STAINLESS STEEL, WATERBASE-COMPATIBLE, HIGH-PRESSURE
Fluid Pressure Regulators

6000 psi (41 MPa, 414 bar) Maximum Fluid Inlet Pressure

238889 with EZ Flush gauge port plug
238890 with fluid pressure gauge
Spring-Operated Regulator, Medium Range
500 to 3000 psi (3.4 to 21 MPa, 34 to 207 bar)
Regulated Fluid Outlet Pressure

238891 with EZ Flush gauge port plug
238892 with fluid pressure gauge
Spring-Operated Regulator, High Range
3000 to 5000 psi (21 to 34 MPa, 207 to 345 bar)
Regulated Fluid Outlet Pressure

238893 with EZ Flush gauge port plug
238894 with fluid pressure gauge
Air-Operated Regulator, Full Range
100 psi (0.7 MPa, 7 bar) Maximum Inbound Air Pressure
500 to 4000 psi (3.4 to 28 MPa, 34 to 276 bar)
Regulated Fluid Outlet Pressure

244734 with EZ Flush gauge port plug
Air-Operated Regulator, Full Range
100 psi (0.7 MPa, 7 bar) Maximum Inbound Air Pressure
500 to 4000 psi (3.4 to 28 MPa, 34 to 276 bar)
Regulated Fluid Outlet Pressure

U.S. Patent No. 4942899

Model 238890, 238892
(spring operated)

Model 238894
(air operated)
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### Symbols

#### Warning Symbol

⚠️ **WARNING**

This symbol alerts you to the possibility of serious injury or death if you do not follow the instructions.

#### Caution Symbol

⚠️ **CAUTION**

This symbol alerts you to the possibility of damage to or destruction of equipment if you do not follow the instructions.

---

⚠️ **WARNING**

**EQUIPMENT MISUSE HAZARD**

Equipment misuse can cause the equipment to rupture or malfunction and result in serious injury.

- This equipment is for professional use only.
- Read all instruction manuals, tags, and labels before operating the equipment.
- Use the equipment only for its intended purpose. If you are not sure, call your Graco distributor.
- Do not alter or modify this equipment. Use only genuine Graco parts and accessories.
- Check equipment daily. Repair or replace worn or damaged parts immediately.
- Do not exceed the maximum working pressure of the lowest rated component in your system. Do not exceed **6000 psi (41 MPa, 414 bar)** maximum fluid inlet pressure of the regulator or the maximum working pressure of the lowest-rated component in your system.
- Use fluids and solvents which are compatible with the equipment wetted parts. Refer to the **Technical Data** section of all equipment manuals. Read the fluid and solvent manufacturer’s warnings.
- Always wear protective eyewear, gloves, clothing, and respirator as recommended by the fluid and solvent manufacturer.
- Comply with all applicable local, state, and national fire, electrical, and safety regulations.
WARNING

INJECTION HAZARD

Spray from the gun, leaks, or ruptured components can inject fluid into your body and cause extremely serious injury, including the need for amputation. Fluid splashed in the eyes or on the skin can also cause serious injury.

- Fluid injected into the skin might look like just a cut, but it is a serious injury. Get immediate medical attention.
- Do not point the gun at anyone or at any part of the body.
- Do not put your hand or fingers over the spray gun tip or extruder gun tip.
- Do not stop or deflect leaks with your hand, body, glove or rag.
- Always have the tip guard and the trigger guard on the gun when spraying.
- Check the gun diffuser operation weekly. Refer to the gun manual.
- Be sure the gun trigger safety operates before spraying.
- Lock the gun trigger safety when you stop dispensing.
- Follow the Pressure Relief Procedure on page 5 if the spray tip clogs and before cleaning, checking, or servicing the equipment.
- Tighten all fluid connections before operating the equipment.
- Check the hoses, tubes, and couplings daily. Replace worn or damaged parts immediately. Do not repair high pressure couplings; you must replace the entire hose.
- Fluid hoses must have spring guards on both ends to help protect them from rupture caused by kinks or bends near the couplings.

HALOGENATED HYDROCARBON HAZARD

Never use 1,1,1–trichloroethane, methylene chloride, other halogenated hydrocarbon solvents, or fluids containing such solvents in these regulators. In the unlikely event that there is a diaphragm failure and the vent hole in the aluminum spring cap is plugged, a serious chemical reaction could occur, with the possibility of explosion, which could cause death, serious injury, and/or substantial property damage.

Consult your fluid suppliers to ensure that the fluids used are compatible with aluminum parts.

TOXIC FLUID HAZARD

Graco does not manufacture or supply the reactive chemical components that may be used in this equipment and is not responsible for injury or property loss, damage, expense or claims (direct or consequential) that arise from the use of such chemical components.
Installation

The installations shown in Fig. 1 are only a guide for selecting and installing a circulating or direct system; they are not actual system designs. Contact your Graco distributor for assistance in designing a system to suit your needs.

Multiple Circulating Spray Station

Key
A Air regulator
B Bleed-type master air valve
C Pump
D Fluid filter and drain valve
E Main fluid supply line
F Gun fluid supply line
G Fluid regulator
H with fluid pressure gauge (H)
J Air-assisted airless spray gun
K Back pressure valve
L Fluid return line
M Main circulating line
N Fluid supply container
P Drain valve

NOTE: Before you install the regulator, thoroughly flush the system to remove metal chips and other contaminants. A fluid filter (D) of 60-mesh or finer should always be installed upstream of the regulator.

Connections
Install the fluid regulator (G) in the spray gun fluid supply line (F), as shown in the typical installation drawings on this page. Connect only one spray gun or dispensing valve to each fluid regulator. Apply pipe sealant to the male pipe threads, and connect the fluid supply line (F) to the fluid regulator’s 3/8 npt(f) inlet. Connect the line from the gun (J) to the fluid regulator’s 3/8 npt(f) outlet. Install the gauge or plug into the 1/4 npt(f) gauge port.

Make sure the direction of fluid flow agrees with the IN and OUT markings on the regulator body.

Flush the System
The regulator was tested in lightweight oil. Flush the entire system with a solvent compatible with the fluid being dispensed. Then test the system.

Mounting Bracket
A Mounting Bracket is available for mounting the regulator. Order Part No. 222515 for the bracket and mounting hardware.

Fig. 1


**Installation**

**Grounding the System**

> **WARNING**
>
> **FIRE AND EXPLOSION HAZARD**
>
> Before operating the fluid pressure regulator, ground the system as explained below.

**Pump:** Use a ground wire and clamp. Loosen the grounding lug locknut (W) and washer (X). Insert one end of a 1.5 mm² (12 ga) minimum ground wire (Y) into the slot in lug (Z) and tighten the locknut securely. Connect the other end of the wire to a true earth ground. Order Part No. 237569 Ground Wire and Clamp.

**Air and fluid hoses:** Use only electrically conductive hoses.

**Heaters, if used:** See the heater instruction manual.

**Air compressor:** Follow manufacturer's recommendations.

**Spray gun:** Ground through connection to a properly grounded fluid hose and pump.

**Fluid supply container:** Follow your local code.

**Object being sprayed:** Follow your local code.

**Solvent pails used when flushing:** Follow your local code. Use only metal pails, which are conductive, placed on a grounded surface. Do not place the pail on a nonconductive surface, such as paper or cardboard, which interrupts the grounding continuity.

To maintain grounding continuity when flushing or relieving pressure, hold a metal part of the spray gun firmly to the side of a grounded metal pail, then trigger the gun.

**Pressure Relief Procedure**

> **WARNING**
>
> **INJECTION HAZARD**
>
> The system pressure must be manually relieved to prevent the system from starting or spraying accidentally. Fluid under high pressure can be injected through the skin and cause serious injury. To reduce the risk of an injury from injection, splashing fluid, or moving parts, follow the Pressure Relief Procedure whenever you

- Are instructed to relieve the pressure
- Stop spraying
- Check or service any of the system equipment
- Install or clean the spray tips
Adjusting the System Pressure

**CAUTION**

- The new system **must** be cleaned and tested thoroughly before admitting fluid to the regulator to avoid contaminants clogging or damaging the regulator.
- **Always** use the lowest possible air and fluid pressures for your application. High pressures can cause premature spray tip, regulator, and pump wear.

**NOTES:**

- The fluid pressure regulator controls pressure downstream from its outlet.
- If you are using an accessory fluid pressure gauge (H in Fig. 1), relieve the spray gun line pressure after you reduce the regulator pressure to ensure a correct gauge reading.

1. Make a note of the proper way to adjust pressure, from the following descriptions:
   - On a spring-operated regulator, turn the adjusting screw (10) counter-clockwise to decrease pressure and clockwise to increase pressure to the spray gun or extruder gun.
   - On an air-operated regulator, increase supply air pressure to increase fluid pressure. Decrease supply air pressure to decrease fluid pressure. Supply air up to 100 psi (0.7 MPa, 7 bar). See the chart on page 19 for air versus fluid pressure.

2. Adjust the pump air pressure and fluid regulator for the desired spray pattern. Use the lowest possible air and fluid pressures for your application. For optimum performance, the inbound fluid pressure should be at least 500 psi (3.4 MPa, 34 bar) above the regulated fluid pressure.

   **NOTE:** Do not exceed a 2000 psi (14 MPa, 138 bar) pressure drop between the regulator inlet and outlet. Excessive pressure drop will cause premature regulator component wear.

   For example: With 3500 psi (24.5 MPa, 245 bar) to the regulator, the minimum regulated outlet pressure would be 1500 psi (10.5 MPa, 105 bar).

3. **In a circulating system,** also adjust the back pressure valve (K).

4. Record all the settings for future reference.

**Cleaning the Regulator**

**Do not** allow fluid to settle in the system.

Flush the regulator whenever the rest of the system is flushed. Before you flush the system, follow the **Pressure Relief Procedure** on page 5, then completely decrease the regulated fluid pressure. See step 1 in **Adjusting the System Pressure**, at left.

Before you remove the regulator for thorough cleaning and inspection, follow the **Pressure Relief Procedure** on page 5. Then remove the regulator, clean it, and inspect all parts.
**WARNING**

To reduce the risk of serious bodily injury, including fluid injection, splashing in the eyes or on the skin, or injury from moving parts, always follow the **Pressure Relief Procedure** on page 5 whenever the pump is shut off, before installing, cleaning, adjusting, removing, or servicing the valve or any part of the system, and whenever you stop dispensing.

**NOTE:** Check all possible solutions in the chart below before you disassemble the regulator.

<table>
<thead>
<tr>
<th>Problem</th>
<th>Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>No pressure regulation</td>
<td>Damaged diaphragm</td>
<td>Replace diaphragm.</td>
</tr>
<tr>
<td></td>
<td>Leaking or dirty seat</td>
<td>Replace cartridge, or clean seat.</td>
</tr>
<tr>
<td>No fluid flow</td>
<td>Damaged valve actuator</td>
<td>Replace valve actuator.</td>
</tr>
<tr>
<td>Pressure creeps above setting</td>
<td>Metal chip or contamination between ball and seat</td>
<td>Replace cartridge, or clean seat area.</td>
</tr>
<tr>
<td></td>
<td>Damaged diaphragm</td>
<td>Replace diaphragm.</td>
</tr>
<tr>
<td></td>
<td>Damaged o-ring or improper seal</td>
<td>Replace the o-ring under the seat.</td>
</tr>
<tr>
<td></td>
<td>Damaged or clogged air regulator or line (air-operated regulator only)</td>
<td>Clear obstruction in line. Service regulator if necessary.</td>
</tr>
<tr>
<td></td>
<td>Leaking or dirty seat</td>
<td>Replace cartridge, or clean seat.</td>
</tr>
<tr>
<td></td>
<td>Large change in inlet pressure</td>
<td>Stabilize regulator inlet pressure.</td>
</tr>
<tr>
<td>Pressure drops below setting</td>
<td>Empty/clogged supply line</td>
<td>Fill/flush supply line.</td>
</tr>
<tr>
<td></td>
<td>Damaged or clogged air regulator or line (air-operated regulator only)</td>
<td>Clear obstruction in line. Service regulator if necessary.</td>
</tr>
<tr>
<td></td>
<td>Using valve beyond its rated flow capacity</td>
<td>Install valve for each spray gun or dispensing valve.</td>
</tr>
<tr>
<td></td>
<td>Large change in inlet pressure</td>
<td>Stabilize regulator inlet pressure.</td>
</tr>
<tr>
<td>Fluid leaks from spring housing</td>
<td>Loose fluid housing</td>
<td>Tighten the four cap screws.</td>
</tr>
<tr>
<td></td>
<td>Damaged diaphragm</td>
<td>Replace diaphragm.</td>
</tr>
<tr>
<td>Chatter</td>
<td>Excessive pressure differential between pump and gun</td>
<td>Reduce pump pressure to not more than 2000 psi (14 MPa, 138 bar) greater than required gun pressure.</td>
</tr>
<tr>
<td></td>
<td>Excessive flow rate</td>
<td>Reduce fluid flow through regulator. Connect only one spray gun or dispensing valve to each fluid regulator.</td>
</tr>
</tbody>
</table>
Service

Service Kits

For the Fluid Diaphragm Repair Kit, order Part No. 238747. Parts included in this kit are marked with an asterisk, for example (7*), in the Parts Drawings and Lists on pages 12 and 14.

For the Cartridge Repair Kit, order Part No. 238748. Parts included in this kit are marked with a dagger, for example (3†), in the Parts Drawings and Lists on pages 12 and 14.

To convert from a spring-operated to an air-operated regulator, order the Air-Operated Conversion Kit, Part No. 238749. Parts included in this kit are marked with a double dagger, for example (37‡), in the Parts Drawings and Lists on pages 12 and 14.

NOTE: To convert from a medium-pressure-range, spring-operated model to a high-pressure-range, spring-operated model (or vice versa), order the appropriate spring (11) from the Parts List on page 13.

Replacing the Fluid Diaphragms

See Fig. 3, and follow the steps below. For parts that are not called out in Fig. 3, see the Parts Drawing on page 12.

1. Relieve the pressure, and remove the regulator from the fluid line.

   WARNING

   To reduce the risk of serious injury whenever you are instructed to relieve pressure, always follow the Pressure Relief Procedure on page 5.

2. Turn the adjusting screw (10) counter-clockwise until it is loose to fully relieve the spring tension.

3. Remove the four base housing screws (9) from the base housing (4), and pull the base housing free of the backing plate (8).

4. Remove the diaphragm and valve actuator subassembly (1, 7, 12, 13, and 19).

5. Clean and inspect the bore in the backing plate (8) for wear, and replace it if necessary.

6. Remove the o-ring (17) from the groove in the base housing (4), clean and inspect the base housing, and replace if necessary.

7. Install a new o-ring (17) in the groove in the base housing (4).

8. Lightly lubricate the backing plate (8) bore and plunger (7) with a lithium-based grease.

9. Install the new, pre-assembled diaphragm subassembly into the backing plate (8).

   NOTE: The diaphragms will have a bow in them before you install them.

10. Align the holes in the diaphragms with the backing plate (8).

11. Install the backing plate/diaphragms assembly over the base housing (4). Hold the backing plate (8) tightly against the base housing, and install the four base housing screws (9).

12. Torque the base housing screws (9) first to 20 to 25 ft-lb (27 to 34 N-m), then to 30 to 35 ft-lb (41 to 48 N-m) in the sequence shown in Fig. 3.
Service

Replacing the Cartridge

See Fig. 3, and follow the steps below. For parts that are not called out in Fig. 3, see the Parts Drawing on page 12.

### CAUTION

Handle the hard carbide parts, which are the ball (16), valve actuator (1), and valve seat (14), carefully to avoid damaging them.

1. Relieve the pressure.

### WARNING

To reduce the risk of serious injury whenever you are instructed to relieve pressure, always follow the Pressure Relief Procedure on page 5.

2. Remove the cartridge assembly by loosening the valve housing (5) with a 6mm hex wrench and pulling the cartridge assembly out of the base housing (4).

3. Inspect and clean the internal walls of the base housing (4).

**NOTE:** Be careful that you do not scrape or gouge the internal walls of the base housing, because they are sealing surfaces.

4. Re-torque the retaining nut (3) to 140 to 160 in-lb (16 to 18 N-m).

**NOTE:** You must re-torque the retaining nut before you install it in the base housing in step 5.

5. Install the new cartridge assembly in the base housing (4), and torque the valve housing (5) to 30 to 35 ft-lb (41 to 48 N-m).

**NOTE:** The valve seat (14) is double sided and may be reversed for extended life. The o-ring (15) and ball (16) must be replaced.

---

Fig. 3

---

Torque Sequence for Regulator Base Housing Screws (9)
Service

Installing the Air-Operated Conversion Kit
(See Parts Drawings on pages 12–14)

1. Relieve the pressure.

   **WARNING**
   To reduce the risk of serious injury whenever you are instructed to relieve pressure, always follow the Pressure Relief Procedure on page 5.

2. On the spring–operated regulator, turn the adjusting screw (10) counter-clockwise until it is loose enough to fully relieve the spring tension.

3. Use a strap wrench or an equivalent wrench to loosen and remove the spring cover (2), spring retainers (6 and 27), and spring (11).

4. Place the stabilizing spring (22) of the air–operated regulator on the piston rod (6). Install the conversion kit assembly onto the backing plate (8). Torque to 15 to 20 ft-lb (20 to 27 N-m).

5. Plumb an air line up to the 1/4 npt(m) threads of the nipple (35) on the air regulator.

6. Flush the system, and set the regulator pressure by following the procedure in Adjusting the System Pressure on page 6.
Parts Drawing
Models 238889, 238890, 238891, and 238892

238889 with EZ Flush gauge port plug
238890 with fluid pressure gauge
Spring-Operated Regulator
500 to 3000 psi (3.4 to 21 MPa, 34 to 207 bar)
Regulated Fluid Outlet Pressure

238891 with EZ Flush gauge port plug
238892 with fluid pressure gauge
Spring-Operated Regulator
3000 to 5000 psi (21 to 34 MPa, 207 to 345 bar)
Regulated Fluid Outlet Pressure

**Torque Sequence for Regulator Base Housing Screws (9)**

- Torque to 25 to 30 in-lb (2.8 to 3.4 N-m).
- Torque to 140 to 160 in-lb (16 to 18 N-m).
- Torque to 10 to 20 ft-lb (14 to 27 N-m).
- Torque to 30 to 35 ft-lb (41 to 48 N-m).
- Torque first to 20 to 25 ft-lb (27 to 34 N-m), then to 30 to 35 ft-lb (41 to 48 N-m) in the sequence shown in DETAIL.
- Apply lithium-based grease when reassembling.
- Apply a fluid-compatible grease to aid in reassembly.

Apply a fluid-compatible grease to aid in reassembly.
# Parts List

## Models 238889, 238890, 238891, and 238892

<table>
<thead>
<tr>
<th>Ref. No.</th>
<th>Part No.</th>
<th>Description</th>
<th>Qty.</th>
<th>Ref. No.</th>
<th>Part No.</th>
<th>Description</th>
<th>Qty.</th>
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<tbody>
<tr>
<td>1</td>
<td>*</td>
<td>ACTUATOR</td>
<td>1</td>
<td>18†</td>
<td>107079</td>
<td>O-RING, packing; PTFE® 019</td>
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<td>2</td>
<td>238858</td>
<td>COVER, spring</td>
<td>1</td>
<td>19</td>
<td>*</td>
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<tr>
<td>3†</td>
<td>191577</td>
<td>NUT, spring retainer</td>
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<td>20†</td>
<td>109450</td>
<td>O-RING, packing; PTFE® 016</td>
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<td>4</td>
<td>191578</td>
<td>BASE HOUSING; sst</td>
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<td>SPRING, compression</td>
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<td>191579</td>
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<td>WRENCH, hex; 6 mm (not shown)</td>
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<td>6</td>
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<td>PLUNGER, spring</td>
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<td>PLATE, backing</td>
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<td>9</td>
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<td>GAUGE, pressure for Model 238892</td>
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<td>238896</td>
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<td>16†</td>
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<td>17*</td>
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<td>O-RING, packing; PTFE® 025</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

* Included in Fluid Diaphragm Repair Kit 238747
† Included in Cartridge Repair Kit 238748
‡ To convert to a higher or lower pressure range, order one of the following compression springs:

- 113626 500 to 3000 psi (3.4 to 21 MPa, 34 to 207 bar)
- 113626 3000 to 5000 psi (21 to 34 MPa, 207 to 345 bar)
Parts Drawing
Models 238893 and 238894

†35
†31
†33
†34
†28
†37
†30
†36
†29
†2
†6
†32‡
†11‡
8
7*
7
12*
13*
19*
1*
17*
3†
14†
15†
20†
18†
16†
21†
5†
4
38
39
25
2
1
3
4
Torque Sequence for Regulator Base Housing Screws (9)

†35 Torque to 25 to 30 in-lb (2.8 to 3.4 N-m).
†31 Torque to 140 to 160 in-lb (16 to 18 N-m).
†33 Torque to 15 to 20 ft-lb (20 to 27 N-m).
†34 Torque to 30 to 35 ft-lb (41 to 48 N-m).
†36 Torque first to 20 to 25 ft-lb (27 to 34 N-m), then to 30 to 35 ft-lb (41 to 48 N-m) in the sequence shown in DETAIL.
†30 Torque to 30 to 33 in-lb (3.4 to 3.7 N-m) in alternating pattern, then torque to 68 to 72 in-lb (7.7 to 8.1 N-m) in alternating pattern.
†32‡ Apply lithium-based grease when reassembling.

238893 with EZ Flush gauge port plug
238894 with fluid pressure gauge

Air-Operated Regulator
100 psi (0.7 MPa, 7 bar)
Maximum Inbound Air Pressure
500 to 4000 psi (3.4 to 28 MPa, 34 to 276 bar)
Regulated Fluid Outlet Pressure
## Parts List
### Models 238893 and 238894

<table>
<thead>
<tr>
<th>Ref. No.</th>
<th>Part No.</th>
<th>Description</th>
<th>Qty.</th>
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<th>Part No.</th>
<th>Description</th>
<th>Qty.</th>
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<td>1</td>
<td>*</td>
<td>ACTUATOR</td>
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<td>21†</td>
<td>111858</td>
<td>SPRING, compression</td>
<td>1</td>
</tr>
<tr>
<td>2‡</td>
<td>191584</td>
<td>HOUSING ADAPTER</td>
<td>1</td>
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</tbody>
</table>

* Included in Fluid Diaphragm Repair Kit 238747
† Included in Cartridge Repair Kit 238748
‡ Included in Air-Operated Conversion Kit 238749
Torque to 25 to 30 in-lb (2.8 to 3.4 N-m).
2 Torque to 140 to 160 in-lb (16 to 18 N-m).
3 Torque to 15 to 20 ft-lb (20 to 27 N-m).
4 Torque to 30 to 35 ft-lb (41 to 48 N-m).
5 Torque to 30 to 33 in-lb (3.4 to 3.7 N-m) in alternating pattern, then torque to 68 to 72 in-lb (7.7 to 8.1 N-m) in alternating pattern.
6 Apply lithium-based grease when reassembling.

244734 with EZ Flush gauge port plug
Air-Operated Regulator, Full Range
100 psi (0.7 MPa, 7 bar)
Maximum Inbound Air Pressure
500 to 4000 psi (3.4 to 28 MPa, 34 to 276 bar)
Regulated Fluid Outlet Pressure
## Parts List
### Model 244734

<table>
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<tr>
<th>Ref. No.</th>
<th>Part No.</th>
<th>Description</th>
<th>Qty.</th>
<th>Ref. No.</th>
<th>Part No.</th>
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Technical Data

Model 238890
spring operated, with fluid pressure gauge

Model 238891
spring operated, with EZ Flush plug

Model 238892
spring operated, with fluid pressure gauge

Model 238893
air operated, with EZ Flush plug

Model 238889
spring operated, with EZ Flush plug

Model 238890
spring operated, with EZ Flush plug

Maximum fluid inlet pressure
6000 psi (41 MPa, 414 bar)

Regulated fluid outlet pressure range
500–3000 psi (3.4–21 MPa, 34–207 bar)

Maximum inbound air pressure
—

Fluid inlet/outlet size
3/8 npt(f)

Gauge port size
1/4 npt(f)

Fluid pressure gauge (Models 238890, 238892, and 238894)
0–3000 psi (0–21 MPa, 0–207 bar)

Maximum flow (in 65 cp material)
2 gpm (7.6 lpm)

Maximum fluid viscosity
up to 15,000 cp

Maximum operating temperature
120° F (50° C)

Weight (with gauge)
7.0 lb (3.2 kg)

Fluid diaphragms
PTFE® with Hytrel® backing

Wetted parts (all models)
304, 316, 17–4 passivated SST, nickel– and cobalt–bound tungsten carbide, PTFE®

Adjustment tool (spring–operated models)
6 mm hex wrench

PTFE® and Hytrel®

Air Requirements for Air-Operated Regulators (Models 238893 and 238894)

The following table shows the approximate air pressure needed to regulate the air-operated regulator to a given fluid outlet pressure.

<table>
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<tr>
<th>Air Pressure</th>
<th>Regulated Fluid Outlet Pressure</th>
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<tr>
<td>psi</td>
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<td>28</td>
<td>1000</td>
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<td>49</td>
<td>2000</td>
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<td>70</td>
<td>3000</td>
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<td>90</td>
<td>4000</td>
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Performance Chart

Fluid Pressure Regulators,
Models 238889 through 238894

Test Conditions
Regulators tested in oil at 70°F (21°C) and at 6000 psi (41 MPa, 414 bar) inbound fluid pressure.

Key
- 65 cp oil
- 3000 cp oil
Dimensional Drawings

Models 238889 and 238891 with port plug
Models 238890 and 238892 with gauge
(spring operated)
A  Height:  8.9 in. (225 mm)
B  Diameter of base housing:  2.65 in. (70 mm)

Model 238893 with port plug
Model 238894 with gauge
(air operated)
A  Height:  10.0 in. (254 mm)
B  Diameter of diaphragm cover:  7.0 in. (179 mm)

Model 244734
(air operated)
A  Height:  8.1 in. (206 mm)
B  Diameter of diaphragm cover:  7.0 in. (179 mm)
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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 by an authorized Graco distributor 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.

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612–623–6921
612–378–3505 Fax

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