

E-Flo[®] DC

Dual Control Electric Pumps



M O V I N G M A T E R I A L S T H A T M A T T E R [™]



SINGLE PUMP. DUAL CONTROL.

MAKE THE SWITCH TO SAVINGS!

Constant pressure when you want it. Constant flow when you need it. **Pressure Mode** allows you to maintain a constant fluid pressure while changing speeds to meet changing demands. This allows the circulated paint to run at slower speeds to extend the life of the paint. **Flow Mode** maintains constant paint velocity.



E-FLO DC CIRCULATION PUMPS

Graco's original 4-ball circulation pump is ideal for small to medium circulation systems. Outputs up to 2500 cc per cycle.

Unlike competitive pumps that are linked and controlled together, Graco's lowers operate independently. This allows the pump to adjust to varying pressure and flow rate demands thousands of times per second. Each pump can also run alone to keep production running if maintenance is required. Outputs up to 5000 cc per cycle.



E-FLO DC SUPPLY PUMPS

Our 2-ball supply pump is for applications requiring high pressure, up to 206 bar. Plus the minimal pulsation at changeover provides a more consistent finish.

Tap into the energy savings and advanced features of Graco's electric motor. It's easier than you think to make the switch.

SAVE ENERGY

5X MORE EFFICIENT

- Electric motor means big savings when compared to similar-sized pneumatic motors – helping lower your energy bill and saving you money.

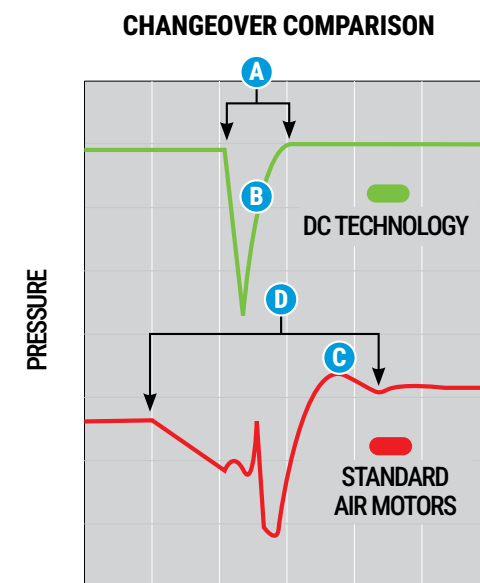
OUTPERFORM

GAIN MORE CONTROL

- Advanced Control Module allows you to easily integrate the pump into a PLC network for even greater control and visibility.

IMPROVE QUALITY

- Dual Control (DC) technology gives you less pulsation and smooth, rapid changeovers – for better, more consistent finishes.



- A** Less than 0.09 second changeover
- B** Quick changeover and recovery with less pulsation
- C** Pressure spike at changeover
- D** Longer changeover causing pulsation

IMPROVE PRODUCTIVITY

SPEND LESS TIME TRAINING

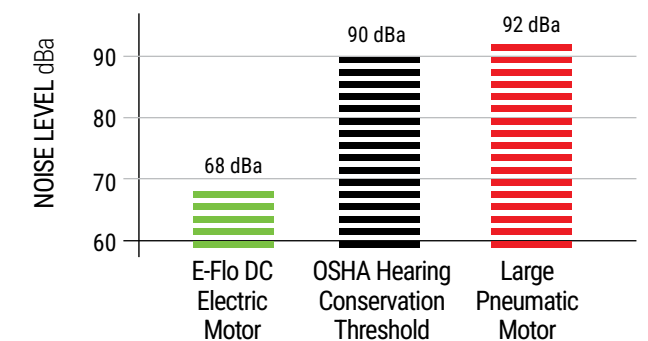
- Electric pump functionality, with the simplicity of a pneumatic pump, makes it easy for anyone to operate.

STAY UP AND RUNNING LONGER

- Increased reliability means you'll spend less time maintaining and more time up and running.

BETTER WORKING ENVIRONMENT

- Quiet electric motor means happier operators and better results. Exceeds OSHA sound regulations and over 20 dbA's quieter compared to similar-sized pneumatic motors.



Note: All pressures 100 psi

BOOST YOUR PROFITS

PREVENT MATERIAL LOSS

- Integrated runaway protection protects your pump from premature wear and prevents costly material loss.

ELIMINATE COSTLY REWORK

- Electric motor eliminates icing – giving you smoother pump operation and better finished product.

LOWER COST OF OWNERSHIP

- Use less energy and spend less on maintenance costs with the field-proven reliability of Graco's 2- and 4-ball pumps.

CHOOSE POWER

- Select single phase 220 V or 3-phase 380-480 V Input power.



BOOST YOUR BOTTOM LINE WITH ENERGY SAVINGS AND ADVANCED PUMP CONTROL

CHOOSE THE RIGHT PUMP FOR YOU! HOW TO SELECT YOUR E-FLO DC PUMP



ADVANCED MOTOR WITH CONTROL MODULE

Efficient and smart, the E-Flo DC with Advanced Control Module gives you additional control of pump performance and allows you to manage several pumps from a single module.



CONTROL MODULE

- Integrate the pump easily into a PLC Network for better visibility and control outside of the hazardous area
- Configure different operating profiles of pump
- Mount directly on pump motor or remotely on nearby wall
- Up to two pressure transducers can be added for greater control
- Connect pneumatic BPR controller to automate an "off-production" profile for even greater energy savings
- Password protect pump settings to protect against unauthorized access

DIRECT PLC CONTROL

- Connect Eflo-DC directly to a PLC via 4-20 mA signal with the fiber to serial converter to allow basic automation without a local pump controller



SIMPLE TO INSTALL

- Basic installation requires only a single-phase 220 V, 50/60 Hz power or 3-phase 380 – 480 V 50/60 Hz power
No VFD's Required.



BASIC MOTOR

- Operator-friendly control knobs have clear symbols making it easy to adjust pump settings. Gives you local control at the pump and runaway protection.

1 PUMP SELECTIONS REFER TO THE PUMP SELECTION TABLE ON THE NEXT PAGE TO ANSWER THE FOLLOWING QUESTIONS:

LOWER SIZE – Based on desired pressure and flow rates, what size lower is required?
Circulation Pumps: 750 cc, 1000 cc, 1500 cc, 2000 cc, 2500 cc, 3000 cc, 4000 cc, or 5000 cc
Supply Pumps: 145 cc, 180 cc, 220 cc or 290 cc

MOTOR SIZE & CONTROLS – What motor size and control type would you like on the motor? 1 or 2 hp, Basic or Advanced? What approvals are required?

LOWER, FITTINGS AND PACKINGS – What lower material, type of fitting and packings are required on the lower?

MOUNT – How would you like to mount the pump? Choose either Stand/Wall Mount Bracket or None.

2 CONTROL MODULE & CABLE

If Basic motor control is desired, your pump selection is complete. Refer to the Pump Selection Table on the next page for your part number.

If Advanced motor is desired, a Control Module and cable will be required. You can mount the controller on the pump or on a nearby wall and connect it to the pump with the appropriate CAN cable selected from the table.

High flow rate circulation pumps (2X) include the Control Module and CAN Cable. No additional equipment is required.

PART NUMBER	DESCRIPTION
24P822	Control Module Kit (220v)
17V232	Control Module Kit (480v)
16P911	1 m CAN Cable
16P912	8 m CAN Cable
16M173	30 m Fiber Cable
17B160	97 m (room) Fiber Cable

E-FLO DC CIRCULATION PUMP SELECTION PART NUMBER MATRIX

ELECTRIC	CIRCULATION PUMP	LOWER SIZE	MOTOR SIZE, CONTROLS & APPROVALS		PUMP TYPE/FITTINGS	MOUNT
E = Electric	C=Circulation	1 = 750 cc	1 = 1 hp Motor, Basic Controls, ATEX/FM/IECEx	A = 1 hp Motor 480 V, Basic Controls, ATEX/FM/IECEx	4 = Sealed SST Lower, Ultralife Rod, Ultralife Cylinder, Tri-Clamp Fittings	0 = No Stand
		2 = 1000 cc	2 = 1 hp Motor, Advanced Controls, ATEX/FM/IECEx	B = 1 hp Motor 480V, Advanced Controls, ATEX/FM/IECEx		1 = Stand
		3 = 1500 cc	3 = 2 hp Motor, Basic Controls, ATEX/FM/IECEx	C = 2 hp Motor 480V, Basic Controls, ATEX/FM/IECEx		Bracket
		4 = 2000 cc	4 = 2 hp Motor, Advanced Controls, ATEX/FM/IECEx	D = 2 hp Motor 480V, Advanced Controls, ATEX/FM/IECEx	C = Chrome Cylinder, Tri-Clamp Fittings	
		5 = 3000 cc	5 = 1 hp Motor, Basic Controls, ATEX/IECEx/TIIS/KCS	E = 1 hp Motor 480V, Basic Controls, ATEX/IECEx/TIIS/KCS		
		6 = 4000 cc	6 = 1 hp Motor, Advanced Controls, ATEX/IECEx/TIIS/KCS	F = 1 hp Motor 480V, Advanced Controls, ATEX/IECEx/TIIS/KCS		
		7 = 2500 cc	7 = 2 hp Motor, Basic Controls, ATEX/IECEx/TIIS/KCS	G = 2 hp Motor 480V, Basic Controls, ATEX/IECEx/TIIS/KCS		
			8 = 2 hp Motor, Advanced Controls, ATEX/IECEx/TIIS/KCS	H = 2 hp Motor 480V, Advanced Controls, ATEX/IECEx/TIIS/KCS		
			9 = 2 x 2 hp Motor, Advanced Controls, ATEX/FM/IECEx	J = 2 x 2 hp Motor 480V, Advanced Controls, ATEX/FM/IECEx		
			0 = 2 x 2 hp Motor, Advanced Controls, ATEX/IECEx/TIIS/KCS	K = 2 x 2 hp Motor 480V, Advanced Controls, ATEX/IECEx/TIIS/KCS		



E-FLO DC CIRCULATION PUMP SELECTION

E-FLO DC SUPPLY PUMP SELECTION

PUMP SPECIFICATIONS

MODEL	750	1000	1500	2000	2500	5000	2000X2	3000X2	4000X2
Output per Cycle	750 cc	1000 cc	1500 cc	2000 cc	2500 cc	5000 cc	2000 cc	3000 cc	4000 cc
Max Working Pressure bar	19.7	1HP: 14.5 2HP: 27.6	20.6	14.5	—	—	27.6	20.6	14.5
Max Working Pressure bar 3-Phase	24.5	1HP: 17.9 2HP: 32.8	24.5	17.9	14.5	14.5	32.8	24.5	17.9
Max Flow @ 20 cpm lpm	15	20	30	40	50	100	40	60	80

ORDERING INFORMATION

MOTOR SIZE & CONTROLS			VOLTAGE		APPROVALS		LOWER TYPE/FITTING		MOUNT		OUTPUT PER CYCLE						
MOTOR SIZE	BASIC CONTROLS	ADVANCED CONTROLS	240 VAC SINGLE PHASE	380-480 VAC 3 PHASE	ATEX / FM / IECEx	ATEX / IECEX / TIIS / KCS	SEALED STAINLESS, TRI-CLAMP	SEALED STAINLESS, CHROME/CHROMEX	NO STAND	STAND	750 CC	1000 CC	1500 CC	2000 CC	2500 CC	3000 CC	4000 CC
1 hp	•		•		•		•		•		EC1140	EC2140					
1 hp	•		•		•		•		•		EC1141	EC2141					
1 hp		•	•		•		•		•		EC1240	EC2240					
1 hp		•	•		•		•		•		EC1241	EC2241					
1 hp	•		•			•	•		•		EC1540	EC2540					
1 hp	•		•			•	•		•		EC1541	EC2541					
1 hp		•	•			•	•		•		EC1640	EC2640					
1 hp		•	•			•	•		•		EC1641	EC2641					
1 hp		•	•			•	•		•		EC16C1						
1 hp	•			•	•		•		•		EC1A40	EC2A40					
1 hp	•			•	•		•		•		EC1A41	EC2A41					
1 hp		•		•	•		•		•		EC1B40	EC2B40					
1 hp		•		•	•		•		•		EC1B41	EC2B41					
1 hp	•			•		•	•		•		EC1E40	EC2E40					
1 hp	•			•		•	•		•		EC1E41	EC2E41					
1 hp		•		•		•	•		•		EC1F40	EC2F40					
1 hp		•		•		•	•		•		EC1F41	EC2F41					
1 hp		•		•		•	•		•		EC1FC1						
2 hp	•		•		•		•		•			EC2340	EC3340	EC4340			
2 hp	•		•		•		•		•			EC2341	EC3341	EC4341			
2 hp		•	•		•		•		•			EC2440	EC3440	EC4440			
2 hp		•	•		•		•		•			EC2441	EC3441	EC4441			
2 hp	•		•			•	•		•			EC2740	EC3740	EC4740			
2 hp	•		•			•	•		•			EC2741	EC3741	EC4741			
2 hp		•	•			•	•		•			EC2840	EC3840	EC4840			
2 hp		•	•			•	•		•			EC2841	EC3841	EC4841			
2 hp		•	•			•		•				EC38C0	EC48C0				
2 hp	•			•	•		•		•			EC2C40	EC3C40	EC4C40	EC7C40		
2 hp	•			•	•		•		•			EC2C41	EC3C41	EC4C41	EC7C41		
2 hp		•		•	•		•		•			EC2D40	EC3D40	EC4D40	EC7D40		
2 hp		•		•	•		•		•			EC2D41	EC3D41	EC4D41	EC7D41		
2 hp	•			•		•	•		•			EC2G40	EC3G40	EC4G40	EC7G40		
2 hp	•			•		•	•		•			EC2G41	EC3G41	EC4G41	EC7G41		
2 hp		•		•		•	•		•			EC2H40	EC3H40	EC4H40	EC7H40		
2 hp		•		•		•	•		•			EC2H41	EC3H41	EC4H41	EC7H41		
2 x 2 hp		•	•		•		•		•					EC4941		EC5941	EC6941
2 x 2 hp		•	•		•		•		•					EC4041		EC5041	EC6041
2 x 2 hp		•		•	•		•		•					EC4J41		EC5J41	EC6J41
2 x 2 hp		•		•		•	•		•					EC4K41		EC5K41	EC6K41

PART NUMBER MATRIX

ELECTRIC	SUPPLY PUMP	LOWER SIZE	MOTOR SIZE, CONTROLS & APPROVALS		PUMP TYPE/FITTINGS	MOUNT
E = Electric	S = Supply	7 = 145 cc	3 = 2 hp Motor, Basic Controls, ATEX/FM/IECEX	C = 2 hp Motor 480V, Basic Controls, ATEX/FM/IECEX	4 = Xtreme/3 Xtreme, 2 Leather	0 = No Stand
		8 = 180 cc	4 = 2 hp Motor, Advanced Controls, ATEX/FM/IECEX	D = 2 hp Motor 480V, Advanced Controls, ATEX/FM/IECEX	5 = DuraFlo/4 Leather, 1 PTFE	1 = Stand
		9 = 220 cc	7 = 2 hp Motor, Basic Controls, ATEX/IECEX/TIIS/KCS	G = 2 hp Motor 480V, Basic Controls, ATEX/IECEX/TIIS/KCS	6 = DuraFlo/Leather, PTFE	Bracket
		0 = 290 cc	8 = 2 hp Motor, Advanced Controls, ATEX/IECEX/TIIS/KCS	H = 2 hp Motor 480V, Advanced Controls, ATEX/IECEX/TIIS/KCS		

PUMP SPECIFICATIONS

MODEL	290	220	180	145
Output per Cycle	290 cc	220 cc	180 cc	145 cc
Maximum Working Pressure bar	105	140	168	210
Output at 20 CPM lpm	5.8	4.4	3.6	2.9
Pump Manual	333389	333389	333389	333389
Motor Manual	3A2526	3A2526	3A2526	3A2526
Control Module Manual	3A2527	3A2527	3A2527	3A2527

ORDERING INFORMATION

MOTOR CONTROLS		VOLTAGE		APPROVALS		LOWER MATERIAL		PACKINGS		MOUNT		RATIO			
BASIC CONTROLS	ADVANCED CONTROLS	240 VAC SINGLE PHASE	380-480 VAC 3 PHASE	ATEX / FM / IECEx	ATEX / IECEX / TIIS / KCS	DURAFLO (SST)	XTREME (CS)	3 XTREME / 2 LEATHER	4 LEATHER / 1 PTFE	NO STAND	STAND	290 CC	220CC	180CC	145 CC
•		•		•			•	•		•		ES0340	ES9340	ES8340	
•		•		•			•	•			•	ES0341	ES9341	ES8341	
•		•		•					•	•		ES0350	ES9350	ES8350	ES7360
•		•		•							•	ES0351	ES9351	ES8351	ES7361
	•	•		•					•	•		ES0450	ES9450	ES8450	ES7460
	•	•		•					•	•		ES0451	ES9451	ES8451	ES7461
•		•			•		•	•		•		ES0740	ES9740	ES8740	
•		•			•						•	ES0741	ES9741	ES8741	
•		•			•		•		•	•		ES0750	ES9750	ES8750	ES7760
•		•			•		•		•		•	ES0751	ES9751	ES8751	ES7761
	•	•			•		•		•	•		ES0850	ES9950	ES8850	ES7860
	•	•			•		•		•		•	ES0851	ES9951	ES8851	ES7861
•			•	•			•	•		•		ES0C40	ES9C40	ES8C40	
•			•	•			•	•			•	ES0C41	ES9C41	ES8C41	
•			•	•					•	•		ES0C50	ES9C50	ES8C50	ES7C60
•			•	•			•				•	ES0C51	ES9C51	ES8C51	ES7C61
	•		•	•			•		•	•		ES0D50	ES9D50	ES8D50	ES7D60
	•		•	•			•		•		•	ES0D51	ES9D51	ES8D51	ES7D61
•			•		•		•	•		•		ES0G40	ES9G40	ES8G40	
•			•		•		•	•			•	ES0G41	ES9G41	ES8G41	
•			•		•				•	•		ES0G50	ES9G50	ES8G50	ES7G60
•			•		•						•	ES0G51	ES9G51	ES8G51	ES7G61
	•		•		•		•	•		•		ES0H50	ES9950	ES8H50	ES7H60
	•		•		•		•	•	•		•	ES0H51	ES9951	ES8H51	ES7H61



3 ACCESSORIES

CONTROL MODULE ACCESSORIES

PART NUMBER	DESCRIPTION	COMMENTS
24R050	Pressure Transducer, NPT	Up to two pressure transducers can be connected to one Control Module. Cable length: 1.4 m (4.5 ft)
24X089	Pressure Transducer, Inline Tri-clamp	Up to two pressure transducers can be connected to one Control Module. Cable length: 1.4 m (4.5 ft)
16V103	Transducer Extension Cable	For extending length of pressure transducer. Length: 6.5 ft (2 m)
24V001	Pneumatic BPR Control System	For use when implementing an "off-production" or "sleep" profile with the Control Module
16U729	Run/Stop Switch	Additional, separate switch for running and stopping the pump
16M172	15 m (50 ft) Fiber Optic Cable	Used for communicating outside of a hazardous area
16M173	30 m (100 ft) Fiber Optic Cable	Used for communicating outside of a hazardous area
17B160	100 m (330 ft) Fiber Optic Cable	Used for communicating outside of a hazardous area
24R086	Fiber/Serial Converter	For converting Fiber Optic Cable to RS485/Modbus RTU Serial. Located outside of the hazardous area.
15V331	Ethernet IP Gateway Assembly	For interfacing with a PLC network. Located outside of the hazardous area.

MOTORS

PART NUMBER		DESCRIPTION	APPROVALS
220V	340-480V		
EM0011	EM1011	1 hp Motor, Basic Controls	ATEX / FM / IECEx
EM0012	EM1012	1 hp Motor, Advanced Controls	ATEX / FM / IECEx
EM0013	EM1013	1 hp Motor, Basic Controls	ATEX / IECEx / TIIS / KCS
EM0014	EM1014	1 hp Motor, Advanced Controls	ATEX / IECEx / TIIS / KCS
EM0021	EM1021	2 hp Motor, Basic Controls	ATEX / FM / IECEx
EM0022	EM1022	2 hp Motor, Advanced Controls	ATEX / FM / IECEx
EM0023	EM1023	2 hp Motor, Basic Controls	ATEX / IECEx / TIIS / KCS
EM0024	EM1024	2 hp Motor, Advanced Controls	ATEX / IECEx / TIIS / KCS
EM0025*	EM1025*	2 hp Motor (for "2X" E-Flo DC 2000-4000cc Circulation Pumps), Advanced Controls	ATEX / FM / IECEx
EM0026*	EM1026*	2 hp Motor (for "2X" E-Flo DC 2000-4000cc Circulation Pumps), Advanced Controls	ATEX / IECEx / TIIS / KCS

*System requires two motors

BACK PRESSURE REGULATORS

PART NUMBER	DESCRIPTION
288117	Pneumatic BPR (75 lpm, 20 bar max fluid pressure, 1-1/4 npt)
288311	Pneumatic BPR (75 lpm, 20 bar max fluid pressure, 1-1/2 npt)
288262	Pneumatic BPR (75 lpm, 20 bar max fluid pressure, 2 in Tri-Clamp)

OTHER ACCESSORIES

PART NUMBER	DESCRIPTION
253692	Floor Stand/ Wall /Floor Stand
24R101	Basic Controls Securing Kit

For more information visit [graco.com](https://www.graco.com)

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