



# PCF Metering System

Precision Continuous Flow Metering and Dispense System  
for Sealants and Adhesives



PROVEN QUALITY. LEADING TECHNOLOGY.

# The Next Generation of Precision Dispensing



## Reduce material usage with precise, reliable metering

The Graco® PCF is a metering system that dispenses a precise, continuous flow of single-component sealants or adhesives in automotive and industrial applications. Advanced technology provides the ultimate control, resulting in smooth, consistent beads, dots and spray patterns. You minimize material usage and reduce rework, while improving operational efficiencies.

## Closed-loop Technology provides real-time Flow Control

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

## Advanced Technologies improve 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 gun capabilities – let you program parameters for up to four different guns
- Superior flow control reduces material waste

## Low Cost of Ownership

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

## Modular Design

- Compact, with few moving parts for easy maintenance
- Simplicity makes it 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

## Handles a Wide Range of Materials:

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



# Precise Control to fit your System



## Graco PCF Metering System – System components include:

### 1 Advanced Display Module

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

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

- DeviceNet™, EtherNet/IP™, PROFIBUS™, PROFINET™, Discrete

# Intuitive User Controls and Intelligent Fluid Plate



## Advanced, intuitive User Controls

The Advanced Display Module 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

## 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

### 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

## 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 flowmeters to create six configurations to support a wide range of ambient or hot melt materials.

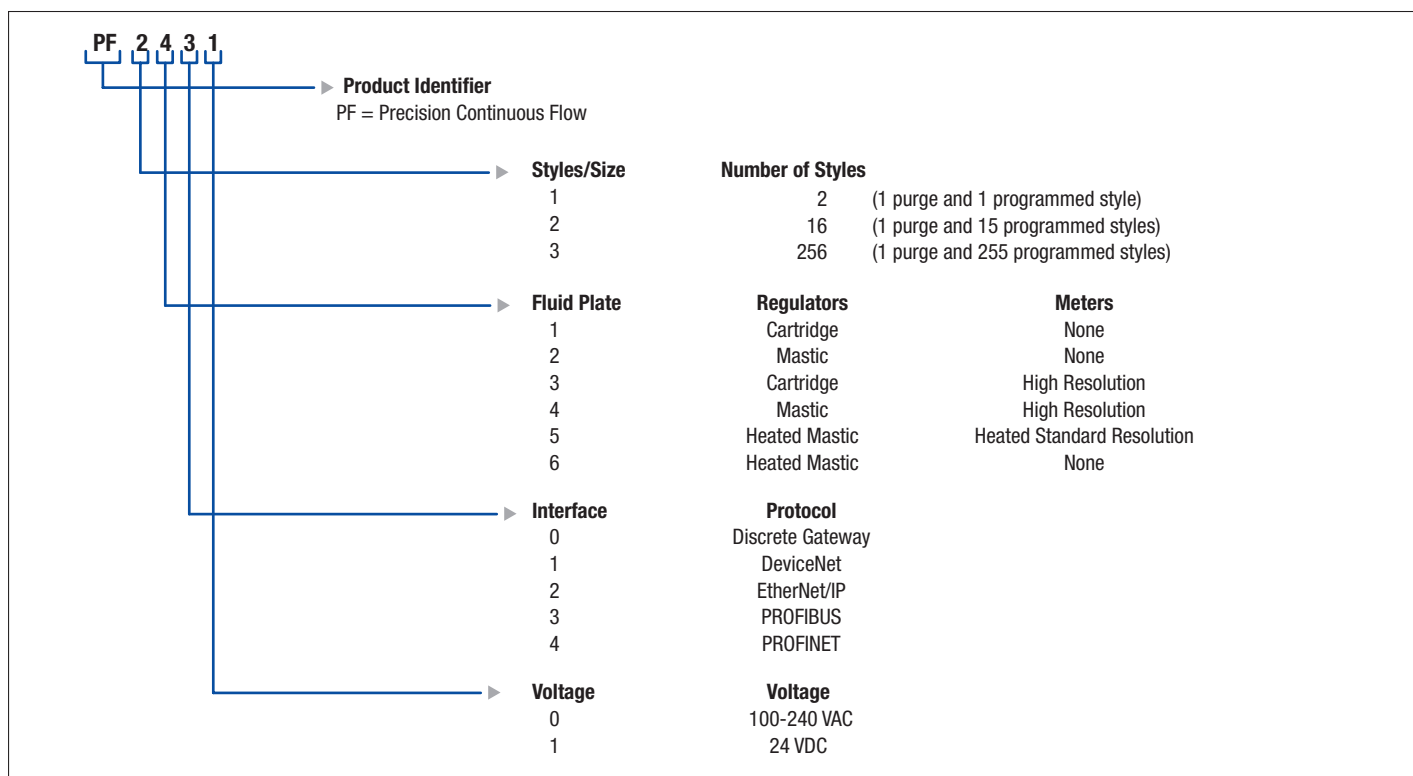


# Ordering Information and Specifications

## Use Graco's Numbering System

Graco's numbering system helps you simplify the ordering process. Just follow the diagram below to select the parts you want. You'll have your order built easily and accurately in no time.

## PCF Order Numbering



## Technical Specifications

<b>Minimum flow rates*</b> .....	25 cc/minute with high-resolution helical flowmeter	<b>Viscosity range of fluids*</b> .....	10000 to 1000000 cps with helical meter
	50 cc/minute with heated helical flowmeter	<b>Minimum dispensed shot size*</b> .....	6 cc with helical meter
<b>Maximum flow rates*</b> .....	7500 cc/minute with high-resolution helical flowmeter		3 cc with high-resolution helical meter
	22,500 cc/minute with heated helical flowmeter	<b>Wetted parts meters and fluid panels</b> .....	303, 304, 321, 17- 4 stainless steel; tungsten carbide, PTFE, steel, fluoroelastomer
	37,500 cc/minute with separate flowmeter		
<b>Maximum fluid working pressure</b>		<b>Power requirements</b>	
feed pressure to fluid plate .....	cartridge regulator: 414 bar (41.4 MPa, 6000 psi)	100-240 VAC .....	full load 1.4A, fuse rating-2.5A
feed pressure to fluid plate .....	mastic regulator: 345 bar (34.5 MPa, 5000 psi)	24 VDC .....	full load-4A, fuse rating-4A
at regulator outlet .....	310 bar (31.0 MPa, 4500 psi)	<b>Power supply voltage range</b>	
at regulator outlet with electric heat components .....	241 bar (24.1 MPa, 3500 psi)	100-240 VAC nominal .....	100 - 240 VAC, 50-60 Hz., single phase
<b>Minimum fluid working pressure</b>		<b>Operating temperature range</b>	
at regulator outlet .....	6.8 bar (.68 MPa, 100 psi)	Controller .....	4° to 49°C (40° to 120°F)
<b>Air supply pressure range</b> .....	4.1 to 8.3 bar (0.4 to 0.8 MPa, 60 to 120 psi) <i>filtration required</i>	Fluid plate .....	heated: 4° to 204°C (40° to 400°F)
<b>Fluid filtration required</b> .....	30 mesh (500 micron) minimum		ambient: 4° to 49°C (40° to 120°F)
		Operating humidity range .....	0 to 90% non-condensing

\*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.

**Manual** .....313377

# Ordering Information

## SYSTEM ACCESSORIES

255468	Light tower
24B946	Meter Enabled Token + Tag
24B947	Meter Disabled Token + Tag
24B948	2 Styles Token + Tag
24B949	16 Styles Token + Tag
24B950	256 Styles Token + Tag
289697	Base

## CONTROL CENTER PARTS AND ACCESSORIES

115216	Fuse, 2-amp
123783	Breakout board, discrete gateway
123792	Cable, discrete gateway, 78 pin D-Sub, 15 m (50 ft) - use with 123783
123793	Cable, discrete gateway, 78 pin D-Sub to flying leads, 15 m (50 ft)
24B681	Discrete Gateway Module
24B928	Line voltage module
24B929	24V DC module kit
289701	Advanced Display Module with USB
15V759	Communications Gateway, DeviceNet
15V760	Communications Gateway, EtherNet/IP
15V761	Communications Gateway, PROFIBUS
15V762	Communications Gateway, PROFINET

## CAN CABLES

121201	Cable, standard flex operation, 6 m (20 ft)
121228	Cable, standard flex operation, 15 m (50 ft)
123341	Cable, standard flex operation, 40 m (130 ft)
123342	Cable, high flex operation, 6 m (20 ft)
123343	Cable, high flex operation, 15 m (50 ft)
123344	Cable, high flex operation, 40 m (130 ft)

## FLUID PLATE PARTS AND ACCESSORIES

117764	Pressure sensor, outlet for heated regulators
120010	V/P Regulator
123091	5 micron air filter
123092	0.3 micron air filter
121806	Cable, dispense solenoid, 0.5 m
123846	Cable, flowmeter, 2 m with flying leads – use with 15D887
157630	Spring, filter
15D877	Mass flowmeter, non-intrusive
15M669	Pressure sensor for ambient regulators
210657	Ball valve, high pressure, 1-in npt (m), 345 bar (34.5 MPa, 5000 psi) CS, fluoroelastomer
210658	Same as 210657, but 3/8-in npt (m)
210659	Same as 210657, but 3/8-in x 1-in npt (m)
233131	Fluid section repair kit, mastic fluid regulator
234967	Dual air filter assembly, 5/3 micron filter to be used for inlet air to fluid plate
238747	Fluid diaphragm repair kit, cartridge regulator
238748	Repair kit, cartridge regulator
24B693	Four-gun breakout kit
24B694	Kit, command cable
24B924	Sensor, helical flowmeter, all models
244734	Cartridge regulator with transducer ports
246191	Flowmeter, heated helical, without sensor
246340	Flowmeter, heated helical, with sensor
246596	Kit, helical gear set repair (heated)
246642	Mastic regulator, 3/4-in, air operated, for ambient fluid plates with transducer ports
246643	Mastic regulator, 3/4-in, air operated, for heated fluid plates with transducer ports
246650	Flowmeter, high resolution helical, without sensor
246652	Flowmeter, high resolution helical, with sensor
246949	Kit, helical gear set repair (high resolution)
258334	Dispense solenoid
289696	Fluid Control Module

## FLUID PLATE PARTS AND ACCESSORIES continued

515222	30 mesh filter screen, for C58997 filter
521477	Fluid shutoff valve, 1-in npt (f), 345 bar (34.5 MPa, 5000 psi) CS, fluoroelastomer
C58997	Fluid filter, polyethylene support, no element from above kits
C59547	Single filter kit, gauges, ball and drain valves, 30 mesh element

## FLUID PLATES

24B958	Fluid plate, ambient cartridge regulator with high resolution helical flowmeter
24B959	Fluid plate, ambient cartridge regulator with no flowmeter
24B960	Fluid plate, ambient mastic regulator with high resolution helical flowmeter
24B961	Fluid plate, ambient mastic regulator with no flowmeter
24B962	Fluid plate, heated mastic regulator with helical flowmeter
24C901	Fluid plate, heated mastic regulator with no flowmeter

## APPLICATORS AND REPAIR KITS

244961	EnDure Valve with 120 volt electric heat (93.3°C /200°F)
244962	EnDure Valve with 230 volt electric heat (93.3°C /200°F)
243482	1K Ultra-Lite valve, 45° outlet for orbiter
243666	1K Ultra-Lite valve
244535	EnDure Valve replacement, no manifold
244910	EnDure Valve with ambient or temperature conditioning manifold
288554	AutoPlus valve
918533	Dispense valve, extrusion, ambient, ball seat
918535	Dispense valve, extrusion, ambient, snuff back
918537	Dispense valve, high viscosity
918539	Dispense valve, extrusion, high flow, high viscosity
918623	Compact dispense valve, extrusion
918625	Compact dispense valve, spray
965766	1K Ultra-Lite valve, machine mount, SST wetted parts
965786	1K Ultra-Lite valve, machine mount, Aluminum wetted parts

## PRECISIONSWIRL

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)
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)

For more PrecisionSwirl information, see brochure 300537.

For more Graco Supply System information, visit [www.graco.com](http://www.graco.com).

## EXTRUDING APPLICATIONS

161505	Dispense nozzle, steel, 1/8-in npt (m), 2.39 mm (0.094 in), 51 mm (2 in) long
164799	Dispense nozzle, steel, 1/8-in npt (m), 1.4 mm (0.055 in), 54 mm (2.12 in) long
182xxx	Airless 182xxx fan tips for AutoPlus SAE valve; refer to manual form number 308813
197504	Straight 3/4-16 JIC outlet for swirl, EnDure valve
198316	Nozzle nut, 1/8-in npt for AutoPlus SAE valve
198391	Tip nut, AutoPlus SAE valve, fan or stream
270025	Streaming tip, 0.64 mm (0.025 in) orifice
270027	Streaming tip, 0.69 mm (0.027 in) orifice
270029	Streaming tip, 0.74 mm (0.029 in) orifice
270035	Streaming tip, 0.89 mm (0.035 in) orifice
270037	Streaming tip, 0.94 mm (0.037 in) orifice
270039	Streaming tip, 0.99 mm (0.039 in) orifice
270041	Streaming tip, 1.04 mm (0.041 in) orifice
270043	Streaming tip, 1.09 mm (0.043 in) orifice
270059	Streaming tip, 1.50 mm (0.059 in) orifice
607665	Dispense nozzle, steel, 1/8-in npt (m), 3.18 mm (0.125 in), 51 mm (2 in) long
C01025	Dispense nozzle, steel, 1/8-in npt (m), 22.86 mm x 9.40 mm (0.9 in x 0.37 in) ribbon hardened tip, 61.72 mm (2.43 in) long
C08224	Shower tip, 6 orifices, 0.53 mm (0.021 in) orifice size
C17009	Dispense nozzle, steel, 1/8-in npt (m), 3.18 mm (0.125 in), 31 mm (1.22 in) long

## DISPENSE HOSE AND FEED HOSE

Dispense Hose (from fluid plate to valve) and Feed Hose (from pump to fluid plate) Selection

Part Number	Type	Material	ID mm (inches)	Length m (feet)	Coupling	Pressure bar (MPa, psi)
109150	Dispense	Buna-N	6 (0.25)	1.8 (6)	1/4M	345 (34.5, 5000)
685612	Dispense	PTFE	6 (0.25)	1.8 (6)	1/4M SS	276 (27.6, 4000)
109151	Dispense	Buna-N	6 (0.25)	3.7 (12)	1/4M	345 (34.5, 5000)
685614	Dispense	PTFE	6 (0.25)	4.6 (15)	1/4M SS	276 (27.6, 4000)
109163	Dispense	Buna-N	10 (0.375)	1.8 (6)	3/8M	276 (27.6, 4000)
109165	Dispense	Buna-N	10 (0.375)	4.6 (15)	1/4M	276 (27.6, 4000)
685602	Dispense	PTFE	10 (0.375)	4.6 (15)	3/8M SS	276 (27.6, 4000)
626720	Dispense or Feed	Buna-N*	13 (0.50)	1.5 (5)	1/2M	345 (34.5, 5000)
215445	Dispense or Feed	Buna-N	13 (0.50)	1.5 (5)	1/2M	362 (36.2, 5250)
626723	Dispense or Feed	Buna-N*	13 (0.50)	1.8 (6)	1/2M	345 (34.5, 5000)
626721	Dispense or Feed	Buna-N*	13 (0.50)	3 (10)	1/2M	345 (34.5, 5000)
215441	Dispense or Feed	Buna-N	13 (0.50)	3 (10)	1/2M	362 (36.2, 5250)
116761	Dispense or Feed	Neoprene	13 (0.50)	3 (10)	7/8F	276 (27.6, 4000)
511381	Dispense or Feed	PTFE	13 (0.50)	4.6 (15)	1/2M SS	345 (34.5, 5000)
626722	Dispense or Feed	Buna-N*	13 (0.50)	7.6 (25)	1/2M	345 (34.5, 5000)
215443	Dispense or Feed	Buna-N	13 (0.50)	7.6 (25)	1/2M	362 (36.2, 5250)
215444	Dispense or Feed	Buna-N	13 (0.50)	15.2 (50)	1/2M	362 (36.2, 5250)
215241	Feed	Buna-N	19 (0.75)	1.8 (6)	3/4M	345 (34.5, 5000)
685605	Feed	PTFE	19 (0.75)	1.8 (6)	3/4M SS	276 (27.6, 4000)
215238	Feed	Buna-N	19 (0.75)	3 (10)	3/4M	345 (34.5, 5000)
626724	Feed	Buna-N*	19 (0.75)	3 (10)	3/4M	345 (34.5, 5000)
685606	Feed	PTFE	19 (0.75)	3 (10)	3/4M SS	276 (27.6, 4000)
215239	Feed	Buna-N	19 (0.75)	4.6 (15)	3/4M	345 (34.5, 5000)
626725	Feed	Buna-N*	19 (0.75)	4.6 (15)	3/4M	345 (34.5, 5000)
685607	Feed	PTFE	19 (0.75)	4.6 (15)	3/4M SS	276 (27.6, 4000)
215240	Feed	Buna-N	19 (0.75)	7.6 (25)	3/4M	345 (34.5, 5000)
626726	Feed	Buna-N*	19 (0.75)	7.6 (25)	3/4M	345 (34.5, 5000)
C12383	Feed	Buna-N	25 (1.00)	3 (10)	1" M	345 (34.5, 5000)
521973	Feed	Buna-N	32 (1.25)	3 (10)	1-1/4M	345 (34.5, 5000)
51B352	Feed	Buna-N	32 (1.25)	4.6 (15)	1-1/4M	345 (34.5, 5000)

\*Dried Hose capped with desiccant.

## 240 VOLT ELECTRIC HEAT HOSE SELECTION

Heating element - fiberglass insulated, 230/240 VAC, 165 Watt/meter (50 watts per hose foot)

Part Number	Type	Material	ID mm (inches)	Length m (feet)	Coupling	Pressure bar (MPa, psi)
115875	Dispense or Feed	PTFE	13 (0.50)	1.8 (6)	7/8-14 JICF SS	207 (20.7, 3000)
115876	Dispense or Feed	PTFE	13 (0.50)	3 (10)	7/8-14 JICF SS	207 (20.7, 3000)
115903	Dispense or Feed	PTFE	16 (0.62)	1.8 (6)	1 1/16-12 JICF SS	207 (20.7, 3000)
115880	Dispense or Feed	PTFE	16 (0.62)	3 (10)	1 1/16-12 JICF SS	207 (20.7, 3000)
115885	Feed	PTFE	22 (0.87)	3 (10)	1 5/16-12 JICF SS	207 (20.7, 3000)
115887	Feed	PTFE	22 (0.87)	6.1 (20)	1 5/16-12 JICF SS	207 (20.7, 3000)
117821	Feed	PTFE	29 (1.13)	3 (10)	1 5/8-12 JICF SS	207 (20.7, 3000)

## TEMPERATURE CONDITIONING EQUIPMENT

### Automotive Temperature Control Units

118404	HO3000 heat only 480/60 GND (stand alone)*
118406	SC2000 heat/cool 480/60 GND (stand alone)*

### Industrial Temperature Control Unit

118405	HO1800 heat only 120/60 GND (stand alone)*
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### Heat Transfer Options

233731	25.4 mm x 6 m (1 in x 20 ft) 345 bar (34.5 MPa, 5000 psi) <i>water jacketed hose assembly featuring aluminum blocks and one 4-pass plastic manifold</i>
117349	51 mm dia x 76 cm length (2-in x 30-in) length heat exchanger assembly

### RTD & Extension Cable

198457	RTD 1/8 x 13/16 x 1/8-in MPT Picofast connector
198458	RTD cable x A18
198490	21.3 m (70 ft) extension cable with 3-prong mini round connector
120407	RTD sensor

## FLUID PLATE WATER JACKETED INSULATED COVERS

118407	Water jacketed insulated cover for 1/2-in cartridge regulator
118408	Water jacketed insulated cover for 3/4-in mastic regulator
118410	Water jacketed insulated cover for G3000 flowmeter
118411	Water jacketed insulated cover for Graco helical gear meter

### Dispense Hose Covers

118441	140 mm dia x 91 cm length (5.5-in x 36 in) <i>water jacketed blue Velcro closure cover with four clear tubes</i>
118443	140 mm dia x 152 cm length (5.5-in x 60 in) <i>water jacketed blue Velcro closure cover with four clear tubes</i>
116770	140 mm dia x 183 cm length (5.5-in x 72 in) <i>water jacketed blue Velcro closure cover with four clear tubes</i>

Note: \* All TCU's include 15.2 m (50 ft) of water hose, hose clamps, tube fittings, four-pass water manifold, 1 pint of water conditioner, and instruction manual



## ABOUT GRACO

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 that 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.

## GRACO LOCATIONS

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

Graco is certified ISO 9001.

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