



# PRECISIONSWIRL™

State-of-the-art technology for applying sealants and adhesives



**SEALANTS AND ADHESIVES**

PROVEN QUALITY. LEADING TECHNOLOGY.

# Material-Saving Technology



PRECISIONSWIRL

Graco's electric orbital PrecisionSwirl applicator delivers a continuous, consistently sized, non-atomized swirled bead of material. Its tight tolerance control saves material as it dispenses the exact amount needed. Tighter control means fewer warranty issues, water and air leaks, as well as less squeeze-out, repair and scrap.

Get the full coverage and control you need with PrecisionSwirl!

## Only PrecisionSwirl gives you:

- ⊕ Uniform, circular loop "swirl" bead pattern and consistent edges with no mess
- ⊕ Open or closed, wide or narrow pattern
- ⊕ Virtually no tip plugging with PrecisionSwirl's large orifice
- ⊕ Pattern variation along the bead path
- ⊕ Simplified robotics programming to change directions while maintaining a uniform pattern
- ⊕ An oscillating nozzle for applying on vertical and horizontal planes

- ⊕ Eliminates manual touch-up, masking and rework
- ⊕ Replaces manual die-cut operations
- ⊕ Ventilation booths not required

## SOLUTION FEATURES

### Key Applications

- PVC Seam Sealing
- Hem Flange Adhesive Bonding
- Structural Adhesive Bonding
- After Hem Sealing
- Liquid Mask Sealing
- Liquid Applied Sound Deadening
- Window Glazing



### Key Industries

- Automotive
  - Paint Shops
  - Body Shops
  - Stamping Plants
- Automotive Tiered Suppliers
- Appliance
- Door and Window
- Transportation
  - Truck
  - Bus
  - RV
  - Farm Equipment



### Key Fluids Handled

- PVC Plastisol
- Expandable Sealers
- Heat Cure Epoxy
- Waterborne and Epoxy Sound Deadeners
- Liquid Masking



## Put Material Where *You* Want it

PrecisionSwirl's orbital dispenser applies a continuous swirled bead of material that goes exactly where you want it to, even in tight crevices. Each bead profile is "pre-shaped" in a uniform pattern of circular loops with no overspray and less wasted product.

The bead shape is determined by nozzle size, material composition, flow rate, stand-off distance and orbital dispense motor speed. The nozzle doesn't rotate, but its orifice moves in a small circle at high speed to dispense without dimples, air pockets, depressions or bumps.

The orbital dispenser is operated either manually from the control assembly or automatically from a robot controller, where the orbital dispenser is programmed to apply material continuously, at interrupted intervals, or both. The orbital dispenser can be stopped, started and regulated, depending on the application, producing high quality swirl patterns that hold their form.

The material source for the PrecisionSwirl orbital dispenser is usually supplied by a dual ram pump fluid supply system, which can be equipped with filters and temperature conditioning.



### CONTROL UNIT

PrecisionFlo XL has integrated controls for PrecisionSwirl. Use a PrecisionSwirl stand-alone module with PrecisionFlo LT or with customer-supplied fluid controls.

SMOOTH, NEAT AND CONSISTENT BEADS

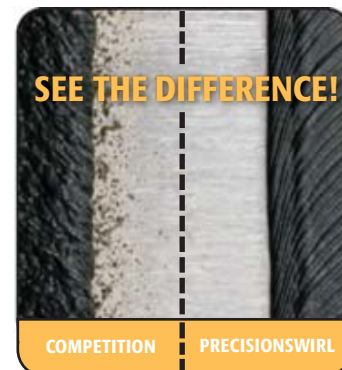


# Compare and Save!

## 1 Compare PrecisionSwirl to Flat Stream and Competitive Air Swirl Alternatives

With hundreds of global installations and over 5 years in the industry, PrecisionSwirl is simply the best choice for increased productivity and improved efficiency.

- Consistent and reliable in high production environments
- Exceptional pattern control, uniform bead profile and consistent coverage
- Cost savings compared to flat and air swirl alternatives



### PrecisionSwirl Versus Flat Stream and Air Swirl

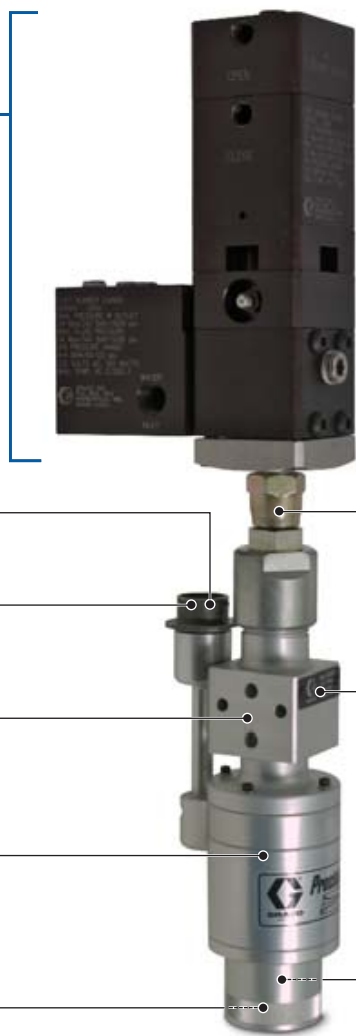
	PrecisionSwirl	Flat Stream
<b>Quality/Productivity</b>	<ul style="list-style-type: none"> <li>• Almost zero tip wear</li> <li>• Virtually no tip plugging</li> <li>• Large filter mesh</li> <li>• Operates in all directions</li> <li>• Consistent pattern control</li> <li>• Electrically operated</li> <li>• 27% material use reduction</li> </ul>	<ul style="list-style-type: none"> <li>• Frequent tip wear</li> <li>• Tip plugging</li> <li>• Small filter mesh</li> <li>• Directional pattern only</li> <li>• Inconsistent pattern control</li> <li>• Fluid pressure operated</li> </ul>
<b>Return-on-Investment</b>	<ul style="list-style-type: none"> <li>• 12-24 month life</li> </ul>	<ul style="list-style-type: none"> <li>• \$75,000 annual replacement cost</li> </ul>
	Electric PrecisionSwirl	Competitive Air Swirl
<b>Quality</b>	<ul style="list-style-type: none"> <li>• Consistent swirl edges for predictable material usage</li> <li>• No air turbulence; consistent bead profile</li> <li>• Wide variety of pattern widths, material thickness and patterns</li> </ul>	<ul style="list-style-type: none"> <li>• Variable swirl edges</li> <li>• Air turbulence causes inconsistent edges and pattern bead profile</li> <li>• Small selection of pattern widths</li> </ul>
<b>Productivity</b>	<ul style="list-style-type: none"> <li>• Tip to part stand-off distance: 75 mm - 200 mm</li> <li>• Applicator passages stay clean</li> <li>• Better operation on irregular shaped parts</li> </ul>	<ul style="list-style-type: none"> <li>• Tip to part stand-off distance: 75 mm - 200 mm. May also require 65° angle. Robot programming is complex</li> <li>• Applicator passages may accumulate material and require shift maintenance</li> <li>• Difficult to use when penetration is needed</li> </ul>
<b>Return-on-Investment</b>	<ul style="list-style-type: none"> <li>• No additional air needed</li> <li>• Long life tungsten carbide tips</li> </ul>	<ul style="list-style-type: none"> <li>• Additional air needed, and may require a dryer.</li> <li>• Nozzles are typically carbon or stainless steel</li> </ul>

TECHNOLOGY COMPARISON

# Get Control and Better Accuracy

## EnDure™ Valve

Snuff-back gives a clean cut-off in the end of the bead



## SWIRL APPLICATOR

The Swirl Applicator dispenses a tight uniform pattern using the exact amount of material needed, resulting in less waste. A consistent, crisp edge is applied, resulting in no mess to clean up. The larger tip orifice allows for easier flow with virtually no plugging. And with the circular multidirectional pattern, the head does not need to rotate when the robot changes direction. This reduces robot rotating motion, resulting in a higher throughput.

## Reverse Braking

Controls and adjusts speed quickly

## Analog Tachometer Signal

Monitors external speed for accurate and reliable dispensing

## Tool Mounts

Allows for precise installation after servicing

## No dynamic seals on orbital applicator

Simplifies maintenance

## Round Orifice Carbide Tips

Reduces tip wear

## Swivel Union

3/4-16" SAE\*  
37" adapter fitting

## CE Marked

## Swirl Applicator Orbiter

Provides uniform, circular loop "swirl" bead pattern with consistent clean edge

## Oscillating Nozzle

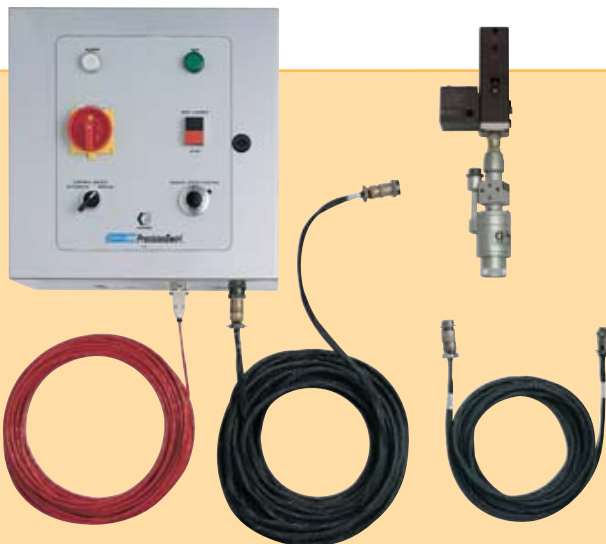
Applies an accurate bead of material on vertical and horizontal planes

\*Society of Automotive Engineers

## PrecisionSwirl Orbital Application Module

The PrecisionSwirl is sold as a stand-alone module or integrated into the PrecisionFlo™ XL to create your own automated system.

Features include: digital microprocessor-based speed control versus analog torque control; easy setup; reverse braking for robotic applications; and an analog tachometer signal to monitor PrecisionSwirl's speed externally.



## ORBITAL APPLICATOR MODULE KIT

### 241658 Orbital Applicator Module Kit (wide pattern)

Swirl orbiter (243403), motor cable (617870), extension motor cable (233123), control panel (918616) and Robot Interface Cable Assembly (617829)

### 234029 Orbital Applicator Module (narrow pattern)

Swirl orbiter (243402), motor cable (617870), extension motor cable (233123), control panel (918616) and Robot Interface Cable Assembly (617829)

## ACCESSORIES

### Swirl Dispense Tips

Part No.	Size	Part No.	Size
918610	0.012	918608	0.030
918601	0.015	918609	0.033
918602	0.017	918611	0.035
918603	0.019	918613	0.043
918604	0.021	918614	0.047
918605	0.023	241813	0.051
918606	0.025	241814	0.055
918607	0.027	241816	0.070

### Dispense Valves

For 1K Ultra-Lite straight connection order:

243666 – 1K Ultra-Lite Dispense Valve, straight

For 1K Ultra-Lite 45 degree connection order:

243482 – 1K Ultra-Lite Dispense Valve, 45 deg

For EnDure straight connection order:

244910 – Endure (ambient or water conditioned)

197504 - Straight flange adapter, EnDure

For EnDure 45 deg connection order:

244910 – Endure (ambient or water conditioned)

198323 - Alternative orbiter nut

197842 - 45 degree nosepiece

198324 - Nosepiece to orbiter fitting

### Swirl Dispenser

#### 243402 Tool-Mounted Dispensers

With narrow pattern coupler (0.012 in. [0.3 mm])

#### 243403 Tool-Mounted Dispensers

With wide pattern coupler (0.028 in. [0.7 mm])

### Motor Extension Cable

233123 15 ft. (4.6 m)

233124 9 ft. (2.7 m)

233125 6 ft. (1.8 m)

Connects PrecisionSwirl orbital applicator to motor cable.

### Motor Cable

617870 Motor Cable, 55 ft. (16.8 m)

Connects PrecisionSwirl control panel to extension cable or directly to orbital applicator.

198730 Motor Cable, 110 ft. (33.6 m)

Connects PrecisionSwirl control panel to extension cable or directly to orbital applicator.

### Controller

918616 PrecisionSwirl Control Assembly

Bare model only. Order appropriate cables to connect to dispenser.

### Robot Interface Cable

617829 Robot Interface Cable, 40 ft. (12.2 m)

Connects PrecisionSwirl control panel to robot control panel. Accepts a 0-10 volt signal to adjust RPM.

### Swirl Dispenser Accessory

196039 Small Profile Retainer

Replaces standard nozzle guard. Allows easier access to tight locations.

196160 Teach Adapter

Replaces nozzle guard during robot path teaching.

15D259 Swirl Control Cable Support

Add to the orbiter assembly if extreme stresses are being applied to the motor control cable.

### Repair Kits

241479 Swirl Motor Assembly

Order bearing and coupler separately.

918620 Swirl Tube Repair Kit

Includes coupler assembly, o-ring, tube assembly and bellows.

241569 Tool Kit

Includes various tools required for servicing the Swirl applicator and tube bearing.

241466 Tube Bearing Wide Pattern Coupler Assembly

Tool kit (241569) required for replacement.

243256 Tube Bearing Narrow Pattern Coupler Assembly

Tool kit (241569) required for replacement.

246292 Tube Support Bearing Repair Kit

With wide-pattern coupler. Includes 241466, o-ring, seal, and tube assembly.

246293 Tube Support Bearing Repair Kit

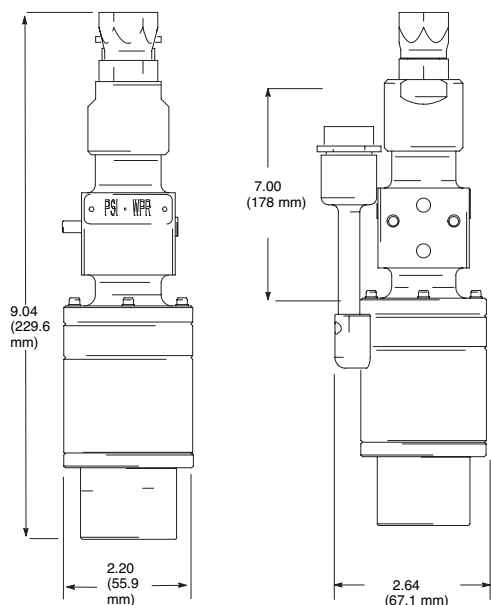
With narrow-pattern coupler. Includes 243256, o-ring, seal, and tube assembly.

15B619 Bellows Seal

Qty: 1 – fluoroelastomer

246290 Bellows Seal Kit

Qty: 12 – fluoroelastomer



Tool Mounted PrecisionSwirl Orbital Dispenser Dimensions;  
Part Numbers 243402 and 243403

## BUILD YOUR SYSTEM

### START ORDER

**617829 Robot Interface Cable Assembly**  
40 ft (12.2 m)

**918616 PrecisionSwirl Control Assembly**

**617870 Motor Cable**  
55 ft (16.8 m)  
Can be used alone or in conjunction  
with Cable Extension.

... OR ...

**198730 Motor Cable**  
110 ft (33.6 m)  
Can be used alone or in conjunction  
with Cable Extension.

**233125 6 ft (1.8 m) Extension Cable**

... OR ...

**233124 9 ft (2.7 m) Extension Cable**

... OR ...

**233123 15 ft (4.6 m) Extension Cable**

**243402 PrecisionSwirl Orbital Dispenser**  
.12 coupler offset for smaller bead widths.  
Typical for hem flange, after hem, etc.

... OR ...

**243403 PrecisionSwirl Orbital Dispenser**  
.28 coupler offset for larger bead widths.  
Typical for seam sealing applications.

#### Dispense Nozzle

918610 - 0.012"	918612 - 0.039"
918601 - 0.015"	918613 - 0.043"
918603 - 0.019"	918614 - 0.047"
918605 - 0.023"	241813 - 0.051"
918607 - 0.027"	241814 - 0.055"
918608 - 0.030"	241816 - 0.070"
918611 - 0.035"	

#### Accessories

15D259 - Swirl Control Cable support  
196039 - Small Profile Retainer  
196169 - Teach Adapter

**243482 - 1K Ultra-Lite**  
Dispense Valve with 45 degree connection

... OR ...

**243666 - 1K Ultra-Lite**  
Dispense Valve Straight connection

... OR ...

**For EnDure 45 deg connection, order:**  
244910 - Endure Valve  
197504 - Straight flange adapter, EnDure

... OR ...

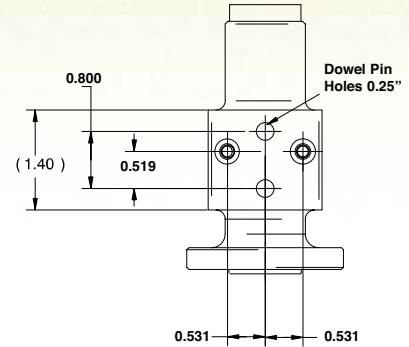
**For Endure 45 deg connection, order:**  
244910 - Endure Valve  
197842 - 45 degree nosepiece  
198323 - Alternative orbiter nut  
198324 - Nosepiece to orbiter fitting

### FINISH ORDER

## PRECISIONSWIRL ORBITAL DISPENSER

### PrecisionSwirl Orbital Dispenser (Tool Mount) 243402 and 243403 Parts List

617567	UNION, swivel	114135	SCREW, mounting, manifold
617561	CAP, inlet	196038	GUARD, nozzle
195923	HOUSING, upper	617756	KIT, tool
C19953	SCREW, SCH, #4-40 x .75	15B619	GUARD, coupler sealant, Fluoroelastomer
C19208	WASHER, lock, #4	196037	HOUSING, lower
241479	MOTOR ASSEMBLY		
C19950	SCREW, SHC, #4-40 x .375		
617626	PLATE, identification, Graco		
617712	PLATE, 3500 PSI WPR		
C20084	O-RING, -011, EPDM		
241465	TUBE ASSEMBLY		
070518	ANAEROBIC RESIN, Loctite Liquid		
243256	COUPLER ASSEMBLY 243402 assembly .012 offset (includes tube bearing)		
241466	COUPLER ASSEMBLY 243403 assembly .028 offset (includes tube bearing)		
100020	WASHER, lock		



**NOTE:** The orbital dispenser requires a 3/4-16" SAE 37" adapter fitting if a different dispense valve is used.

## Technical Specifications

### Control Panel

Input power	85-264 VAC, 50/60 Hz, 1 phase
Output power	proprietary PWM voltage to the motor, less than 24V
Automatic control analog input (speed adjustment)	0-10 Vdc or 0-5 Vdc
Auto control relay contact rating	3 amps at 30 VDC
Weight	23.5 lbs. (10.7 kg)

### Swirl Orbital Applicator

Input power	proprietary PWM voltage to the motor, less than 24V
Motor torque	1.5 oz.-inches
Minimum motor speed	6,600 rpm
Maximum motor speed	24,000 rpm
Maximum operating pressure	3500 psi (24.1 MPa, 241 bar)
Fluid inlet	3/4-16 37° JIC female swivel
Nozzle attachment	#10-32 proprietary connection
Wetted parts	stainless steel, nickel alloy, brazing alloy, epoxy, EPDM rubber
Noise level	sound pressure level - 67 dBa
Weight	1.6 lbs. (0.7 kg)

### Temperature Conditioned Dispense Valve

Maximum fluid working pressure	3500 psi (24 MPa, 241 bar)
Maximum working dry air pressure	150 psi (1 MPa, 10 bar)
Material inlet (to conditioning manifold)	1/2 npt
Air inlet	1/8 npt(m)
Conditioning fluid inlet/outlet	(2 ports) 1/4 npt (4 ports) 1/8 npt
Wetted parts	stainless steel, aluminum, UHMWPE, Fluoroelastomer, black oxide coated CS, Hytel elastomer
Maximum temperature rating	140°F (60°C)
Weight	4.4 lbs. (2 kg) approximately
Instruction manuals	
PrecisionSwirl	310554
Temperature Conditioned Dispense Valve	310539

## ABOUT GRACO

### PROVEN QUALITY. LEADING TECHNOLOGY.

Founded in 1926, Graco is a world leader in fluid handling systems and components. Graco products move, measure, control, dispense and apply a wide range of fluids and viscous materials used in vehicle lubrication, commercial and industrial settings.

The company's success is based on its unwavering commitment to technical excellence, world-class manufacturing and unparalleled customer service. Working closely with qualified distributors, Graco offers systems, products and technology which set the quality standard in a wide range of fluid handling solutions. Graco provides equipment for spray finishing, protective coating, paint circulation, lubrication, and dispensing sealants and adhesives, along with power application equipment for the contractor industry. Graco's ongoing investment in fluid management and control will continue to provide innovative solutions to a diverse global market.

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