

Flow Control Modules

3A2097B

EN

Precisely regulates the flow of material to a gun in an automatic proportioning system.
For professional use only.

Approved for use in explosive atmospheres only when used in conjunction with ProMix
Electronic Proportioners.

190 psi (1.31 MPa, 13.1 bar) Maximum Fluid Working Pressure

Model 249849 Flow Control Module

With integrated air-operated fluid regulator.

Model 24H989 Flow Control Module

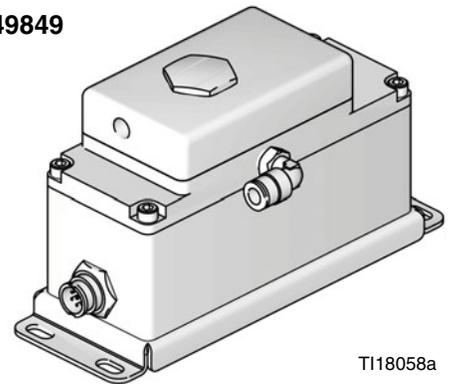
For use with a remotely mounted, air-operated fluid regulator (not included).



Important Safety Instructions

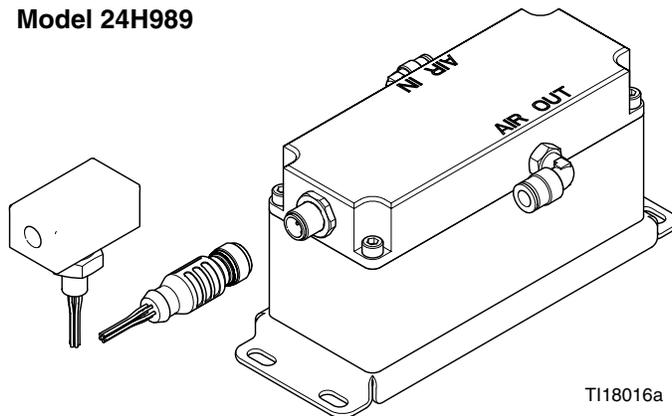
Read all warnings and instructions in this manual and in your ProMix instruction manuals. Save these instructions.

Model 249849



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Model 24H989



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Related Manuals

ProMix Manuals in English

Manual	Description
312778	ProMix 2KS Automatic System Installation
312779	ProMix 2KS Automatic System Operation
312780	ProMix 2KS Automatic System Repair-Parts
3A1163	ProMix 1KS Installation
3A1080	ProMix 1KS Automatic System Operation
3A1164	ProMix 1KS Repair-Parts
313881	ProMix 3KS Installation
313885	ProMix 3KS Automatic System Operation
313883	ProMix 3KS Repair-Parts

Grounding

						
Your system must be grounded. See the Grounding instructions in your ProMix Installation manual.						

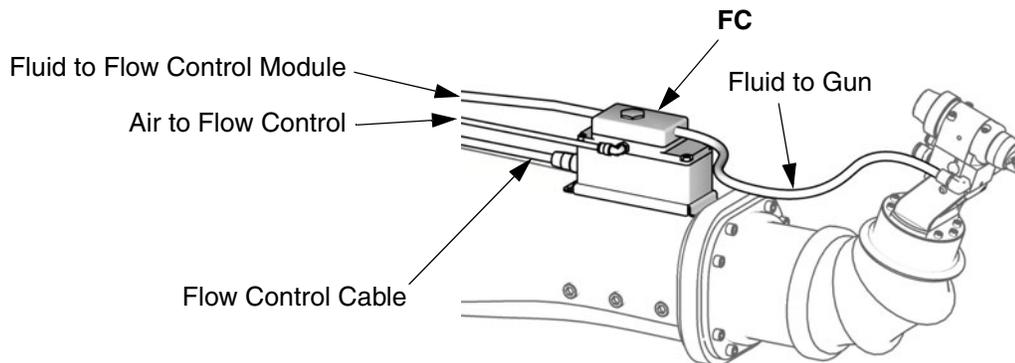
Ground all components in your system, as explained in your ProMix Installation manual.

Ground a remote fluid regulator (used with Model 24H989 only) by connection to a properly grounded fluid hose.

Installation (Model 249849)

The intrinsically safe flow control module (FC) is required to use flow control in your system. See FIG. 1.

1. Connect a 1/4 in. (6 mm) OD air supply line to the air inlet fitting of the flow control module (FC). Connect the other end of this line as follows:
 - a. Wall Mount Systems: Connect to the air manifold at the rear of the wall mount fluid station.
 - b. RoboMix Systems: Install a 1/4 in. (6 mm) OD tube tee at the air logic inlet of the RoboMix. Connect the flow control air line to one branch of the tee and the main air line to the other branch.
2. Connect a fluid line from the proportioner to the 1/8 npt(f) fluid inlet of the flow control module (FC).
3. Connect a fluid line from the 1/8 npt(f) fluid outlet of the flow control module (FC) to the spray gun inlet.
4. See the **Electrical Schematic** in your ProMix instruction manual. Connect the flow control cable to the fluid station control board and to the cable connector on the flow control module (FC).



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FIG. 1. 249849 Flow Control Module

Installation (Model 24H989)

The intrinsically safe flow control module (FC) is required to use flow control in your system. It is for use with a remotely mounted, air-operated fluid regulator (FR, not included). See FIG. 2.

1. Connect a 1/4 in. (6 mm) OD air supply line to the air inlet fitting of the flow control module (FC). Connect the other end of this line as follows:
 - a. Wall Mount Systems: Connect to the air manifold at the rear of the wall mount fluid station.
 - b. RoboMix Systems: Install a 1/4 in. (6 mm) OD tube tee at the air logic inlet of the RoboMix. Connect the flow control air line to one branch of the tee and the main air line to the other branch.
2. Connect a 5/32 in. (4 mm) OD air supply line to the air outlet fitting of the flow control module (FC). Connect the other end of this line to the air inlet fitting of a remotely mounted fluid regulator (FR).
3. Connect a fluid line from the proportioner to the fluid inlet of the remote fluid regulator (FR).
4. Connect a fluid line from the outlet of the fluid regulator (FR) to the 1/8 npt(f) inlet of the pressure sensor (PS).
5. Connect a fluid line from the 1/8 npt(f) outlet of the pressure sensor (PS) to the spray gun inlet.
6. Connect the pressure sensor cable to the cable connector on the flow control module (FC).
7. See the **Electrical Schematic** in your ProMix instruction manual. Connect the flow control cable to the fluid station control board and to the cable connector on the flow control module (FC).

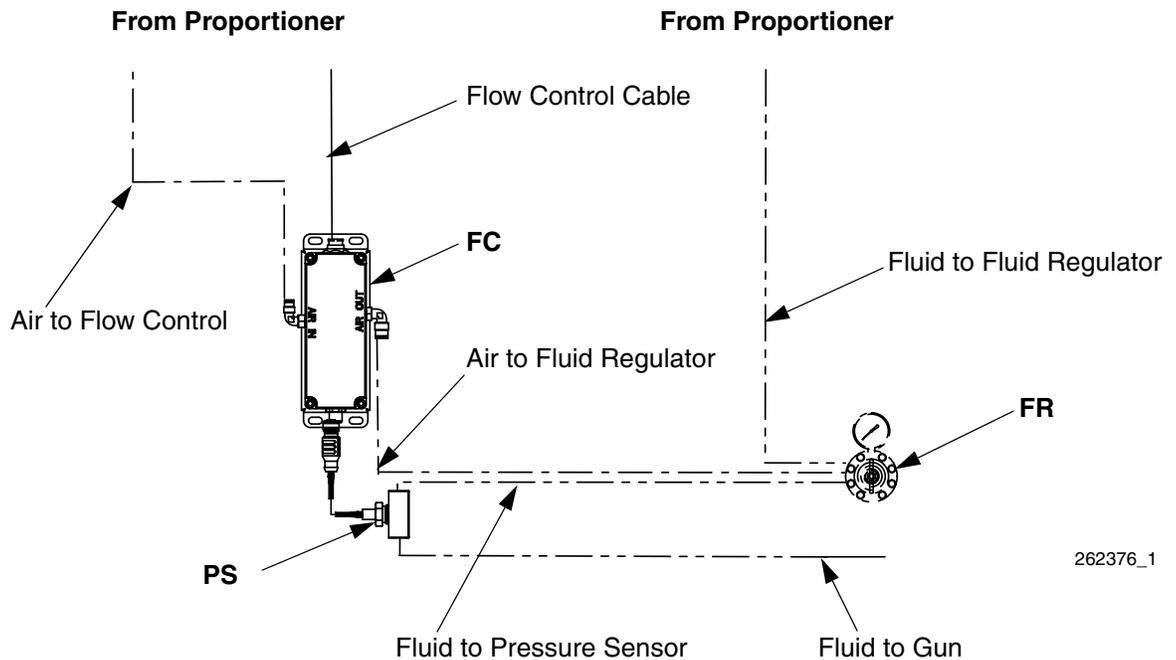


FIG. 2. 24H989 Flow Control Module, with Remotely Mounted Fluid Regulator

Service

Before Servicing

NOTICE

To avoid damaging circuit board when servicing, wear Part No. 112190 grounding strap on wrist and ground appropriately.

1. Flush system and follow **Pressure Relief Procedure** in your ProMix Repair-Parts manual.
2. Close main air shutoff valve on air supply line and on ProMix.
3. Shut off power (0 position). FIG. 3.
4. Shut off power at main circuit breaker.

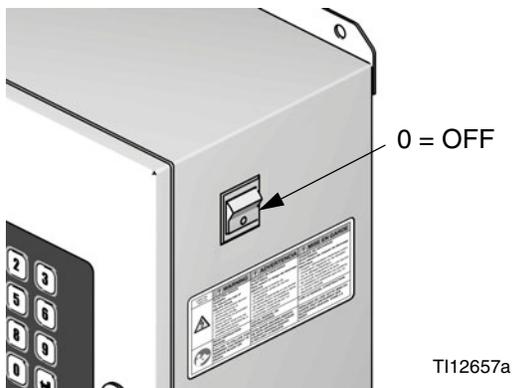


FIG. 3: Power Off

5. Disconnect all air and fluid lines from the flow control module.
6. *Model 24H989 only:* Disconnect all fluid lines from the pressure sensor fitting (626).
7. Disconnect the flow control cable from the flow control harness (624). FIG. 4 or FIG. 5.

After Servicing

After servicing, be sure to follow the **Start Up** checklist and procedure in the ProMix Operation manual.

Servicing the Regulator and Pressure Sensor (Model 249849 only)

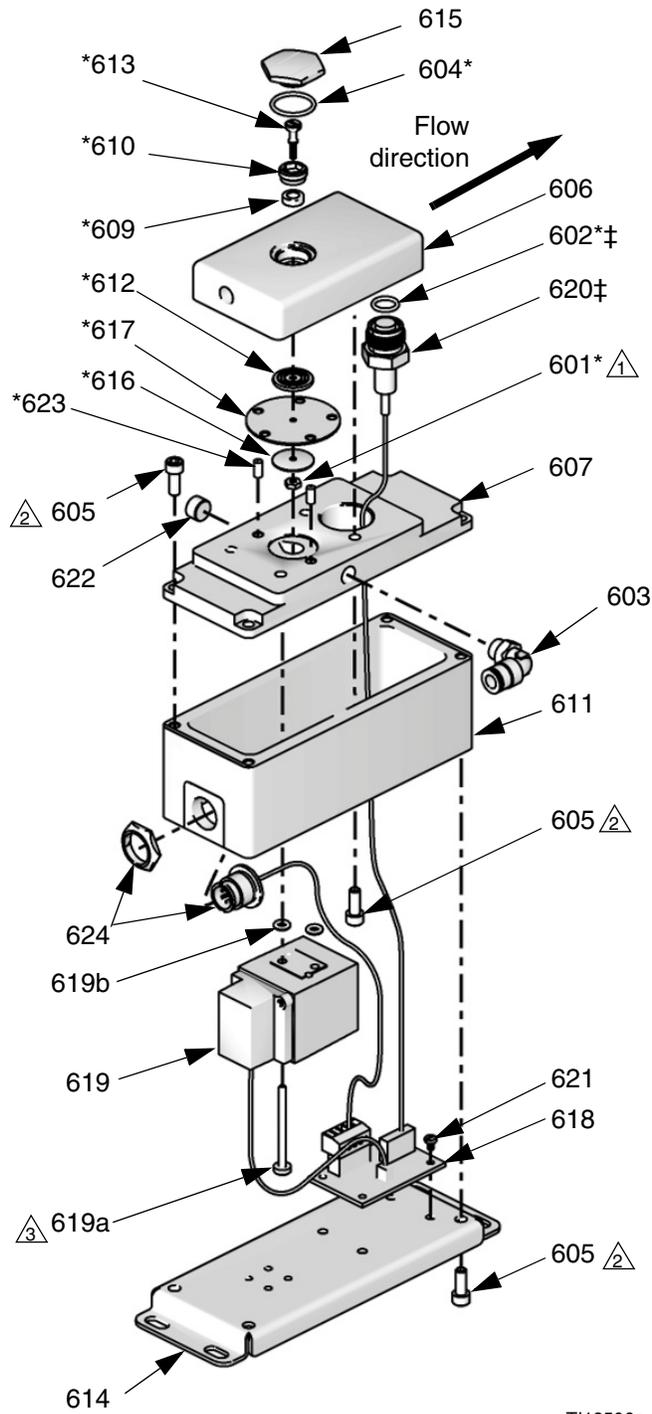
Regulator Service Kit 15G843 is available. Kit parts are marked with an asterisk, for example (602*). For best results, use all parts in the kit.

Sensor Service Kit 15G867 is available to service the pressure sensor only. Kit parts are marked with a symbol, for example (602‡). For best results, use all parts in the kit.

1. Follow **Before Servicing**, above.
2. Remove the four screws (605) and the nut (601) from the underside of the air plate (607). Separate the air plate and fluid plate. FIG. 4.
3. Unscrew the pressure sensor (620) from the fluid plate (606).

NOTE: If you are only replacing the pressure sensor kit 15G867, skip to step 6.

4. Remove the plug (615) and o-ring (604) from the top of the fluid plate (606). Remove the parts of the diaphragm assembly (613, 610, 609, 612, 617, 616). Remove and discard the dowels (623).
5. Reassemble the diaphragm assembly using the new parts from the kit. Be sure the AIR SIDE of the diaphragm (617) faces down. Torque the nut (601) to 8-10 in-lb (0.9-1.1 N•m).
6. Install a new o-ring (602) on the pressure sensor (620) and screw the sensor into the fluid plate (606).
7. Reinstall the fluid plate on the air plate. Be careful not to pinch the pressure sensor cable. Torque the screws (605) to 30-40 in-lb (3.4-4.5 N•m).
8. Reconnect the three cables to J1, J2, and J4 on the circuit board (618). FIG. 6.
9. Reattach the air plate (607) to the housing (611). Torque the screws (605) to 30-40 in-lb (3.4-4.5 N•m).
10. Reattach the flow control cable and all air and fluid lines.



① Torque to 8-10 in-lbs (0.9-1.1 N•m)

② Torque to 30-40 in-lbs (3.4-4.5 N•m)

③ Torque to 5-7 in-lbs (0.6 -0.8 N•m)

FIG. 4: 249849 Flow Control Module

Servicing the Pressure Sensor (Model 24H989 only)

1. Follow **Before Servicing**, page 4.
2. Disconnect the pressure sensor (620) from the pressure sensor wire harness (620b). FIG. 5.
3. Unscrew the pressure sensor (620) from the pressure sensor fitting (626).
4. Install a new o-ring (602) on the new pressure sensor (620).
5. Reassemble in the reverse order.

Servicing the Pressure Sensor Wire Harness (Model 24H989 only)

1. Follow **Before Servicing**, page 4.
2. Disconnect the pressure sensor (620) from the pressure sensor wire harness (620b). FIG. 5.
3. Remove the four screws (605) holding the air plate (607) to the housing (611). Unscrew the nut from the pressure sensor wire harness connector (620b).
4. Carefully lift the plate (607) off the housing. Disconnect the wire harness from J4 on the circuit board (618) and remove the wire harness. FIG. 6.
5. Install the new wire harness (620b) in the reverse order.
6. Reattach the air plate (607) to the housing (611). Torque the screws (605) to 30-40 in-lb (3.4-4.5 N•m).

Servicing the Flow Control Board (all Models)

1. Follow **Before Servicing**, page 4.
2. Remove the four screws (605) holding the bracket (614) to the housing (611). FIG. 4 or FIG. 5.
3. Carefully separate the bracket from the housing and disconnect the three cables from J1, J2, and J4 on the circuit board (618). FIG. 6.
4. Remove the screws (621). Replace the old board with the new board. Install the screws (621).
5. Reconnect the three cables to J1, J2, and J4 on the circuit board (618). FIG. 6.
6. Reattach the bracket (614) to the housing (611). Torque the screws (605) to 30-40 in-lb (3.4-4.5 N•m).

Servicing the V/P Valve (all Models)

1. Follow **Before Servicing**, page 4.
2. Remove the four screws (605) holding the bracket (614) to the housing (611). FIG. 4 or FIG. 5.
3. Carefully separate the bracket from the housing and disconnect the V/P valve cable from J2 on the circuit board (618). FIG. 6.
4. Remove the two screws (619a) and o-rings (619b). Install the new valve (619) with new screws and o-rings. Torque the screws to 5-7 in-lb (0.6-0.8 N•m).
5. Reconnect the V/P valve cable to J2 on the circuit board (618). FIG. 6.
6. Reattach the bracket (614) to the housing (611). Torque the screws (605) to 30-40 in-lb (3.4-4.5 N•m).

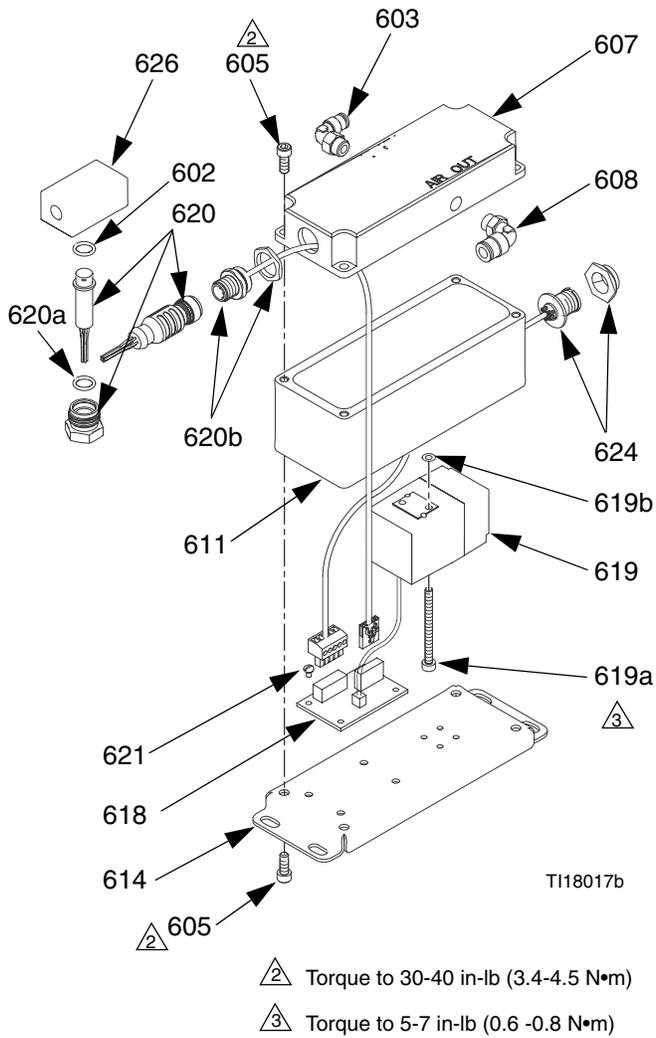


FIG. 5: 24H989 Flow Control Module

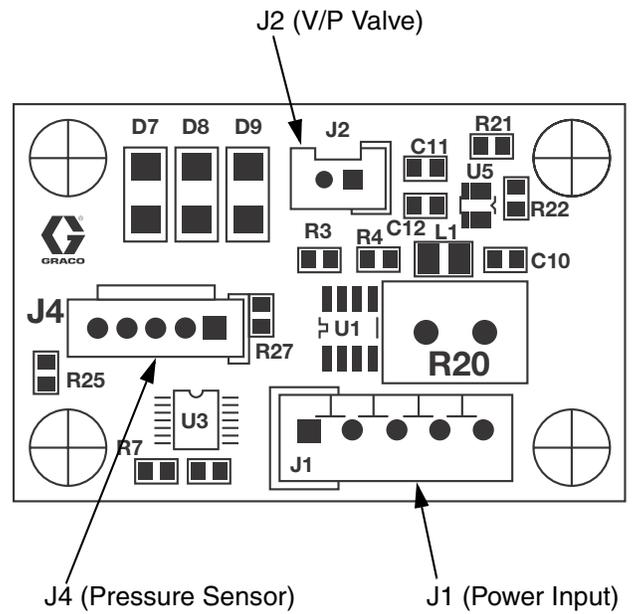


FIG. 6: 249179 Flow Control Board

Parts

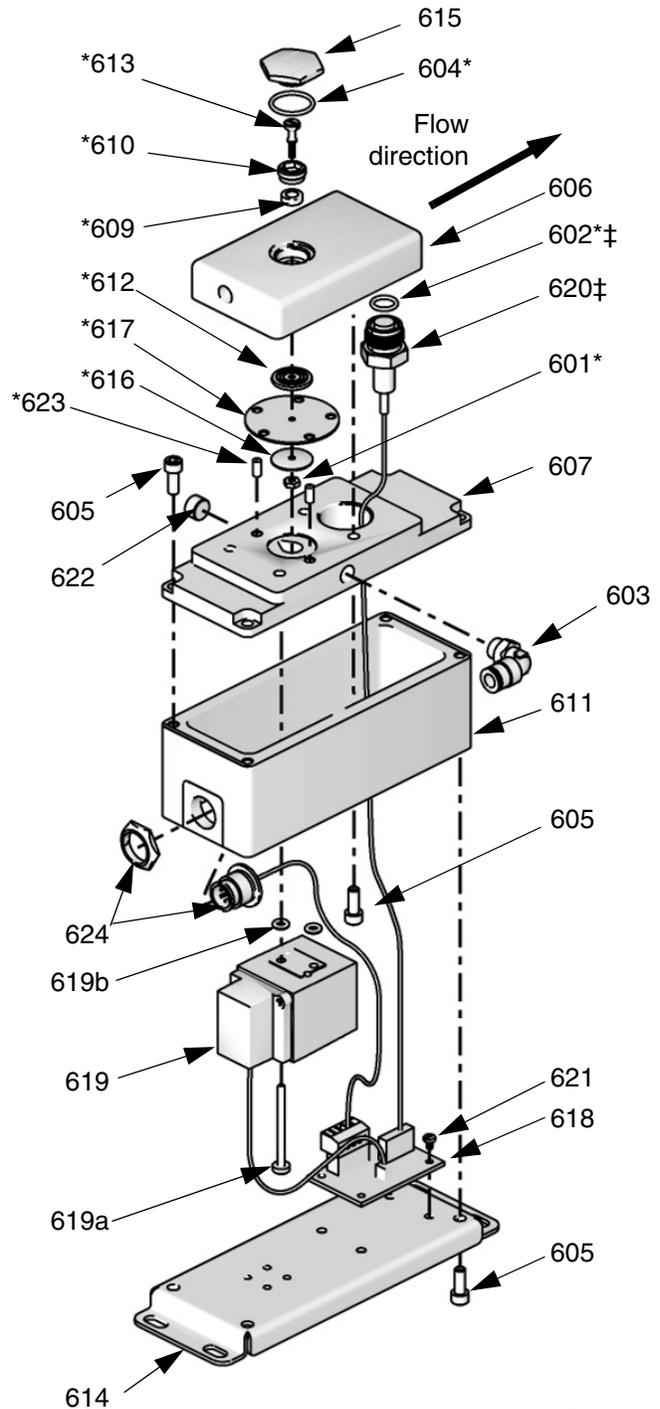
249849 Flow Control Module

Ref. No.	Part No.	Description	Qty
601*	102980	NUT, full, hex; 4-40	1
602‡*	---	O-RING; chemically resistant fluoroelastomer	1
603	112698	ELBOW; 1/8 npt(m) x 1/4 in. (6 mm) OD tube	1
604*	---	O-RING; chemically resistant fluoroelastomer	1
605	---	SCREW, cap, socket-hd; 10-32 x 1/2 in. (13 mm)	12
606	---	PLATE, fluid, regulator	1
607	15F799	PLATE, air, regulator	1
609*	---	SEAT, regulator	1
610*	---	RETAINER, seat	1
611	---	HOUSING, flow control	1
612*	---	SPACER, regulator	1
613*	---	NEEDLE, regulator	1
614	---	BRACKET, flow control	1
615	15F806	PLUG, regulator	1
616*	168881	GASKET; acetal	1
617*	178321	DIAPHRAGM, regulator	1
618	249179	BOARD, circuit assembly	1
619	120013	VALVE, proportional, V/P; includes items 619a and 619b	1
619a	---	• SCREW, cap, socket-hd; M3 x 0.5 x 44 mm	2
619b	---	• O-RING, mounting	2
620‡	---	SENSOR, pressure control; includes ptfе o-ring	1
621	107295	SCREW, machine, pan-hd; 4-40 x 3/16 in. (5 mm)	4
622	104765	PLUG, pipe; 1/8 ptf	1
623*	192387	PIN, dowel	2
624	15G613	WIRE HARNESS, flow control	1

* Parts included in Regulator Service Kit 15G843. Purchase separately.

‡ Parts included in Sensor Service Kit 15G867. Purchase separately.

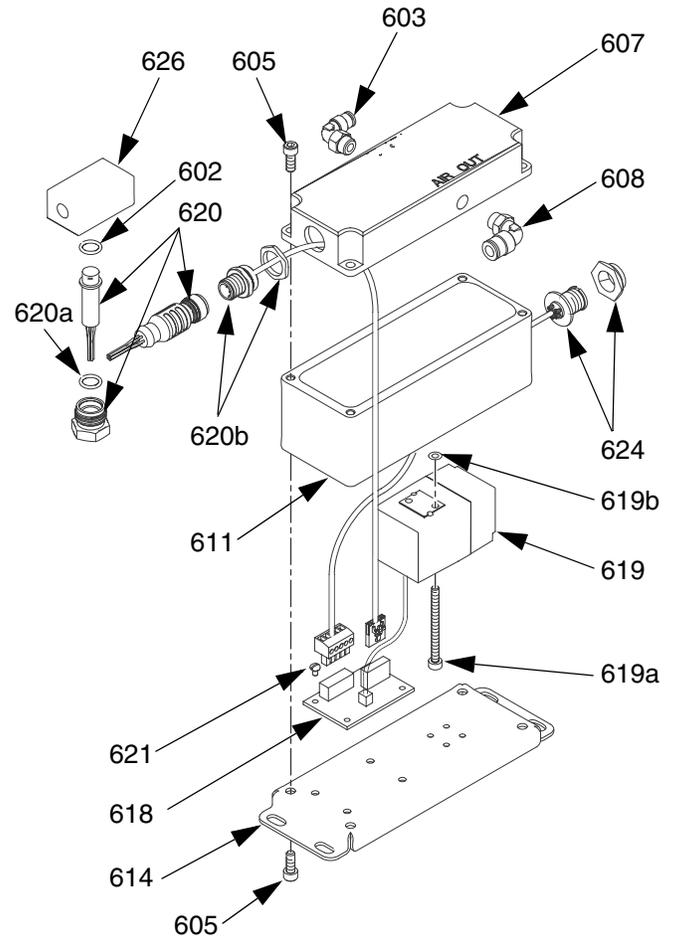
Parts labeled --- are not available separately.



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24H989 Flow Control Module for Remote Fluid Regulator

Ref. No.	Part No.	Description	Qty
602	---	O-RING; chemically resistant fluoroelastomer	1
603	112698	ELBOW, air inlet; 1/8 npt(m) x 1/4 in. (6 mm) OD tube	1
605	---	SCREW, cap, socket-hd; 10-32 x 1/2 in. (13 mm)	8
607	---	PLATE, air, regulator	1
608	114151	ELBOW, air outlet; 1/8 npt(m) x 5/32 in. (4 mm) OD tube	1
611	---	HOUSING, flow control	1
614	---	BRACKET, flow control	1
618	249179	BOARD, circuit assembly	1
619	120013	VALVE, proportional, V/P; includes items 619a and 619b	1
619a	---	• SCREW, cap, socket-hd; M3 x 0.5 x 44 mm	2
619b	106560	• O-RING, mounting, 007	2
620	24R099	KIT, sensor, pressure control; includes 620a and 620b	1
620a	---	• O-RING; ptfe	1
620b	---	• WIRE HARNESS, pressure sensor	1
621	107295	SCREW, machine, pan-hd; 4-40 x 3/16 in. (5 mm)	4
624	15G613	WIRE HARNESS, flow control	1
626	---	FITTING, pressure sensor; two 1/8 npt(f) ports	1



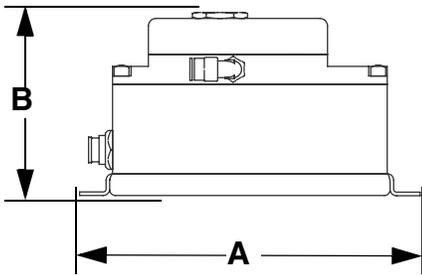
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Parts labeled --- are not available separately.

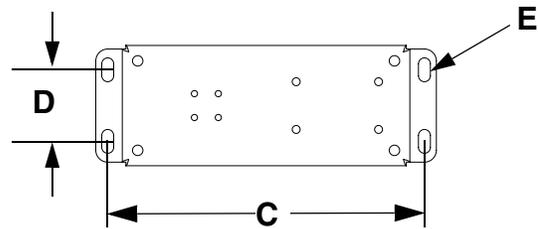
Dimensions and Mounting Hole Layouts

Module	A Overall Length in. (mm)	Overall Width in. (mm)	B Overall Height in. (mm)	Mounting Dimensions, Length (C) x Width (D) in. (mm)	E Mounting Hole Size in. (mm)	Weight lb (kg)
249849 Flow Control Module	7.13 (181.1)	2.52 (64.0)	3.86 (98.0)	6.63 x 1.50 (168.4 x 38.1)	0.25 (6.3)	3.9 (1.78)
24H989 Flow Control Module	7.13 (181.1)	2.52 (64.0)	3.86 (98.0)	6.63 x 1.50 (168.4 x 38.1)	0.25 (6.3)	2.5 (1.13) [includes pressure sensor and fitting]

249849 Flow Control Module

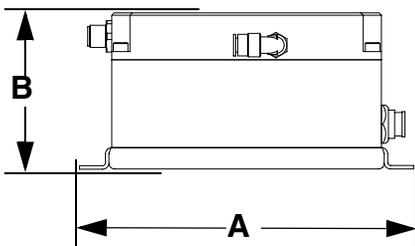


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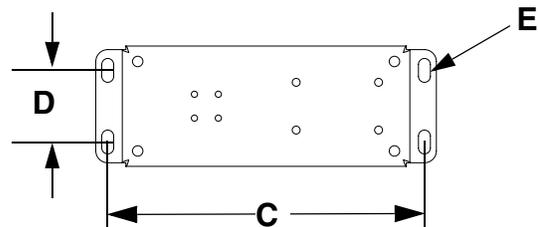


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24H989 Flow Control Module



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Technical Data

Maximum fluid working pressure	190 psi (1.31 MPa, 13.1 bar)
Maximum working air pressure.	100 psi (0.7 MPa, 7 bar)
Air supply	75 - 100 psi (0.5 - 0.7 MPa, 5.2 - 7 bar)
Air inlet size	1/8 npt(m) x 1/4 in. (6 mm) OD tube
Air outlet size (Model 24H989 only)	1/8 npt(m) x 5/32 in. (4 mm) OD tube
Fluid inlet and outlet sizes	1/8 npt(f)
Wetted parts	<i>Model 249849</i> : 303 Stainless Steel, chemically resistant fluoro-elastomer, titanium, ptfе <i>Model 24H989</i> : 316 Stainless Steel, chemically resistant fluoro-elastomer, titanium, ptfе

Graco Standard Warranty

Graco warrants all equipment referenced in this document which is manufactured by Graco and bearing its name to be free from defects in material and workmanship on the date of sale to the original purchaser for use. With the exception of any special, extended, or limited warranty published by Graco, Graco will, for a period of twelve months from the date of sale, repair or replace any part of the equipment determined by Graco to be defective. This warranty applies only when the equipment is installed, operated and maintained in accordance with Graco's written recommendations.

This warranty does not cover, and Graco shall not be liable for general wear and tear, or any malfunction, damage or wear caused by faulty installation, misapplication, abrasion, corrosion, inadequate or improper maintenance, negligence, accident, tampering, or substitution of non-Graco component parts. Nor shall Graco be liable for malfunction, damage or wear caused by the incompatibility of Graco equipment with structures, accessories, equipment or materials not supplied by Graco, or the improper design, manufacture, installation, operation or maintenance of structures, accessories, equipment or materials not supplied by Graco.

This warranty is conditioned upon the prepaid return of the equipment claimed to be defective to an authorized Graco distributor for verification of the claimed defect. If the claimed defect is verified, Graco will repair or replace free of charge any defective parts. The equipment will be returned to the original purchaser transportation prepaid. If inspection of the equipment does not disclose any defect in material or workmanship, repairs will be made at a reasonable charge, which charges may include the costs of parts, labor, and transportation.

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Graco's sole obligation and buyer's sole remedy for any breach of warranty shall be as set forth above. The buyer agrees that no other remedy (including, but not limited to, incidental or consequential damages for lost profits, lost sales, injury to person or property, or any other incidental or consequential loss) shall be available. Any action for breach of warranty must be brought within two (2) years of the date of sale.

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For the latest information about Graco products, visit www.graco.com. For patent information, see www.graco.com/patents.

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Original instructions. This manual contains English. MM 3A2097

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