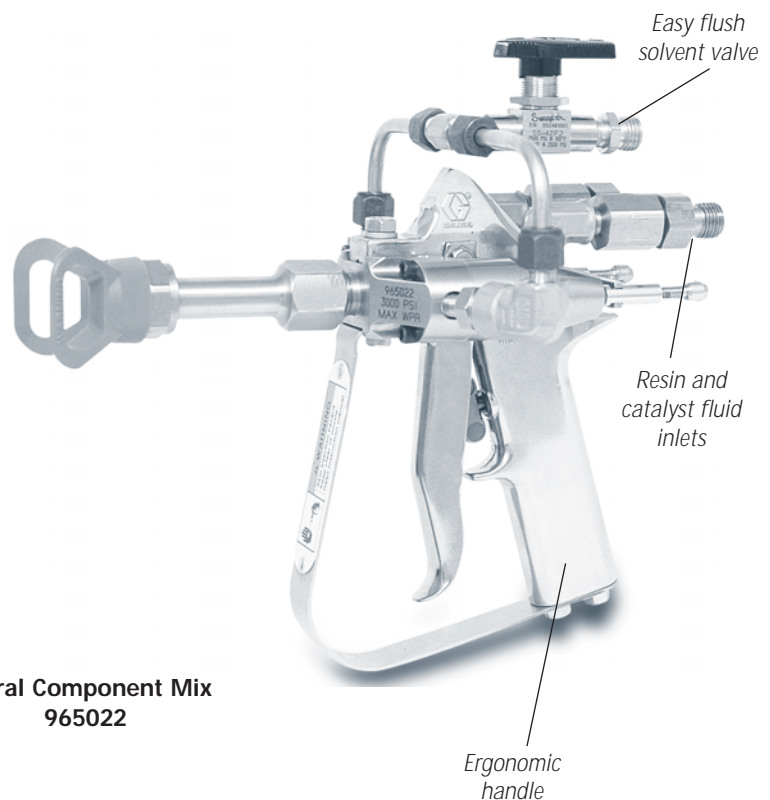
- Applies coatings with pot lives of under one minute
- Solvent valve flushes gun quickly and easily

### Typical Applications

- Tank and pipe linings
- Structural steel and corrosion protection

### Typical Coatings Applied

- Plural component coatings
- Coatings with very short pot lives
- High solids polyurethanes
- High solids epoxies



Plural Component Mix  
965022

# Plural Component Mix Manual Gun

## Technical Specifications

Maximum working pressure	3000 psi (20.7 MPa, 207 bar)
Fluid orifice size	0.090 in. (2.3 mm)
Wetted parts	Stainless Steel (303 or 304), Ethylene-Polypropylene, Tungsten Carbide, PTFE, Polyurethane, Polyethylene
Fluid inlet size (catalyst and resin)	1/4 npsm(m)
Weight	4.375 lbs. (2 kg)
Height	8 in. (204 mm)
Length	9 in. (229 mm)
Instruction manual	684002

## Ordering Information

- 965022 Plural Component Mix Gun**  
Includes standard (non-reversing) DripLess tip guard.  
Spray tip and mixer not included.

## Accessories

- Static Mixers**
  - 11/16 - 16 UN(f) x 11/16 - 16 UN(m)
  - 947492** 2 in. (50.8 mm) stainless steel
  - 947512** 3 in. (76.2 mm) stainless steel
- 237858 RAC IV Tip Retainer**  
11/16 - 16 UN
- 949097 Repair Kit**
- 204940 Gun/Hose Swivel**  
Maximum working pressure: 5800 psi (40 MPa, 400 bar). 1/4 npsm(m) x 1/4 npsm(f).
- 214700 Whip Hose**  
Maximum working pressure: 3000 psi (20.7 MPa, 207 bar).

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# AL Plus™

## Automatic Airless Spray Gun

### Features and Benefits

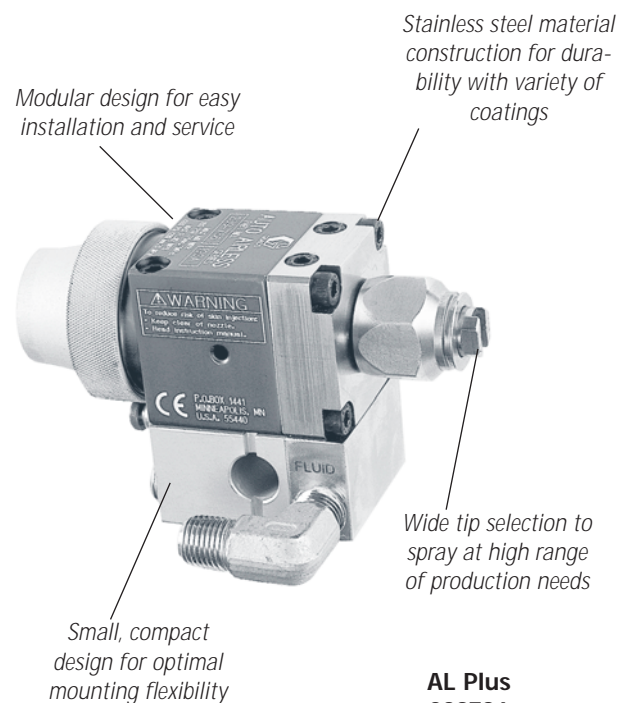
- Easy maintenance and repair with removable spray gun on manifold
- Compact style that is simple to mount
- Capable of high production speeds

### Typical Applications

- Drum painting
- Metal furniture and fixture manufacturing
- Fabricated metal manufacturing
- Leather finishing
- Wood finishing

### Typical Coatings Applied

- Primers, protective coatings, waterborne materials and two-part urethane
- Washcoats, glazes, top coat lacquers and catalyzed varnishes
- Epoxies, urethanes, air dry enamels and clear coat enamels





# AL Plus

## Automatic Airless Spray Gun

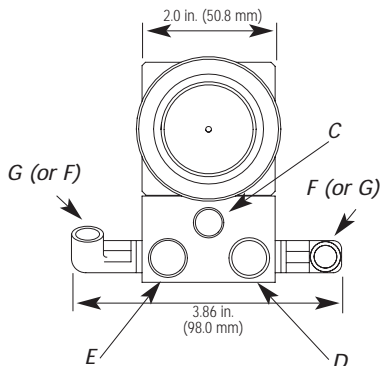
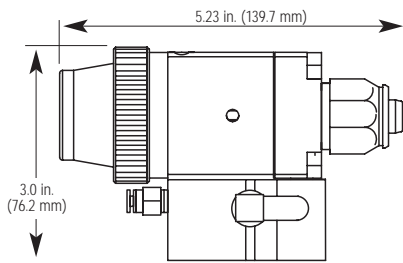
### Technical Specifications

Maximum fluid pressure . . . . . 4000 psi (27.6 MPa, 276 bar)  
 Maximum working air pressure . . . . . 100 psi (0.7 MPa, 7 bar)  
 Maximum cylinder air pressure . . . . . 100 psi (0.7 MPa, 7 bar)  
 Minimum actuating pressure . . . . . 70 psi (0.5 MPa, 4.9 bar)  
 Maximum working fluid temperature . . . . . 120°F (49°C)  
 Wetted parts . . . . . Stainless Steel, Carbide, UHMWPE,  
 Delrin®, PEEK, CV75, PTFE  
 Weight . . . . . 2.1 lbs. (0.95 kg)  
 Instruction manual . . . . . 308813  
 Delrin® is a registered trademark of Du Pont.

### Triggering Speed

Cylinder Air Pressure psi (MPa, bar)	Fluid Pressure psi (MPa, bar)	msec to fully open	msec to fully close
70 (0.49, 4.9)	600 (4.2, 42)	51	72
70 (0.49, 4.9)	1800 (12.4, 124)	56	73
70 (0.49, 4.9)	4000 (28.8, 280)	69	73

### Dimensions



- Key**  
 C Cylinder Air Inlet: accepts 1/4 in. (6.3 mm) O.D. tubing  
 D Atomization Air Inlet: 1/4 - 18.6 npsm (plugged on airless gun)  
 E Fan Air Inlet: 1/4 - 18.6 npsm (plugged on airless gun)  
 F Fluid Inlet: 1/4 - 18 nptf (or #5 JIC (1/2-20 unf)  
 G Fluid Outlet (circulating gun only): 1/4-18 npt(f) or #5 JIC (1/2-20 unf)

### Tip Selection Guide

Orifice in. (mm)	Fan Width at 12 in. in. (mm)	Flow Rate gpm (lpm)	Tip Part No.
0.007 (0.178)	2-2.5 (50-63)	0.053 (0.20)	GG0107
0.009 (0.229)	2-2.5 (50-63) 4-4.5 (100-113) 6-6.5 (150-163)	0.087 (0.33)	GG0109 GG0209 GG0309
0.011 (0.279)	2-2.5 (50-63) 4-4.5 (100-113) 6-6.5 (150-163) 8-8.5 (200-213) 10-10.5 (250-263) 12-13 (300-325)	0.13 (0.49)	GG0111 GG0211 GG0311 GG0411 GG0511 GG0611
0.013 (0.330)	2-2.5 (50-63) 4-4.5 (100-113) 6-6.5 (150-163) 8-8.5 (200-213) 10-10.5 (250-263) 12-13 (300-325) 14-15 (350-375)	0.18 (0.69)	GG0113 GG0213 GG0313 GG0413 GG0513 GG0613 GG0713
0.015 (0.381)	2-2.5 (50-63) 4-4.5 (100-113) 6-6.5 (150-163) 8-8.5 (200-213) 10-10.5 (250-263) 12-13 (300-325) 14-15 (350-375) 16-17 (400-425)	0.24 (0.91)	GG0115 GG0215 GG0315 GG0415 GG0515 GG0615 GG0715 GG0815
0.017 (0.432)	2-2.5 (50-63) 4-4.5 (100-113) 6-6.5 (150-163) 8-8.5 (200-213) 10-10.5 (250-263) 12-13 (300-325) 16-17 (400-425) 18-19 (450-475)	0.31 (1.17)	GG0117 GG0217 GG0317 GG0417 GG0517 GG0617 GG0817 GG0917
0.019 (0.483)	4-4.5 (100-113) 6-6.5 (150-163) 8-8.5 (200-213) 10-10.5 (250-263) 12-13 (300-325) 14-15 (350-375) 16-17 (400-425) 18-19 (450-475)	0.39 (1.47)	GG0219 GG0319 GG0419 GG0519 GG0619 GG0719 GG0819 GG0919
0.021 (0.533)	4-4.5 (100-113) 6-6.5 (150-163) 8-8.5 (200-213) 10-10.5 (250-263) 12-13 (300-325) 14-15 (350-375) 16-17 (400-425) 18-19 (450-475)	0.47 (1.79)	GG0221 GG0321 GG0421 GG0521 GG0621 GG0721 GG0821 GG0921

# AL Plus

## Automatic Airless Spray Gun

### Tip Selection Guide (continued)

Orifice in. (mm)	Fan Width at 12 in. in. (mm)	Flow Rate gpm (lpm)	Tip Part No.
0.023 (0.584)	4-4.5 (100-113)	0.57 (2.15)	GG0223
	6-6.5 (150-163)		GG0323
	8-8.5 (200-213)		GG0423
	10-10.5 (250-263)		GG0523
	12-13 (300-325)		GG0623
	14-15 (350-375)		GG0723
	16-17 (400-425)		GG0823
18-19 (450-475)	GG0923		
0.025 (0.635)	6-6.5 (150-163)	0.67 (2.54)	GG0325
	8-8.5 (200-213)		GG0425
	10-10.5 (250-263)		GG0525
	12-13 (300-325)		GG0625
	14-15 (350-375)		GG0725
	16-17 (400-425)		GG0825
	18-19 (450-475)		GG0925
20-21 (500-525)	GG1025		
0.027 (0.686)	4-4.5 (100-113)	0.78 (2.96)	GG0227
	6-6.5 (150-163)		GG0327
	8-8.5 (200-213)		GG0427
	10-10.5 (250-263)		GG0527
	12-13 (300-325)		GG0627
	14-15 (350-375)		GG0727
	16-17 (400-425)		GG0827
18-19 (450-475)	GG0927		
0.029 (0.737)	8-8.5 (200-213)	0.90 (3.42)	GG0429
	10-10.5 (250-263)		GG0529
	12-13 (300-325)		GG0629
	14-15 (350-375)		GG0729
0.031 (0.787)	6-6.5 (150-163)	1.03 (3.90)	GG0331
	8-8.5 (200-213)		GG0431
	10-10.5 (250-263)		GG0531
	12-13 (300-325)		GG0631
	16-17 (400-425)		GG0831
	18-19 (450-475)		GG0931
0.033 (0.838)	8-8.5 (200-213)	1.17 (4.42)	GG0433
	10-10.5 (250-263)		GG0533
	12-13 (300-325)		GG0633
	14-15 (350-375)		GG0733
	18-19 (450-475)		GG0933
0.035 (0.889)	4-4.5 (100-113)	1.31 (4.98)	GG0235
	6-6.5 (150-163)		GG0335
	8-8.5 (200-213)		GG0435
	10-10.5 (250-263)		GG0535
	12-13 (300-325)		GG0635
	14-15 (350-375)		GG0735
	18-19 (450-475)		GG0935
0.039 (0.991)	10-10.5 (250-263)	1.63 (6.18)	GG0539
0.041 (1.041)	10-10.5 (250-263)	1.80 (6.83)	GG0541
	16-17 (400-425)		GG0841
0.043 (1.092)	10-10.5 (250-263)	1.99 (7.51)	GG0543
	12-13 (300-325)		GG0643
0.045 (1.143)	10-10.5 (250-263)	2.17 (8.23)	GG0545

Orifice in. (mm)	Fan Width at 12 in. in. (mm)	Flow Rate gpm (lpm)	Tip Part No.
0.047 (1.194)	10-10.5 (250-263)	2.37 (8.98)	GG0547
	16-17 (400-425)		GG0847
0.049 (1.245)	8-8.5 (200-213)	2.58 (9.76)	GG0449
	14-15 (350-375)		GG0749
0.051 (1.29)	12-13 (300-325)	2.79 (10.6)	GG0651
0.053	10-10.5 (250-263)	3.02 (11.4)	GG0553
0.055 (1.40)	12-13 (300-325)	3.25 (12.3)	GG0655
0.059 (1.50)	6-6.5 (150-163)	3.74 (14.1)	GG0359
	8-8.5 (200-213)		GG0459
	14-15 (350-375)		GG0759
	28-29 (700-725)		GG1459
0.061 (1.55)	10-10.5 (250-263)	3.99 (15.1)	GG0561
0.063 (1.60)	8-8.5 (200-213)	4.26 (16.1)	GG0463
	14-15 (350-375)		GG0763
	16-17 (400-425)		GG0863
0.065 (1.65)	10-10.5 (250-263)	4.53 (17.2)	GG0565
	14-15 (350-375)		GG0765
	16-17 (400-425)		GG0865
0.067 (1.70)	12-13 (300-325)	4.82 (18.2)	GG0667
0.069 (1.75)	8-8.5 (200-213)	5.11 (19.3)	GG0469
	10-10.5 (250-263)		GG0569
	12-13 (300-325)		GG0669
0.071 (1.80)	8-8.5 (200-213)	5.41 (20.5)	GG0471
0.073 (1.85)	28-29 (700-725)	5.72 (21.7)	GG1471
0.073 (1.85)	10-10.5 (250-263)	5.72 (21.7)	GG0573
0.075 (1.90)	8-8.5 (200-213)	6.04 (22.9)	GG0475
0.077 (1.95)	8-8.5 (200-213)	6.36 (24.1)	GG0477
0.079 (2.00)	8-8.5 (200-213)	6.70 (25.4)	GG0479

# AL Plus

## Automatic Airless Spray Gun

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### Ordering Information

*A manifold is required for each gun to be installed. All models include internal filter.*

**239786 Airless Gun**

Includes GG0 precision spray tip (size of choice).

**Manifolds**

*A manifold is required for each gun to be installed.*

**241161** Standard 1/4-18 npsm inlets

**241162** European #5 JIC inlets

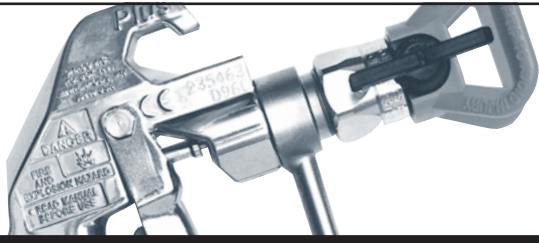
### Accessories

**239894** Air Seal Repair Kit

**239896** Fluid Repair Kit

**240948** Filter Kit

10 - 193413 internal filters.



# Airless Tip Selection Guide

Choosing the right tip is extremely important for maximum productivity, because the tip determines the fluid flow and the size of the spray pattern — the fan size. Using the right tip results in maximum control and minimum overspray, which means faster work and less paint usage, which ultimately means finishing the job quickly without wasting paint!

To choose the right spray tip, you need to consider several factors, such as the material thickness, the sprayer's maximum flow rate and the best fan size for the job. Knowing when a tip is worn and why to replace it are also important.

So the next time you're selecting spray tips, consider these questions:

## How thick is the material?

It's easy to determine which tip size to use when you know the type of material you'll be spraying. Lower viscosity (thinner) materials, such as stain or lacquer, require a spray tip with a smaller orifice or hole size. Heavier materials, like latex, require a tip with a larger orifice. Extremely heavy materials like elastomerics and blockfiller might require spray tips larger than .035.

## What is the sprayer's maximum flow rate?

For optimum performance, the sprayer must have a maximum flow rate higher than the flow rate of the tip, so be sure the flow rate of the tip is less than the maximum flow rate of your sprayer. Why use a tip with a lower flow rate? Because as the tip wears, the orifice becomes larger, and the flow rate increases.

## What is the best fan size for the job?

Fan size — the width of the spray pattern — determines the area covered with each pass.

For a given tip orifice, a wider fan delivers a thinner coat, less defined spray pattern, more overspray, and faster coverage on broad, open surfaces. A narrower fan delivers a thicker coat, more defined spray pattern, less overspray, and better control when spraying small or confined surfaces.

To maximize productivity and lower labor costs, choose a tip with the right fan size. In general, a larger fan size increases production with less control, and a smaller fan size decreases production with more control.

### RECOMMENDED TIP SIZES FOR COMMON COATINGS

Material	Tip Size (in./mm)
Stain or Lacquer	.011 to .013/0.28 to 0.33
Oil Base Paint	.013 to .015/0.33 to 0.38
Latex Paint	.015 to .019/0.33 to 0.48
Heavy Latex & Smooth Elastomeric	.021 to .025/0.53 to 0.63
Elastomeric & Blockfiller	.025 to .035+/0.53 to 0.89+

### MAKE SURE TIP AND SPRAYER ARE RATED FOR EACH OTHER

Suppose your sprayer has a flow rate of 0.38 gpm (1.4 lpm), and you want to spray latex paint with a 0.017 in. (0.43 mm) tip. The 0.017 tip has a flow rate of 0.31 gpm (1.17 lpm).

The Verdict? You can use the 0.017 tip because it has a lower flow rate than the maximum flow rate of your sprayer.

### ORIFICE SIZE ALONE DETERMINES FLOW RATE OF TIP

Tips 286415 and 286515 have a 0.24 gpm (0.9 lpm) flow rate with different fan sizes. Tip 286415 sprays an 8 in. (203 mm) fan with a thicker coat (more mil build), and tip 286515 sprays a 10 in. (254 mm) fan with less mil build.

Do not try to increase the area covered with each pass by backing the gun away from the surface. From farther away, less paint will reach the surface and go to waste as overspray.

The Solution? Use a tip with a larger fan and orifice. Remember, if you use a tip with a larger fan but not a larger orifice, the mil build will be less, and you'll have to move the gun more slowly.

# Airless Applicators

## Tip Selection Guide

### Can You Afford the High Cost of Using a Worn Tip?

Choosing the right spray tip is essential for a quality finish no matter what material is being sprayed, but tips wear with normal use. It's impossible to say how long a tip will last, because there is a huge difference in abrasiveness from one coating to another. For example, latex paints are usually more abrasive than lacquers or alkyd enamels. There's even a wide variation in the abrasiveness of latex paints from one manufacturer to another. And because paint is sprayed at different pressures, some tips will wear faster than others. Abrasive material sprayed at too high a pressure or through too small a tip causes faster tip wear, which wastes time and paint.

### How Do You Determine if a Tip is Worn?

When a spray tip wears, the orifice gets bigger and rounder, which makes the fan pattern smaller. When the fan has lost 25% of its original size, it is time to replace the tip. When a tip with a 12 in. (305 mm) fan wears down to a 9 in. (230 mm) fan, it outputs 30% more paint on 25% less area. Continuing to spray with a worn tip means painting takes longer, more paint gets used, and the finish may be uneven and have runs.

### Five Ways to Extend Tip Life:

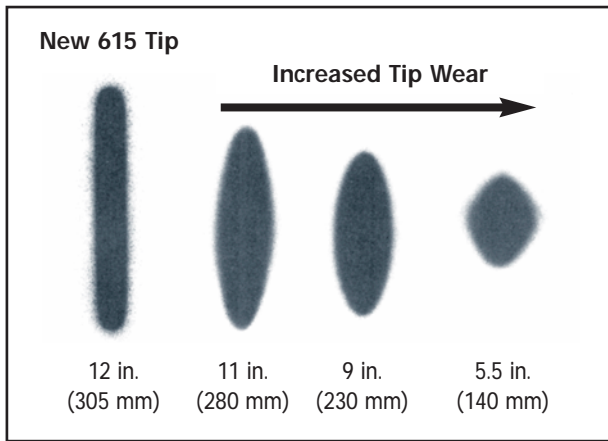
1. Spray at the lowest atomization pressure.
2. Strain the material before you spray it.
3. Use the correct size filters.
4. Clean the filters after every use.
5. Clean the tip with a soft-bristled brush.

**EXPENSIVE DECISION**

A contractor spraying with a worn tip uses, on average, 20% more paint and 20% more labor.

Consider this:  
Assuming paint is \$10 per gal. (\$2.64 per L), consumption is 5 gal. (19 L) per hour, and labor is \$18 per hour, the total cost is \$68 per hour.

But if the contractor sprays with a worn tip? Labor efficiency would decrease by 20% while paint consumption would increase to 6 gallons (22.7 L) per hour, which would increase the hourly cost to \$81.60. The total cost increase would be \$108.80 per 8-hour shift!



**A TIP ON TIPS**

A rule of thumb: use smaller orifice sizes to spray lower viscosity materials such as stains and lacquers. Use larger orifice sizes for heavier viscosity coatings such as latex or oil-base paints.

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# Airless Applicators

## Tip Selection Guide

### Tip Charts

#### Color Coded RAC™ Tips

Graco identifies Reverse-A-Clean® tips with color codes:

- Standard RAC 5 SwitchTips are black.
- Fine Finish RAC (FF5) SwitchTips are green.
- LineLazer RAC (LL5) SwitchTips are yellow.
- Graco Heavy-Duty (GHD) RAC tips are gray.

### Making Sense of the Numbers

Graco uses a unique numbering system for all airless spray tips.

The first three characters designate the type of tip. For example, a 286417 is a RAC 5 SwitchTip™. The chart below shows other types.

286 RAC 5 SwitchTip	221 RAC IV SwitchTip
FF5 Fine Finish RAC 5 SwitchTip	269 Contractor Flat Tip
LL5 LineLazer™ RAC 5 SwitchTip	163 Fine Finish and Silver Flat Tip
GHD Heavy-Duty RAC SwitchTip	

Double the fourth digit for the approximate fan width in inches when the gun is held 12 in. (305 mm) from the surface.

Example: 286417 has a fan width of approximately 8 in. (203 mm).

Divide the last two digits by 1000 for the tip orifice size in inches.

Example: 286417 has an orifice size of 0.017 in. (0.43 mm). Also, look at the RAC 5 chart below to determine the flow rate of a .017 tip.

As indicated in the chart, this tip has a flow rate of 0.31, or approximately 1/3 gpm (which is about 1.2 lpm).

### RAC 5 SwitchTips (286XXX)

		Orifice Size - Inches																						
in. (mm)		.007	.009	.011	.013	.015	.017	.019	.021	.023	.025	.027	.029	.031	.033	.035	.039	.043	.045	.051	.055	.063	.065	
Fan Width	2-4 (51-102)		109	111	113	115		119	121															
	4-6 (102-152)	207	209	211	213	215	217	219	221	223	225					235								
	6-8 (152-203)	307	309	311	313	315	317	319	321	323	325	327		331										
	8-10 (203-254)		409	411	413	415	417	419	421	423	425	427	429		433	435	439	443			451	455		
	10-12 (254-305)		509	511	513	515	517	519	521	523	525	527	529	531	533	535		543			551	555	563	
	12-14 (305-356)		609	611	613	615	617	619	621	623	625	627	629	631	633	635			645			655		665
	14-16 (356-406)								721	723	725		729			735								
	16-18 (406-457)					815	817	819	821				827		831	833	835							
18-20 (457-508)							917									935								
Flow rate (gpm)		.05	.09	.12	.18	.24	.31	.38	.47	.57	.67	.77	.90	1.03	1.17	1.31	1.63	1.98	2.17	2.79	3.25	4.26	4.53	
Flow rate (lpm)		.20	.33	.49	.69	.91	1.17	1.47	1.79	2.15	2.54	2.96	3.42	3.90	4.42	4.98	6.18	7.51	8.23	10.57	12.29	16.13	17.17	

(water @ 2000 psi, 13.8 MPa, 138 bar)

Example: for a tip with a 0.011 in. (0.28 mm) orifice and a 6 in. (152 mm) pattern, order 286311.

Fan width of a spray pattern is measured at 12 in. (305 mm) from the surface.

### Fine Finish RAC 5 SwitchTips (FF5XXX)

		Orifice Size - Inches		
in. (mm)		.010	.012	.014
Fan Width	4-6 (102-152)	210	212	214
	6-8 (152-203)	310	312	
	8-10 (203-254)	410	412	414
	10-12 (254-305)	510	512	514
	12-14 (305-356)		612	614
	Flow rate (gpm)		.11	.15
Flow rate (lpm)		.41	.59	.80

(water @ 2000 psi, 13.8 MPa, 138 bar)

Example: for a tip with a 0.010 in. (0.25 mm) orifice and a 10 in. (254 mm) pattern, order FF510.

Fan width of a spray pattern is measured at 12 in. (305 mm) from the surface.

### LineLazer RAC 5 SwitchTips (LL5XXX)

		Orifice Size - Inches								
in. (mm)		.013	.015	.017	.019	.021	.023	.025	.027	.055
Line Width	2 (51)	213	215	217	219					
	4 (102)		315	317	319	321	323		327	355
	6 (152)			417	419	421				
	12 (305)					621	623	625	627	
Flow rate (gpm)		.18	.24	.31	.38	.47	.57	.67	.79	3.25
Flow rate (lpm)		.69	.91	1.17	1.47	1.79	2.15	2.54	2.96	12.29

(water @ 2000 psi, 13.8 MPa, 138 bar)

Example: for a tip with a 0.015 in. (0.38 mm) orifice and a 4 in. (102 mm) pattern, order LL5315.

Fan width of a spray pattern is measured at 6 in. (152 mm) from the surface with traffic paint at 2000 psi (13.8 MPa, 138 bar).

# Airless Applicators

## Tip Selection Guide

### Heavy-Duty RAC SwitchTips (GHDXXX)

		Orifice Size - Inches															
in. (mm)		.007	.009	.011	.013	.015	.017	.019	.021	.023	.025	.027	.029	.031	.033	.035	
Fan Width	2-4 (51-102)	107	109	111	113	115	117	119	121				129				
	4-6 (102-152)		209	211	213	215	217	219	221		225	227	229	231		235	
	6-8 (152-203)	307	309	311	313	315	317	319	321	323	325	327	329	331	333	335	
	8-10 (203-254)		409	411	413	415	417	419	421	423	425	427	429	431	433	435	
	10-12 (254-305)		509	511	513	515	517	519	521	523	525	527	529	531	533	535	
	12-14 (305-356)		609	611	613	615	617	619	621	623	625	627	629	631	633	635	
	14-16 (356-406)			711	713	715	717	719	721	723	725	727	729	731	733	735	
	16-18 (406-457)				813	815	817	819	821	823	825	827	829	831	833	835	
	18-20 (457-508)									923		927		931	933	935	
<b>Flow rate (gpm)</b>		.05	.09	.12	.18	.24	.31	.38	.47	.57	.67	.74	.90	1.03	1.17	1.31	
<b>Flow rate (lpm)</b>		.20	.33	.49	.69	.91	1.17	1.47	1.79	2.15	2.54	2.96	3.42	3.90	4.42	4.98	

(water @ 2000 psi, 13.8 MPa, 138 bar)

		Orifice Size - Inches																			
in. (mm)		.037	.039	.041	.043	.045	.047	.049	.051	.053	.055	.057	.059	.061	.063	.065	.067	.069	.071	.075	.081
Fan Width	2-4 (51-102)		139																		
	4-6 (102-152)		239																		
	6-8 (152-203)	337	339	341	343	345	347	349	351		355										
	8-10 (203-254)	437	439	441	443	445	447	449	451		455			461	463	465	467		471	475	481
	10-12 (254-305)	537	539	541	543	545	547	549	551	553	555	557	559	561	563	565	567		571	575	
	12-14 (305-356)	637	639	641	643	645	647	649	651		655	657	659	661	663	665	667	669	671	675	
	14-16 (356-406)	737	739	741	743		747	749	751	753	755			761	763		767		771		
	16-18 (406-457)	837	839	841	843		847		851		855			861	863		867				
	18-20 (457-508)	937	939																		
<b>Flow rate (gpm)</b>		1.47	1.63	1.8	1.98	2.17	2.37	2.58	2.79	4.26	3.25	3.49	3.74	4.0	4.26	4.53	4.82	5.11	5.41	6.04	7.04
<b>Flow rate (lpm)</b>		5.56	6.78	6.83	7.51	8.23	8.98	9.76	10.57	16.13	12.29	13.2	14.14	15.12	16.13	17.17	18.24	19.34	20.48	22.85	26.66

(water @ 2000 psi, 13.8 MPa, 138 bar)

Example: for a tip with a 0.039 in. (9.9 mm) orifice and a 10 in. (254 mm) pattern, order GHD539.  
 Fan width of a spray pattern is measured at 12 in. (305 mm) from the surface.

### RAC IV SwitchTips (221XXX)

		Orifice Size - Inches																					
in. (mm)		.007	.009	.011	.013	.015	.017	.019	.021	.023	.025	.027	.029	.031	.033	.035	.039	.043	.045	.051	.055	.063	.065
Fan Width	2-4 (51-102)			111		115																	
	4-6 (102-152)	207	209	211	213	215	217	219	221	223	225					235							
	6-8 (152-203)	307	309	311	313	315	317	319	321	323	325	327		331									
	8-10 (203-254)		409	411	413	415	417	419	421	423	425	427	429		433	435	439	443		451	455		
	10-12 (254-305)		509	511	513	515	517	519	521	523	525	527	529	531	533	535		543		551	555	563	
	12-14 (305-356)		609	611	613	615	617	619	621	623	625	627	629	631	633	635			645		655		665
	14-16 (356-406)								721	723	725		729			735							
	16-18 (406-457)					815	817	819	821			827			831	833	835						
	18-20 (457-508)						917									935							
<b>Flow rate (gpm)</b>		.05	.09	.12	.18	.24	.31	.38	.47	.57	.67	.77	.90	1.03	1.17	1.31	1.63	1.98	2.17	2.79	3.25	4.26	4.53
<b>Flow rate (lpm)</b>		.20	.33	.49	.69	.91	1.17	1.47	1.79	2.15	2.54	2.96	3.42	3.90	4.42	4.98	6.18	7.51	8.23	10.57	12.29	16.13	17.17

(water @ 2000 psi, 13.8 MPa, 138 bar)

Example: for a tip with a 0.013 in. (3.3 mm) orifice and a 8 in. (203 mm) pattern, order 221413.  
 Fan width of a spray pattern is measured at 12 in. (305 mm) from the surface.





# Airless Applicators

## Tip Selection Guide

### Silver Flat Tips (163XXX)

		Orifice Size - Inches																			
in. (mm)		.007	.009	.011	.013	.015	.017	.019	.021	.023	.025	.027	.029	.031	.033	.035	.039	.041			
Fan Width	2-4 (51-102)	107	109	111	113	115	117	119	121												
	4-6 (102-152)	207	209	211	213	215	217	219	221	223	225	227	229	231		235	239				
	6-8 (152-203)	307	309	311	313	315	317	319	321	323	325	327	329	331		335	339	341			
	8-10 (203-254)	407	409	411	413	415	417	419	421	423	425	427	429	431	433	435	439	441			
	10-12 (254-305)		509	511	513	515	517	519	521	523	525	527	529	531	533	535	539	541			
	12-14 (305-356)		609	611	613	615	617	619	621	623	625	627	629	631	633	635	639	641			
	14-16 (356-406)			711	713	715	717	719	721	723	725	727	729	731	733	735					
	16-18 (406-457)				813	815	817	819	821	823	825	827	829	831	833	835	839	841			
	18-20 (457-508)					915	917	919	921	923	925	927	929	931	933	935	939				
<b>Flow rate (gpm)</b>		.05	.09	.12	.18	.24	.31	.38	.47	.57	.67	.79	.90	1.03	1.17	1.31	1.63	1.8			
<b>Flow rate (lpm)</b>		.20	.33	.49	.69	.94	1.17	1.47	1.79	2.15	2.54	2.69	3.42	3.90	4.42	4.98	6.18	6.83			

(water @ 2000 psi, 13.8 MPa, 138 bar)

		Orifice Size - Inches																			
in. (mm)		.043	.045	.047	.049	.051	.053	.055	.057	.059	.061	.063	.065	.067	.069	.071	.073	.075	.077	.079	.081
Fan Width	6-8 (152-203)					351			357	359											
	8-10 (203-254)	443	445		449	451		455	457	459	461	463	465	467	469	471	473	475	477	479	481
	10-12 (254-305)	543	545	547		551	553	555	557	559	561	563	565	567	569	571	573				
	12-14 (305-356)	643	645	647		651		655	657	659	661	663	665	667	669	671					
	14-16 (356-406)				749				757	759		763		767							
	16-18 (406-457)		845	847	849						861	863	865	867							
	18-20 (457-508)																				
<b>Flow rate (gpm)</b>		1.98	2.17	2.37	2.58	2.79	4.26	3.25	3.49	3.74	4.0	4.26	4.53	4.82	5.11	5.41	5.72	6.04	6.36	6.70	7.04
<b>Flow rate (lpm)</b>		7.51	8.23	8.98	9.76	10.57	6.13	12.29	13.2	14.14	15.12	16.13	17.17	18.24	19.34	20.48	21.65	22.85	24.0	25.36	26.66

(water @ 2000 psi, 13.8 MPa, 138 bar)

Example: for a tip with a .043 in. (1.09 mm) orifice and a 12 in. (305 mm) pattern, order 163643.  
 Fan width of a spray pattern is measured at 12 in. (305 mm) from the surface.

### REPLACE TIPS OFTEN FOR MAXIMUM PERFORMANCE

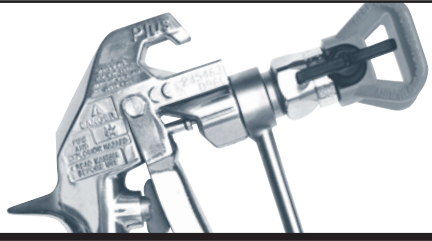
Watch for runs or sags in the spray pattern as signs of a worn tip. Don't increase pressure to combat these problems. You'll only waste paint and increase wear on the pump. Simply replace the worn tip.

Worn-out tips also wear components in your equipment much faster.

By spraying materials with correctly sized Graco tips and replacing tips when necessary, you'll maximize productivity, save paint and earn more profits.

### HELPFUL HINT

1. Spraying at the lowest possible pressure greatly extends the service life of major pump components — and spray tips too!
2. Even though Graco Airless Spray Guns are built for long life, you can extend the life of your gun even more with a daily maintenance routine. At the end of each day, clean and oil your gun with a lightweight spray oil such as WD-40®.



# Tips & Tip Guards

## HANDTITE TIP GUARDS

Use with all RAC Tips  
(221XXX, 286XXX, LL5XXX and FF5XXX)

243161 For 7/8 in. (22 mm) thread size.

Fits Graco and Titan® guns.

243263 For 11/16 in. (17 mm) thread size.

Fits Graco Pole Guns (older style), ASM® Guns and Wagner® Guns.

- Accepts RAC 5, RAC IV, Fine Finish RAC or LineLazer RAC Tips in over 100 sizes.
- Aerodynamic design creates a tighter, more consistent pattern while minimizing overspray.
- Virtually eliminates paint build-up, dripping and spitting.
- Seals when hand tightened — no tools required!
- Aluminum nut won't rust.
- Maximum working pressure: 4050 psi (27.9 MPa, 279 bar).



**HandTite Tip Guard**  
243161

## HEAVY-DUTY RAC TIP GUARDS

Use with Heavy-Duty RAC Tips (GHDXXX).

222674 For 7/8 in. (22 mm) thread size.

- Patented aerodynamic design.
- Extra large tip guard for heavier coatings.
- Tip secured to guard with a screw for safe spraying at higher pressures.
- Maximum working pressure: 5000 psi (34.5 MPa, 345 bar).



**HD RAC Tip Guard**  
222674

## FLAT TIP GUARDS

Use with Contractor and Silver Flat Tips  
(269XXX and 163XXX, Odd #).

220251 For 7/8 in. (22 mm) thread size.

Fits Graco and Titan Guns.

220255 For 11/16 in. (17 mm) thread size.

Fits Graco Pole Guns (older style), ASM Guns and Wagner Guns.



**Flat Tip Guard**  
220251

## FINE FINISH FLAT TIP GUARDS

Use with Fine Finish Flat Tips (163XXX, Even #).

220247 For 7/8 in. (22 mm) thread size.

Fits Graco and Titan Guns.

220249 For 11/16 in. (17 mm) thread size.

Use with Pole Guns (older style), ASM Guns, Wagner Guns, Tip Filter Housings and Swivel Adapters.



**Fine Finish Flat Tip Guard**  
220247

# Airless Applicators

## Tips & Tip Guards

### RAC SwitchTips

Reverse-A-Clean SwitchTips reverse to clear tip plugs for reduced downtime and improved productivity. The SwitchTip design makes tip changes fast and simple.

#### RAC 5 SWITCHTIP

286XXX Black (Odd#)

- Arrow-shaped handle with contoured grip easily identifies spray versus unplug position.
- General spray tip is ideal for residential, commercial and industrial jobs.
- All RAC 5 SwitchTips feature OneSeal™ design.
- Proprietary spray tip provides consistent pattern and long life.
- Maximum working pressure: 4050 psi (27.9 MPa, 279 bar).



RAC 5 SwitchTip  
243XXX

#### FINE FINISH RAC 5 SWITCHTIP

FF5XXX Green (Even#)

- Dual orifice tip for fine finish with light viscosity coatings.
- Patented, two-stage atomization process creates a soft, feathered spray pattern.
- Produces a smooth, extremely fine finish with consistent material thickness.
- Allows spraying at lower pressures for more control and dramatic overspray reduction.
- Maximum working pressure: 4050 psi (27.9 MPa, 279 bar).



Fine Finish RAC 5  
SwitchTip  
FF5XXX

#### LINELAZER RAC 5 SWITCHTIP

LL5XXX Yellow (Odd#)

- Designed specifically for parking lots, roads, warehouse floors, crosswalks and athletic fields.
- Sprays heavy waterbased to thin alkyd traffic paints.
- Ensures consistent paint thickness, less overspray and long-lasting lines.
- Maximum working pressure: 4050 psi (27.9 MPa, 279 bar).

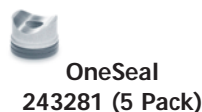


LineLazer RAC 5  
SwitchTip  
LL5XXX

#### ONESEAL KITS

243281 5-Pack of OneSeals

- Compatible with all fluids.
- Easy installation without tools.



OneSeal

243281 (5 Pack)

#### RACPAK™

243269 Includes 517 RAC 5 SwitchTip and HandTite Guard with 7/8 in. (22 mm) thread.



RACPAK  
243269

## 1

# Airless Applicators

## Tips & Tip Guards

### HEAVY-DUTY RAC SWITCHTIP

GHDXXX Gray (Odd#)

- Recommended for filled materials such as high solids coatings and fibrous mastics.
- Use with virtually all paints and coatings – solvent or waterbased.
- Applications include bridges, tank farms, structural steel and roofing.
- Features a secure, single screw assembly that secures tip to housing (ideal for heavy duty applications).
- Maximum working pressure: 5000 psi (34.5 MPa, 345 bar).



GHDXXX

### RAC IV SWITCHTIP

221XXX Black (Odd#)

- General spray tip, ideal for common coatings.
- Choose black rubber gasket (for latex) or yellow gasket (for solvent).
- Maximum working pressure: 4050 psi (27.9 MPa, 279 bar).



221XXX

## Flat Tips

### CONTRACTOR FLAT TIP

269XXX (Odd#)

- Tungsten carbide orifice for optimum hardness and wear resistance.
- Use filter with smaller sizes to avoid tip plugging.
- Maximum working pressure: 5000 psi (34.5 MPa, 345 bar).



269XXX

### SILVER FLAT TIP

163XXX (Odd#)

- For industrial spray applications where tighter tolerances are required.
- Sprays lacquers, varnishes, shellacs and enamels, as well as acrylics, latex, oil bases, blockfillers, epoxies, zinc chromates, roof coatings, mastics and adhesives.
- Maximum working pressure: 5000 psi (34.5 MPa, 345 bar).



163XXX  
(odd)

### FINE FINISH FLAT TIP

163XXX (Even#)

- Excellent for spraying extremely smooth finishes.
- Sprays varnishes and lacquers as well as modified urethanes and topcoats.
- Pre-orifice provides a fine finish like air spray but with the control of airless.
- Maximum working pressure: 3000 psi (20.7 MPa, 207 bar).



163XXX  
(even)

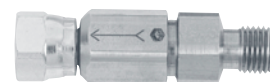


# Airless Applicators Accessories

1

## Gun Filters, Swivels and Adapters

- 210500 In-line Gun Filter**  
 Maximum working pressure - 5000 psi (34.5 MPa, 345 bar).  
 Filters fluid before it enters the gun.  
 Helps reduce tip plugging; provides better finish quality.  
 Attaches to hose and connects to the gun inlet.  
 Contains one 205264 filter equivalent to 100 mesh (149 micron) screen.  
 Fluid Inlet - 1/4 npsm(m).  
 Fluid Outlet - 1/4 npsm(f).
- 239394 High Pressure SST Swivel/Filter**  
 Maximum working pressure: 5800 psi (40.1 MPa, 401 bar).  
 Fluid inlet - 1/4 npsm(m)  
 Fluid outlet - 1/4 npsm(f)
- 224457 High Pressure Straight Swivel**  
 Maximum working pressure - 3600 psi (24.8 MPa, 248 bar).  
 Provides a swiveling joint between gun and hose for free gun movement.  
 Installs at gun inlet.  
 Leather packings.  
 Fluid inlet - 1/4 npt(m).  
 Fluid outlet - 1/4 npsm(f).
- 189018 High Pressure Straight Swivel**  
 Maximum working pressure - 5800 psi (40.0 MPa, 400 bar).  
 Provides a swiveling joint between gun and hose for free gun movement.  
 Installs at gun inlet.  
 Fluid inlet - 1/4 npsm(m).  
 Fluid outlet - 1/4 npsm(f).
- 236987 High Pressure Straight Swivel**  
 Maximum working pressure - 7400 psi (51.0 MPa, 510 bar).  
 Provides a swiveling joint between gun and hose for free gun movement.  
 Installs at gun inlet.  
 PTFE packings.  
 Fluid inlet - 1/4 npt(m)  
 Fluid outlet - 1/4 npsm(f)
- 181085 Gun Adapter**  
 Use to install a RAC IV on a competitive airless spray gun.  
 166969 tip gasket required.  
 Converts 11/16 in. (17 mm) gun thread (Wagner, ASM or Airlessco) to accept 7/8 in. (22 mm) thread used on most Graco accessories (including tip guards and extensions).



210500



224457



189018



236987



181085

# Airless Applicators

## Accessories

### Extended Reach Tools & Accessories

#### POLE GUNS

244057 3 ft. (0.9 m)

244058 6 ft. (1.8 m)

Maximum working pressure: 3600 psi (24.8 MPa, 248 bar).  
Features the new CleanShot™ Shut-Off Valve and Contractor In-Line Valve (see below).  
Unmatched spraying performance in high or recessed areas.  
Well-balanced and lightweight design.  
Includes 517 RAC 5 SwitchTip and HandTite Guard.

#### 244160 CleanShot Shut-Off Valve

Maximum working pressure: 3600 psi (24.8 MPa, 248 bar).

Shuts fluid flow off at the tip.

180° tip swivel for ultimate spraying versatility.

Pressure-actuated — operates at a minimum of 700 psi (4.8 MPa, 48 bar).

Can override valve (open) for cleaning, priming or low-pressure applications.

**Shut-Off Valve Repair Kit - 244162**

**CleanShot Swivel Repair Kit - 244363**

Includes 517 RAC 5 SwitchTip and HandTite Guard.

#### 244161 Contractor In-Line Valve

In-handle Paint Filter and built-in Hose Swivel connection for top spraying performance.

Can be used with other extended reach tools.

**In-Line Valve Repair Kit - 218070**

Uses Contractor Gun Filters 218131 (50 mesh) and 218133 (100 mesh).

Maximum working pressure: 3600 psi (24.8 MPa, 248 bar).

#### POLE GUN EXTENSIONS

244163 1 ft. (0.3 m)

244164 2 ft. (0.6 m)

Maximum working pressure: 3600 psi (24.8 MPa, 248 bar)  
Use with the Contractor In-Line Valve and the CleanShot Shut-Off Valve to create different length Pole Guns.

Lightweight aluminum construction.

Unique fitting and captive gasket allow quick attachment to Airless Gun or In-Line Valve.

Can be used alone or connected in series for longer reach.

Outside Diameter: 5/8 in (15.9 mm).

Standard with 7/8 in (22 mm) gun nut.

Fits Graco or Titan Guns.



Pole Gun  
244057



CleanShot Valve  
244160



In-Line Valve  
244161

# Airless Applicators Accessories

## Extended Reach Tools & Accessories

### TIP EXTENSIONS

- 243295 10 in. (25 cm)
- 243296 15 in. (38 cm)
- 243297 20 in. (50 cm)
- 243298 30 in. (75 cm)

Maximum working pressure: 4050 psi (28.0 MPa, 280 bar).  
 For easier spraying in hard-to-reach areas such as soffits, high walls and ceilings.  
 Unique fitting and captive gasket allow quick attachment to Airless Gun or In-Line Valve.  
 Includes: HandTite Guard standard with 7/8 in. (22 mm) gun nut.  
 Fits Graco or Titan guns.



Tip Extensions

### HEAVY-DUTY EXTENSIONS

- 232121 10 in. (25 cm)
- 232122 20 in. (50 cm)
- 232123 40 in. (100 cm)
- 232124 60 in. (150 cm)
- 232125 80 in. (200 cm)

Maximum working pressure: 3600 psi (24.8 MPa, 248 bar).  
 Tough, lightweight aluminum construction.  
 Unique fitting and captive gasket allow for quick attachment to Airless Gun or In-Line Valve.  
 Ideal for high pressure spraying or low pressure roller applications.  
 No extra couplings/fittings required.  
 Can be used alone or connected in series for longer reach.  
 Outside Diameter: 1 in. (25.4 mm)  
 Standard with 7/8 in. (22 mm) gun nut.  
 Fits Graco or Titan guns



Heavy-Duty Extensions

### EASY TURN DIRECTIONAL SPRAY NOZZLE

235486

Maximum working pressure - 3600 psi (248 bar, 24.8 MPa).  
 Attaches to extensions or Airless Spray Guns.  
 Allows spraying at a variety of angles.  
 Allows easy, one-step alignment.  
 Standard with 7/8 in. (22 mm) thread.  
 Thread Size - 7/8 in. - 14 UNF  
 Instruction Manual - 308244



Easy Turn Directional Spray Nozzle  
235486

### 45° SWIVEL ADAPTER

224399

Maximum working pressure - 3600 psi (248 bar, 24.8 MPa)  
 Provides a comfortable operating angle when using a Heavy-Duty Extension or Pressure Roller Attachment.  
 Connects to Airless Spray Gun and Heavy-Duty Extension.  
 Thread Size - 7/8 in. - 14 UNF



45° Swivel Adapter  
224399

## 1

# Airless Applicators

## Accessories

### PRESSURE ROLLERS

Typical pressure roller applications require 300 psi (21 bar, 2.1 MPa) or less. Connects to airless gun or Contractor In-Line Valve. Provides consistent finish, while eliminating heavy edges and uneven build. Standard with 7/8 in. (22 mm) gun nut, fits Graco or Titan guns. Includes 9 in. x 1/2 in. (229 mm x 13 mm) nap roller cover.

- 244279** With 20 in. (50 cm) Fixed Extension. Maximum working pressure: 3600 psi (24.8 MPa, 248 bar).
- 244281** With 18 to 36 in. (46 to 91 cm) Telescoping Extension. Maximum working pressure: 3000 psi (20.7 MPa, 207 bar)

### PRESSURE ROLLER ACCESSORIES

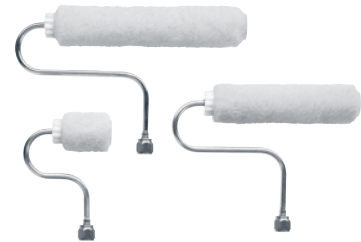
- 244271** 9 in. (229 mm) Roller Frame with 7/8 in. (22 mm) thread, for use with Graco Heavy-Duty Extensions
- 244623** 9 in. (229 mm) Roller Frame with 1/8 npt thread, for use with Graco Telescoping Extensions
- 107589** 9 in. Roller Cover, 3/8 in. (10 mm) nap
- 107590** 9 in. Roller Cover, 1/2 in. (13 mm) nap
- 107591** 9 in. Roller Cover, 3/4 in. (19 mm) nap
- 107592** 9 in. Roller Cover, 1 1/4 in. (32 mm) nap
- 224398** Roller Frame Adapter

### TELESCOPING EXTENSIONS

All Telescoping Extensions include Adapter 244398, for use with 7/8 in. (22 mm) In-Line Valve or Airless Gun.

- 218775** 18 to 36 in. (45 to 90 cm)
- 218776** 36 to 72 in. (90 to 180 cm)
- 218770** 72 to 144 in. (180 to 360 cm)

Pressure Roller Attachments



Telescoping Roller



Telescoping Extensions



Roller Covers







# Alpha Plus™

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## Manual Air-Assisted Spray Gun

### Features and Benefits

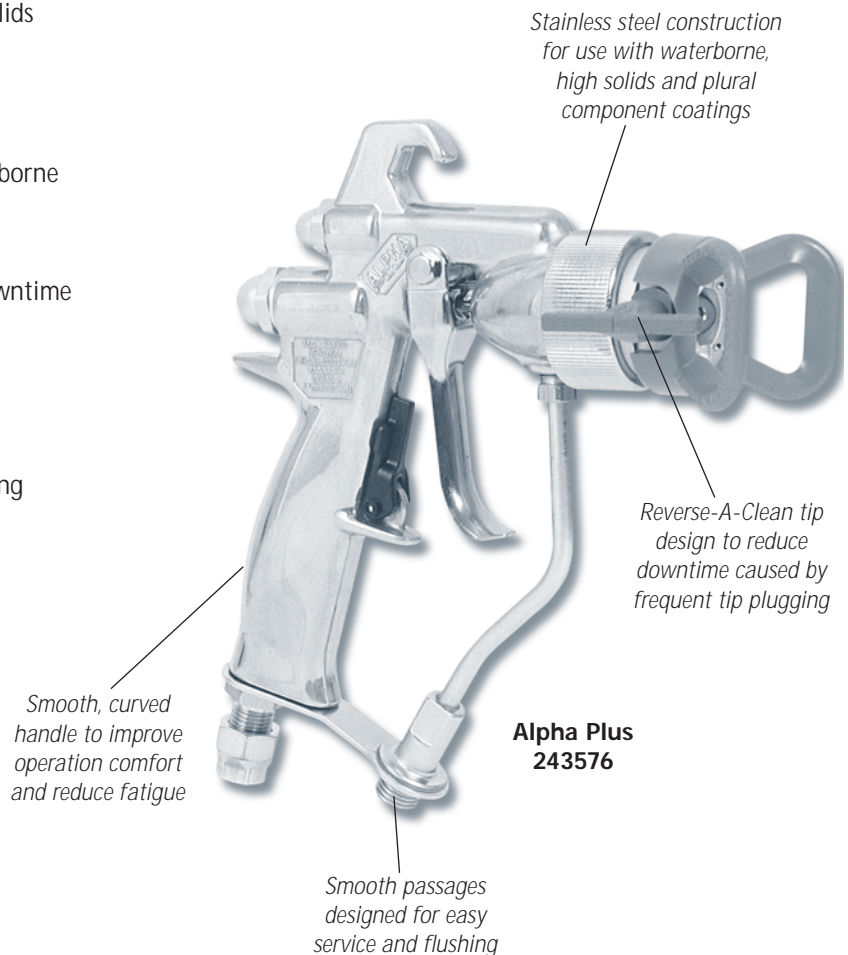
- 4000 psi (27.6 MPa, 276 bar) fluid pressure rating capable of atomizing tomorrow's high solids coatings today
- Smaller, more comfortable handle to reduce operator fatigue
- SST material passages for use with waterborne coatings as well as standard high solids and two component coatings
- Reverse-A-Clean tip to design reduce downtime caused by frequent tip plugging

### Typical Applications

- Railcar finishing
- Farm and construction equipment finishing
- Aircraft finishing and maintenance
- Fabricated metal finishing
- Truck and trailer finishing

### Typical Coatings Applied

- High solids
- Waterborne materials
- Enamels
- Primers
- Plural component epoxies
- Plural component urethanes



# Alpha Plus

## Manual Air-Assisted Spray Gun

### Technical Specifications

Maximum working fluid pressure	4000 psi (27.6 MPa, 276 bar)
Maximum working air pressure	100 psi (0.7 MPa, 7 bar)
Maximum compliant inbound air pressure*	16 psi (110 kPa, 1.1 bar)
Maximum working fluid temperature	120°F (49°C)
Fluid inlet	1/4-18 npsm
Air inlet	1/4-18 npsm (R1/4-19) compound male thread
Sound pressure at 30 psi (210 kPa, 2.1 bar)**	86.2 dBA
Sound power at 30 psi (210 kPa, 2.1 bar)**	90.2 dBA
Weight	20.1 oz. (570 grams)
Dimensions	6.70 in. (170 mm) W x 7.65 in. (194 mm) H
Wetted parts	Stainless Steel, Carbide or Engineered Plastic, Acetal, PTFE, Ultra High Molecular Weight Polyethylene (UHMWPE)
Instruction manual	309117

\* Model 243575 only

\*\* All readings were taken with the fan valve closed (full fan size), at 30 psi (210 kPa, 2.1 bar) and 100 psi (0.7 MPa, 7 bar).  
Sound pressure was measured at 1 meter from the unit. Sound power was tested in accordance with ISO 9614-2.

### Ordering Information

*Spray tip of choice included.*

#### 243573 Alpha Plus Spray Gun

Spray gun with standard spray tip, air cap and tip guard for a fine finish quality at higher pressures.

#### 243574 Alpha Plus Hi-Flow Spray Gun

Spray gun with hi-flow fluid needle and diffuser seat, standard spray tip, air cap and tip guard. Recommended for tips larger than .025" and other high flow applications.

#### 243575 Alpha Plus HVLP Spray Gun

Standard spray gun with HVLP-compliant air cap. To be compliant, atomizing air pressure must not exceed 10 psi (70 kPa, 0.7 bar)

#### 243576 Alpha Plus Reverse-A-Clean (RAC) Spray Gun

Spray gun with AA Reverse-A-Clean assembly to reduce downtime caused by frequent tip plugging.

#### 243577 Alpha Plus Reverse-A-Clean (RAC) Hi-Flow Spray Gun

Spray gun with the hi-flow fluid needle and diffuser-seat and AA Reverse-A-Clean assembly.

# Alpha Plus

## Manual Air-Assisted Spray Gun

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### Accessories

- 239898 Alpha Plus HVLP Air Cap**  
Converts standard Alpha Plus users to HVLP compliancy. To be compliant, atomizing air pressure must not exceed 10 psi (70 kPa, 0.7 bar).
- 243581 HVLP Verification Kit**  
For use with 239898 air cap only, to determine air pressure behind the air cap. Do not use for actual spraying. To be compliant, atomizing air pressure must not exceed 10 psi (70 kPa, 0.7 bar).
- 243790 Reverse-A-Clean Conversion Kit**  
Converts 243573 gun with standard spray tip, tip guard and air cap to 243576 gun with the AA RAC assembly.
- 243588 Ruby Ball/Needle Kit**  
For use with acid-catalyzed finishes at high pressure  
Use with 243564 diffuser seat only. Not recommended for use with AA RAC tips.
- 243585 3/32 in. (2.38 mm) Carbide Needle Kit**  
For replacement of needle assembly.  
(3/32 in. [2.38 mm] carbide ball).
- 243586 1/8 in. (3.17 mm) Carbide Needle Kit**  
For replacement of needle assembly.  
(1/8 in. [3.17 mm] carbide ball).
- 189018 Fluid Swivel Connector**  
Maximum working pressure: 5800 psi  
(40 MPa, 400 bar). 1/4-18 npsm.
- Air Whip Hoses**  
Maximum working pressure: 100 psi (0.7 MPa, 7 bar),  
1/4-18 npsm, polyurethane with SST braid.
- 238759** 3 ft. (0.92 m) hose  
**236873** 6 ft. (1.83 m) hose
- 241619 Gun Repair Kit**  
Does not include needle assembly or seat assembly.  
Must be ordered separately.
- 210500 In-Line Fluid Filter**  
Maximum working pressure: 5000 psi  
(34.5 MPa, 345 bar). For additional filtering at the gun inlet. 100 mesh (149 micron).

# Alpha Plus

## Manual Air-Assisted Spray Gun

### Standard Spray Tip Selection Guide

For use with 239781 Air Cap

Note: 243586 fluid needle and 243564 diffuser seat must be used with tips larger than 0.025 in. (0.635 mm)

Tips are compatible with 239898 HVLP compliant cap

Orifice Size in. (mm)	Fan Width at 12 in. (300 mm) in. (mm)	Fluid Output*		Orifice Size in. (mm)	Fan Width at 12 in. (300 mm) in. (mm)	Fluid Output*				
		Fluid Oz./Min. (lpm) Viscosity: Light to Medium Heavy	Part No.			Fluid Oz./Min. (lpm) Viscosity: Light to Medium Heavy	Part No.			
0.007 (0.178)	2-4 (50-100)	4.0 (0.1)	GG4107	0.023 (0.584)	10-12 (250-300)	40.0 (1.2)/34.0 (0.97)	GG4521			
	4-6 (100-150)		GG4207		12-14 (300-350)		GG4621			
	6-8 (150-200)		GG4307		14-16 (350-400)		GG4721			
0.009 (0.229)	2-4 (50-100)	7.0 (0.2)	GG4109	0.025 (0.635)	18-20 (457-508)	50.0 (1.5)/42.0 (1.2)	GG4921			
	4-6 (100-150)		GG4209		8-10 (200-250)		GG4423			
	6-8 (150-200)		GG4309		10-12 (250-300)		GG4523			
	8-10 (200-250)		GG4409		12-14 (300-350)		GG4623			
	10-12 (250-300)		GG4509		14-16 (350-400)		GG4723			
0.011 (0.279)	2-4 (50-100)	10.0 (0.3)	GG4111	0.027 (0.686)	18-20 (457-508)	58.5 (1.7)/50.0 (1.4)	GG4923			
	4-6 (100-150)		GG4211		8-10 (200-250)		GG4425			
	6-8 (150-200)		GG4311		12-14 (300-350)		GG4625			
	8-10 (200-250)		GG4411		14-16 (350-400)		GG4725			
	10-12 (250-300)		GG4511		16-18 (400-460)		GG4825			
	12-14 (300-350)		GG4611		10-12 (250-300)		GG4527			
0.013 (0.330)	4-6 (100-50)	13.0 (0.4)	GG4213	0.029 (0.737)	12-14 (300-350)	68.0 (1.9)/59.0 (1.7)	GG4627			
	6-8 (150-200)		GG4313		8-10 (200-250)		GG4431			
	8-10 (200-250)		GG4413		12-14 (300-350)		GG4631			
	10-12 (250-300)		GG4513		12-14 (300-350)		GG4631			
	12-14 (300-350)		GG4613		0.031 (0.787)		8-10 (200-250)	78.0 (2.2)/69.0 (2.0)	GG4431	
	14-16 (350-400)		GG4713		12-14 (300-350)		GG4631			
0.015 (0.381)	4-6 (100-150)	17.0 (0.5)	GG4215	0.033 (0.838)	12-14 (300-350)	88.0 (2.5)/79.0 (2.3)	GG4633			
	6-8 (150-200)		GG4315		16-18 (400-460)		GG4833			
	8-10 (200-250)		GG4415		8-10 (200-250)		98.0 (2.8)/89.0 (2.5)	GG4435		
	10-12 (250-300)		GG4515		0.037 (0.940)		14-16 (350-400)	108 (3.1)/99.0 (2.8)	GG4737	
	12-14 (300-350)		GG4615		0.039 (0.991)		10-12 (250-300)	118.0 (3.4)/109.0 (3.1)	GG4539	
	14-16 (350-400)		GG4715				12-14 (300-350)			
	16-18 (400-460)		GG4815				16-18 (400-460)			
	18-20 (457-508)		GG4915							
	0.017 (0.432)		4-6 (100-150)		22.0 (0.7)		GG4217	0.039 (0.991)	118.0 (3.4)/109.0 (3.1)	GG4539
			6-8 (150-200)				GG4317			
8-10 (200-250)		GG4417								
10-12 (250-300)		GG4517								
12-14 (300-350)		GG4617								
14-16 (350-400)		GG4717								
16-18 (400-460)		GG4817								
18-20 (457-508)		GG4917								
0.019 (0.483)	4-6 (100-150)	28.0 (0.8)	GG4219	0.039 (0.991)	118.0 (3.4)/109.0 (3.1)	GG4539				
	6-8 (150-200)		GG4319							
	8-10 (200-250)		GG4419							
	10-12 (250-300)		GG4519							
	12-14 (300-350)		GG4619							
	14-16 (350-400)		GG4719							
	16-18 (400-460)		GG4819							
	18-20 (457-508)		GG4919							
0.021 (0.533)	6-8 (150-200)	35.0 (1.0)	GG4321	0.039 (0.991)	118.0 (3.4)/109.0 (3.1)	GG4539				
	8-10 (200-250)		GG4421							

\* Fluid output at 600 psi (4.1 MPa, 41 bar)

Note: Fluid output (Q) at other pressures (P) can be calculated by this formula:

$$Q = (0.041) (QT) ( \quad )$$

Where QT = fluid output (fluid oz./min.) from the above table for the selected orifice size.

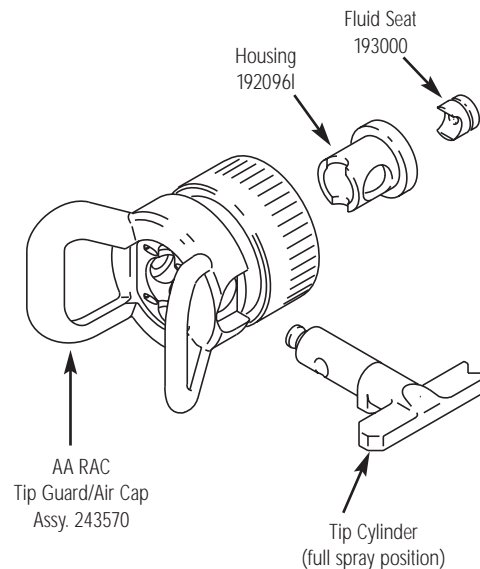
# Alpha Plus

## Manual Air-Assisted Spray Gun

### AA Reverse-A-Clean (AA RAC) Spray Tip Selection Guide

Note: Not for Fine Finish

Orifice Size in. (mm)	Fan Width at 12 in. (300 mm) in. (mm)	Viscosity		Part No.
		Light to Medium* Fl. oz./min. (lpm)	Heavy Fl. oz./min. (lpm)	
0.011 (0.279)	6-8 (150-200)	10.0 (0.3)	–	242311
	8-10 (200-250)			242411
	10-12 (250-300)			242511
0.013 (0.330)	4-6 (100-150)	13.0 (0.4)		242213
	6-8 (150-200)		–	242313
	8-10 (200-250)			242413
	10-12 (250-300)			242513
	12-14 (300-350)			242613
0.015 (0.381)	4-6 (100-150)	17.0 (0.5)	–	242215
	6-8 (150-200)		–	242315
	8-10 (200-250)			242415
	10-12 (250-300)			242515
	12-14 (300-350)			242615
0.017 (0.432)	4-6 (100-150)	22.0 (0.7)	17.0 (0.5)	242217
	6-8 (150-200)			242317
	8-10 (200-250)			242417
	10-12 (250-300)			242517
	12-14 (300-350)			242617
0.019 (0.483)	4-6 (100-150)	28.0 (0.8)	21.0 (0.6)	242219
	6-8 (150-200)			242319
	8-10 (200-250)			242419
	10-12 (250-300)			242519
	12-14 (300-350)			242619
0.021 (0.533)	4-6 (100-150)	35.0 (1.0)	27.0 (0.8)	242221
	6-8 (150-200)			242321
	8-10 (200-250)			242421
	10-12 (250-300)			242521
	12-14 (300-350)			242621
0.023 (0.584)	8-10 (200-250)	40.0 (1.2)	34.0 (0.97)	242423
	12-14 (300-350)			242623
0.025 (0.635)	10-12 (250-300)	50.0 (1.5)	42.0 (1.2)	242525
	12-14 (300-350)			242625
0.027 (0.686)	8-10 (200-250)	58.5 (1.7)	50.0 (1.4)	242427
0.029 (0.737)	10-12 (250-300)	68.0 (1.9)	59.0 (1.7)	242529
0.031 (0.787)	10-12 (250-300)	78.0 (2.2)	69.0 (2.0)	242531
	12-14 (300-350)			242631



\* Fluid output at 600 psi (4.1 MPa, 41 bar)

Note for AA RAC Spray Tips:

- AA RAC spray tip feature a one-piece plastic fluid seat
- The air separator must be removed when using the AA RAC
- 243790 AA RAC conversion kit available
- 243586 Fluid Needle and 243566 Diffuser Seat must be used with tips larger than 0.025 in. (0.635 mm).



# PRO™ Xs4 AA

## Manual Electrostatic Air-Assisted Spray Guns

The PRO Xs4 AA's lightweight, comfortable design reduces operator fatigue, with excellent transfer efficiency for increased material savings.

### Features and Benefits

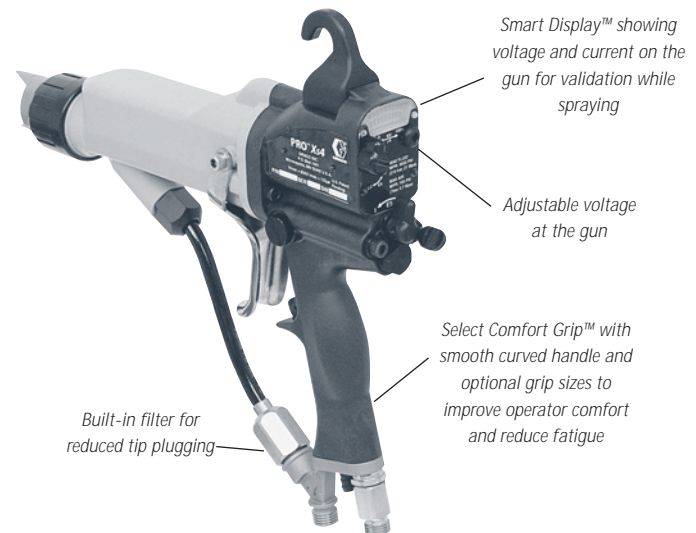
- Lightest 85 kV AA gun on the market
- Best material savings for hand held applicators
- Available with adjustable voltage for flexibility with various materials and applications
- Rugged, durable design supported by three year warranty
- AP2 Air Powered gun for easy installation without electrical connections
- Meets worldwide approvals – FM, CSA, and Cenelec

### Typical Applications

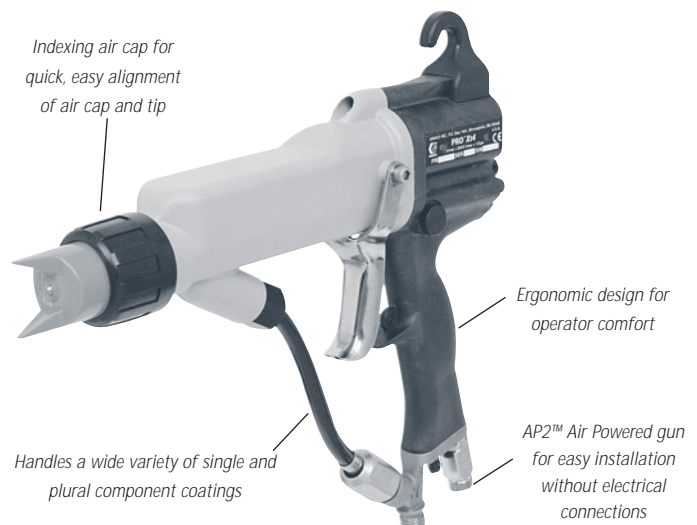
- Private, commercial and military aircraft OEM and refinish
- Farm and construction
- Truck and bus
- Rail car OEM and refinish
- General metal

### Typical Fluids Handled

- Medium to high solids solvent-borne primers
- Single and plural component topcoats
- Alkyd, enamel, polyurethane and epoxy-based paints



**PRO Xs4 AA Smart  
244573**





# PRO Xs4 AA

## Manual Electrostatic Air-Assisted Spray Guns

### Technical Specifications

Maximum voltage output .....	85 kV DC
Maximum fluid pressure .....	.3000 psi (207 bar, 20.7 MPa)
Maximum air pressure .....	100 psi (7 bar, 0.7 MPa)
Air inlet .....	1/4 npsm (left handed)
Fluid inlet .....	1/4-18 npsm
Gun length .....	11.4 in. (290 mm)
Gun weight (standard model) .....	29.1 oz. (1 kg)
Wetted parts .....	Stainless Steel, Nylon, PEEK, UHMWPE*, Carbide, Acetal
Instruction manual .....	309296

*\*UHMWPE = Ultra High Molecular Weight Polyethylene.*

### Ordering Information

- 244572 PRO Xs4, Air-Assisted, Standard**  
Includes tip of choice when ordering.  
Grounded air hose must be ordered separately.
  
- 244573 PRO Xs4, Air-Assisted, Smart**  
Includes Smart display showing voltage and current at the gun, adjustable voltage and tip of choice when ordering.  
Grounded air hose must be ordered separately.

# PRO Xs4 AA

## Manual Electrostatic Air-Assisted Spray Guns

### Accessories

#### Grounded Air Hoses (required for use)

Length	Air Flex™	Standard
6 ft. (1.8 m)	244963	223068
15 ft. (4.6 m)	244964	223069
25 ft. (7.6 m)	244965	223070
36 ft. (11 m)	244966	223071
50 ft. (15 m)	244967	223072
75 ft. (23 m)	244968	223073
100 ft. (30.5 m)	244969	223074

#### Air Flex

EPDM rubber core and cover for extra flexibility

#### Standard

Modified semi-conductive polyamide core, urethane cover for added durability.

- 185493 Air Hose Adapter Nipple**  
This adapter allows for the connection of multiple air hose as needed for the special grounded PRO air hose. 1/4 npsm (L.H.) x 1/4 npsm.
- 235300 Gun Mounting Bracket**  
Allows gun to hang with barrel in a downward orientation to prevent material from getting into the air passages.
- 244917 Electrode Replacement Kit**  
Includes 5 electrodes.
- 115898 Fluid Swivel**
- 105749 Cleaning Brush**
- 244915 Box of 10 Gun Covers**
- 244913 E/S Always On Valve Kit**  
Replaces inlet fitting with ball valve to shut air off during flushing. Converts E/S on/off lever to always ON condition.
- Paint Resistivity Meter (used together)**
- 722886** Meter
- 722860** Probe
- 236003 High Voltage Probe and Meter**  
Complete assembly includes high voltage probe, meter, and ground wire.
- 238563 In-Line Fluid Filter, 60 mesh (3 pack)**  
To replace the 100 mesh filter that is included with the gun.

#### Fluid Whip Hose

Maximum working pressure: 3000 psi (20.7 MPa, 207 bar)  
ID: 1/8 in. (3.2 mm). Thread size: 1/4 npsm(f) x 1/4 npt(m).

**236134** Length: 3 ft. (0.9 m)

**236135** Length: 6 ft. (1.8 m)

- 112534 Air Quick-Disconnect/Swivel**  
Swiveling air quick-disconnect designed to replace the standard air swivel fitting in the gun handle.

- 244781 Air Seal Repair Kit**

#### Fluid Hose

**223540** 1/4 in. ID x 25 ft. (7.6 m)

**223541** 1/4 in. ID x 50 ft. (15.2 m)

- 241079 Megohmmeter**  
Used to check gun resistance and part grounding.

#### Select Comfort Grips

Snap-on grips to increase the handle size to reduce operator fatigue.

**245263 Medium Grip Kit**

**245264 Large Grip Kit**

- 245271 Gun Washer Kit**  
Used to convert Graco gun washers to clean PRO Xs air-assisted guns.
- 244912 Push/Pull Valve**  
For quick change of fan size.
- 223688 Turbine Alternator Bearing Repair Kit**
- 245277 Test Equipment Kit**  
Includes 236003 High Voltage Probe, 245278 PRO Xs Cartridge and Alternator Test Fixture, 189351 Alignment Sleeve, carrying case and instruction manual.





# PRO Xs4 AA

## Manual Electrostatic Air-Assisted Spray Guns

### Tip Selection Chart for PRO Xs4 AA Manual Spray Guns

Orifice Size in. (mm)	Fan Width at 10 in. (260 mm) in (mm)	Part No.	Orifice Size in. (mm)	Fan Width at 10 in. (260 mm) in (mm)	Part No.
0.007 (0.178)	2-4 (50-100)	GG3107	0.019 (0.483)	6-8 (150-200)	GG3319
	4-6 (100-150)	GG3207		8-10 (200-250)	GG3419
	6-8 (150-200)	GG3307		10-12 (250-300)	GG3519
0.009 (0.229)	4-6 (100-150)	GG3209		12-14 (300-350)	GG3619
	6-8 (150-200)	GG3309		14-16 (350-400)	GG3719
	8-10 (200-250)	GG3409		0.021 (0.533)	8-10 (200-250)
0.011 (0.279)	4-6 (100-150)	GG3211			10-12 (250-300)
	6-8 (150-200)	GG3311	12-14 (300-350)		GG3621
	8-10 (200-250)	GG3411	14-16 (350-400)		GG3721
	10-12 (250-300)	GG3511	16-18 (400-450)		GG3821
12-14 (300-350)	GG3611	0.023 (0.584)	8-10 (200-250)	GG3423	
0.013 (0.330)	4-6 (100-150)		GG3213	10-12 (250-300)	GG3523
	6-8 (150-200)		GG3313	12-14 (300-350)	GG3623
	8-10 (200-250)		GG3413	14-16 (350-400)	GG3723
	10-12 (250-300)	GG3513	16-18 (400-450)	GG3823	
12-14 (300-350)	GG3613	0.025 (0.635)	8-10 (200-250)	GG3425	
0.015 (0.381)	4-6 (100-150)		GG3215	10-12 (250-300)	GG3525
	6-8 (150-200)		GG3315	12-14 (300-350)	GG3625
	8-10 (200-250)		GG3415	14-16 (350-400)	GG3725
	10-12 (250-300)		GG3515	16-18 (400-450)	GG3825
12-14 (300-350)	GG3615	0.017 (0.432)	4-6 (100-150)	GG3217	
6-8 (150-200)	GG3317		6-8 (150-200)	GG3317	
8-10 (200-250)	GG3417		8-10 (200-250)	GG3417	
10-12 (250-300)	GG3517		10-12 (250-300)	GG3517	
12-14 (300-350)	GG3617		12-14 (300-350)	GG3617	

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# Foam-Cat®

## Foam Applicator

### Features and Benefits

- Extremely quick nozzle changes and a single piece nozzle
- Optional back or bottom hose attachment with quick disconnect
- Lightweight design of less than 4 lbs. (1.8 kg)
- 2-finger trigger

### Typical Applications

- Roof top
- Sidewall insulation
- Refrigeration

### Typical Coatings Applied

- Foam
- Elastomeric topcoat



**Foam-Cat**  
217373

# Foam-Cat

## Foam Applicator

### Technical Specifications

Maximum working pressure	1500 psi (10.5 MPa, 105 bar)
Maximum air working pressure	120 psi (0.83 MPa, 8.3 bar)
Air inlet size	
with bushing	1/4 npt(m)
without bushing	1/8 npt(m)
Fluid inlet size	
with adapter	1/4 npsm(m)
without adapter	1/8 npt(f)
Filter	80 mesh (177 micron)
Wetted parts	Stainless Steel, Carbon Steel, Brass, Viton®, Delrin, PTFE, Fluorocarbon
Weight	4 lbs. (1.8 kg)
Instruction manual	307546

### Ordering Information

**217373 Foam-Cat Spray Gun**  
Needle/nozzle assembly not included

#### Spray Valving Rod/Nozzle Assemblies

Part No.	Flow Rate (lbs./min.)	Pattern Diameter	Valving Rod Diameter
217420	37-52	20 in. (507 mm)	0.125 in. (3.17 mm)
217421	29-41	18 in. (456 mm)	0.114 in. (2.89 mm)
217423	15-19	17 in. (431 mm)	0.089 in. (2.25 mm)
217424	8.5-10.5	12 in. (304 mm)	0.073 in. (1.85 mm)
217425	12-15	17 in. (431 mm)	0.083 in. (2.10 mm)
217426	21-29	17 in. (431 mm)	0.102 in. (2.58 mm)

#### Pour Foam Nozzles

Part No.	Flow Rate (lbs./min.)	Pattern Diameter	Valving Rod Diameter
217427	16-20	-	0.187 in. (4.74 mm)
220616	6-8	-	0.073 in. (1.85 mm)

Flow rate depends on spray pressure.  
Pattern diameter at 30 in. (761 mm) distance.

### Accessories

**218669 Foam Flush Kit**  
For solvent flushing the Foam-Cat Gun.  
Maximum working pressure: 120 psi (0.8 MPa, 8 bar).

**217360 Air Valve Repair Kit**





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GMax™ .....	152-157
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HydraMax™ .....	160-163



2



# Pumping Technology Definitions

## Cycle Rate

The number of times the pump completes a pump cycle in a given period of time.

## Flow Rate

The volume of material that can be pumped in a given period of time.

## Maximum Fluid Outlet Pressure

The maximum outlet fluid pressure a pump can achieve at stall, no flow.

## Pressure

The amount of force exerted evenly on a given surface area, typically reported in pounds per square inch (psi), MegaPascals (MPa), or bar (bar).

## Pump

The term referring to equipment that supplies fluid pressure and flow for fluid handling needs.

## Pump Cycle

A complete upstroke and downstroke operation of the lower displacement pump.

## Pump Ratio

The relationship between the air or hydraulic motor piston effective area and the lower displacement pump's piston effective area.

## Pump Stroke

The upstroke or downstroke operation of a pump.

## Pump Volume per Cycle

The volume of material pumped in a complete upstroke and downstroke pump operation.

## Sound Pressure Level

The number of decibels (dBA) produced by the pump at a given pump cycle rate.

## Shear

One layer of fluid slipping relative to an adjacent layer of fluid. The more a fluid slips in a pump, the higher the shear rate.

## Viscosity

The resistance of a fluid to flowing. The more a fluid resists flowing, the higher its viscosity.

## Single Component Coatings

Coatings that come complete in one container and do not require the addition of a catalyst or activator.

## Plural Component Coatings

Coatings that require two or more parts packaged separately to be mixed together prior to application. They generally consist of a base component and a catalyst component.

## High Solids Coatings

Coatings that have a higher percentage of solids and a lower percentage of solvent carriers than conventional solventborne coatings. A coating containing 80 to 100 percent solids by weight is referred to in the coatings industry as a high-solids coating. It has a higher viscosity and requires heating and higher pressures for atomization.

## 100% Solids Coatings

Coatings that are 100 percent solids by weight.

# Pumping Technology Definitions

## Zinc Applications

2

### INORGANIC ZINC

- Most inorganic solvent-based zinc coatings consist of two parts: a liquid and a powder. When these two parts are mixed, a chemical reaction causes the material to set up. This chemical reaction can be accelerated by exposure to heat and moisture.
- Zinc coatings settle out very easily and should be constantly agitated and circulated when not being sprayed.

### SELECTING A ZINC PUMP

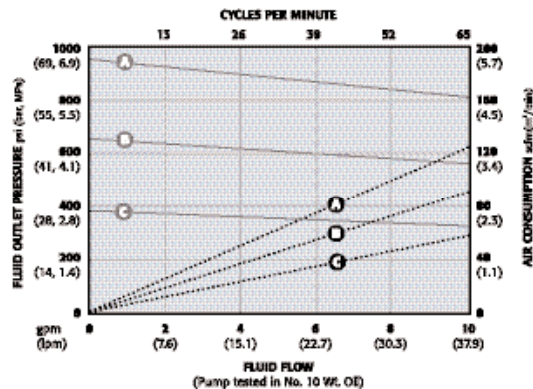
- Zinc coatings are very abrasive and may cause premature component wear. For this reason, durability and component wear life should be considered when selecting a zinc pump.
- Most zinc coatings atomize at lower pressures than other types of coatings. The recommended spraying pressures are 1400-2500 psi (9.65-17.2 MPa, 96.5 -172 bar). The material may “pack out” (liquid squeezed out of the powder) at higher pressures, causing the pump to stop. Pump maximum working pressures should be 1500-3500 psi (10.3-24 MPa, 103-240 bar), depending on the application conditions.
- Low pump cycle rates and low pressure are the optimal zinc application conditions. Fewer pump cycles and lower pressure equal less internal heat, less wear, less pack out, and less downtime.

### HOW TO READ THE PERFORMANCE CHARTS

- Step 1:** Locate the required fluid flow along bottom axis of chart.
- Step 2:** Follow vertical line to the intersection with the solid curve (A, B or C – based on your air inlet pressure).
- Step 3:** Follow to left axis to read fluid outlet pressure.
- Step 4:** From Step 2, follow vertical line up or down to the intersection with the dotted line (A, B or C – based on your air inlet pressure) then follow to right axis to read air consumption.

#### Example\*

To obtain 4 gpm at approximately 175 psi (12 bar, 1.2 MPa) you will need 70 psi (4.8 bar, 0.5 MPa) of air pressure. The air consumption will be approximately 2.7 scfm.



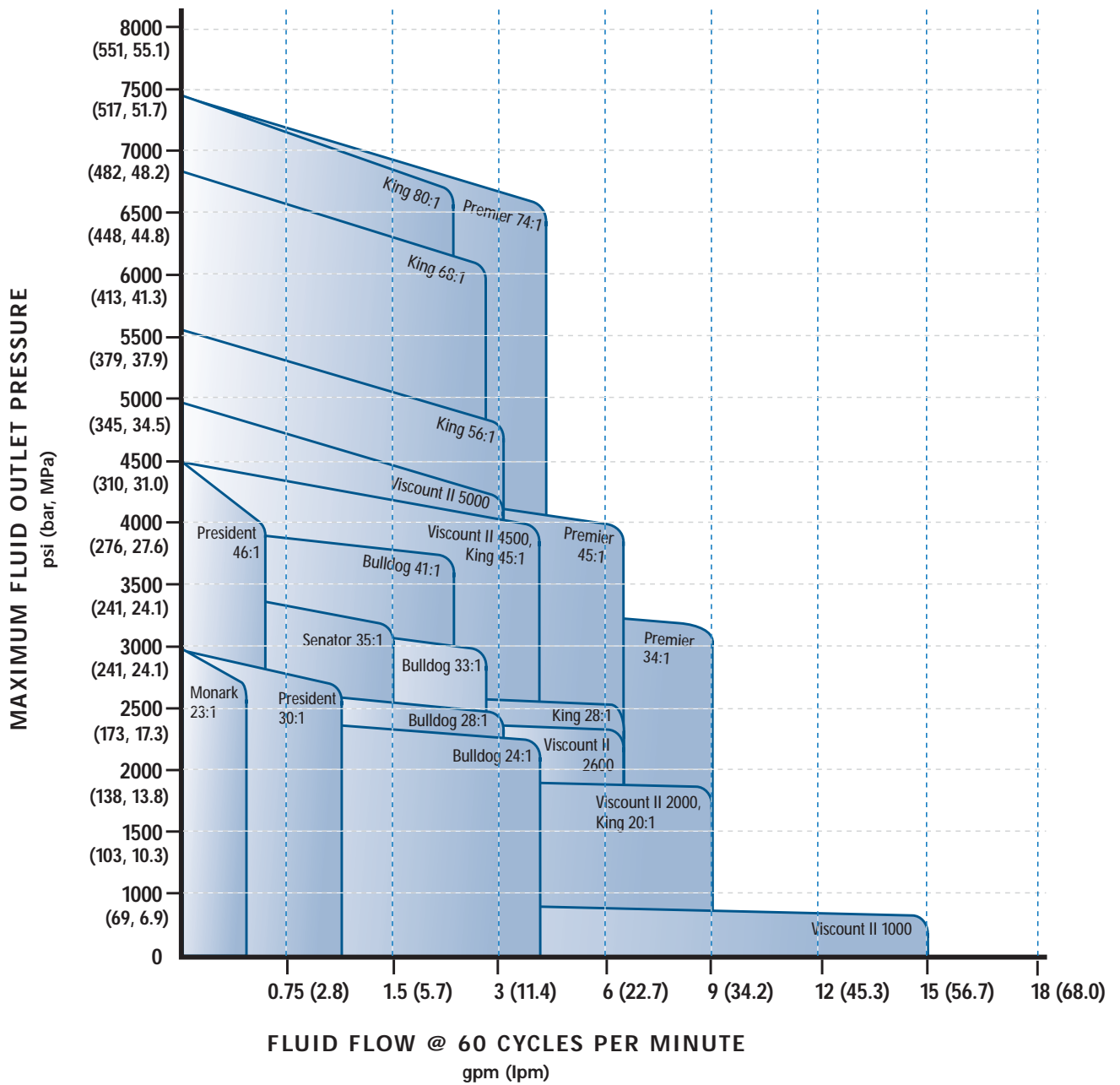
AIR PRESSURES	LEGEND
A = 100 psi (7.0 bar, 0.7 MPa)	Air Consumption.....
B = 70 psi (4.8 bar, 0.5 MPa)	Fluid Flow.....
C = 40 psi (2.8 bar, 0.3 MPa)	



# Pump Selection Guide

## Choose the best pump solution.

### 1 Select Pressure and Flow



# Pump Selection Guide

## 2

Choose your pump in three easy steps.

- Select Pressure and Flow Rate
- Select Pump Materials of Construction.
- Select Power Source.

### 1 Select Pressure and Flow

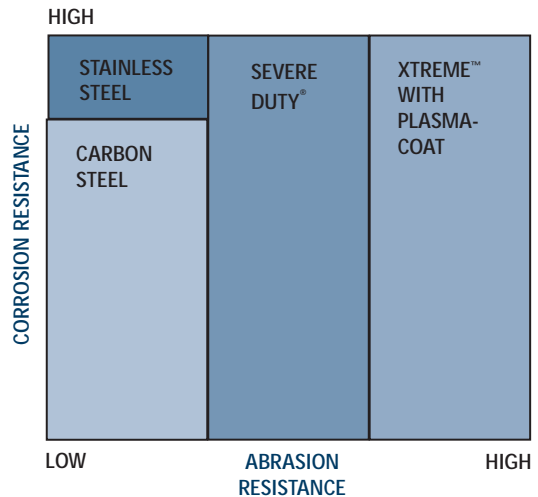
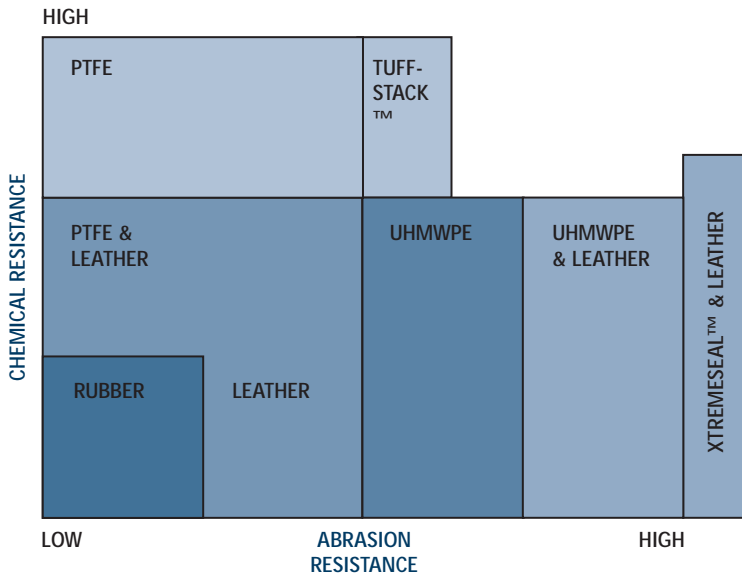
- Locate your desired maximum pump fluid outlet pressure along the vertical axis (1a). All pumps shown above this pressure can supply the necessary fluid pressure.
- Locate your necessary pump flow rate capability along the horizontal axis (1b). Flow rates capabilities are reported at 20 cycles per minute. All pumps shown to the right of this flow rate can supply the necessary fluid flow rate.

### 2 Chemical Compatibility

Choose the pump's wetted parts based on their resistance to the corrosive, chemical and abrasive characteristics of the fluid to be handled.

Refer to individual pump product sections to determine available materials of construction

*Note:*  
 UHMWPE (Ultra High Molecular Weight Polyethylene)  
 Tuff-Stack™ is a proprietary Ptfе blend.  
 XtremeSeal™ is a proprietary Ptfе-filled UHMWPE blend.  
 PlasmaCoat™ is a proprietary case hardening process.  
 Severe Duty (exclusive Graco metal treatment) Chrome-plated Stainless Steel.  
 Make sure other wetted parts for each pump model are also compatible with the fluid to be pumped.



# Pump Selection Guide

## 3 Select Power Source

Choose the pump power source based on installation and energy efficiency requirements.

### Air-Operated Supply Pumps

- Most readily available power source
- Simple Installation

Monark	President	Senator	Bulldog	King	Premier
23:1	30:1	35:1	24:1	45:1	34:1
	46:1		28:1	56:1	45:1
			33:1	68:1	74:1
			41:1	80:1	

### Hydraulic Supply Pumps

- An effective alternative to compressed air systems
- More than three times energy efficient than comparable air-operated pumps
- Quiet operation

Viscount II
1000
2000
2600
4500
5000

*Viscount number values refer to maximum pump fluid output pressure in psi.*

### Compressor Size - Rule of Thumb

- Approximate CFM = **Pump Ratio x GPM**  
*GPM determined from pump performance chart at actual pump cycle rate per minute*
- Horsepower (Electric Compressor) = **CFM/4**
- Horsepower (Gas/Diesel Compressor) = **CFM/2**

**EXAMPLES:**

**45:1 King** = 2 gpm at 30 cycles per minute  
 Approximate CFM = 45:1 x 2 gpm = **90 CFM**  
 Horsepower (Electric) = CFM/4 = 90/4 = **22.5 HP**  
 Horsepower (Gas/Diesel) = CFM/2 = 90/2 = **45.0 HP**

**56:1 King** = 1.7 gpm at 30 cycles per minute  
 Approximate CFM = 56:1 x 1.7 gpm = **95 cfm**  
 Horsepower (Electric) = CFM/4 = 95/4 = **23.8 HP**  
 Horsepower (Gas/Diesel) = CFM/2 = 95/2 = **47.5 HP**



# Monark<sup>®</sup> 23:1

## Air-Operated Piston Pumps, Airless and Air-Assisted Packages

2

### Features and Benefits

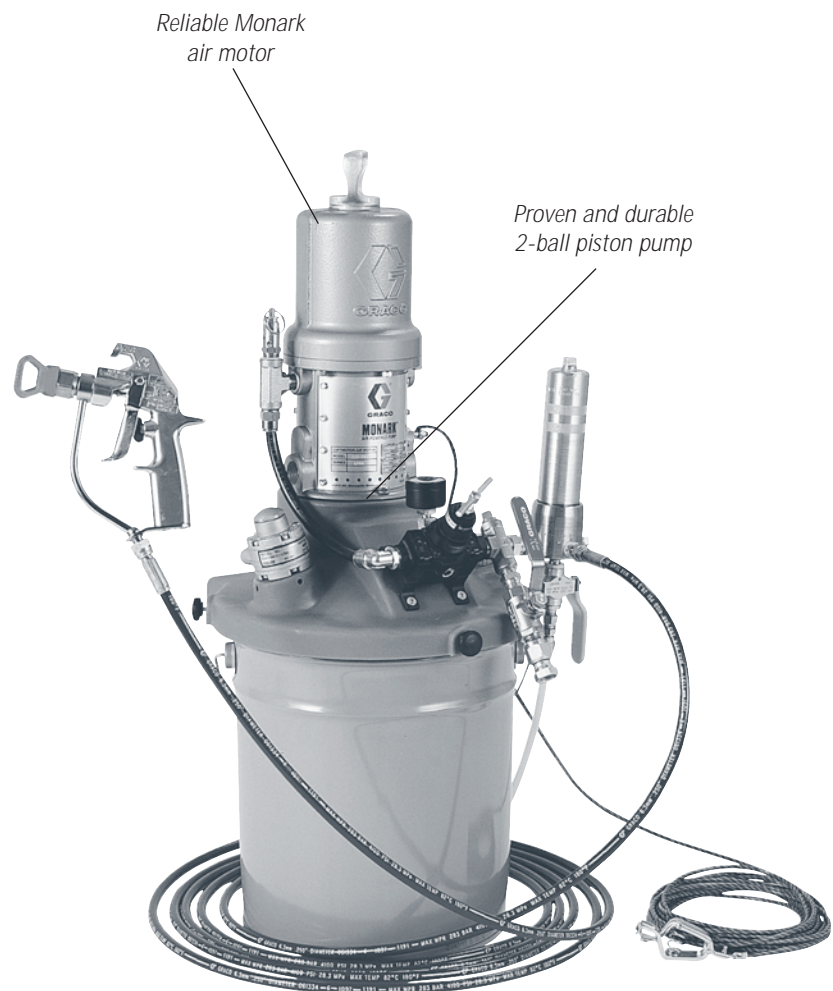
- Easy to operate and maintain
- Durable and dependable design reduces downtime and repair costs
- Multiple package configurations to fit your specific application

### Typical Applications

- Airless or air-assisted applications
- Marine and shipbuilding
- Railcar manufacturing and repair
- Commercial, military and civilian aircraft
- Farm and construction equipment
- Fabricated metal products

### Typical Coatings Applied

- Low to medium viscosity coatings
- Plural component coatings
- Solventborne coatings
- Epoxies and polyurethanes
- Waterborne coatings
- Primers
- Stains, lacquers and varnishes
- Acid-catalyzed materials
- Sealants and low viscosity adhesives



**Monark 23:1  
Pail-Mount  
232433**

# Monark 23:1

## Air-Operated Piston Pumps, Airless and Air-Assisted Packages

### Technical Specifications

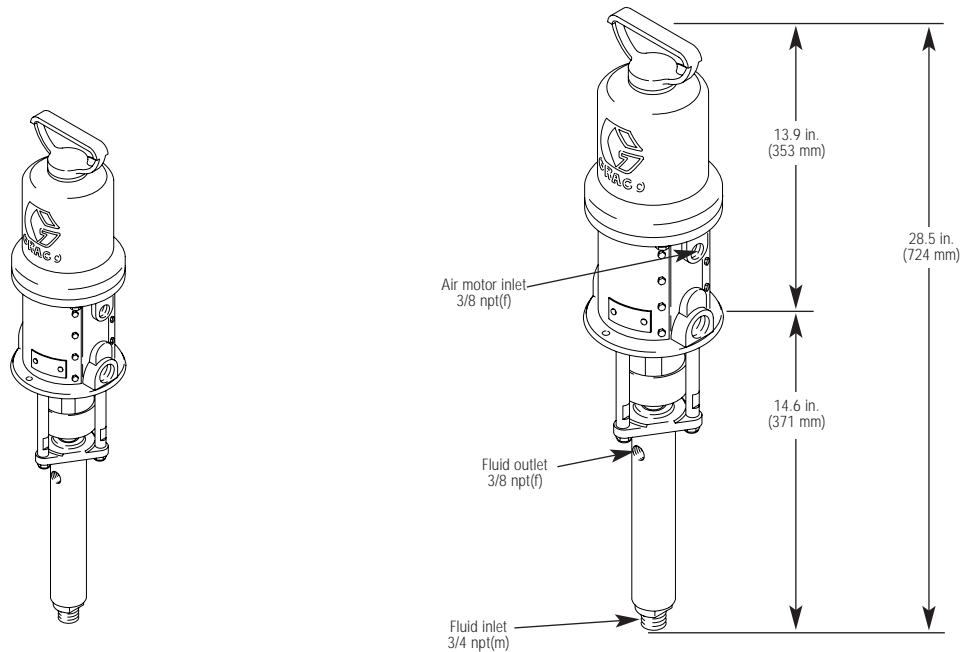
Maximum fluid pressure .....	223596 - 2760 psi (19.0 MPa, 190 bar) 237958 - 3450 psi (24 MPa, 238 bar)
Maximum air inlet pressure .....	237958 - 120 psi (0.8 MPa, 8 bar) 223596 - 150 psi (1.0 MPa, 10 bar)
Air inlet size .....	3/8 npt(f)
Fluid inlet size .....	3/4 npt(m)
Fluid outlet size .....	3/8 npt(f)
Fluid flow @ 60 cpm .....	0.4 gpm (1.5 lpm)
Air consumption @ 100 psi (0.7 MPa, 7 bar) @ 20 cpm .....	3 scfm (0.08 m <sup>3</sup> /min.)
Sound pressure level @ 100 psi (0.7 MPa, 7 bar), air @ 20 cpm .....	75 dBA
Volume per cycle .....	1.1 oz. (32 cc)
Air motor diameter .....	3 in. (7.6 cm)
Weight (bare pump) .....	24 lbs. (11 kg)
Instruction manual .....	307619



### Performance Chart

MONARK 23:1

### Dimensions



# Monark 23:1

## Air-Operated Piston Pumps, Airless and Air-Assisted Packages

2

### Ordering Information - Monark 23:1 Bare Pumps

1. Select appropriate pump ratio (23:1) based on pressure and flow requirements of the application.
2. Select Lower Pump Displacement Construction (CS - carbon steel or SST - stainless steel) based on the corrosive and chemical characteristics of the fluid to be handled.
3. Order pump part number.

**Pump part number includes motor and lower displacement pump.**

	Monark 23:1	Monark 23:1
Pump part number	<b>223596</b>	<b>237958</b>
Air motor	222791	222791
Lower displacement pump	223595	239145
Construction	CS	SST
Seal construction	4 Leather/1 Ptfе	2 Ptfе/2 Leather

### Replacement Parts Ordering Information

Air motor repair kit	206728	206728
Standard piston seal kit	239328	235636
Construction	4 Leather/1 Ptfе	2 Ptfе/2 Leather
Optional piston seal	223674	223674
Construction	2 UHMWPE/2 Leather	2 UHMWPE/2 Leather
Optional piston seal	236724	236724
Construction	4 Ptfе	4 Ptfе
Optional piston seal	235636	239328
Construction	2 Ptfе/2 Leather	4 Leather/1 Ptfе
Optional seals	243615/243616	243615/243616
Construction	Tuff-Stack	Tuff-Stack
Displacement rod	223603	223603
Construction	SST	SST
Sleeve housing	178898	178898
Construction	SST	SST

*Note: Tuff-Stack part number sold as 12-count convenience pack.*

*Note: Tuff-Stack is a proprietary Ptfе blend.*

# Monark 23:1

## Air-Operated Piston Pumps, Airless and Air-Assisted Packages

### Ordering Information - Monark 23:1 Packages

AIRLESS PACKAGES					
	PACKAGE PART NO.	PUMP LOWER	STANDARD SEAL REPAIR KIT	DISPLACEMENT ROD	SLEEVE HOUSING
<b>PAIL-MOUNT</b>					
Carbon Steel Bare Package, No Gun or Hose <b>23:1</b>	<b>232434</b>	223595	239328	223603	178898
Carbon Steel Complete Package with Silver Plus™ Gun and Hose <b>23:1</b>	<b>232433</b>	223595	239328	223603	178898
Carbon Steel Complete Package with Agitator, Silver Plus Gun and Hose <b>23:1</b>	<b>232437</b>	223595	239328	223603	178898
Stainless Steel Bare Package, No Gun or Hose <b>23:1</b>	<b>232446</b>	239145	235636	223603	178898
Stainless Steel Complete Package with Silver Plus Gun and Hose <b>23:1</b>	<b>232445</b>	239145	235636	223603	178898
Stainless Steel Complete Package with Agitator, Silver Plus Gun and Hose <b>23:1</b>	<b>232449</b>	239145	235636	223603	178898
<b>LIGHT-DUTY CART-MOUNT</b>					
Carbon Steel Bare Package, No Gun or Hose <b>23:1</b>	<b>232412</b>	223595	239328	223603	178898
Carbon Steel Complete Package with Silver Plus Gun and Hose <b>23:1</b>	<b>232411</b>	223595	239328	223603	178898
<b>CART-MOUNT</b>					
Carbon Steel Bare Package, No Gun or Hose <b>23:1</b>	<b>231941</b>	223595	239328	223603	178898
Carbon Steel Complete Package with Silver Plus Gun and Hose <b>23:1</b>	<b>231940</b>	223595	239328	223603	178898
Carbon Steel Complete Package with Heater, Silver Plus Gun and Hose <b>23:1 (120V)</b>	<b>231989</b>	223595	239328	223603	178898
<b>23:1 (240V)</b>	<b>231990</b>	223595	239328	223603	178898
Stainless Steel Complete Package with Silver Plus Gun and Hose <b>23:1</b>	<b>231949</b>	239145	235636	223603	178898
Stainless Steel Complete Package with Heater, Silver Plus Gun and Hose <b>23:1 (120V)</b>	<b>232044</b>	239145	235636	223603	178898
<b>23:1 (240V)</b>	<b>232045</b>	239145	235636	223603	178898
<b>WALL-MOUNT</b>					
Carbon Steel Bare Package, No Gun or Hose <b>23:1</b>	<b>232223</b>	223595	239328	223603	178898
Carbon Steel Complete Package with Silver Plus Gun and Hose <b>23:1</b>	<b>232222</b>	223595	239328	223603	178898
Carbon Steel Complete Package with Heater, Silver Plus Gun and Hose <b>23:1 (240V)</b>	<b>232291</b>	223595	239328	223603	178898
<b>23:1 (480V)</b>	<b>232292</b>	223595	239328	223603	178898

# Monark 23:1

## Air-Operated Piston Pumps, Airless and Air-Assisted Packages

### Ordering Information - Monark 23:1 Packages (continued)

2

#### AIRLESS PACKAGES (CONTINUED)

	PACKAGE PART NO.	PUMP LOWER	STANDARD SEAL REPAIR KIT	DISPLACEMENT ROD	SLEEVE HOUSING
<b>WALL-MOUNT (CONTINUED)</b>					
Stainless Steel Bare Package, No Gun or Hose 23:1	<b>232234</b>	239145	235636	223603	178898
Stainless Steel Complete Package with Silver Plus Gun and Hose 23:1	<b>232233</b>	239145	235636	223603	178898
Stainless Steel Complete Package with Heater, Silver Plus Gun and Hose 23:1 (240V)	<b>232379</b>	239145	235636	223603	178898

#### AIR-ASSISTED PACKAGES

	PACKAGE PART NO.	PUMP LOWER	STANDARD SEAL REPAIR KIT	DISPLACEMENT ROD	SLEEVE HOUSING
<b>PAIL-MOUNT</b>					
Carbon Steel Bare Package, No Gun or Hose 23:1	<b>232440</b>	223595	239328	223603	178898
Carbon Steel Complete Package with Alpha Plus™ AA Gun and Hose 23:1	<b>232439</b>	223595	239328	223603	178898
Carbon Steel Complete Package with Agitator, Alpha Plus AA Gun and Hose 23:1	<b>232433</b>	223595	239328	223603	178898
Stainless Steel Bare Package, No Gun Or Hose 23:1	<b>232452</b>	239145	235636	223603	178898
Stainless Steel Complete Package with Alpha Plus AA Gun and Hose 23:1	<b>232451</b>	239145	235636	223603	178898
Stainless Steel Complete Package with Agitator, Alpha Plus AA Gun and Hose 23:1	<b>232455</b>	239145	235636	223603	178898

#### LIGHT-DUTY CART-MOUNT

Carbon Steel Bare Package, No Gun or Hose 23:1	<b>232416</b>	223595	239328	223603	178898
Carbon Steel Complete Package with Alpha Plus AA Gun and Hose 23:1	<b>232415</b>	223595	239328	223603	178898
Carbon Steel Complete Package with PRO™ AA Xs4 Gun and Hose 23:1	<b>232419</b>	223595	239328	223603	178898
Stainless Steel Complete Package with Alpha Plus AA Gun and Hose 23:1	<b>232688</b>	239145	235636	223603	178898
Stainless Steel Complete Package with PRO Xs4 AA Gun and Hose 23:1	<b>232422</b>	239145	235636	223603	178898



# Monark 23:1

## Air-Operated Piston Pumps, Airless and Air-Assisted Packages

### Ordering Information - Monark 23:1 Packages (continued)

AIR-ASSISTED PACKAGES (CONTINUED)					
	PACKAGE PART NO.	PUMP LOWER	STANDARD SEAL REPAIR KIT	DISPLACEMENT ROD	SLEEVE HOUSING
<b>CART-MOUNT</b>					
Carbon Steel Bare Package, No Gun or Hose 23:1	<b>231944</b>	223595	239328	223603	178898
Carbon Steel Complete Package with Alpha Plus AA Gun and Hose 23:1	<b>231943</b>	223595	239328	223603	178898
Carbon Steel Complete Package with Alpha Plus AA Gun and 50 ft Hose 23:1	<b>231945</b>	223595	239328	223603	178898
Carbon Steel Complete Package with Heater, Alpha Plus AA Gun and Hose 23:1 (120V)	<b>232059</b>	223595	239328	223603	178898
23:1 (240V)	<b>232060</b>	223595	239328	223603	178898
Stainless Steel Complete Package with Alpha Plus AA Gun and Hose 23:1	<b>231952</b>	239145	235636	223603	178898
Stainless Steel Complete Package with Heater, Alpha Plus™ AA Gun and Hose 23:1 (120V)	<b>232049</b>	239145	235636	223603	178898
23:1 (240V)	<b>232050</b>	239145	235636	223603	178898
<b>WALL-MOUNT</b>					
Carbon Steel Bare Package, No Gun or Hose 23:1	<b>232227</b>	223595	239328	223603	178898
Carbon Steel Complete Package with Alpha Plus AA Gun and Hose 23:1	<b>232226</b>	223595	239328	223603	178898
Carbon Steel Complete Package with PRO Xs4 AA Gun and Hose 23:1	<b>232230</b>	223595	239328	223603	178898
Carbon Steel Complete Package with Heater, PRO Xs4 AA Gun and Hose 23:1 (240V)	<b>232307</b>	223595	239328	223603	178898
23:1 (480V)	<b>232308</b>	223595	239328	223603	178898
Stainless Steel Complete Package with Alpha Plus AA Gun and Hose 23:1	<b>232237</b>	239145	235636	223603	178898
Stainless Steel Complete Package with PRO Xs4 AA Gun and Hose 23:1	<b>232241</b>	239145	235636	223603	178898
Stainless Steel Complete Package with Heater, PRO Xs4 AA Gun and Hose 23:1 (240V)	<b>232395</b>	239145	235636	223603	178898
23:1 (480V)	<b>232396</b>	239145	235636	223603	178898

# Monark 23:1

## Air-Operated Piston Pumps, Airless and Air-Assisted Packages

### Accessories

#### GUNS AND TIPS

- 238591 Silver Plus Gun**  
Maximum working pressure: 5000 psi (34.5 MPa, 345 bar). With Heavy-Duty Reverse-A-Clean® (HD RAC) tip and guard.
- 243573 Alpha Plus AA Gun**  
Maximum working pressure: 4000 psi (27.6 MPa, 276 bar).
- 244580 PRO Xs4 AA Smart Electrostatic Gun**

#### AIR HOSES

##### Air Hose

- ID 1/2 in. (12.7 mm), 3/8 npt(m) thread.
- 214650** 5 ft. (1.5 m)  
**214655** 25 ft. (7.6 m)  
**214654** 50 ft. (15.2 m)  
**214653** 100 ft. (30.4 m)

#### FLUID HOSES

##### Fluid Hose

- Maximum working pressure: 3000 psi (20.7 MPa, 207 bar). ID 3/8 in. (9.52 mm), 3/8 npt(mbe).
- 214705** 50 ft. (15.24 m)  
**214703** 25 ft. (7.62 m)

##### Whip Hose

- Maximum working pressure: 5000 psi (34.5 MPa, 345 bar). ID 1/4 in. (0.63 cm), 1/4 npsm(fbe).
- 214912** 3 ft. (0.91 m)  
**214913** 6 ft. (1.83 m)

#### ADAPTERS AND FITTINGS

- 241953 Monark Muffler Retrofit Kit**  
Upgrade Monark air motor with foam attached to air motor plates. Reduces sound level of Monark air motor.

#### SUCTION KITS

- 208259 Siphon Kit, Carbon Steel**  
For use with drums. Outlet size: 3/4 npt(f) swivel.
- 208920 Siphon Kit, Aluminum**  
Use to siphon fluid from a 5-gal. (18.9 L) pail. Includes 214960 ID 3/4 in. nylon suction hose, 3.5 ft. (1.1 m) long, 3/4 npt(f) swivel outlet fitting.
- 207484 Siphon Kit, Aluminum**  
Use to siphon fluid from a 5-gal. (18.9 L) pail. Includes 214960 ID 3/4 in. nylon suction hose, 3.5 ft. (1.1 m) long, 3/4 npt(f) swivel outlet fitting.

#### CONTROLS AND VALVES

- 110234 Air Regulator**  
Maximum working pressure: 300 psi (2.1 MPa, 21 bar). Regulated pressure range: 0-250 psi (0-1.8 MPa, 18 bar). Inlet/outlet: 3/8 npt(f).
- 224040 Pump Runaway Valve**  
Maximum working pressure: 120 psi (0.84 MPa, 8.4 bar). Inlet/outlet: 3/4 npt(f).
- 214847 Air Line Lubricator**  
Maximum working pressure: 250 psi (1.8 MPa, 18 bar). Bowl capacity: 5 oz. (0.15 L). Inlet/outlet: 3/8 npt(f).
- 110150 Air FRL Kit**  
Maximum working pressure: 250 psi (1.8 MPa, 18 bar). Includes air filter, regulator, pressure gauge, lubricator, mounting bracket, and connection fittings. Inlet/outlet: 3/8 npt(f).

#### FILTERS

- 106148 Air Line Filter**  
Maximum working pressure: 250 psi (1.8 MPa, 18 bar). Inlet/outlet: 3/8 npt(f).
- 214570 Carbon Steel Fluid Filter**  
Maximum working pressure: 3000 psi (20.7 MPa, 207 bar). Screen: 60 mesh (250 micron). Inlet: 3/8 npt(f). Outlet: 1/4 npt(f).
- 223160 Stainless Steel Fluid Filter**  
Maximum working pressure: 5000 psi (34.5 MPa, 345 bar). Screen: 60 mesh (250 micron). Inlet: 3/8 npt(f). Outlet: 1/4 npt(m).

#### Replacement Screen Filter Elements

3 Pack	25 Pack	
<b>238435</b>	<b>238436</b>	30 mesh (595 micron)
<b>238437</b>	<b>238438</b>	60 mesh (250 micron)
<b>238439</b>	<b>238440</b>	100 mesh (149 micron)

# Monark 23:1

## Air-Operated Piston Pumps, Airless and Air-Assisted Packages

### Accessories (continued)

#### LIQUIDS AND LUBRICATION

##### Graco Throat Seal Liquid

206995	1 qt. (0.9 L)
206996	1 gal. (3.8 L)

#### MOUNTING OPTIONS

##### 207365 Wall Bracket

Includes all screws, washers, and nuts for fastening the pump to the bracket.

#### TOOLS

##### 205579 Padded Pliers

For servicing Monark air motor trip rod.

##### 171818 Adjustment Tool

A 0.145 in. (3.7 mm) gauge used to ensure proper clearance between the poppets and the piston on the Monark air motor.

# President® 30:1 & 46:1

## Air-Operated Piston Pumps, Airless and Air-Assisted Packages

2

### Features and Benefits

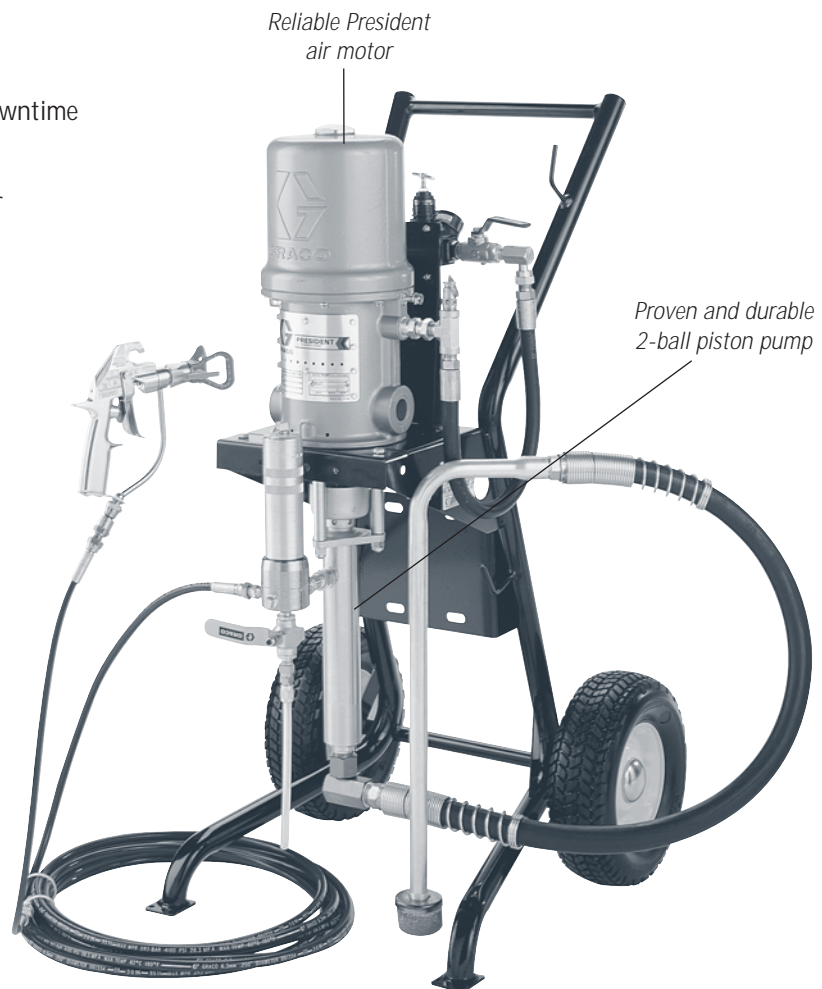
- Easy to operate and maintain
- Durable and dependable design reduces downtime and repair costs
- Multiple package configurations to fit your specific application

### Typical Applications

- Airless and air-assisted spray finishing
- Marine and shipbuilding
- Railcar manufacturing and repair
- High pressure supply pumping
- Farm and construction equipment
- Fabricated metal products

### Typical Coatings Applied

- Medium to high viscosity coatings
- Plural component coatings
- Solventborne coatings
- Epoxies and polyurethanes
- Waterborne coatings
- Primers
- Acid-catalyzed coatings
- Stains, lacquers and varnishes
- Sealant and low viscosity adhesives



**President 30:1  
Cart-Mount  
231921**

# President 30:1 & 46:1

## Air-Operated Piston Pumps, Airless and Air-Assisted Packages

### Technical Specifications

	President 30:1	President 46:1
Fluid pressure ratio		
Maximum fluid outlet pressure	3600 psi (25 MPa, 250 bar)	4600 psi (32 MPa, 320 bar)
Maximum air input pressure	120 psi (0.8 MPa, 8 bar)	100 psi (0.7 MPa, 7 bar)
Fluid flow @ 60 cpm	1.0 gpm (3.8 lpm)	0.58 gpm (2.2 lpm)
Volume per double stroke (cycle)	2.0 oz. (62 cc)	1.2 oz. (36 cc)
Air consumption @ 100 psi (0.7 MPa, 7 bar), air @ 20 cpm	10 scfm, (0.28 m <sup>3</sup> /min.)	10 scfm, (0.28 m <sup>3</sup> /min.)
Sound pressure level @ 100 psi (0.7 MPa, 7 bar), air @ 20 cpm	81 dBA	81 dBA
Air inlet size	1/2 npt(f)	1/2 npt(f)
Fluid inlet size	3/4 npt(m)	3/4 npt(m)
Fluid outlet size	3/8 npt(f)	3/8 npt(f)
Height	30 in. (762 mm) Stubby	31.6 in. (802.6 mm)
	47 in. (1194 mm) Drum Length	
Weight	30 lbs. (14 kg) Drum Length	
	24 lbs. (11 kg) All Other Models	24 lbs. (11 kg)
Instruction manuals	308106 Model 223843 (SST)	307619
	306981 Models 223586, 221075, 243664	

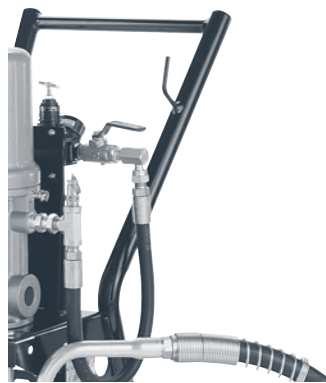
# President 30:1 & 46:1

## Air-Operated Piston Pumps, Airless and Air-Assisted Packages

### Performance Charts

PRESIDENT 30:1

PRESIDENT 46:1

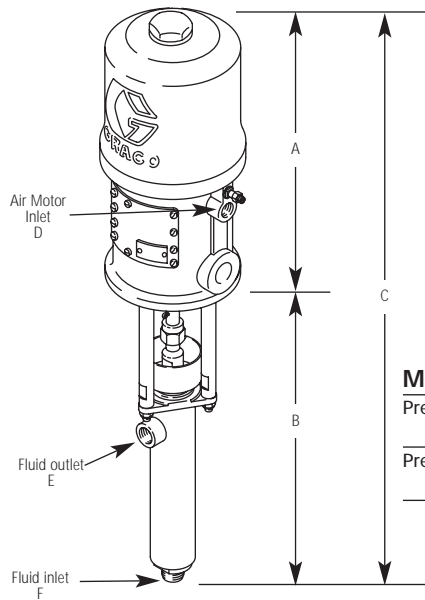


# President 30:1 & 46:1

## Air-Operated Piston Pumps, Airless and Air-Assisted Packages

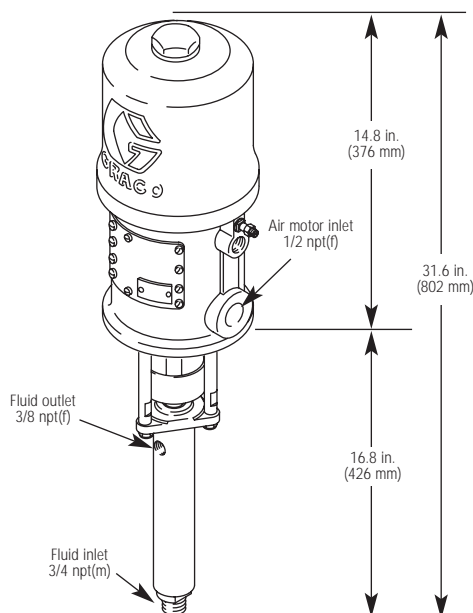
### Dimensions

#### PRESIDENT 30:1



Model	A	B	C	D	E	F
President 30:1 Stubby	15.0 in. (381 mm)	15.0 in. (381 mm)	30.0 in. (762 mm)	3/8 npt(f) or 1/2 npt(f)	1/4 npt(f) or 3/8 npt(f)	3/4 npt(f) or 3/4 npt(m)
President 30:1 Drum	15.0 in. (381 mm)	32.0 in. (810 mm)	47.0 in. (1194 mm)	1/2 npt(f)	3/8 npt(f)	3/4 npt(m)

#### PRESIDENT 46:1



# President 30:1 & 46:1

## Air-Operated Piston Pumps, Airless and Air-Assisted Packages

2

### Ordering Information - President 30:1 & 46:1 Bare Pumps

1. Select appropriate pump ratio (30:1 or 46:1) based on pressure and flow requirements of the application.
2. Select stubby length pump configuration if siphoning from material container, drum length pump if immersing in a 55 gallon (200 l) drum, or stubby with riser tube to mount pump outlet above pump mounting bracket.
3. Select lower pump displacement construction (CS - carbon steel or SST - stainless steel) based on the corrosive and chemical characteristics of the fluid to be handled.
4. Select appropriate seal construction based on the chemical characteristics of the fluid to be handled.
5. Order pump part number.

**Pump part number includes motor and lower displacement pump**

	President 30:1	President 30:1	President 30:1	President 30:1
Pump part number	221075	223586	243664	223843
Configuration	Drum	Stubby	Stubby	Stubby
Air motor	207352	207352	207352	207352
Lower displacement pump	223587	223587	243663	223842
Construction	CS	CS	CS	304 SST
Seal construction	Ptfe/Leather	Ptfe/Leather	Tuff-Stack	Ptfe/Leather

### Replacement Parts Ordering Information

Air motor repair kit	207385	207385	207385	207385
Standard seal repair kits	235635	235635	243687	235635
Construction	Ptfe/Leather	Ptfe/Leather	Tuff-Stack	Ptfe/Leather
Optional seal repair kits	223675	223675	223675	223675
Construction	UHMWPE/Leather	UHMWPE/Leather	UHMWPE/Leather	UHMWPE/Leather
Optional seal repair kits	237725	237725	235635	237725
Construction	Ptfe	Ptfe	Ptfe/Leather	Ptfe
Optional seal repair kits	243687	243687	237725	243687
Construction	Tuff-Stack	Tuff-Stack	Ptfe	Tuff-Stack
Optional seal packings	243621	243621	243621	243621
Construction	Tuff-Stack	Tuff-Stack	Tuff-Stack	Tuff-Stack
Displacement rod	223589	223589	223589	223589
Construction	17-4PH SST	17-4PH SST	17-4PH SST	17-4PH SST
Sleeve housing	178902	178902	178902	178902
Construction	304 SST	304 SST	304 SST	304 SST

Note: Tuff-Stack part number sold as 12-count convenience pack.

Note: Tuff-Stack is a proprietary Ptfe blend.



# President 30:1 & 46:1

## Air-Operated Piston Pumps, Airless and Air-Assisted Packages

### Ordering Information - President 30:1 & 46:1 Bare Pumps (continued)

Pump part number includes motor and lower displacement pump

	President 46:1	President 46:1
Pump part number	239140	240445
Air motor	207352	207352
Lower displacement pump	239145	240444
Construction	SST	SST
Seal construction	2 Ptfе/2 Leather	4 Ptfе

#### Replacement Parts Ordering Information

Air motor repair kit	207385	207385
Standard seal repair kit	235636	236724
Construction	2 Ptfе/2 Leather	4 Ptfе
Optional seal repair kit	236724	223674
Construction	4 Ptfе	2 UHMWPE/2 Leather
Optional seal repair kit	223674	235636
Construction	2 UHMWPE/2 Leather	2 Ptfе/2 Leather
Standard seal repair kit	239328	239328
Construction	4 Leather/1 Ptfе	4 Leather/1 Ptfе
Optional seals	243615/243616	243615/243616
Construction	Tuff-Stack	Tuff-Stack
Displacement rod	223603	223603
Construction	SST	SST
Cylinder	178898	178898
Construction	SST	SST

Note: Tuff-Stack part number sold as 12-count convenience pack.

Note: Tuff-Stack is a proprietary Ptfе blend.

The following lower displacement pump is not offered in a complete President 46:1 pump assembly. To configure a complete carbon steel President 46:1 pump with this lower:

1. Order lower displacement pump 223595.
2. Order President air motor 207352.
3. Order adapter 191995, cotter pin 101946 (qty 2), o-ring 154771, carbon steel tie rods 191996 (qty 3) and locknuts 101566 (qty 3).

#### Additional Lower Displacement Pumps

Lower displacement pump	223595
Material of Construction	CS
Standard seal repair kit	239328
Construction	4 Leather/1 Ptfе
Displacement rod	223603
Construction	SST
Sleeve housing	178898
Construction	SST

# President 30:1 & 46:1

## Air-Operated Piston Pumps, Airless and Air-Assisted Packages

### Ordering Information - President 30:1 & 46:1 Packages

#### AIRLESS PACKAGES

	PACKAGE PART NO.	PUMP LOWER	STANDARD SEAL REPAIR KIT	DISPLACEMENT ROD	SLEEVE HOUSING
<b>CART-MOUNT</b>					
Carbon Steel Bare Package, No Gun or Hose					
30:1	231922	223587	235635	223589	178902
Carbon Steel Complete Package with Silver Plus Gun and Hose					
30:1	231921	223587	235635	223589	178902
Carbon Steel Complete Package with Heater, Silver Plus Gun and Hose					
30:1 (120V)	231973	223587	235635	223589	178902
30:1 (240V)	231974	223587	235635	223589	178902
Carbon Steel Bare Package					
30:1	231920	223587	235635	223589	178902
30:1	231923	223587	235635	223589	178902
Stainless Steel Complete Package with Silver Plus Gun and Hose					
30:1	231931	223842	223675	223589	178902
46:1	232025	240444	236724	223603	178898
Stainless Steel Complete Package with Heater, Silver Plus Gun and Hose					
30:1 (120V)	232028	223842	223675	223589	178902
30:1 (240V)	232029	223842	223675	223589	178902
Stainless Steel Bare Package					
30:1	231933	223842	223675	223589	178902

#### WALL-MOUNT

Carbon Steel Bare Package, No Gun or Hose					
30:1	232201	223587	235635	223589	178902
46:1	232264	239145	235636	223603	178898
Carbon Steel Complete Package with Silver Plus Gun and Hose					
30:1	232200	223587	235635	223589	178902
Carbon Steel Complete Package with Heater, Silver Plus Gun and Hose					
30:1 (240V)	232267	223587	235635	223589	178902
30:1 (480V)	232268	223587	235635	223589	178902
Stainless Steel Bare Package, No Gun or Hose					
30:1	232212	223842	223675	223589	178902
Stainless Steel Complete Package with Silver Plus Gun and Hose					
30:1	232211	223842	223675	223589	178902
Stainless Steel Complete Package with Heater, Silver Plus Gun and Hose					
30:1 (240V)	232355	223842	223675	223589	178902
30:1 (480V)	232356	223842	223675	223589	178902

# President 30:1 & 46:1

## Air-Operated Piston Pumps, Airless and Air-Assisted Packages

### Ordering Information - President 30:1 & 46:1 Packages (continued)

AIR-ASSISTED PACKAGES					
	PACKAGE PART NO.	PUMP LOWER	STANDARD SEAL REPAIR KIT	DISPLACEMENT ROD	SLEEVE HOUSING
<b>CART-MOUNT</b>					
Carbon Steel Bare Package, No Gun or Hose					
<b>30:1</b>	<b>231926</b>	223587	235635	223589	178902
Carbon Steel Complete Package with Alpha Plus AA Gun and Hose					
<b>30:1</b>	<b>231925</b>	223587	235635	223589	178902
Carbon Steel Complete Package with Alpha Plus AA Gun and 50 ft. Hose					
<b>30:1</b>	<b>231927</b>	223587	235635	223589	178902
Carbon Steel Complete Package with Heater, Alpha Plus AA Gun and Hose					
<b>30:1</b> (120V)	<b>231979</b>	223587	235635	223589	178902
<b>30:1</b> (240V)	<b>231980</b>	223587	235635	223589	178902
Carbon Steel Complete Package with PRO Xs4 AA Gun and Hose					
<b>30:1</b>	<b>231928</b>	223587	235635	223589	178902
Carbon Steel Complete Package with PRO Xs4 AA Gun and 50 ft Hose					
<b>30:1</b>	<b>231929</b>	223587	235635	223589	178902
Carbon Steel Complete Package with Heater, PRO Xs4 AA Gun and Hose					
<b>30:1</b> (120V)	<b>231983</b>	223587	235635	223589	178902
<b>30:1</b> (240V)	<b>231984</b>	223587	235635	223589	178902
Stainless Steel Bare Package, No Gun or Hose					
<b>30:1</b>	<b>231935</b>	223842	223675	223589	178902
Stainless Steel Complete Package with Alpha Plus AA Gun and Hose					
<b>30:1</b>	<b>231934</b>	223842	223675	223589	178902
Stainless Steel Complete Package with Alpha Plus AA Gun and 50 ft. Hose					
<b>30:1</b>	<b>231936</b>	223842	223675	223589	178902
Stainless Steel Complete Package with Heater, Alpha Plus AA Gun and Hose					
<b>30:1</b> (120V)	<b>232034</b>	223842	223675	223589	178902
<b>30:1</b> (240V)	<b>232035</b>	223842	223675	223589	178902
Stainless Steel Complete Package with PRO Xs4 AA Gun and Hose					
<b>30:1</b>	<b>231937</b>	223842	223675	223589	178902
Stainless Steel Complete Package with PRO Xs4 AA Gun and 50 ft. Hose					
<b>30:1</b>	<b>231938</b>	223842	223675	223589	178902
Stainless Steel Complete Package with Heater, PRO Xs4 AA Gun and Hose					
<b>30:1</b> (120V)	<b>232038</b>	223842	223675	223589	178902
<b>30:1</b> (240V)	<b>232039</b>	223842	223675	223589	178902

# President 30:1 & 46:1

## Air-Operated Piston Pumps, Airless and Air-Assisted Packages

### Ordering Information - President 30:1 & 46:1 Packages (continued)

#### AIR-ASSISTED PACKAGES (CONTINUED)

	PACKAGE PART NO.	PUMP LOWER	STANDARD SEAL REPAIR KIT	DISPLACEMENT ROD	SLEEVE HOUSING
<b>WALL-MOUNT</b>					
Carbon Steel Bare Package, No Gun or Hose					
<b>30:1</b>	<b>232205</b>	223587	235635	223589	178902
Carbon Steel Complete Package with Alpha Plus AA Gun and Hose					
<b>30:1</b>	<b>232204</b>	223587	235635	223589	178902
Carbon Steel Complete Package with Heater, Alpha Plus AA Gun and Hose					
<b>30:1</b> (240V)	<b>232275</b>	223587	235635	223589	178902
<b>30:1</b> (480V)	<b>232276</b>	223587	235635	223589	178902
Carbon Steel Complete Package with PRO Xs4 AA Gun and Hose					
<b>30:1</b>	<b>232208</b>	223587	235635	223589	178902
Carbon Steel Complete Package with Heater, PRO Xs4 AA Gun and Hose					
<b>30:1</b> (240V)	<b>232283</b>	223587	235635	223589	178902
<b>30:1</b> (480V)	<b>232284</b>	223587	235635	223589	178902
Stainless Steel Bare Package, No Gun or Hose					
<b>30:1</b>	<b>232216</b>	223842	223675	223589	178902
Stainless Steel Complete Package with Alpha Plus AA Gun and Hose					
<b>30:1</b>	<b>232215</b>	223842	223675	223589	178902
Stainless Steel Complete Package with Heater, Alpha Plus AA Gun and Hose					
<b>30:1</b> (240V)	<b>232363</b>	223842	223675	223589	178902
<b>30:1</b> (480V)	<b>232364</b>	223842	223675	223589	178902
Stainless Steel Complete Package with PRO Xs4 AA Gun and Hose					
<b>30:1</b>	<b>232219</b>	223842	223675	223589	178902
Stainless Steel Complete Package with Heater, PRO Xs4 AA Gun and Hose					
<b>30:1</b> (240V)	<b>232371</b>	223842	223675	223589	178902
<b>30:1</b> (480V)	<b>232372</b>	223842	223675	223589	178902

# President 30:1 & 46:1

## Air-Operated Piston Pumps, Airless and Air-Assisted Packages

### Accessories

#### GUNS AND TIPS

- 238591 Silver Plus Gun**  
Maximum working pressure: 5000 psi (34.5 MPa, 345 bar). With RAC 5 tip and 2-finger trigger.
- 243573 Alpha Plus AA Gun**  
Maximum working pressure: 4000 psi (27.6 MPa, 276 bar).
- 244580 PRO Xs4 AA Smart Electrostatic Gun**

#### AIR HOSES

##### Grounded Air Hose, Buna-S

Maximum working pressure: 175 psi (1.2 MPa, 12 bar).

- 205418** ID 1/2 in. x 6 ft. (13 mm x 1.8 m)  
1/2 npt(m)
- 205273** ID 1/2 in. x 25 ft. (13 mm x 7.6 m)  
1/2 npt(m)
- 208594** ID 1/2 in. x 50 ft. (13 mm x 15.2 m)  
1/2 npt(m)

#### FLUID HOSES

##### Whip Hose

Maximum working pressure: 5000 psi (34.5 MPa, 345 bar). ID 1/4 in. (6.3 mm). 1/4 npsm(fbe).

- 214912** 3 ft. (1.8 m)
- 214913** 6 ft. (1.8 m)

##### Fluid Hose

Maximum working pressure: 5000 psi (34.5 MPa, 345 bar).

- 214914** ID 1/4 in. x 25 ft. (6.3 mm x 7.6 m).  
1/4 npt(f).
- 214915** ID 1/4 in. x 50 ft. (6.3 mm x 15.2 m).  
1/4 npt(f).
- 215244** ID 3/8 in. x 25 ft. (9.5 mm x 7.6 m).  
3/8 npt(m).
- 215245** ID 3/8 in. x 50 ft. (9.5 mm x 15.2 m).  
3/8 npt(m).
- 215246** ID 3/8 in. x 100 ft. (9.5 mm x 30.4 m).  
3/8 npt(m).

##### 214961 Suction Hose, Neoprene

Maximum working pressure: 500 psi (3.5 MPa, 35 bar). Length: 6 ft. (1.8 m). Coupled 3/4 npt (mbe).

#### CONTROLS AND VALVES

- 107142 Bleed-Type Master Air Valve**  
Maximum working pressure: 300 psi (2.1 MPa, 21 bar). Inlet: 1/2 npt(m), Outlet: 1/2 npt(f).
- 202858 Air Regulator**  
Maximum working pressure: 300 psi (2.1 MPa, 21 bar). Regulated pressure range: 0-250 psi (0-1.8 MPa, 0-18 bar). Inlet: 3/8 npt(f). Outlet: 1/2 npt(f).
- 214848 Air Line Lubricator**  
Maximum working pressure: 250 psi (1.75 MPa, 17.5 bar). Bowl capacity: 8 oz. (0.24 L). Inlet/outlet: 1/2 npt(f).
- 224040 Pump Runaway Valve**  
Maximum working pressure: 120 psi (0.84 MPa, 8.4 bar). Inlet/outlet: 3/4 npt(f).
- Fluid Drain Valve**  
Maximum working pressure: 5000 psi (34.5 MPa, 345 bar).
- 210657** 1/4 npt(mbe)
- 210658** 3/8 npt(mbe)
- 210659** 1/4 npt x 3/8 npt(mbe)

#### ADAPTERS AND FITTINGS

- 231414 SST Drum Agitator Package**  
Includes heavy-duty agitator, cover, siphon kit and elevator.
- 243801 Remote Exhaust Muffler Kit**  
Kit allows for remote exhaust piping to be installed to President air motor exhaust port. Redirects noise and exhaust contaminants to a remote location. Kit includes air motor covers with 3/4 npt(f) exhaust port and cork gasket.
- 243421 Muffler Kit**  
Kit includes external muffler, plates and gaskets used in muffler kit 243801. External muffler provides noise reduction to air motor.

# President 30:1 & 46:1

## Air-Operated Piston Pumps, Airless and Air-Assisted Packages

### Accessories (continued)

#### SUCTION KITS

- 207484 Siphon Kit, Aluminum**  
Use to siphon fluid from a 5-gal. (18.9 L) pail. Includes 214960 ID 3/4 in. nylon suction hose 3.5 ft. (1.1 m) long, 3/4 npt(f) swivel outlet fitting.
- 208259 Siphon Kit, Carbon Steel**  
Use to siphon fluid from a 55-gal. (200 L) drum. Includes 214961 ID 3/4 in. nylon suction hose, 6 ft. (1.8 m) long, 3/4 npt(f) swivel outlet fitting and bung adapter.
- 208920 Siphon Kit, Aluminum**  
Use to siphon fluid from a 5-gal. (18.9 L) pail. Includes 170706 ID 1 in. nylon suction hose, 4 ft. (1.2 m) long, 3/4 npt(f) swivel outlet fitting and inlet strainer.
- 206266 55-gal. (200 L) Suction Tube**

#### FILTERS

- 106149 Air Line Filter**  
Maximum working pressure: 250 psi (1.75 MPa, 17.5 bar). Inlet and outlet: 1/2 npt(f).
- 223160 Fluid Filter (SST)**  
Maximum working pressure: 5000 psi (34.5 MPa, 345 bar). Screen: 60 mesh (250 micron).

#### Replacement Screen Filter Elements

3 Pack	25 Pack	
238435	238436	30 mesh (595 micron)
238437	238438	60 mesh (250 micron)
238439	238440	100 mesh (149 micron)

#### LIQUIDS AND LUBRICATION

##### Graco Throat Seal Liquid

206995	1 qt. (0.95 L)
206996	1 gal. (3.8 L)

#### TOOLS

- 168085 Accessory Assembly Tool**  
Use to install piston assembly into cylinder (model 239326).
- 207579 Padded Pliers**  
For servicing President air motor trip rod.
- 171818 Adjustment Tool**  
A 0.145 in. (3.7 mm) gauge used to ensure proper clearance between the poppets and the piston on the President air motor.

#### MOUNTING OPTIONS

- 237569 Grounding Clamp & Wire**  
Length: 25 ft. (7.6 m), 12 gauge (1.5 mm<sup>2</sup>).
- 207365 Wall Bracket**
- 206220 Wall Bracket**  
For model 206897.
- 220581 Floor Stand**

# Senator® 35:1

## Air-Operated Piston Pump

2

### Features and Benefits

- Durable and dependable design reduces downtime and repair costs
- Easy to use and maintain

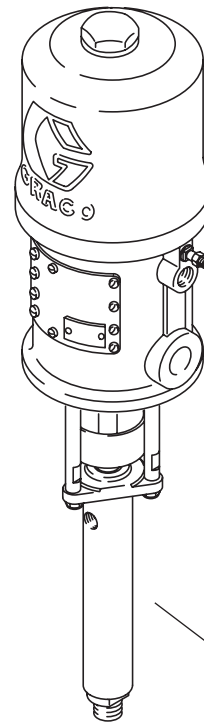
### Typical Applications

- Airless and air-assisted spray applications
- Marine and shipbuilding
- Railcar manufacturing and repair
- Tank and pipe coating
- Wood finishing
- Aerospace industry

### Typical Coatings Applied

- Medium to high viscosity coatings
- High solids plural component coatings
- Solventborne coatings
- Epoxies and polyurethanes
- Waterborne coatings
- Zinc-rich primers and coatings
- Stains, lacquers and varnishes
- Acid-catalyzed lacquers and varnishes

Reliable Senator  
air motor



Senator 35:1  
218048

Proven and  
durable 2-ball  
piston pump

# Senator 35:1

## Air-Operated Piston Pump

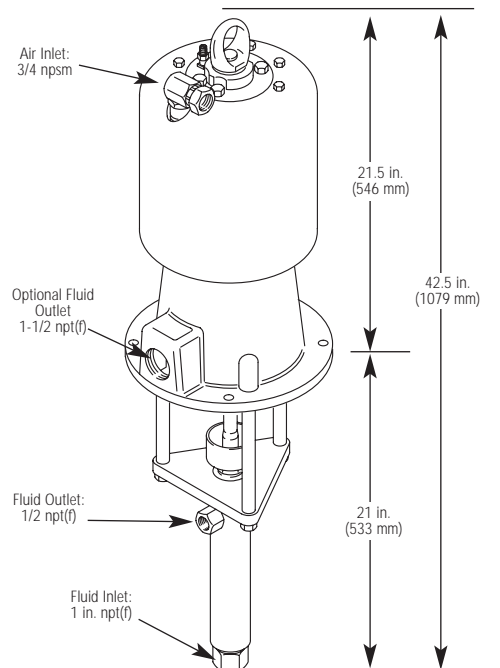
### Technical Specifications

Maximum fluid working pressure	4200 psi (29.0 MPa, 290 bar)
Maximum air pressure	120 psi (0.8 MPa, 8 bar)
Fluid flow at 60 cpm	1.5 gpm (5.7 lpm)
Volume per cycle	3.2 oz. (94.6 cc)
Air inlet size	3/4 npsm
Fluid inlet size	1 npt(f)
Fluid outlet size	1/2 npt(f)
Air consumption @ 100 psi (0.7 MPa, 7 bar) @ 20 cpm	12 scfm, (0.34 m <sup>3</sup> /min.)
Sound pressure level @ 100 psi (0.7 MPa, 7 bar), air @ 20 cpm	88 dBA
Maximum operating temperature	180°F (82°C)
Weight	65 lbs. (28 kg)
Instruction Manual	307648

### Performance Chart

SENATOR 35:1

### Dimensions





# Senator 35:1

## Air-Operated Piston Pump

### Ordering Information - Senator 35:1 Bare Pump

1. Select appropriate pump ratio (35:1) based on pressure and flow requirements of the application.
2. Order pump part number.

**Pump part number includes motor and lower displacement pump.**

Senator 35:1	
Pump part number	218048
Air motor	217540
Lower displacement pump	217462
Construction	CS
Seal construction	UHMWPE/Leather

#### Replacement Parts Ordering Information

Air motor repair kit	218122
Standard seal repair kit	220371
Construction	UHMWPE/Leather
Displacement rod	178977
Construction	SST
Sleeve housing	178984
Construction	SST

# Senator 35:1

## Air-Operated Piston Pump

### Accessories

#### GUNS AND TIPS

- 238591 Silver Plus Gun**  
Maximum working pressure: 5000 psi (34.5 MPa, 345 bar). With HD RAC tip and guard.
- 237162 HD RAC Tip Retainer**  
Maximum working pressure: 7400 psi (51 MPa, 510 bar). Fits guns with 7/8 in. (22.2 mm) thread, included as part of 236995 Model 510 Gun.
- 222674 HD RAC Tip Retainer With DripLess™ Guard**  
Inlet: 7/8 in. (22.2 mm) thread.
- GHDxxx HD RAC Tips**  
See your local distributor for tip size selection.

#### Pole Guns

- Inlet: 1/4 npsm(m). Outlet: 11/16 in. (27 mm).
- 205129** 3 ft. (0.9 m)  
**204979** 6 ft. (1.8 m)  
**205130** 8 ft. (2.4 m)

#### FLUID HOSES

- 236074 Fluid Hose**  
Maximum working pressure: 3300 psi (22.4 MPa, 224 bar). ID 1/4 in. x 25 ft. (6 mm x 7.6 m). Coupled: 1/4 npt(fbe). Swivel end spring guards at both ends.

#### AIR HOSES

##### Grounded Buna-S Air Supply Hose

- Maximum working pressure: 175 psi (1.2 MPa, 12 bar).  
Thread size: 1/2-14 npt(mbe). ID 1/2 in. (12.7 mm).
- 205418** 6 ft. (1.8 m)  
**205273** 25 ft. (7.6 m)  
**208594** 50 ft. (15.2 m)

#### CONTROLS AND VALVES

##### Modular Air Regulator Kit with Filter

- 244719** Lightweight Cart  
**244720** Heavy-Duty Cart

##### 244841 Air Line Lubricator

##### Safety Relief Valves

- 116643** 80 psi (0.55 MPa, 55 bar)  
**103347** 100 psi (0.69 MPa, 69 bar)  
**113488** 110 psi (0.76 MPa, 76 bar)

##### Bleed-Type Master Air Valve (required)

- Maximum working pressure: 300 psi (2.1 MPa, 21 bar).
- 107141** Inlet/outlet: 3/4 npt(mf)  
**107142** Inlet/outlet: 1/2 npt(mf)

##### 224040 Pump Runaway Valve

- Maximum working pressure: 120 psi (0.83 MPa, 8.3 bar). Inlet/outlet: 3/4 npt(f). Includes optional 90° 3/4 npsm swivel fitting.

#### CONTROLS AND VALVES

- 237569 Ground Wire**  
25 ft. (7.62 m); 12 gauge (1.5 mm<sup>2</sup>).
- 245143 Pressure Bleed Valve**  
Maximum working pressure: 7400 psi (51 MPa, 510 bar).
- 245145 Pressure Bleed Valve Repair Kit**  
Includes ball, seat, retaining ring, O-ring, gasket.

#### Ball Valves

- Maximum working pressure: 5000 psi (35 MPa, 350 bar).
- 210657** 1/4 npt(m)  
**210658** 3/8 npt(m)  
**210659** 3/8 x 1/4 npt(m)

#### SUCTION KITS

- 208259 Suction Kit, 55-gal. (200 L)**
- 222916 Suction Kit, Carbon Steel**  
Connect to pump fluid inlet to draw fluid from 55-gal. (200 L) drum. Includes ID 1-1/2 in. 222914 polyethylene hose, 8 ft. (2.4 m) long and 2 npt(m) outlet fitting.
- 236054 Suction Kit, Carbon Steel**  
Use to siphon fluid out of a 55-gal. (200 L) closed-end drum. Includes siphon tube, bung adapter, 6 ft. (1.8 m) nitrile hose and 1-1/2 npt(m) outlet fitting.
- 207484 Siphon Kit, Aluminum**  
Use to siphon fluid from a 5-gal. (18.9 L) pail. Includes ID 3/4 in. 214960 nylon suction hose, 3.5 ft. (1.1 m) long, 3/4 npt(f) swivel outlet fitting.
- 238588 Zinc Conversion Kit**  
Maximum working pressure: 3000 psi (20.7 MPa, 207 bar). Includes: circulation tee at pump outlet, shutoff valve, and drain hose. For spraying zinc primers.
- 207484 Siphon Kit, Carbon Steel**  
Use to siphon fluid from a 55-gal. (200 L) pail. Includes ID 3/4 in. 214961 nylon suction hose, 6 ft. (1.8 m) long, 3/4 npt(f) swivel outlet fitting and bung adapter.
- 208920 Siphon Kit, Aluminum**  
Use to siphon fluid from a 5-gal. (18.9 L) pail. Includes ID 1 in. 170706 nylon suction hose, 4 ft. (1.2 m) long, 3/4 npt(f) swivel outlet fitting and inlet strainer.
- Suction Tube Strainers**  
Fit 197682 suction tube and 245136 suction tube extension.
- 187147** Round strainer  
**191635** Tube strainer

# Senator 35:1

## Air-Operated Piston Pump

### Accessories (continued)

#### ADAPTERS AND FITTINGS

**150287 Hose Coupler**  
Maximum working pressure: 8000 psi (55 MPa, 550 bar). Use to connect 3/8 in. (9.5 mm) hose to whip hose. 3/8 npt(f) x 1/4 npt(m).

#### Nipples

Use to connect hoses together.

**156971** Maximum working pressure: 7500 psi (51.7 MPa, 517 bar).  
1/4 npt x 1/4 npt(mbe).

**165198** Maximum working pressure: 10000 psi (69 MPa, 690 bar).  
1/4 npt x 3/8 npt(mbe).

**162449** Maximum working pressure: 7400 psi (51 MPa, 510 bar).  
1/4 npt x 1/2 npt(mbe).

**159239** Maximum working pressure: 7400 psi (51 MPa, 510 bar).  
3/8 npt x 1/2 npt(mbe).

**158491** Maximum working pressure: 7400 psi (51 MPa, 510 bar).  
1/2 npt x 1/2 npt(mbe).

#### FILTERS

##### Replacement Screen Filter Elements

3 Pack	25 Pack	
<b>238435</b>	<b>238436</b>	30 mesh (595 micron)
<b>238437</b>	<b>238438</b>	60 mesh (250 micron)
<b>238439</b>	<b>238440</b>	100 mesh (149 micron)

#### LIQUIDS AND LUBRICATION

##### Graco Throat Seal Liquid (TSL)

Non-evaporating liquid for wet cup.

<b>206995</b>	1 qt. (0.9 L)
<b>206996</b>	1 gal. (3.8 L)

#### TOOLS

##### 207579 Padded Pliers

For servicing Senator air motor trip rod.

##### 112887 Packing Nut Wrench

For adjusting throat packing compression in pump. Use with lower displacement pumps 237514, 236470, 236490, 237515 and 236897.

##### 168513 Alignment Tool

Use to ensure proper clearance and alignment for the Senator air manifolds.

#### MOUNTING OPTIONS

##### 206221 Wall Bracket

##### 244530 Heavy-Duty 2-Wheel Cart

##### 244527 Lightweight 2-Wheel Cart

# Bulldog<sup>®</sup> 24:1, 28:1, 33:1 & 41:1

## Air-Operated Piston Pumps, Airless and Air-Assisted Packages

2

### Features and Benefits

- Longer life packings and displacement rods reduce downtime and lower maintenance costs
- Easy-to-service Xtreme lower cuts labor time in half
- Superior performance with the highest viscosity coatings

### Typical Applications

- Marine and ship building
- Offshore oil platform production
- Railcar manufacturing and repair
- Nuclear and conventional power facilities
- Container manufacturing
- Bridge maintenance and new construction
- Tank and pipe lining
- Structural steel and corrosion protection

### Typical Coatings Applied

- Medium to high viscosity coatings
- Plural component coatings
- High solids epoxy primers and coatings
- High solids polyurethane top coatings
- Coal tar epoxy primers
- Waterborne coatings
- Fire retardant coatings



Reliable Bulldog  
air motor

Easy-to-use, longer  
life Xtreme pump  
lower with built-in  
filter

**Bulldog 41:1  
Heavy-Duty Cart Mount  
Bare Package  
244466**

# Bulldog 24:1, 28:1, 33:1 & 41:1

## Air-Operated Piston Pumps, Airless and Air-Assisted Packages

### Technical Specifications

	Bulldog 24:1	Bulldog 28:1	Bulldog 33:1	Bulldog 41:1
Fluid pressure ratio				
Maximum fluid outlet pressure	2400 psi (16.5 MPa, 165 bar)	2800 psi (19.3 MPa, 193 bar)	3300 psi (22.4 MPa, 224 bar)	4100 psi (28 MPa, 279 bar)
Maximum air input pressure	100 psi (0.7 MPa, 7 bar)	100 psi (0.7 MPa, 7 bar)	100 psi (0.7 MPa, 7 bar)	100 psi (0.7 MPa, 7 bar)
Fluid flow @ 60 cpm	4.0 gpm (15 lpm)	3.4 gpm (13 lpm)	2.9 gpm (11 lpm)	2.3 gpm (8.7 lpm)
Volume per double stroke (cycle)	8.45 oz. (250 cc)	7.4 oz. (220 cc)	6.1 oz. (180 cc)	4.9 oz. (145 cc)
Maximum pump operating temperature	180° F (82° C)	180° F (82° C)	180° F (82° C)	180° F (82° C)
Air inlet size	3/4 npsm(f)	3/4 npsm(f)	3/4 npsm(f)	3/4 npsm(f)
Fluid inlet size	1-1/4 npt(m) Xtreme	1-1/4 npt(m) Xtreme	1-1/4 npt(m) Xtreme	1-1/4 npt(m) Xtreme
		2 npt(f) Dura-Flo	1-1/2 npt(f) Dura-Flo	1-1/2 npt(f) Dura-Flo
Fluid outlet size	(2) 1/2 npt(m) Xtreme Built-In Filter	(2) 1/2 npt(m) Xtreme Built-In Filter	(2) 1/2 npt(m) Xtreme Built-In Filter	(2) 1/2 npt(m) Xtreme Built-In Filter
	1 npt(f) Xtreme Standard	1 npt(f) Xtreme Standard	3/4 npt(f) Xtreme Standard	3/4 npt(f) Xtreme Standard
	N/A	1 npt(f) Dura-Flo	3/4 npt(f) Dura-Flo	3/4 npt(f) Dura-Flo
Weight	110 lbs. (50 kg) Xtreme Bare Pump	112 lbs. (50.7 kg) Xtreme Bare Pump	105.4 lbs. (47.8 kg) Xtreme Bare Pump	105.4 lbs. (47.8 kg) Xtreme Bare Pump
	N/A	150 lbs. (68 kg) Dura-Flo Bare Pump	115 lbs. (51.7 kg) Dura-Flo Bare Pump	115 lbs. (51.7 kg) Dura-Flo Bare Pump
	246.2 lbs. (111.6 kg) Xtreme Heavy-Duty Cart-Mount	N/A	225.7 lbs. (102.4 kg) Xtreme Heavy-Duty Cart-Mount	225.7 lbs. (102.4 kg) Xtreme Heavy-Duty Cart-Mount
			183.9 lbs. (83.4 kg) Xtreme Lightweight Cart-Mount	
Instruction manual	309340 Xtreme	309340 Xtreme	309340 Xtreme	309340 Xtreme
			308354 Dura-Flo	308418 Dura-Flo

# Bulldog 24:1, 28:1, 33:1 & 41:1

## Air-Operated Piston Pumps, Airless and Air-Assisted Packages

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### Performance Charts

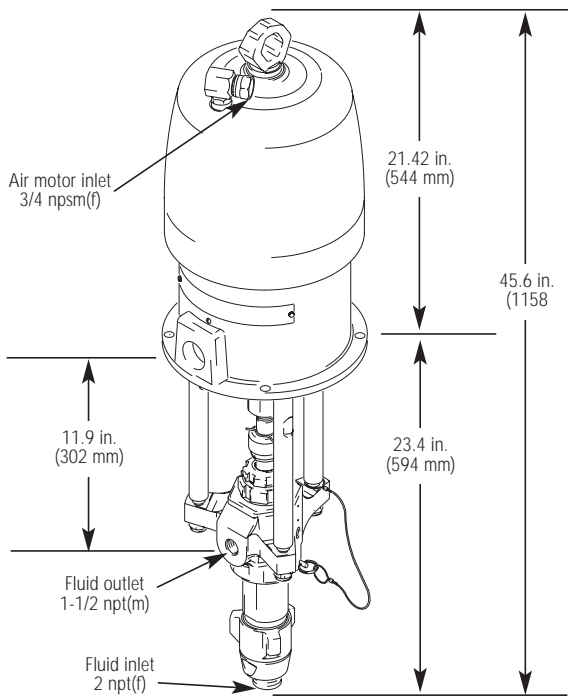
**BULLDOG 24:1****BULLDOG 28:1****BULLDOG 33:1****BULLDOG 41:1**

# Bulldog 24:1, 28:1, 33:1 & 41:1

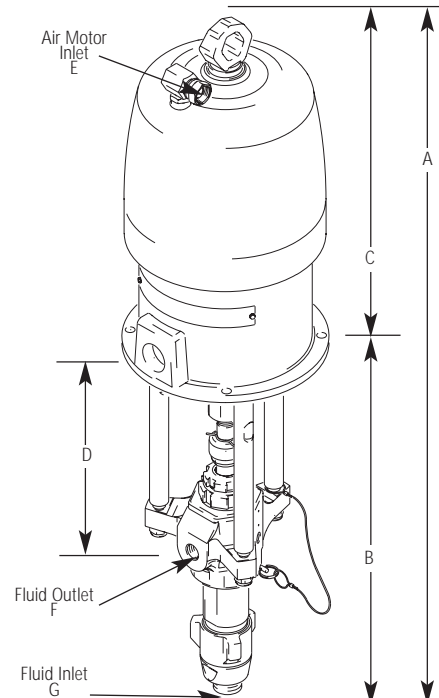
## Air-Operated Piston Pumps, Airless and Air-Assisted Packages

### Dimensions

**BULLDOG 24:1 AND 28:1**



**BULLDOG 33:1 & 41:1 (SEE CHART BELOW)**



Model	A	B	C	D	E	F	G
<b>Bulldog 33:1, Xtreme</b>	45.47 in. (1155 mm)	22.09 in. (561 mm)	23.38 in. (594 mm)	10.12 in. (257 mm)	3/4 npsm(f)	3/4 npt(f) or 1/2 npt(m)	1-1/4 npt(m)
<b>Bulldog 33:1, Xtreme Drum Length</b>	53.71 in. (1364 mm)	32.32 in. (821 mm)	21.38 in. (543 mm)	20.35 in. (517 mm)	3/4 npsm(f)	3/4 npt(f)	1-1/4 npt(m)
<b>Bulldog Quiet 33:1, Xtreme</b>	45.47 in. (1155 mm)	22.09 in. (561 mm)	23.39 in. (594 mm)	10.12 in. (257 mm)	3/4 npsm(f)	or 1/2 npt(m)	1-1/4 npt(m)
<b>Bulldog Quiet 41:1, Xtreme</b>	45.47 in. (1155 mm)	22.09 in. (561 mm)	23.39 in. (594 mm)	10.12 in. (257 mm)	3/4 npsm(f)	3/4 npt(f) or 1/2 npt(m)	1-1/4 npt(m)
<b>Bulldog 33:1, Dura-Flo</b>	43.50 in. (1105 mm)	22.09 in. (561 mm)	21.42 in. (544 mm)	10.12 in. (257 mm)	3/4 npsm(f)	3/4 npt(f)	1-1/2 npt(f)
<b>Bulldog Quiet 33:1, Dura-Flo</b>	45.47 in. (1155 mm)	22.09 in. (561 mm)	23.39 in. (594 mm)	10.12 in. (257 mm)	3/4 npsm(f)	3/4 npt(f)	1-1/2 npt(f)
<b>Bulldog 41:1, Dura-Flo</b>	43.50 in. (1105 mm)	22.09 in. (561 mm)	21.42 in. (544 mm)	10.12 in. (257 mm)	3/4 npsm(f)	3/4 npt(f)	1-1/2 npt(f)
<b>Bulldog Quiet 41:1, Dura-Flo</b>	45.47 in. (1105 mm)	22.09 in. (561 mm)	21.42 in. (544 mm)	10.12 in. (257 mm)	3/4 npsm(f)	3/4 npt(f)	1-1/2 npt(f)



# Bulldog 24:1, 28:1, 33:1 & 41:1

## Air-Operated Piston Pumps, Airless and Air-Assisted Packages

### Ordering Information - Bulldog 24:1, 28:1, 33:1 & 41:1 Bare Pumps

1. Select appropriate pump ratio (24:1, 28:1, 33:1 or 41:1) based on pressure and flow requirements of the application.
2. Select lower pump displacement construction (CS - carbon steel or SST - stainless steel) based on the corrosive and chemical characteristics of the fluid to be handled.
3. Order pump part number.

	Bulldog 24:1 Xtreme	Bulldog 28:1 Xtreme	Bulldog 28:1 Dura-Flo
Pump part number	245116	245167	237287
Air motor	208356	208356	208356
Lower displacement pump	244416	244414	236470
Construction	CS	CS	SST
Fluid filter configuration	No Filter	No Filter	No Filter
Piston seal construction	3 XtremeSeal™/2 Leather	3 XtremeSeal/2 Leather	4 Leather/1 Ptfе
Throat seal construction	3 XtremeSeal/2 Leather	3 XtremeSeal/2 Leather	4 Leather/1 Ptfе

### Replacement Parts Ordering Information

Air motor repair kit	206734	206734	206734
Standard seal kit	244853	244852	237172
Construction	3 XtremeSeal/2 Leather	3 XtremeSeal/2 Leather	4 Leather/1 Ptfе
Optional seal kit	244903	244902	237174
Construction	5 Tuff-Stack	5 Tuff-Stack	3 XtremeSeal/2 Leather
Optional seal kit	N/A	N/A	237173
Construction			5 Ptfе
Optional seal kit	N/A	N/A	237710
Construction			3 XtremeSeal/2 Ptfе
Optional piston seal packings	245230	244872	N/A
Construction	Leather (10 pack)	Leather (10 pack)	
Optional piston seal packings	245231	244866	N/A
Construction	XtremeSeal (10 pack)	XtremeSeal (10 pack)	
Optional piston seal packings	245229	244860	N/A
Construction	Tuff-Stack (10 pack)	Tuff-Stack (10 pack)	
Optional throat seal packings	245230	244871	N/A
Construction	Leather (10 pack)	Leather (10 pack)	
Optional throat seal packings	245231	244865	N/A
Construction	XtremeSeal (10 pack)	XtremeSeal (10 pack)	
Optional throat seal packings	245229	244859	N/A
Construction	Tuff-Stack (10 pack)	Tuff-Stack (10 pack)	
Standard displacement rod	197323	197322	189316
Construction	SST/PlasmaCoat	SST/PlasmaCoat	SST/Chrome
Optional displacement rod	198417	198416	687219
Construction	SST/Chrome	SST/Chrome	Ceramic
Standard cylinder	197318	197317	189383
Construction	SST/Chrome	SST/Chrome	SST/Chrome
Optional cylinder	N/A	N/A	687218
Construction			Ceramic

Note: Optional seal packings sold as 10-count convenience pack.  
Note: XtremeSeal is a proprietary Ptfе-filled UHMWPE blend.

Note: Tuff-Stack is a proprietary Ptfе blend.  
Note: PlasmaCoat is a proprietary case-hardening process.



# Bulldog 24:1, 28:1, 33:1 & 41:1

## Air-Operated Piston Pumps, Airless and Air-Assisted Packages

### Ordering Information - Bulldog 24:1, 28:1, 33:1 & 41:1 Bare Pumps (continued)

Pump part number includes motor and lower displacement pump.

	Bulldog 33:1 Xtreme	Bulldog 33:1 Xtreme, Drum Length	Bulldog 33:1 Xtreme	Bulldog Quiet 33:1 Xtreme	Bulldog 33:1 Dura-Flo	Bulldog Quiet 33:1 Dura-Flo
Pump part number	245117	245165	244457	244464	237367	237613
Air motor	208356	209356	208356	237001	208356	237001
Lower displacement pump	244412	244412	244413	244413	236456	236456
Construction	CS	CS	CS	CS	SST	SST
Fluid filter configuration	No Filter	No Filter	Built-In-Filter	Built-In Filter	No Filter	No Filter
Piston seal construction	3 XtremeSeal/ 2 Leather	3 XtremeSeal/ 2 Leather	3 XtremeSeal/ 2 Leather	3 XtremeSeal/ 2 Leather	4 Leather/ 1 Ptfе	4 Leather/ 1 Ptfе
Seal construction	3 XtremeSeal/ 2 Leather	3 XtremeSeal/ 2 Leather	3 XtremeSeal/ 2 Leather	3 XtremeSeal/ 2 Leather	4 Leather/ 1 Ptfе	4 Leather/ 1 Ptfе

#### Replacement Parts Ordering Information

Air motor repair kit	206734	206734	206734	206734	206734	215906
Standard seal kit	244851	244851	244851	244851	236456	236456
Construction	3 XtremeSeal/ 2 Leather	3 XtremeSeal/ 2 Leather	3 XtremeSeal/ 2 Leather	3 XtremeSeal/ 2 Leather	4 Leather/ 1 Ptfе	4 Leather/ 1 Ptfе
Optional seal kit	244901	244901	244901	244901	237242	237242
Construction	5 Tuff-Stack	5 Tuff-Stack	5 Tuff-Stack	5 Tuff-Stack	5 Ptfе	5 Ptfе
Optional seal kit	N/A	N/A	N/A	N/A	237244	237244
Construction					3 XtremeSeal/ 2 Leather	3 XtremeSeal/ 2 Leather
Optional seal kit	N/A	N/A	N/A	N/A	237608	237608
Construction					3 XtremeSeal/ 2 Ptfе	3 XtremeSeal/ 2 Ptfе
Optional seal packings	244864	244864	244864	244864	N/A	N/A
Construction	XtremeSeal	XtremeSeal	XtremeSeal	XtremeSeal		
Optional seal packings	244870	244870	244870	244870	N/A	N/A
Construction	Leather	Leather	Leather	Leather		
Optional seal packings	244858	244858	244858	244858	N/A	N/A
Construction	Tuff-Stack	Tuff-Stack	Tuff-Stack	Tuff-Stack		
Standard displacement rod	197321	197321	197321	197321	189853	189853
Construction	SST/PlasmaCoat	SST/PlasmaCoat	SST/PlasmaCoat	SST/PlasmaCoat	SST/Chrome	SST/Chrome
Optional displacement rod	198415	198415	198415	198415	N/A	N/A
Construction	SST/Chrome	SST/Chrome	SST/Chrome	SST/Chrome		
Standard cylinder	197316	197316	197316	197316	189857	189857
Construction	SST/Chrome	SST/Chrome	SST/Chrome	SST/Chrome	SST/Chrome	SST/Chrome

Note: Optional seal packings sold as 10-count convenience pack.  
Note: XtremeSeal is a proprietary Ptfе-filled UHMWPE blend.

Note: Tuff-Stack is a proprietary Ptfе blend.  
Note: PlasmaCoat is a proprietary case-hardening process.

# Bulldog 24:1, 28:1, 33:1 & 41:1

## Air-Operated Piston Pumps, Airless and Air-Assisted Packages

### Ordering Information - Bulldog 24:1, 28:1, 33:1 & 41:1 Bare Pumps (continued)

Pump part number includes motor and lower displacement pump.

	Bulldog 41:1 Xtreme	Bulldog 41:1 Xtreme	Bulldog 41:1 Dura-Flo	Bulldog Quiet 41:1 Dura-Flo
<b>Pump part number</b>	<b>245118</b>	<b>244465</b>	<b>237634</b>	<b>236464</b>
Air motor	208356	208356	208356	237001
Lower displacement pump	244410	244411	236458	236458
Construction	CS	CS	SST	SST
Fluid filter configuration	No Filter	Built-In-Filter	No Filter	No Filter
Piston seal construction	3 XtremeSeal/2 Leather	3 XtremeSeal/2 Leather	4 Leather/1 Ptfе	4 Leather/1 Ptfе
Seal construction	3 XtremeSeal/2 Leather	3 XtremeSeal/2 Leather	4 Leather/1 Ptfе	4 Leather/1 Ptfе

#### Replacement Parts Ordering Information

Air motor repair kit	206734	206734	206734	215906
Standard seal kit	244850	244850	237234	237234
Construction	3 XtremeSeal/2 Leather	3 XtremeSeal/2 Leather	4 Leather/1 Ptfе	4 Leather/1 Ptfе
Optional seal kit	244900	244900	237236	237236
Construction	5 Tuff-Stack	5 Tuff-Stack	5 Ptfе	5 Ptfе
Optional seal kit	N/A	N/A	237238	237238
Construction			3 XtremeSeal/2 Leather	3 XtremeSeal/2 Leather
Optional seal kit	N/A	N/A	237609	237609
Construction			3 XtremeSeal/2 Ptfе	3 XtremeSeal/2 Ptfе
Optional seal packings	244863	244863	N/A	N/A
Construction	XtremeSeal	XtremeSeal		
Optional seal packings	244869	244869	N/A	N/A
Construction	Leather	Leather		
Optional seal packings	244857	244857	N/A	N/A
Construction	Tuff-Stack	Tuff-Stack		
Standard displacement rod	197320	197320	190172	190172
Construction	SST/PlasmaCoat	SST/PlasmaCoat	SST/Chrome	SST/Chrome
Optional displacement rod	198414	198414	N/A	N/A
Construction	SST/Chrome	SST/Chrome		
Standard cylinder	197315	197315	184503	184503
Construction	SST/Chrome	SST/Chrome	SST/Chrome	SST/Chrome

Note: Optional seal packings sold as 10-count convenience pack.

Note: XtremeSeal is Ptfе-filled UHMWPE.

# Bulldog 24:1, 28:1, 33:1 & 41:1

## Air-Operated Piston Pumps, Airless and Air-Assisted Packages

### Ordering Information - Bulldog 24:1, 28:1, 33:1 & 41:1 Bare Pumps (continued)

The following Xtreme lower displacement pumps are not offered in a complete Bulldog pump assembly. To configure a complete Bulldog 33:1 or 41:1 pump with these lowers:

1. Select desired lower displacement pump, based on fluid pressure and flow requirements and seal construction. Refer to Bulldog 33:1 and 41:1 performance charts on page 84.
2. Order Bulldog air motor 208356.
3. Order Xtreme pump connection kit 244849.

#### Additional Lower Displacement Pumps

Lower displacement pump	244417	244423	244415	244422	236897
Description	Bulldog 24:1 Lower Xtreme	Bulldog 24:1 Lower Xtreme	Bulldog 28:1 Lower Xtreme	Bulldog 28:1 Lower Xtreme	Bulldog 28:1 Lower Dura-Flo
Material of construction	CS	CS	CS	CS	SST
Fluid filter configuration	Built-In Filter	No Filter	Built-In Filter	No Filter	No Filter
Standard seal kit	244853	244903	244852	244902	237173
Construction	3 XtremeSeal/2 Leather	5 Tuff-Stack	3 XtremeSeal/2 Leather	5 Tuff-Stack	5 Ptf
Standard displacement rod	197323	197323	197322	197322	189316
Construction	SST/PlasmaCoat	SST/PlasmaCoat	SST/PlasmaCoat	SST/PlasmaCoat	SST/Chrome
Standard cylinder	197318	197318	197317	197317	189383
Construction	SST/Chrome	SST/Chrome	SST/Chrome	SST/Chrome	SST/Chrome

#### Additional Lower Displacement Pumps

Lower displacement pump	244421	244420
Description	180cc Lower Xtreme Bulldog 33:1	180cc Lower Xtreme Bulldog 41:1
Fluid filter configuration	No Filter	No Filter
Material of construction	CS	CS
Standard seal kit	244901	244900
Construction	5 Tuff-Stack	5 Tuff-Stack
Standard displacement rod	197321	197320
Construction	SST/PlasmaCoat	SST/PlasmaCoat
Standard cylinder	197316	197315
Construction	SST/Chrome	SST/Chrome

# Bulldog 24:1, 28:1, 33:1 & 41:1

## Air-Operated Piston Pumps, Airless and Air-Assisted Packages

### Ordering Information - Bulldog 24:1, 28:1, 33:1 & 41:1 Packages

2

#### XTREME AIRLESS PACKAGES

	PACKAGE PART NO.	PUMP LOWER	BUILT-IN FILTER	STANDARD SEAL REPAIR KIT	DISPLACEMENT ROD	CYLINDER
<b>HEAVY-DUTY CART-MOUNT</b>						
Bare Package, No Gun or Hose						
<b>33:1</b>	<b>244458</b>	244413	X	244851	197321	197316
<b>33:1</b> (Quiet Motor)	<b>244459</b>	244413	X	244851	197321	197316
<b>41:1</b>	<b>244466</b>	244411	X	244850	197320	197315
Complete Package with Silver Plus Gun and Hose						
<b>33:1</b>	<b>244461</b>	244413	X	244851	197321	197316
<b>41:1</b>	<b>244468</b>	244411	X	244850	197320	197315

#### LIGHTWEIGHT CART-MOUNT

Bare Package, No Gun or Hose						
<b>33:1</b>	<b>244460</b>	244413	X	244851	197321	197316

#### WALL-MOUNT

Bare Package with Suction Kit, No Gun or Hose						
<b>33:1</b>	<b>245187</b>	244413	X	244851	197321	197316
Bare Package with Heater, No Gun or Hose						
<b>33:1</b> (240V)	<b>245185</b>	244412		244851	197321	197316
<b>33:1</b> (480V)	<b>245185</b>	244412		244851	197321	197316

#### XTREME ZINC PACKAGES

	PACKAGE PART NO.	PUMP LOWER	BUILT-IN FILTER	STANDARD SEAL REPAIR KIT	DISPLACEMENT ROD	CYLINDER
<b>HEAVY-DUTY CART-MOUNT</b>						
Complete Package with Silver Plus Gun and Hose						
<b>24:1</b>	<b>245113</b>	244416		244853	197323	197318
<b>33:1</b>	<b>244463</b>	244412		244851	197321	197316

#### XTREME AIR-ASSISTED PACKAGES

	PACKAGE PART NO.	PUMP LOWER	BUILT-IN FILTER	STANDARD SEAL REPAIR KIT	DISPLACEMENT ROD	CYLINDER
<b>HEAVY-DUTY CART-MOUNT</b>						
Complete Package with Alpha Plus AA Gun and Hose						
<b>33:1</b>	<b>244462</b>	244413	X	244851	197321	197316
<b>41:1</b>	<b>244469</b>	244411	X	244850	197320	197315

# Bulldog 24:1, 28:1, 33:1 & 41:1

## Air-Operated Piston Pumps, Airless and Air-Assisted Packages

### Accessories

#### GUNS AND TIPS

- 238591 Silver Plus Gun**  
Maximum working pressure: 5000 psi (34.5 MPa, 345 bar). With HD RAC tip and guard.
- 241705 Heavy-Duty Texture Gun**  
Maximum working pressure: 4000 psi (27.6 MPa, 276 bar). With GHD631 tip and HD RAC guard.
- 243577 Alpha Plus RAC Hi-Flow AA Spray Gun**  
Maximum working pressure: 4000 psi (27.6 MPa, 276 bar). With hi-flow fluid needle, diffuser seat and AA RAC assembly.
- 237162 HD RAC Tip Retainer**  
Maximum working pressure: 7400 psi (51 MPa, 510 bar). Fits guns with 7/8 in. (22.2 mm) thread, included as part of 236995 Model 510 Gun.
- 222674 HD RAC Tip Retainer with DripLess™ Guard**  
Inlet: 7/8 in. (22.2 mm) thread.
- GHDxxx HD RAC Tips**

#### FLUID HOSES

##### Whip Hose

- Maximum working pressure: 5000 psi (34.5 MPa, 345 bar). ID 1/4 in. (0.63 cm), 1/4 npsm(fbe).
- 214912** 3 ft. (0.91 m)  
**214913** 6 ft. (1.83 m)

##### Fluid Hose

- Maximum working pressure: 3000 psi (20.7 MPa, 207 bar). ID 3/8 in. (9.52 mm), 3/8 npt(mbe).
- 214705** 50 ft. (15.24 m)  
**214703** 25 ft. (7.62 m)
- Maximum working pressure: 4050 psi (28 MPa, 280 bar). ID 1/2 in. (12.7 mm), 1/2 npt(mbe).
- 215226** 25 ft. (7.62 m)  
**215227** 50 ft. (15.24 m)  
**215228** 100 ft. (30.48 m)
- Maximum working pressure: 5000 psi (34.5 MPa, 345 bar). ID 3/8 in. (9.5 mm), 3/8 npt(m) x 3/8 npt(f).
- 238395** 24.6 ft. (7.5 m)  
**238396** 49.2 ft. (15 m)  
**238397** 98.4 ft. (30 m)
- Maximum working pressure: 5000 psi (34.5 MPa, 345 bar). ID 1/2 in. (12.7 mm), 1/2 npt(fbe).
- 238716** 24.6 ft. (7.5 m)  
**238717** 49.2 ft. (15 m)  
**238718** 98.4 ft. (30 m)

#### AIR HOSES

- Grounded Buna-N Air Hose  
Maximum working pressure: 175 psi (1.2 MPa, 12 bar). ID 3/4 in. (19 mm). Thread size: 3/4 npt(m).
- 208610** 6 ft. (1.8 m)  
**205548** 15 ft. (4.5 m)  
**208611** 25 ft. (7.6 m)  
**208612** 50 ft. (15.2 m)

#### AIR CONTROLS AND VALVES

##### Modular Air Regulator Kit with Built-In Air Filter

- 244719** Kit for Lightweight Cart  
**244720** Kit for Heavy-Duty Cart

##### 244841 Modular Air Line Lubricator Kit

For use with models 244719 or 244720.

##### 245210 Air Assisted Conversion Kit

Includes 113549 Air Regulator, 210868 1/4 in. x 50 ft. air hose, 243577 Alpha Plus Gun, and 238386 1/4 in. x 50 ft. fluid hose

##### Safety Relief Valves

Limits inlet air pressure to appropriate pump ratio maximum working pressure.

- 116643** 80 psi (0.55 MPa, 55 bar)  
**103347** 100 psi (0.69 MPa, 69 bar)  
**113498** 110 psi (0.76 MPa, 76 bar)  
Standard on all Bulldog packages.

##### 245143 Pressure Bleed Valve

Maximum working pressure: 7400 psi (51 MPa, 510 bar).

##### 245145 Pressure Bleed Valve Repair Kit

Includes ball, seat, retaining ring, O-ring, gasket.

##### 224040 Pump Runaway Valve

Maximum working pressure: 120 psi (0.84 MPa, 8.4 bar). Inlet/outlet: 3/4 npt(f). Includes optional 90° 3/4 npsm swivel fitting.

##### 208627 Air Blow Gun

Maximum working pressure: 150 psi (1.04 MPa, 10.4 bar). For cleaning gun tip. Thread size: 1/4 npt(f).

##### Ball Valves

- Maximum working pressure: 5000 psi (34.5 MPa, 345 bar).
- 210657** Inlet: 1/4 npt(m). Outlet: 1/4 npt(m).  
**210658** Inlet: 3/8 npt(m). Outlet: 3/8 npt(m).  
**210659** Inlet: 1/4 npt(m). Outlet: 3/8 npt(m).

Maximum working pressure: 7400 psi (51 MPa, 510 bar).

- 237303** 1/4 npt(mbe)  
**237304** 3/8 npt(mbe)

# Bulldog 24:1, 28:1, 33:1 & 41:1

## Air-Operated Piston Pumps, Airless and Air-Assisted Packages

### Accessories (continued)

#### PUMP LOWER REPAIR PARTS AND ACCESSORIES

##### Inlet Ball Spring Load Kit

245190	Bulldog 33:1 & 41:1
245191	Bulldog 24:1 & 28:1

##### Tuff-Stack™ Alternate Seal Repair Kit

244900	145cc Lower: Bulldog 41:1
244901	180cc Lower: Bulldog 33:1
244902	220cc Lower: Bulldog 28:1
244903	250cc Lower: Bulldog 24:1
244904	290cc Lower

##### Hard Chrome-Over-Stainless Steel Displacement Rods

198414	145cc Lower: Bulldog 41:1
198415	180cc Lower: Bulldog 33:1
198416	220cc Lower: Bulldog 28:1
198417	250cc Lower: Bulldog 24:1
198418	290cc Lower

##### 245127 Carbide Piston Ball Set (Qty 3)

Use as replacement piston ball for Bulldog 33:1 and 41:1 pumps with exceptionally abrasive coatings.

#### ADAPTERS AND FITTINGS

##### Hose Swivel

214925	Maximum working pressure: 5000 psi (34.5 MPa, 345 bar). 3/8 npt(f) x 1/4 npsm(f).
189018	Maximum working pressure: 5800 psi (39.9 MPa, 399 bar). 1/4 npsm(m) x 1/4 npsm(f).
236987	Maximum working pressure: 7400 psi (51 MPa, 510 bar). 1/4 npsm(m) x 1/4 npsm(f).

##### Gun Swivels (25 Pack)

Maximum working pressure: 3600 psi (24.8 MPa, 248 bar). 1/4 npsm(f) x 1/4 npt(m).

239663	Leather
223341	Ptfe

Maximum working pressure: 5000 psi (34.5 MPa, 345 bar). 1/4 npsm(f) x 3/8 npt(f).

214925	Leather
214926	Leather 3/8 npt(f) x 1/2 npsm(f) swivel.

##### 156173 Union Swivel

Maximum working pressure: 7400 psi (51 MPa, 510 bar). Use to connect 3/8 in. (9.5 mm) hoses together. 3/8 npt(f) x 3/8 npsm(f).

##### 239394 High Pressure SST Swivel/Filter

Maximum working pressure: 5800 psi (40.1 MPa, 401 bar). 1/4 npsm(m) x 1/4 npsm(f).

#### ADAPTERS AND FITTINGS

##### 150287 Hose Coupler

Maximum working pressure: 8000 psi (55 MPa, 550 bar). Use to connect 3/8 in. (9.5 mm) hose to whip hose. 3/8 npt(f) x 1/4 npt(m).

##### Nipples

Use to connect hoses together.

**156971** Maximum working pressure: 7500 psi (51.7 MPa, 517 bar).  
1/4 npt x 1/4 npt(mbe).

**165198** Maximum working pressure: 10000 psi (69 MPa, 690 bar).  
1/4 npt x 3/8 npt(mbe).

**162449** Maximum working pressure: 7400 psi (51 MPa, 510 bar).  
1/4 npt x 1/2 npt(mbe).

**159239** Maximum working pressure: 7400 psi (51 MPa, 510 bar).  
3/8 npt x 1/2 npt(mbe).

**158491** Maximum working pressure: 7400 psi (51 MPa, 510 bar).  
1/2 npt x 1/2 npt(mbe).

##### 158683 High Pressure Elbow

Maximum working pressure: 7400 psi (51 MPa, 510 bar). 1/2 npt(m) x 1/2 npt(f).

#### SUCTION KITS AND ACCESSORIES

##### 245176 Suction Kit, Xtreme™

Includes 244516 suction hose, 116402 Quick Disconnect fitting, 116401 elbow, and 197682 suction tube.

##### 245136 55 Gallon (200 L) Suction Tube Extension, Xtreme

Includes 195151 intake tube and 114967 coupling to extend standard suction tube to bottom of 55-gal. (200 L) drum. Connects to 197682 suction tube.

##### Suction Tube Filter/Strainers

181072	Round strainer
191635	Tube strainer

##### 238588 Zinc Conversion Kit

Maximum working pressure: 3000 psi (20.7 MPa, 207 bar). Includes circulation tee at pump outlet, shutoff valve, drain hose.

# Bulldog 24:1, 28:1, 33:1 & 41:1

## Air-Operated Piston Pumps, Airless and Air-Assisted Packages

### Accessories (continued)

#### FILTERS

##### Replacement Screen Filter Elements

3 Pack	25 Pack	
238435	238436	30 mesh (595 micron)
238437	238438	60 mesh (250 micron)
238439	238440	100 mesh (149 micron)

#### LIQUIDS AND LUBRICATION

##### Graco Throat Seal Liquid

206995	1 qt. (0.9 L)
206996	1 gal. (3.8 L)

#### MOUNTING OPTIONS

- 244849 Xtreme Connection Kit**  
Kit to install Xtreme pump lower under existing King and Bulldog air motors. Includes tie rods, rod adapter and quick disconnect coupler.
- 244530 Heavy-Duty 2-Wheel Cart**
- 244527 Lightweight 2-Wheel Cart**
- 206221 Wall Mounting Bracket**
- 245132 Floor Stand Kit, Xtreme**  
Use to mount Bulldog pumps 245117, 245118, 244457, 244464, and 244465. Includes 222274 floor stand, 198347 intake adapter and ball valve.
- 245131 Ram Adapter, Xtreme**  
Use to mount Bulldog pumps 245117, 245118, 244457, 244464, and 244465 to a ram. Includes 1-1/2 npt(f) x flange and lug kit.
- 237960 Ram Adapter, Dura-Flo™**  
Use to mount Bulldog 33:1 pumps 237367 and 237613 to a ram. Includes 1-1/2 npt(m) x flange and lug kit.
- 237782 Ram Adapter, Dura-Flo**  
Use to mount Bulldog 28:1 pump 237287 to a ram. Includes 2 npt(m) x flange and lug kit
- 235417 Dura-Flo Connection Kit**  
Kit to install Dura-Flo pump lower under existing King and Bulldog air motors. Includes tie rods and other connecting hardware.
- 237961 Floor Stand Kit (Dura-Flo 750 & 600 Only)**  
Includes 222274 floor stand and 237960 adapter.
- 237781 Floor Stand Kit (Dura-Flo 900 & 1200 Only)**  
Includes 222274 floor stand and 237960 adapter.

#### TOOLS

- 207579 Padded Pliers**  
For servicing Bulldog air motor trip rod.
- 112887 Packing Nut Wrench**  
For adjusting throat packing compression in pump.
- 168513 Alignment Tool**  
Use to ensure proper clearance and alignment for the Bulldog air manifolds.



# King<sup>®</sup> 45:1, 56:1, 68:1, & 80:1

## Air-Operated Piston Pumps and Airless Packages

# 2

### Features and Benefits

- Longer life packings and displacement rods reduce pump downtime and lowers maintenance costs
- Easy to service Xtreme lower cuts labor time in half
- Superior performance with the highest viscosity coatings
- Long-life King air motor keeps maintenance costs low

### Typical Applications

- Marine and ship building
- Off-shore oil platform production
- Railcar manufacturing and repair
- Nuclear and conventional power facilities
- Container manufacturing
- Bridge maintenance and new construction
- Structural steel and corrosion protection

### Typical Coatings Applied

- High to ultra-high viscosity coatings
- Plural component coatings
- High-solids epoxy primers and coatings
- High-solids polyurethane top coatings
- Coal tar epoxy primers
- Waterborne coatings
- Fire retardant coatings
- Tank and pipe linings
- PVC auto body sealers and underbody coatings



**King 56:1  
Heavy-Duty Cart-Mount  
Bare Package  
244482**



# King 45:1, 56:1, 68:1 & 80:1

## Air-Operated Piston Pumps and Airless Packages

### Technical Specifications

	<b>King 45:1</b>	<b>King 56:1</b>	<b>King 68:1</b>	<b>King 80:1</b>
Fluid pressure ratio				
Maximum fluid outlet pressure	4500 psi (310 bar, 31.0 MPa)	5600 psi (386 bar, 38.6 MPa)	6800 psi (469 bar, 46.9 MPa)	7400 psi (510 bar, 51.0 MPa)
Maximum air input pressure	100 psi (7 bar, 0.7 MPa)	100 psi (7 bar, 0.7 MPa)	100 psi (7 bar, 0.7 MPa)	88 psi (6 bar, 0.6 MPa)
Fluid flow @ 60 cpm	4.0 gpm (15.0 lpm)	3.5 gpm (13.2 lpm)	2.8 gpm (10.8 lpm)	2.3 gpm (8.7 lpm)
Volume per cycle	8 oz. (250 cc)	7 oz. (220 cc)	6 oz. (180 cc)	5 oz. (145 cc)
Air consumption @100 psi (7 bar, 0.7 MPa) air @ 20 cpm	70 scfm (1.98 m <sup>3</sup> /min)	70 scfm (1.98 m <sup>3</sup> /min)	70 scfm (1.98 m <sup>3</sup> /min)	70 scfm (1.98 m <sup>3</sup> /min)
Sound pressure level @100 psi (7 bar, 0.7 MPa) air @ 20 cpm	98 dBA Standard Motor	98 dBA Standard Motor	98 dBA Standard Motor	98 dBA Standard Motor
	93 dBA Quiet Motor	93 dBA Quiet Motor	93 dBA Quiet Motor	93 dBA Quiet Motor
Air motor inlet	3/4 npsm(f)	3/4 npsm(f)	3/4 npsm(f)	3/4 npsm(f)
Pump fluid inlet	1-1/4 npt(m)	1-1/4 npt(m) Xtreme	1-1/4 npt(m) Xtreme	1-1/4 npt(m)
		2 npt(f) Dura-Flo	1-1/2 npt(f) Dura-Flo	
Pump fluid outlet	(2) 1/2 npt(m) Xtreme Built-In Filter	(2) 1/2 npt(m) Xtreme Built-In Filter	(2) 1/2 npt(m) Xtreme Built-In Filter	(2) 1/2 npt(m) Xtreme Built-In Filter
	1 npt(f) Xtreme Standard	1 npt(f) Xtreme Standard	3/4 npt(f) Xtreme/Dura-Flo	3/4 npt(f) Xtreme Standard
Weight	126 lbs. (57 kg) Xtreme Bare Pump	128 lbs. (58 kg) Xtreme Bare Pump	122 lbs. (55.2 kg) Xtreme Bare Pump	121 lbs. (55 kg) Xtreme Bare Pump
		138 lbs. (62.6 kg) Dura-Flo Bare Pump	132 lbs. (60 kg) Dura-Flo Bare Pump	
	254.1 lbs. (115.2 kg) Xtreme Heavy-Duty Cart-Mount	259.0 lbs. (117.4 kg) Xtreme Heavy-Duty Cart-Mount	252.5 lbs. (114.5 kg) Xtreme Heavy-Duty Cart-Mount	252.6 lbs. (114.5 kg) Xtreme Heavy-Duty Cart-Mount
	222.0 lbs. (100.7 kg) Xtreme Quiet Lightweight Cart-Mount	286.7 lbs. (121.8 kg) Xtreme Quiet Heavy-Duty Cart-Mount	262.2 lbs. (118.9 kg) Xtreme Quiet Heavy-Duty Cart-Mount	262.3 lbs. (118.9 kg) Xtreme Quiet Heavy-Duty Cart-Mount
	212.3 lbs (96.3 kg) Xtreme Lightweight Cart-Mount	217.2 lbs. (98.5 kg) Xtreme Lightweight Cart-Mount	210.7 lbs. (95.6 kg) Xtreme Lightweight Cart-Mount	210.8 lbs. (95.6 kg) Xtreme Lightweight Cart-Mount
		226.9 lbs. (102.9 kg) Xtreme Quiet Lightweight Cart-Mount	220.4 lbs. (100 kg) Xtreme Quiet Lightweight Cart-Mount	220.5 lbs. (100 kg) Xtreme Quiet Lightweight Cart-Mount
Instruction manual	309340 Xtreme	309340 Xtreme	309340 Xtreme	309340 Xtreme
		308354 Dura-Flo	308418 Dura-Flo	

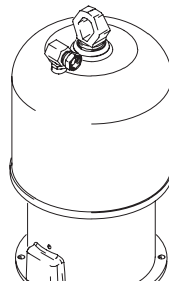
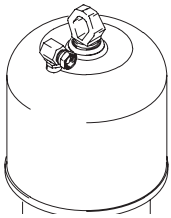
# King 45:1, 56:1, 68:1 & 80:1

## Air-Operated Piston Pumps and Airless Packages

### Performance Charts

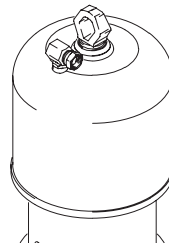
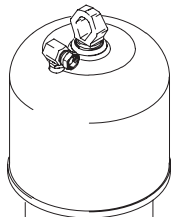
KING 45:1

KING 68:1



KING 56:1

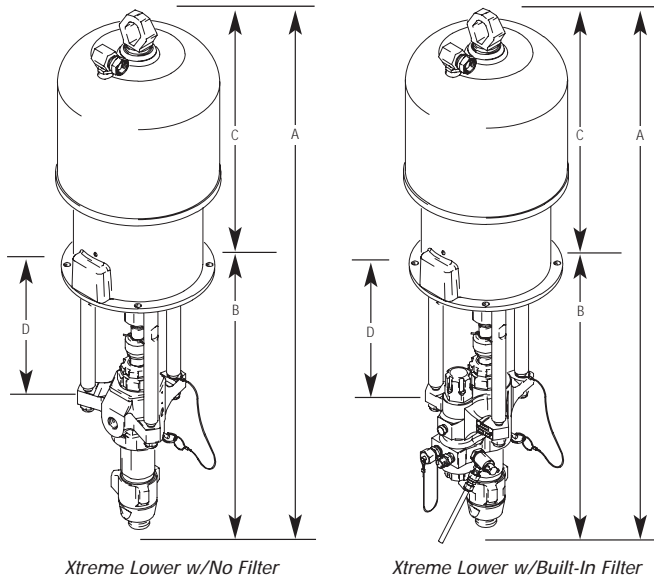
KING 80:1



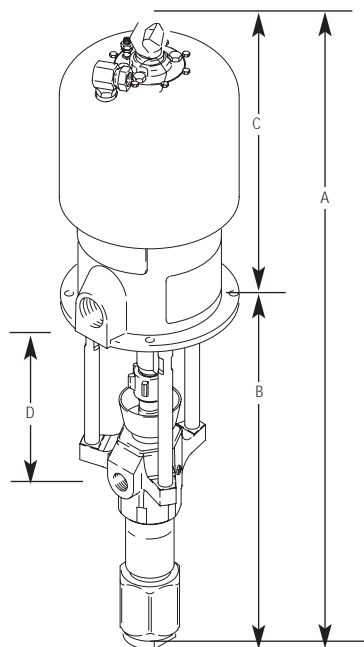
# King 45:1, 56:1, 68:1 & 80:1 Air-Operated Piston Pumps and Airless Packages

## Dimensions

### KING 45:1, 56:1, 68:1 AND 80:1 XTREME PUMPS



### KING 56:1 & 68:1 DURA-FLO PUMPS



King 45:1	A	B	C	D
245119	46.4 in.	23.4 in.	23.0 in.	11.9 in.
Xtreme	(1179 mm)	(594 mm)	(584 mm)	(302 mm)
244470	46.3 in.	23.3 in.	23.0 in.	13.9 in.
Xtreme	(1176 mm)	(592 mm)	(584 mm)	(353 mm)
245138	45.8 in.	23.3 in.	22.6 in.	13.9 in.
Xtreme	(1163 mm)	(592 mm)	(574 mm)	(353 mm)

King 56:1	A	B	C	D
245120	46.4 in.	23.4 in.	23.0 in.	11.9 in.
Xtreme	(1179 mm)	(594 mm)	(584 mm)	(302 mm)
244476	46.4 in.	23.3 in.	23.0 in.	13.9 in.
Xtreme	(1179 mm)	(592 mm)	(584 mm)	(353 mm)
244477	45.8 in.	23.3 in.	22.5 in.	13.9 in.
Xtreme Quiet	(1163 mm)	(592 mm)	(572 mm)	(353 mm)
237286	46.44 in.	23.23 in.	21.43 in.	10.12 in.
Dura-Flo	(1180 mm)	(590 mm)	(544 mm)	(257 mm)

King 68:1	A	B	C	D
245121	46.4 in.	23.4 in.	23.0 in.	11.9 in.
Xtreme	(1179 mm)	(594 mm)	(584 mm)	(302 mm)
244485	45.6 in.	22.6 in.	23.0 in.	13.9 in.
Xtreme	(1158 mm)	(574 mm)	(584 mm)	(353 mm)
244486	45.2 in.	22.6 in.	22.6 in.	13.9 in.
Xtreme Quiet	(1148 mm)	(574 mm)	(574 mm)	(353 mm)
237635	45.04 in.	22.09 in.	22.93 in.	10.12 in.
Dura-Flo	(1144 mm)	(561 mm)	(583 mm)	(257 mm)
236460	45.28 in.	22.09 in.	23.19 in.	10.12 in.
Dura-Flo Quiet	(1150 mm)	(561 mm)	(589 mm)	(257 mm)

King 80:1	A	B	C	D
245122	45.7 in.	22.7 in.	23.0 in.	11.9 in.
Xtreme	(1161 mm)	(577 mm)	(584 mm)	(302 mm)
244494	45.6 in.	22.6 in.	23.0 in.	13.9 in.
Xtreme	(1158 mm)	(574 mm)	(584 mm)	(353 mm)
244495	45.2 in.	22.6 in.	22.6 in.	13.9 in.
Xtreme Quiet	(1148 mm)	(574 mm)	(574 mm)	(353 mm)

# King 45:1, 56:1, 68:1 & 80:1

## Air-Operated Piston Pumps and Airless Packages

2

### Ordering Information - King 45:1, 56:1, 68:1 & 80:1 Bare Pumps

1. Select appropriate pump ratio (45:1, 56:1, 68:1 or 80:1) based on pressure and flow requirements of the application
2. Select lower displacement pump construction (CS - carbon steel or SST - stainless steel) based on the corrosive and chemical characteristics of the fluid to be handled.
3. Select desired fluid filter configuration (built-in-filter integrated in outlet housing or no fluid filter, standard outlet housing).
4. Select Standard or Quiet King air motor (if available) based on sound level requirements.
5. Order pump part number.

**Pump part number includes motor and lower displacement pump**

	King 45:1 Xtreme	King 45:1 Xtreme	King Quiet 45:1 Xtreme
Pump part number	245119	244470	245138
Air motor	245111	245111	245112
Lower displacement pump	244416	244417	244417
Construction	CS	CS	CS
Fluid filter configuration	No Filter	Built-In Filter	Built-In Filter
Piston seal construction	3 XtremeSeal/2 Leather	3 XtremeSeal/2 Leather	3 XtremeSeal/2 Leather
Throat seal construction	3 XtremeSeal/2 Leather	3 XtremeSeal/2 Leather	3 XtremeSeal/2 Leather

### Replacement Parts Ordering Information

Air motor repair kit	207730	207730	207730
Standard seal kit	244853	244853	244853
Construction	3 XtremeSeal/2 Leather	3 XtremeSeal/2 Leather	3 XtremeSeal/2 Leather
Optional seal kit	244903	244903	244903
Construction	5 Tuff-Stack	5 Tuff-Stack	5 Tuff-Stack
Optional seal packings	245231	245231	245231
Construction	XtremeSeal	XtremeSeal	XtremeSeal
Optional seal packings	245230	245230	245230
Construction	Leather	Leather	Leather
Optional seal packings	245229	245229	245229
Construction	Tuff-Stack	Tuff-Stack	Tuff-Stack
Standard displacement rod	197323	197323	197323
Construction	SST/PlasmaCoat	SST/PlasmaCoat	SST/PlasmaCoat
Optional displacement rod	198417	198417	198417
Construction	SST/Chrome	SST/Chrome	SST/Chrome
Standard cylinder	197318	197318	197318
Construction	SST/Chrome	SST/Chrome	SST/Chrome

Note: Optional seal packings sold as 10-count convenience pack.  
Note: XtremeSeal is a proprietary Ptfе-filled UHMWPE blend.

Note: Tuff-Stack is a proprietary Ptfе blend.  
Note: PlasmaCoat is a proprietary case-hardening process.

# King 45:1, 56:1, 68:1 & 80:1

## Air-Operated Piston Pumps and Airless Packages

### Ordering Information - King 45:1, 56:1, 68:1 & 80:1 Bare Pumps (continued)

Pump part number includes motor and lower displacement pump

	King 56:1 Xtreme	King 56:1 Xtreme	King Quiet 56:1 Xtreme	King Quiet 56:1 Dura-Flo
Pump part number	245120	244476	244477	237286
Air motor	245111	245111	245112	245112
Lower displacement pump	244414	244415	244415	236470
Construction	CS	CS	CS	SST
Fluid filter configuration	No Filter	Built-In Filter	Built-In Filter	No Filter
Piston seal construction	3 XtremeSeal/2 Leather	3 XtremeSeal/2 Leather	3 XtremeSeal/2 Leather	4 Leather/1 Ptfе
Throat seal construction	3 XtremeSeal/2 Leather	3 XtremeSeal/2 Leather	3 XtremeSeal/2 Leather	4 Leather/1 Ptfе

#### Replacement Parts Ordering Information

Air motor repair kit	207730	207730	207730	207730
Standard seal kit	244852	244852	244852	237172
Construction	3 XtremeSeal/2 Leather	3 XtremeSeal/2 Leather	3 XtremeSeal/2 Leather	3 Leather/2 Ptfе
Optional seal kit	244902	244902	244902	237174
Construction	5 Tuff-Stack	5 Tuff-Stack	5 Tuff-Stack	3 XtremeSeal/2 Leather
Optional seal kit	N/A	N/A	N/A	237173
Construction				5 Ptfе
Optional seal kit	N/A	N/A	N/A	237710
				3 XtremeSeal/2 Ptfе
Optional seal packings	244866	244866	244866	N/A
Construction	XtremeSeal	XtremeSeal	XtremeSeal	
Optional seal packings	244871	244872	244872	N/A
Construction	Leather	Leather	Leather	
Optional seal packings	244860	244860	244860	N/A
Construction	Tuff-Stack	Tuff-Stack	Tuff-Stack	
Standard displacement rod	197322	197322	197322	189316
Construction	SST/PlasmaCoat	SST/PlasmaCoat	SST/PlasmaCoat	SST/Chrome
Optional displacement rod	198416	198416	198416	687219
Construction	SST/Chrome	SST/Chrome	SST/Chrome	Ceramic
Standard cylinder	197317	197317	197317	189383
Construction	SST/Chrome	SST/Chrome	SST/Chrome	SST/Chrome
Optional cylinder	N/A	N/A	N/A	687218
Construction				Ceramic

Note: Optional seal packings sold as 10-count convenience pack. Note: PlasmaCoat is a proprietary case hardening process.

Note: XtremeSeal is a proprietary Ptfе-filled UHMWPE blend.

# King 45:1, 56:1, 68:1 & 80:1

## Air-Operated Piston Pumps and Airless Packages

### Ordering Information - King 45:1, 56:1, 68:1 & 80:1 Bare Pumps (continued)

Pump part number includes motor and lower displacement pump

	King 68:1 Xtreme	King 68:1 Xtreme	King Quiet 68:1 Xtreme	King Quiet 68:1 Xtreme	King 68:1 Dura-Flo	King Quiet 68:1 Dura-Flo
Pump part number	245121	244485	244486	245178	237635	236460
Air motor	245111	245111	245112	245112	245111	245112
Lower displacement pump	244412	244413	244413	244412	236456	236456
Construction	CS	CS	CS	CS	SST	SST
Fluid filter configuration	No Filter	Built-In Filter	Built-In Filter	No Filter	No Filter	No Filter
Piston seal construction	3 XtremeSeal/ 2 Leather	3 XtremeSeal/ 2 Leather	3 XtremeSeal/ 2 Leather	3 XtremeSeal/ 2 Leather	4 Leather/ 1 Ptfе	4 Leather/ 1 Ptfе
Throat seal construction	3 XtremeSeal/ 2 Leather	3 XtremeSeal/ 2 Leather	3 XtremeSeal/ 2 Leather	3 XtremeSeal/ 2 Leather	4 Leather/ 1 Ptfе	4 Leather/ 1 Ptfе

#### Replacement Parts Ordering Information

Air motor repair kit	207730	207730	207730	207730	207730	207730
Standard seal kit	244851	244851	244851	244851	237240	237240
Construction	3 XtremeSeal/ 2 Leather	3 XtremeSeal/ 2 Leather	3 XtremeSeal/ 2 Leather	3 XtremeSeal/ 2 Leather	4 Leather/ 1 Ptfе	4 Leather/ 1 Ptfе
Optional seal kit	244901	244901	244901	244901	237242	237242
Construction	5 Tuff-Stack	5 Tuff-Stack	5 Tuff-Stack	5 Tuff-Stack	5 Ptfе	5 Ptfе
Optional seal kit	N/A	N/A	N/A	N/A	237244	237244
Construction					3 XtremeSeal/ 2 Leather	3 XtremeSeal/ 2 Leather
Optional seal kit	N/A	N/A	N/A	N/A	237608	237608
Construction					3 XtremeSeal/ 2 Ptfе	3 XtremeSeal/ 2 Ptfе
Optional seal packings	244864	244864	244864	244864	N/A	N/A
Construction	XtremeSeal	XtremeSeal	XtremeSeal	XtremeSeal		
Optional seal packings	244870	244870	244870	244870	N/A	N/A
Construction	Leather	Leather	Leather	Leather		
Optional seal packings	244858	244858	244858	244858	N/A	N/A
Construction	Tuff-Stack	Tuff-Stack	Tuff-Stack	Tuff-Stack		
Standard displacement rod	197321	197321	197321	197321	189853	189853
Construction	SST/PlasmaCoat	SST/PlasmaCoat	SST/PlasmaCoat	SST/PlasmaCoat	SST/Chrome	SST/Chrome
Optional displacement rod	198415	198415	198415	198415	N/A	N/A
Construction	SST/Chrome	SST/Chrome	SST/Chrome	SST/Chrome		
Standard cylinder	197316	197316	197316	197316	189857	189857
Construction	SST/Chrome	SST/Chrome	SST/Chrome	SST/Chrome	SST/Chrome	SST/Chrome

Note: Optional seal packings sold as 10-count convenience pack.  
Note: XtremeSeal is a proprietary Ptfе-filled UHMWPE blend.

Note: Tuff-Stack is a proprietary Ptfе blend.  
Note: PlasmaCoat is a proprietary case-hardening process.

# King 45:1, 56:1, 68:1 & 80:1

## Air-Operated Piston Pumps and Airless Packages

### Ordering Information - King 45:1, 56:1, 68:1 & 80:1 Bare Pumps (continued)

Pump part number includes motor and lower displacement pump

	King 80:1 Xtreme	King 80:1 Xtreme	King Quiet 80:1 Xtreme	King Quiet 80:1 Xtreme
Pump part number	245122	244494	244495	245179
Air motor	245111	245111	245112	245111
Lower displacement pump	244410	244411	244411	244111
Construction	CS	CS	CS	CS
Fluid filter configuration	No Filter	Built-In Filter	Built-In Filter	No Filter
Piston seal construction	3 XtremeSeal/2 Leather	3 XtremeSeal/2 Leather	3 XtremeSeal/2 Leather	3 XtremeSeal/2 Leather
Throat seal construction	3 XtremeSeal/2 Leather	3 XtremeSeal/2 Leather	3 XtremeSeal/2 Leather	3 XtremeSeal/2 Leather

#### Replacement Parts Ordering Information

Air motor repair kit	207730	207730	207730	207730
Standard seal kit	244850	244850	244850	244850
Construction	3 XtremeSeal/2 Leather	3 XtremeSeal/2 Leather	3 XtremeSeal/2 Leather	3 XtremeSeal/2 Leather
Optional seal kit	244900	244900	244900	244900
Construction	5 Tuff-Stack	5 Tuff-Stack	5 Tuff-Stack	5 Tuff-Stack
Optional seal packings	244863	244863	244863	244863
Construction	XtremeSeal	XtremeSeal	XtremeSeal	XtremeSeal
Optional seal packings	244869	244869	244869	244869
Construction	Leather	Leather	Leather	Leather
Optional seal packings	244857	244857	244857	244857
Construction	Tuff-Stack	Tuff-Stack	Tuff-Stack	Tuff-Stack
Standard displacement rod	197320	197320	197320	197320
Construction	SST/PlasmaCoat	SST/PlasmaCoat	SST/PlasmaCoat	SST/PlasmaCoat
Optional displacement rod	198414	198414	198414	198414
Construction	SST/Chrome	SST/Chrome	SST/Chrome	SST/Chrome
Standard cylinder	197315	197315	197315	197315
Construction	SST/Chrome	SST/Chrome	SST/Chrome	SST/Chrome

Note: Optional seal packings sold as 10-count convenience pack.

Note: XtremeSeal is a proprietary Pife-filled UHMWPE blend.

# King 45:1, 56:1, 68:1 & 80:1

## Air-Operated Piston Pumps and Airless Packages

### Ordering Information - King 45:1, 56:1, 68:1 & 80:1 Bare Pumps (continued)

The following Xtreme Lower Displacement Pumps are not offered in complete King pump assemblies. To configure a complete King 45:1, 56:1, 68:1 or 80:1 pump with these lowers:

1. Select desired lower displacement pump, based on fluid pressure and flow requirements and seal construction.
2. Select lower pump displacement construction (CS - carbon steel or SST - stainless steel) based on the corrosive and chemical characteristics of the fluid to be handled.
3. Order Standard King air motor 245111 or King Quiet air motor 245112.
4. For King 45:1, 56:1, 68:1 or 80:1 Xtreme lower displacement pumps, order connection kit 244849. For King 56:1 Dura-Flo lower displacement pump, order connection kit 235417.

#### Additional Lower Displacement Pumps

Pump part number	244420	244421	244422	244423	244418
Description	145cc Lower Xtreme King 80:1	180cc Lower Xtreme King 68:1	220cc Lower Xtreme King 56:1	250cc Lower Xtreme King 45:1	290cc Lower Xtreme King 80:1
Fluid filter configuration	No Filter	No Filter	No Filter	No Filter	No Filter
Material of construction	CS	CS	CS	CS	CS
Standard seal kit	244900	244901	244902	244903	244854
Construction	5 Tuff-Stack	5 Tuff-Stack	5 Tuff-Stack	5 Tuff-Stack	3 Xtreme Seal/ 2 Leather
Standard displacement rod	197320	197321	197322	197323	197324
Construction	SST/PlasmaCoat	SST/PlasmaCoat	SST/PlasmaCoat	SST/PlasmaCoat	SST/PlasmaCoat
Standard cylinder	197315	197316	197317	197318	197319
Construction	SST/Chrome	SST/Chrome	SST/Chrome	SST/Chrome	SST/Chrome

#### Additional Lower Displacement Pumps

Pump part number	244419	244424	236897
Description	290cc Lower Xtreme King 68:1	290cc Lower Dura-Flo King 56:1	220 cc Lower Dura-Flo King 56:1
Fluid filter configuration	Built-In Filter	No Filter	No Filter
Material of construction	CS	CS	SST
Standard seal kit	244854	244904	237173
Construction	3 Xtreme Seal/2 Leather	5 Tuff-Stack	5 Ptfе
Standard displacement rod	197324	197324	189316
Construction	SST/PlasmaCoat	SST/PlasmaCoat	SST/Chrome
Standard cylinder	197319	197319	189383
Construction	SST/Chrome	SST/Chrome	SST/Chrome



# King 45:1, 56:1, 68:1 & 80:1

## Air-Operated Piston Pumps and Airless Packages

### Ordering Information - King 45:1, 56:1, 68:1 & 80:1 Packages

XTREME AIRLESS PACKAGES						
	PACKAGE PART NO.	PUMP LOWER	BUILT-IN FILTER	STANDARD SEAL REPAIR KIT	DISPLACEMENT ROD	CYLINDER
<b>HEAVY-DUTY CART-MOUNT</b>						
<b>Bare Package, No Gun or Hose</b>						
<b>45:1</b>	<b>244471</b>	244417	X	244853	197323	197318
<b>56:1</b>	<b>244478</b>	244415	X	244852	197322	197317
<b>56:1</b> (Quiet Motor)	<b>244479</b>	244415	X	244852	197322	197317
<b>68:1</b>	<b>244487</b>	244413	X	244851	197321	197316
<b>68:1</b> (Quiet Motor)	<b>244488</b>	244413	X	244851	197321	197316
<b>80:1</b>	<b>244496</b>	244411	X	244850	197320	197315
<b>80:1</b> (Quiet Motor)	<b>244497</b>	244411	X	244850	197320	197315
<b>Complete Package with Silver Plus Gun and Hose</b>						
<b>45:1</b>	<b>244474</b>	244417	X	244853	197323	197318
<b>56:1</b>	<b>244482</b>	244415	X	244852	197322	197317
<b>Complete Package with 510 Gun and Hose</b>						
<b>68:1</b>	<b>244491</b>	244413	X	244851	197321	197316
<b>80:1</b>	<b>244500</b>	244411	X	244850	197320	197315
<b>LIGHTWEIGHT CART-MOUNT</b>						
<b>Bare Package, No Gun or Hose</b>						
<b>45:1</b>	<b>244473</b>	244417	X	244853	197323	197318
<b>45:1</b> (Quiet Motor)	<b>244472</b>	244417	X	244853	197323	197318
<b>56:1</b>	<b>244480</b>	244415	X	244852	197322	197317
<b>56:1</b> (Quiet Motor)	<b>244481</b>	244415	X	244852	197322	197317
<b>68:1</b>	<b>244489</b>	244413	X	244851	197321	197316
<b>68:1</b> (Quiet Motor)	<b>244490</b>	244413	X	244851	197321	197316
<b>80:1</b>	<b>244498</b>	244411	X	244850	197320	197315
<b>80:1</b> (Quiet Motor)	<b>244499</b>	244411	X	244850	197320	197315
<b>Complete Package with Silver Plus Gun and Hose</b>						
<b>45:1</b>	<b>244475</b>	244417	X	244853	197323	197318
<b>56:1</b>	<b>244483</b>	244415	X	244852	197322	197317
<b>Complete Package with 510 Gun and Hose</b>						
<b>68:1</b> (Quiet Motor)	<b>244492</b>	244413	X	244851	197321	197316
<b>80:1</b> (Quiet Motor)	<b>244501</b>	244411	X	244850	197320	197315

# King 45:1, 56:1, 68:1 & 80:1

## Air-Operated Piston Pumps and Airless Packages

### Accessories

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#### GUNS AND TIPS

- 238591 Silver Plus Gun**  
Maximum working pressure: 5000 psi (34.5 MPa, 345 bar). With HD RAC tip and guard.
- 241705 Heavy-Duty Texture Gun**  
Maximum working pressure: 4000 psi (27.6 MPa, 276 bar). With GHD631 tip and HD RAC guard.
- 236995 Model 510 Airless Spray Gun**  
Maximum working pressure: 7400 psi (51 MPa, 510 bar). Includes 237162 HD RAC tip retainer and GHD527 tip.
- 243577 Alpha Plus RAC Hi-Flow AA Spray Gun**  
Maximum working pressure: 4000 psi (27.6 MPa, 276 bar). With hi-flow fluid needle, diffuser seat and AA Reverse-A-Clean assembly.
- 237162 HD RAC Tip Retainer**  
Maximum working pressure: 7400 psi (51 MPa, 510 bar). Fits guns with 7/8 in. (22.2 mm) thread.
- 222674 HD RAC Tip Retainer With DripLess™ Guard**  
Inlet: 7/8 in. (22.2 mm) thread.
- GHDxxx HD RAC Tips**

#### FLUID HOSES

##### Whip Hose

- Maximum working pressure: 5000 psi (34.5 MPa, 345 bar). ID 1/4 in. (6.3 mm). 1/4 npsm(fbe).
- 214912** 3 ft. (1.8 m)  
**214913** 6 ft. (1.8 m)

##### Fluid Hose

- Maximum working pressure: 5000 psi (34.5 MPa, 345 bar). ID 3/8 in. (9.5 mm ID). 3/8 npt(m) x 3/8 npt(f).
- 238395** 24.6 ft. (7.5 m)  
**238396** 49.2 ft. (15 m)  
**238397** 98.4 ft. (30 m)
- Maximum working pressure: 5000 psi (34.5 MPa, 345 bar). ID 1/2 in. (12.7 mm ID). 1/2 npt(fbe).
- 238716** 24.6 ft. (7.5 m)  
**238717** 49.2 ft. (15 m)  
**238718** 98.4 ft. (30 m)
- Maximum working pressure: 7400 psi (51 MPa, 510 bar).
- 237071** ID 1/4 in. x 49 ft. (6.3 mm x 15 m) 1/4 npsm(fbe).  
**237213** ID 1/2 in. x 49 ft. (12.7 mm x 15 m) 1/2 npsm(fbe).  
**237070** ID 1/4 in. x 6 ft. (6.3 mm x 1.8 m) 1/4 npsm(fbe).  
**237072** ID 3/8 in. x 49 ft. (9.5 mm x 15 m) 3/8 npsm(fbe).

#### AIR HOSES

##### Grounded Buna-N Air Hose

- Maximum working pressure: 175 psi (1.2 MPa, 12 bar). ID 3/4 in. (19 mm). Thread size: 3/4 npt(m).
- 208610** 6 ft. (1.8 m)  
**205548** 15 ft. (4.5 m)  
**208611** 25 ft. (7.6 m)  
**208612** 50 ft. (15.2 m)

#### AIR CONTROLS AND VALVES

##### Modular Air Regulator Kit with built in Filter

- 244719** Kit for Lightweight Cart  
**244720** Kit for Heavy-Duty Cart

##### 244841 Modular Air Line Lubricator Kit

For use with models 244719 or 244720.

##### 245210 Air Assisted Conversion Kit

Includes 113549 air regulator, 210868 50 ft. x 1/4 in. (15.2 m x 6.35 mm) air hose, 243577 Alpha Plus gun, and 238386 50 ft. x 1/4 in. (15.2 m x 6.35 mm) fluid hose.

##### Safety Relief Valves

- Limits inlet air pressure to appropriate pump ratio.
- 116643** 80 psi (0.55 MPa, 55 bar)  
Standard with King 80:1 packages.
- 103347** 100 psi (0.69 MPa, 69 bar)  
Standard with King 56:1 packages.
- 113498** 110 psi (0.76 MPa, 76 bar)

##### 245143 Pressure Bleed Valve

Maximum working pressure: 7400 psi (51 MPa, 510 bar).

##### 245145 Pressure Bleed Valve Repair Kit

Includes ball, seat, retaining ring, O-ring, gasket.

##### 224040 Pump Runaway Valve

Maximum working pressure: 120 psi (0.83 MPa, 8.3 bar). Inlet/outlet: 3/4 npt(f). Includes optional 90° 3/4 npsm swivel fitting.

##### 208627 Air Blow Gun

Maximum working pressure: 150 psi (1.04 MPa, 10.4 bar). For cleaning gun tip. Thread size: 1/4 npt(f).

##### Ball Valves

- Maximum working pressure: 5000 psi (34.5 MPa, 345 bar).
- 210657** Inlet: 1/4 npt(m). Outlet: 1/4 npt(m).  
**210658** Inlet: 3/8 npt(m). Outlet: 3/8 npt(m).  
**210659** Inlet: 1/4 npt(m). Outlet: 3/8 npt(m).

Maximum working pressure: 7400 psi (51 MPa, 510 bar).

- 237303** 1/4 npt(mbe)  
**237304** 3/8 npt(mbe)

# King 45:1, 56:1, 68:1 & 80:1

## Air-Operated Piston Pumps and Airless Packages

### Accessories (continued)

#### PUMP LOWER REPAIR PARTS AND ACCESSORIES

##### Inlet Ball Spring Load Kit

245190	King 80:1 & 68:1
245191	King 45:1 & 56:1

##### Tuff-Stack Alternate Seal Repair Kit

244900	145cc Lower: King 80:1
244901	180cc Lower: King 68:1
244902	220cc Lower: King 56:1
244903	250cc Lower: King 45:1
244904	290cc Lower

##### Hard Chrome-Over-Stainless Steel Displacement Rods

198414	145cc Lower: King 80:1
198415	180cc Lower: King 68:1
198416	220cc Lower: King 56:1
198417	250cc Lower: King 45:1
198418	290cc Lower

##### 245127 Carbide Piston Ball Set (Qty 3)

Use as replacement piston ball for Bulldog 33:1 and 41:1 pumps with exceptionally abrasive coatings.

#### ADAPTERS AND FITTINGS

##### Hose Swivels

214925	Maximum working pressure: 5000 psi (34.5 MPa, 345 bar). 3/8 npt(f) x 1/4 npsm(f).
236987	Maximum working pressure: 7400 psi (51 MPa, 510 bar). 1/4 npsm(m) x 1/4 npsm(f). SST.
189018	Maximum working pressure: 5800 psi (39.9 MPa, 399 bar). 1/4 npsm(m) x 1/4 npsm(f).

##### 156173 Union Swivel

Maximum working pressure: 7400 psi (51 MPa, 510 bar). Use to connect 3/8 in. (9.5 mm) hoses together. 3/8 npt(f) x 3/8 npsm(f).

##### 150287 Hose Coupler

Maximum working pressure: 8000 psi (55 MPa, 550 bar). Use to connect 3/8 in. (9.5mm) hose to whip hose. 3/8 npt(f) x 1/4 npt(m).

##### Gun Swivels (25 Pack)

Maximum working pressure: 3600 psi (25 MPa, 250 bar). 1/4 npsm(f) x 1/4 npt(m).

239663	Leather
223341	Ptfe

Maximum working pressure: 5000 psi (34.5 MPa, 345 bar). 1/4 npsm(f) x 3/8 npt(f).

214925	Leather
214926	Leather 3/8 npt(f) x 1/2 npsm(f) swivel.

#### ADAPTERS AND FITTINGS

##### 239394 High Pressure SST Swivel/Filter

Maximum working pressure: 5800 psi (40.1 MPa, 401 bar). 1/4 npsm(m) x 1/4 npsm(f).

##### Nipples

Use to connect hoses together.

156971	Maximum working pressure: 7500 psi (51.7 MPa, 517 bar). 1/4 npt x 1/4 npt(mbe).
165198	Maximum working pressure: 10000 psi (69 MPa, 690 bar). 1/4 npt x 3/8 npt(mbe).
162449	Maximum working pressure: 13000 psi (90 MPa, 900 bar). 1/4 npt x 1/2 npt(mbe).
159239	Maximum working pressure: 14000 psi (96.5 MPa, 965 bar). 3/8 npt x 1/2 npt(mbe).
158491	Maximum working pressure: 7400 psi (51 MPa, 510 bar). 1/2 npt x 1/2 npt(mbe).

#### SUCTION KITS AND ACCESSORIES

##### 245176 Suction Kit, Xtreme

Includes 244516 suction hose, 116402 Quick-Disconnect fitting, 116401 elbow, and 197682 suction tube.

##### 245136 55-Gal. (200 L) Suction Tube Extension, Xtreme

Includes 195151 intake tube and 114967 coupling to extend standard suction tube to bottom of 55-gal. (200 L) drum. Connects to suction tube 197682.

##### Suction Tube Filter/Strainers

181072	Round strainer
191635	Tube strainer

##### 238588 Zinc Conversion Kit

Maximum working pressure: 3000 psi (20.7 MPa, 207 bar). Includes circulation tee at pump outlet, shutoff valve, drain hose.

#### FILTERS

##### Replacement Screen Filter Elements

3 Pack	25 Pack	
238435	238436	30 mesh (595 micron)
238437	238438	60 mesh (250 micron)
238439	238440	100 mesh (149 micron)

#### LIQUIDS AND LUBRICATION

##### Graco Throat Seal Liquid

206995	1 qt. (0.9 L)
206996	1 gal. (3.8 L)

# King 45:1, 56:1, 68:1 & 80:1

## Air-Operated Piston Pumps and Airless Packages

### Accessories (continued)

#### MOUNTING OPTIONS

- 244849 Xtreme Connection Kit**  
Kit to install Xtreme pump lower under existing King and Bulldog air motors. Includes tie rods, rod adapter and quick disconnect coupler.
- 244530 Heavy-Duty 2-Wheel Cart**
- 244527 Lightweight 2-Wheel Cart**
- 206221 Wall Mounting Bracket**
- 245132 Floor Stand Kit, Xtreme**  
Use to mount King pumps 245119, 244470, 245138, 245120, 244476, 244477, 245121, 244485, 244486, 245122, 244494, and 244495. Includes 222274 floor stand, 198347 intake adapter and ball valve.
- 245131 Ram Adapter, Xtreme**  
Use to mount King pumps 245119, 244470, 245138, 245120, 244476, 244477, 245121, 244485, 244486, 245122, 244494, and 244495 to a ram. Includes 1-1/2 npt(f) x flange and lug kit.
- 237960 Ram Adapter, Dura-Flo**  
Use to mount King 68:1 pumps 237635 and 236460 to a ram. Includes 1-1/2 npt(m) x flange and lug kit.
- 237782 Ram Adapter, Dura-Flo**  
Use to mount King 56:1 pump 237286 to a ram. Includes 2 npt(m) x flange and lug kit.
- 237961 Floor Stand Kit (Dura-Flo 750 & 600 Only)**  
Includes 222274 floor stand and 237960 adapter.
- 237781 Floor Stand Kit (Dura-Flo 900 & 1200 Only)**  
Includes 222274 floor stand and 237960 adapter.
- 235417 Dura-Flo Connection Kit**  
Kit to install Dura-Flo pump lower under existing King and Bulldog air motors. Includes tie rods and other connecting hardware.

#### TOOLS

- 207579 Padded Pliers**  
For servicing King air motor trip rod.
- 112887 Packing Nut Wrench**  
For adjusting throat packing compression in pump.
- 168513 Alignment Tool**  
Use to ensure proper clearance and alignment for the King air manifolds.



# King<sup>®</sup> 20:1 & 28:1

## Air-Operated Piston Pumps and Airless Packages

**2**

### Features and Benefits

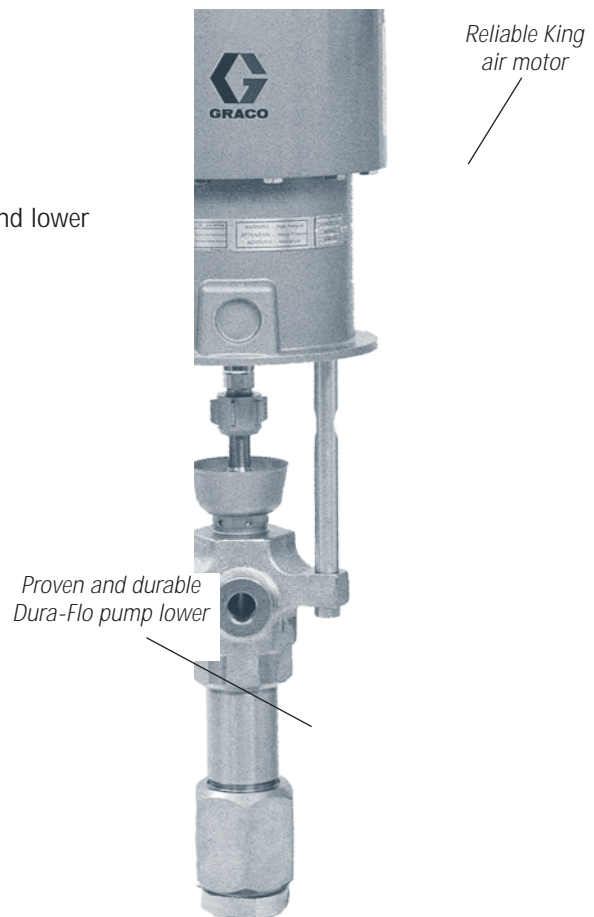
- High flow performance and pump pressure handle a broad range of coatings and applications
- Extremely durable pump with longer life packing design
- Improved serviceability means fewer parts, faster repairs and lower overall maintenance and ownership costs

### Typical Applications

- Airless spray
- Air-assisted spray
- Cleaning systems

### Typical Coatings Applied

- Solventborne paints and coatings
- Waterborne paints and coatings
- Water



King 20:1  
222832

# King 20:1 & 28:1

## Air-Operated Piston Pumps and Airless Packages

### Technical Specifications

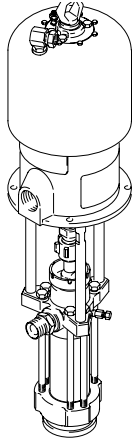
	King 20:1	King 28:1
Fluid pressure ratio		
Maximum fluid outlet pressure	2000 psi (13.8 MPa, 138 bar)	2800 psi (19.3 MPa, 193 bar)
Maximum air input pressure	100 psi (0.7 MPa, 7 bar)	100 psi (0.7 MPa, 7 bar)
Fluid flow @ 60 cpm	9.2 gpm (34.7 lpm)	6.8 gpm (25.9 lpm)
Volume per cycle	20 oz. (578 cc)	15 oz. (431 cc)
Air consumption @ 90 psi (6.2 bar, 0.6 MPa) @ 20 cpm	70 scfm (1.98 m <sup>3</sup> /min)	70 scfm (1.98 m <sup>3</sup> /min)
Sound pressure level @ 90 psi (6.2 bar, 0.6 MPa) air @ 20 cpm	90 dBA (Standard Motor) 87 dBA (Quiet Motor)	90 dBA (Standard Motor) 87 dBA (Quiet Motor)
Air motor inlet	3/4 npsm(f)	3/4 npsm(f)
Pump fluid inlet	2 npt(f)	2 npt(f)
Pump fluid outlet	1-1/2 npt(m)	1-1/2 npt(m)
Weight	134 lbs. (61 kg)	152 lbs. (69 kg)
Instruction manual	308151 (Model 222826) 308152 (Model 222827)	308147 (Model 222837, 222891) 308148 (Model 222895)

# King 20:1 & 28:1

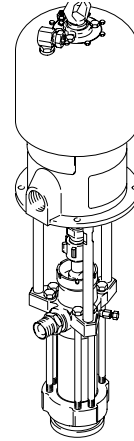
## Air-Operated Piston Pumps and Airless Packages

### Performance Charts

**KING 20:1**



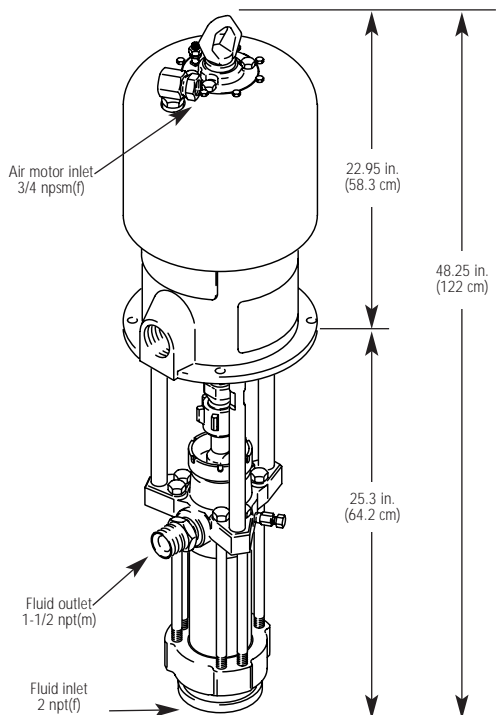
**KING 28:1**



2

### Dimensions

**KING 20:1 & 28:1**



# King 20:1 & 28:1

## Air-Operated Piston Pumps and Airless Packages

### Ordering Information - King 20:1 & 28:1 Bare Pumps

1. Select appropriate pump ratio (20:1 or 28:1) based on pressure and flow requirements of the application.
2. Select Standard or Quiet King air motor based on sound level requirements.
3. Select lower pump displacement construction (carbon steel or stainless steel) based on the corrosive and chemical characteristics of the fluid to be handled.
4. Order pump part number.

**Pump part number includes motor and lower displacement pump.**

	King 20:1	King Quiet 20:1	King 20:1	King Quiet 20:1
Pump part number	222832	222833	222899	222898
Air motor	245111	220106	245111	220106
Lower displacement pump	222801	222801	222803	222803
Construction	CS	CS	SST	SST
Piston seal construction	3 Ptfе/2 Leather	3 Ptfе/2 Leather	3 UHMWPE/2 Ptfе	3 UHMWPE/2 Ptfе
Throat seal construction	3 Ptfе/2 Leather	3 Ptfе/2 Leather	3 UHMWPE/2 Ptfе	3 UHMWPE/2 Ptfе

### Replacement Parts Ordering Information

Air motor repair kit	207730	220153	207730	220153
Standard seal kit	222879	222879	222875	222875
Construction	3 Ptfе/2 Leather	3 Ptfе/2 Leather	3 UHMWPE/2 Ptfе	3 UHMWPE/2 Ptfе
Optional seal kit	222876	222876	222876	222876
Construction	5 Ptfе	5 Ptfе	5 Ptfе	5 Ptfе
Optional seal kit	222877	222877	222877	222877
Construction	4 Leather/1 Ptfе	4 Leather/1 Ptfе	4 Leather/1 Ptfе	4 Leather/1 Ptfе
Optional seal kit	222878	222878	222878	222878
Construction	3 UHMWPE/2 Leather	3 UHMWPE/2 Leather	3 UHMWPE/2 Leather	3 UHMWPE/2 Leather
Optional seal kit	222875	222875	222879	222879
Construction	3 UHMWPE/2 Ptfе	3 UHMWPE/2 Ptfе	3 Ptfе/2 Leather	3 Ptfе/2 Leather
Optional seal kit	222880	222880	222880	222880
Construction	3 UHMWPE/2 Tuff-Stack	3 UHMWPE/2 Tuff-Stack	3 UHMWPE/2 Tuff-Stack	3 UHMWPE/2 Tuff-Stack
Standard displacement rod	184002	184002	184002	184002
Construction	SST	SST	SST	SST
Optional displacement rod	687119	687119	687119	687119
Construction	Ceramic	Ceramic	Ceramic	Ceramic
Standard cylinder	184003	184003	184003	184003
Construction	SST	SST	SST	SST



# King 20:1 & 28:1

## Air-Operated Piston Pumps and Airless Packages

### Ordering Information - King 20:1 & 28:1 Bare Pumps (continued)

Pump part number includes motor and lower displacement pump.

	King 28:1	King Quiet 28:1	King Quiet 28:1
Pump part number	222837	222891	222895
Air motor	245111	220106	220106
Lower displacement pump	222796	222796	222805
Construction	CS	CS	SST
Piston seal construction	3 Ptfе/2 Leather	3 Ptfе/2 Leather	3 UHMWPE/2 Ptfе
Throat seal construction	3 Ptfе/2 Leather	3 Ptfе/2 Leather	3 UHMWPE/2 Ptfе

#### Replacement Parts Ordering Information

Air motor repair kit	207730	220153	220153
Standard seal kit	222849	222849	222845
Construction	3 Ptfе/2 Leather	3 Ptfе/2 Leather	3 UHMWPE/2 Ptfе
Optional seal kit	222847	222847	222847
Construction	4 Leather/1 Ptfе	4 Leather/1 Ptfе	4 Leather/1 Ptfе
Optional seal kit	222846	222846	222846
Construction	5 Ptfе	5 Ptfе	5 Ptfе
Optional seal kit	222845	222845	222849
Construction	3 UHMWPE/2 Ptfе	3 UHMWPE/2 Ptfе	3 Ptfе/2 Leather
Optional seal kit	222848	222848	222848
Construction	3 UHMWPE/2 Leather	3 UHMWPE/2 Leather	3 UHMWPE/2 Leather
Standard displacement rod	184276	184276	184276
Construction	SST	SST	SST
Optional displacement rod	687118	687118	687118
Construction	Ceramic	Ceramic	Ceramic
Standard cylinder	184461	184461	184661
Construction	SST	SST	SST

# King 20:1 & 28:1

## Air-Operated Piston Pumps and Airless Packages

### Ordering Information - King 20:1 & 28:1 Bare Pumps (continued)

The following lower displacement pumps are not offered in complete King pump assemblies. To configure a complete King 20:1 or 28:1 pump with these lowers:

1. Select desired lower displacement pump, based on fluid pressure and flow requirements and seal construction.
2. Select appropriate seal construction based on the chemical characteristics of the fluid to be handled.
3. Order standard King air motor 245111 or King Quiet air motor 220106.
4. Order pump connection kit 235414.

#### Additional Lower Displacement Pumps

Lower displacement pump	222991	222992	241648	236226	222994
Description	King 20:1 Lower	King 20:1 Lower	King 20:1 Lower	King 20:1 Lower	King 20:1 Lower
Material of construction	CS	CS	SST	SST	SST
Standard seal kit	222877	222876	222880	222875	222876
Construction	4 Leather/1 Ptfе	Ptfе	3 UHMWPE/2 Tuff-Stack	3 UHMWPE/2 Ptfе	5 Ptfе
Standard displacement rod	184002	184002	184002	184002	184002
Construction	SST	SST	SST	SST	SST
Standard cylinder	184003	184003	814003	184003	184003
Construction	SST	SST	SST	SST	SST

#### Additional Lower Displacement Pumps

Lower displacement pump	236230	222993	222988	241956	687055	C59703
Description	King 20:1 Lower	King 20:1 Lower	King 28:1 Lower	King 28:1 Lower	King 28:1 Lower	King 28:1 Lower
Material of construction	SST	SST	CS	SST	SST	SST w/carbide balls
Standard seal kit	222877	222879	222846	222845	N/A	222845
Construction	4 Leather/1 Ptfе	3 Ptfе/2 Leather	5 Ptfе	3 UHMWPE/2 Ptfе	3 UHMWPE/2 Tuff-Stack	3 UHMWPE/2 Ptfе
Standard displacement rod	184002	184002	184276	687118	184276	184276
Construction	SST	SST	SST	Ceramic	SST	SST
Standard cylinder	184003	184003	184461	184461	184461	184461
Construction	SST	SST	SST	SST	SST	SST

# King 20:1 & 28:1

## Air-Operated Piston Pumps and Airless Packages

### Ordering Information - King 20:1 & 28:1 Packages

AIRLESS PACKAGES					
	PACKAGE PART NO.	PUMP LOWER	STANDARD SEAL REPAIR KIT	DISPLACEMENT ROD	SLEEVE HOUSING
<b>HEAVY-DUTY CART-MOUNT</b>					
<b>Dura-Flo Bare Package, No Gun or Hose</b>					
<b>20:1</b>	<b>231175</b>	222801	222879	184002	184003
<b>28:1</b>	<b>231174</b>	222796	222845	184276	184461
<b>Dura-Flo Zinc Complete Package with Silver Plus Gun and Hose</b>					
<b>20:1</b>	<b>231131</b>	222801	222879	184002	184003

# King 20:1 & 28:1

## Air-Operated Piston Pumps and Airless Packages

### Accessories

#### GUNS AND TIPS

- 238591 Silver Plus Gun**  
Maximum working pressure: 5000 psi (34.5 MPa, 345 bar). With HD RAC tip and guard.
- 237162 HD RAC Tip Retainer**  
Maximum working pressure: 7400 psi (51 MPa, 510 bar). Fits guns with 7/8 in. (22.2 mm) thread, included as part of 236995 Model 510 Gun.
- 222674 HD RAC Tip Retainer With DripLess™ Guard**  
Inlet: 7/8 in. (22.2 mm) thread.
- GHDxxx HD RAC Tips**

#### FLUID HOSES

##### Whip Hose

- Maximum working pressure: 3000 psi (20.7 MPa, 207 bar). ID 3/16 in. (5 mm).
- 214700** 2 ft. (0.6 m), 1/4 npsm(fbe)  
**214701** 3 ft. (0.9 m), 1/4 npsm(f) x 1/4 npt(m)
- Maximum working pressure: 5000 psi (34.5 MPa, 345 bar). ID 1/4 in. (0.63 cm), 1/4 npsm(fbe).
- 214912** 3 ft. (0.91 m)  
**214913** 6 ft. (1.83 m)

##### Fluid Hose

- Maximum working pressure: 3000 psi (20.7 MPa, 207 bar). ID 3/8 in. (9.52 mm), 3/8 npt(mbe).
- 214703** 25 ft. (7.62 m)  
**214705** 50 ft. (15.24 m)  
**214920** 100 ft. (30.4m)
- Maximum working pressure: 3000 psi (20.7 MPa, 207 bar)
- 223540** ID 1/4 in. x 25 ft. (6.3 mm x 7.6 m). 1/4 npsm(fbe)
- Maximum working pressure: 4050 psi (28 MPa, 280 bar). ID 1/2 in. (12.7 mm), 1/2 npt(mbe).
- 215226** 25 ft. (7.62 m)  
**215227** 50 ft. (15.24 m)  
**215228** 100 ft. (30.48 m)
- Maximum working pressure: 5000 psi (34.5 MPa, 345 bar). ID 3/8 in. (9.5 mm). 3/8 npt(m) x 3/8 npt(f).
- 238395** 24.6 ft. (7.5 m)  
**238396** 49.2 ft. (15 m)  
**238397** 98.4 ft. (30 m)
- Maximum working pressure: 5000 psi (34.5 MPa, 345 bar). ID 1/2 in. (12.7 mm). 1/2 npt(fbe).
- 238716** 24.6 ft. (7.5 m)  
**238717** 49.2 ft. (15 m)  
**238718** 98.4 ft. (30 m)  
**223541** ID 1/4 in. x 50 ft. (6.3 mm x 15.2 m). 1/4 npsm(fbe)

#### AIR HOSES

##### Grounded Buna-N Air Hose

- Maximum working pressure: 175 psi (1.2 MPa, 12 bar). ID 3/4 in. (19 mm). Thread size: 3/4 npt(m).
- 208610** 6 ft. (1.8 m)  
**205548** 15 ft. (4.5 m)  
**208611** 25 ft. (7.6 m)  
**208612** 50 ft. (15.2 m)

#### AIR CONTROLS AND VALVES

##### 244720 Modular Air Regulator Kit with Built-In Filter

##### 244841 Modular Air Line Lubricator Kit

##### 245210 Air-Assisted Conversion Kit

Includes 113549 air regulator, 210868 50 ft. x 1/4 in. air hose, 243577 Alpha Plus Gun, and 238386 50 ft. x 1/4 in. fluid hose.

##### Safety Relief Valves

Limits inlet air pressure to appropriate pump ratio maximum working pressure.

**116643** 80 psi (0.55 MPa, 55 bar)  
**103347** 100 psi (0.69 MPa, 69 bar)  
**113488** 110 psi (0.76 MPa, 76 bar)

##### 245143 Pressure Bleed Valve

Maximum working pressure: 7400 psi (51 MPa, 510 bar).

##### 245145 Pressure Bleed Valve Repair Kit

Includes ball, seat, retaining ring, O-ring, gasket.

##### 224040 Pump Runaway Valve

Maximum working pressure: 120 psi (0.83 MPa, 8.3 bar). Inlet/outlet: 3/4 npt(f). Includes optional 90° 3/4 npsm swivel fitting.

##### Ball Valve

Maximum working pressure: 5000 psi (34.5 MPa, 345 bar).

**210657** Inlet: 1/4 npt(m). Outlet: 1/4 npt(m).  
**210658** Inlet: 3/8 npt(m). Outlet: 3/8 npt(m).  
**210659** Inlet: 1/4 npt(m). Outlet: 3/8 npt(m).

Maximum working pressure: 7400 psi (51 MPa, 510 bar).

**237303** 1/4 npt(mbe)  
**237304** 3/8 npt(mbe)

##### 107141 Bleed-Type Master Air Valve

Maximum working pressure: 300 psi (2.1 MPa, 21 bar).

# King 20:1 & 28:1

## Air-Operated Piston Pumps and Airless Packages

### Accessories (continued)

#### ADAPTERS AND FITTINGS

##### Hose Swivel

- 214925** Maximum working pressure: 5000 psi (34.5 MPa, 345 bar).  
3/8 npt(f) x 1/4 npsm(f).
- 236987** Maximum working pressure: 7400 psi (51 MPa, 510 bar).  
1/4 npsm(m) x 1/4 npsm(f).
- 189018** Maximum working pressure: 5800 psi (39.9 MPa, 399 bar).  
1/4 npsm(m) x 1/4 npsm(f).

##### 156173 Union Swivel

Maximum working pressure: 7400 psi (51 MPa, 510 bar). Use to connect 3/8 in. (9.5 mm) hoses together. 3/8 npt(f) x 3/8 npsm(f).

##### 150287 Hose Coupler

Maximum working pressure: 8000 psi (55 MPa, 550 bar). Use to connect 3/8 in. (9.5 mm) hose to whip hose. 3/8 npt(f) x 1/4 npt(m).

##### Gun Swivels (25 Pack)

Maximum working pressure: 3600 psi (25 MPa, 250 bar). 1/4 npsm(f) x 1/4 npt(m).

- 239663** Leather
- 223341** Ptfе

Maximum working pressure: 5000 psi (34.5 MPa, 345 bar). 1/4 npsm(f) x 3/8 npt(m).

- 214925** Leather
- 214926** Leather

Maximum working pressure: 5800 psi (48 MPa, 406 bar).

- 239394** Swivel with Built-in Filter

##### Nipples

Use to connect hoses together.

- 156971** Maximum working pressure: 7500 psi (51.7 MPa, 517 bar).  
1/4 npt x 1/4 npt(mbe).
- 165198** Maximum working pressure: 10000 psi (69 MPa, 690 bar).  
1/4 npt x 3/8 npt(mbe).
- 162449** Maximum working pressure: 7400 psi (51 MPa, 510 bar).  
1/4 npt x 1/2 npt(mbe).
- 159239** Maximum working pressure: 7400 psi (51 MPa, 510 bar).  
3/8 npt x 1/2 npt(mbe).
- 158491** Maximum working pressure: 7400 psi (51 MPa, 510 bar).  
1/2 npt x 1/2 npt(mbe).

#### SUCTION KITS AND ACCESSORIES

- 184545** **Suction Tube Extension**  
Screws into fluid intake to make a drum length pump.
- 222916** **Suction Kit, Carbon Steel**  
Connect to pump fluid inlet to draw fluid from 55-gal. (200 L) drum. Includes ID 1-1/2 in. 222914 polyethylene hose, 8 ft. (2.4 m) long and 2 npt(m) outlet fitting.
- 236054** **Suction Kit, Carbon Steel**  
Use to siphon material out of a 55-gal. (200 L) closed-end drum. Includes siphon tube, bung adapter, 6 ft. (1.8 m) nitrile hose and 1-1/2 npt(m) outlet fitting.
- 238588** **Zinc Conversion Kit**  
Maximum working pressure: 3000 psi (20.7 MPa, 207 bar). Includes circulation tee at pump outlet, shutoff valve, drain hose.

#### FILTERS

##### Replacement Screen Filter Elements

3 Pack	25 Pack	
<b>238435</b>	<b>238436</b>	30 mesh (595 micron)
<b>238437</b>	<b>238438</b>	60 mesh (250 micron)
<b>238439</b>	<b>238440</b>	100 mesh (149 micron)
<b>238441</b>	<b>238442</b>	200 mesh (75 micron)

#### LIQUIDS AND LUBRICATION

##### Graco Throat Seal Liquid

<b>206995</b>	1 qt. (0.9 L)
<b>206996</b>	1 gal. (3.8 L)

#### MOUNTING OPTIONS

- 235414** **Connection Kit, King 20:1 and 28:1**  
Kit to install lower displacement pump under existing King air motor. Includes carbon steel tie rods and other connecting hardware.
- 244530** **Heavy-Duty 2-Wheel Cart**
- 244527** **Light-Duty 2-Wheel Cart**
- 206221** **Wall Mounting Bracket**
- 237782** **Adapter, Ram**  
Use to mount King 20:1 and 28:1 pumps to a ram. Includes 2 npt(m) x flange and lug kit.
- 222780** **Floor Stand**  
Use to mount King 20:1 and 28:1 pumps. Includes 222274 floor stand, ball valve and 109495 viton gasket.

# King 20:1 & 28:1

## Air-Operated Piston Pumps and Airless Packages

### Accessories (continued)

#### TOOLS

- 109507 Socket Service Tool, King 28:1**  
Use to connect or disconnect displacement rod from piston assembly. Tool fits over the top of the displacement rod, making it easier to apply a 24 in. adjustable wrench or 3/4 in. drive socket for servicing displacement rod.
- 109508 Socket Service Tool, King 20:1**  
Use to connect or disconnect displacement rod from piston assembly. Tool fits over the top of the displacement rod, making it easier to apply a 24 in. adjustable wrench or 3/4 in. drive socket for servicing displacement rod.
- 207579 Padded Pliers**  
For servicing King air motor trip rod.
- 184278 Packing Nut Wrench, King 20:1 and 28:1**  
For adjusting throat packing compression in pump.
- 168513 Alignment Tool**  
Use to ensure proper clearance and alignment for the King air manifolds.



# Premier® 34:1, 45:1 & 74:1

## Air-Operated Piston Pumps and Airless Packages

# 2

### Features and Benefits

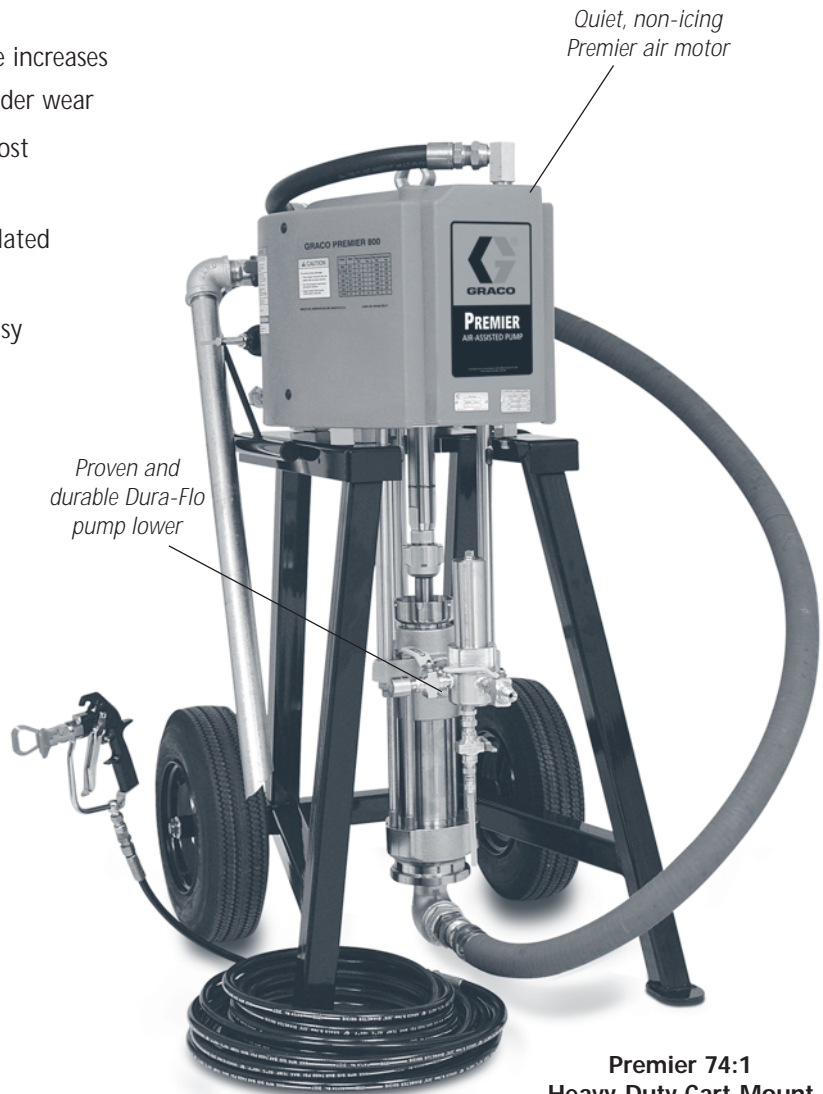
- High pressure and high fluid flow per cycle increases your production and reduces rod and cylinder wear
- SevereDuty rod and cylinder handle the most abrasive coatings
- Exclusive air valve design minimizes ice-related downtime
- Simple design makes fluid pump repairs easy

### Typical Applications

- Marine and shipbuilding
- Offshore industry
- Bridge coatings
- Structural steel and corrosion protection
- Railcar manufacturing and repair

### Typical Coatings Applied

- High viscosity coatings
- Plural component coatings
- High solids epoxy primers and coatings
- Marine coatings
- Polyurethane topcoats
- Fire retardant coatings
- Waterproofing coatings
- Waterborne coatings
- Tank and pipe linings
- Sealers



**Premier 74:1  
Heavy-Duty Cart-Mount  
Complete Package  
237158**

# Premier 34:1, 45:1 & 74:1

## Air-Operated Piston Pumps and Airless Packages

### Technical Specifications

	Premier 34:1	Premier 45:1	Premier 74:1
Fluid pressure ratio			
Maximum fluid outlet pressure	3400 psi (23.5 MPa, 235 bar)	4500 psi (31.0 MPa, 310 bar)	7400 (51.0 MPa, 510 bar)
Maximum air input pressure	100 psi (0.7 MPa, 7 bar)	100 psi (0.7 MPa, 7 bar)	100 psi (0.7 MPa, 7 bar)
Fluid flow @ 60 cpm	9.2 gpm (34.7 lpm)	6.8 gpm (25.9 lpm)	4.3 gpm (16.1 lpm)
Volume per cycle	20 oz. (578 cc)	15 oz. (431 cc)	9 oz. (269 cc)
Air consumption @ 100 psi (0.7 MPa, 7 bar) air @ 20 cpm	80 scfm, (2.26 m <sup>3</sup> /min)	80 scfm, (2.26 m <sup>3</sup> /min)	80 scfm, (2.26 m <sup>3</sup> /min)
Sound pressure level @ 100 psi (0.7 MPa, 7 bar) air @ 20 cpm	83 dBA	83 dBA	83 dBA
Air motor inlet	3/4 npsm(f)	3/4 npsm(f)	3/4 npsm(f)
Pump fluid inlet	2 npt(f)	2 npt(f)	2 npt(f)
Pump fluid outlet	1-1/2 npt(m)	1-1/2 npt(m)	1 npt(f)
Weight	240 lbs. (109 kg)	240 lbs. (109 kg)	240 lbs. (109 kg)
Instruction manual	308151 (Model 222942) 308152 (Model 222943)	308147 (Model 237555) 308148 (Model 222939)	308357



# Premier 34:1, 45:1 & 74:1

## Air-Operated Piston Pumps and Airless Packages

### Performance Charts

**PREMIER 34:1**



**PREMIER 74:1**



**PREMIER 45:1**

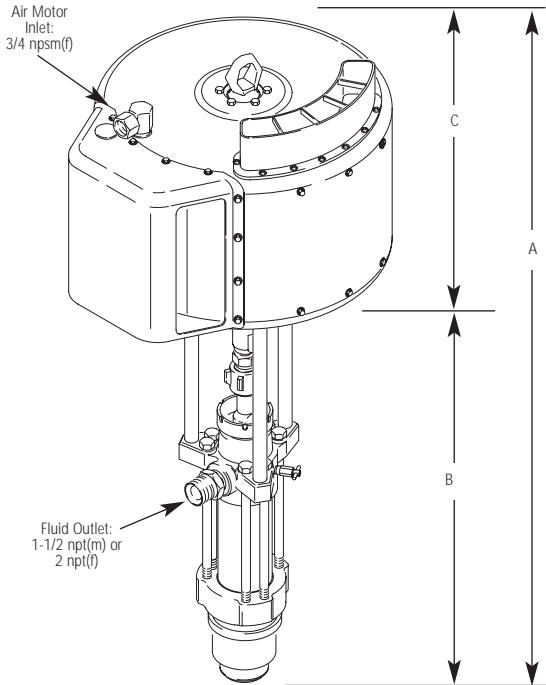


# Premier 34:1, 45:1 & 74:1

## Air-Operated Piston Pumps and Airless Packages

2

### Dimensions



Model	A	B	C
Premier 34:1 & 45:1	45.7 in. (1160 mm)	29 in. (759 mm)	15.79 in. (401 mm)
Premier 74:1	45.15 in. (1147 mm)	29.37 in. (746 mm)	15.78 in. (401 mm)

# Premier 34:1, 45:1 & 74:1

## Air-Operated Piston Pumps and Airless Packages

### Ordering Information - Premier 34:1, 45:1 & 74:1 Bare Pumps

1. Select appropriate pump ratio (34:1, 45:1 or 74:1) based on pressure and flow requirements of the application.
2. Select lower displacement pump construction (CS - carbon steel or SST - stainless steel) based on the corrosive and chemical characteristics of the fluid to be handled.
3. Select Standard length or Drum length pump, dependent on desired pump length.
4. Select pump ball construction (stainless steel, carbide or alloy steel).
5. Select right-hand or left-hand pump outlet configuration for Premier 45:1 models.
6. Order pump part number.

#### Pump part number includes motor and lower displacement pump

	Premier 34:1	Premier 34:1	Premier 34:1	Premier 34:1
Pump configuration	Standard	Drum Length	Standard	Standard
Pump part number	222942	241506	222943	241649
Air motor	222800	222800	222800	222800
Lower displacement pump	222801	222801	222803	241648
Material of construction	CS	CS	SST	SST
Ball construction	SST	SST	SST	SST
Piston seal construction	3 Ptfе/2 Leather	3 Ptfе/2 Leather	3 UHMWPE/2 Ptfе	3 UHMWPE/ 2 Tuff-Stack
Throat seal construction	3 Ptfе/2 Leather	3 Ptfе/2 Leather	3 UHMWPE/2 Ptfе	3 UHMWPE/ 2 Tuff-Stack

#### Replacement Parts Ordering Information

Air motor repair kit	222959	222959	222959	222959
Standard seal kit	222879	222879	222875	222880
Construction	3 Ptfе/2 Leather	3 Ptfе/2 Leather	3 UHMWPE/2 Ptfе	3 UHMWPE/ 2 Tuff-Stack
Optional seal kit	222877	222877	222877	222877
Construction	4 Leather/ 1 Ptfе	4 Leather/ 1 Ptfе	4 Leather/ 1 Ptfе	4 Leather/ 1 Ptfе
Optional seal kit	222876	222876	222876	222876
Construction	5 Ptfе	5 Ptfе	5 Ptfе	5 Ptfе
Optional seal kit	222878	222878	222878	222878
Construction	3 UHMWPE/2 Leather	3 UHMWPE/2 Leather	3 UHMWPE/2 Leather	3 UHMWPE/2 Leather
Optional seal kit	222875	222875	222897	222897
Construction	3 UHMWPE/2 Ptfе	3 UHMWPE/2 Ptfе	3 Ptfе/2 Leather	3 Ptfе/2 Leather
Optional seal kit	222880	222880	222880	222875
Construction	3 UHMWPE/ 2 Tuff-Stack	3 UHMWPE/ 2 Tuff-Stack	3 UHMWPE/ 2 Tuff-Stack	3 UHMWPE/ 2 Ptfе
Standard displacement rod	184002	184002	184002	184002
Construction	SST	SST	SST	SST
Optional displacement rod	687119	687119	687119	687119
Construction	Ceramic	Ceramic	Ceramic	Ceramic
Standard cylinder	184003	184003	184003	184003
Construction	SST/Chrome	SST/Chrome	SST/Chrome	SST/Chrome

# Premier 34:1, 45:1 & 74:1

## Air-Operated Piston Pumps and Airless Packages

### Ordering Information - Premier 34:1, 45:1 & 74:1 Bare Pumps (continued)

Pump part number includes motor and lower displacement pump

	Premier 45:1	Premier 45:1	Premier 45:1	Premier 45:1	Premier 74:1
Pump configuration	Standard	Standard	Drum Length	Standard	Standard
Pump part number	237555	222939	243241	241957	236932
Air motor	222800	222800	222800	222800	222800
Lower displacement pump	222796	222805	C59703	241956	236478
Material of construction	CS	SST	SST	SST	CS
Ball construction	SST	SST	Carbide	Carbide	Alloy Steel
Piston seal construction	3 Ptfе/ 2 Leather	3 UHMWPE/ 2 Ptfе	3 UHMWPE/ 2 Ptfе	3 UHMWPE/ 2 Ptfе	4 Leather/ 1 Ptfе
Throat seal construction	3 Ptfе/ 2 Leather	3 UHMWPE/ 2 Ptfе	3 UHMWPE/ 2 Ptfе	3 UHMWPE/ 2 Ptfе	4 Leather/ 1 Ptfе

#### Replacement Parts Ordering Information

Air motor repair kit	222959	222959	222959	222959	222959
Standard seal kit	222849	222845	222845	222845	237166
Construction	3 Ptfе/ 2 Leather	3 UHMWPE/ 2 Ptfе	3 UHMWPE/ 2 Ptfе	3 UHMWPE/ 2 Ptfе	4 Leather/ 1 Ptfе
Optional seal kit	222847	222847	222847	222847	237168
Construction	4 Leather/ 1 Ptfе	4 Leather/ 1 Ptfе	4 Leather/ 1 Ptfе	4 Leather/ 1 Ptfе	3 UHMWPE/ 2 Ptfе
Optional seal kit	222846	222846	222846	222846	237167
Construction	5 Ptfе	5 Ptfе	5 Ptfе	5 Ptfе	5 Ptfе
Optional seal kit	222848	222848	222848	222848	N/A
Construction	3 UHMWPE/ 2 Leather	3 UHMWPE/ 2 Leather	3 UHMWPE/ 2 Leather	3 UHMWPE/ 2 Leather	
Optional seal kit	222845	222849	222849	222849	N/A
Construction	3 UHMWPE/ 2 Ptfе	3 Ptfе/ 2 Leather	3 Ptfе/ 2 Leather	3 Ptfе/ 2 Leather	
Standard displacement rod	184276	184276	184276	687118	189317
Construction	SST	SST	SST	Ceramic	SST
Optional displacement rod	687118	687118	687118	184276	N/A
Construction	Ceramic	Ceramic	Ceramic	SST	
Standard cylinder	184461	184461	184461	184461	190221
Construction	SST	SST	SST	SST	SST

# Premier 34:1, 45:1 & 74:1

## Air-Operated Piston Pumps and Airless Packages

### Ordering Information - Premier 34:1, 45:1 & 74:1 Bare Pumps (continued)

The following lower displacement pumps are not offered in complete Premier pump assemblies. To configure a complete Premier 34:1, 45:1 or 74:1 pump with these lowers:

1. Select desired lower displacement pump, based on fluid pressure and flow requirements and seal construction.
2. Select lower pump displacement construction (CS - carbon steel or SST - stainless steel) based on the corrosive and chemical characteristics of the fluid to be handled.
3. Order Premier air motor 222800.
4. Order connection kit 235419 for Premier 34:1 and 45:1 pumps.

#### Additional Lower Displacement Pumps

Lower displacement pump	222991	222992	236226	222994
Description	Premier 34:1 Lower	Premier 34:1 Lower	Premier 34:1 Lower	Premier 34:1 Lower
Material of construction	CS	CS	SST	SST
Standard seal kit	222877	222876	222875	222876
Construction	4 Leather/1 Ptfе	5 Ptfе	3 UHMWPE/2 Ptfе	5 Ptfе
Standard displacement rod	184002	184002	184002	184002
Construction	SST	SST	SST	SST
Standard cylinder	184003	184003	184003	184003
Construction	SST	SST	SST	SST

#### Additional Lower Displacement Pumps

Lower displacement pump	236230	222993	222988	687055
Description	Premier 34:1 Lower	Premier 34:1 Lower	Premier 45:1 Lower	Premier 45:1 Lower
Material of construction	SST	SST	CS	SST
Standard seal kit	222877	222879	222846	N/A
Construction	4 Leather/1 Ptfе	3 Ptfе/2 Leather	5 Ptfе	3 UHMWPE/2 Tuff-Stack
Standard displacement rod	184002	184002	184276	184276
Construction	SST	SST	SST	SST
Standard cylinder	184003	184003	184461	184461
Construction	SST	SST	SST	SST

# Premier 34:1, 45:1 & 74:1

## Air-Operated Piston Pumps and Airless Packages

### Ordering Information - Premier 34:1, 45:1 & 74:1 Packages

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#### AIRLESS PACKAGES

PACKAGE PART NO.	PUMP LOWER	STANDARD SEAL REPAIR KIT	DISPLACEMENT ROD	SLEEVE HOUSING
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#### HEAVY-DUTY CART-MOUNT

Bare Package, No Gun or Hose

<b>45:1</b>	<b>222973</b>	222796	222849	184276	184461
<b>74:1</b>	<b>236489</b>	236478	237166	189317	190221

Complete Package with Silver Plus Gun and Hose

<b>45:1</b>	<b>238144</b>	222796	222849	184276	184461
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Complete Package with Model 510 Gun and Hose

<b>74:1</b>	<b>237158</b>	236478	237166	189317	190221
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# Premier 34:1, 45:1 & 74:1

## Air-Operated Piston Pumps and Airless Packages

### Accessories

#### GUNS AND TIPS

- 238591 Silver Plus Gun**  
Maximum working pressure: 5000 psi (34.5 MPa, 345 bar). With HD RAC tip and guard.
- 236995 Model 510 Airless Spray Gun**  
Maximum working pressure: 7400 psi (51 MPa, 510 bar).
- 237162 HD RAC Tip Retainer**  
Maximum working pressure: 7400 psi (51 MPa, 510 bar). Fits guns with 7/8 in. (22.2 mm) thread, included as part of 236995 Model 510 Gun.
- 222674 HD RAC Tip Retainer With DripLess Guard**  
Inlet: 7/8 in. (22.2 mm) thread

#### GHDXXX HD RAC Tips

#### FLUID HOSES

##### Fluid Hoses

- Maximum working pressure: 7400 psi (51 MPa, 510 bar).
- 237071** ID 1/4 in. x 50 ft. (6 mm x 15 m).  
1/4 npsm(fbe).
- 237072** ID 3/8 in. x 50 ft. (10 mm x 15 m).  
3/8 npsm(fbe)
- 237213** ID 1/2 in. x 50 ft. (13 mm x 15 m).  
1/2 npsm(fbe)
- 237070** ID Whip: 1/4 in. x 6 ft.  
(6 mm x 1.8 m). 1/4 npsm(fbe).

#### AIR HOSES

##### Grounded Buna-N Air Hose

- Maximum working pressure: 175 psi (1.2 MPa, 12 bar). Thread size: 3/4 npt(m).  
ID: 3/4 in. (19 mm).
- 208610** 6 ft. (1.8 m)
- 208611** 25 ft. (7.6 m)
- 205548** 15 ft. (4.5 m)
- 208612** 50 ft. (15.2 m)

#### AIR CONTROLS AND VALVES

- 244720 Modular Air Regulator Kit with built in Filter**
- 244841 Modular Air Line Lubricator Kit**
- 237212 Air Line Lubricator**  
Maximum working pressure: 250 psi (1.7 MPa, 17 bar). Provides automatic lubrication for the air motor. Bowl capacity: 16 oz. (0.48 L).

##### Safety Relief Valves

- Limits inlet air pressure to appropriate pump ratio maximum working pressure.
- 116643** 80 psi (0.55 MPa, 55 bar)
- 103347** 100 psi (0.69 MPa, 69 bar)
- 113488** 110 psi (0.76 MPa, 76 bar)

- 106493 Air Line Desiccant Dryer**  
Dries compressed air. Removes corrosive moisture that damages air motors.
- 245143 Pressure Bleed Valve**  
Maximum working pressure: 7400 psi (51 MPa, 510 bar).
- 245145 Pressure Bleed Valve Repair Kit**  
Includes ball, seat, retaining ring, O-ring, gasket.
- 224040 Pump Runaway Valve**  
Maximum working pressure: 120 psi (0.8 MPa, 8.3 bar). Inlet/outlet: 3/4 npt(f). Includes optional 90° 3/4 npsm swivel outlet fitting.

##### Ball Valves

- Maximum working pressure: 7400 psi (51 MPa, 510 bar). Includes heavy-duty handle.
- 237303** 1/4 npt(mbe)
- 237304** 3/8 npt(mbe)

##### 208627 Air Blow Gun

- Maximum working pressure: 150 psi (1.05 MPa, 10.5 bar). For cleaning gun tip.  
Thread size: 1/4 npt(f).

#### SUCTION KITS AND ACCESSORIES

- 222916 High Volume Suction Kits (CS)**  
ID 1-1/2 in. (3/8 mm). Connects to pump fluid intake to draw fluid from a 55-gal. (200 L) drum. Includes polyethylene tube hose, suction pipe, and fittings.
- 236054 Suction Kit**  
Use to siphon material out of 55-gal. (200 L) closed-end drum. Includes siphon tube, bung adapter, 6 ft. (1.8 m) nitrile hose and 1-1/2 npt (m) outlet fitting.
- 205306 Siphon Tube Strainer**  
Pancake-style inlet, for immersed feed. Requires 190032 adapter and 109505 bushing.
- 190032 Suction Tube Adapter**  
Strainer to 1-1/2 npt(m).
- 109505 Bushing**  
2 x 1-1/2 npt. Connects adapter to pump fluid inlet.

#### AIR MOTOR REPAIR KITS

- 222981 Trip Rod Repair Kit**  
Repair kit to service Premier trip rod.
- 222982 Detent Repair Kit**  
Repair kit to service Premier air motor.

# Premier 34:1, 45:1 & 74:1

## Air-Operated Piston Pumps and Airless Packages

### Accessories (continued)

#### ADAPTERS AND FITTINGS

##### Hose Swivels

- 214925** Maximum working pressure: 5000 psi (34.5 MPa, 345 bar).  
3/8 npt(f) x 1/4 npsm(f).
- 236987** Maximum working pressure: 7400 psi (51 MPa, 510 bar).  
1/4 npsm(m) x 1/4 npsm(f). SST.
- 189018** Maximum working pressure: 5800 psi (39.9 MPa, 399 bar).  
1/4 npsm(m) x 1/4 npsm(f).

##### 156173 Union Swivel

Maximum working pressure: 7400 psi (51 MPa, 510 bar). Use to connect 3/8 in. (9.5 mm) hoses together. 3/8 npt(f) x 3/8 npsm(f).

##### 150287 Hose Coupler

Maximum working pressure: 8000 psi (55 MPa, 550 bar). Use to connect 3/8 in. (9.5mm) hose to whip hose. 3/8 npt(f) x 1/4 npt(m).

##### 236987 Gun Swivel

Maximum working pressure: 7400 psi (51 MPa, 510 bar). 1/4 npsm(f) x 1/4 npt(m).

##### Gun Swivels (25 Pack)

Maximum working pressure: 3600 psi (25 MPa, 250 bar). 1/4 npsm(f) x 1/4 npt(m).

**239663** Leather

**223341** Ptfе

Maximum working pressure: 5000 psi (34.5 MPa, 345 bar).

**214925** Leather 1/4 npsm(f) 3/8 npt(f)

**214926** Leather 1/2 npsm(f) 3/8 npt(f)

Maximum working pressure: 5800 psi (48 MPa, 406 bar).

**239394** Swivel with Built-in Filter

##### Nipples

Use to connect hoses together.

**156971** Maximum working pressure: 7500 psi (51.7 MPa, 517 bar).  
1/4 npt x 1/4 npt(mbe).

**165198** Maximum working pressure: 10000 psi (69 MPa, 690 bar).  
1/4 npt x 3/8 npt(mbe).

**162449** Maximum working pressure: 13000 psi (90 MPa, 900 bar).  
1/4 npt x 1/2 npt(mbe).

**159239** Maximum working pressure: 14000 psi (96.5 MPa, 965 bar).  
3/8 npt x 1/2 npt(mbe).

**158491** Maximum working pressure: 7400 psi (51 MPa, 510 bar).  
1/2 npt x 1/2 npt(mbe).

##### 158683 High Pressure Elbow

Maximum working pressure: 7400 psi (51 MPa, 510 bar). 1/2 npt(m) x 1/2 npt(f).

##### 237569 Ground Wire and Clamp

Length: 25 ft. (7.6 m), 12 gauge (1.5 mm<sup>2</sup>).

#### FILTERS

##### Replacement Screen Filter Elements

3 Pack	25 Pack	
<b>238435</b>	<b>238436</b>	30 mesh (595 micron)
<b>238437</b>	<b>238438</b>	60 mesh (250 micron)
<b>238439</b>	<b>238440</b>	100 mesh (149 micron)

##### 112859 Air Line Filter, 1 npt(fbe)

Maximum working pressure: 250 psi (1.7 MPa, 17 bar).  
Filters harmful dirt and moisture from the compressed air supply.

#### LIQUIDS AND LUBRICATION

##### 222955 Anti-Seize Lubricant

##### Graco Throat Seal Liquid

**206995** 1 qt. (0.95 L)

**206996** 1 gal. (3.8 L)

#### MOUNTING OPTIONS

##### 235419 Connection Kit, Premier 34:1 and 45:1

Kit to install lower displacement pump under an existing Premier air motor. Includes tie rods and other connecting hardware.

##### 236943 Premier Portable 2-Wheel Cart

##### 222780 Floor Stand, Premier 34:1 and 45:1

Use to mount Premier 34:1 and 45:1 pumps to floor. Includes 222274 floor stand, ball valve and 109495 viton gasket.

##### 237782 Ram Adapter

Use to mount Premier 34:1, 45:1, and 74:1 pumps to a ram. Includes 2 npt(m) x flange and lug kit.

#### TOOLS

##### 109507 Socket Service Tool, Premier 34:1

Use to connect or disconnect displacement rod from piston assembly. Tool fits over the top of the displacement rod, making it easier to apply a 24 in. adjustable wrench or 3/4 in. socket for servicing the displacement rod.

##### 109508 Socket Service Tool, Premier 45:1

Use to connect or disconnect displacement rod from piston assembly. Tool fits over the top of the displacement rod, making it easier to apply a 24 in. adjustable wrench or 3/4 in. socket for servicing the displacement rod.

##### 184278 Packing Nut Wrench, Premier 34:1 and 45:1

For adjusting throat packing compression in pump.



# Viscount® II 1000, 2000, & 2600

## Hydraulic Pumps

**2**

### Features and Benefits

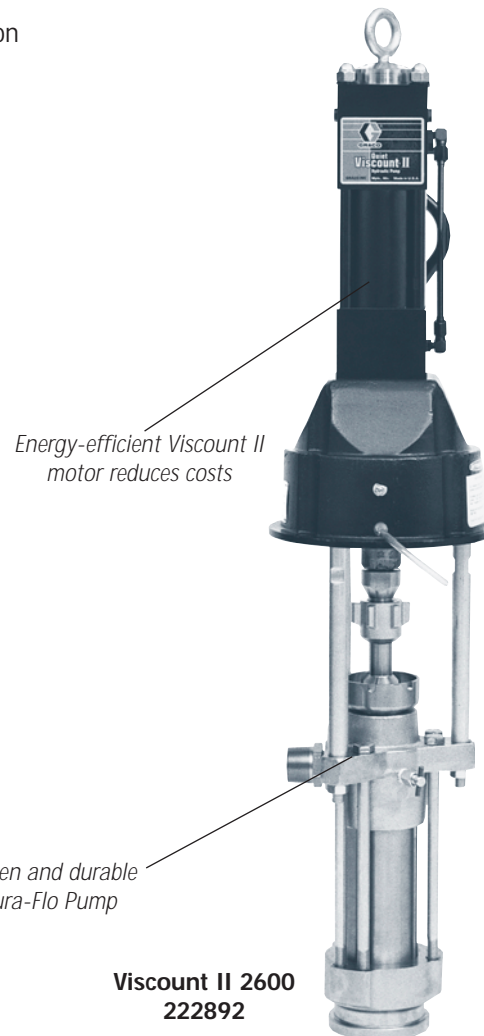
- Quiet, clean operation with no airborne contamination
- No production downtime due to ice build-up
- Long life and low maintenance costs

### Typical Applications

- Wood finishing operations
- Line striping trucks
- Lubrication trucks
- Bulk transfer

### Typical Coatings Applied

- Solventborne paints and coatings
- Waterborne paints and coatings
- Roof coatings
- Waterproofing materials
- Stains and lacquers
- Paints
- Lubricating fluids



# Viscount II 1000, 2000 & 2600

## Hydraulic Pumps

### Technical Specifications

	Viscount II 1000	Viscount II 2000	Viscount II 2600
Fluid pressure ratio	0.67:1	1.3:1	1.8:1
Maximum fluid outlet pressure	1000 psi (69 bar, 6.9 MPa)	2000 psi (138 bar, 13.8 MPa)	2600 psi (179 bar, 18 MPa)
Maximum hydraulic fluid pressure	1500 psi (104 bar, 10.4 MPa)	1500 psi (104 bar, 10.4 MPa)	1500 psi (104 bar, 10.4 MPa)
Oil flow @ 60 cpm	12 gpm (45 lpm)	12 gpm (45 lpm)	12 gpm (45 lpm)
Fluid flow @ 60 cpm	15 gpm (56.7 lpm)	9.2 gpm (34.7 lpm)	6.8 gpm (25.9 lpm)
Volume per cycle	32 oz. (945 cc)	20 oz. (578 cc)	15 oz. (431 cc)
Sound pressure level @1000 psi (69 bar, 6.9 MPa) oil @ 20 cpm	78 dBA	78 dBA	78 dBA
Hydraulic motor inlet	3/4 npt(f)	3/4 npt(f)	3/4 npt(f)
Hydraulic motor outlet	1 npt(f)	1 npt(f)	1 npt(f)
Pump fluid inlet	2 npt(f)	2 npt(f)	2 npt(f)
Pump fluid outlet	1-1/2 npt(f)	1-1/2 npt(m)	1-1/2 npt(m)
Weight	98 lbs. (44 kg)	196 lbs. (89 kg)	196 lbs. (89 kg)
Instruction manual	307160	308151 (Model 222834) 308152 (Model 222900)	308147 (Model 222892) 308148 (Model 222897)

# Viscount II 1000, 2000 & 2600 Hydraulic Pumps

## Performance Charts

VISCOUNT II 1000



VISCOUNT II 2000



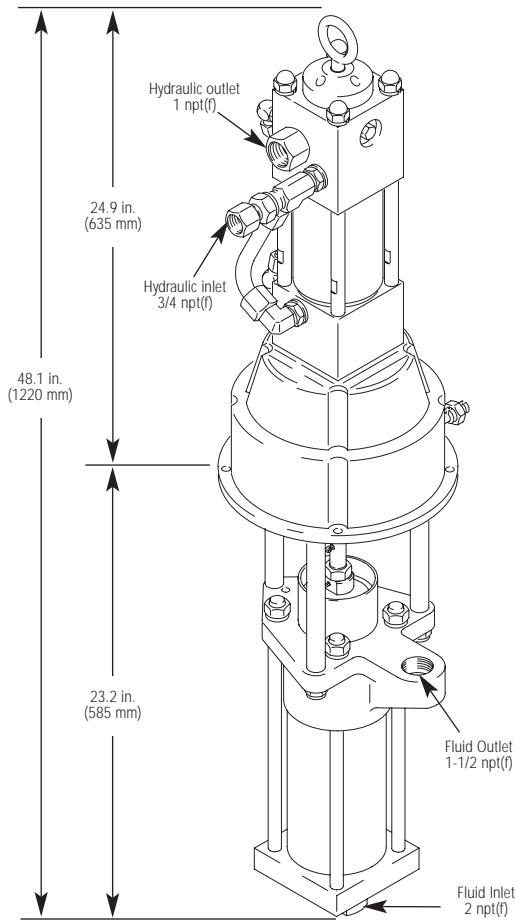
VISCOUNT II 2600



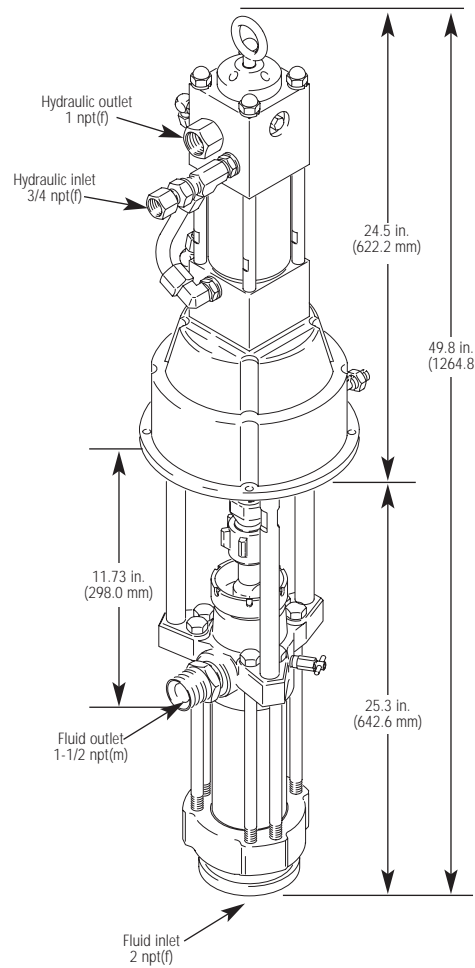
# Viscount II 1000, 2000 & 2600 Hydraulic Pumps

## Dimensions

### VISCOUNT II 1000



### VISCOUNT II 2000 & 2600



# Viscount II 1000, 2000 & 2600 Hydraulic Pumps

## Ordering Information - Viscount II 1000, 2000, 2600 Bare Pumps

1. Select appropriate hydraulic pump (Viscount II 1000, 2000 or 2600) based on pressure and flow requirements of the application.
2. Select lower pump displacement construction (CS - carbon steel or SST - stainless steel) based on the corrosive and chemical characteristics of the fluid to be handled.
3. Order pump part number.

**Pump part number includes motor and lower displacement pump**

	Viscount II 1000	Viscount II 2000	Viscount II 2000	Viscount II 2600	Viscount II 2600
<b>Pump part number</b>	<b>210313</b>	<b>222834</b>	<b>222900</b>	<b>222892</b>	<b>222897</b>
Hydraulic motor/reciprocator	235345	235345	235345	235345	235345
Lower displacement pump	210208	222801	222803	222796	222805
Construction	CS	CS	SST	CS	SST
Seal construction	4 UHMWPE/ 2 Leather	3 Ptfе/ 2 Leather	3 UHMWPE/ 2 Ptfе	3 Ptfе/ 2 Leather	3 UHMWPE/ 2 Ptfе

## Replacement Parts Ordering Information

Hydraulic motor repair kit	223654	223654	223654	223654	223654
Standard seal repair kits	223439	222879	222875	222849	222845
Construction	4 UHMWPE/ 2 Leather	3 Ptfе/ 2 Leather	3 UHMWPE/ 2 Ptfе	3 Ptfе/ 2 Leather	3 UHMWPE/ 2 Ptfе
Optional seal repair kits	224443	222876	222876	222847	222847
Construction	4 UHMWPE/ 2 Leather	5 Ptfе	5 Ptfе	4 Leather/ 1 Ptfе	4 Leather/ 1 Ptfе
Optional seal repair kits	N/A	222877	222877	222846	222846
Construction		4 Leather/ 1 Ptfе	4 Leather/ 1 Ptfе	5 Ptfе	5 Ptfе
Optional seal repair kit	N/A	222878	222878	222845	222849
Construction		3 UHMWPE/ 2 Leather	3 UHMWPE/ 2 Leather	3 UHMWPE/ 2 Ptfе	3 Ptfе/ 2 Leather
Optional seal repair kit	N/A	222875	222879	222848	222848
Construction		3 UHMWPE/ 2 Ptfе	3 Ptfе/ 2 Leather	3 UHMWPE/ 2 Leather	3 UHMWPE/ 2 Leather
Optional seal repair kit	N/A	222880	222880	N/A	N/A
Construction		3 UHMWPE/ 2 Tuff-Stack	3 UHMWPE/ 2 Tuff-Stack		
Standard displacement rod	217478	184002	184002	184276	184276
Construction	CS	SST	SST	SST	SST
Optional displacement rod	N/A	687119	687119	687118	687118
Construction		Ceramic	Ceramic	Ceramic	Ceramic
Cylinder	181269	184003	184003	184461	184461
Construction	SST	SST	SST	SST	SST

# Viscount II 1000, 2000 & 2600 Hydraulic Pumps

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## Ordering Information - Viscount II 1000, 2000, 2600 Bare Pumps (continued)

The following lower displacement pumps are not offered in complete Viscount II pump assemblies. To configure a complete Viscount II 2000 or 2600 pump with these lowers:

1. Select desired lower displacement pump, based on fluid pressure and flow requirements and seal construction.
2. Select appropriate seal construction based on the chemical characteristics of the fluid to be handled.
3. Order standard Viscount II hydraulic motor 235345.
4. Order pump connection kit 222976.

### Additional Lower Displacement Pumps

Lower displacement pump	222991	222992	241648	236226	222994
Description	Viscount II 2000 Lower	Viscount II 2000 Lower	Viscount II 2000 Lower	Viscount II 2000 Lower	Viscount II 2000 Lower
Material of construction	CS	CS	SST	SST	SST
Standard seal kit	222877	222876	222880	222875	222876
Construction	4 Leather/1 Ptfе	5 Ptfе	3 UHMWPE/2 Tuff-Stack	3 UHMWPE/2 Ptfе	Ptfе
Standard displacement rod	184002	184002	184002	184002	184002
Construction	SST	SST	SST	SST	SST
Standard cylinder	184003	184003	184003	184003	184003
Construction	SST	SST	SST	SST	SST

### Additional Lower Displacement Pumps

Lower displacement pump	236230	222993	222988	241956	687055	C59703
Description	Viscount II 2000 Lower	Viscount II 2000 Lower	Viscount II 2600 Lower	Viscount II 2600 Lower	Viscount II 2600 Lower	Viscount II 2600 Lower
Material of construction	SST	SST	CS	SST	SST	SST w/carbide balls
Standard seal kit	222877	222879	222846	222845	N/A	222845
Construction	4 Leather/ 1 Ptfе	3 Ptfе/ 2 Leather	5 Ptfе	3 UHMWPE/ 2 Ptfе	3 UHMWPE/ 2 Tuff-Stack	3 UHMWPE/ 2 Ptfе
Standard displacement rod	184002	184002	184276	687118	184276	184276
Construction	SST	SST	SST	Ceramic	SST	SST
Standard cylinder	184003	184003	184461	184461	184461	184461
Construction	SST	SST	SST	SST	SST	SST

# Viscount II 1000, 2000 & 2600 Hydraulic Pumps

## Accessories

### GUNS AND TIPS

- 238591 Silver Plus Gun**  
Maximum working pressure: 5000 psi (34.5 MPa, 345 bar). With HD RAC tip and guard.
- 237162 HD RAC Tip Retainer**  
Maximum working pressure: 7400 psi (51 MPa, 510 bar). Fits guns with 7/8 in. (22.2 mm) thread, included as part of 236995 Model 510 Gun.
- 222674 HD RAC Tip Retainer With DripLess Guard**  
Inlet: 7/8 in. (22.2 mm) thread.
- GHDxxx HD RAC Tips**

### FLUID HOSES

#### Whip Hose

Maximum working pressure: 3000 psi (20.7 MPa, 207 bar). ID 3/16 in. (5 mm). 1/4 npt(mbe).

- 214700** 2 ft. (0.6 m)  
**214701** 3 ft. (0.9 m)

#### Fluid Hose

Maximum working pressure: 3000 psi (20.7 MPa, 207 bar). ID 3/8 in. (9.52 mm). 3/8 npt(mbe).

- 214703** 25 ft. (7.62 m)  
**214705** 50 ft. (15.24 m)  
**214920** 100 ft. (30.4 m)

Maximum working pressure: 3000 psi (20.7 MPa, 207 bar). ID 1/4 in. (6.3 mm). 1/4 npsm(fbe).

- 223540** 25 ft. (7.62 m)  
**223541** 50 ft. (15.24 m)

### HYDRAULIC HOSES

#### Hydraulic Supply Line Hose

Maximum working pressure: 2000 psi (14.0 MPa, 140 bar). ID 1/2 in. Coupled: 1/2 npt(m) x 3/4-16 SAE 37° flare(f), 90° swivel elbow, grounded.

- 180090** 3 ft. (0.9 m)  
**180093** 6 ft. (1.8 m)

#### Hydraulic Return Line Hose

Maximum working pressure: 1500 psi (10.5 MPa, 105 bar). ID 5/8 in. Coupled: 3/4 npt(m) x 7/8-14 SAE 37° flare(f), 90° swivel elbow, grounded.

- 180091** 3 ft. (0.9 m)  
**180092** 6 ft. (1.8 m)

### CONTROLS AND VALVES

- 102644 Shut-Off Valve**  
For hydraulic supply or return line. 3/4 npt(f).
- 102646 Shut-Off Valve**  
For hydraulic supply or return line. 1 npt(f).

#### Fluid Drain Valve (Carbon Steel)

Maximum working pressure: 5000 psi (34.5 MPa, 345 bar). Open to relieve fluid pressure in hose and gun/valve.

- 210657** 1/4 npt(mbe)  
**210658** 3/8 npt(mbe)  
**210659** 1/4 npt x 3/8 npt(mbe)

### ADAPTERS AND FITTINGS

#### Hose Swivel

- 214925** Maximum working pressure: 5000 psi (34.5 MPa, 345 bar). 3/8 npt(f) x 1/4 npsm(f).
- 236987** Maximum working pressure: 7400 psi (51 MPa, 510 bar). 1/4 npsm(m) x 1/4 npsm(f).
- 189018** Maximum working pressure: 5800 psi (39.9 MPa, 399 bar). 1/4 npsm(m) x 1/4 npsm(f).

#### 156173 Union Swivel

Maximum working pressure: 7400 psi (51 MPa, 510 bar). Use to connect 3/8 in. (9.5 mm) hoses together. 3/8 npt(f) x 3/8 npsm(f).

#### 150287 Hose Coupler

Maximum working pressure: 8000 psi (55 MPa, 550 bar). Use to connect 3/8 in. (9.5 mm) hose to whip hose. 3/8 npt(f) x 1/4 npt(m).

#### Gun Swivels (25 Pack)

Maximum working pressure: 3600 psi (25 MPa, 250 bar). 1/4 npsm(f) x 1/4 npt(m).

- 239663** Leather  
**223341** Ptfе

Maximum working pressure: 5000 psi (34.5 MPa, 345 bar).

- 214925** Leather 1/4 npsm(f) 3/8 npt(f)  
**214926** Leather 1/2 npsm(f) 3/8 npt(f)

Maximum working pressure: 5800 psi (48 MPa, 406 bar).

- 239394** Swivel with Built-in Filter

# Viscount II 1000, 2000 & 2600 Hydraulic Pumps

## Accessories (continued)

### Nipples

Use to connect hoses together.

<b>156971</b>	Maximum working pressure: 7500 psi (51.7 MPa, 517 bar). 1/4 npt x 1/4 npt(mbe).
<b>165198</b>	Maximum working pressure: 10000 psi (69 MPa, 690 bar). 1/4 npt x 3/8 npt(mbe).
<b>162449</b>	Maximum working pressure: 7400 psi (51 MPa, 510 bar). 1/4 npt x 1/2 npt(mbe).
<b>159239</b>	Maximum working pressure: 7400 psi (51 MPa, 510 bar). 3/8 npt x 1/2 npt(mbe).
<b>158491</b>	Maximum working pressure: 7400 psi (51 MPa, 510 bar). 1/2 npt x 1/2 npt(mbe).

**184470 Fluid Outlet Reducer Fitting (CS)**  
Allows connection of 3/4 npt(f) hose 3/4 npt(m) x M42 x 2.0.

**237569 Grounding Wire**  
Length: 25 ft. (7.6 mm), 12 gauge (1.5 mm<sup>2</sup>).

### SUCTION KITS AND ACCESSORIES

#### Hydraulic Agitator and Drum Cover

**214906** Drum size: 55-gal. (200 L)

**184545 Suction Tube Extension**  
Screws into fluid intake to make a drum length pump.

**222916 Suction Kit, Carbon Steel**  
Connect to pump fluid inlet to draw fluid from 55-gal. (200 L) drum. Includes ID 1-1/2 in. 222914 polyethylene hose, 8 ft. (2.4 m) length and 2 npt(m) outlet fitting.

**236054 Siphon Kit, Carbon Steel**  
Use to siphon material out of 55-gal. (200 L) drum. Includes ID 3/8 in. 109105 nylon suction hose, 6 ft. (1.8 m) long, 1-1/2 npt(m) outlet fitting.

**208920 Siphon Kit, Aluminum**  
Use to siphon fluid from a 5-gal. (18.9 L) pail. Includes ID 1 in. 170706 nylon suction hose, 4 ft. (1.2 m) long, 3/4 npt(f) swivel outlet fitting.

**207484 Siphon Kit, Aluminum**  
Use to siphon fluid from a 5-gal. (18.9 L) pail. Includes ID 3/4 in. 214960 nylon suction hose, 3.5 ft. (1.1 m) long, 3/4 npt(f) swivel outlet fitting.

**208259 Siphon Kit, Carbon Steel**  
Use to siphon fluid from a 55-gal. (200 L) drum. Includes 214961 ID 3/4 in. nylon suction hose, 6 ft. (1.8 m) long, 3/4 npt(f) swivel outlet fitting and bung adapter.

### FILTERS

#### Replacement Screen Filter Elements

3 Pack	25 Pack	
<b>238435</b>	<b>238436</b>	30 mesh (595 micron)
<b>238437</b>	<b>238438</b>	60 mesh (250 micron)
<b>238439</b>	<b>238440</b>	100 mesh (149 micron)
<b>238441</b>	<b>238442</b>	200 mesh (75 micron)

#### Red Alert Filters

Built-in bypass with pop-up indicator.

<b>207994</b>	with 30 mesh (595 micron) element
<b>207995</b>	with 60 mesh (250 micron) element
<b>207996</b>	with 100 mesh (149 micron) element
<b>207997</b>	with 150 mesh element
<b>207998</b>	with 200 mesh (75 micron) element

#### 238620 Fluid Filter (Carbon Steel)

Maximum working pressure: 5000 psi (34.5 MPa, 345 bar). SST screen: 60 mesh (250 micron).  
Outlets: 3/4 npt(f). Inlet: 3/8 npt(f) and 1/2 npt(f).  
Includes 210658 drain valve.

### LIQUIDS AND LUBRICATION

#### Graco Throat Seal Liquid

<b>206995</b>	1 qt. (0.9 L)
<b>206996</b>	1 gal. (3.8 L)

#### Graco-Approved Hydraulic Fluid

<b>169236</b>	5 gal. (20 L)
<b>207428</b>	1 gal. (3.8 L)

#### 222955 Anti-Seize Lubricant

Prevents parts from seizing, making disassembly easier.  
Can size: 16 oz. (454 g).

### MOUNTING OPTIONS

#### 222976 Connection Kit, Viscount II 2000 and 2600

Kit to install lower displacement pump under existing Viscount II motor. Includes carbon steel tie rods and other connecting hardware.

#### 244849 Xtreme Connection Kit

Kit to install Xtreme pump lower under existing Viscount II motors. Includes tie rods, rod adapter and quick disconnect coupler.

#### 244530 Heavy-Duty 2-Wheel Cart

#### 244527 Lightweight 2-Wheel Cart

#### 222780 Floor Stand

Use to mount Viscount II 2000 and 2600 pumps to floor. Includes 222274 floor stand, ball valve and 109495 Viton gasket.

#### 206221 Wall Mounting Bracket

#### 237782 Adapter, Ram

Use to mount Viscount II 2000 and 2600 pumps to a ram. Includes 2 npt(m) x flange and lug kit.



# Viscount II 1000, 2000 & 2600 Hydraulic Pumps

## Accessories (continued)

### TOOLS

- 109507 Socket Service Tool, Viscount II 2600**  
Use to connect or disconnect displacement rod from piston assembly. Tool fits over the top of the displacement rod, making it easier to apply a 24 in. adjustable wrench or 3/4 in. drive socket for servicing displacement rod.
- 109508 Socket Service Tool, Viscount II 2000**  
Use to connect or disconnect displacement rod from piston assembly. Tool fits over the top of the displacement rod, making it easier to apply a 24 in. adjustable wrench or 3/4 in. drive socket for servicing displacement rod.
- 184278 Packing Nut Wrench, Viscount II 2000 and 2600**  
For adjusting throat packing compression in pump.

# Viscount® II 4500 & 5000

## Hydraulic Piston Pumps

2

### Features and Benefits

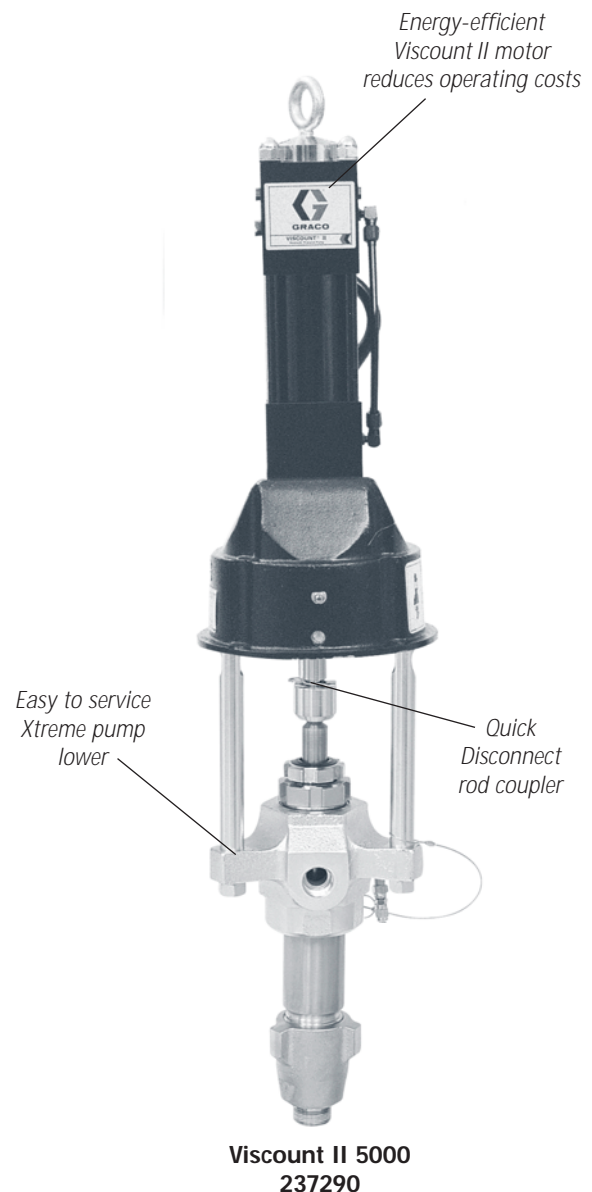
- PlasmaCoat rods and XtremeSeal packings more than double the life of the pump
- Finish routine maintenance and repairs in half the time of comparable pump lowers
- No production downtime due to ice build-up
- Clean, quiet and efficient hydraulic power, up to three times more energy-efficient than comparable compressed air systems

### Typical Applications

- Factory operations with limited compressed air supplies

### Typical Coatings Applied

- Solventborne paints and coatings
- Waterborne paints and coatings
- Polyurethane top coats
- Epoxy primers



# Viscount II 4500 & 5000

## Hydraulic Piston Pumps

### Technical Specifications

	Viscount II 4500	Viscount II 5000
Maximum fluid working pressure	4500 psi (31 MPa, 310 bar)	5000 psi (34.5 MPa, 345 bar)
Maximum hydraulic input pressure	1500 psi (10.3 MPa, 103 bar)	1428 psi (9.9 MPa, 99 bar)
Fluid flow @ 60 cpm	4.0 gpm (15 lpm)	3.4 gpm (12.9 lpm)
Oil Flow @ 60 cpm	12 gpm (45 lpm)	12 gpm (45 lpm)
Hydraulic motor piston effective area	4.9 in. <sup>2</sup> (316 mm <sup>2</sup> )	4.9 in. <sup>2</sup> (316 mm <sup>2</sup> )
Stroke length	4.75 in. (120 mm)	4.75 in. (120 mm)
Displacement pump effective area	1.62 in. <sup>2</sup> (10.45 mm <sup>2</sup> )	1.4 in. <sup>2</sup> (90 mm <sup>2</sup> )
Maximum pump operating temperature	180° F (82° C)	180° F (82° C)
Noise level @ 25 cpm	88 dBA	88 dBA
Sound power level @ 25 cpm	103 dBA	103 dBA
Hydraulic oil inlet	3/4 npt(f)	3/4 npt(f)
Fluid inlet	1-1/4 npt(f)	1-1/4 npt(f)
Fluid outlet	1 npt(f)	1 npt(f)
Instruction manual	309340 Pump & Lower 307158 Hydraulic motor 235345	309340 Pump & Lower 307158 Hydraulic motor 235345

### Performance Charts

VISCOUNT II 4500

VISCOUNT II 5000

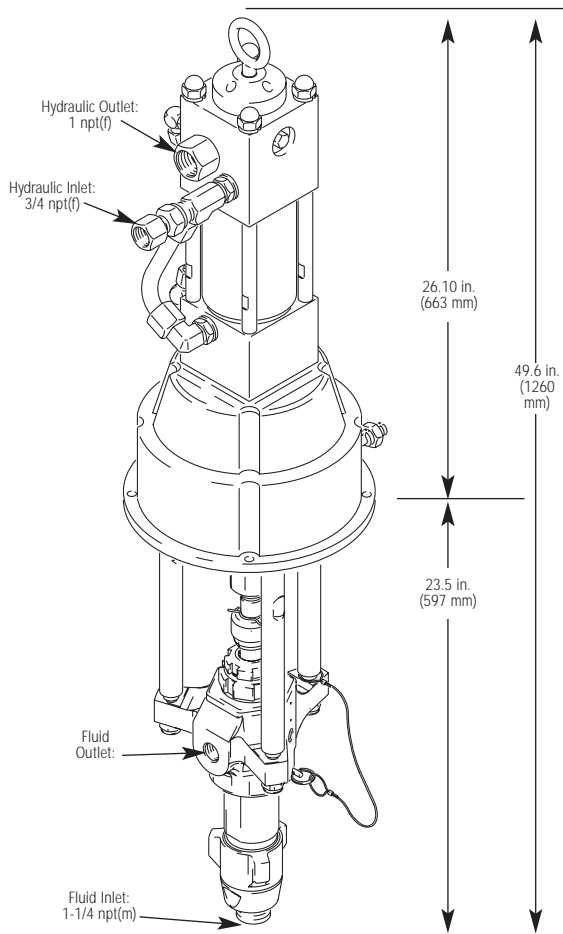


# Viscount II 4500 & 5000 Hydraulic Piston Pumps

## Dimensions

### VISCOUNT II 4500 & 5000

2



# Viscount II 4500 & 5000

## Hydraulic Pumps

### Ordering Information - Viscount II 4500 & 5000

Pump part number includes motor and lower displacement pump

	Viscount II 4500	Viscount II 5000
Pump part number	245180	245168
Hydraulic motor/reciprocator	235345	235345
Lower displacement pump	244416	244414
Construction	CS	CS
Fluid filter configuration	No Filter	No Filter
Piston seal construction	3 XtremeSeal/2 Leather	3 XtremeSeal/2 Leather
Throat seal construction	3 XtremeSeal/2 Leather	3 XtremeSeal/2 Leather

#### Replacement Parts Ordering Information

Hydraulic motor repair kit	223654	223654
Standard seal kit	244853	244852
Construction	3 XtremeSeal/2 Leather	3 XtremeSeal/2 Leather
Optional seal kit	244903	244902
Construction	5 Tuff-Stack	5 Tuff-Stack
Optional piston seal packings	245231	244866
Construction	XtremeSeal	XtremeSeal
Optional piston seal packings	245230	244872
Construction	Leather	Leather
Optional piston seal packings	245229	244860
Construction	Tuff-Stack	Tuff-Stack
Optional throat seal packings	245231	244865
Construction	XtremeSeal	XtremeSeal
Optional throat seal packings	245230	244871
Construction	Leather	Leather
Optional throat seal packings	245229	244859
Construction	Tuff-Stack	Tuff-Stack
Standard displacement rod	197323	197322
Construction	SST/PlasmaCoat	SST/PlasmaCoat
Optional displacement rod	198417	198416
Construction	SST/Chrome	SST/Chrome
Standard cylinder	197318	197317
Construction	SST/Chrome	SST/Chrome

Note: Optional throat and piston seal packings sold as 10-count convenience pack.  
Note: XtremeSeal is a proprietary Ptfе-filled UHMWPE blend.

Note: Tuff-Stack is a proprietary Ptfе blend.  
Note: PlasmaCoat is a proprietary case-hardening process.

# Viscount II 4500 & 5000

## Hydraulic Pumps

### Ordering Information - Viscount II 4500 & 5000 (continued)

The following lower displacement pumps are not offered in complete Viscount II pump assemblies. To configure a complete Viscount II 4500 or 5000 pump with these lowers:

1. Select lower displacement pump construction (carbon steel or stainless steel) based on the corrosive and chemical characteristics of the fluid to be handled.
2. For carbon steel Xtreme lowers, select desired fluid filter configuration (built-in-filter integrated in outlet housing or no fluid filter, standard outlet housing).
3. Select appropriate seal construction based on the chemical characteristics of the fluid to be handled.
4. Order Standard Viscount II hydraulic motor/reciprocator 235345.
5. For Viscount II Xtreme carbon steel pumps, order connection kit 244849. For Viscount II Dura-Flo stainless steel pump, order adapter 190287, coupling collars 184129 (qty 2), coupling nut 186925, carbon steel tie rods 184596 (qty 3) and hexnuts 106166 (qty 3).

#### Additional Lower Displacement Pumps

Lower displacement pump	244422	244415	236897	236470	244423	244417
Description	220cc Lower Viscount II 5000 Xtreme	220cc Lower Viscount II 5000 Xtreme	220cc Lower Viscount II 5000 Dura-Flo	220cc Lower Viscount II 5000 Dura-Flo	250cc Lower Viscount II 4500 Xtreme	250cc Lower Viscount II 4500 Xtreme
Fluid filter configuration	No Filter	Built-In-Filter	No Filter	No Filter	No Filter	Built-In Filter
Material of construction	CS	CS	SST	SST	CS	CS
Standard seal kit	244902	244852	237173	237172	244903	244853
Construction	5 Tuff-Stack	3 XtremeSeal/ 2 Leather	5 Ptfе	3 Leather/ 2 Ptfе	5 Tuff-Stack	3 XtremeSeal/ 2 Leather
Standard displacement rod	197322	197322	189316	189316	197323	197323
Construction	SST/PlasmaCoat	SST/PlasmaCoat	SST/Chrome	SST/Chrome	SST/PlasmaCoat	SST/PlasmaCoat
Standard cylinder	197317	197317	189383	189383	197318	197318
Construction	SST/Chrome	SST/Chrome	SST/Chrome	SST/Chrome	SST/Chrome	SST/Chrome

#### Additional Lower Displacement Pumps

Lower displacement pumps	244410	244411	244412	244413	244418	244419
Description	145cc Lower Xtreme	145cc Lower Xtreme	180cc Lower Xtreme	180cc Lower Xtreme	290cc Lower Xtreme	290cc Lower Xtreme
Fluid filter configuration	No Filter	Built-In-Filter	No Filter	Built-In-Filter	No Filter	Built-In Filter
Material of construction	CS	CS	CS	CS	CS	CS
Standard seal kit	244850	244850	244851	244851	244854	244854
Construction	3 XtremeSeal/ 2 Leather	3 XtremeSeal/ 2 Leather	3 XtremeSeal/ 2 Leather	3 XtremeSeal/ 2 Leather	3 Xtreme Seal/ 2 Leather	3 Xtreme Seal/ 2 Leather
Standard displacement rod	197320	197320	197321	197321	197324	197324
Construction	SST/PlasmaCoat	SST/PlasmaCoat	SST/PlasmaCoat	SST/PlasmaCoat	SST/PlasmaCoat	SST/PlasmaCoat
Standard cylinder	197315	197315	197316	197316	197319	197319
Construction	SST/Chrome	SST/Chrome	SST/Chrome	SST/Chrome	SST/Chrome	SST/Chrome

# Viscount II 4500 & 5000 Hydraulic Pump

## Accessories

### GUNS AND TIPS

- 238591 Silver Plus Gun**  
Maximum working pressure: 5000 psi (34.5 MPa, 345 bar). With HD RAC tip and guard.
- 236995 Model 510 Airless Spray Gun**  
Maximum working pressure: 7400 psi (51 MPa, 510 bar). Includes 237162 HD RAC tip retainer and GHD527 tip.
- 243577 Alpha Plus RAC Hi-Flow AA Spray Gun**  
Maximum working pressure: 4000 psi (27.6 MPa, 276 bar). With hi-flow fluid needle, diffuser seat and AA Reverse-A-Clean assembly.
- 237162 HD RAC Tip Retainer**  
Maximum working pressure: 7400 psi (51 MPa, 510 bar). Fits guns with 7/8 in. (22.2 mm) thread.
- 222674 HD RAC Tip Retainer With DripLess Guard**  
Inlet: 7/8 in. (22.2 mm) thread.
- GHDxxx HD RAC Tips**

### FLUID HOSES

#### Whip Hose

Maximum working pressure: 5000 psi (34.5 MPa, 345 bar). ID 1/4 in. (6.3 mm). 1/4 npsm(fbe).

- 214912** 3 ft. (1.8 m)  
**214913** 6 ft. (1.8 m)

#### Fluid Hose

Maximum working pressure: 5000 psi (34.5 MPa, 345 bar). ID 3/8 in. (9.5 mm ID). 3/8 npt(m) x 3/8 npt(f).

- 238395** 24.6 ft. (7.5 m)  
**238396** 49.2 ft. (15 m)  
**238397** 98.4 ft. (30 m)

Maximum working pressure: 5000 psi (34.5 MPa, 345 bar). ID 1/2 in. (12.7 mm ID). 1/2 npt(fbe).

- 238716** 24.6 ft. (7.5 m)  
**238717** 49.2 ft. (15 m)  
**238718** 98.4 ft. (30 m)

### HYDRAULIC HOSES

#### Hydraulic Supply Line Hose

Maximum working pressure: 2000 psi (14.0 MPa, 140 bar). ID 1/2 in. Coupled: 1/2 npt(m) x 3/4-16 SAE 37° flare(f), 90° swivel elbow, grounded.

- 180090** 3 ft. (0.9 m)  
**180093** 6 ft. (1.8 m)

#### Hydraulic Return Line Hose

Maximum working pressure: 1500 psi (10.5 MPa, 105 bar). ID: 5/8 in. Coupled: 3/4 npt(m) x 7/8-14 SAE 37° flare(f), 90° swivel elbow, grounded.

- 180091** 3 ft. (0.9 m)  
**180092** 6 ft. (1.8 m)

### CONTROLS AND VALVES

- 102644 Shut-Off Valve**  
For hydraulic supply or return line. 3/4 npt(f).
- 102646 Shut-Off Valve**  
For hydraulic supply or return line. 1 npt(f).
- Fluid Drain Valve (Carbon Steel)**  
Maximum working pressure: 5000 psi (34.5 MPa, 345 bar). Open to relieve fluid pressure in hose and gun/valve.
- 210657** 1/4 npt(mbe)  
**210658** 3/8 npt(mbe)  
**210659** 1/4 npt x 3/8 npt(mbe)

### ADAPTERS AND FITTINGS

#### Hose Swivel

- 214925** Maximum working pressure: 5000 psi (34.5 MPa, 345 bar). 3/8 npt(f) x 1/4 npsm(f).
- 236987** Maximum working pressure: 7400 psi (51 MPa, 510 bar). 1/4 npsm(m) x 1/4 npsm(f).
- 189018** Maximum working pressure: 5800 psi (39.9 MPa, 399 bar). 1/4 npsm(m) x 1/4 npsm(f).

#### 156173 Union Swivel

Maximum working pressure: 7400 psi (51 MPa, 510 bar). Use to connect 3/8 in. (9.5 mm) hoses together. 3/8 npt(f) x 3/8 npsm(f).

#### 150287 Hose Coupler

Maximum working pressure: 8000 psi (55 MPa, 550 bar). Use to connect 3/8 in. (9.5 mm) hose to whip hose. 3/8 npt(f) x 1/4 npt(m).

#### Gun Swivels (25 Pack)

Maximum working pressure: 3600 psi (25 MPa, 250 bar). 1/4 npsm(f) x 1/4 npt(m).

- 239663** Leather  
**233410** Ptfе

Maximum working pressure: 5000 psi (34.5 MPa, 345 bar). 1/2 npsm(f) x 3/8 npt(f).

- 214925** Leather  
**214926** Leather

Maximum working pressure: 5800 psi (48 MPa, 406 bar).

- 239394** Swivel with Built-in Filter

# Viscount II 4500 & 5000 Hydraulic Pump

## Accessories (continued)

### Nipples

Use to connect hoses together.

- 156971** Maximum working pressure: 7500 psi (51.7 MPa, 517 bar).  
1/4 npt x 1/4 npt(mbe).
- 165198** Maximum working pressure: 10000 psi (69 MPa, 690 bar).  
1/4 npt x 3/8 npt(mbe).
- 162449** Maximum working pressure: 7400 psi (51 MPa, 510 bar).  
1/4 npt x 1/2 npt(mbe).
- 159239** Maximum working pressure: 7400 psi (51 MPa, 510 bar).  
3/8 npt x 1/2 npt(mbe).
- 158491** Maximum working pressure: 7400 psi (51 MPa, 510 bar).  
1/2 npt x 1/2 npt(mbe).

- 184470 Fluid Outlet Reducer Fitting (CS)**  
Allows connection of 3/4 npt(f) hose.  
3/4 npt(m) x M42 x 2.0.

- 237569 Grounding Wire**  
Length: 25 ft. (7.6 mm), 12 gauge (1.5 mm<sup>2</sup>)

### SUCTION KITS AND ACCESSORIES

- 238588 Zinc Conversion Kit**  
Maximum working pressure: 3000 psi (20.7 MPa, 207 bar). Includes circulation tee at pump outlet, shutoff valve, drain hose.
- 245176 Suction Kit, Xtreme**  
Includes 244516 suction hose, 116402 Quick-Disconnect fitting, 116401 elbow, and 197682 suction tube.
- 245136 55-Gal. (200 L) Suction Tube Extension, Xtreme**  
Includes 195151 intake tube and 114967 coupling to extend standard suction tube to bottom of 55-gal. (200 L) drum. Connects to suction tube 197682.

### Suction Tube Filter/Strainers

Fit 197682 suction tube and 245136 suction tube extension.

- 181072** Round strainer  
**191635** Tube strainer

- 208920 Siphon Kit, Aluminum**  
Use to siphon fluid from a 5-gal. (18.9 L) pail. Includes ID 1 in. 170706 nylon suction hose, 4 ft. (1.2 m) long, 3/4 npt(f) swivel outlet fitting.
- 207484 Siphon Kit, Aluminum**  
Use to siphon fluid from a 5-gal. (18.9 L) pail. Includes ID 3/4 in. 214960 nylon suction hose, 3.5 ft. (1.1 m) long, 3/4 npt(f) swivel outlet fitting.

- 208259 Siphon Kit, Carbon Steel**  
Use to siphon fluid from a 55-gal. (200 L) drum. Includes ID 3/4 in. 214961 nylon suction hose, 6 ft. (1.8 m) long, 3/4 npt(f) swivel outlet fitting and bung adapter.
- 236054 Siphon Kit, Carbon Steel**  
Use to siphon material out of 55-gal. (200 L) drum. Includes ID 1/2 in. 109105 nylon suction hose, 6 ft. (1.8 m) long, 1-1/2 npt(m) outlet fitting.
- 184545 Suction Tube Extension**  
Screws into fluid intake to make a drum length pump for Viscount pumps.
- 222916 Suction Kit, Carbon Steel**  
Connect to pump fluid inlet to draw fluid from 55-gal. (200 L) drum. Includes ID 1-1/2 in. 222914 polyethylene hose, 8 ft. (2.4 m) long and 2 npt(m) outlet fitting.

### Hydraulic Agitator and Drum Cover

- 214906** Drum size: 55 gal. (200 L).

### FILTERS

#### Replacement Screen Filter Elements

3 Pack	25 Pack	
<b>238435</b>	<b>238436</b>	30 mesh (595 micron)
<b>238437</b>	<b>238438</b>	60 mesh (250 micron)
<b>238439</b>	<b>238440</b>	100 mesh (149 micron)
<b>238441</b>	<b>238442</b>	200 mesh (75 micron)

#### Red Alert Filters

- Built-in bypass with pop-up indicator
- 207994** with 30 mesh (595 micron) element  
**207995** with 60 mesh (250 micron) element  
**207996** with 100 mesh (149 micron) element  
**207997** with 150 mesh element  
**207998** with 200 mesh (75 micron) element

#### 238620 Fluid Filter (Carbon Steel)

Maximum working pressure: 5000 psi (34.5 MPa, 345 bar). SST screen: 60 mesh (250 micron). Outlets 3/4 npt(f). Inlets: 3/8 npt(f) and 1/2 npt(f). Includes 210658 drain valve. To mount directly to pump fluid outlet, use 184470 3/4 npt fitting.

### LIQUIDS AND LUBRICATION

#### Graco Throat Seal Liquid

- 206995** 1 qt. (0.9 L)  
**206996** 1 gal. (3.8 L)

#### Graco-Approved Hydraulic Fluid

- 169236** 5 gal. (20 L)  
**207428** 1 gal. (3.8 L)

#### 222955 Anti-Seize Lubricant

Prevents parts from seizing, making disassembly easier. Can size: 16 oz. (454 g).



# Viscount II 4500 & 5000 Hydraulic Pump

## Accessories (continued)

### MOUNTING OPTIONS

- 244849 Xtreme Connection Kit**  
Kit to install Xtreme pump lower under existing Viscount II motors. Includes tie rods, rod adapter and quick disconnect coupler.
- 244530 Heavy-Duty 2-Wheel Cart**
- 244527 Lightweight 2-Wheel Cart**
- 206221 Wall Mounting Bracket**
- 245132 Floor Stand Kit, Xtreme**  
Use to mount King pumps 245119, 244470, 245138, 245120, 244476, 244477, 245121, 244485, 244486, 245122, 244494, and 244495. Includes 222274 floor stand, 198347 intake adapter and ball valve.
- 245131 Ram Adapter, Xtreme**  
Use to mount King pumps 245119, 244470, 245138, 245120, 244476, 244477, 245121, 244485, 244486, 245122, 244494, and 244495 to a ram. Includes 1-1/2 npt(f) x flange and lug kit.

### TOOLS

- 112887 Packing Nut Wrench**  
For adjusting throat packing compression in pump.

### PUMP LOWER REPAIR PARTS AND ACCESSORIES

#### Inlet Ball Spring Load Kit

- 245190** King 80:1 & 68:1  
**245191** King 45:1 & 56:1

#### Tuff-Stack Alternate Seal Repair Kit

- 244900** 145cc Lower  
**244901** 180cc Lower  
**244902** 220cc Lower  
**244903** 250cc Lower  
**244904** 290cc Lower

#### Hard Chrome-Over-Stainless Steel Displacement Rods

- 198414** 145cc Lower  
**198415** 180cc Lower  
**198416** 220cc Lower  
**198417** 250cc Lower  
**198418** 290cc Lower

#### 245127 Carbide Piston Ball Set (Qty 3)

Use as replacement piston ball for Bulldog 33:1 and 41:1 pumps with exceptionally abrasive coatings.

# Hydra-Clean®

## Air-Operated Pressure Washers

2

### Features and Benefits

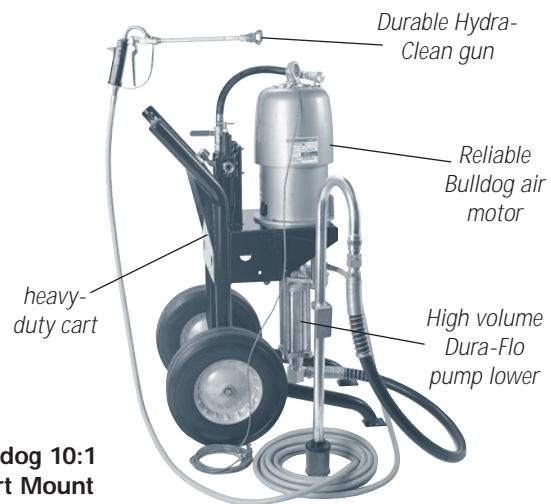
- Supply packages include everything you need for use with open-head universal drums
- Available with an accumulator and chemical injector
- Configurations available to fit most pressure, flow, and material requirements
- Supports multiple guns
- Use with cold or hot water up to 200°F (93°C)

### Typical Applications

- Vehicle fleets, buses, transit systems
- Heavy construction equipment, off-highway vehicles
- General industrial equipment
- Building exteriors
- Sanitizing
- Public Works facilities and equipment
- Farm maintenance
- Marinas

### Typical Coatings Applied

- Water
- Detergent solutions
- Chemical solutions



# Hydra-Clean Packages

## Air-Operated Pressure Washers

### Technical Specifications

Pump Package	Max. Working Pressure psi (MPa, bar)	Max. Air Input Pressure psi (MPa, bar)	Fluid Flow at 60 cpm gpm (lpm)	Vol. per Cycle oz (cc)	Air Inlet Size	Fluid Inlet Size	Fluid Outlet Size	Package Instruction Manual
President 10:1	1000 (7, 69)	100 (0.7, 7)	3 gpm (11.4)	6.4 (189)	1/2 npt(f)	3/4 npt(f)	1/2 npt(f)	306817
Bulldog 10:1	1000 (7, 69)	100 (0.7, 7)	8 (29)	17 (505)	3/4 npsm(f)	2 npt(f)	1-1/2 npt(m)	306926 308509
Premier 34:1	3400 (23, 230)	100 (0.7, 7)	9.2 (34.8)	19.6 (580)	3/4 npsm(f)	2 npt(f)	1-1/2 npt(m)	-

# Hydra-Clean Packages

## Air-Operated Pressure Washers

2

### Performance Charts

PRESIDENT 10:1

PREMIER 34:1



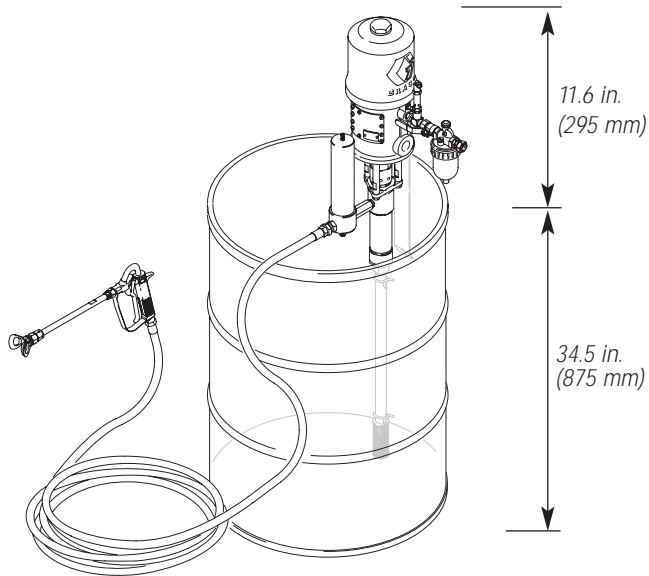
BULLDOG 10:1



# Hydra-Clean Packages

## Air-Operated Pressure Washers

### System Dimensions



#### 206515 President 10:1 Open Drum Mount

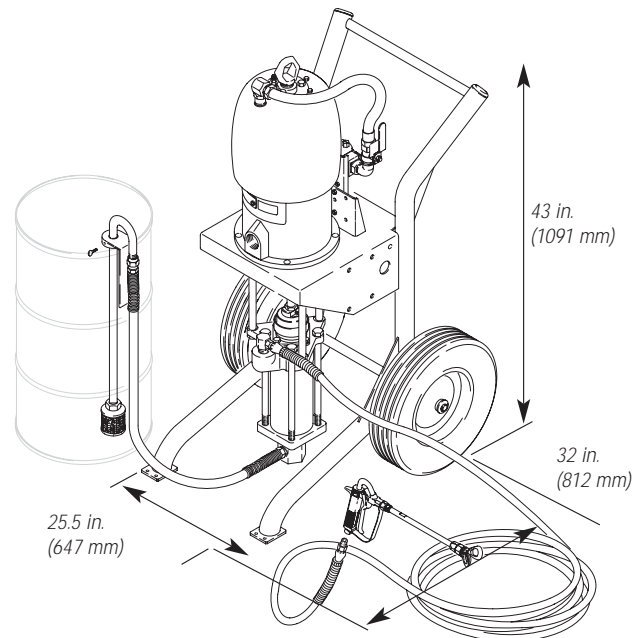
##### Includes:

- Air line lubricator
- Fluid intake filter
- Hydra-Clean gun and hose
- Fluid accumulator
- Pump mounting bracket
- Suction hose

#### 226314 Bulldog 10:1 Heavy-Duty Cart Mount

##### Includes:

- Air filter/regulator/lubricator
- Fluid intake filter
- Hydra-Clean gun and hose
- Suction hose

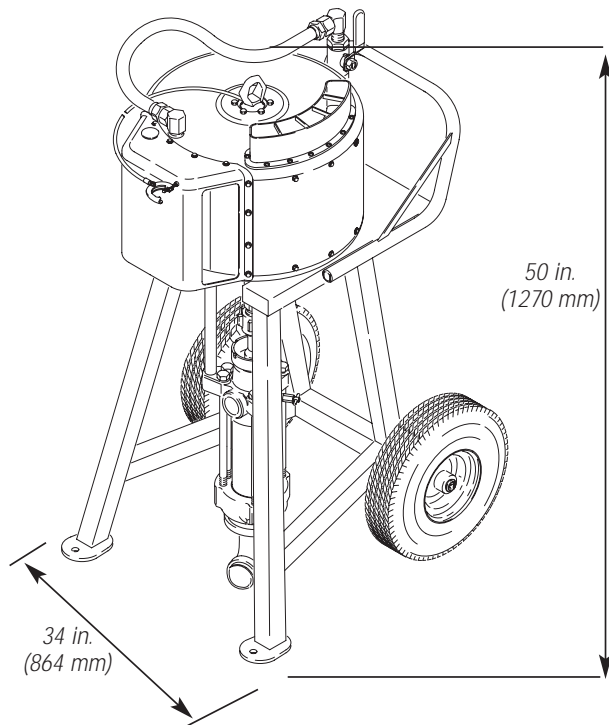


# Hydra-Clean Packages

## Air-Operated Pressure Washers

### System Dimensions (continued)

2



#### 965389 Premier 34:1 Heavy-Duty Cart Mount

Includes:

- Air regulator
- Hydra-Clean® gun and hose

# Hydra-Clean Packages

## Air-Operated Pressure Washers

### Accessories

#### GUNS AND TIPS

- 208008** Hydra-Clean Spray Gun with 10 in. Wand  
**804381** Hydra-Clean Gun with 32 in. Wand  
**207299** 10 in. Replacement Wand for Hydra-Clean

#### FLUID HOSES

##### Whip Hose

Maximum working pressure: 3000 psi (20.7 MPa, 207 bar). ID 3/16 in. (5 mm).

- 214700** 2 ft. (0.6 m), 1/4 npsm(fbe)  
**214701** 3 ft. (0.9 m), 1/4 npsm(f) x 1/4 npt(m)

Maximum working pressure: 5000 psi (34.5 MPa, 345 bar). ID 1/4 in. (0.63 cm), 1/4 npsm(fbe).

- 214912** 3 ft. (0.91 m)  
**214913** 6 ft. (1.83 m)

##### Fluid Hose

Maximum working pressure: 3000 psi (20.7 MPa, 207 bar). ID 3/8 in. (9.52 mm), 3/8 npt(mbe).

- 214703** 25 ft. (7.62 m)  
**214705** 50 ft. (15.24 m)  
**214920** 100 ft. (30.48 m)

Maximum working pressure: 3000 psi (20.7 MPa, 207 bar). ID 1/4 in. (6.3 mm), 1/4 npsm(fbe).

- 223540** ID 1/4 in. x 25 ft. (6.3 mm x 7.6 m)  
 1/4 npsm(fbe)

Maximum working pressure: 4050 psi (28 MPa, 280 bar). ID 1/2 in. (12.7 mm), 1/2 npt(mbe).

- 215226** 25 ft. (7.62 m)  
**215227** 50 ft. (15.24 m)  
**215228** 100 ft. (30.48 m)

Maximum working pressure: 5000 psi (34.5 MPa, 345 bar). ID 3/8 in. (9.5 mm), 3/8 npt(m) x 3/8 npt(f).

- 238395** 24.6 ft. (7.5 m)  
**238396** 49.2 ft. (15 m)  
**238397** 98.4 ft. (30 m)

Maximum working pressure: 5000 psi (34.5 MPa, 345 bar). ID 1/2 in. (12.7 mm), 1/2 npt(fbe).

- 238716** 24.6 ft. (7.5 m)  
**238717** 49.2 ft. (15 m)  
**238718** 98.4 ft. (30 m)  
**223541** ID 1/4 in. x 50 ft. (6.3 mm x 15.2 m)  
 1/4 npsm(fbe)

#### AIR HOSES

##### Grounded Buna-N Air Hose

Maximum working pressure: 175 psi (1.2 MPa, 12 bar). ID 3/4 in. (19 mm). Thread size: 3/4 npt(m).

- 208610** 6 ft. (1.8 m)  
**205548** 15 ft. (4.5 m)  
**208611** 25 ft. (7.6 m)  
**208612** 50 ft. (15.2 m)

#### AIR CONTROLS AND VALVES

##### 244720 Modular Air Regulator Kit with Built-In Filter

Maximum working pressure: 250 psi (1.7 MPa, 17 bar). 3/4 npt(f).

##### 244841 Modular Air Line Lubricator Kit

Maximum working pressure: 250 psi (1.7 MPa, 17 bar). 3/4 npt(f)

##### 207651 Air Regulator Kit

Maximum working pressure: 300 psi (2.1 MPa, 21 bar). 3/4 npt(f).

##### 214849 Air Line Lubricator

Maximum working pressure: 250 psi (1.7 MPa, 17 bar). 3/4 in. npt(f).

##### Safety Relief Valves

Limits Inlet air pressure to appropriate pump ratio maximum working pressure.

- 116643** 90 psi (0.62 MPa, 6.2 bar)  
**103347** 100 psi (0.69 MPa, 6.9 bar)  
**113498** 110 psi (0.76 MPa, 7.6 bar)

##### 245143 Pressure Bleed Valve

Maximum working pressure: 7400 psi (51 MPa, 510 bar).

##### 245145 Pressure Bleed Valve Repair Kit

Includes ball, seat, retaining ring, O-ring, gasket.

##### 224040 Pump Runaway Valve

Maximum working pressure: 120 psi (0.83 MPa, 8.3 bar). Inlet/outlet: 3/4 npt(f). Includes optional 90° 3/4 npsm swivel fitting.

##### Ball Valve

Maximum working pressure: 5000 psi (34.5 MPa, 345 bar).

- 210657** Inlet: 1/4 npt(m). Outlet: 1/4 npt(m).  
**210658** Inlet: 3/8 npt(m). Outlet: 3/8 npt(m).  
**210659** Inlet: 1/4 npt(m). Outlet: 3/8 npt(m).

Maximum working pressure: 7400 psi (51 MPa, 510 bar).

- 237303** 1/4 npt(mbe)  
**237304** 3/8 npt(mbe)

##### 107141 Bleed-Type Master Air Valve

Maximum working pressure: 300 psi (2.1 MPa, 21 bar).

# Hydra-Clean Packages

## Air-Operated Pressure Washers

### Accessories (continued)

#### ADAPTERS AND FITTINGS

##### Hose Swivel

- 214925** Maximum working pressure: 5000 psi (34.5 MPa, 345 bar).  
3/8 npt(f) x 1/4 npsm(f).
- 236987** Maximum working pressure: 7400 psi (51 MPa, 510 bar).  
1/4 npsm(m) x 1/4 npsm(f).
- 189018** Maximum working pressure: 5800 psi (39.9 MPa, 399 bar).  
1/4 npsm(m) x 1/4 npsm(f).

##### 156173 Union Swivel

Maximum working pressure: 7400 psi (51 MPa, 510 bar). Use to connect 3/8 in. (9.5 mm) hoses together. 3/8 npt(f) x 3/8 npsm(f).

##### 150287 Hose Coupler

Maximum working pressure: 8000 psi (55 MPa, 550 bar). Use to connect 3/8 in. (9.5 mm) hose to whip hose. 3/8 npt(f) x 1/4 npt(m).

##### Gun Swivels (25 Pack)

Maximum working pressure: 3600 psi (25 MPa, 250 bar). 1/4 npsm(f) x 1/4 npt(m).

- 239663** Leather
- 223341** Ptfе

Maximum working pressure: 5000 psi (34.5 MPa, 345 bar).

- 214925** Leather 1/4 npsm(f) 3/8 npt(f)
- 214926** Leather 1/2 npsm(f) 3/8 npt(f)

Maximum working pressure: 5800 psi (48 MPa, 406 bar).

- 239394** Swivel with Built-in Filter

##### Nipples

Use to connect hoses together.

- 156971** Maximum working pressure: 7500 psi (51.7 MPa, 517 bar).  
1/4 npt x 1/4 npt(mbe).
- 165198** Maximum working pressure: 10000 psi (69 MPa, 690 bar).  
1/4 npt x 3/8 npt(mbe).
- 162449** Maximum working pressure: 7400 psi (51 MPa, 510 bar).  
1/4 npt x 1/2 npt(mbe).
- 159239** Maximum working pressure: 7400 psi (51 MPa, 510 bar).  
3/8 npt x 1/2 npt(mbe).
- 158491** Maximum working pressure: 7400 psi (51 MPa, 510 bar).  
1/2 npt x 1/2 npt(mbe).

#### SUCTION KITS AND ACCESSORIES

- 184545** **Suction Tube Extension**  
Screws into fluid intake to make a drum length pump for Bulldog 10:1.
- 222916** **Suction Kit, Carbon Steel**  
Connect to pump fluid inlet to draw fluid from 55-gal. (200 L) drum. Includes ID 1-1/2 in. 222914 polyethylene hose, 8 ft. (2.4 m) length and 2 npt(m) outlet fitting.
- 236054** **Suction Kit, Carbon Steel**  
Use to siphon material out of a 55-gal. (200 L) closed-end drum. Includes siphon tube, bung adapter, 6 ft. (1.8 m) nitrile hose and 1-1/2 npt(m) outlet fitting.

#### FILTERS

##### Replacement Screen Filter Elements

	3 Pack	25 Pack	
<b>238435</b>	<b>238436</b>		30 mesh (595 micron)
<b>238437</b>	<b>238438</b>		60 mesh (250 micron)
<b>238439</b>	<b>238440</b>		100 mesh (149 micron)
<b>238441</b>			200 mesh (75 micron)

#### LIQUIDS AND LUBRICATION

##### Graco Throat Seal Liquid

<b>206995</b>	1 qt. (0.9 L)
<b>206996</b>	1 gal. (3.8 L)

#### MOUNTING OPTIONS

- 244530** **Heavy-Duty 2-Wheel Cart**
- 244527** **Light-Duty 2-Wheel Cart**
- 206221** **Wall Mounting Bracket**
- 222780** **Floor Stand Kit, Bulldog 10:1**  
Use to mount Bulldog 10:1. Includes 222274 floor stand, 190166 intake adapter and ball valve.
- 235414** **Connection Kit, Bulldog 10:1**  
Kit to install lower displacement pump under existing Bulldog air motor. Includes tie rods and other connecting hardware.



# Hydra-Clean Packages

## Air-Operated Pressure Washers

### Accessories (continued)

#### AIR MOTOR REPAIR KITS

- 222981 Trip Rod Repair Kit**  
Repair kit to service Premier trip rod.
- 222982 Detent Repair Kit**  
Repair kit to service Premier air motor.

#### TOOLS

- 109507 Socket Service Tool, Premier 34:1**  
Use to connect or disconnect displacement rod from piston assembly. Tool fits over the top of the displacement rod, making it easier to apply a 24 in. adjustable wrench or 3/4 in. socket for servicing the displacement rod.
- 184278 Packing Nut Wrench, Premier 34:1**  
For adjusting throat packing compression in pump.
- 109508 Socket Service Tool, Bulldog 10:1**  
Use to connect or disconnect displacement rod from piston assembly. Tool fits over the top of the displacement rod, making is easier to apply a 24 in. adjustable wrench or 3/4 in. drive socket for servicing displacement rod.
- 184278 Packing Nut Wrench, Bulldog 10:1**  
For adjusting throat packing compression in pump.
- 207579 Padded Pliers**  
For servicing Bulldog and King air motor trip rod.
- 168513 Alignment Tool**  
Use to ensure proper clearance and alignment for the Bulldog and King air manifolds.

GMAX™



## Gas-Powered Airless Sprayers

2

### Features and Benefits

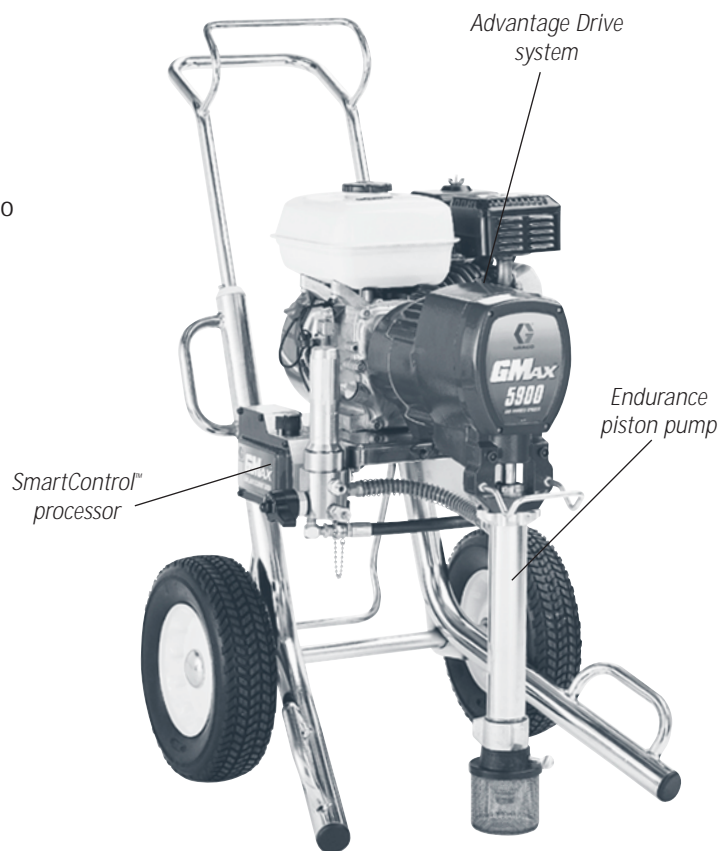
- Advantage Drive™ system with hardened helical gears and heavy-duty clutch combine to provide reliable and efficient performance
- Conveniently-located user controls on one side of the sprayer
- Lift handles for easy transport
- Larger capacity hose wrap and hose strap holds up to 300 ft. (91.4 m) and conveniently secures hose
- Innovative cart design allows for easy movement on the job site

### Typical Applications

- Medium to large residential jobs
- Light commercial jobs
- Medium to large commercial jobs
- Industrial jobs

### Typical Coatings Applied

- Stains
- Light specialty coatings
- Latex
- Enamels
- Light and heavy elastomerics
- Light and heavy blockfillers
- Gypsum-based products
- Drywall mud
- Architectural coatings



**GMAX 5900 HB  
Hi-Boy  
232620**

# GMAX

## Gas-Powered Airless Sprayers

### Technical Specifications

	GM3000™	GMax 3900	GMax 5900 GMax 5900 Convertible
Maximum Tip Size	1 gun to 0.025	1 gun to 0.034 2 guns to 0.024 3 guns to 0.017	1 gun to 0.041 2 guns to 0.028 3 guns to 0.022 4 guns to 0.019
Maximum Delivery Rating	0.62 gpm (2.4 lpm)	1.15 gpm (4.4 lpm)	1.5 gpm (5.7 lpm)
Additional Output		104% more output than the GM3000	30% more output than the GMax 3900
Maximum Working Pressure	3000 psi (20.7 MPa, 207 bar)	3300 psi (22.7 MPa, 227 bar)	3300 psi (22.7 MPa, 227 bar)
Maximum Hose	300 ft (91.4 m)	300 ft (91.4 m)	300 ft (91.4 m)
Engine Size	4.0 HP Honda	4.0 HP Honda	5.5 HP Honda
Fuel Tank Capacity	0.66 gal (2.5 l)	0.66 gal (2.5 l)	0.95 gal (3.6 l)
Weight (kg)	148 lbs. (67 kg)	182 lbs. (82.5 kg)	230 lbs. (104 kg)/170 lbs. (77 kg)
Dimensions	inches cm	32 W x 25 L x 40 H (81 W x 63.5 L x 101.6 H)	22 W x 42 L x 38 H (55.9 W x 106.7 L x 96.5 H)
Pump Repair Kit	235703	244196	244198
Instruction Manuals Operation/Repair/Displacement	308620/308190	308867/308868/308798	308867/308868/308798 308863/308864/308798
Materials Sprayed	Stains, light specialty coatings, latex, enamels and light elastomerics	Stains, light specialty coatings, latex, enamels, light elastomerics and light blockfillers	Stains, light specialty coatings, latex, enamels, light elastomerics and heavy blockfillers
Typical Application	Residential and light commercial jobs	Residential and light commercial jobs	Medium to large residential and commercial jobs

# GMAX

## Gas-Powered Airless Sprayers

### Technical Specifications (continued)

		GMAX 5900HD	GMAX 7900	GMAX 10000
Maximum Tip Size		1 gun to 0.041 2 guns to 0.028 3 guns to 0.022 4 guns to 0.019	1 gun to 0.046 2 guns to 0.033 3 guns to 0.026 4 guns to 0.022	1 gun to 0.055 2 guns to 0.035 3 guns to 0.029 4 guns to 0.025 5 guns to 0.021
Maximum Delivery Rating		1.5 gpm (5.7 lpm)	2.1 gpm (7.9 lpm)	2.5 gpm (9.5 lpm)
Additional Output		30% more output than the GMAX 3900	40% more output than the GMAX 5900	8% more output than the GMAX 7900
Maximum Working Pressure		3300 psi (22.7 MPa, 227 bar)	3300 psi (22.7 MPa, 227 bar)	3000 psi (20.7 MPa, 207 bar)
Maximum Hose		300 ft. (91.4 m)	300 ft. (91.4 m)	300 ft. (91.4 m)
Engine Size		5.5 HP Honda	5.5 HP Honda	8.0 HP Honda
Fuel Tank Capacity		0.95-gal. (3.6 l)	0.95-gal. (3.6 l)	1.59 gal. (6.04 l)
Weight		214 lbs. (70.3 kg)	244 lbs. (79.4 kg)	280 lbs. (99.8 kg)
Dimensions	inches cm	43 W x 28 L x 40 H (109.2 W x 71.1 L x 101.6 H)	43 W x 28 L x 40 H (109.2 W x 71.1 L x 101.6 H)	42 W x 28 L x 38 H (106.7 W x 71.1 L x 96.5 H)
Pump Repair Kit		244198	240916	244198
Instruction Manuals		308867/308868/308798	308867/308870/308798	308871/308798
Materials Sprayed		Elastomerics, blockfillers, gypsum based products and drywall mud	All architectural coatings including heavy mastics	All architectural coatings including heavy mastics
Typical Application		Medium to large residential and commercial jobs	Medium to large residential, commercial and industrial	Large residential, commercial and industrial jobs

# GMAX

## Gas-Powered Airless Sprayers

### Ordering Information

Complete sprayer includes 1/4 in. x 50 ft. (6.35 mm x 15.2 m) BlueMax hose and Contractor Gun with RAC 5 517 SwitchTip and DripLess Tip Guard, unless otherwise noted.

#### GMax 3900

Residential and light commercial jobs. Sprays stains, light specialty coatings, latex, enamels and light elastomerics.

<b>232612</b>	<b>Bare Sprayer, Lo-Boy</b>
<b>232610</b>	<b>Bare Sprayer, Hi-Boy</b>
<b>232613</b>	<b>Complete Sprayer, Lo-Boy</b>
<b>232611</b>	<b>Complete Sprayer, Hi-Boy</b>

#### GMax 5900

Medium to large residential and commercial jobs. Sprays stains, light specialty coatings, latex, enamels, light elastomerics and heavy blockfillers.

<b>232622</b>	<b>Bare Sprayer, Lo-Boy</b>
<b>232620</b>	<b>Bare Sprayer, Hi-Boy</b>
<b>232623</b>	<b>Complete Sprayer, Lo-Boy</b>
<b>232621</b>	<b>Complete Sprayer, Hi-Boy</b>

#### GMax 5900 Convertible

Medium to large residential and commercial jobs. Easily converts to a DC electric-powered unit for interior applications. Sprays same materials as the GMax 5900 listed above.

<b>232624</b>	<b>Bare Sprayer, Hi-Boy</b> Gas-Powered
<b>232626</b>	<b>Bare Sprayer, Hi-Boy</b> Gas-Powered. With electric motor kit (non CSA certified).
<b>232629</b>	<b>Bare Sprayer, Hi-Boy,</b> Gas-Powered. With electric motor kit (CSA version).
<b>232680</b>	<b>Bare Sprayer, Lo-Boy</b> Gas-Powered
<b>232682</b>	<b>Bare Sprayer, Lo-Boy,</b> Gas-Powered. With electric motor kit (non CSA certified).
<b>240774</b>	<b>Electric Motor Kit</b>
<b>240775</b>	<b>Electric Motor Kit (CSA version)</b>
<b>232625</b>	<b>Complete Sprayer, Hi-Boy*</b> Gas-Powered
<b>232681</b>	<b>Complete Sprayer, Lo-Boy**</b> Gas-Powered

\* Complete with gun and hose, does not include electric motor kit.

\*\* Includes Texture Gun, 3/8 in. x 50 ft. (9.5 mm x 15.2 m) Blue Max hose, GHD527 tip, tip guard, swivel and whip hose.

#### GMax 5900HD

Medium to large residential and commercial jobs. Sprays elastomerics, blockfillers, gypsum-based products, drywall mud finishing, joint/nail filling and skim coating.

<b>232627</b>	<b>Bare Sprayer, Hi-Boy</b>
<b>232628</b>	<b>Complete Sprayer, Hi-Boy</b>

#### GMax 7900

Large residential, commercial and industrial jobs. Sprays all architectural coatings, including mastics.

<b>232632</b>	<b>Bare Sprayer, Lo-Boy</b>
<b>232630</b>	<b>Bare Sprayer, Hi-Boy</b>

#### GM3000

<b>231363</b>	<b>Upright</b>
<b>231550</b>	<b>Lo-Boy</b>

# GMAX

## Gas-Powered Airless Sprayers

### Accessories

#### TOOL TOTE

##### 240148 Tool Tote Only

Complete storage space for common tools and accessories. Easily fastens to any GMAX Model. Spacious Compartment\* Holds:

5 RAC Tips	1 Performance Series
3 Manifold Filters	Tip Guard
2 Adjustable Wrenches	3 Contractor Gun Filters
1 Hammer	2 Screwdrivers
Tip Brushes	1 TSL - 8 oz.

\*Accessories sold separately

#### AIRLESS TIPS AND GUARDS

##### Reverse-A-Clean 5 SwitchTip

Maximum working pressure: 4050 psi (27.9 MPa, 279 bar). OneSeal™ – compatible with both paints and solvents. Arrow-shaped, ergonomic handle. Easy assembly without tools. Sprays laquers to mastics. **286XXX** (black)

##### Fine Finish RAC 5 Tip

Maximum working pressure - 4050 psi (27.9 MPa, 279 bar). Spray lacquers, varnishes, stains and high finish enamels.

**FF5XXX** (green)

##### Contractor Flat Tip

Maximum working pressure - 5000 psi (34.5 MPa, 345 bar). Tungsten carbide orifice resists wear to abrasive coatings.

**269XXX**

##### Silver Flat Tip

Maximum working pressure - 5000 psi (34.5 MPa, 345 bar). Sprays from low to high viscosity materials. **163XXX** (Odd)

##### HandTite Tip Guard

**243161** For 7/8 in. (22 m) Thread Size.

Fits Graco and Titan Guns.

**243263** For 11/16 in. (17 m) Thread Size.

Fits Graco Pole Guns (older style), Wagner, Airlessco and ASM guns.

##### Flat Tip Guards

**220251** For 7/8 in. (22 mm) thread size.

Fits Graco and Titan Guns.

**220255** For 11/16 in. (17 mm) thread size.

Fits Graco Pole Guns (older style), Wagner, Airlessco and ASM Guns.

#### AIRLESS TIPS AND GUARDS

##### Gun Filters

<b>218131</b>	50 mesh
<b>218133</b>	100 mesh

##### Manifold Filters

<b>224459</b>	60 mesh (2 pk)
<b>224468</b>	100 mesh (2 pk)
<b>224469</b>	200 mesh (2 pk)

#### AIRLESS GUNS

##### Contractor Gun

Maximum working pressure: 3600 psi (24.8 MPa, 248 bar).

**243282** Includes 517 RAC 5 SwitchTip and HandTite Tip Guard

**179943** Optional 4-Finger Trigger available

##### Silver Plus Gun

Maximum working pressure: 5000 psi (34.5 MPa, 345 bar).

**243283** 2-Finger Trigger with RAC 5 517 SwitchTip and HandTite Tip Guard

**235460** 2-Finger Trigger with Flat Tip Guard

**235461** 4-Finger Trigger with Flat Tip Guard

**235462** Fine Finish with 2-Finger Trigger and Flat Tip Guard

##### Contractor FTx™ Gun

Maximum working pressure: 3600 psi (24.8 MPa, 248 bar).

**243285** Includes 515 RAC 5 SwitchTip and HandTite Tip Guard.

##### Pole Guns

Maximum working pressure: 3600 psi (24.8 MPa, 248 bar). Includes 517 RAC 5 SwitchTip and HandTite Guard.

**244057** 3 ft. (0.9 m)

**244058** 6 ft. (1.8 m)

**244160** CleanShot™ Shut-Off Valve

**244162** CleanShot Shut-Off Valve Repair Kit

**244363** CleanShot Swivel Repair Kit

Maximum working pressure: 500 to 3600 psi (3.5 to 24.8 MPa, 34.5 to 248 bar).

**244161** Contractor In-Line Valve

Maximum working pressure: 3600 psi (24.8 MPa, 248 bar). Uses Contractor Gun Filters 218131 (50 mesh) and 218133 (100 mesh).

**218070** In-Line Valve Repair Kit

# GMAX

## Gas-Powered Airless Sprayers

### Accessories (continued)

#### GUN HOSE KITS

All Gun Hose Kits include the following unless otherwise noted: Airless gun, RAC 5 SwitchTip, HandTite Guard, 1/4 in. x 50 ft. (6.3 mm x 15.2 m) Blue Max airless hose and 3 ft. (0.9 m) Whip Hose.

<b>243318</b>	<b>Contractor Gun Hose Kit</b>
<b>243319</b>	<b>Contractor FTx Gun Hose Kit</b> Whip hose not included.
<b>243320</b>	<b>Contractor Gun Hose Kit</b> includes 3/8 in. x 50 ft. (9.5 mm x 15.2 m) airless hose
<b>243321</b>	<b>Silver Plus Gun Hose Kit</b>
<b>243322</b>	<b>Flex Plus Gun Hose Kit</b>
<b>Blue Max™ Hose</b>	
Maximum working pressure: 3300 psi (22.7 MPa, 227 bar). Less pressure drop for higher performance at the gun.	
<b>238358</b>	3/16 in. x 3 ft. (4.8 mm x 0.9 m) MxF Whip
<b>238959</b>	3/16 in. x 4.5 ft. (4.8 mm x 1.4 m) FBE Whip
<b>238359</b>	3/16 in. x 6 ft. (4.8 mm x 1.8 m) FBE Whip
<b>240793</b>	1/4 in. x 25 ft. (6.3 mm x 7.6 m), FBE
<b>240794</b>	1/4 in. x 50 ft. (6.3 mm x 15.2 m), FBE
<b>240796</b>	3/8 in. x 25 ft. (9.5 mm x 7.6 m), FBE
<b>240797</b>	3/8 in. x 50 ft. (9.5 mm x 15.2 m), FBE

#### EXTENSIONS

##### Tip Extensions

Maximum working pressure: 4050 psi (27.9 MPa, 279 bar). Include RAC 5 Tip Guard standard with 7/8 in. gun nut (fits Graco and Titan Guns). For Wagner or other guns using 11/16 in. gun nut, order 181085 gun adapter.

<b>243295</b>	10 in. (25 cm)
<b>243296</b>	15 in. (38 cm)
<b>243297</b>	20 in. (50 cm)
<b>243298</b>	30 in. (75 cm)

##### Heavy-Duty Extensions

Maximum working pressure: 3600 psi (24.8 MPa, 248 bar). Standard with 7/8 in. (22 cm) gun nut (fits Graco or Titan Guns). For Wagner or other guns using 11/16 in. gun nut, order 181085 gun adapter.

<b>232121</b>	10 in. (25 cm)
<b>232122</b>	20 in. (50 cm)
<b>232123</b>	40 in. (100 cm)
<b>232124</b>	60 in. (150 cm)
<b>232125</b>	80 in. (200 cm)

#### SUCTION TUBE KITS

<b>241287</b>	5-Gal. (19 L) GMAX 3900 and 5900
<b>241289</b>	5-Gal. (19 L) GMAX 7900
<b>241303</b>	30-Gal. (114 L) GMAX 3900 and 5900
<b>241288</b>	30-Gal. (114 L) GMAX 7900
<b>208259</b>	55-Gal. (208 L) GMAX 3900 and 5900
<b>241321</b>	55-Gal. (208 L) GMAX 7900
<b>203992</b>	55-Gal. (208 L) GMAX 5900HD



# GH™ Roof Rigs

## Gas Hydraulic Sprayers

2

### Features and Benefits

- Exclusive Quick Change Pump Lower maximize production. Easily customize your Roof Rig for each coating, without purchasing additional rigs
- Oversized 2 in. x 6 ft. (50.8 mm x 1.8 m), 55-gal. (200 L) suction hose and tube allow siphoning of heavy coatings directly from the drum to increase spray time and reduce changeover
- Quick disconnects make clean-up easy
- Higher pressure Roof Rigs allow the use of smaller diameter hose or longer hose lengths for maximum efficiency and coverage

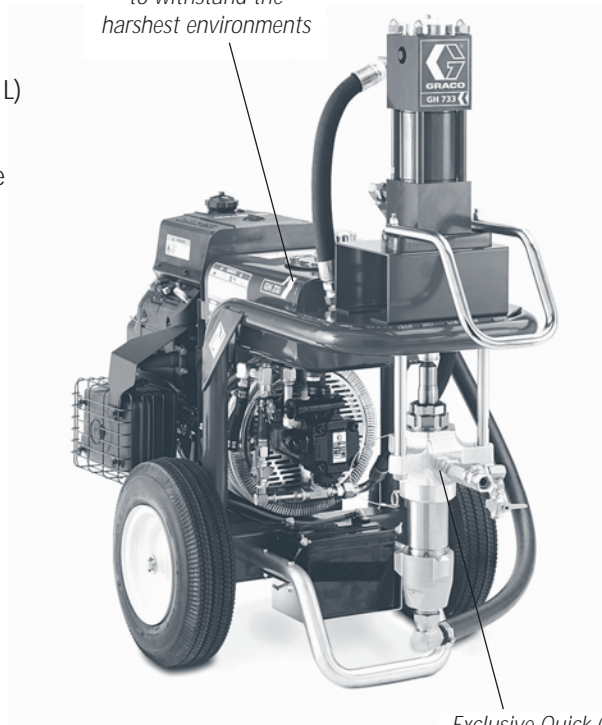
### Typical Applications

- Roofing

### Typical Coatings Applied

- Primers
- Acrylics
- Emulsions
- Elastomerics
- Mastics
- Contact Cement

*Heavy-duty construction  
to withstand the  
harshest environments*



*Exclusive Quick Change  
pump lower*

**GH733 Roof Rig  
231733**



# GH Roof Rigs

## Gas Hydraulic Sprayers

### Technical Specifications

	GH733	GH1015 Roof Rig	GH2075 Roof Rig	GH2560 Roof Rig	GH3640 Roof Rig	GH5030 Roof Rig
Maximum working pressure (MPa, bar)	3500 psi (36.9, 369)	1000 psi (0.7, 7)	1800 psi (12.4, 124)	2400 psi (16.6, 166)	3600 psi (24.5, 245)	4900 psi (337, 33.7)
Fluid flow (gpm, lpm)	3.0 (11.4)	15 (56.7)	7.5 (28.4)	6 (22.7)	3.8 (14.4)	2.8 (10.5)

### Ordering Information

#### SPRAYERS

231733	GH733
965165	GH1015 Roof Rig
965171	GH2075 Roof Rig
965168	GH2560 Roof Rig
687327	GH3640 Roof Rig
687100	GH5030 Roof Rig

#### QUICK-CHANGE PUMP LOWERS

948728	GH1015 Pump Lower
948734	GH2075 Pump Lower
948731	GH2560 Pump Lower
687329	GH3640 Xtreme Pump Lower
570183	GH5030 Xtreme Pump Lower

### Accessories

<b>224472</b>	<b>Mastic Roofing Gun</b> Rated to 4050 psi (27.5 MPa, 275 bar) with 36 in. (914 mm) extension.
<b>236995</b>	<b>High Pressure Elastomeric Hand Gun</b> Rated to 7400 psi (50.3 MPa, 503 bar).
<b>224470</b>	<b>Spray Roller</b> Rated to 4000 psi (27.6 MPa, 276 bar), standard with 18 in. (45 cm) roller cover & two 861 HD RAC Tips. Attach to 224472 Gun (tip selection will vary with material sprayed)
<b>High Pressure Hose</b>	
<b>214705</b>	3/8 in. x 50 ft. (10 mm x 15.2 m) long, 3/8(mbe), 3000 psi (20.7 MPa, 207 bar)
<b>215227</b>	1/2 in. x 50 ft. (12 mm x 15.2 m) long, 1/2(mbe), 4050 psi (27.5 MPa, 275 bar)
<b>215245</b>	3/8 in. x 50 ft. (10 mm x 15.2 m) long, 3/8(mbe), 5000 psi (34.5 MPa, 345 bar)
<b>Low Pressure Hose</b>	
<b>224440</b>	3/4 in. x 50 ft. (9 mm x 15.2 m) long, 3/4(m) x 3/4(f), 2250 psi (15.5 MPa, 155 bar)
<b>224439</b>	5/8 in. x 40 ft. (15.9 mm x 12.2 m) long, 3/4(m) x 1/2(m), 2750 psi (18.7 MPa, 187 bar)
<b>Fittings</b>	
<b>156849</b>	3/8(mbe) Nipple for 3/8 in. (10 mm) hose.
<b>155865</b>	1/2(fbe) Coupler for 1/2 in. (12 mm) hose.
<b>Kits</b>	
<b>948727</b>	2 in. (50.8 mm) Siphon Kit adapts to any GH733, Bulldog or King Pump – air or gas
<b>Lift Kits</b>	
<b>948740</b>	Changes Standard GH733 to a Quick Change Roof Rig. For modifying a GH733 to a Quick-Change Roof Rig.
<b>245244</b>	For modifying a GH733 with version code A, B or C to accept GH 1015, GH2075, or GH2560 pump lowers.

# HydraMax™

## Gas Hydraulic Sprayers

2

### Features and Benefits

- Spool-less hydraulic motor has fewer wear parts
- Electronic pump changeover for fast and accurate timing and pressure control
- HydraPort™ internally-ported hydraulic feed lines eliminate hoses, resulting in fewer leak points
- TwinCool™ dual cooling system keeps the sprayer running cool in the harshest conditions
- Digital tracking system tracks spraying pressure, lifetime material usage and the AutoClean™ shutoff timer
- EZView™ oil level window makes at-a-glance oil checks easy and accurate
- New Xtreme pump rod with PlasmaCoat technology has more than 3 times the life of chromed stainless steel rods

### Typical Applications

- Medium to large residential, commercial, and industrial jobs

### Typical Coatings Applied

- All architectural coatings, including heavy mastics



# HydraMax

## Gas Hydraulic Sprayers

### Technical Specifications

	<b>HydraMax 225</b>	<b>HydraMax 300</b>	<b>HydraMax 350</b>
Maximum Tip Size	1 gun: 0.050 2 guns: 0.035 3 guns: 0.029 4 guns: 0.025	1 gun: 0.055 2 guns: 0.037 3 guns: 0.031 4 guns: 0.027	1 gun: 0.060 2 guns: 0.041 3 guns: 0.033 4 guns: 0.029
Maximum Delivery Rating	2.25 gpm (8.6 lpm)	3.0 gpm (11.4 lpm)	3.5 gpm (13.3 lpm)
Maximum Working Pressure	3600 psi (24.8 MPa, 248 bar)	3600 psi (24.8 MPa, 248 bar)	4000 psi (27.6 MPa, 276 bar)
Maximum Hose Length	300 ft. (91.4 m)	300 ft. (91.4 m)	300 ft. (91.4 m)
Engine	6.5 HP Honda	9.0 HP Honda	11.0 HP Honda
Fuel Tank Capacity	0.95 gal (3.6 L)	1.59 gal (6.0 L)	1.72 gal (6.5 L)
Weight	229 lb (104 kg)	279 lb (127 kg)	294 lb (134 kg)
Dimensions	inches (cm) 24.5 W x 35 L x 34 H (62.23 W x 88.9 L x 86.36 H)	24.5 W x 38 L x 36 H (62.23 W x 96.52 L x 91.44 H)	24.5 W x 38 L x 36 H (62.23 W x 96.52 L x 91.44 H)
Pump Repair Kit	244955	244958	244958
Operation Manual	309378	309378	309378
Repair Manual	309379	309379	309379

### Ordering Information

#### HydraMax 225 Direct Immersion

<b>233640</b>	<b>Bare Sprayer</b>
<b>233642</b>	<b>Complete Sprayer</b> Includes Silver Plus Gun, RAC 5 SwitchTip (.517), HandTite Guard, 3/8 in. x 50 ft. (9.5 mm x 15.2 m) Airless Hose, 3 ft. (0.9 m) Whip Hose and Swivel

#### HydraMax 225 Siphon

<b>233641</b>	<b>Bare Sprayer</b>
<b>233643</b>	<b>Complete Sprayer</b> Includes Silver Plus Gun, RAC 5 SwitchTip (.517), HandTite Guard, 3/8 in. x 50 ft. (9.5 mm x 15.2 m) Airless Hose, 3 ft. (0.9 m) Whip Hose and Swivel

#### HydraMax 300 Siphon

<b>233650</b>	<b>Bare Sprayer</b>
<b>233651</b>	<b>Complete Sprayer</b> Includes Silver Plus Gun, RAC 5 SwitchTip (.517), HandTite Guard, 3/8 in. x 50 ft. (9.5 mm x 15.2 m) Airless Hose, 3 ft. (.9 m) Whip Hose and Swivel.

#### HydraMax 350 Siphon

<b>233660</b>	<b>Bare Sprayer</b>
<b>233661</b>	<b>Complete Sprayer</b> Includes HD Texture Gun, Heavy-Duty RAC Tip (.631), Heavy-Duty RAC Guard, 3/8 in. x 50 ft. (9.5 mm x 15.2 m) 5000 psi (34.5 MPa, 345 bar) Hose, 3 ft. (.9 m) Whip Hose and Swivel.

# HydraMax

## Gas Hydraulic Sprayers

### Accessories

#### AIRLESS TIPS AND GUARDS

##### RAC 5 SwitchTip

Maximum working pressure: 4050 psi (27.9 MPa, 279 bar). OneSeal — compatible with both latex and solvent-based materials. Arrow-shaped, ergonomic handle, easy assembly without tools, sprays lacquers to mastics.

**286XXX** (black)

##### Fine Finish RAC 5 Tip

Maximum working pressure: 4050 psi (27.9 MPa, 279 bar). Sprays lacquers, varnishes, stains and high finish enamels. Dual orifice tip for finer finish at low pressures with less overspray.

**FF5XXX** (green)

##### Contractor Flat Tip

Maximum working pressure - 5000 psi (34.5 MPa, 345 bar). Tungsten carbide orifice resists wear due to abrasive coatings.

**269XXX**

##### HandTite Tip Guards

**243161** For 7/8 in. (22 mm) thread size. Fits Graco and Titan Guns.

**243263** For 11/16 in. (17 mm) thread size. Fits some Wagner, Airlessco and ASM Guns.

##### Flat Tip Guards

**220251** For 7/8 in. (22 mm) thread size. Fits Graco and Titan Guns.

**220255** For 11/16 in. (17 mm) thread size. Fits some Wagner, Airlessco and ASM Guns.

#### GUN HOSE KITS

##### 244924 HydraMax 225/300 Gun Hose Kit

Includes Silver Plus Gun, RAC 5 SwitchTip (.517), HandTite Guard, 3/8 in. x 50 ft. (9.5 mm x 15.2 m) 3600 psi (24.8 MPa, 248 bar) Airless Hose and 3 ft. (0.9 m) Whip Hose with Swivel.

##### 244925 HydraMax 350 Gun Hose Kit

Includes Heavy-Duty Texture Gun, Heavy-Duty RAC Tip (.631), Heavy-Duty RAC Guard, 3/8 in. x 50 ft. (9.5 mm x 15.2 m) 5000 psi (34.5 MPa, 345 bar) Airless Hose and 3 ft. (0.9 m) Whip Hose with Swivel.

##### Blue Max™ HP High-Pressure Hose

Maximum working pressure: 3600 psi (24.8 MPa, 248 bar). Less pressure drop for higher performance at the gun.

**244926** 1/4 in. x 3 ft. (6.3 mm x 0.9 m) MxF Whip

**244339** 1/4 in. x 50 ft. (6.3 mm x 15.2 m) FBE

**244340** 3/8 in. x 50 ft. (9.5 mm x 15.2 m) FBE

#### SUCTION TUBE KITS

##### 245242 Direct Immersion Kit for HydraMax 225

##### 245249 Siphon Kit for HydraMax 225

Works with containers up to 55-gal. (208 L). Adapt suction tube to fit your container.

##### 245250 Siphon Kit for HydraMax 300 and 350

Works with containers up to 55-gal. (208 L). Adapt suction tube to fit your container.

#### FILTERS

##### Easy Out Filters (Long) - 1 Pack

**244071** 30 mesh (grey)

**244067** 60 mesh (black)

**244068** 100 mesh (blue)

**244069** 200 mesh (red)

##### Gun Filters - 1 per Card

**218131** 50 mesh (blue)

**218133** 100 mesh (red)

##### Tip Filters

**238563** 3 pack (60 mesh)

**238561** 3 pack (100 mesh)

**224453** 5 pack (100 mesh)

**224454** 5 pack (60 mesh)

**238564** 25 pack (60 mesh)

**238562** 25 pack (100 mesh)

**164120** Tip Filter Housing

#### AIRLESS GUNS

##### Contractor Gun

Maximum working pressure: 3600 psi (24.8 MPa, 248 bar).

**243282** Includes RAC 5 (.517) SwitchTip and HandTite Tip Guard

**179943** Optional 4-Finger Trigger available

##### 218070 Contractor Gun Repair Kit

##### Contractor FTx Gun

Maximum working pressure: 3600 psi (24.8 MPa, 248 bar).

**243285** Includes RAC 5 (.515) SwitchTip and HandTite Tip Guard

##### 218070 Contractor FTx Gun Repair Kit

# HydraMax

## Gas Hydraulic Sprayers

### Accessories (continued)

#### AIRLESS GUNS

##### Silver Plus Gun

Maximum working pressure: 5000 psi (34.5 MPa, 345 bar)

- 243283** 2-Finger Trigger with RAC 5 (.517) SwitchTip and HandTite Tip Guard
- 235460** 2-Finger Trigger with Flat Tip Guard
- 235461** 4-Finger Trigger with Flat Tip Guard
- 235462** Fine Finish with 2-Finger Trigger and Flat Tip Guard

##### 235474 Silver Plus Gun Repair Kit

##### Heavy-Duty Texture Gun

Maximum working pressure: 4000 psi (27.6 MPa, 276 bar). Ideal for high solids, mastics, protective coatings and smooth textures. Stainless steel fluid tube. Fluid orifice diameter: 0.125 in. (3.2 mm).

- 241705** Heavy-Duty Texture Gun with GHD631 Spray Tip and Heavy-Duty RAC 5 Tip Guard

##### 237260 Heavy-Duty Texture Gun Repair Kit

#### EXTENSIONS AND POLE GUNS

##### Tip Extensions

- 243295** 10 in. (25 cm)
- 243296** 15 in. (38 cm)
- 243297** 20 in. (50 cm)
- 243298** 30 in. (75 cm)

Includes HandTite Tip Guard standard with 7/8 in. (22 mm) gun nut. Fits Graco and Titan Guns.

- 181085** For Wagner or other guns, order 11/16 in. (17 mm) gun nut adapter.

##### Heavy-Duty Extensions

Standard with 7/8 in. (22 cm) gun nut. Fits Graco or Titan Guns. For Wagner or other guns using 11/16 in. (17 mm) gun nut, order 181085 gun adapter.

- 232121** 10 in. (25 cm)
- 232122** 20 in. (50 cm)
- 232123** 40 in. (100 cm)
- 232124** 60 in. (150 cm)
- 232125** 80 in. (200 cm)

##### Pole Guns

Maximum working pressure: 3600 psi (24.8 MPa, 248 bar). Includes RAC 5 (.517) SwitchTip and HandTite Guard.

- 244057** 3 ft. (0.9 m)
- 244058** 6 ft. (1.8 m)

- 244160** CleanShot Shut-Off Valve

- 244162** CleanShot Shut-Off Valve Repair Kit

- 244363** CleanShot Swivel

Working Pressure: 500 to 3600 psi (3.5 to 24.8 MPa, 34.5 to 248 bar).

- 244161** Contractor In-Line Valve

Maximum working pressure: 3600 psi (248 bar, 24.8 MPa). Uses Contractor Gun Filters 218131 (50 mesh) and 218133 (100 mesh).

- 218070** In-Line Valve Repair Kit

##### AutoClean™ Accessory Kit

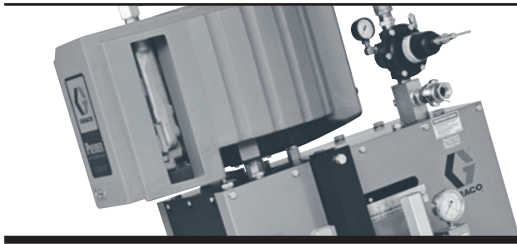
Upgrade your HydraMax Sprayer to include the AutoClean Reverse-Flushing System. The AutoClean System saves you time and reduces mess during cleanup.

- 245159** Easy-to-Install AutoClean System



2





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# Proportioning Technology Definitions

## Flush

When the system is purged of resin and/or catalyst.

## Catalyst

A chemical additive that causes a reaction that causes a coating to cure.

## Controller

The system controls that are configured to setup, control and monitor fluids.

## Flow Rate

The measure of the flow of material.

## Intrinsically Safe

Refers to equipment that can be placed in hazardous areas.

## Mix Ratio

The ratio of each material being mixed together.

## Pot Life

The length of time that a fluid is processable, prior to a rise in viscosity.

## Proportioner

The term referring to plural component equipment that mixes multiple fluids to preset ratios and dispenses the mixed fluid to the application device.

## PSI

A pressure measurement reported in pounds per square inch.

## Purge

The processes where fluids are cleaned out of certain components.

## Ratio

Proportion of materials.

## Recipe

Characteristics of the material for processing, including ratio, purge sequence, pot life and meter K-factors.

## Solvent

The component of a solution that is used to control viscosity of a mixture (thinner) or a fluid used to dissolve and flush materials from fluid equipment.

## Viscosity

The resistance of a fluid to flowing. The more a fluid resists flowing, the higher its viscosity.

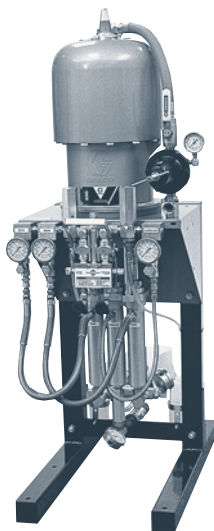
## Waterborne

A sprayable paint medium that uses water for reduction instead of organic solvents.

# Mechanical Proportioner Family Comparison Chart

## Performance Criteria

	Hydra-Cat	Hydra-Cat HP	SuperCat Basic	SuperCat Complete
Ratio Capability	Fixed & Variable	Variable	Fixed & Variable	Fixed & Variable
Ratio Range	1:1 - 24:1	1:1 - 9:1	1:1 - 6:1	1:1 - 6:1
Flow Rate (cc/min.)	1-4/3.8-15	5.8/21.9	4.1/15.4	4.1/15.4
Maximum Pressure psi (MPa, bar)	3000 (20.7, 207)	5000 (34.5, 345)	5000 (34.5, 345)	5000 psi (34.5, 345)
Remote Mix Manifold	X	X	X	X
Intrinsic Safe			X	X
Electronic Ratio Assurance			X	X
Ratio Check			X	X
Electronic Controls			X	X
Security			X	X
Diagnostics (online)			X	X
Pot Life Alarms				X
Recipe Control				X
Reservoir Supply Tanks				X
Solvent Pump				X
Heaters				X
Gun & Hose				X



Fixed Ratio Hydra-Cat



Hydra-Cat HP

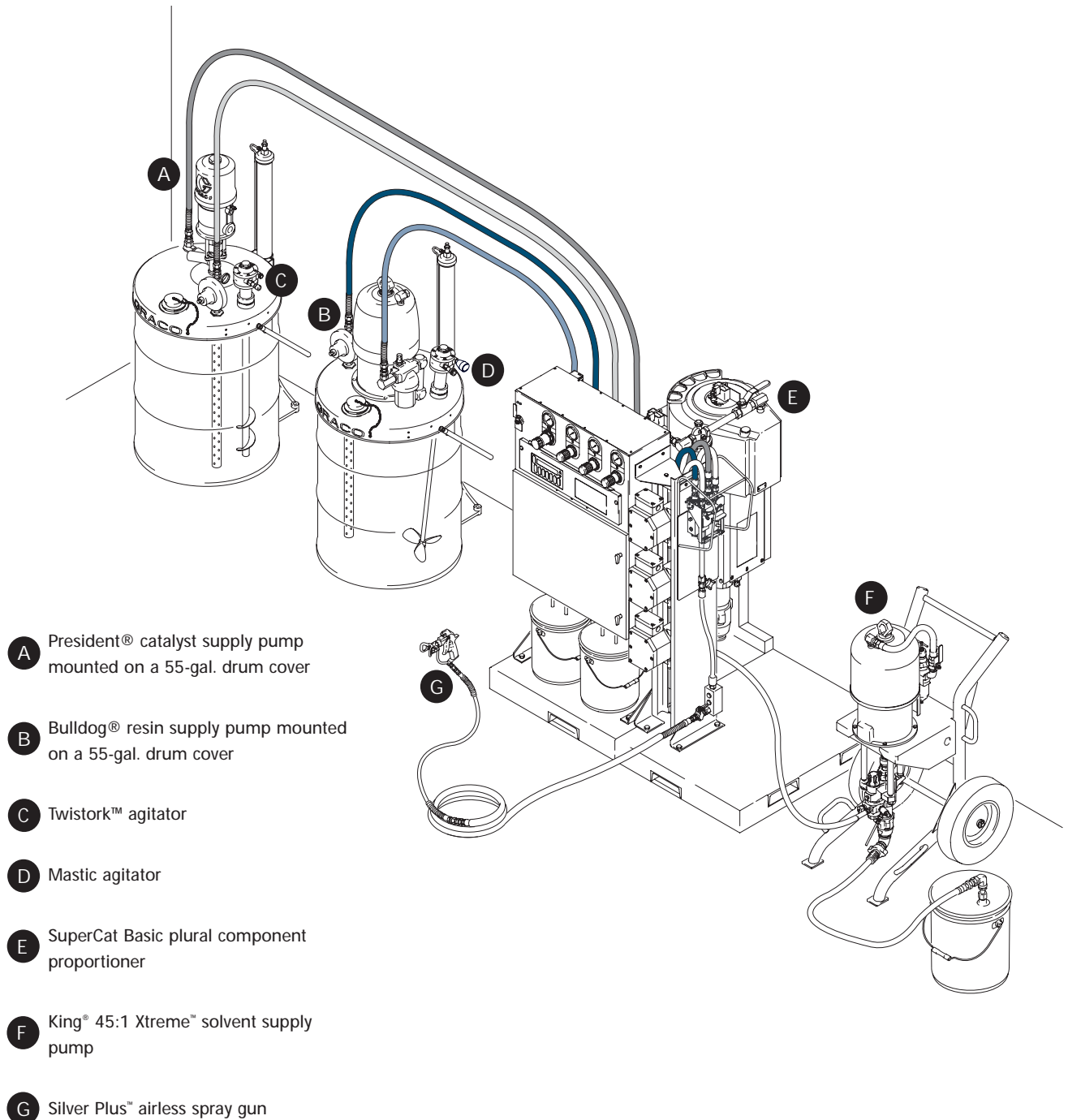


SuperCat

## Typical High Pressure, High Volume Plural Component System Layouts

This drawing is a guide to provide a typical equipment range and system layout. Consult an authorized Graco distributor before selecting, installing or designing a plural component system.

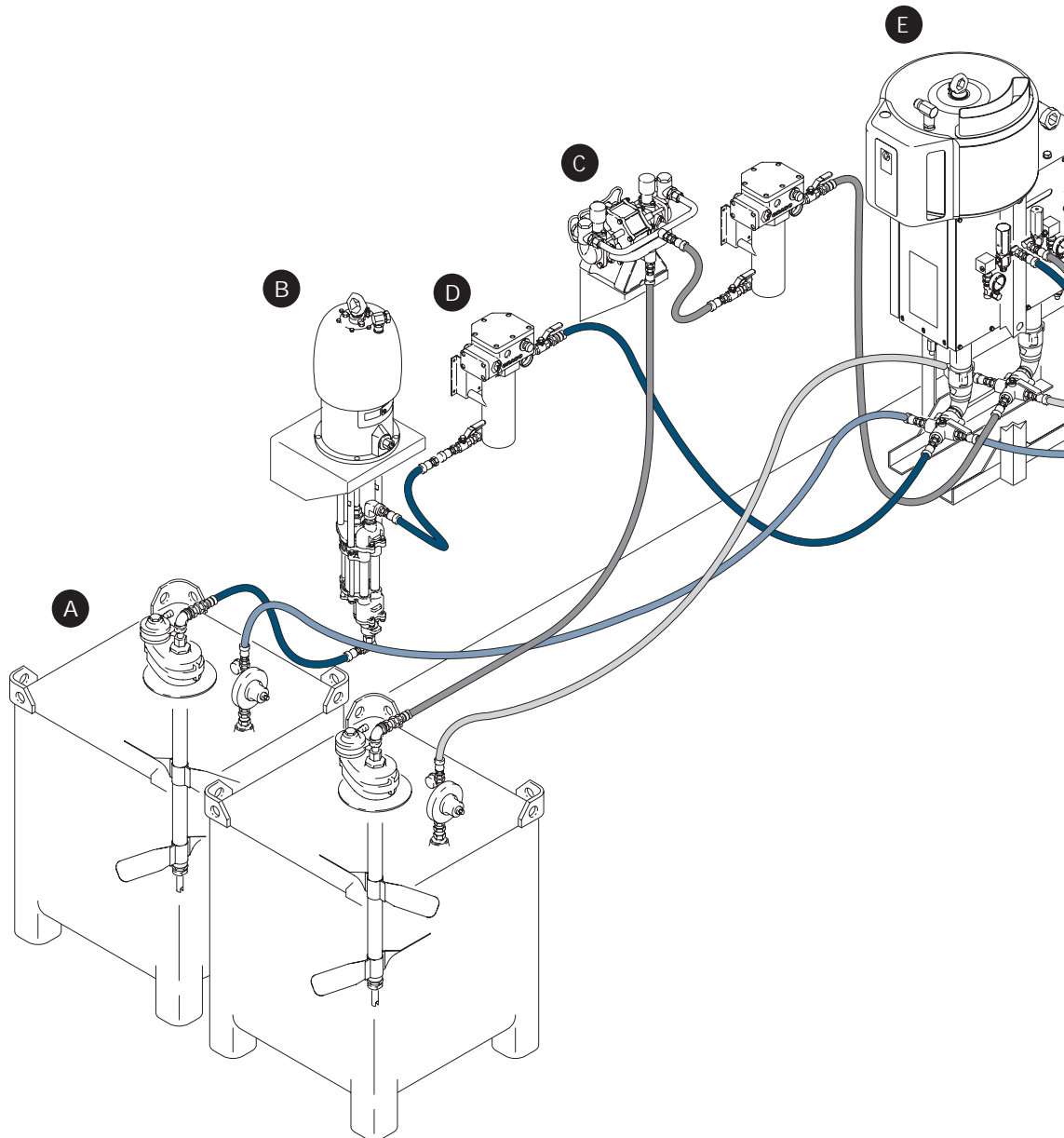
### SYSTEM I - SUPERCAT

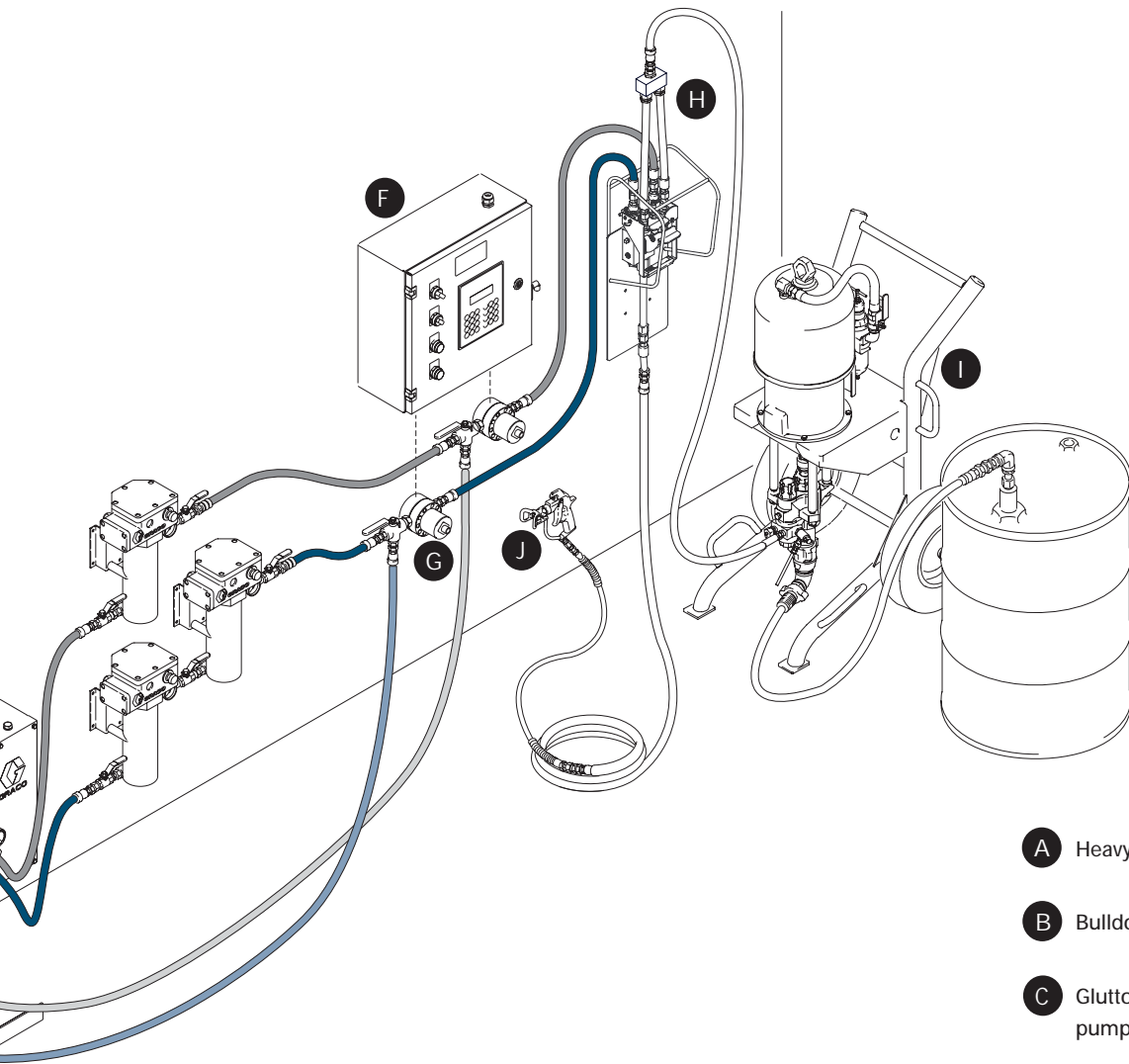


## Typical High Pressure, High Volume Plural Component System Layouts

This drawing is a guide to provide a typical equipment range and system layout. Consult an authorized Graco distributor before selecting, installing or designing a plural component system.

### SYSTEM II - HYDRA-CAT HP

**3**



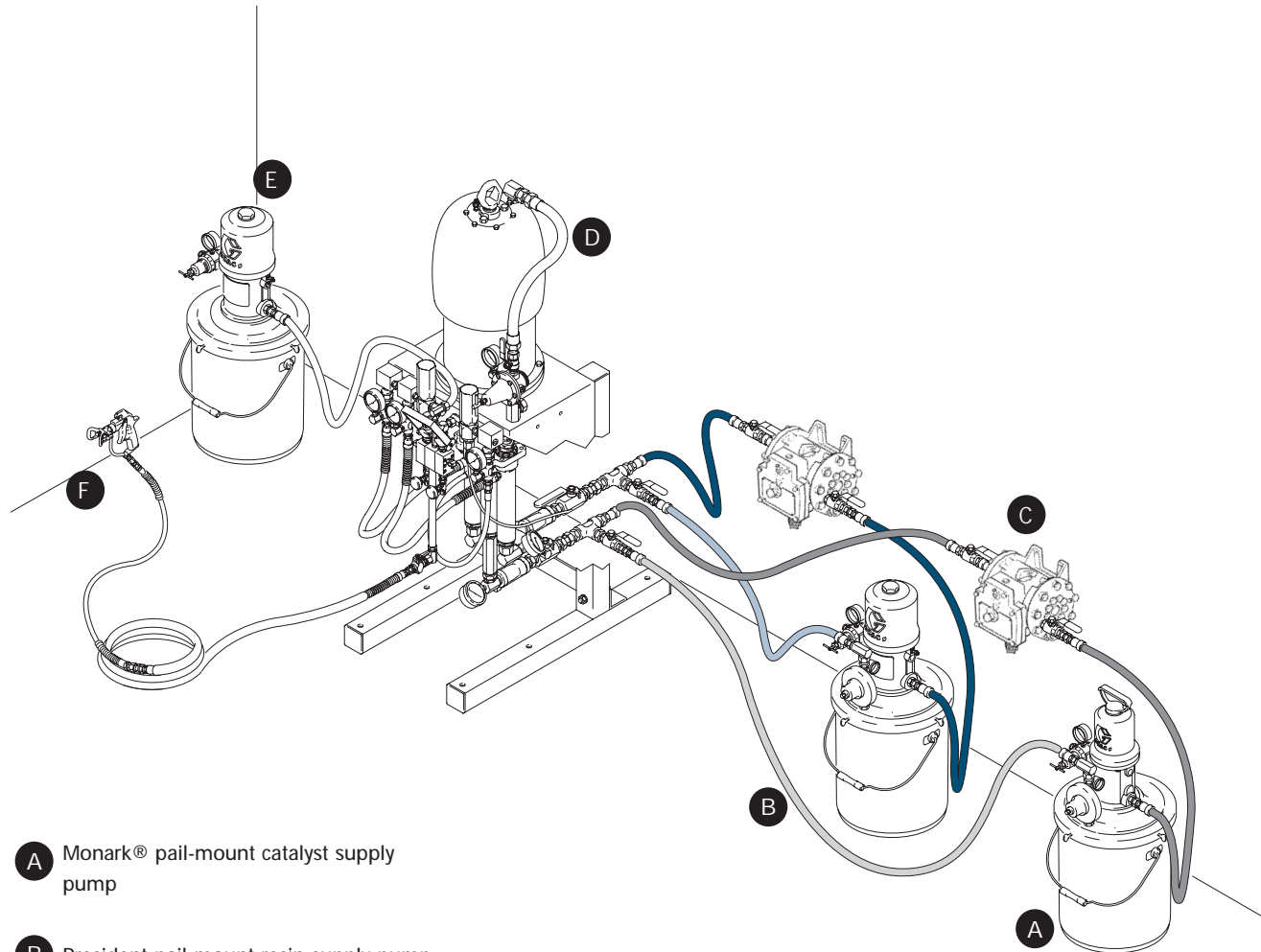
- A** Heavy-duty back-gear agitator
- B** Bulldog Hi-Flo 4-ball resin supply pump
- C** Glutton dual piston catalyst supply pump
- D** Viscon2 fluid heater
- E** Hydra-Cat HP plural component proportioner
- F** 2K Monitor ratio assurance system
- G** Helical flow meter
- H** Remote mounted mix manifold
- I** King 56:1 Xtreme solvent supply pump
- J** Model 510 airless spray gun

3

## Typical High Pressure, High Volume Plural Component System Layouts

This drawing is a guide to provide a typical equipment range and system layout. Consult an authorized Graco distributor before selecting, installing or designing a plural component system.

### SYSTEM III - FIXED RATIO HYDRA-CAT



- A** Monark® pail-mount catalyst supply pump
- B** President pail-mount resin supply pump
- C** Viscon fluid heaters
- D** Bulldog Fixed Ratio Hydra-Cat plural component proportioner
- E** President pail-mount solvent supply pump
- F** Silver Plus airless spray gun



# SuperCat™ & SuperCat Basic

## Mechanical Proportioners

High pressure, high volume mechanical proportioning system that uses electronic controls and a state-of-the-art ratio assurance system to reduce material and solvent waste, and eliminate rework costs associated with off-ratio applications.

### Features and Benefits

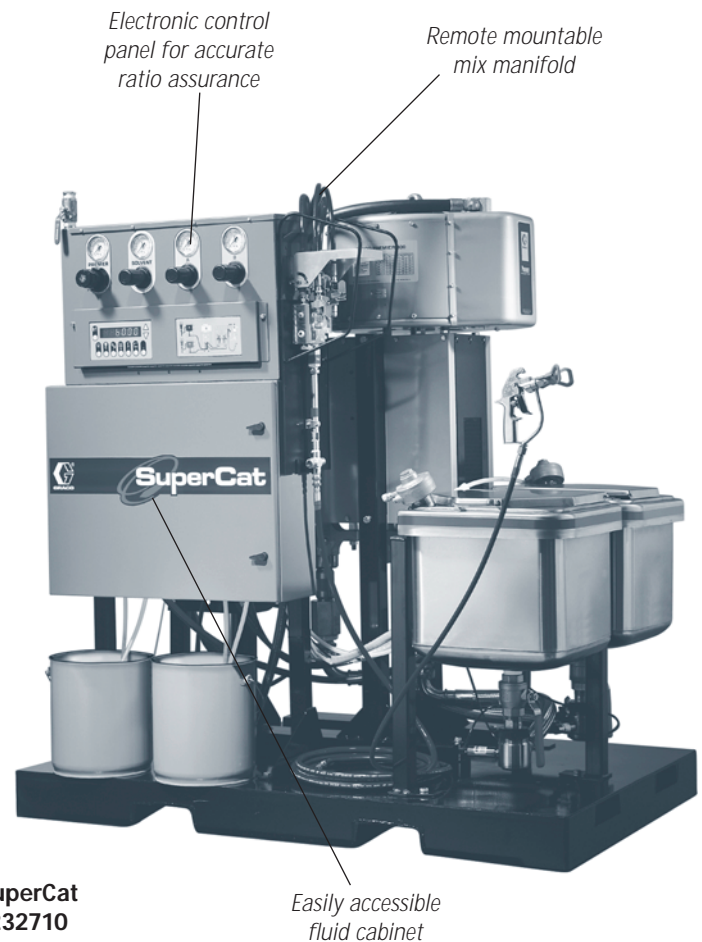
- Available with Xtreme lowers or SST Dura-Flo™ lowers
- Operator-friendly electronic controls provide superior monitoring of mix ratio and other operating parameters
- Secured electronic controls allow only authorized access

### Typical Applications

- Marine shipbuilding
- Railcar
- Tank farms
- Refineries
- Oil field tanks
- Chemical storage tanks
- Bridges
- Power plants
- Desalinization plants
- Water treatment plants
- Pulp and paper mills
- Secondary containment

### Typical Coatings Applied

- High solids and 100% solids epoxy coatings
- Solventborne coatings
- Waterborne coatings
- Primers
- Tank linings
- Pipeline coatings
- Fire retardant coatings



# SuperCat and SuperCat Basic

## Mechanical Proportioners

### SuperCat & SuperCat Basic Features

- Electronic display
  - Internally powered
  - Vital data displayed
  - Limit values (999 settable recipes)
  - Electronic security built-in
  - Alarms for off-ratio conditions
- Function schematic display indicates operational areas and fault conditions
- Fluid control cabinet
  - Control valving - color-coded for resin, catalyst and solvent
  - Fluid filters (60 mesh/250 micron)
  - Ratio checking valves with pressure gauges
- Back pressure valve for pressure control
- Pneumatic controls, all on operator console
- Mix manifold with concentric mixing and interlocked handles
- 12 element static mixer with three gun manifold

#### SUPERCAT BASIC INCLUDES:

- Premier® driven proportioning pump
- Xtreme™ cylinders option
- Available ratios:
  - 1:1 Fixed
  - 4:1 Fixed
  - 2:1 Fixed
  - 1:1- 3:1 Variable
  - 3:1 Fixed
  - 2:1- 6:1 Variable

#### SUPERCAT COMPLETE INCLUDES:

- Premier driven proportioning pump with Dura-Flo™ SST fluid cylinders
- 20-gal. SST reservoirs with gravity feed to the proportioners
- Fluid level and filter controls
- Fluid recirculation
- 50 ft. (15.2 m) of ID 3/8 in. (9.5 mm) fluid hose
- 6 ft. (1.8 m) of ID 1/4 in. (6.3 mm) whip hose
- Silver Plus™ gun with 617 HD RAC tip
- President® 46:1 solvent flush pump

#### Available in Heated Models:

- (2) Inline high pressure SST 2500 kw heaters
- Heater mounting bracket
- All hoses and connections
- Feed pump controls
- Electronic temperature monitoring
- Insulated fluid hose

#### Available Ratios:

- 1:1 Fixed
- 4:1 Fixed
- 2:1 Fixed
- 1:1- 3:1 Variable
- 3:1 Fixed
- 2:1- 6:1 Variable



# SuperCat and SuperCat Basic

## Mechanical Proportioners

### Technical Specifications

Maximum fluid working pressure .....	5000 psi (34.5 MPa, 345 bar)
Maximum air input pressure .....	100 psi (0.7 MPa, 7 bar)
Fluid inlet size	
Xtreme .....	1-1/4 npt(m)
Dura-Flo 1200, 900 .....	2 npt(f)
Dura-Flo 750, 600 .....	1-1/2 npt(f)
Reservoirs .....	2 npt(f)
Fluid outlet size	
Xtreme 290, 250, 220 .....	1 npt(f)
Xtreme 180, 145 .....	3/4 npt(f)
Dura-Flo 1200, 900 .....	1 npt(f)
Dura-Flo 750, 600 .....	3/4 npt(f)
Air inlet size .....	3/4 npt(f)
Weight .....	1365 lbs. (619.7 kg)
Instruction Manuals	
Variable Ratio SuperCat .....	.308881
Fixed Ratio SuperCat 2:1, 3:1, 4:1 .....	.308925
Fixed Ratio SuperCat 1:1 .....	.308803
Xtreme Pump Lower .....	.309340
Dura-Flo 1200 Pump Lower .....	.308360
Dura-Flo 900 Pump Lower .....	.308354
Dura-Flo 750 Pump Lower .....	.308418
Dura-Flo 600 Pump Lower .....	.308350
Premier Air Motor .....	.308213
Silver Plus Gun .....	.308326
President 46:1 .....	.307619
President Air Motor .....	.306982



# SuperCat and SuperCat Basic

## Mechanical Proportioners

### Pump Specifications

Note: • All output pressures limited to 5000 psi (34 MPa, 345 bar) by integral pressure relief valves.

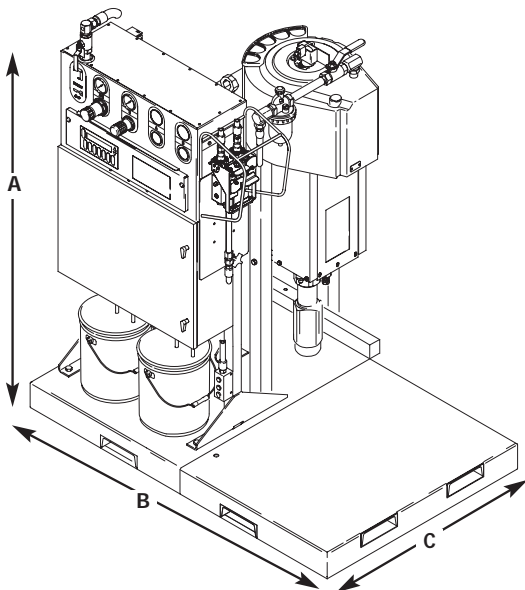
- Pressure outputs calculated at 100 psi (0.7 MPa, 7 bar) air pressure.
- Volume outputs calculated at 40 cycles per minute.

Variable Ratio Range	Air Motor	At Minimum Ratio Setting		At Maximum Ratio Setting		Master	Slave
		Stall psi (MPa, bar)	Output at 40 cpm gpm (lpm)	Stall psi (MPa, bar)	Output at 40 cpm gpm (lpm)		
1:1 - 3:1	Premier	3333 (23, 230)	6.1 (23.0)	5000 (34.5, 345)	4.1 (15.4)	1200	1200
2:1 - 6:1	Premier	4444 (30.7, 307)	4.6 (17.3)	5714 (39.4, 394)	3.6 (13.4)	1200	600
Fixed Ratio Range	Air Motor	Output Pressure at 100 psi air psi (MPa, bar)		Output Flow at 40 cpm gpm (lpm)		Master	Slave
1:1	Premier	5000 (34.5, 345)		3.9 (14.9)		750	750
2:1	Premier	5000 (34.5, 345)		4.5 (17.0)		1200	1200
3:1	Premier	5000 (34.5, 345)		3.2 (12.1)		900	750
4:1	Premier	5000 (34.5, 345)		4.0 (15.2)		1200	600

### PREMIER AIR CONSUMPTION (ALL MODELS)

Cycles per min. (cpm)	40 psi (280 kPa, 2.8 bar)		70 psi (480 kPa, 4.8 bar)		100 psi (0.7 MPa, 7.0 bar)	
	cfm	M <sup>3</sup> /min	cfm	M <sup>3</sup> /min	cfm	M <sup>3</sup> /min
5	13	0.36	20	0.56	26	0.74
10	25	0.71	40	1.13	52	1.48
15	38	1.07	60	1.69	78	2.22
20	50	1.42	80	2.26	104	2.95
25	63	1.78	100	2.82	130	3.69
30	75	2.13	120	3.39	156	4.43
35	88	2.49	140	3.95	183	5.17
40	100	2.84	160	4.52	209	5.91

### Dimensions



Height (A)	Length (B)	Width (C)
74 in.	66 in.	42 in.
(1880 mm)	(1676 mm)	(1067 mm)

# SuperCat and SuperCat Basic Mechanical Proportioners

## Variable Ratio SuperCat Basic Ordering Information

Note: Solvent and feed pumps must be purchased separately.

Part No.	Variable Ratio Range
243476*	1:1 - 3:1
243631**	1:1 - 3:1
243477*	2:1 - 6:1
243632**	2:1 - 6:1

\*with Xtreme Lowers  
\*\*with SST Dura-Flo Lowers

## Variable Ratio SuperCat Ordering Information

Note: Feed pumps must be purchased separately.  
Solvent pump (46:1 President) supplied as standard.

Part No.	Variable Ratio Range	Number of Heaters Used			
		240v	480v	Europe 220v	Asia/Pacific 200v
965761	1:1 - 3:1	na	na	na	na
232705	1:1 - 3:1	2	-	-	-
232706	1:1 - 3:1	-	2	-	-
232707	1:1 - 3:1	-	-	-	2
965762	2:1 - 6:1	na	na	na	na
232709	2:1 - 6:1	2	-	-	-
232710	2:1 - 6:1	-	2	-	-
232711	2:1 - 6:1	-	-	-	2
232712	2:1 - 6:1	-	-	2	-

\*with Xtreme Lowers  
\*\*with SST Dura-Flo Lowers

## Fixed Ratio SuperCat Basic Ordering Information

Note: Solvent and feed pumps must be purchased separately.

Part No.	Ratio
243611**	1:1
243461*	2:1
243617**	2:1
243462*	3:1
243618**	3:1
243463*	4:1
243619**	4:1

\*with Xtreme Lowers  
\*\*with SST Dura-Flo Lowers

## Fixed Ratio SuperCat Ordering Information

Note: Feed pumps must be purchased separately. Solvent pump (46:1 President) supplied as standard.

Part No.	Ratio	Number of Heaters Used			
		Europe		Asia/Pacific	
		240v	480v	220v	200v
232095	1:1	na	na	na	na
232701	1:1	2	-	-	-
232702	1:1	-	2	-	-
232703	1:1	-	-	-	2
232704	1:1	-	-	2	-
232096	2:1	na	na	na	na
232713	2:1	2	-	-	-
232714	2:1	-	2	-	-
232715	2:1	-	-	-	2
232716	2:1	-	-	2	-
232097	3:1	na	na	na	na
232717	3:1	2	-	-	-
232718	3:1	-	2	-	-
232719	3:1	-	-	-	2
232720	3:1	-	-	2	-
232098	4:1	na	na	na	na
232721	4:1	2	-	-	-
232722	4:1	-	2	-	-
232723	4:1	-	-	-	2
232724	4:1	-	-	2	-

# SuperCat and SuperCat Basic

## Mechanical Proportioners

### Accessories

#### GUNS AND TIPS

**235464 Silver Plus Gun**  
Maximum working pressure: 5000 psi (34 MPa, 345 bar). Includes HD Reverse-A-Clean™ (RAC) tip assembly, 617 size SwitchTip™, and 2-finger trigger.

**235474 Silver Plus Gun Repair Kit**  
Includes diffuser seat, gasket and needle.

**236995 Model 510 Airless Spray Gun**  
Maximum working pressure: 7400 psi (50 MPa, 503 bar). Includes HD RAC tip assembly, 527 size SwitchTip, and 4-finger trigger.

#### Needle and Seat Repair Kits for 510 Gun

**237398** For fluid orifice size of 0.090 in. (2.3 mm)  
**237260** For fluid orifice size of 0.125 in. (3.2 mm)

**222674 HD RAC Tip Retainer With DripLess™ Guard**  
Inlet: 7/8 in. (22.2 mm) thread. Tip (GHDxxx) ordered separately.

**GHDxxx HD RAC Tips**  
See your local distributor for tip size selection.

#### ADAPTERS AND FITTINGS

**231414 HD SST Drum Agitator**  
Includes agitator, siphon tube, drum cover, & elevator.

**236629 Siphon SST Twistork Agitator**  
Fits standard 2 in. bung opening in closed-head 55-gal. (200 L) drums. Includes siphon tube.

**240690 Reservoir Level Indicator Kit**  
Includes 2 hopper level indicators. Used when the SuperCat hoppers are manually filled and/or filled from bulk supplies with optional feed pumps.

#### Viscon™ Fluid Heaters

**220522** 120 VAC, single phase, 16.7 amp  
**220523** 240 VAC, single phase, 9.6 amp  
**220524** 480 VAC, single phase, 4.8 amp

**241186 Additional Heater Installation Kit**  
Includes mounting hardware and hoses for the addition of 1 heater. Heater not included, see manual 308914 for available heater voltages.

**240689 Feed Pump Control Kit (for use with reservoirs only)**  
Includes air regulators, solenoid valves and required tubing for the installation of the feed pump controls. Feed pumps not included.

**243479 Solvent Pump Pick-up Kit**  
Attaches to solvent pump to pick up strokes used for solvent use control.

**114312 Paint Shield, 10 Pack**  
Clear, disposable peel-off shield for the control and schematic keypads.

#### Gauge Cover, 12 per single sheet

Clear, disposable peel-off shield for air and fluid pressure gauges.

**193199** For 2 in. gauge face

**193200** For 2-1/2 in. gauge face

#### 245177 Xtreme Proportioner Connection Kit

Kit to install two Xtreme pump lowers on an existing SuperCat proportioner. Includes tie rods, rod adapters, and quick disconnect coupler.

### HOSES

#### Hoses, SST, Coupled

Maximum working pressure: 5000 psi (34 MPa, 345 bar).

**240658** 1/4 in. x 6 ft. fxf whip hose

**240642** 1/4 in. x 50 ft. mx f

**240659** 1/4 in. x 15 ft. fxf, whip hose

**240647** 3/8 in. x 50 ft. mx f

**240660** 1/4 in. x 25 ft. fxf whip hose

**240636** 1/2 in. x 50 ft. mx f

#### Hoses, SST, Insulated

Maximum working pressure: 5000 psi (34 MPa, 345 bar).

**241449** 1/4 in. x 50 ft.

**241454** 1/2 in. x 50 ft.

**241171** 3/8 in. x 50 ft.

### CONTROLS AND VALVES

#### High Pressure Fluid Regulators

For fluid control in the high pressure line.

Maximum working pressure: 6000 psi (41.4 MPa, 414 bar). Regulated pressure range: 500-3000 psi (3.4-20.7 MPa, 34-207 bar).

**238890** Spring-operated, with gauge

**238889** Spring-operated with EZ flush plug

Maximum working pressure: 6000 psi (41.4 MPa, 414 bar). Regulated pressure range: 3000-5000 psi (20.7-34.5 MPa, 207-345 bar).

**238892** Spring-operated with gauge

**238891** Spring-operated with EZ flush plug

#### 240688 Inlet Low Pressure Transducer Kit

Includes 2 low pressure transducers to indicate hopper filter status and provide an alarm signal.

# SuperCat and SuperCat Basic

## Mechanical Proportioners

### Accessories (continued)

#### FILTERS

**192974** Pump Inlet Filter Element  
12 mesh

**Pump Outlet Filter Elements (3 pack)**

**238437** 60 mesh (250 micron)

**238439** 100 mesh (149 micron)

#### MOUNTING OPTIONS

**240225** Fluid Mix Manifold

Maximum working pressure: 5000 psi (34.5 MPa, 345 bar). Includes mix manifold, material ball valves, solvent inlet valve, outlet static mixer (1/2 in. [12.7 mm] x 12 element), and mounting bracket. 1/2 in. (12.7 mm) ported.

**241157** Heater Mounting/Installation Kit

Includes heater mounting rack, mounting hardware and fluid hoses for 2 heaters, and 240689 feed pump control kit. Heaters not included, see manual 308914 for available heater voltages.

#### LIQUIDS AND LUBRICATION

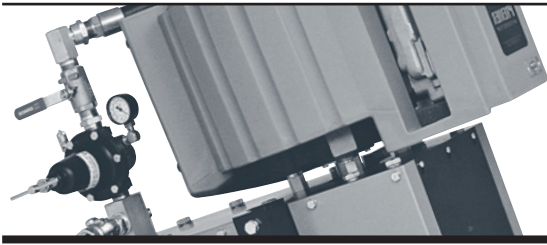
**Throat Seal Liquid**

**206995** 1 qt. (0.9 L)

**206996** 1 gal. (3.8 L)

**206997** 12-qt. case (11.3 L)

**206998** 4-gal. case (15.14 L)



# Hydra-Cat® HP

## Mechanical Proportioner

High pressure, high value mechanical proportioner that replaces the manual pre-mixing of plural component materials and reduces the cost of wasted paint and labor.

### 3

### Features and Benefits

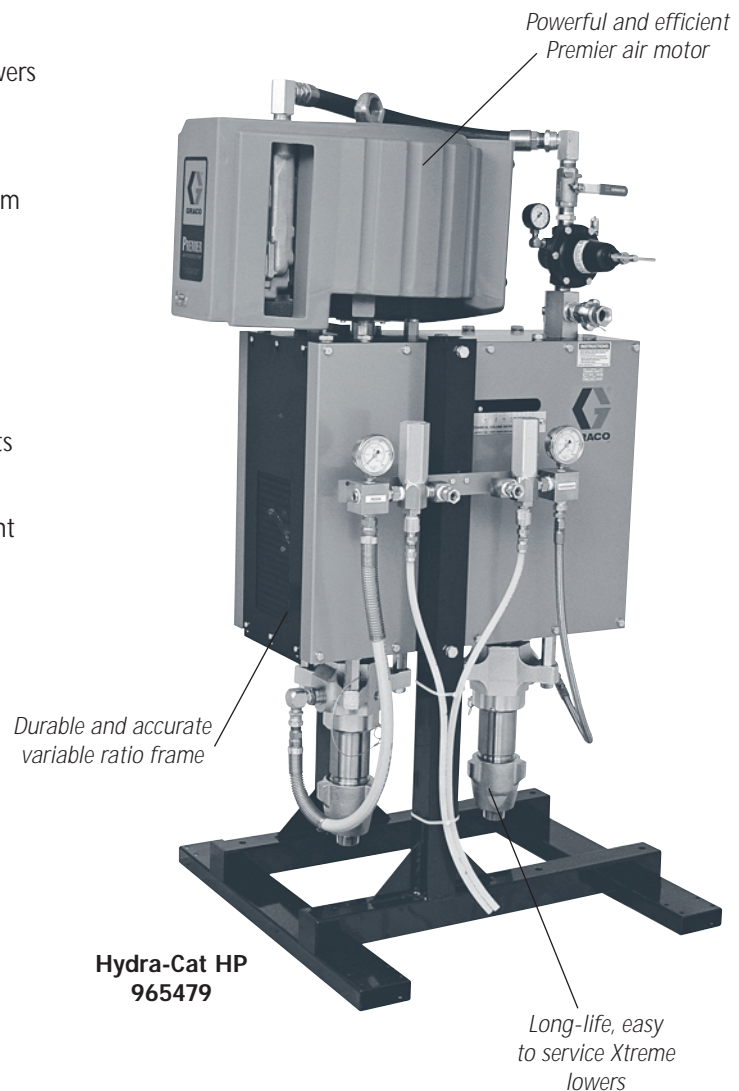
- Easily adjustable ratios without changing pump lowers
- Choice of Premier or King air motor
- Compatible with Dura-Flo fluid sections
- Freestanding design - easy to integrate into a system

### Typical Applications

- Marine Shipbuilding
- Railcar
- Tank farms
- Refineries
- Oil field tanks
- Chemical storage tanks
- Bridges
- Power plants
- Desalinization plants
- Water treatment plants
- Pulp and paper mills
- Secondary containment

### Typical Coatings Applied

- High solids and 100% solids epoxy coatings
- Solventborne coatings
- Waterborne coatings
- Primers
- Tank linings
- Pipeline coatings
- Fire retardant coatings



# Hydra-Cat HP

## Mechanical Proportioner

### Technical Specifications

Maximum fluid pressure .....5000 psi (3.5 MPa, 345 bar)  
 Input air pressure ..... 40 psi (.27 MPa, 2.7 bar) to 100 psi (.69 MPa, 6.9 bar)  
 Maximum fluid flow ..... 6 gpm (22.7 lpm)at 40 cycles/min.  
 Wetted parts ..... PlasmaCoat™ SST rods, hardened Chrome Over High-Grade SST cylinders,  
 Stainless Steel balls, Electroless Nickel-Plated inlet and outlet housings,  
 Tuff-Stack™, PTFE packings standard

### Dimensions

	Width	Depth	Height	Weight
<b>King</b> Hydra-Cat HP	32 in. (81.3 cm)	30 in. (76.2 cm)	65 in. (165.1 cm) no casters 70 in. (177.8 cm) with casters	600 lbs. (272.4 kg) approximate
<b>Premier</b> Hydra-Cat HP	39 in. (99.1 cm)	30 in. (76.2 cm)	65 in. (165.1 cm) no casters 70 in. (177.8 cm) with casters	600 lbs. (272.4 kg) approximate

### Ordering Information

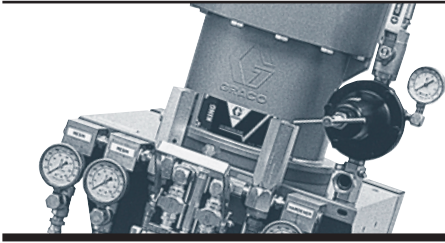
Complete Hydra-Cat HP Units		At Minimum Ratio Setting				At Maximum Ratio Setting					
Air Motor	Assembly Part No.	Ratio Range		Stall Pressure		Output		Stall Pressure		Output	
		Min.	Max.	psi	(bar)	gpm	(lpm)	psi	(bar)	gpm	(lpm)
Premier 12 x 6	965479	2.00	6.00	4444	(307)	4.38	(16.56)	5714	(394)	3.40	(12.88)
Premier 9 x 9	965530	1.00	3.00	4444	(307)	4.38	(16.56)	6667	(460)	2.92	(11.04)
King 6 x 6	965477	1.00	3.00	3803	(262)	2.92	(11.04)	5704	(393)	1.94	(7.36)
King 9 x 6	965478	1.50	4.50	3042	(210)	3.65	(13.80)	4148	(286)	2.67	(10.12)
King 18 x 6	965466	3.00	9.00	1901	(131)	5.83	(22.08)	2282	(157)	4.86	(18.40)

Note: all output pressures limited to 5000 psi (345 bar) by integral pressure relief valves.

### Accessories

**245177 Xtreme Proportioner Connection Kit**  
 Kit to install two Xtreme pump lowers on an existing SuperCat proportioner. Includes tie rods, rod adapters, and quick disconnect couplers.





# Fixed Ratio Hydra-Cat®

## Mechanical Proportioner

3

High volume mechanical proportioner that replaces the manual pre-mixing of plural component materials and reduces the cost of wasted paint and labor.

### Features and Benefits

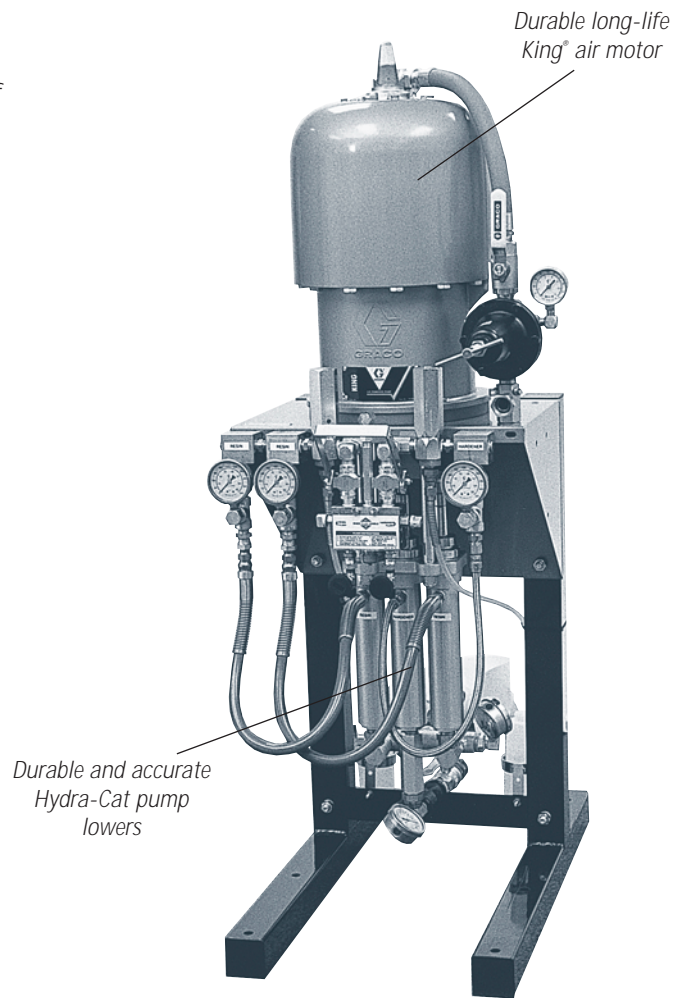
- Severe Duty™ lowers for wear resistance and durability
- Two- and three-lower designs achieve a wide variety of mix ratios
- Two-lower design for a consistent 1:1 mix ratio.
- Three-lower design provides mix ratios above 1:1 for balanced pumping
- Provides accurately mixed and proportioned material on demand
- Reduces material and solvent waste

### Typical Applications

- Plural component materials
- Protective coatings
- Farm and construction equipment
- Truck and bus
- General metal fabrication
- Foam and elastomerics

### Typical Coatings Applied

- Epoxies
- Polyurethanes
- Waterbornes
- Acid-catalyzed wood finishing materials
- Stains, lacquers and varnishes
- Sealants and adhesives



**Fixed Ratio Hydra-Cat  
Configured Product**



# Fixed Ratio Hydra-Cat

## Mechanical Proportioner

The Hydra-Cat is a dispensing system that will proportion and mix two-component fluids. The fixed ratio proportioners accurately pump and proportion two-component materials by powering two or three positive displacement pump lowers from a common air motor. This assures that the stroke rate and stroke length of all pump lowers are identical, providing constant proportioning. The mix ratio is fixed by selecting compatible sets of two or three lowers.

*Fixed Ratio Hydra-Cat can be ordered as a package or a custom-configured unit by choosing all desired options to be factory-integrated. Use configurator form number 309002 on pages 182-193 to configure your custom package.*

### Fixed Ratio Hydra-Cat Options

#### MOTOR TYPE

*Note: Graco air motors can be combined with various lowers to achieve a wide range of air-to-fluid pressure ratios.*

Air Motors	Effective Area Sq. in. (Sq. cm)	Fluid Pressure Range	Flow Rates @ 40 cpm
President	14.19 (91.55)	500-2500 psi (3.4-17.2 MPa, 34-172 bar)	0.75-4.16 gpm (2.8-15.75 lpm)
Bulldog*	38.48 (248.26)	1300-3000 psi (8.9-20.7 MPa, 89-207 bar)	1.5-4.62 gpm (5.7-17.5 lpm)
King	78.54 (506.71)	2600-3000 psi (17.9-20.7 MPa, 179-207 bar)	2.73-4.62 gpm (10.3-17.5 lpm)
<b>Hydraulic Motors</b>			
Viscount I	1.48 (9.55)	500-2671 psi (3.4-18.4 MPa, 34-184 bar)	0.73-3.89 gpm (2.7-14.7 lpm)
Viscount II	4.9 (31.61)	1500-3000 psi (10.3-20.7 MPa, 103-207 bar)	3.35-4.62 gpm (12.7-17.5 lpm)

#### PUMP LOWER TYPE

##### Two Lower Design (1:1 Mix Ratio Only)

The Fixed Ratio Hydra-Cat uses two identically sized lowers driven by a common air motor through a connecting yoke. Using one lower each for the base and catalyst components achieves a consistent 1:1 mix ratio and provides balanced pumping forces to prevent premature packing wear.

##### Three Pump Lower Design (1:1 to 6.4:1 Mix Ratio)

The Fixed Ratio Hydra-Cat uses two identically sized outer lowers joined by a manifold to pump one component while a third (center) lower pumps the second component. In this manner, lowers of various sizes can be selected to provide a wide variety of mix ratios while maintaining balanced pumping forces and optimum packing life.

Lower Identification	Effective Area Sq. In. (sq. cm)	Lower Part No.
(President 10:1)	1.476 (9.53)	215932
(Bulldog 30:1)	1.248 (8.05)	901878
(President 15:1)	0.884 (5.70)	215930
0	0.884 (5.70)	948640
1	0.740 (4.77)	948641
2	0.553 (3.57)	222012
2 (w/scraper)	0.553 (3.57)	222012
5	0.443 (2.86)	222015
7	0.370 (2.39)	222017
9	0.277 (1.79)	222019
(Bulldog 10:1)	3.540 (22.80)	206792
(Monark 5:1)	1.478 (9.54)	217339
(Bulldog 40:1)	0.875 (5.65)	946196

# Fixed Ratio Hydra-Cat

## Mechanical Proportioner

### MIX MANIFOLD OPTIONS

The mix manifold incorporates two materials and mixes them thoroughly using a 12 in. static mixer. Mix manifolds can be mounted locally on the Hydra-Cat or mounted remotely, closer to the application, in order to reduce material and solvent waste. All manifolds include a 12 in. SST mixer with 32 plastic elements, except 240225, which uses a SST mixer element.

Local Standard Manifold (CS)	241692	3000 psi	1/4 port size
Local Control Mixer Manifold (SST)	241808	3000 psi	1/2 port size
Remote Mounted Manifold (CS)	241809	5000 psi	3/8 port size
Remote Mounted Manifold (SST)	240225	5000 psi	1/2 port size

3

### Mounting Options

#### BARE PROPORTIONER

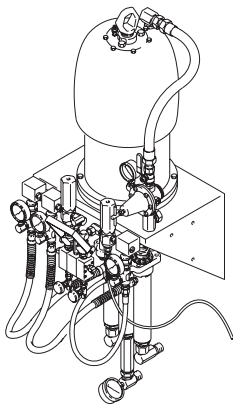
Bare proportioners consist of an air motor assembled with two or three lowers. Bare proportioners require a mix manifold, shut-off valves and other installation hardware as described in wall-mount and floor-stand proportioners.

#### WALL-MOUNT

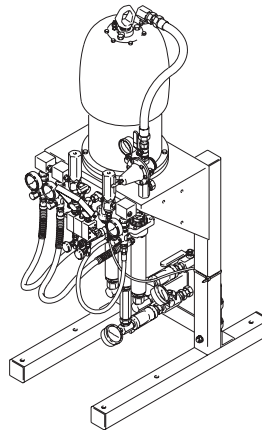
Wall-mounted proportioners consist of a bare proportioner, mix manifold, shut-off valves, gauges, inlet kit (supply) and wall bracket. These proportioners may require other system accessories such as feed systems, applicators and manifolds. Wall mount proportioners can be mounted directly on a wall or attached to the side of a supply tank or other piece of equipment for convenient installation.

#### FLOOR-STAND

Floor-stand proportioners consist of a bare proportioner, mix manifold, shut-off valves, gauges, inlet kit and floor-stand. These proportioners may require other system accessories such as supply systems, applicators and manifolds. Floor-stand proportioners are completely free standing. They can be made portable by mounting them on a four-wheel cart designed to accommodate all system components.



Fixed Ratio Hydra-Cat Wall-Mount



Fixed Ratio Hydra-Cat Floor-Stand

# Fixed Ratio Hydra-Cat Mechanical Proportioner

## How to Select a Hydra-Cat

### 1. SELECT A MIX RATIO

The mix ratio is usually specified by the material manufacturer.

### 2. SELECT PRESSURE RATIO OR MAX PRESSURE

Select a pressure ratio that will allow the proportioner to deliver the required amount of fluid pressure for the application. This is determined by material viscosity and setup parameters.

### 3. SELECT A FLOW RATE

From the possible choices of fluid to air ratio, select one that exceeds the total flow requirements of the application device(s) by approximately 30%. This provides an adequate application factor for such variables as tip or nozzle wear and pump/motor characteristics.



## Fixed Ratio Hydra-Cat Packages

### 1:1 MIX RATIO

Fluid to Air Ratio	Fluid Flow gpm	Fluid Flow lpm	Lower ID Code	Air Motor	Stand	Wall	Bare
13:1	1.5	5.7	2 • 2	President	231618	231593	231643
19:1	1.0	3.8	7 • 7	President	231620	231595	231645
35:1	1.8	6.7	2 • 2	Bulldog	231865	231836	231897

### 4:1 MIX RATIO

Fluid to Air Ratio	Fluid Flow gpm	Fluid Flow lpm	Lower ID Code	Air Motor	Stand	Wall	Bare
10:1	1.9	7.2	292	President	231638	231613	231663
28:1	2.2	8.4	292	Bulldog	231883	231854	231915
35:1	3.5	13.4	050	King	231291	231286	231668

### 2:1 MIX RATIO

Fluid to Air Ratio	Fluid Flow gpm	Fluid Flow lpm	Lower ID Code	Air Motor	Stand	Wall	Bare
13:1	1.5	5.7	777	President	231632	231607	231657
23:1	2.6	10.0	222	Bulldog	231876	231847	231908
35:1	1.8	6.7	777	Bulldog	231878	231849	231910

### 1:1 MIX RATIO – HYDRAULIC-POWERED

Pressure Ratio	Fluid Flow gpm	Fluid Flow lpm*	Lower ID Code	Air Motor	Stand	Wall	Bare
1.7:1	3.3	12.5	—	Viscount II	—	—	217337

### 3:1 MIX RATIO

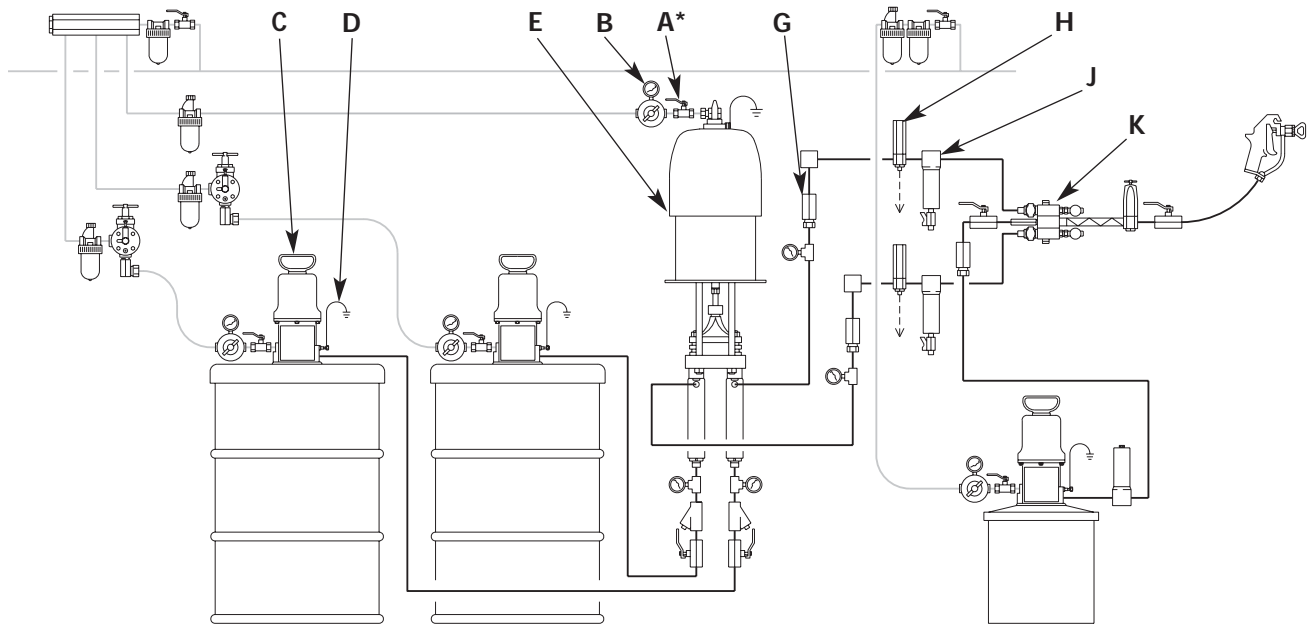
Fluid to Air Ratio	Fluid Flow gpm	Fluid Flow lpm	Lower ID Code	Air Motor	Stand	Wall	Bare
26:1	2.3	8.9	272	Bulldog	231880	231851	231912



# Fixed Ratio Hydra-Cat Mechanical Proportioner

## System Setup

### TWO DISPLACEMENT PUMPS WITH FEED PUMPS



## Key

<b>A</b>	Bleed-Type Master Air Valve	<b>E</b>	Proportioning Pump	<b>J</b>	Fluid Filter (Optional)
<b>B</b>	Pump Air Regulator	<b>F</b>	Fluid Pressure Gauge	<b>K</b>	Mixer Manifold
<b>C</b>	Feed Pump	<b>G</b>	Check Valve	<b>L</b>	Fluid Shutoff Valve
<b>D</b>	Ground Wire	<b>H</b>	Automatic Pressure Relief Valve	<b>M</b>	Solvent Pump
				<b>N</b>	Fluid Strainer

\*Part of proportioner assembly

# Fixed Ratio Hydra-Cat

## Mechanical Proportioner

### Ordering Information

To complete your configured HydraCat Model Number please follow these instructions.

**Step 1.** Select whether your HydraCat will be air-operated or hydraulic-operated. Enter an A for Air Operated or B for Hydraulic. Select the corresponding following table for all future selections. Table FA = air operated. Table FH = hydraulic operated. Enter the appropriate letter above the code B in the Order Information section located on the bottom of the first page (Configured Product Order Form).

FRHC - E    <sup>X</sup>  
 B     CCC     DD     E     FF     GG     HH     J

*Note: once you've determined the correct reference table you must proceed as follows to select the best proportioner to meet your application requirements.*

**Required Information: Mix Ratio, Fluid Pressure, & Flow Required**

**Step 2.** Identify the applicable mix ratio to narrow down the rows in the reference table that meet this requirement.

**Step 3.** Look at the pressure and flow rate combinations available for the ratio identified in Step 2. Select the best pressure/flow rate combination requirements based on materials of construction. This should further narrow down the number of HydraCats that meet the application. In many cases there may only be one appropriate CCC selection in which case you've identified a specific solution.

If there are multiple rows that meet the customer's requirements with the same ratio, pressure and flow rate listed, review the wetted part compatibility option for the "A" and "B" components. Once you've selected compatible wetted parts, you've narrowed down the HydraCat solution to a single entry represented by the CCC table reference code. Enter these three letters above code CCC in the order information selection area on the Configured Product Order Form.

FRHC - E    <sup>X</sup>  
 B    <sup>XXX</sup>  
 CCC     DD     E     FF     GG     HH     J

If no combinations are available it's likely that our standard product offerings do not meet the application requirements.

**Step 4.** Using the table reference number "CCC" which you have identified in steps 1-3, fill in the next four codes (DD, E, FF, and GG) in the order information portion of the Configured Product Order Form.

*Note: stainless steel cylinders do not necessarily have all stainless steel wetted areas.*

FRHC - E    <sup>X</sup>  
 B    <sup>XXX</sup>  
 CCC    <sup>XX</sup>  
 DD    <sup>X</sup>  
 E    <sup>XX</sup>  
 FF    <sup>XX</sup>  
 GG    <sup>XX</sup>  
 HH    <sup>X</sup>  
 J

**Step 5.** Using the Mixed Manifold Options table select the appropriate item and enter the two digit number above the HH code on the Configured Product Order Form.

FRHC - E    <sup>X</sup>  
 B    <sup>XXX</sup>  
 CCC    <sup>XX</sup>  
 DD    <sup>X</sup>  
 E    <sup>XX</sup>  
 FF    <sup>XX</sup>  
 GG    <sup>XX</sup>  
 HH     J

**Step 6.** Select a mounting configuration (O, W, or S) and enter the letter above the J code on the Configured Product Order Form.

FRHC - E    <sup>X</sup>  
 B    <sup>XXX</sup>  
 CCC    <sup>XX</sup>  
 DD    <sup>X</sup>  
 E    <sup>XX</sup>  
 FF    <sup>XX</sup>  
 GG    <sup>XX</sup>  
 HH    <sup>X</sup>  
 J

*Once completed, please Fax or mail your order form to the number or address located on the Product Configurator Form.*

# Fixed Ratio Hydra-Cat Mechanical Proportioner

**Table FA - Fixed Ratio, Air-Powered Hydra-Cat**

To Determine Code "CCC" <i>Lookup Parameters</i>			Code "CCC"	Code "DD"	Code "E"	Code "FF"			Code "GG"		
Mix Ratio	Max Pressure (psi)	Fluid Flow at 40 cpm (gpm)	Table Reference Number	Air Motor Code	Number of Lowers	<i>See Pump Lower Table</i>					
						"A" Component Lower(s)			"B" Component Lowers		
						Lower(s) Code	Wetted Parts	Packing Material	Lower Code	Wetted Parts	Packing Material
1.00	480	3.99	A02	P1	2	01	SST	PTFE	01	SST	PTFE
1.00	800	2.40	A05	P1	2	14	CS	Tef/UH	14	CS	Tef/UH
1.00	959	2.00	A11	P1	2	15	CS	Tef/UH	15	CS	Tef/UH
1.00	1281	1.50	A14	P1	2	16	CS	PTFE	16	CS	PTFE
1.00	1281	1.50	A15	P1	2	17	CS	CFTEF	17	CS	CFTEF
1.00	1281	1.50	A16	P1	2	16	CS	PTFE	17	CS	CFTEF
1.00	1281	1.50	A17	P1	2	17	CS	CFTEF	16	CS	PTFE
1.00	1302	4.62	A20	B1	2	12	SST	PTFE	12	SST	PTFE
1.00	1602	1.20	A22	P1	2	18	CS	PTFE	18	CS	PTFE
1.00	1602	1.20	A23	P1	2	19	SST	PTFE	19	SST	PTFE
1.00	1918	1.00	A24	P1	2	20	CS	PTFE	20	CS	PTFE
1.00	1918	1.00	A25	P1	2	21	SST	PTFE	21	SST	PTFE
1.00	2169	2.78	A26	B1	2	14	CS	Tef/UH	14	CS	Tef/UH
1.00	2561	0.75	A30	P1	2	22	CS	PTFE	22	CS	PTFE
1.00	2600	2.32	A33	B1	2	15	CS	Tef/UH	15	CS	Tef/UH
1.00	3000	1.73	A37	B1	2	16	CS	PTFE	16	CS	PTFE
1.00	3000	1.73	A38	B1	2	17	CS	CFTEF	17	CS	CFTEF
1.00	3000	1.73	A39	B1	2	16	CS	PTFE	16	CS	PTFE
1.00	3000	1.73	A40	B1	2	17	CS	CFTEF	16	CS	PTFE
1.00	3000	2.78	A41	K1	2	14	CS	Tef/UH	14	CS	Tef/UH
1.20	873	2.20	B01	P1	3	18	CS	PTFE	15	CS	Tef/UH
1.20	873	2.54	B02	P1	3	19	SST	PTFE	15	CS	Tef/UH
1.20	2367	2.20	B03	B1	3	18	CS	PTFE	15	CS	Tef/UH
1.20	2367	2.20	B04	B1	3	19	SST	PTFE	15	CS	Tef/UH
1.25	711	2.70	C01	P1	3	16	CS	PTFE	14	CS	Tef/UH
1.25	711	2.70	C02	P1	3	17	CS	CFTEF	14	CS	Tef/UH
1.25	1423	1.35	C03	P1	3	22	CS	PTFE	18	CS	PTFE
1.25	1423	1.56	C04	P1	3	22	CS	PTFE	19	SST	PTFE
1.25	1929	3.12	C05	B1	3	16	CS	PTFE	14	CS	Tef/UH
1.25	1929	3.12	C06	B1	3	17	CS	CFTEF	14	CS	Tef/UH
1.34	1097	1.75	D01	P1	3	20	CS	PTFE	16	CS	PTFE
1.34	1097	1.75	D02	P1	3	20	CS	PTFE	17	CS	CFTEF
1.34	1097	1.75	D03	P1	3	21	SST	PTFE	16	CS	PTFE
1.34	1097	1.75	D04	P1	3	21	SST	PTFE	17	CS	CFTEF
1.34	2974	1.75	D05	B1	3	20	CS	PTFE	16	CS	PTFE
1.34	2974	1.75	D06	B1	3	20	CS	PTFE	17	CS	CFTEF
1.34	2974	1.75	D07	B1	3	21	SST	PTFE	16	CS	PTFE
1.34	2974	1.75	D08	B1	3	21	SST	PTFE	17	CS	CFTEF
1.50	768	2.50	E01	P1	3	16	CS	PTFE	15	CS	Tef/UH
1.50	768	2.50	E02	P1	3	17	CS	CFTEF	15	CS	Tef/UH
1.50	1536	1.25	E03	P1	3	22	CS	PTFE	20	CS	PTFE
1.50	1536	1.25	E04	P1	3	22	CS	PTFE	21	SST	PTFE
1.50	2082	2.50	E05	B1	3	16	CS	PTFE	15	CS	Tef/UH
1.50	2082	2.50	E06	B1	3	17	CS	CFTEF	15	CS	Tef/UH
1.60	985	1.95	F01	P1	3	18	CS	PTFE	16	CS	PTFE
1.60	985	1.95	F02	P1	3	18	CS	PTFE	17	CS	CFTEF
1.60	985	1.95	F03	P1	3	19	SST	PTFE	16	CS	PTFE
1.60	985	1.95	F04	P1	3	19	SST	PTFE	17	CS	CFTEF
1.60	2672	1.95	F05	B1	3	19	SST	PTFE	16	CS	PTFE
1.60	2672	1.95	F06	B1	3	19	SST	PTFE	17	CS	CFTEF
1.60	2672	2.25	F07	B1	3	18	CS	PTFE	16	CS	PTFE



# Fixed Ratio Hydra-Cat Mechanical Proportioner

**Table FA - Fixed Ratio, Air-Powered Hydra-Cat**

To Determine Code "CCC"			Code "CCC"	Code "DD"	Code "E"	Code "FF"			Code "GG"		
Lookup Parameters			Table Reference Number	See Motor Table		See Pump Lower Table					
Mix Ratio	Max Pressure (psi)	Fluid Flow at 40 cpm (gpm)		Air Motor Code	Number of Lowers	"A" Component Lower(s)			"B" Component Lowers		
					Lower(s) Code	Wetted Parts	Packing Material	Lower Code	Wetted Parts	Packing Material	
1.60	2672	2.25	F08	B1	3	18	CS	PTFE	17	CS	CFTEF
1.67	599	3.70	G01	P1	3	15	CS	Tef/UH	14	CS	Tef/UH
1.67	1199	1.60	G02	P1	3	21	SST	PTFE	18	CS	PTFE
1.67	1199	1.85	G03	P1	3	20	CS	PTFE	18	CS	PTFE
1.67	1199	1.85	G04	P1	3	20	CS	PTFE	19	SST	PTFE
1.67	1199	1.85	G05	P1	3	21	SST	PTFE	19	SST	PTFE
1.67	1626	3.70	G06	B1	3	15	CS	Tef/UH	14	CS	Tef/UH
1.67	3000	1.60	G07	B1	3	20	CS	PTFE	18	CS	PTFE
1.67	3000	1.60	G08	B1	3	21	SST	PTFE	18	CS	PTFE
1.67	3000	1.85	G09	B1	3	20	CS	PTFE	19	SST	PTFE
1.67	3000	1.85	G10	B1	3	21	SST	PTFE	19	SST	PTFE
1.67	2986	3.20	G11	K1	3	15	CS	Tef/UH	14	CS	Tef/UH
2.00	533	4.16	H01	P1	3	14	CS	Tef/UH	14	CS	Tef/UH
2.00	639	3.00	H02	P1	3	15	CS	Tef/UH	15	CS	Tef/UH
2.00	854	2.25	H03	P1	3	16	CS	PTFE	16	CS	PTFE
2.00	854	2.25	H04	P1	3	17	CS	CFTEF	17	CS	CFTEF
2.00	854	2.25	H05	P1	3	17	CS	CFTEF	16	CS	PTFE
2.00	854	2.25	H06	P1	3	16	CS	PTFE	17	CS	CFTEF
2.00	1068	1.80	H07	P1	3	18	CS	PTFE	18	CS	PTFE
2.00	1068	1.80	H08	P1	3	19	SST	PTFE	18	CS	PTFE
2.00	1068	2.08	H09	P1	3	18	CS	PTFE	19	SST	PTFE
2.00	1068	2.08	H10	P1	3	19	SST	PTFE	19	SST	PTFE
2.00	1278	1.50	H11	P1	3	21	SST	PTFE	20	CS	PTFE
2.00	1278	1.50	H12	P1	3	21	SST	PTFE	21	SST	PTFE
2.00	1278	1.74	H13	P1	3	20	CS	PTFE	20	CS	PTFE
2.00	1278	1.74	H14	P1	3	20	CS	PTFE	21	SST	PTFE
2.00	1446	3.60	H15	B1	3	14	CS	Tef/UH	14	CS	Tef/UH
2.00	1708	1.12	H16	P1	3	22	CS	PTFE	22	CS	PTFE
2.00	1733	3.47	H17	B1	3	15	CS	Tef/UH	15	CS	Tef/UH
2.00	2315	2.60	H18	B1	3	16	CS	PTFE	16	CS	PTFE
2.00	2315	2.60	H19	B1	3	17	CS	CFTEF	17	CS	CFTEF
2.00	2315	2.60	H20	B1	3	17	CS	CFTEF	16	CS	PTFE
2.00	2315	2.60	H21	B1	3	16	CS	PTFE	17	CS	CFTEF
2.00	2895	2.08	H22	B1	3	18	CS	PTFE	18	CS	PTFE
2.00	2895	2.08	H23	B1	3	19	SST	PTFE	18	CS	PTFE
2.00	2895	2.08	H24	B1	3	18	CS	PTFE	19	SST	PTFE
2.00	2895	2.08	H25	B1	3	19	SST	PTFE	19	SST	PTFE
2.00	2656	3.60	H26	K1	3	14	CS	Tef/UH	14	CS	Tef/UH
2.00	3000	3.47	H27	K1	3	15	CS	Tef/UH	15	CS	Tef/UH
2.00	3000	1.50	H28	B1	3	21	SST	PTFE	20	CS	PTFE
2.00	3000	1.50	H29	B1	3	21	SST	PTFE	21	SST	PTFE
2.00	3000	1.74	H30	B1	3	20	CS	PTFE	20	CS	PTFE
2.00	3000	1.74	H31	B1	3	20	CS	PTFE	21	SST	PTFE
2.00	3000	2.73	H32	K1	3	16	CS	PTFE	16	CS	PTFE
2.40	564	3.93	J01	P1	3	14	CS	Tef/UH	15	CS	Tef/UH
2.40	1130	1.70	J02	P1	3	18	CS	PTFE	20	CS	PTFE
2.40	1130	1.70	J03	P1	3	19	SST	PTFE	20	CS	PTFE
2.40	1130	1.96	J04	P1	3	18	CS	PTFE	21	SST	PTFE
2.40	1130	1.96	J05	P1	3	19	SST	PTFE	21	SST	PTFE
2.40	1531	3.40	J06	B1	3	14	CS	Tef/UH	15	CS	Tef/UH
2.40	2812	3.93	J07	K1	3	14	CS	Tef/UH	15	CS	Tef/UH
2.40	3000	1.70	J08	B1	3	18	CS	PTFE	20	CS	PTFE
2.40	3000	1.70	J09	B1	3	19	SST	PTFE	20	CS	PTFE
2.40	3000	1.96	J10	B1	3	18	CS	PTFE	21	SST	PTFE
2.40	3000	1.96	J11	B1	3	19	SST	PTFE	21	SST	PTFE

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# Fixed Ratio Hydra-Cat Mechanical Proportioner

**Table FA - Fixed Ratio, Air-Powered Hydra-Cat**

To Determine Code "CCC"			Code "CCC"	Code "DD"	Code "E"	Code "FF"			Code "GG"		
Lookup Parameters			Table Reference Number	See Motor Table		See Pump Lower Table					
Mix Ratio	Max Pressure (psi)	Fluid Flow at 40 cpm (gpm)		Air Motor Code	Number of Lower(s)	"A" Component Lower(s)			"B" Component Lower(s)		
						Lower(s) Code	Wetted Parts	Packing Material	Lower Code	Wetted Parts	Packing Material
2.50	915	2.43	K01	P1	3	16	CS	PTFE	18	CS	PTFE
2.50	915	2.43	K02	P1	3	17	CS	CFTEF	18	CS	PTFE
2.50	915	2.43	K03	P1	3	16	CS	PTFE	19	SST	PTFE
2.50	915	2.43	K04	P1	3	17	CS	CFTEF	19	SST	PTFE
2.50	2481	2.10	K05	B1	3	16	CS	PTFE	18	CS	PTFE
2.50	2481	2.10	K06	B1	3	17	CS	CFTEF	18	CS	PTFE
2.50	2481	2.10	K07	B1	3	16	CS	PTFE	19	SST	PTFE
2.50	2481	2.10	K08	B1	3	17	CS	CFTEF	19	SST	PTFE
2.67	698	3.18	M01	P1	3	15	CS	Tef/UH	16	CS	PTFE
2.67	698	3.18	M02	P1	3	15	CS	Tef/UH	17	CS	CFTEF
2.67	1395	1.37	M03	P1	3	20	CS	PTFE	22	CS	PTFE
2.67	1395	1.37	M04	P1	3	21	SST	PTFE	22	CS	PTFE
2.67	1892	3.18	M05	B1	3	15	CS	Tef/UH	16	CS	PTFE
2.67	1892	3.18	M06	B1	3	15	CS	Tef/UH	17	CS	CFTEF
3.00	960	2.00	P01	P1	3	16	CS	PTFE	20	CS	PTFE
3.00	960	2.00	P02	P1	3	17	CS	CFTEF	20	CS	PTFE
3.00	960	2.00	P03	P1	3	16	CS	PTFE	21	SST	PTFE
3.00	960	2.00	P04	P1	3	17	CS	CFTEF	21	SST	PTFE
3.00	2604	2.00	P05	B1	3	16	CS	PTFE	21	SST	PTFE
3.00	2604	2.00	P06	B1	3	17	CS	CFTEF	21	SST	PTFE
3.00	2604	2.31	P07	B1	3	16	CS	PTFE	20	CS	PTFE
3.00	2604	2.31	P08	B1	3	17	CS	CFTEF	20	CS	PTFE
3.20	610	3.15	Q01	P1	3	14	CS	Tef/UH	16	CS	PTFE
3.20	610	3.15	Q02	P1	3	14	CS	Tef/UH	17	CS	CFTEF
3.20	1220	1.57	Q03	P1	3	18	CS	PTFE	22	CS	PTFE
3.20	1220	1.57	Q04	P1	3	19	SST	PTFE	22	CS	PTFE
3.20	1653	3.64	Q05	B1	3	14	CS	Tef/UH	16	CS	PTFE
3.20	1653	3.64	Q06	B1	3	14	CS	Tef/UH	17	CS	CFTEF
3.20	3000	1.57	Q07	B1	3	18	CS	PTFE	22	CS	PTFE
3.20	3000	1.57	Q08	B1	3	19	SST	PTFE	22	CS	PTFE
3.20	3000	3.64	Q09	K1	3	14	CS	Tef/UH	16	CS	PTFE
3.20	3000	3.64	Q10	K1	3	14	CS	Tef/UH	17	CS	CFTEF
3.34	738	2.60	R01	P1	3	15	CS	Tef/UH	18	CS	PTFE
3.34	738	2.60	R02	P1	3	15	CS	Tef/UH	19	SST	PTFE
3.34	2001	2.60	R03	B1	3	15	CS	Tef/UH	18	CS	PTFE
3.34	2001	2.60	R04	B1	3	15	CS	Tef/UH	19	SST	PTFE
4.00	640	3.47	S01	P1	3	14	CS	Tef/UH	18	CS	PTFE
4.00	640	3.47	S02	P1	3	14	CS	Tef/UH	19	SST	PTFE
4.00	767	2.50	S03	P1	3	15	CS	Tef/UH	21	SST	PTFE
4.00	767	2.89	S04	P1	3	15	CS	Tef/UH	20	CS	PTFE
4.00	1025	2.17	S05	P1	3	16	CS	PTFE	22	CS	PTFE
4.00	1025	2.17	S06	P1	3	17	CS	CFTEF	22	CS	PTFE
4.00	1736	3.47	S07	B1	3	14	CS	Tef/UH	18	CS	PTFE
4.00	1736	3.47	S08	B1	3	14	CS	Tef/UH	19	SST	PTFE
4.00	2080	2.50	S09	B1	3	15	CS	Tef/UH	21	SST	PTFE
4.00	2080	2.89	S10	B1	3	15	CS	Tef/UH	20	CS	PTFE
4.00	2778	2.17	S11	B1	3	16	CS	PTFE	22	CS	PTFE
4.00	2778	2.17	S12	B1	3	17	CS	CFTEF	22	CS	PTFE
4.00	3000	3.47	S13	K1	3	14	CS	Tef/UH	18	CS	PTFE
4.00	3000	3.47	S14	K1	3	14	CS	Tef/UH	19	SST	PTFE
4.79	662	3.35	T01	P1	3	14	CS	Tef/UH	20	CS	PTFE
4.79	662	3.35	T02	P1	3	14	CS	Tef/UH	21	SST	PTFE
4.79	1795	3.35	T03	B1	3	14	CS	Tef/UH	20	CS	PTFE
4.79	1795	3.35	T04	B1	3	14	CS	Tef/UH	21	SST	PTFE

# Fixed Ratio Hydra-Cat

## Mechanical Proportioner

**Table FA - Fixed Ratio, Air-Powered Hydra-Cat**

To Determine Code "CCC"			Code "CCC"	Code "DD"	Code "E"	Code "FF"			Code "GG"		
<i>Lookup Parameters</i>				<i>See Motor Table</i>		<i>See Pump Lower Table</i>					
Mix Ratio	Max Pressure (psi)	Fluid Flow at 40 cpm (gpm)	Table Reference Number	Air Motor Code	Number of Lowers	"A" Component Lower(s)			"B" Component Lowers		
						Lower(s) Code	Wetted Parts	Packing Material	Lower Code	Wetted Parts	Packing Material
5.34	808	2.37	U01	P1	3	15	CS	Tef/UH	22	CS	PTFE
5.34	2190	2.37	U02	B1	3	15	CS	Tef/UH	22	CS	PTFE
6.40	692	2.77	V01	P1	3	14	CS	Tef/UH	22	CS	PTFE
6.40	1876	2.77	V02	B1	3	14	CS	Tef/UH	22	CS	PTFE

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# Fixed Ratio Hydra-Cat Mechanical Proportioner

**Table FH - Fixed Ratio, Hydraulic-Powered Hydra-Cat**

To Determine Code "CCC"			Code "CCC"	Code "DD"	Code "E"	Code "FF"			Code "GG"		
Lookup Parameters			Table Reference Number	See Motor Table		See Pump Lower Table					
Mix Ratio	Max Pressure (psi)	Fluid Flow at 40 cpm (gpm)		Air Motor Code	Number of Lowers	"A" Component Lower(s)			"B" Component Lowers		
						Lower(s) Code	Wetted Parts	Packing Material	Lower Code	Wetted Parts	Packing Material
1.00	501	3.89	A02	V1	2	12	SST	PTFE	12	SST	PTFE
1.00	501	3.89	A03	V1	2	01	SST	PTFE	01	SST	PTFE
1.00	834	2.34	A05	V1	2	14	CS	Tef/UH	14	CS	Tef/UH
1.00	1000	1.95	A13	V1	2	15	CS	Tef/UH	15	CS	Tef/UH
1.00	1336	1.46	A16	V1	2	16	CS	PTFE	16	CS	PTFE
1.00	1336	1.46	A17	V1	2	17	CS	CFTEF	17	CS	CFTEF
1.00	1336	1.46	A18	V1	2	16	CS	PTFE	16	CS	PTFE
1.00	1336	1.46	A19	V1	2	17	CS	CFTEF	17	CS	PTFE
1.00	1670	1.17	A20	V1	2	18	CS	PTFE	18	CS	PTFE
1.00	1670	1.17	A21	V1	2	19	SST	PTFE	19	SST	PTFE
1.00	2000	0.97	A22	V1	2	20	CS	PTFE	20	CS	PTFE
1.00	2000	0.97	A23	V1	2	21	SST	PTFE	21	SST	PTFE
1.00	1500	4.62	A24	V2	2	12	SST	PTFE	12	SST	PTFE
1.00	2671	0.73	A26	V1	2	22	CS	PTFE	22	CS	PTFE
1.20	910	2.14	B01	V1	3	18	CS	PTFE	15	CS	Tef/UH
1.20	910	2.14	B02	V1	3	19	SST	PTFE	15	CS	Tef/UH
1.25	742	2.63	C01	V1	3	16	CS	PTFE	14	CS	Tef/UH
1.25	742	2.63	C02	V1	3	17	CS	CFTEF	14	CS	Tef/UH
1.25	1484	1.31	C03	V1	3	22	CS	PTFE	18	CS	PTFE
1.25	1484	1.31	C04	V1	3	22	CS	PTFE	19	SST	PTFE
1.34	1144	1.70	D01	V1	3	20	CS	PTFE	16	CS	PTFE
1.34	1144	1.70	D02	V1	3	20	CS	PTFE	17	CS	CFTEF
1.34	1144	1.70	D03	V1	3	21	SST	PTFE	16	CS	PTFE
1.34	1144	1.70	D04	V1	3	21	SST	PTFE	17	CS	CFTEF
1.50	801	2.43	E01	V1	3	16	CS	PTFE	15	CS	Tef/UH
1.50	801	2.43	E02	V1	3	17	CS	CFTEF	15	CS	Tef/UH
1.50	1602	1.22	E03	V1	3	22	CS	PTFE	20	CS	PTFE
1.50	1602	1.22	E04	V1	3	22	CS	PTFE	21	SST	PTFE
1.60	1028	1.90	F01	V1	3	18	CS	PTFE	16	CS	PTFE
1.60	1028	1.90	F02	V1	3	18	CS	PTFE	17	CS	CFTEF
1.60	1028	1.90	F03	V1	3	19	SST	PTFE	16	CS	PTFE
1.60	1028	1.90	F04	V1	3	19	SST	PTFE	17	CS	CFTEF
1.67	625	3.12	G01	V1	3	15	CS	Tef/UH	14	CS	Tef/UH
1.67	1251	1.56	G02	V1	3	20	CS	PTFE	18	CS	PTFE
1.67	1251	1.56	G03	V1	3	20	CS	PTFE	19	SST	PTFE
1.67	1251	1.56	G04	V1	3	21	SST	PTFE	18	CS	PTFE
1.67	1251	1.56	G05	V1	3	21	SST	PTFE	19	SST	PTFE
1.67	3000	3.70	G06	V2	3	15	CS	Tef/UH	14	CS	Tef/UH
2.00	556	3.51	H01	V1	3	14	CS	Tef/UH	14	CS	Tef/UH
2.00	667	2.92	H02	V1	3	15	CS	Tef/UH	15	CS	Tef/UH
2.00	890	2.19	H03	V1	3	16	CS	PTFE	16	CS	PTFE
2.00	890	2.19	H04	V1	3	17	CS	CFTEF	17	CS	CFTEF
2.00	890	2.19	H05	V1	3	16	CS	PTFE	17	CS	CFTEF
2.00	890	2.19	H06	V1	3	17	CS	CFTEF	16	CS	PTFE
2.00	1114	1.75	H07	V1	3	18	CS	PTFE	18	CS	PTFE
2.00	1114	1.75	H08	V1	3	18	CS	PTFE	19	SST	PTFE



# Fixed Ratio Hydra-Cat

## Mechanical Proportioner

**Table FH - Fixed Ratio, Hydraulic-Powered Hydra-Cat**

To Determine Code "CCC"			Code "CCC"	Code "DD"	Code "E"	Code "FF"			Code "GG"		
Lookup Parameters			Table Reference Number	See Motor Table		See Pump Lower Table					
Mix Ratio	Max Pressure (psi)	Fluid Flow at 40 cpm (gpm)		Air Motor Code	Number of Lowers	"A" Component Lower(s)			"B" Component Lowers		
						Lower(s) Code	Wetted Parts	Packing Material	Lower Code	Wetted Parts	Packing Material
2.00	1114	1.75	H09	V1	3	19	SST	PTFE	18	CS	PTFE
2.00	1114	1.75	H10	V1	3	19	SST	PTFE	19	SST	PTFE
2.00	1333	1.46	H11	V1	3	20	CS	PTFE	20	CS	PTFE
2.00	1333	1.46	H12	V1	3	20	CS	PTFE	21	SST	PTFE
2.00	1333	1.46	H13	V1	3	21	SST	PTFE	20	CS	PTFE
2.00	1333	1.46	H14	V1	3	21	SST	PTFE	21	SST	PTFE
2.00	1781	1.09	H15	V1	3	22	CS	PTFE	22	CS	PTFE
2.00	2762	4.16	H16	V2	3	14	CS	Tef/UH	14	CS	Tef/UH
2.00	3000	3.47	H17	V2	3	15	CS	Tef/UH	15	CS	Tef/UH
2.40	589	3.31	J01	V1	3	14	CS	Tef/UH	15	CS	Tef/UH
2.40	1178	1.65	J02	V1	3	18	CS	PTFE	20	CS	PTFE
2.40	1178	1.65	J03	V1	3	18	CS	PTFE	21	SST	PTFE
2.40	1178	1.65	J04	V1	3	19	SST	PTFE	20	CS	PTFE
2.40	1178	1.65	J05	V1	3	19	SST	PTFE	21	SST	PTFE
2.40	2924	3.93	J06	V2	3	14	CS	Tef/UH	15	CS	Tef/UH
2.50	954	2.04	K01	V1	3	16	CS	PTFE	18	CS	PTFE
2.50	954	2.04	K02	V1	3	17	CS	CFTEF	18	CS	PTFE
2.50	954	2.04	K03	V1	3	16	CS	PTFE	19	SST	PTFE
2.50	954	2.04	K04	V1	3	17	CS	CFTEF	19	SST	PTFE
2.67	728	2.68	M01	V1	3	15	CS	Tef/UH	16	CS	PTFE
2.67	728	2.68	M02	V1	3	15	CS	Tef/UH	17	CS	CFTEF
2.67	1455	1.34	M03	V1	3	20	CS	PTFE	22	CS	PTFE
2.67	1455	1.34	M04	V1	3	21	SST	PTFE	22	CS	PTFE
3.00	1001	1.95	P01	V1	3	16	CS	PTFE	20	CS	PTFE
3.00	1001	1.95	P02	V1	3	17	CS	CFTEF	20	CS	PTFE
3.00	1001	1.95	P03	V1	3	16	CS	PTFE	21	SST	PTFE
3.00	1001	1.95	P04	V1	3	17	CS	CFTEF	21	SST	PTFE
3.20	636	3.07	Q01	V1	3	14	CS	Tef/UH	16	CS	PTFE
3.20	636	3.07	Q02	V1	3	14	CS	Tef/UH	17	CS	CFTEF
3.20	1273	1.53	Q03	V1	3	18	CS	PTFE	22	CS	PTFE
3.20	1273	1.53	Q04	V1	3	19	SST	PTFE	22	CS	PTFE
3.20	3000	3.64	Q05	V2	3	14	CS	Tef/UH	16	CS	PTFE
3.20	3000	3.64	Q06	V2	3	14	CS	Tef/UH	17	CS	CFTEF
3.34	770	2.53	R01	V1	3	15	CS	Tef/UH	18	CS	PTFE
3.34	770	2.53	R02	V1	3	15	CS	Tef/UH	19	SST	PTFE
4.00	668	2.92	S01	V1	3	14	CS	Tef/UH	18	CS	PTFE
4.00	668	2.92	S02	V1	3	14	CS	Tef/UH	19	SST	PTFE
4.00	800	2.44	S03	V1	3	15	CS	Tef/UH	20	CS	PTFE
4.00	800	2.44	S04	V1	3	15	CS	Tef/UH	21	SST	PTFE
4.00	1069	1.82	S05	V1	3	16	CS	PTFE	22	CS	PTFE
4.00	1069	1.82	S06	V1	3	17	CS	CFTEF	22	CS	PTFE
4.00	3000	3.47	S07	V2	3	14	CS	Tef/UH	18	CS	PTFE
4.00	3000	3.47	S08	V2	3	14	CS	Tef/UH	19	SST	PTFE
4.79	690	2.82	T01	V1	3	14	CS	Tef/UH	20	CS	PTFE
4.79	690	2.82	T02	V1	3	14	CS	Tef/UH	21	SST	PTFE
4.79	3000	3.35	T03	V2	3	14	CS	Tef/UH	20	CS	PTFE
4.79	3000	3.35	T04	V2	3	14	CS	Tef/UH	21	SST	PTFE
5.34	842	2.31	U01	V1	3	15	CS	Tef/UH	22	CS	PTFE
6.40	722	2.70	V01	V1	3	14	CS	Tef/UH	22	CS	PTFE

3

# Fixed Ratio Hydra-Cat Mechanical Proportioner

**Table FH - Fixed Ratio, Hydraulic-Powered Hydra-Cat**

To Determine Code "CCC"			Code "CCC"	Code "DD"	Code "E"	Code "FF"			Code "GG"		
Lookup Parameters				See Motor Table		See Pump Lower Table					
Mix Ratio	Max Pressure (psi)	Fluid Flow at 40 cpm (gpm)	Table Reference Number	Air Motor Code	Number of Lowers	"A" Component Lower(s)			"B" Component Lowers		
						Lower(s) Code	Wetted Parts	Packing Material	Lower Code	Wetted Parts	Packing Material
2.00	1114	1.75	H09	V1	3	19	SST	PTFE	18	CS	PTFE
2.00	1114	1.75	H10	V1	3	19	SST	PTFE	19	SST	PTFE
2.00	1333	1.46	H11	V1	3	20	CS	PTFE	20	CS	PTFE
2.00	1333	1.46	H12	V1	3	20	CS	PTFE	21	SST	PTFE
2.00	1333	1.46	H13	V1	3	21	SST	PTFE	20	CS	PTFE
2.00	1333	1.46	H14	V1	3	21	SST	PTFE	21	SST	PTFE
2.00	1781	1.09	H15	V1	3	22	CS	PTFE	22	CS	PTFE
2.00	2762	4.16	H16	V2	3	14	CS	Tef/UH	14	CS	Tef/UH
2.00	3000	3.47	H17	V2	3	15	CS	Tef/UH	15	CS	Tef/UH
2.40	589	3.31	J01	V1	3	14	CS	Tef/UH	15	CS	Tef/UH
2.40	1178	1.65	J02	V1	3	18	CS	PTFE	20	CS	PTFE
2.40	1178	1.65	J03	V1	3	18	CS	PTFE	21	SST	PTFE
2.40	1178	1.65	J04	V1	3	19	SST	PTFE	20	CS	PTFE
2.40	1178	1.65	J05	V1	3	19	SST	PTFE	21	SST	PTFE
2.40	2924	3.93	J06	V2	3	14	CS	Tef/UH	15	CS	Tef/UH
2.50	954	2.04	K01	V1	3	16	CS	PTFE	18	CS	PTFE
2.50	954	2.04	K02	V1	3	17	CS	CFTEF	18	CS	PTFE
2.50	954	2.04	K03	V1	3	16	CS	PTFE	19	SST	PTFE
2.50	954	2.04	K04	V1	3	17	CS	CFTEF	19	SST	PTFE
2.67	728	2.68	M01	V1	3	15	CS	Tef/UH	16	CS	PTFE
2.67	728	2.68	M02	V1	3	15	CS	Tef/UH	17	CS	CFTEF
2.67	1455	1.34	M03	V1	3	20	CS	PTFE	22	CS	PTFE
2.67	1455	1.34	M04	V1	3	21	SST	PTFE	22	CS	PTFE
3.00	1001	1.95	P01	V1	3	16	CS	PTFE	20	CS	PTFE
3.00	1001	1.95	P02	V1	3	17	CS	CFTEF	20	CS	PTFE
3.00	1001	1.95	P03	V1	3	16	CS	PTFE	21	SST	PTFE
3.00	1001	1.95	P04	V1	3	17	CS	CFTEF	21	SST	PTFE
3.20	636	3.07	Q01	V1	3	14	CS	Tef/UH	16	CS	PTFE
3.20	636	3.07	Q02	V1	3	14	CS	Tef/UH	17	CS	CFTEF
3.20	1273	1.53	Q03	V1	3	18	CS	PTFE	22	CS	PTFE
3.20	1273	1.53	Q04	V1	3	19	SST	PTFE	22	CS	PTFE
3.20	3000	3.64	Q05	V2	3	14	CS	Tef/UH	16	CS	PTFE
3.20	3000	3.64	Q06	V2	3	14	CS	Tef/UH	17	CS	CFTEF
3.34	770	2.53	R01	V1	3	15	CS	Tef/UH	18	CS	PTFE
3.34	770	2.53	R02	V1	3	15	CS	Tef/UH	19	SST	PTFE
4.00	668	2.92	S01	V1	3	14	CS	Tef/UH	18	CS	PTFE
4.00	668	2.92	S02	V1	3	14	CS	Tef/UH	19	SST	PTFE
4.00	800	2.44	S03	V1	3	15	CS	Tef/UH	20	CS	PTFE
4.00	800	2.44	S04	V1	3	15	CS	Tef/UH	21	SST	PTFE
4.00	1069	1.82	S05	V1	3	16	CS	PTFE	22	CS	PTFE
4.00	1069	1.82	S06	V1	3	17	CS	CFTEF	22	CS	PTFE
4.00	3000	3.47	S07	V2	3	14	CS	Tef/UH	18	CS	PTFE
4.00	3000	3.47	S08	V2	3	14	CS	Tef/UH	19	SST	PTFE
4.79	690	2.82	T01	V1	3	14	CS	Tef/UH	20	CS	PTFE
4.79	690	2.82	T02	V1	3	14	CS	Tef/UH	21	SST	PTFE
4.79	3000	3.35	T03	V2	3	14	CS	Tef/UH	20	CS	PTFE
4.79	3000	3.35	T04	V2	3	14	CS	Tef/UH	21	SST	PTFE
5.34	842	2.31	U01	V1	3	15	CS	Tef/UH	22	CS	PTFE
6.40	722	2.70	V01	V1	3	14	CS	Tef/UH	22	CS	PTFE



# Fixed Ratio Hydra-Cat

## Mechanical Proportioner

### Hydra-Cat Motor Table

Motor Code "DD"	Description	Power Source	Max. Stroke Length		Effective Area		Motor Reference Number	Manual Number
			Inches	cm	Sq. Inch	Sq. cm		
P1	President	Air	4.0	10.79	14.19	91.55	207352	306982
B1	Bulldog	Air	4.75	12.06	38.48	248.26	208356	307049
K1	King	Air	4.75	12.06	78.54	506.71	207647	306968
V1	Viscount I	Hydraulic	4.00	10.16	1.48	9.55	948699	307654
V2	Viscount II	Hydraulic	4.69	11.91	4.90	31.61	235345	307158

### Hydra-Cat Pump Lower Table

Pump Lower Codes "FF" & "GG"	Stroke Length		Pressure Rating		Effective Area		Wetted Material	Packing Material	Lower Reference Number	Manual Number
	(Inches)	(cm)	(psi)	(bar)	(Sq Inch)	(Sq cm)				
01	4.25	10.79	1500	103.42	1.476	9.53	SST	PTFE	215932	307430
03	4.25	10.79	2000	137.89	0.884	5.70	CS	PTFE	215930	307431
11	4.75	12.06	1000	68.94	3.54	22.80	SST	PTFE	206792	306821
12	4.75	12.06	1500	103.42	1.478	9.43	SST	PTFE	217339	307430
13	4.75	12.06	3000	206.84	1.248	8.05	CS	PTFE/Poly	901878	
14	4.75	12.06	3000	206.84	0.884	5.70	CS	PTFE/UH	948640	684004
15	4.75	12.06	3000	206.84	0.74	4.77	CS	PTFE/UH	948641	684004
16	4.75	12.06	3000	206.84	0.553	3.57	CS	PTFE	222012	307944
17	4.75	12.06	3000	206.84	0.553	3.57	CS	CFPTFE	239388	307944
18	4.75	12.06	3000	206.84	0.443	2.86	CS	PTFE	222015	307944
19	4.75	12.06	3000	206.84	0.443	2.86	SST	PTFE	948195	
20	4.75	12.06	3000	206.84	0.37	2.39	CS	PTFE	222017	307944
21	4.75	12.06	3000	206.84	0.37	2.39	SST	PTFE/UH	948197	
22	4.75	12.06	3000	206.84	0.277	1.79	CS	PTFE	222019	307944
23	4.75	12.06	4000	275.79	0.875	5.65	CS	PTFE	946196	

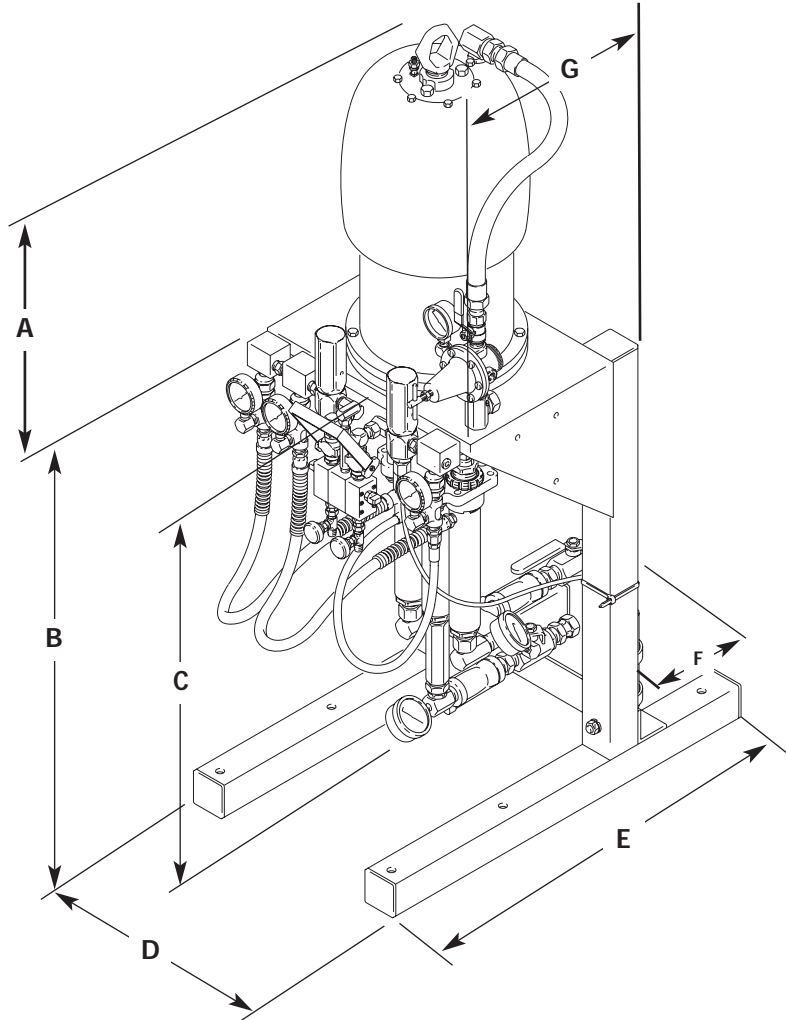
### Hydra-Cat Mix Manifold Options

Code "HH"	Description	Mounting Location	Wetted Material	Pressure Rating		Manifold Reference Number
				(psi)	(bar)	
00	None	N/A	N/A	N/A	N/A	N/A
11	Standard Manifold, CS 1/4" Ported	Local	CS	3000	207	241692
21	Remote Mixer Manifold, CS 1/2" Ported	Remote	SST	3000	207	241808
31	Remote Mounted Manifold, CS 3/8" Ported	Remote	CS	3000	345	241809
41	Remote Mounted Manifold, SST 1/2" Ported	Remote	SST	5000	207	240225

Note: All manifolds come with a 1/2 in. SST Mixer with 32 plastic elements. (#41 uses a SST Mixer Element)

# Fixed Ratio Hydra-Cat Mechanical Proportioner

## Dimensions and Approximate Weights



### Dimensions

A	Determined by air motor
B	32-3/4 in. (832 mm)
C	28-1/4 in. (718 mm)
D	17-3/4 in. (451 mm)
E	30-1/4 in. (768 mm)
F	11 in. (279 mm)
G	12-1/2 in. (318 mm)

### Weights

Motor Code	Weight (lbs./kg)
P1	183/83
B1	240/109
K1	256/116
V1	199/90
V2	277/126

# Fixed Ratio Hydra-Cat

## Mechanical Proportioner

### Technical Specifications

Air operating range	40-100 psi (0.3-0.7 MPa, 3-7 bar)
Maximum fluid outlet pressure	3000 psi (20.4 MPa, 204 bar)
Maximum fluid inlet pressure*	750 psi (5.1 MPa, 51 bar)
Maximum recommended cycle rate	40 cpm
Air consumption @ 100 psi (0.7 MPa, 7 bar), 40 cpm	President: 20 scfm (0.56 m <sup>3</sup> /min.) Bulldog: 60 scfm (1.7 m <sup>3</sup> /min.) King: 110 scfm (3.1 m <sup>3</sup> /min.)

Wetted Parts . . . . . Stainless Steel, Carbon Steel, Chrome Plating, Tungsten Carbide, PTFE

\*To ensure accurate mix ratios when pressure feeding, inlet fluid pressure should not exceed 25% of the outlet fluid pressure.

Note: When using proportioners having an air-to-fluid pressure ratio above 30:1, inlet air pressure must be regulated below 100 psi (0.7 MPa, 7 bar) to limit fluid outlet pressure to a maximum of 3000 psi (20.4 MPa, 204 bar).



# Fixed Ratio Hydra-Cat Mechanical Proportioner

## Accessories

### STAINLESS STEEL LOWERS

Allow conversion of any Standard Series Hydra-Cat to 304 SST/PTFE packing lower construction.

Lower ID	Effective Cylinder Area Sq in. (sq mm)	Part No.
5	0.443 (286)	948195
7	0.370 (239)	948197

### CONVERSION/REPAIR KITS

Lower ID	PTFE w/CS Gland	PTFE/UHMWPE w/CS Gland	PTFE w/SST Gland	PTFE/UHMWPE w/SST Gland
0	—	948650	—	949383
1	—	948651	—	949384
2	236597	222236	—	—
5	236598	222237	948195	—
7	236595	222234	948197	—
9	236596	222235	—	—

### 501095 Inlet Valve Spring Load Conversion

Use with higher viscosity materials to provide faster inlet check valve closing. For use with pressure feed proportioners only.

### GUNS AND TIPS

#### Alpha Plus™ Air-Assisted Airless Gun

Maximum working pressure: 4000 psi (27.6 MPa, 276 bar)

- 243573 with standard spray tip
- 243576 with RAC Tip

#### 238591 Silver Plus™ Gun

Maximum working pressure: 5000 psi (34.5 MPa, 345 bar). 4-finger gun with Heavy-Duty RAC IV Tip.

#### GHDxxx HD RAC Tip

#### 965022 Plural Component Mix Gun

Maximum working pressure: 3000 psi (20.7 MPa, 207 bar). Coatings enter the gun separately and are mixed together in the gun. Designed for plural component materials with very short setup times.

#### 235463 Silver Plus Gun

Maximum working pressure: 5000 psi (34.5 MPa, 345 bar) 2-finger gun with RAC IV Tip.

### HOSES

#### Whip Hose

Maximum working pressure: 5000 psi (34.5 MPa, 345 bar). 1/4 in. ID (0.63 cm), 1/4 npsm(fbe).

- 214912 3 ft. (0.91 m)
- 214913 6 ft. (1.83 m)

#### Nylon Fluid Hose

Maximum working pressure: 5000 psi (34.5 MPa, 345 bar). 3/8 in. ID (9.5 mm ID), 3/8 npt(m) x 3/8 npt(f).

- 238395 24.6 ft. (7.5 m)
- 238396 49.2 ft. (15 m)
- 238397 98.4 ft. (30 m)

Maximum working pressure: 5000 psi (34.5 MPa, 345 bar). ID 1/2 in. (12.7 mm), 1/2 npt(fbe).

- 238716 24.6 ft. (7.5 m)
- 238717 49.2 ft. (15 m)
- 238718 98.4 ft. (30 m)

### CONTROLS AND VALVES

#### 224040 Pump Runaway Valve

Used to stop pump if pump runs dry and exceeds set speed.

#### Bleed-Type Air Valve

- 110224 3/8 in. npt(fbe)
- 110225 1/2 in. npt(fbe)
- 110226 3/4 in. npt(fbe)

#### Check Valves

Maximum working pressure: 3000 psi (20.6 MPa, 206 bar).

- 501867 1/4 in. npt (mbe)
- 501684 3/8 in. npt(mbe)
- 501603 1/2 in. npt(mbe)

#### Fluid Regulators

- 222121 Maximum working pressure: 1500 psi (10.3 MPa, 103 bar). Regulated range: 500-1200 psi (3.4-8.3 MPa, 34-83 bar). 1.5 gpm (5.7 lpm), SST.
- 238890 Maximum working pressure: 6000 psi (41.3 MPa, 413 bar). Regulated range: 500-3000 psi (3.4-20.7 MPa, 34-207 bar). 2 gpm (7.5 lpm), SST.
- 206661 Maximum working pressure: 3000 psi (20.7 MPa, 207 bar). Regulated range: 1000-3000 psi (6.9-20.7 MPa, 69-207 bar). 3.5 gpm (13.25 lpm), CS.

# Fixed Ratio Hydra-Cat

## Mechanical Proportioner

### Accessories (continued)

#### Fluid Ball Valves

- 210657** 1/4 in. npt(mbe).  
5000 psi (34.5 MPa, 345 bar), CS.
- 240410** 3/8 in. npt(mbe).  
5000 psi (34.5 MPa, 345 bar), SST.

- 237073** **Optional Safety Relief Valves**  
3750 psi (25.9 MPa, 259 bar).

### ADAPTERS AND FITTINGS

#### Agitators

- 224854** Drum bung-mounted Twistork, CS.
- 236760** Drum bung-mounted Twistork,  
siphon, SST.
- 231414** Heavy-duty back geared with drum cover,  
elevator and siphon kit, SST.

#### Fluid Heaters – Viscon<sup>2</sup>

Maximum working pressure: 5000 psi  
(34.5 MPa, 345 bar). UL and CSA approved.

- 220522** 120V, 16.5 amp
- 220523** 240V, 9.6 amp
- 220254** 480V, 4.8 amp
- 222307** 220-240V, 9.6 amp

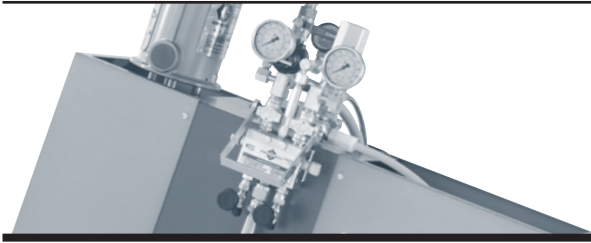
### FILTERS

#### Fluid Filters

- 218029** 14 sq in. (90.3 sq cm),  
5000 psi (34.5 MPa, 345 bar), CS.

#### Replacement Screen Filter Elements

- | 3 Pack        | 25 Pack       |                       |
|---------------|---------------|-----------------------|
| <b>238435</b> | <b>238436</b> | 30 mesh (595 micron)  |
| <b>238437</b> | <b>238438</b> | 60 mesh (250 micron)  |
| <b>238439</b> | <b>238440</b> | 100 mesh (149 micron) |



# Variable Ratio Hydra-Cat®

## Mechanical Proportioner

High volume variable ratio proportioner that replaces the manual pre-mixing of plural component materials and reduces the cost of wasted paint and labor.

### Features and Benefits

- Provides accurately mixed and proportioned materials on demand
- Variable ratio settings allow adjustment to meet requirements and to fine-tune required ratio
- High reliability design for minimum maintenance and maximum up-time
- Easy to use mix manifold allows control of main fluid and catalyst material

### Typical Applications

- Plural component materials
- Protective coatings
- Farm and construction equipment manufacturing and refinishing
- Truck and bus manufacturing and refinishing
- General metal fabrication
- Foam and elastomers

### Typical Coatings Applied

- Epoxies
- Polyurethanes
- Waterbornes
- Acid-catalyzed wood finishing materials
- Stains, lacquers and varnishes
- Sealants and adhesives



*Reliable Graco  
air motor*

**Variable Ratio Hydra-Cat  
Monark® Unit  
Configured Product**

*Durable and dependable  
variable ratio frame*

# Variable Ratio Hydra-Cat

## Mechanical Proportioner

The Hydra-Cat is a dispensing system that will proportion and mix two-component fluids. The variable ratio proportioners accurately pump and proportion two-component materials by powering two positive displacement pump lowers from a common air motor.

Custom order Variable Ratio Hydra-Cat by choosing all desired options to be factory-integrated. Use configurator form 309025 on pages 201-207 to configure your custom package.

### Variable Ratio Hydra-Cat Options

#### MOTOR TYPE

Air Motors	Effective Area Sq. in. (Sq. cm)	Fluid Pressure Range	Flow Rates
Monark	7.0 (45.6)	239-459 psi (1.6-3.2 MPa, 16-32 bar)	1.5-4.62 gpm (5.7-17.5 lpm)
President	14.19 (91.6)	480-3000 psi (3.3-20.7 MPa, 33-207 bar)	0.58-3.99 gpm (2.2-15.1 lpm)
Bulldog	38.48 (248.26)	2044-2700 psi (14-18.6 MPa, 140-186 bar)	2.21-2.95 gpm (8.4-11.2 lpm)
<b>Hydraulic Motors</b>			
Viscount I	1.48 (9.55)	837-2455 psi (5.8-16.9 MPa, 58-169 bar)	0.81-3.11 gpm (3-11.8 lpm)

#### VARIABLE RATIO TWO-LOWER DESIGN

- The proportioner achieves the ratio variability based on physical lower size and the position of the secondary lower relative to the pivot point on the rocker arm
- Moving the secondary lower will change the output stroke and therefore the volumetric relationship of the primary and secondary lowers
- A scale on the rocker arm is used to get close to the desired range - a ratio check is required to verify that the desired ratio is correct
- Adjustments of the ratio are done by moving the secondary lower - the farther from the pivot point, the more volume the lower will deliver
- As the secondary lower moves farther from the pivot point, the system will deliver less pressure
- Select an operation point that gives the required ratio and pressure range where the secondary lower is in the farthest setting from the pivot point
- This allows for the longest stroke possible on the secondary lower and the minimal number of changeovers, which increases ratio accuracy

Lower Identification	Effective Area Sq. In. (sq. mm)	Lower Part No.	Instruction Manual
(President 10:1)	1.476 (9.53)	215932	307430
(Bulldog 30:1)	1.248 (8.05)	901878	
(President 15:1)	0.884 (5.70)	215930	307431
0	0.884 (5.70)	948640	
1	0.740 (4.77)	948641	
2	0.554 (3.57)	222012	307944
5	0.443 (2.86)	222015	307944
7	0.370 (2.39)	222017	307944
9	0.277 (1.79)	222019	307944
(President 15:1)	0.884 (5.70)	217529	

# Variable Ratio Hydra-Cat

## Mechanical Proportioner

### Variable Ratio Hydra-Cat Options (continued)

#### MIX MANIFOLD OPTIONS

The mix manifold incorporates two materials and mixes them thoroughly using a 12 in. static mixer. Mix manifolds can be mounted locally on the Hydra-Cat or mounted remotely, closer to the application, in order to reduce material and solvent waste.

- Standard Manifold (CS)
- Control Mixer Manifold (SST)
- Remote Mounted Manifold (CS)
- Remote Mounted Manifold (SST)

### How to Select a Hydra-Cat

#### 1. SELECT A MIX RATIO

The mix ratio is usually specified by the material manufacturer.

#### 2. SELECT PRESSURE RATIO OR MAX PRESSURE

Select a pressure ratio that will allow the proportioner to deliver the required amount of fluid pressure for the application. This is determined by material viscosity and setup parameters.

#### 3. SELECT A FLOW RATE

Select one fluid-to-air ratio that exceeds the total flow requirements of the application device(s) by approximately 30%. This provides an adequate application factor for such variables as tip or nozzle wear and pump/motor characteristics.

### Proportioner Assembly

- Pumping unit creates pressure and pumps material at designated volumetric ratio
- Separated material moves into mixing manifold and is blended with a static mixer
- Mixed material is delivered to applicator and sprayed
- Proportioner mixes only material required to complete the job
- After spraying, material is shut off and solvent pumped through mixed material line only
- Unit can remain unused for a length of time
- Restart unit simply by opening material lines and flushing out solvent
- Waste is eliminated and a better mix accuracy is ensured

### How Proportioner Creates Ratio

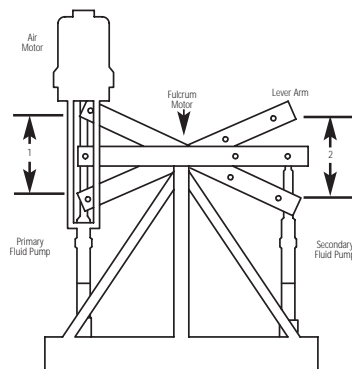
- Lower fluid sections of pump are mechanically linked together
- Ratio is selected by matching volumetric output of cylinders and position on lever arm
- Outputs of cylinders are fed into mixing manifold for use at applicator

# Variable Ratio Hydra-Cat Mechanical Proportioner

**FIGURE A**  
**VARIABLE RATIO HYDRA-CAT IN**  
**MINIMUM RATIO POSITION**

- Air motor is connected directly to primary fluid pump
- Each full stroke of air motor creates full stroke in primary fluid pump
- Air motor is also connected to secondary fluid pump by lever arm, which is supported at fulcrum like a teeter-totter.
- In the Min-Set position, the stroke of the primary fluid pump (1) is equal to the stroke of the secondary fluid pump (2).

**Figure A**  
1 = Primary Stroke 4 in. (102 mm)  
2 = Secondary Stroke in  
Minimum Ratio Position



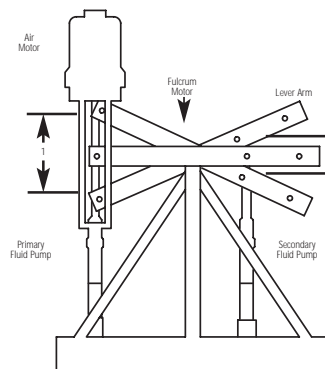
**If setting is at Min-Set:**

- Mix ratio will be at a minimum
- Pressure ratio will be at a minimum
- Flow Rate will be at a maximum

**FIGURE B**  
**VARIABLE RATIO HYDRA-CAT IN**  
**MAXIMUM RATIO POSITION**

- Secondary fluid pump was moved closer to the fulcrum
- In the Max-Set position, air motor and primary fluid pump still make full stroke (1), but secondary fluid pump now makes shorter stroke (3) which is less than 25% of original stroke length.
- By moving the secondary fluid pump closer to or farther from the fulcrum, any ratio in the basic range can be obtained.

**Figure B**  
1 = Primary Stroke  
4 in. (102 mm)  
3 = Secondary Stroke  
in Maximum  
Ratio Position



**If setting is at Max-Set:**

- Mix ratio will be at a maximum
- Pressure ratio will be at a maximum
- Flow Rate will be at a minimum

# Variable Ratio Hydra-Cat Mechanical Proportioner

## Product Configurator Form

Typical Model Number: VRHC - B - A - A13 - P1 - 2 - 21 - 21 - 12

Model	Product Description	U.S. List Price
VRHC-A	Variable Ratio Hydra-Cat	
<b>Code B</b>	<b>Air or Hydraulic Powered</b>	<b>Add</b>
A	Air (see table 1 VA for air powered Hydra-Cats)	
B	Hydraulic (see table 2 VH for hydraulic powered Hydra-Cats)	
<b>Code CCC</b>	<b>Table Reference Number</b> – is determined from the table reference number found on the appropriate air (VA) or hydraulic (VH) table.	<b>Add</b>
	From Selection Table	\$3,000.00
<b>Code DD</b>	<b>Motor Type</b> – is determined from the motor code column found on the appropriate air (VA table 1) or hydraulic (VH table 2).	<b>Add</b>
	M1 Monark® (205997)	\$912.00
	P1 President® (207352)	\$1,565.00
	B1 Bulldog® (208356)	\$2,340.00
	V1 Viscount® I (948699)	\$1,570.00
<b>Code FF</b>	<b>"A" Component Lower</b> – is determined from the "A" component lowers column on the appropriate reference table.	<b>Add</b>
	01 (10:1 President) Cylinder (215932)	\$1,895.00
	03 (President 15:1) Cylinder (215930)	\$1,645.00
	13 (30:1 Bulldog) Cylinder (901878)	\$3,330.00
	14 (#0) Cylinder (948640)	\$2,040.00
	15 (#1) Cylinder (948641)	\$2,120.00
	16 (#2) Cylinder (222012)	\$1,125.00
	17 (#2) Cylinder with Scraper (239388)	\$1,520.00
	18 (#5) Cylinder (222015)	\$1,125.00
	19 (#5 SST) Cylinder (948195)	\$4,100.00
	20 (#7) Cylinder (222017)	\$1,125.00
	21 (#7 SST) Cylinder (948197)	\$4,710.00
	22 (#9) Cylinder (222019)	\$1,125.00
	24 (President 15:1) Cylinder (217529)	\$1,735.00

Model	Product Description	U.S. List Price
<b>Code GG</b>	<b>"B" Component Lower</b> – is determined from the "B" component lowers column on the appropriate reference table.	<b>Add</b>
	01 (10:1 President) Cylinder (215932)	\$1,895.00
	03 (President 15:1) Cylinder (215930)	\$1,645.00
	13 (30:1 Bulldog) Cylinder (901878)	\$3,330.00
	14 (#0) Cylinder (948640)	\$2,040.00
	15 (#1) Cylinder (948641)	\$2,120.00
	16 (#2) Cylinder (222012)	\$1,125.00
	17 (#2) Cylinder with Scraper (239388)	\$1,520.00
	18 (#5) Cylinder (222015)	\$1,125.00
	19 (#5 SST) Cylinder (948195)	\$4,100.00
	20 (#7) Cylinder (222017)	\$1,125.00
	21 (#7 SST) Cylinder (948197)	\$4,710.00
	22 (#9) Cylinder (222019)	\$1,125.00
	24 (President 15:1) Cylinder (217529)	\$1,735.00
<b>Code HH</b>	<b>Manifold Options</b> – is determined from the "Mix Manifold Options" table.	<b>Add</b>
	00 None	
	11 Standard Manifold, CS (241692)	\$1,270.00
	21 Control Mixer Manifold SST	\$2,600.00
	31 Remote Mounted Manifold, CS (241808)	\$1,560.00
	41 Remote Mounted Manifold, SST (240225)	\$4,830.00

3

Fax completed form and Purchase Order to Graco Customer Service.  
Toll-Free Fax (877) 340-6427 - North America  
(612) 623-6884 - International

Ordering Information (Not intended for quoting purposes. Purchase order must accompany order. No verbal orders accepted).

Note: Codes DD, E, FF and GG are copied from the appropriate table after Codes BB and CCC are selected.

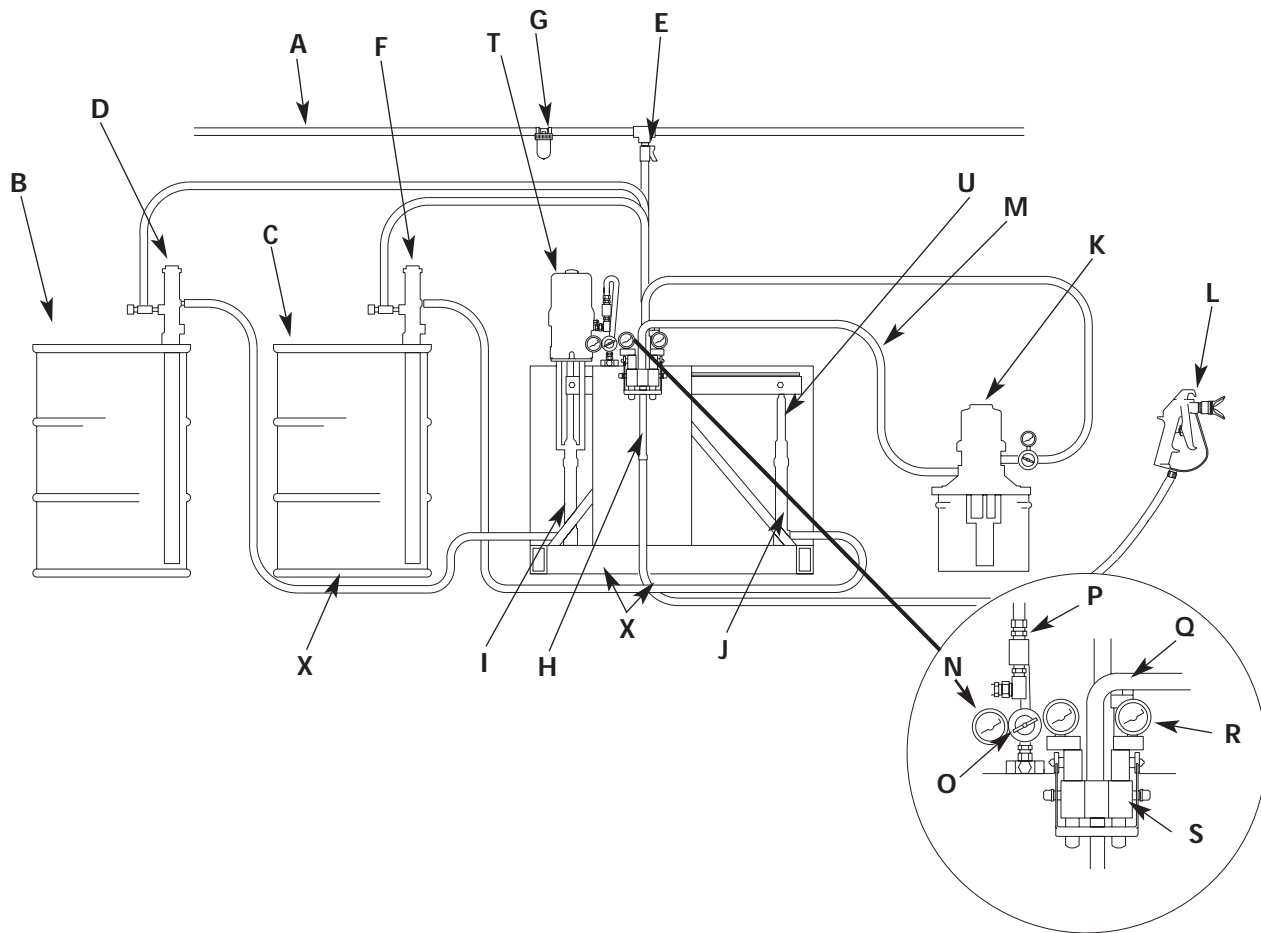
VRHC - B - _____ - _____ - _____ - 2 - _____ - _____ - _____	_____ SAE Application (397)
Code B CCC DD E FF GG HH	_____ Industrial Application
Note: Orders cancelled prior to shipment are subject to a 25% restocking fee. Configured products are not returnable.	
Order Quantity _____ x List Price (each) _____ = Total List Price _____	
Distributor Requested Ship Date _____	
(Please contact Graco Customer Service for delivery information)	

Print Name \_\_\_\_\_ Signature \_\_\_\_\_ Date \_\_\_\_\_

# Variable Ratio Hydra-Cat Mechanical Proportioner

## Airless Spray Dispensing System

FOR LIGHT VISCOSITY FLUIDS



### Key

<b>A</b> Air Supply	<b>H</b> Static Mixer	<b>O</b> Air Regulator
<b>B</b> Base Supply	<b>I</b> Primary Pump Inlet	<b>P</b> Bleed-Type Master Air Valve
<b>C</b> Catalyst Supply	<b>J</b> Secondary Pump Inlet	<b>Q</b> Pressure Relief Valve
<b>D</b> Base Supply Pump	<b>K</b> Solvent Pump	<b>R</b> Pressure Gauge
<b>E</b> Air Shutoff Valve	<b>L</b> Airless Spray Gun	<b>S</b> Mixer Manifold
<b>F</b> Catalyst Supply Pump	<b>M</b> Grounded Fluid Hose	<b>T</b> Air Motor
<b>G</b> Air Line Filter	<b>N</b> Air Pressure Gauge	<b>U</b> Secondary Proportioning Pump (Slave)



# Variable Ratio Hydra-Cat

## Mechanical Proportioner

### Ordering Information

To complete your configured HydraCat Model Number please follow these instructions.

**Step 1.** Select whether your HydraCat will be air-operated or hydraulic-operated. Enter an A for Air Operated or B for Hydraulic. Select the corresponding following table for all future selections. Table VA = air operated. Table VH = hydraulic operated. Enter the appropriate letter above the code B in the Order Information section located on the bottom of the first page (Configured Product Order Form).

VRHC - B    <sup>x</sup>             <sup>2</sup>            

*Note: once you've determined the correct reference table you must proceed as follows to select the best proportioner to meet your application requirements.*

#### Required Information: Mix Ratio, Fluid Pressure, & Flow Required

**Step 2.** Identify the applicable mix ratio to narrow down the rows in the reference table that meet this requirement.

**Step 3.** Look at the pressure and flow rate combinations available for the ratio identified in Step 2. Select the best pressure/flow rate combination requirements based on materials of construction. This should further narrow down the number of HydraCats that meet the application. In many cases there may only be one appropriate CCC selection in which case you've identified a specific solution.

If there are multiple rows that meet the customer's requirements with the same ratio, pressure and flow rate listed, review the wetted part compatibility option for the "A" and "B" components. Once you've selected compatible wetted parts, you've narrowed down the HydraCat solution to a single entry represented by the CCC table reference code. Enter these three letters above code CCC in the order information selection area on the Configured Product Order Form.

VRHC - B    <sup>x</sup>     <sup>xxx</sup>         <sup>2</sup>            

If no combinations are available it's likely that our standard product offerings do not meet the application requirements.

**Step 4.** Using the table reference number "CCC" which you have identified in steps 1-3, fill in the next four codes (DD, E, FF, and GG) in the order information portion of the Configured Product Order Form.

VRHC - B    <sup>x</sup>     <sup>xxx</sup>     <sup>xx</sup>     <sup>2</sup>     <sup>xx</sup>     <sup>xx</sup>     <sup>xx</sup>

**Step 5.** Using the Mixed Manifold Options table select the appropriate item and enter the two digit number above the HH code on the Configured Product Order Form.

VRHC - B    <sup>x</sup>     <sup>xxx</sup>     <sup>xx</sup>     <sup>x</sup>     <sup>xx</sup>     <sup>xx</sup>     <sup>xx</sup>

*Note: Feed systems and applicators are the responsibility of the qualified Hydra-Cat distributor. Technical Assistance may be able to help define these needs. Design and installation are the responsibility of the Hydra-Cat distributor.*

Once completed, please Fax or mail your order form to the number or address located on the Product Configurator Form.

# Variable Ratio Hydra-Cat

## Mechanical Proportioner

**Table VA - Variable Ratio, Air-Powered Hydra-Cat**

Minimum Set Position			Maximum Set Position			Code CCC	Code DD	CODE FF			CODE GG		
Mix Ratio	Max Pressure (PSI)	Fluid Flow at 40 CPM (GPM)	Mix Ratio	Max Pressure (PSI)	Fluid Flow at 40 CPM (GPM)	Table Reference Number	Air Motor Code	"A" Component Lower			"B" Component Lowers		
								Wetted Parts	Packing Material	Lower Code	Wetted Parts	Packing Material	Lower Code
1.00	239	4.62	4.50	391	2.83	A01	M1	SST	PTFE	01	SST	PTFE	01
1.00	480	3.99	4.50	786	2.44	A04	P1	SST	PTFE	01	SST	PTFE	01
1.00	803	2.39	4.50	1314	1.46	A06	P1	CS	PTFE	3	CS	PTFE	3
1.00	803	2.39	4.50	1314	1.46	A07	P1	CS	PTFE	3	SST	TEF/LEATH	24
1.00	803	2.39	4.50	1314	1.46	A08	P1	SST	TEF/LEATH	24	SST	TEF/LEATH	24
1.00	1281	1.50	4.50	2096	0.91	A09	P1	CS	PTFE	16	CS	PTFE	16
1.00	1602	1.20	4.50	2621	0.73	A12	P1	CS	PTFE	18	CS	PTFE	18
1.00	1833	1.00	4.50	3000	0.61	A14	P1	CS	PTFE	20	CS	PTFE	20
1.00	1218	1.50	4.50	2096	0.91	A15	P1	CS	PTFE	17	CS	PTFE	17
1.00	800	2.40	4.50	1309	1.46	A19	P1	CS	PTFE UH	14	CS	TEF/UH	14
1.00	959	2.00	4.50	1659	1.22	A20	P1	CS	TEF/UH	15	CS	TEF/UH	15
1.20	1745	1.10	5.39	2702	0.71	B01	P1	CS	PTFE	18	CS	PTFE	20
1.20	872	2.20	5.40	1350	1.42	B06	P1	CS	TEF/UH	14	CS	TEF/UH	15
1.25	1423	1.35	5.63	2175	0.88	C03	P1	CS	PTFE	16	CS	PTFE	18
1.34	2001	0.87	6.02	3000	0.58	D02	P1	CS	PTFE	20	CS	PTFE	22
1.50	1536	1.25	6.74	2231	0.86	E03	P1	CS	PTFE	16	CS	PTFE	20
1.60	987	1.94	7.19	1409	1.36	F03	P1	CS	PTFE	3	CS	PTFE	16
1.60	987	1.94	7.19	1409	1.36	F04	P1	SST	TEF/LEATH	24	CS	PTFE	16
1.60	1971	0.97	7.20	2813	0.68	F06	P1	CS	PTFE	18	CS	PTFE	22
2.00	1069	1.79	8.99	1445	1.33	G06	P1	CS	PTFE	3	CS	PTFE	18
2.00	1069	1.79	8.99	1445	1.33	G08	P1	SST	TEF/LEATH	24	CS	PTFE	18
2.00	1708	1.12	9.01	2305	0.83	G10	P1	CS	PTFE	16	CS	PTFE	22
2.40	1132	1.69	10.76	1469	1.31	H05	P1	CS	PTFE	3	CS	PTFE	20
2.40	1132	1.69	10.76	1469	1.31	H07	P1	SST	TEF/LEATH	24	CS	PTFE	20
2.40	2044	2.95	10.81	2650	2.27	H09	B1	CS	TEFPOLY	13	CS	PTFE	16
3.00	2172	2.77	13.51	2696	2.23	J01	B1	CS	TEFPOLY	13	CS	PTFE	18
3.19	1222	1.57	14.38	1501	1.28	K03	P1	CS	PTFE	3	CS	PTFE	22
3.19	1222	1.57	14.38	1501	1.28	K04	P1	SST	TEF/LEATH	24	CS	PTFE	22
3.34	368	1.83	15.03	449	1.50	M01	M1	SST	PTFE	01	CS	PTFE	18
3.59	2265	2.66	16.18	2727	2.21	N01	B1	CS	TEFPOLY	13	CS	PTFE	20
4.80	2396	2.51	21.61	2767	2.18	P01	B1	CS	TEFPOLY	13	CS	PTFE	22
5.34	403	1.67	24.03	459	1.47	Q01	M1	SST	PTFE	01	CS	PTFE	22

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# Variable Ratio Hydra-Cat

## Mechanical Proportioner

**Table VH - Variable Ratio, Hydraulic-Powered Hydra-Cat**

Minimum Set Position			Maximum Set Position			Code CCC	Code DD	CODE FF			CODE GG		
Mix Ratio	Max Pressure (PSI)	Fluid Flow at 40 CPM (GPM)	Mix Ratio	Max Pressure (PSI)	Fluid Flow at 40 CPM (GPM)	Table Reference Number	Hydraulic Motor Code	"A" Component Lower			"B" Component Lower		
								Wetted Parts	Packing Material	Lower Code	Wetted Parts	Packing Material	Lower Code
1.00	837	2.33	4.50	1370	1.42	A02	V1	CS	PTFE	3	SST	TEF/LEATH	24
1.00	837	2.33	4.50	1370	1.42	A03	V1	SST	TEF/LEATH	24	SST	TEF/LEATH	24
1.00	1336	1.46	4.50	2186	0.89	A04	V1	CS	PTFE	16	CS	PTFE	16
1.00	1251	2.34	4.50	2048	1.43	A05	V1	CS	TEF/UH	14	CS	TEF/UH	14
1.00	1500	1.95	4.50	2455	1.19	A06	V1	CS	TEF/UH	15	CS	TEF/UH	15
1.20	1364	2.14	5.40	2112	1.38	A07	V1	CS	TEF/UH	14	CS	TEF/UH	15
1.25	1484	1.31	5.63	2269	0.86	BO1	V1	CS	PTFE	16	CS	PTFE	18
1.50	1602	1.22	6.74	2327	0.84	CO1	V1	CS	PTFE	16	CS	PTFE	20
1.60	1029	1.89	7.19	1470	1.33	CO3	V1	CS	PTFE	3	CS	PTFE	16
1.60	1029	1.89	7.19	1470	1.33	CO4	V1	SST	TEF/LEATH	24	CS	PTFE	16
1.67	940	3.11	7.53	1326	2.21	DO1	V1	SST	PTFE	01	SST	TEF/LEATH	24
2.00	1115	1.75	8.99	1507	1.29	E01	V1	CS	PTFE	3	CS	PTFE	18
2.00	1115	1.75	8.99	1507	1.29	E03	V1	SST	TEF/LEATH	24	CS	PTFE	18
2.00	1781	1.09	9.01	2405	0.81	E05	V1	CS	PTFE	16	CS	PTFE	22
2.40	1180	1.65	10.76	1532	1.27	F01	V1	CS	PTFE	3	CS	PTFE	20
2.40	1180	1.65	10.76	1532	1.27	F03	V1	SST	TEF/LEATH	24	CS	PTFE	20
3.19	1275	1.53	14.38	1565	1.25	H01	V1	CS	PTFE	3	CS	PTFE	22
3.19	1275	1.53	14.38	1565	1.25	H02	V1	SST	TEF/LEATH	24	CS	PTFE	22



# Variable Ratio Hydra-Cat

## Mechanical Proportioner

### Hydra-Cat Motor Table

Motor Code "DD"	Description	Power Source	Max. Stroke Length		Effective Area		Motor Reference Number	Manual Number
			Inches	cm	Sq. Inch	Sq. cm		
P1	President	Air	4.0	10.79	14.19	91.55	207352	306982
B1	Bulldog	Air	4.75	12.06	38.48	248.26	208356	307049
K1	King	Air	4.75	12.06	78.54	506.71	207647	306968
V1	Viscount I	Hydraulic	4.00	10.16	1.48	9.55	948699	307654

### Hydra-Cat Pump Lower Table

Pump Lower Codes "FF" & "GG"	Stroke Length		Pressure Rating		Effective Area		Wetted Material	Packing Material	Lower Reference Number	Manual Number
	(Inches)	(cm)	(psi)	(bar)	(Sq Inch)	(Sq cm)				
01	4.25	10.79	1500	103.42	1.478	9.53	SST	PTFE	215932	307430
03	4.25	10.79	2000	137.89	0.884	5.70	CS	PTFE	215930	307431
11	4.75	12.06	1000	68.94	3.54	22.80	SST	PTFE	206792	306821
12	4.75	12.06	1500	103.42	1.478	9.53	SST	PTFE	217339	307430
13	4.75	12.06	3000	206.84	1.248	8.05	CS	PTFE/Poly	901878	
14	4.75	12.06	3000	206.84	0.884	5.70	CS	PTFE/UH	948640	684004
15	4.75	12.06	3000	206.84	0.74	4.77	CS	PTFE/UH	948641	684004
16	4.75	12.06	3000	206.84	0.554	3.58	CS	PTFE	222012	307944
17	4.75	12.06	3000	206.84	0.554	3.58	CS	CFPTFE	239388	307944
18	4.75	12.06	3000	206.84	0.443	2.86	CS	PTFE	222015	307944
19	4.75	12.06	3000	206.84	0.443	2.86	SST	PTFE	948195	
20	4.75	12.06	3000	206.84	0.37	2.39	CS	PTFE	222017	307944
21	4.75	12.06	3000	206.84	0.37	2.39	SST	PTFE/UH	948197	
22	4.75	12.06	3000	206.84	0.277	1.79	CS	PTFE	222019	307944
23	4.75	12.06	4000	275.79	0.875	5.65	CS	PTFE	946196	

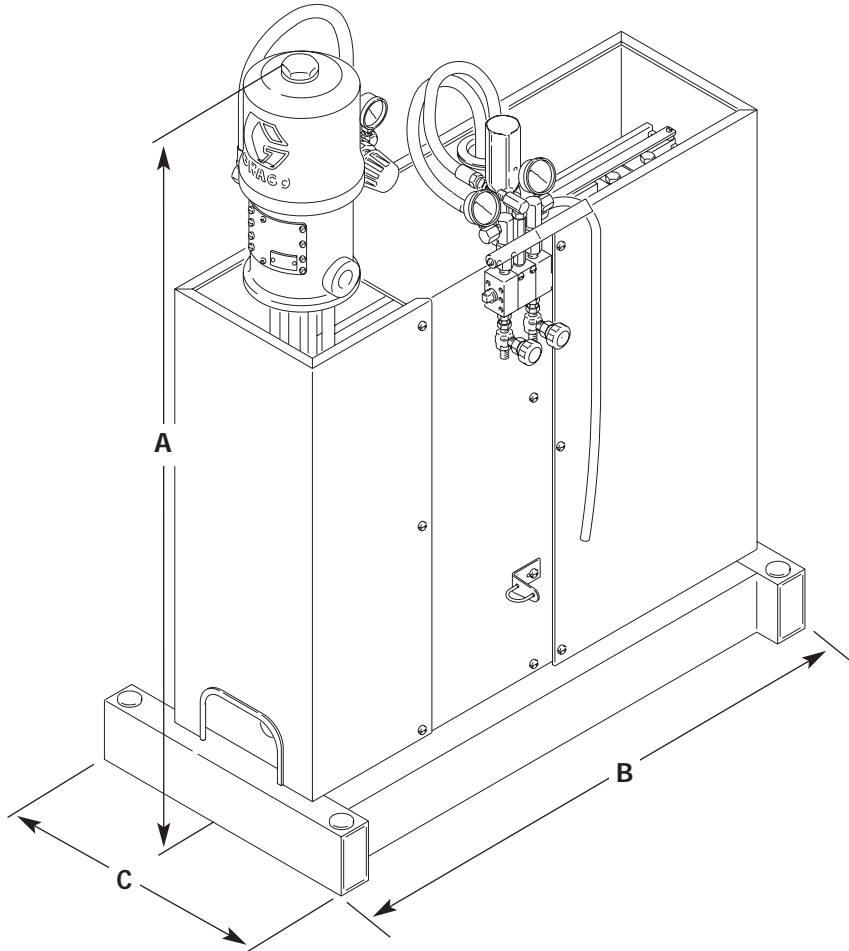
### Hydra-Cat Mix Manifold Options

Code "HH"	Description	Mounting Location	Wetted Material	Pressure Rating		Manifold Reference Number
				(psi)	(bar)	
00	None	N/A	N/A	N/A	N/A	N/A
11	Standard Manifold, CS 1/4" Ported	Local	CS	3000	207	241692
21	Remote Mixer Manifold, CS 1/2" Ported	Remote	SST	3000	207	241808
31	Remote Mounted Manifold, CS 3/8" Ported	Remote	CS	3000	345	241809
41	Remote Mounted Manifold, SST 1/2" Ported	Remote	SST	5000	207	240225

Note: All manifolds come with a 1/2 in. SST Mixer with 32 plastic elements. (#41 uses a SST Mixer Element)

# Variable Ratio Hydra-Cat Mechanical Proportioner

## Dimensions and Approximate Weights



3

### Dimensions

- A Determined by air motor
- B 35 in. (889 mm)
- C 18 in. (457 mm)

### Weights

Motor Code	Weight (lbs./kg)
P1	183/83
B1	240/109
K1	256/116
V1	199/90
V2	277/126

# Variable Ratio Hydra-Cat

## Mechanical Proportioner

### Accessories

#### STAINLESS STEEL FLUID PUMPS

Allows conversion of standard series Hydra-Cat to 304 SST/PTFE fluid pump construction. Fluid pumps are dimensionally interchangeable with standard carbon steel, Severe Duty™ pumps.

Lower ID	Effective Cylinder Area Sq in. (sq mm)	Part No.
President 10:1	1.476 (953)	215932 (SST)
President 15:1	0.884 (570)	217529
#5	0.443 (286)	948195
#7	0.370 (239)	948197

#### CONVERSION/REPAIR KITS

Lower ID	PTFE w/CS Gland	PTFE/UHMWPE w/CS Gland	PTFE w/SST Gland	PTFE/UHMWPE w/SST Gland
—	—	—	—	215336
Bulldog 30:1	—	—	—	948242
President 15:1	—	—	—	218559
#0	—	948650	948750	949383
#1	—	948651	948751	949384
#2	236597	222236	948192	949379
#5	236598	222237	948195	949380
#7	236595	222234	948197	949381
#9	236596	222235	948199	949302

#### 501095 Inlet Valve Spring Load Conversion

Used to provide spring bias for closing foot valve on 2 thru 9 Hydra-Cat pumps. Use with higher viscosity materials to provide faster check valve closing. For use with pressure feed proportioners only.

# Variable Ratio Hydra-Cat Mechanical Proportioner

## Accessories (continued)

### GUNS AND TIPS

#### Alpha Plus™ Air-Assisted Airless Gun

Maximum working pressure:  
4000 psi (27.6 MPa, 276 bar)  
**243573** with standard spray tip  
**243576** with RAC Tip

#### 235463 Silver Plus Gun

Maximum working pressure:  
5000 psi (34.5 MPa, 345 bar)  
2-finger gun with RAC IV Tip.

#### 238591 Silver Plus Gun

Maximum working pressure:  
5000 psi (34.5 MPa, 345 bar)  
4-finger gun with Heavy-Duty RAC IV Tip.

#### GHDxxx HD RAC Tip

**965022 2K Mix Gun**  
Maximum working pressure: 3000 psi (20.7 MPa, 207 bar). Coatings enter the gun separately and are mixed together in the gun. Designed for plural component materials with very short setup times.

### HOSES

#### Whip Hose

Maximum working pressure: 5000 psi (34.5 MPa, 345 bar).  
1/4 in ID (0.63 cm), 1/4 npsm(fbe).  
**214912** 3 ft. (0.91 m)  
**214913** 6 ft. (1.83 m)

#### Nylon Fluid Hose

Maximum working pressure: 5000 psi (34.5 MPa, 345 bar).  
3/8 in. ID (9.5 mm ID), 3/8 npt(m) x 3/8 npt(f).  
**238395** 24.6 ft. (7.5 m)  
**238396** 49.2 ft. (15 m)  
**238397** 98.4 ft. (30 m)  
Maximum working pressure: 5000 psi (34.5 MPa, 345 bar).  
1/2 in. ID (12.7 mm ID), 1/2 npt(fbe).  
**238716** 24.6 ft. (7.5 m)  
**238717** 49.2 ft. (15 m)  
**238718** 98.4 ft. (30 m)

### CONTROLS AND VALVES

#### 224040 Pump Runaway Valve

#### Bleed-Type Air Valve

**110224** 3/8 in. npt(fbe)  
**110225** 1/2 in. npt(fbe)  
**110226** 3/4 in. npt(fbe)

### Check Valves

Maximum working pressure: 3000 psi (20.6 MPa, 206 bar).  
**501867** 1/4 in. npt (mbe)  
**501684** 3/8 in. npt(mbe)  
**501603** 1/2 in. npt(mbe)

### Fluid Regulators

**222121** Maximum working pressure: 1500 psi (10.3 MPa, 103 bar). Regulated range: 500-1200 psi (3.4-8.3 MPa, 34-83 bar). 1.5 gpm (5.7 lpm), SST.  
**238890** Maximum working pressure: 6000 psi (41.3 MPa, 413 bar). Regulated range: 500-3000 psi (3.4-20.7 MPa, 34-207 bar). 2 gpm (7.5 lpm), SST.  
**206661** Maximum working pressure: 3000 psi (20.7 MPa, 207 bar). Regulated range: 1000-3000 psi (6.9-20.7 MPa, 69-207 bar). 3.5 gpm (13.25 lpm), CS.

### Fluid Ball Valves

**210657** 1/4 in. npt(mbe)  
5000 psi (34.5 MPa, 345 bar), CS.  
**240410** 3/8 in. npt(mbe)  
5000 psi (34.5 MPa, 345 bar), SST.

#### 237073 Optional Safety Relief Valves

3750 psi (25.9 MPa, 259 bar).

### ADAPTERS AND FITTINGS

#### Agitators

**224854** Drum bung-mounted Twistork, CS  
**236760** Drum bung-mounted Twistork, siphon, SST  
**231414** Heavy-duty back geared with drum cover, elevator and siphon kit, SST

#### Fluid Heaters – Viscon<sup>2</sup>

Maximum working pressure: 5000 psi (34.5 MPa, 345 bar). UL and CSA approved.  
**220522** 120V, 16.5 amp  
**220523** 240V, 9.6 amp  
**220254** 480V, 4.8 amp  
**222307** 220-240V, 9.6 amp

### FILTERS

#### Fluid Filter

**218029** 14 sq. in. (90.3 sq. cm), 5000 psi (34.4 MPa, 344 bar), CS

#### Replacement Screen Filter Elements

**3 Pack** **25 Pack**  
**238435** **238436** 30 mesh (595 micron)  
**238437** **238438** 60 mesh (250 micron)  
**238439** **238440** 100 mesh (149 micron)

# Foam Cat<sup>®</sup> 200

## Mechanical Proportioner

3

### Features and Benefits

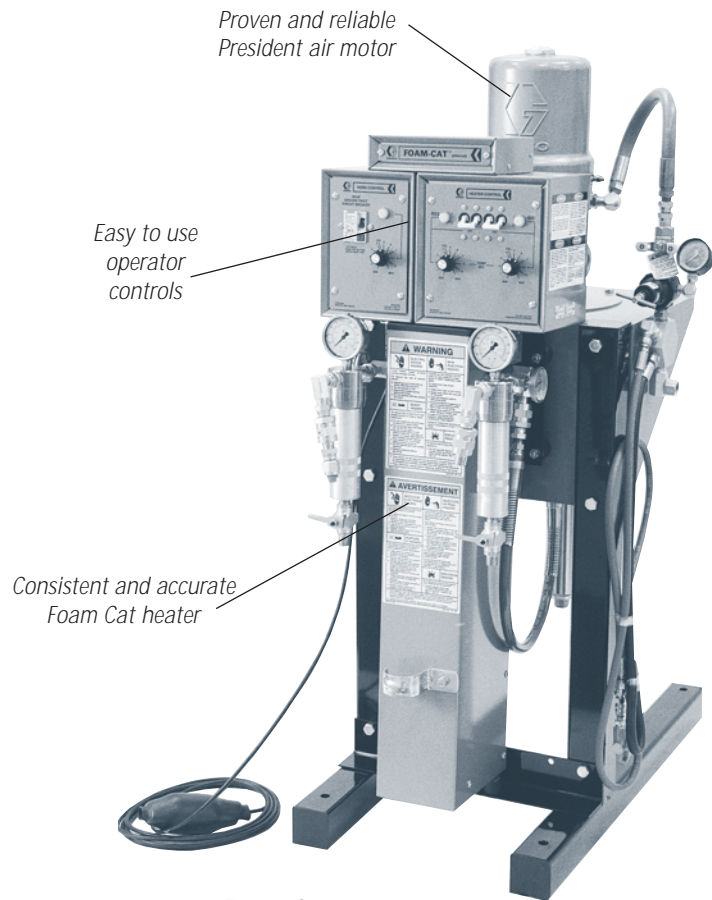
- Module fully assembled
- Proven air driven performance and reliability
- Choice of deliveries and pressures
- Fluid delivery to 15 lbs./min/ (6.7 kg/min.)

### Typical Applications

- Foam chemical supply
- Fluid transfer

### Typical Coatings Applied

- Polyurethane foams
- Polyurethane coatings
- Polyureas



Foam Cat 200  
224546



# Foam Cat 200

## Mechanical Proportioner

### Technical Specifications

Maximum working pressure	President: 1500 psi (10.5 MPa, 105 bar) Bulldog: 1500 psi (10.5 MPa, 105 bar)
Maximum continuous flow	President: 15 lbs./min (6.8 kg/min) Bulldog: 30 lbs./min (13.6 kg/min)
Electrical requirements	.240V, single phase 37 amp, 3 phase 27 amp
Instruction manual	307542

### Ordering Information

#### FOAM CAT 200 SPRAYERS WITH PRESIDENT PUMP:

- 226990 Foam Cat 200 Sprayer**  
Includes 208851 President pump and 235259 Heater.
- 226991 Foam Cat 200 Sprayer Package**  
Includes 226990 Sprayer (above)  
ID 3/8 in. x 50 ft. (9.52 mm x 15.2 m) Dual-hose set, ID 1/4 in. x 15 ft. (6.35 mm x 4.57 m) Heated dual whip hose, and 217373 Foam gun with 0.083 in. (2.11 mm) nozzle kit. Stand mounted.
- 230965 Foam Cat 200 Sprayer Package w/o Hoses**  
Includes 226990 Sprayer (above), 217373 Foam gun with 0.083 in. (2.11 mm) nozzle kit. Stand mounted.
- 239389 President Pump, PTFE Seals**  
Alternative to 208851 President pump.  
Seals are carbon filled PTFE with scraper.

#### FOAM CAT 200 SPRAYERS WITH BULLDOG PUMP:

- 224544 Foam Cat 200 Sprayer**  
Includes 224567 Bulldog pump and 235260 Heater.
- 224546 Foam Cat 200 Sprayer Package**  
Includes 224544 Sprayer (above), ID 3/8 in. x 50 ft. (9.52 mm x 15.2 m) Dual-hose set, ID 1/4 in. x 15 ft. (6.35 mm x 4.57 m) Heated dual whip hose, and 217373 Foam gun with 0.114 in. (2.9 mm) nozzle kit. Stand mounted

### Accessories

- 217374 ISO Pump Oil, 1 pint (236 cc)**
- 237569 Ground Wire, 25 ft. (7.6 m)**
- 106148 Air Filter**  
Maximum working pressure: 250 psi (1.8 MPa, 18 bar).
- Air Shutoff Valve**  
Maximum working pressure: 500 psi (3.5 MPa, 35 bar).  
**110225** 1/2 in. (1.25 cm)
- 217341 Air Dryer Kit**  
Maximum air inlet working pressure: 150 psi (1 MPa, 10 bar). Provides clean, dry air to prevent crystallization of isocyanate and freon loss in resin.
- Foam Cat Heated Hose**  
Maximum working pressure: 3000 psi (20.4 MPa, 204 bar)
  - 218613** Hose set, ID 3/8 in. x 50 ft. (9.5 mm x 15.2 m)
  - 218614** Whip hose, ID 1/4 in. x 15 ft. (6.3 mm x 4.57 m).
- 206199 Air Regulator and Gauge**  
Maximum working pressure: 300 psi (2.1 MPa, 21 bar).  
Regulated pressure range: 10-125 psi (0.07-0.9 MPa, 0.7-8.5 bar). Inlet and outlet: 1/2 npt(f).

# Foam Cat<sup>®</sup> 400

## Mechanical Proportioner

Durable and reliable high production mechanical proportioning system that provides consistent and accurate material heating for fast and efficient job completion with fewer repairs and less pump downtime

### 3

#### Features and Benefits

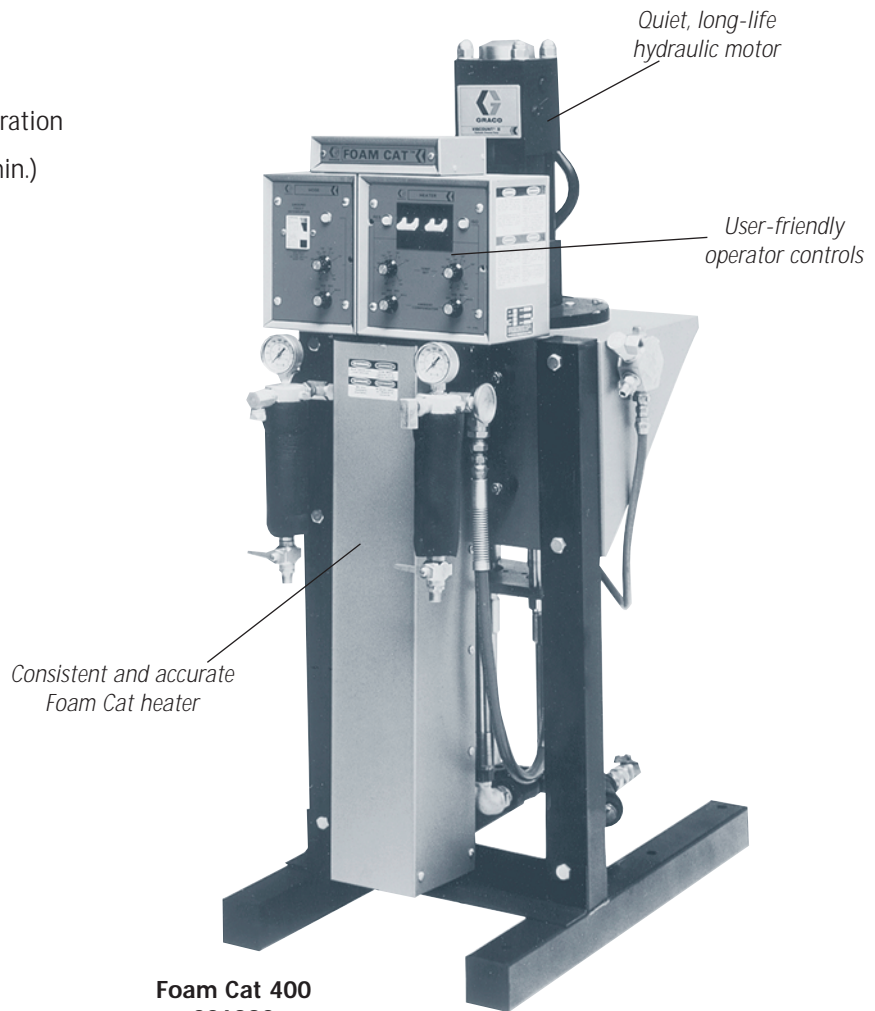
- Module fully assembled
- Hydraulic power for quiet long life operation
- Fluid flow up to 30 lbs./min. (13.5 kg/min.)
- Heated hose controls included

#### Typical Applications

- Foam chemical supply
- Fluid transfer

#### Typical Coatings Applied

- Polyurethane foams
- Polyurethane coatings
- Polyureas



# Foam Cat 400

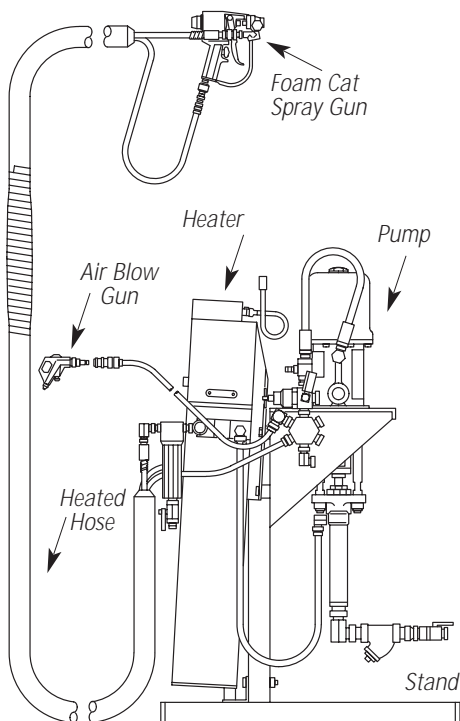
## Mechanical Proportioner

### Technical Specifications

Maximum working pressure .....	1500 psi (10.5 MPa, 105 bar)
Maximum fluid flow .....	30 lbs./min. at 48°F temp rise (13 kg/min. at 27°C)
Electrical requirements .....	240V single phase 80 amp, 3 phase 60 amp
Hydraulic power delivery (226994 only) .....	5 gpm at 800 psi (19 lpm at 5.6 MPa, 56 bar)
Instruction manual .....	307541

### Ordering Information

- 226989 Foam Cat 400 Hydraulic Sprayer**  
Includes 217337 Viscount® Pump and 235260 Heater.
- 226992 Foam Cat 400 Hydraulic Sprayer Package**  
Sprayer 226989 (above), plus ID 3/8 in. x 50 ft. (9.52 mm x 15.2 m) Dual-hose set, ID 1/4 in. x 15 ft. (6.35 mm x 4.57 m) Heated whip hose and 217373 Foam gun with 0.114 in. (2.9 mm) nozzle kit. Stand mounted.
- 226994 Foam Cat 400 Hydraulic Sprayer Package with Hydraulic Power Supply**  
Includes 226992 Sprayer (above), plus hydraulic power supply, 10 ft. (3.1 m) hydraulic supply and return hoses, and 10 gal. (19 L) hydraulic oil.



### Accessories

- 106522 Hydraulic Power Supply**  
3 hp. 2300k6 Hz
- 217374 ISO Pump Oil, 1 pint (236 cc)**
- 237569 Ground Wire**  
25 ft. (7.6 m)
- 106149 Air Filter**  
Maximum working pressure: 250 psi (1.8 MPa, 18 bar).
- Hydraulic Oil**
  - 207428** 1 gal. (3.8 L)
  - 169236** 5 gal. (19 L)
- 217341 Air Dryer Kit**  
Maximum air inlet working pressure: 150 psi (1MPa, 10 bar). Provides clean, dry air to prevent crystallization of isocyanate and freon loss in resin.
- 226946 Feed Pump, 1:1 Ratio**  
Maximum working pressure: 180 psi (1.2 MPa, 12 bar). Supplies polyurethane foam chemicals from supply containers to proportioning pumps
- 217381 Feed Pump Kit, 1:1 Ratio**  
Includes:
  - 2 - 226946 feed pumps (1:1 Fast Flow)
  - 2 - 217382 10 ft. (3 m) fluid hoses
  - 2 - 200991 10 ft. (3 m) air hoses
  - 4 - 102022 bushings
  - 1 - 217341 air dryer
- 070411 Abrasion-Resistant Hose Cover**  
Order by the foot.
- 206199 Air Regulator and Gauge**  
Maximum working pressure: 300 psi (2.1 MPa, 21 bar). Regulated pressure range: 10-125 psi (0.07-0.9 MPa, 0.7-8.5 bar). Inlet/outlet: 1/2 npt(f).
- Air Shutoff Valve**  
Maximum working pressure: 500 psi (3.5 MPa, 35 bar). Bleed type valve for shutting off main air supply to spray system.
  - 110225** 1/2 in. (12.7 mm)
  - 103344** 3/4 in. (19 mm)
- Heated Hose**
  - 218613** 3/8 in. npt x 50 ft. (00m)
  - 218614** 1/4 in. npt x 15 ft. (00m)



# Foam Cat 2:1 & Standard 2:1

## Feed Pumps

3

### Features and Benefits

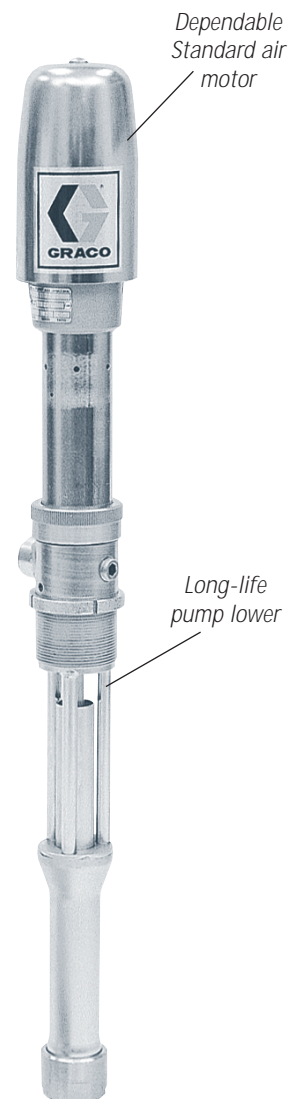
- Air-powered for high reliability and low cost
- Typical fluid delivery up to 2.5 gpm (9.46 lpm); up to 360 psi (2.4 MPa, 24 bar) fluid pressure
- Divorced-style drum for leak-free operation
- Stainless steel construction
- Mountings available for wall mount configuration

### Typical Applications

- Foam chemical supply
- Spray gun supply
- Dispensing valve supply
- Cleaning chemical supply
- Fluid transfer

### Typical Fluids Handled

- Solvents
- Adhesives
- Resins
- Catalysts
- Chemicals



Standard 2:1  
223954

# Foam Cat 2:1 and Standard 2:1 Feed Pumps

## Technical Specifications

	Foam Cat 2:1	Standard 2:1
Maximum continuous flow	2 gpm (7.6 lpm)	2.5 gpm (9.5 lpm)
Air input pressure range	30-120 psi (0.2-0.84 MPa, 2-8.4 bar)	30-180 psi (0.4-1.2 MPa, 4-12 bar)
Pump cycles per gallon (3.8L)	50	50
Maximum fluid pressure	240 psi (1.68 MPa, 16.8 bar)	360 psi (2.4 MPa, 24 bar)
Air inlet size	1/4 in. npt(f)	1/4 npt(f)
Fluid outlet size	1/2 in. npt(f)	1/2 npt(f)
Height	38.73 in. (984 mm)	30.5 in. (775 mm)
Weight	23 lbs. (10.4 kg)	11.5 lbs. (5.2 kg)
Instruction manual	307679	307026

## Performance Charts

### STANDARD 2:1

# Foam Cat 2:1 and Standard 2:1 Feed Pumps

## Ordering Information

Order number includes motor and pump lower assembly

Order Nos.	Standard 2:1 Stubby 223954	Standard 2:1 Drum 226040	Foam Cat 2:1 Stubby 223777	Foam Cat 2:1 Drum 218556
<b>Pump Lower</b>				
Part No.	223955	204724	223775	218554
Construction	SST	SST	SST	SST
<b>Standard Repair Kits</b>				
Part No.	224005	224005	223650	223650
Construction	PTFE/PEEK	PTFE/PEEK	UHMWPE	UHMWPE
<b>Motor</b>				
Air Valve Assembly	220168	220168	220168	220168

## Service Parts Information

Pump Lower Part Nos.	223955	204724	223775	218554
<b>Displacement Rod</b>				
Upper	223957	204885	180440	180433
Lower	186569	162239	186394	180413
Construction	SST	SST	SST	SST
<b>Cylinder</b>				
Part No.	223956	204725	180417	180417
Construction	SST	SST	SST	SST
<b>Intake Valve (order separate part numbers)</b>				
Intake Ball	101917	101917	101917	101917
Intake Valve Seat	166609	164251	179941	179941
<b>Piston Valve (order separate part numbers)</b>				
Piston Ball	101750	101750	101750	101750
Seat	161795	161795	186399	186399
Ball Guide	161791	161791	161791	161791

# Foam Cat 2:1 and Standard 2:1 Feed Pumps

## Accessories

### ADAPTERS AND FITTINGS

**237569 Grounding Clamp and Wire**  
25 ft. (7.6 m), 12 gauge (1.5 mm<sup>2</sup>).

### CONTROLS AND VALVES

**107142 Bleed-Type Master Air Valve**  
Maximum working pressure: 300 psi (2.1 MPa, 21 bar). Inlet: 1/2 npt(m), Outlet: 1/2 npt(f).

**202156 Air Regulator and Gauge**  
Maximum working pressure: 300 psi (2.0 MPa, 20 bar). Inlet and outlet: 3/8 npt(f).

**214848 Air Line Lubricator**  
Maximum working pressure: 250 psi (1.7 MPa, 17 bar). Bowl capacity: 8 oz. (0.24 L). Inlet and outlet: 1/2 npt(f).

### Fluid Drain Valve

Maximum working pressure: 500 psi (3.5 MPa, 35 bar).

**208630** Inlet: 1/2 npt(m), Outlet: 3/8 npt(f).  
Non-corrosive fluids; carbon steel & PTFE.

**237534** Inlet: 3/8 npt(m), Outlet: 3/8 npt(f).  
Corrosive fluids; stainless steel & PTFE.

### Fluid Pressure Regulator

Maximum working pressure: 250 psi (1.7 MPa, 17 bar). Inlet: 3/8 npsm(f), Outlets: 3/8 npsm(m) and 3/8 npt(f).

**203831** (CS) Regulated pressure range:  
0-60 psi (0-0.4 MPa, 0-4 bar).  
Maximum 250 psi.  
Maximum flow rate: 2 gpm (7.6 lpm).

**209030** (SST) Regulated pressure range:  
5-100 psi (0.04-0.7 MPa, 0.4-7 bar).  
Maximum 250 psi.  
Maximum flow rate: 3 gpm (11.3 lpm).

### 202660 Air Line Filter and Regulator

Maximum working pressure: 180 psi (1.3 MPa, 13 bar). Inlet: 1/2 npt(f), Outlet 1/4 npt(m). Flow rate is over 50 scfm (1.4 m<sup>3</sup>/min). Includes gauge and two outlet valves, 50 micron filter element and 100 mesh (149 micron) inlet strainer.

### FILTERS

**106149 Air Line Filter**  
Maximum working pressure: 250 psi (1.7 MPa, 17 bar). Inlet/outlet: 1/2 npt(f).

### Fluid Filter

Maximum working pressure: 300 psi (2.0 MPa, 20 bar). Inlet and outlet: 3/4 npt(f).

**213057** 30 mesh (595 micron)

**213058** 60 mesh (250 micron)

**213059** 100 mesh (149 micron)

### MOUNTING OPTIONS

**203987** Wall Mounting Bracket

**224004** Pail Mount Kit

**187316** Pail Cover Funnel

**224302** Pail Cover Kit, Stainless Steel



# Pressure Monitor™

## 3

### Features and Benefits

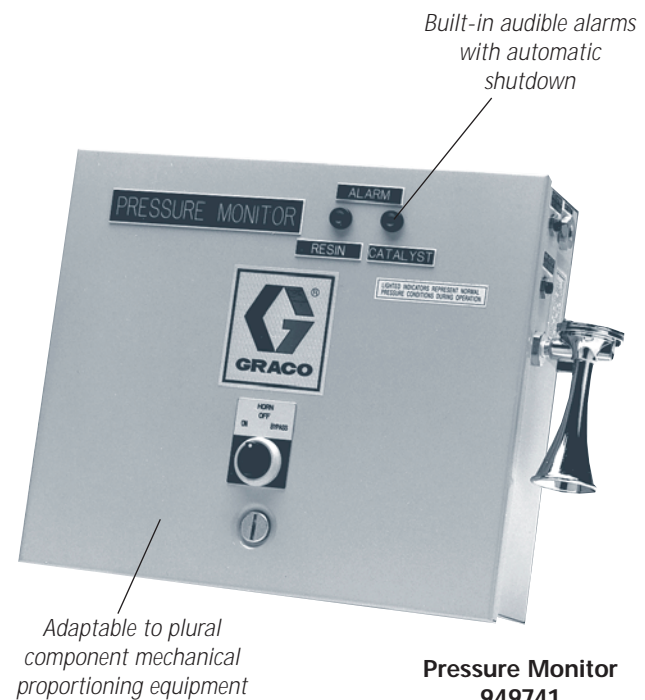
- Available for two- or three-component materials
- Quick installation and easy operation
- Built-in audible alarms, automatic system shutdown, and component identification indicators for straightforward troubleshooting
- Operates safely in hazardous environments

### Typical Applications

- Adaptable to virtually any plural component mechanical proportioning equipment

### Typical Fluids Handled

- Plural component paints
- Protective coatings
- Adhesives



**Pressure Monitor  
949741**



# Pressure Monitor

## Operation

Fluid pressure is monitored in the outlet lines of the proportioner with in-line pressure switches. If an off-ratio condition occurs, the remote signal operates the air pilot valve to shut off the proportioner and sound an audible alarm alerting the operator.

## Technical Specifications

Fluid pressure ranges	75-600 psi (5.2-41.4 bar)
	450-2600 psi (31.0-179.3 bar)
	2400-4800 psi (166.5-331.0 bar)
Air inlet	1/4 npt(f)
Air pressure required	60-80 psi (4.1-5.5 bar)
Fluid inlets	1/2 npt(f)
Wetted parts	316 SST / Chemraz
By-pass input signal	5/32 in. tube
Motor pilot signal	5/32 in. tube
Weight	22 lbs. 8 oz. (10.21 kg)
Dimensions	14.5 in. W x 12.5 in. H x 4 in. D (36.9 cm W x 31.7 cm H x 10.1 cm D)
Instruction manuals	949741, 949742, 949743, 305769

## Ordering Information

- 949741 Plural Component Pressure Monitor**  
for 75-600 psi (0.52-4.14 MPa, 5.2-41.4 bar) pressures
- 949742 Plural Component Pressure Monitor**  
for 450-2600 psi (3.1-17.9 MPa, 31.0-179.3 bar) pressures
- 949743 Plural Component Pressure Monitor**  
for 2400-4800 psi (16.7-33.1 MPa, 166.5-331.0 bar) pressures

## Accessories

- 949721 Third Switch for 75-600 psi**  
(.52-4.14 MPa, 5.2-41.4 bar)
- 949722 Third Switch for 450-2400 psi**  
(3.1-17.9 MPa, 31.0-179.3 bar)
- 949723 Third Switch for 2400-4800 psi**  
(16.7-33.1 MPa, 166.5-331.0 bar)



## 2K Monitor™

The 2K Monitor works in connection with a variety of flow meters to monitor flow in mechanical proportioners, thus assuring on-ratio performance.

3

### Features and Benefits

- Provides the highest level of ratio assurance for mechanical proportioning systems
- Adaptable to virtually any plural-component proportioning equipment
- Insensitive to pressure fluctuations that generate false alarms on other systems
- Provides material use reports and maintenance schedules

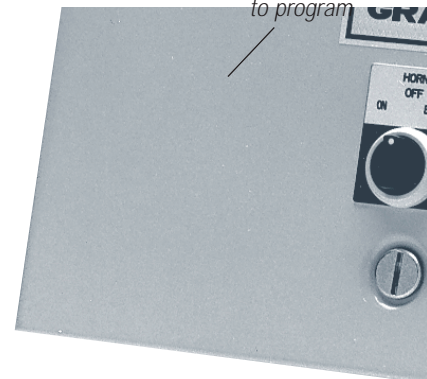
### Typical Applications

- Ratio monitoring for mechanical proportioners such as Variable Ratio Hydra-Cat

### Typical Fluids Handled

- Paints
- "Waterless" flexible laminating urethanes
- Epoxies

*User interface is easy to program*



**2K Monitor  
233061**

*Can be used with a wide variety of meters*

# 2k Monitor

## Technical Specifications

User interface	
Display	4 x 20 character LCD display
Key pad	Membrane keypad with 24 keys, 12 of which are illuminated with LEDs
Mix ratio range	0.25 to 99.99:1
Mix ratio tolerance range	1% minimum (user selectable)
Minimum flow rate	50 cc/min. with G3000 meter.
Using higher viscosities and/or appropriate accessory meters can enable system for flow rates as low as 10cc/min.	
Air supply pressure range	80-125 psi (5.5-9 bar, 0.6-0.9 MPa)
Filtration required for atomizing air quality desired	
Fluid filtration required for flowmeter	100 mesh (149 micron) minimum
Viscosity range of fluids	20 to 30,000 cps with G3000 meters
Heavier viscosities can be proportioned with use of optional meters and hardware.	
Meters must be selected for the appropriate resolution and pressure drop at the process flow rate with that viscosity fluid.	
Wetted parts	
G3000 meters	303, 304, 17-4 stainless steel; tungsten carbide (with nickel binder), Chemrez, PTFE, CV75
Using other flow meters with the 2K Monitor	
Maximum Hz signal	20 KHz
Minimum input voltage	18 Vdc
Maximum input voltage	30 Vdc
Maximum power requirement	50 watts
Power supply voltage range	85-265 VAC, 50-60 Hz, single phase
Communication	
Printer (standard)	RS-232
Network/PC (optional with kit)	RS-485
Network communication protocol	Modbus
Cable lengths	
Printer	
Standard	10 ft. (3.05 m)
Maximum	50 ft. (15.2 m)
Network Cable	
Minimum	none
Total cable maximum length	4000 ft. (1220 m)



# 2K Monitor

## Technical Specifications (continued)

### Display Parameters

#### Grand totalizer

Selectable units .....	L, gal
Count .....	Up
Maximum displayed value .....	Non-volatile memory 99999999 L or 2642079 gal

#### Batch totalizer

Selectable units .....	L, gal
Count direction .....	Up
Maximum displayed value .....	Non-volatile memory 99999.9 L or 26420.1 gal

#### Job totalizer

Selectable units .....	cc, oz.
Count direction .....	Up
Maximum displayed value .....	999999 cc or 33806 oz.
Reset .....	Manual

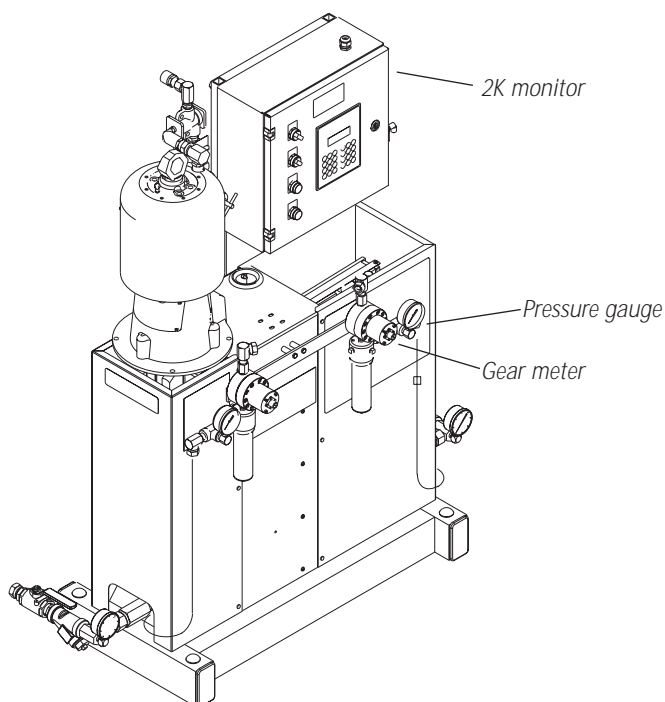
#### Flow rate

Display update time .....	1 second
---------------------------	----------

#### Background lighting

No activity shut-off time .....	10 minutes
---------------------------------	------------

## System Diagram



# 2K Monitor

## Measuring and Reporting

The 2K Monitor will confirm the ratio accuracy and provide a reliable record of material use. This information can be used to keep records of total material use for costing and environmental reporting purposes.

The 2K Monitor measures:

- Total Volume of Components A and B
- Total Volume of A + B Mixture
- Flow Rate of Components A and B
- Flow Rate of A + B Mixture
- Total Job Volume (preset)
- Total Batch Volume ( preset)
- Grand Total Volume (non- preset)

The 2K Monitor is capable of the following reporting functions:

- Output ratio warnings
- Output ratio alarms (shutdown)
- Report printout
- Communication with PC data reporting software

## Communications

- RS-232** Printer (standard)
- RS-485** Network/PC  
For Lengths of 50 feet or more.
- Modbus** Network Communication Protocol

## Ordering Information

Order monitors, meters and cables to build a complete system.

- 233061 2K Monitor**  
Flow meters installed in non-hazardous areas.
- 233062 2K Monitor**  
Intrinsically safe unit. Flow meters installed in hazardous area.

### Flow Meters (required)

Order flow meters separately. Verify meter selection with Graco technical assistance.

- 239716 G3000**  
4000 psi WP, 0.02 to 1.06 gpm.
- 235592 PPM 3550**  
2000 psi WP, 0.1 to 5.5 gpm.
- 617418 Helical Flow Meter**  
4050 psi WP, 0.1 to 11.0 gpm.

### Flow Meter Cables

- 948920 6 ft. cable**
- 948922 25 ft. cable**
- 948924 50 ft. cable**
- 948926 100 ft. cable**

## Accessories

- 218029 In-Line Filter**
- 949709 Check Valves**
- 104632 Piloted Valve**  
Shuts down air motor when alarm sounds.
- 241263 Printer Kit**
- 514037 Printer Paper**





# Viscon & Viscon<sup>2</sup>

## Fluid Heaters

3

### Features and Benefits

#### CONSISTENT CONTROL OF FLUID VISCOSITY FOR UNIFORM APPLICATION

- Highest temperature rise of any fluid heater:
  - +100°F (55°C) @ 0.2 gpm (.75 lpm)
  - +72°F (40°C) @ 0.4 gpm (1.5 lpm)
  - +43°F (24°C) @ 0.8 gpm (3.0 lpm)
- 10% greater temperature rise than any stainless steel heater on the market
- Fluid temperature range 85-220°F (29-104°C)
- Temperature accuracy to within  $\pm 3^\circ\text{F}$  (1.7°C) of set point

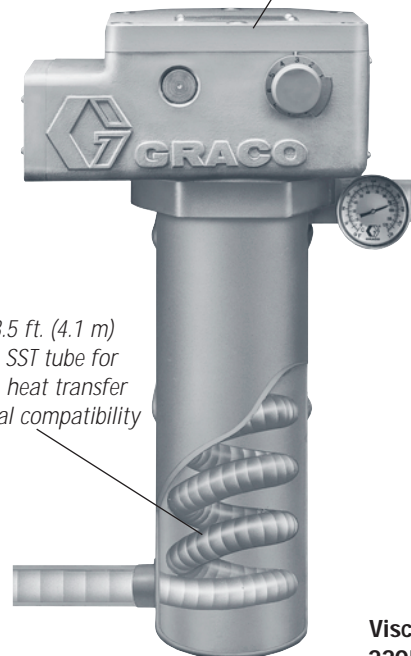
#### USE WITH VIRTUALLY ANY COATING, SEALANT, ADHESIVE AND LUBRICANT YOU CAN PUMP

- Stainless steel design resists corrosion, as well as being compatible with chlorinated solvents (HHCs)
- Rated at 4000 psi (276 bar). Excellent for high solids coatings, adhesives or resins pumped at high pressure or through long supply lines.

#### INSTALLATION AND SERVICE SIMPLICITY

- Three models available: 120V, 240V and 480V to match existing plant wiring or location requirements
- Metric sizing for universal system acceptance
- Easy access to electrical connections
- Explosion-proof design for installation flexibility and code compliance to meet tough industry standards
- Complies with temperature code T3C. Certified as explosion-proof for Class 1; Division 1 and 2; Group D hazardous location

*constant temp control accurate to  $\pm 3^\circ\text{F}$  ( $-16^\circ\text{C}$ ) of set point*



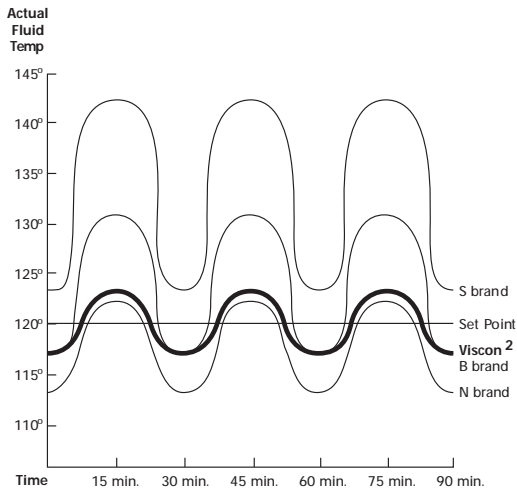
*Spiral 13.5 ft. (4.1 m) seamless SST tube for maximum heat transfer and material compatibility*

**Viscon<sup>2</sup>**  
**220522**  
**220523**  
**220524**

# Viscon™ and Viscon<sup>2</sup> Fluid Heaters

## Most Stable Temperature Control

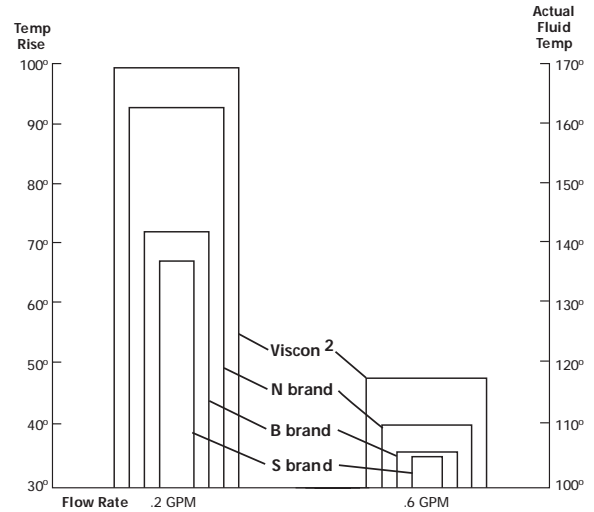
Graco set point accuracy provides consistent viscosity.



Graco Viscon2 heater maintains heater temperature to within  $\pm 3^{\circ}\text{F}$  ( $1.7^{\circ}\text{C}$ ) of set point, compared to other brands which can fluctuate as much as  $22^{\circ}\text{F}$  ( $12.2^{\circ}\text{C}$ ). Such cycling control is critical in circulating systems to maintain constant fluid viscosity.

## Great Heating Capacity

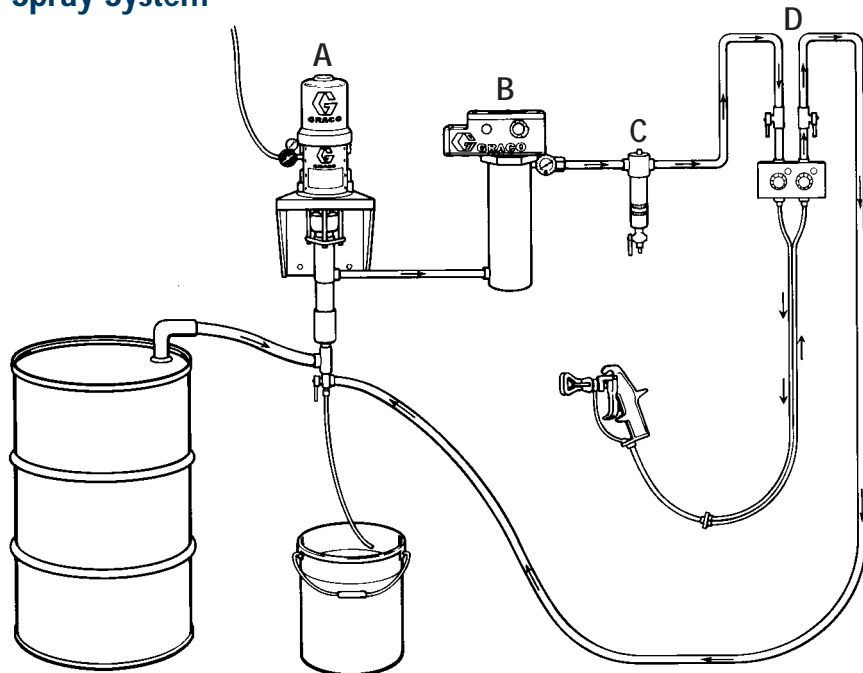
Maximum temperature rise from  $70^{\circ}\text{F}$  ( $21^{\circ}\text{C}$ ) ambient.



At the flow rates shown above, Graco Viscon2 fluid heaters can raise fluid temperatures higher than any of the leading competitive heaters in use today.

## Single Station Heated Spray System

- A. Pumping module
- B. Viscon2 heater
- C. Fluid filter
- D. Regulator/BPR gun station
- E. Return line



# Viscon™ and Viscon<sup>2</sup>

## Fluid Heaters

### Original Viscon

#### ALUMINUM FLUID HEATERS

For use in hazardous locations. Offers consistent fluid viscosity control with a variety of materials.

Part No.	Voltage
Model 226816	.120 VAC, single phase, 18 amp
Model 226819	.240 VAC, single phase, 9 amp
Explosion proof	Class 1, Division 1, Group D, Hazardous Location
Heating element wattage	.2100 watts
Fluid passage area	.254 in.2 (645 cm <sup>2</sup> )
Heat transfer	.8 watts/in.2
Fluid passage	
Diameter	.056 in. (1.4 cm)
Length	.12 ft. (3.7 m)
Maximum working pressure	.3000 psi (20.7 MPa, 207 bar)
Thermometer range	.0-250°F (0-121°C)
Temperature Operating Range	.80-190°F (26-88°C)
Inlet	.1/2 npt(f)
Outlet	.1/2 npt(f)
Electrical Inlet	.1/2 npt(f)
Dimensions (H x W x D)	.10.5 in. x 10.9 in. x 7.5 in. (27 cm x 28 cm x 19 cm)
Wetted parts	.aluminum*
Weight	.37.5 lb. (17 kg)
Instruction manual	.307363

\* Warning: Never use 1,1,1 - trichloroethane, methylene chloride, other halogenated hydrocarbon solvents or fluids containing such solvents in this equipment. Such use could result in a serious chemical reaction, with the possibility of explosion, which could cause death, serious bodily injury and/or substantial property damage. Consult your fluid suppliers to ensure that the fluids being used are compatible with aluminum and zinc parts.

### Viscon<sup>2</sup>

#### STAINLESS STEEL FLUID HEATERS

Consistent fluid control. Helps maintain uniform viscosity for steady flow rate, reduced operating pressures, and less overspray in critical applications. Explosion-proof Class 1, Division 1, Group D. Model 222307 is Ex de 11B T2 (250°C).

Part No.	Voltage
Model 220522	.120 VAC, single phase, 16.7 amp
Model 220523	.240 VAC, single phase, 9.6 amp
Model 220524	.480 VAC, single phase, 4.8 amp
Model 222307	.240 VAC, single phase, 9.6 amp
Heating element wattage	
Model 220522	.2000 watts
Models 220523, 220524 & 222307	.2300 watts
Fluid passage area	.200 in.2 (508 cm <sup>2</sup> )
Fluid passage	
Diameter	.038 in. (9.7 mm)
Length	.164 in. (417 cm)
Maximum working pressure	.5000 psi (34.5 MPa, 345 bar)
Thermometer range	.0-250°F (0-121°C)
Temperature operating range	.85-220°F (29-104°C)
Surface temperature code	.T3 (392°F) (200°C)
Surface temperature code, Model 222-307	.T2 (250°C)
Inlet	.1/2 npt(f)
Outlet	.3/8 npt(f)
Electrical Inlet	.3/4 npt(f)
Electrical Inlet, Model 222-307	.3/4 npt(f) x Pg 16
Dimensions (H x W x D)	.18 in. x 10.5 in. x 8.5 in. (46 cm x 27 cm x 22 cm)
Wetted parts	.stainless steel
Weight	.39 lb. (17.6 kg)
Instruction manual	.307805
Instruction manual, Model 222307	.307914

#### OPTIONAL MOUNTING BRACKET

Part No.	Description
183982	Wall bracket
183484	Cart clamp, 2 each
183485	Cart bar, 2 each
222219	120V light kit, explosion-proof
222220	240V light kit, explosion-proof
110160	Power cord set 600V, 3 wire, 12 AWG high temperature (105°C), North America only



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## Equipment Misuse Hazard

**General Safety.** Any misuse of Graco equipment or accessories, such as overpressurizing, modifying parts, using incompatible chemicals and fluids, or using worn or damaged parts, can cause them to rupture and result in fluid injection, splashing in the eyes or on the skin, or other serious bodily injury, or fire, explosion or property damage. NEVER alter or modify any part of Graco equipment; doing so could cause the product to malfunction. CHECK all equipment regularly and repair or replace worn or damaged parts immediately. Always wear protective eyewear, gloves, clothing and respirator as recommended by fluid and solvent manufacturers.

**System Pressure.** Be sure that all equipment and accessories used are rated to withstand the applicable MAXIMUM WORKING PRESSURE. DO NOT exceed the maximum working pressure of any component or accessory used in a system.

**Fluid and Solvent Compatibility.** All chemicals used in a Graco sprayer must be compatible with wetted parts. Consult your chemical supplier to ensure compatibility. Do not use 1,1,1-trichloroethane, methylene chloride, other halogenated hydrocarbon solvents or fluids containing such solvents in this equipment, which contains aluminum and/or zinc parts. Such use could result in a serious chemical reaction, with the possibility of explosion, which could cause death, serious bodily injury and/or substantial property damage.

# protective coatings

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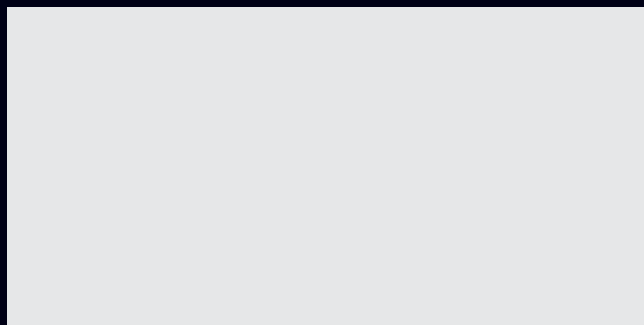
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