



# PCF™ Metering System

Precision Continuous Flow Metering and Dispense System for Sealants and Adhesives



PROVEN QUALITY. LEADING TECHNOLOGY.

# Precision dispensing in a flexible system



## Reduce material usage with precise, reliable metering

The Graco PCF Metering System dispenses a precise, continuous flow of single-component sealants or adhesives in automotive and industrial applications. Advanced technology provides ultimate control, resulting in smooth, consistent beads, dots and spray patterns. You minimize material usage, reduce rework, and improve operational efficiencies.

## Reduce your cost of ownership

- Low initial capital investment
- Fewer wear parts compared to shot meters simplifies maintenance



## Improve your process efficiencies

- Provides consistent, continuous flow – no worry of slow shot meter refill times or the expense of more complicated mechanical solutions
- Intuitive user interface and control options
- Self-diagnostics allow for predictive and preventive maintenance strategies – improving process availability
- Multiple applicator capabilities – lets you program parameters for up to 16 different applicators
- Superior flow control saves material – less material waste

*Control your entire cell with one Advanced Display Module (ADM). Take control of up to four systems with the ADM's easy-to-read system status and alert messages.*

## Get consistent, repeatable results

The Graco PCF ensures consistent material flow through closed-loop technology. It takes feedback from the fluid stream, and adjusts for changes in material temperatures, viscosities, dispense rates or robot speeds. Real-time adjustments mean the Graco PCF delivers a highly precise, continuous dispense.

## Adapt to changing manufacturing needs

- Modular design for added system flexibility
- Compact, with few moving parts for easy maintenance
- Easy to integrate and install

### Applications:

- Bead dispensing
- Gasketing
- Seam sealing
- Hem flange
- Sound deadening
- Anti-flutter
- Body panel reinforcement
- Bonding
- Profile wrapping
- Cable filling
- Automotive underbody coating
- Solar frame sealing

### Materials:

- Ambient, warm melt and hot melt materials to 400°F (204°C)
- Low to high-viscosity materials
- Unlimited volume





## Graco PCF Metering System – System components include:

### 1 Control Center/Advanced Display Module (ADM)

Provides easy setup, monitoring and system diagnostics – includes USB interface.

### 2 Fluid Plate

Advanced sensors provide feedback to system controls – where real-time adjustments are made for changes in material temperatures, viscosities, dispense rates or robot speeds.

### 3 Graco CAN Cable

Provides digital communications between the Advanced Display Module and the fluid plate.

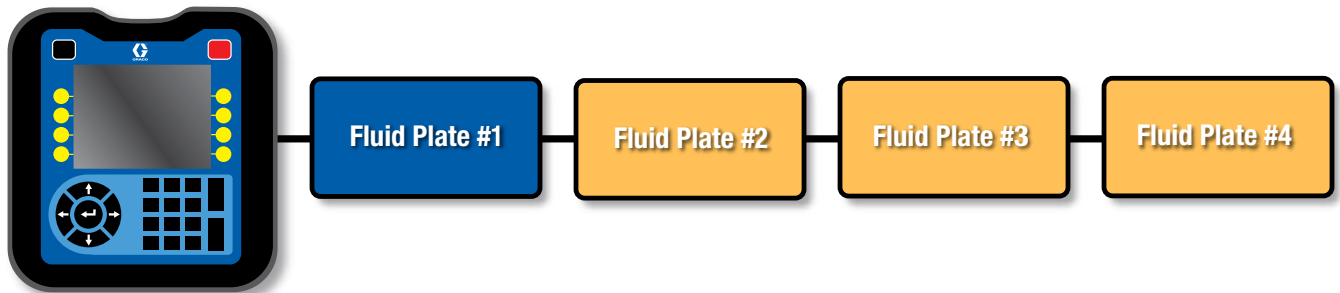
### 4 Gateway Modules

Allows the Graco PCF to communicate with other systems within your manufacturing process.

- Communications Gateway Module for DeviceNet™, EtherNet/IP™, PROFIBUS™, PROFINET™
- Discrete Gateway Module

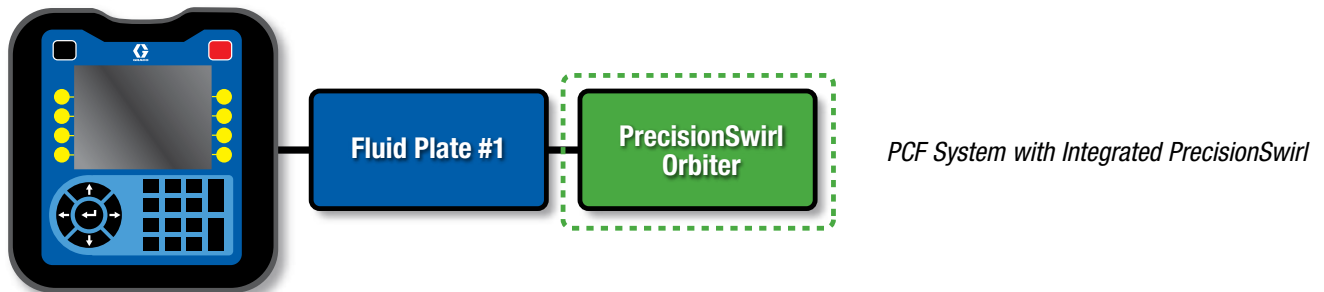
# Take total control of your process

## Control Center operates multiple fluid plates

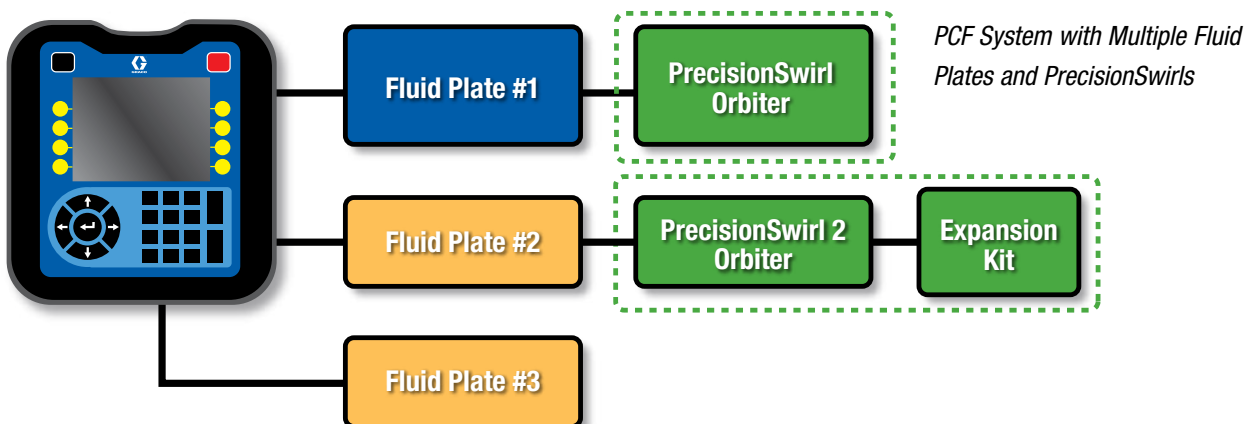


- Controls each fluid plate independently
- Capable of operating multiple fluid plates – up to four with Communication Gateway Modules and up to two with Discrete Gateway Modules
- Controls up to 16 different applicators

## Control Center can also control PrecisionSwirl™ Technology



- Integrated PrecisionSwirl allows for full control in a single system



- Operates additional PrecisionSwirl applicators with optional PrecisionSwirl Expansion Kit

Additional fluid plates are optional and sold separately

Optional (Sold Separately)



## Advanced, intuitive user controls

The Control Center contains the electronics that communicate with the fluid plate. Its user interface is easy to use, and is detachable for in-plant mobility and flexibility.

- Monitors amount of material dispensed in each cycle
- Lets you change system values or do simple tests without reprogramming the robot controller
- Provides system diagnostics, helping you isolate problems more easily

### Control modes include:

- Bead control – measures flow rate and pressure to ensure a consistent bead size
- Full open – opens regulator to allow for recirculation
- Shot dispense – for controlling specific volumes for cartridge filling or potting applications
- Pressure control – controls regulator outlet pressure for when a flowmeter is not being used

## Integrated USB interface for easy data downloads

- Lets you download process data, plus job and error logs onto a flash drive for further analysis
- Allows you to archive valuable setup parameters

## Fluid plate provides precision fluid dispensing

The fluid plate metering assembly monitors flow and makes continuous adjustments for changes in pressure and flow rate.

It uses flowmeters and advanced pressure sensors that operate in a closed loop to provide constant and instant adjustments to ensure an accurate dispense.

Graco offers a combination of fluid pressure regulators and flow meters to create six configurations to support a wide range of ambient or hot melt materials.



# PrecisionSwirl Electric Orbital Applicator



## PrecisionSwirl Technology for consistent material delivery

PrecisionSwirl Technology can now be programmed within the PCF Metering System, in the Advanced Display Module, for easy integration with your automation.

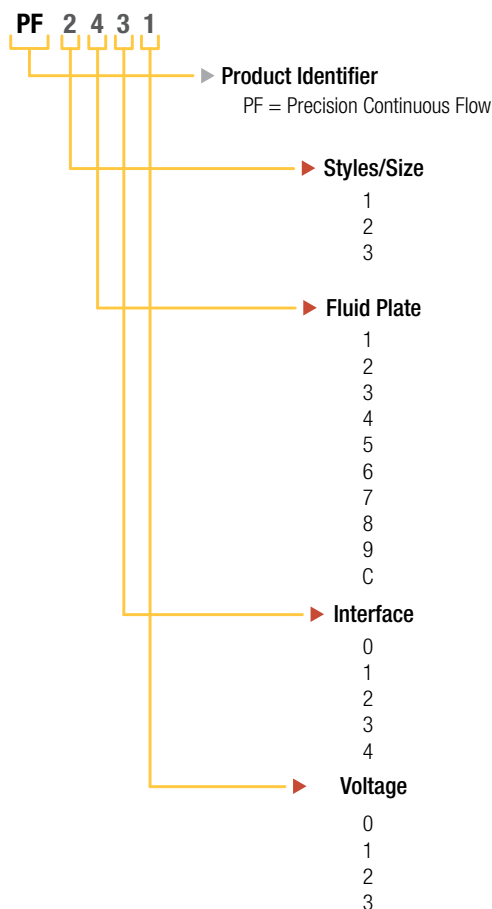
- Applies a uniform, circular loop pattern with clean edges and no mess
- Dispenses open or closed, wide or narrow pattern beads
- Reduces downtime – virtually no tip plugging with PrecisionSwirl applicator’s large tip sizes
- Simplifies robotics programming for directional changes
- An orbiting nozzle allows you to apply material on vertical and horizontal surfaces
- Eliminates manual touch-up, masking and rework

## Technical Specifications

### PrecisionSwirl

Input power .....	Proprietary PWM control of the motor
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-in 37° JIC female swivel
Wetted parts .....	Stainless steel, nickel alloy, brazing alloy, epoxy, EPDM rubber
Noise level .....	Sound pressure level – 67 dBa
Weight.....	1.6 lb (0.7 kg)

# Ordering Information and Specifications



## PCF Metering System Selection Matrix

### Number of Styles

- 2 (1 purge and 1 programmed style)
- 16 (1 purge and 15 programmed styles)
- 256 (1 purge and 255 programmed styles)

### Regulators

- Cartridge
- Mastic
- Cartridge
- Mastic
- Heated Mastic
- Heated Mastic
- Cartridge
- Cartridge
- Mastic
- Cartridge Abrasive

### Meters

- None
- None
- High Resolution
- High Resolution
- Heated Standard Resolution
- None
- Ultra High Resolution
- Glass bead
- Glass bead
- Coriolis

### Protocol (Interface cable not included)

- Discrete Gateway
- DeviceNet
- Ethernet/IP
- PROFIBUS
- PROFINET

### Voltage

- 100-240 VAC
- 24 VDC
- 100-240 VAC with Integrated PrecisionSwirl
- 24VDC with Integrated PrecisionSwirl

## PCF Metering System Specifications

- Minimum flow rates\*** ..... 6 cc/min with ultra-high resolution helical flowmeter  
..... 25 cc/minute with high-resolution helical flowmeter  
..... 50 cc/minute with heated helical flowmeter
- Maximum flow rates\*** ..... 4,000 cc/minute with ultra-high resolution helical flowmeter  
..... 7,500 cc/minute with high-resolution helical flowmeter  
..... 22,500 cc/minute with heated helical flowmeter
- Maximum fluid working pressure**
  - feed pressure to fluid plate ..... cartridge regulator: 6000 psi (414 bar, 41.4 MPa)
  - feed pressure to fluid plate ..... mastic regulator: 5000 psi (345 bar, 34.5 MPa)
  - at regulator outlet ..... 4500 psi (310 bar, 31.0 MPa)
  - at regulator outlet with electric heat components ..... 3500 psi (241 bar, 24.1 MPa)
- Minimum fluid working pressure**
  - at regulator outlet ..... 100 psi (6.8 bar, 0.68 MPa)
- Air supply pressure range** ..... 60 to 120 psi (4.1 to 8.3 bar, 0.4 to 0.8 MPa)  
filtration required
- Fluid filtration required** ..... 30 mesh (500 micron) minimum

- Viscosity range of fluids\*** ..... up to 1,000,000 cps with helical meter
- Minimum dispensed shot size\*** ..... <1 cc ultra-high resolution helical flowmeter  
..... 6 cc with helical meter  
..... 3 cc with high-resolution helical meter
- Wetted parts meters and fluid panels** ..... 303, 304, 321, 17-4 stainless steel;  
..... tungsten carbide, PTFE, steel, fluoroelastomer
- Power requirements**
  - 100-240 VAC ..... full load 1.4A, fuse rating-2.5A
  - 24 VDC ..... full load-4A, fuse rating-4A
- Power supply voltage range**
  - 100-240 VAC nominal ..... 100 - 240 VAC, 50-60 Hz., single phase
- Operating temperature range**
  - Controller ..... 40° to 120°F (4° to 49°C)
  - Fluid plate ..... heated: 40° to 400°F (4° to 204°C)  
..... ambient: 40° to 120°F (4° to 49°C)
  - Operating humidity range ..... 0 to 90% non-condensing
- Manuals** ..... 3A1935, 3A2098

\*Flow rates and viscosities are general estimates. Flow rates drop as viscosity increases. Fluids are expected to shear under pressure. New applications or fluids should always be tested to determine proper line sizes and equipment selections. See your Graco Authorized distributor for other capabilities.

# Part numbers for multiple fluid plates

REGULATOR	METER	STYLES	PART NUMBER
Cartridge	None	2	24B959
		16	24K802
		256	24K809
	High Resolution (for flow rates above 25 cc's per minute)	2	24B958
16		24K801	
256		24K808	
Ultra High Resolution (for flow rates under 25 cc's per minute)	2	24J873	
	16	24K807	
	256	24K814	
High Resolution for Glass Beads	2	24V592	
	16	24V593	
	256	24V594	
Mastic	None	2	24B961
		16	24K804
		256	24K811
High Resolution	2	24B960	
	16	24K803	
	256	24K810	
Heated Mastic	None	2	24C901
		16	24K806
		256	24K813
	Heated Standard Resolution	2	24B962
		16	24K805
		256	24K812
Heated Standard Resolution for Glass Beads	2	24W201	
	16	24W202	
	256	24W203	

Note: Independent fluid plate sales include a 50 ft (15 m) CAN cable.

## PrecisionSwirl Expansion Kits

PrecisionSwirl Expansion Kits include 20 ft (6 m) CAN cable to connect to Control Center. PrecisionSwirl orbiter and motor cable must be ordered separately.

16M350 Expansion kit for AC power

16M351 Expansion kit for DC power

## CAN Cables

121201 Cable, standard flex operation, 20 ft (6 m)

121228 Cable, standard flex operation, 50 ft (15 m)

123341 Cable, standard flex operation, 130 ft (40 m)

123342 Cable, high flex operation, 20 ft (6 m)

123343 Cable, high flex operation, 50 ft (15 m)

123344 Cable, high flex operation, 130 ft (40 m)

## PCF System Accessories

255468 Light tower

16M100 Meter enabled, 2 styles token

16M101 Meter disabled, 2 styles token

16M102 Meter enabled, 16 styles token

16M103 Meter disabled, 16 styles token

16M104 Meter enabled, 256 styles token

16M105 Meter disabled, 256 styles token

120010 V/P Regulator

121806 Cable, dispense solenoid, 0.5 m

123846 Cable, flowmeter, 2 m with flying leads  
– use with 150887

24B693 Four-gun breakout kit

24B694 Kit, command cable

258334 Dispense solenoid

## Contact us today!

To receive product information or to speak with a Graco representative, call 800-746-1334 or visit us online at [www.graco.com/pcf](http://www.graco.com/pcf).

