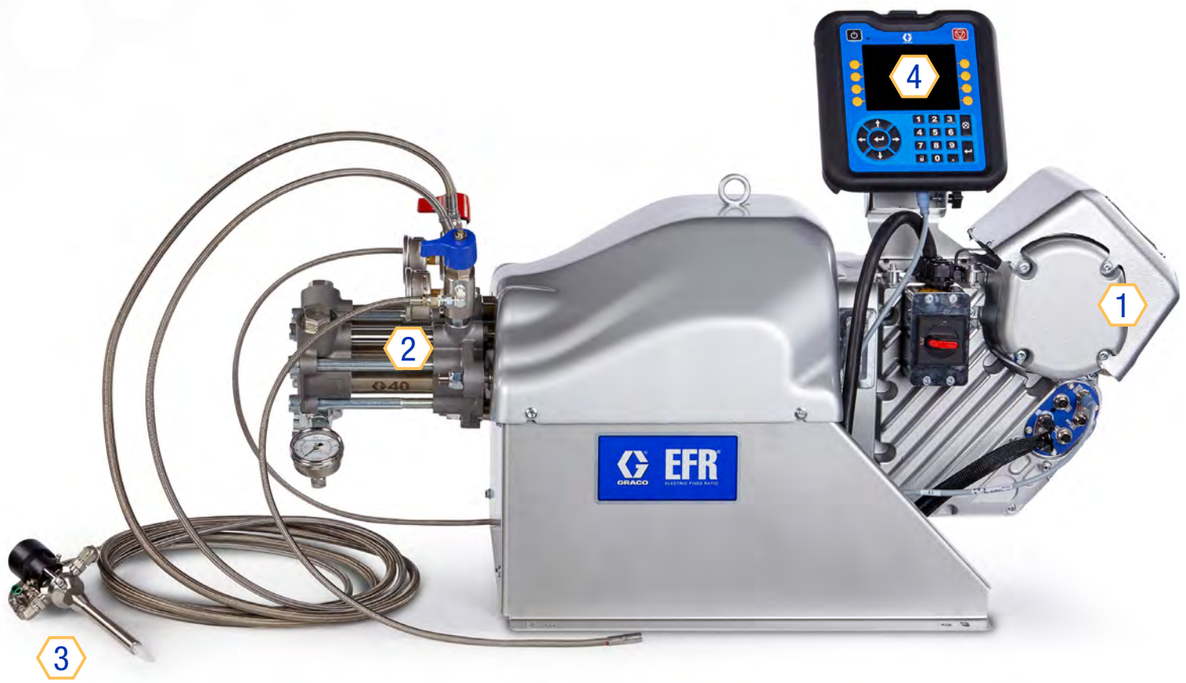
EFR METERING SYSTEM

METER MIX AND DISPENSE SYSTEM

The Graco Electric Fixed Ratio (EFR) system is a meter, mix and dispense system for two component sealant and adhesive delivery. Ideal for applications requiring precision dispense, the EFR provides superior control over material and dispensing of gaskets, beads, shots and potting applications. Trust in the EFR, which is accurate, versatile and easy to use.



1 ADVANCE PRECISION DRIVER

- Powerful driver reaches up to 20 cycles per minute
- Precise encoder that assures low flows and small shots consistently
- Direct pump control
- Limited maintenance needs

2 INDUSTRY PROVEN Z PUMPS

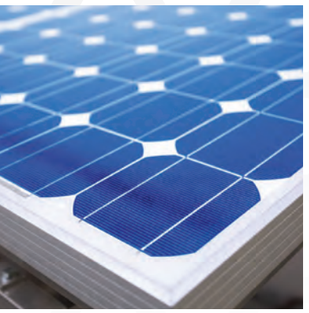
- Multiple Ratio options
- Only the seals are wear parts
- Abrasive resistant version
- Mechanically linked pumps offer ratio assurance

3 MD2 VALVE

- Adjustable snuff back
- Mixing at tip of the gun, limiting purge material waste
- Multiple seal combination for material compatibility
- Available in 1:1 to 10:1 for wide ratio applications
- For manual or robotic applications

4 ADVANCED DISPLAY MODULE

- Easy to use interface
- Possibility to have it completely integrated
- Communication Gateway Modules: EtherNet/IP, DeviceNet, Profibus, Profitnet,



ACCURATE

Accurate dispensing is key for quality end products. With the EFR you can be assured to reach accuracy during every dispense.

Consistent Ratio

The mechanically linked Z-pumps dispense 50% of its total volume in each stroke of the cycle. Therefore you are always guaranteed that you have a consistent ratio during the complete application, allowing you to use it for continuous flow applications.

Start & Stop

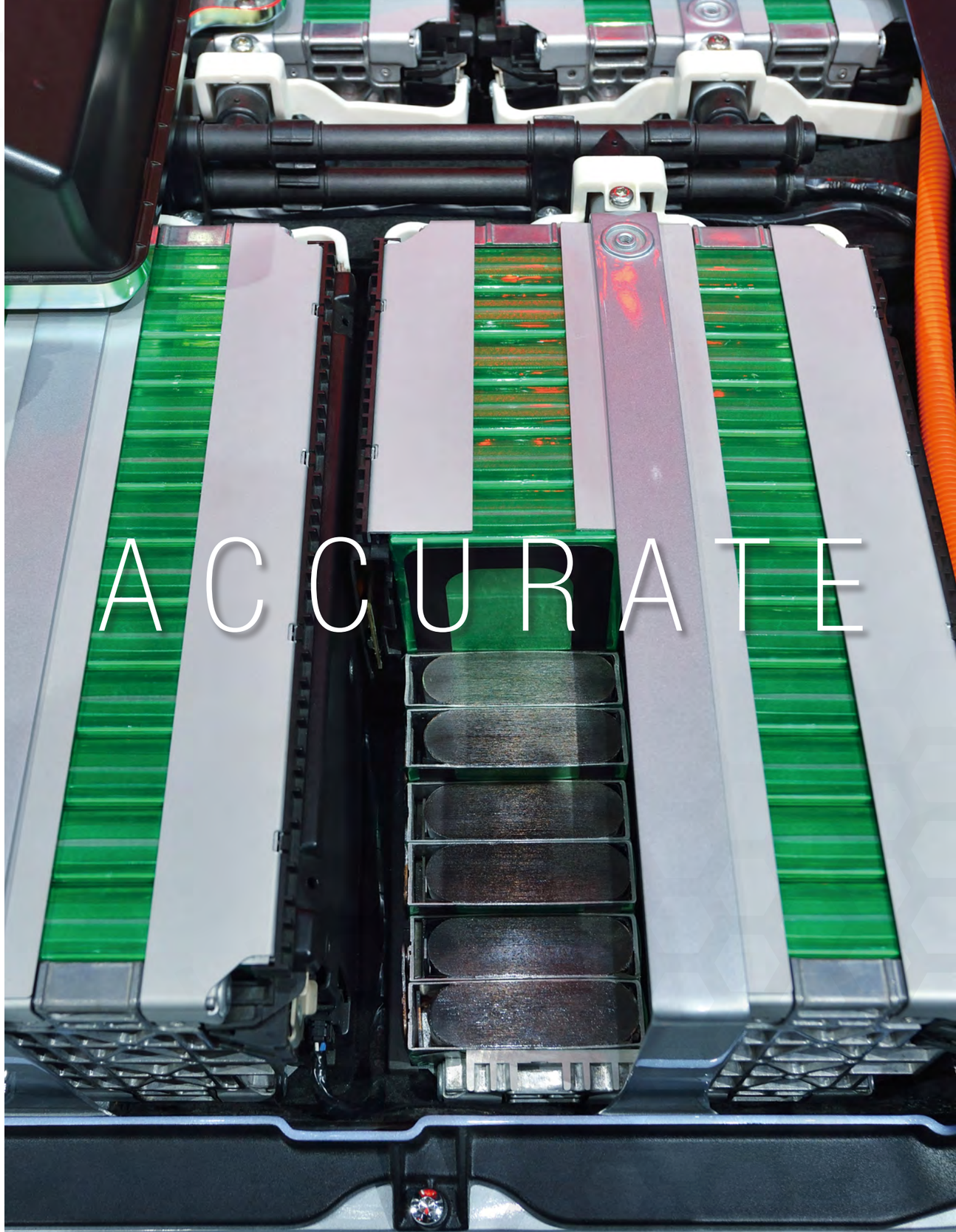
The electric motor directly controls the movement in the pumps so that the requested flow rate is achieved directly from the start. With the additional automatic calibration cycle, snake heads at the start and end are eliminated.

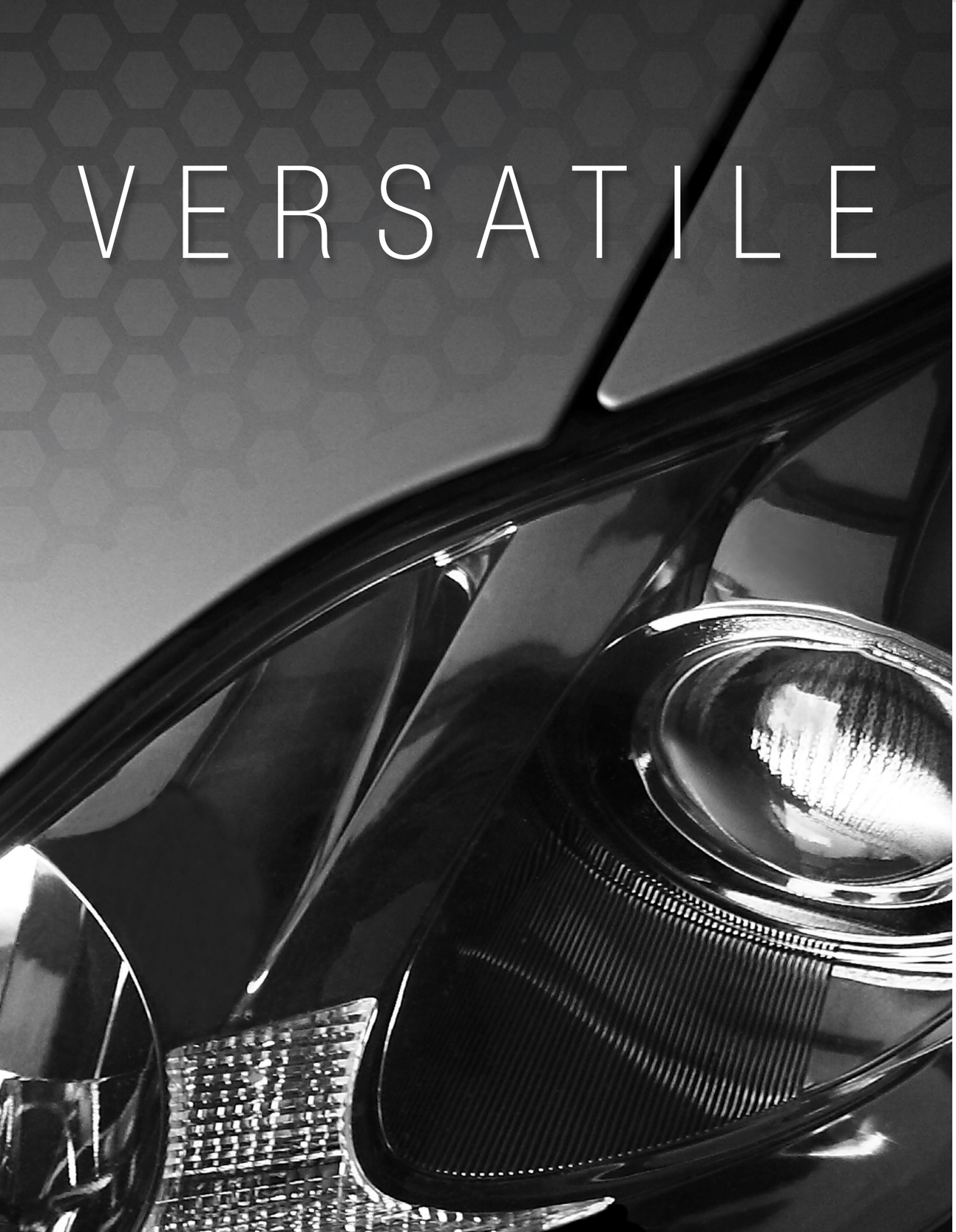
Shot Repeatability

With the built-in encoder, material flow is continuously controlled to assure a consistent flow rate, even during pump changeovers.

During Pump Changeovers

In combination with Graco's control architecture, the advanced driver can recognize when the pump is close to changeover and is able to accelerate and decelerate to eliminate pulsation in the dispense.





VERSATILE

The EFR gives you the versatility to choose the material and flow rates you need no matter your project requirements.

Flow Rates

The EFR system consists of a powerful electric motor and a precise encoder. While the motor is powerful enough to give you a high output up to 3.2L per minute, the precise encoder helps you control the flow to reach very low flows or small shots consistently.

- Minimum shot size of 0.3 cc
- Maximum flow rate of 3200 cc/min

Material

With the EFR system you have the freedom to use the material that fits your application best. The unit can be configured with multiple versions of Z-pumps so that the unit can handle a wide range of materials, including difficult to ratio and very abrasive ones.

Material types:

- Epoxies
- Acrylic
- Urethanes
- Silicones
- Polysulfide
- Thermal Interface Materials

Markets and Applications

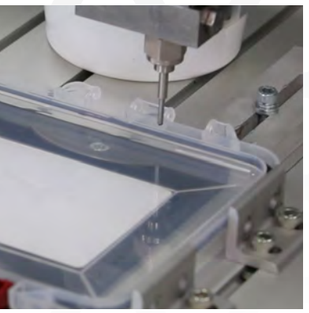
Adaptable for manual or robotic applications, the EFR can be configured for a wide range of manufacturing markets and applications.

Markets

- Battery
- Automotive
- Solar
- General Industry

Applications

- Bonding
- Sealing
- Potting
- Gasketing



EASY

Feel comfortable choosing a unit that is easy to configure and very easy to maintain.

Configure

The EFR offers a wide range of ratio choices and can be connected to multiple Graco feed systems.

If you still need help, Graco engineers are always available to help you with selecting, configuring and testing the unit.

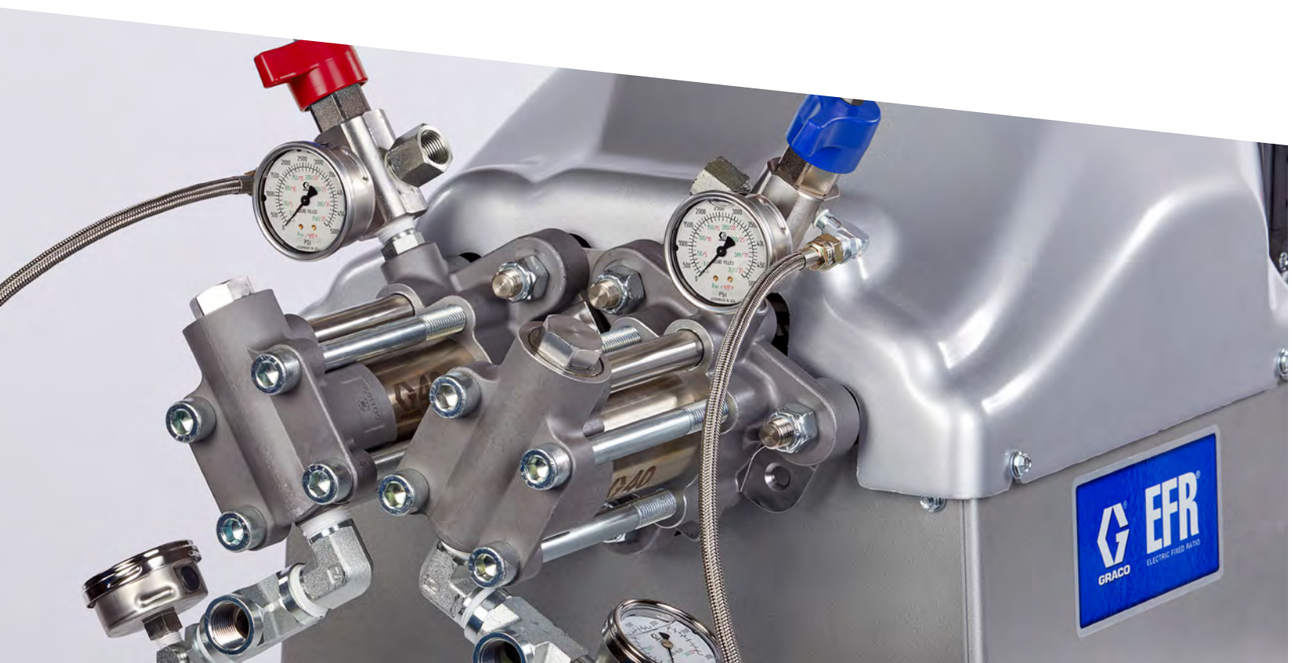
Maintenance

The use of an EFR means a reduction in maintenance time and costs as well.

– Z Pumps
  The seals are the only wear parts of the pumps which can easily be replaced within minutes.

TECHNICAL SPECIFICATIONS

Drive	Precision Controlled ServoDrive Motor
Material delivery	Shot or Bead
Flow rate	1 to 3200 cc/min
Supply type	Bulk supply from 20 L pails to 200 L drums and larger totes.
Shot range	0.1 grams
Mix ratio range	1:1 to 12:1
Maximum fluid working pressure	3500 psi (24 MPa, 241 bar)
Maximum fluid temperature	120° F (50° C)
Electrical Power	280V or 480V
Wetted parts	Stainless steel, zinc-plated carbon steel, brass, tungsten carbide, chrome, fluoroelastomer, PTFE, ultra-high molecular weight polyethylene, silicon nitride
Weight	320 – 401 lbs (145–182 kg)
Dimensions (H x L x W)	22 x 50 x x 22.5 in (56 x 127 x 57 cm)
Gateway	EtherNet/IP, DeviceNet, Profibus, Profinet



ORDERING INFORMATION

EFR (First, Second, and Third Digits)	Digit 4		Digit 5		Digit 6		Digit 7		Digit 8	
System Designator	Voltage Options		Control Options		A Side Pump*		B Side Pump		Material Options	
EFR (Electric Fixed-Ratio Proportioner)	2	240V	A	ADM	A	5 cc	A	5 cc	C	Carbon and Stainless Steel
	4	480V			B	10 cc	B	10 cc	S	Stainless Steel
					C	15 cc	C	15 cc		
					D	20 cc	D	20 cc		
					E	25 cc	E	25 cc		
					F	30 cc	F	30 cc		
					G	35 cc	G	35 cc		
					H	40 cc	H	40 cc		
					I	45 cc	I	45 cc		
					J	50 cc	J	50 cc		
					K	60 cc	K	60 cc		
					L	65 cc	L	65 cc		
					M	70 cc	M	70 cc		
					N	75 cc	N	75 cc		
					O	80 cc	O	80 cc		
					P	86 cc	P	86 cc		
					Q	90 cc	Q	90 cc		
					R	100 cc	R	100 cc		
					S	105 cc	S	105 cc		
					T	120 cc	T	120 cc		
					U	140 cc	U	140 cc		
					V	150 cc	V	150 cc		
					W	160 cc	W	160 cc		

PERFORMANCE

Combined Displacement (A Pump + B Pump)	Max Output Flow (20 cycles/min max)*	Max Average Outlet Pressure**
60 cc	1200 cc/min	3500 psi (241 bar)
80 cc	1600 cc/min	3500 psi (241 bar)
100 cc	2000 cc/min	3500 psi (241 bar)
120 cc	2400 cc/min	3500 psi (241 bar)
140 cc	2800 cc/min	3500 psi (235 bar)
160 cc	3200 cc/min	3000 psi (207 bar)

** Flow may be limited by the amount of pressure generated when using thick materials or with high restriction.*
*** High inlet pressures reduce this value, subtract 2x inlet pressure.*

Graco has you covered

Unmatched Quality

Our focus on continued innovation keeps Graco Fluid Automation at the forefront of fluid handling technology. We typically reinvest three times the industry average into research and development. Our mission is to provide customers with products that result in the **lowest total cost of ownership** while maximizing product quality and business success.

Global Presence

With facilities located in Europe, Asia Pacific and the United States, Graco provides a personalized, **end-to-end partnership experience**. Our engineers will lead the solution planning, testing and refining of your solution in our regional labs to ultimately over-seeing the product installation process.

Global Support

After installation, you'll receive **24/7 in-person support** from our worldwide distribution network of trained and certified distributors who offer relevant experience, product knowledge and responsive service to all our customers.

There is no better reassurance than Graco technology, product innovation and the people committed to helping you succeed all day, every day.

Contact us today!

Call **800-746-1334** to speak with a Graco representative, visit **www.graco.com** for more information.

GRACO

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