

# DATA SHEET

## PRESSURE REGULATOR



**Stainless Steel**      **7410**  
**Model:**



### COMMON SPECIFICATIONS

	U.S.	Metric
Flow Range	10–100 gpm	38–378 lpm
Pressure Range	100–1500 psi	6.9–103 bar
Maximum Temperature	240° F	115° C
Inlet/Outlet Ports	1½" NPT(F)	1½" NPT(F)
Bypass Port	2" NPT(F)	2" NPT(F)
Accessory Port	¼" NPT(F)	¼" NPT(F)
Weight	14.8 lbs	6.7 kg
Dimensions	3.25 x 11.42"	82.6 x 290 mm

### FEATURES

- Flow-through design facilitates easy installation.
- Unique high-velocity design ensures consistent pressure for multiple pump, gun or nozzle installations.
- Stainless steel internal parts enhance durability and compatibility.
- All elastomers are FPM for increased compatibility.
- Adjusting nut allows for easily-calibrated pressure adjustment.
- Multiple regulators can be installed in parallel to handle larger volumes.
- No external moving parts or springs.

## Read all CAUTIONS and WARNINGS before commencing service or operation of any high-pressure system

### SELECTION

This pressure regulator is designed for systems with single or multiple pumps, solenoid (gate) valves, nozzles, and standard or weep guns.

**Note:** For multiple pump systems, it is best to use a pressure regulator, not a pressure-sensitive regulating unloader. The regulator should meet both the desired system flow (combined nozzle flow rate) and the desired system pressure.

**NOTICE:** Operating below the minimum rated flow of the regulator will cause the regulator to cycle. Operating above the maximum rated flow of the regulator will cause premature regulator wear, regulator cycling and wear, preventing the desired system pressure.

### INSTALLATION

This regulator operates properly when mounted in any direction. However, keeping the plumbing to a minimum and the adjusting nut easily accessible is preferred. The preferred mounting location is directly on the pump discharge manifold. Use flexible, high-pressure hose (minimum single wire braid) at least the size of the regulator ports when plumbing to and from the regulator.

Since this is a flow-through design regulator, the inlet and discharge connections are interchangeable and are 1½" NPT(F) ports. An arrow on the label indicates liquid flow in either direction. Plumb into one side for inlet flow from pump and plumb opposite side to the discharge line with spray guns, solenoid (gate) valves or nozzles.

The bypass connection is a 2" NPT(F) port. An arrow on the label indicates the direction of flow. Bypass liquid is directed out this port and can be routed to a reservoir (preferred method), drain or pump inlet.

### OPERATION

This pressure regulator maintains system pressure in the discharge line and at the pump head when the trigger gun or the solenoid (gate) valve is closed, or the nozzles are clogged, thus bypassing all unrequired flow. Squeezing the trigger gun or opening the solenoid valve allows for a quick return to established system pressure.

### PRESSURE ADJUSTMENT

**Note:** Pressure is not set at the factory.

1. Setting and adjusting the regulator pressure must be done while system is running.
2. Start the system with regulator backed off to the lowest pressure setting by turning the adjustment nut counterclockwise.
3. Increase the regulator pressure setting by turning the adjustment nut clockwise.
4. Squeeze the trigger and read the pressure on the gauge at the pump.

**Note:** Do not read the pressure at the gun or nozzle.

5. If more pressure is desired, release the trigger, turn adjusting nut one quarter turn in clockwise direction.
6. Squeeze the trigger and read the pressure.
7. Repeat this process until desired system pressure is attained.

**NOTICE:** A minimum of 5% of the flow through the regulator should bypass for proper regulator performance. If the entire regulator flow pumps through the nozzle (zero-bypass), the valve can easily be set for pressure higher than the desired pressure, causing a malfunction or premature wear.

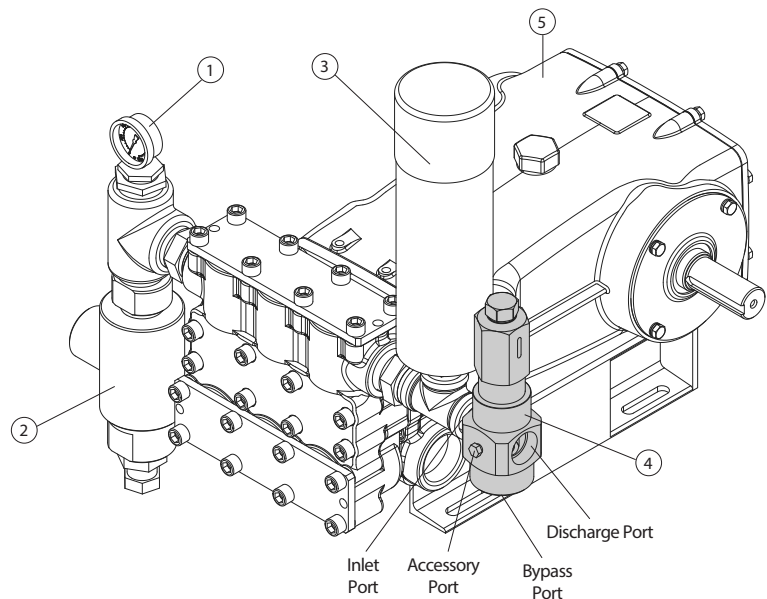
8. If desired system pressure cannot be reached, review TROUBLESHOOTING chart.

**Note:** Do not adjust regulator pressure setting to compensate for a worn nozzle. Check the nozzle as part of the regular maintenance and replace if worn.

**Note:** A secondary pressure safety relief device (e.g., pop-off valve or safety valve) should be used along with this pressure regulator. Final adjustment of the relief valve should relieve at 200 psi above the system operating pressure.

### TYPICAL REGULATOR INSTALLATION

1. Pressure Gauge
2. Relief Valve (Secondary Pressure Relief Device)
3. Pulsation Dampener
4. **Pressure Regulator (Primary Pressure Regulating Device)**
5. Triplex Plunger Pump



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### SERVICING

**CAUTION:** Before commencing with service, shut off drive (electric motor, gas or diesel engine) and turn off water supply to pump. Relieve all discharge line pressure by triggering gun or opening valve in discharge line.

#### Disassembly

1. Disconnect bypass, discharge and inlet plumbing from regulator.
2. Remove regulator from pump.
3. Secure lower body of regulator in a vise with adjusting nut facing up.
4. Remove upper body by unthreading from lower body.
5. Grasp top of piston stem and separate from conical piston.
6. Remove piston stem with stack of spring washers, flat washers and anti-rotating washer and place on flat surface.
7. Remove conical piston with reverse pliers by making contact on the inside diameter of conical piston.

**CAUTION:** Exercise extreme caution to avoid contact and damage to outside diameter and sharp tip of conical piston.

8. Remove piston retainer from lower body of regulator.

**CAUTION:** Exercise extreme caution to avoid contact and damage to the inside diameter of the piston retainer.

9. Remove conical seat from lower body of regulator.

**CAUTION:** Exercise extreme caution to avoid contact and damage to outside diameter and the tapered surface of the seat.

**Note:** With the regulator completely disassembled, inspect lower body sealing areas where the conical seat and piston retainer makes contact for grooves, pitting and wear. If damage is found, replace with new lower body or complete new regulator. If not, proceed with reassembly.

### Reassembly

**Note:** Spring washers and flat washers should be changed as a spring set.

1. Place lower regulator body with bypass port facing down into a vise.
2. Lubricate and install O-ring onto outside diameter of conical seat. Press conical seat down into lower regulator body with small hole facing up.
3. Lubricate and install O-ring onto piston retainer. Press piston retainer with raised surface facing up.
4. Lubricate and install backup ring, then O-ring onto outside diameter of conical piston. Press conical piston with sharp point down into piston retainer.
5. Replace piston stem with stack of spring washers and flat washers into hole of conical piston.
6. Place anti-rotating washer on top of spring set. Align tabs on washer with slots on the upper body.
7. Thread upper body into lower body.
8. Re-install regulator onto pump.
9. Reconnect bypass, discharge and inlet plumbing to regulator.
10. Proceed to PRESSURE ADJUSTMENT.

### TROUBLESHOOTING

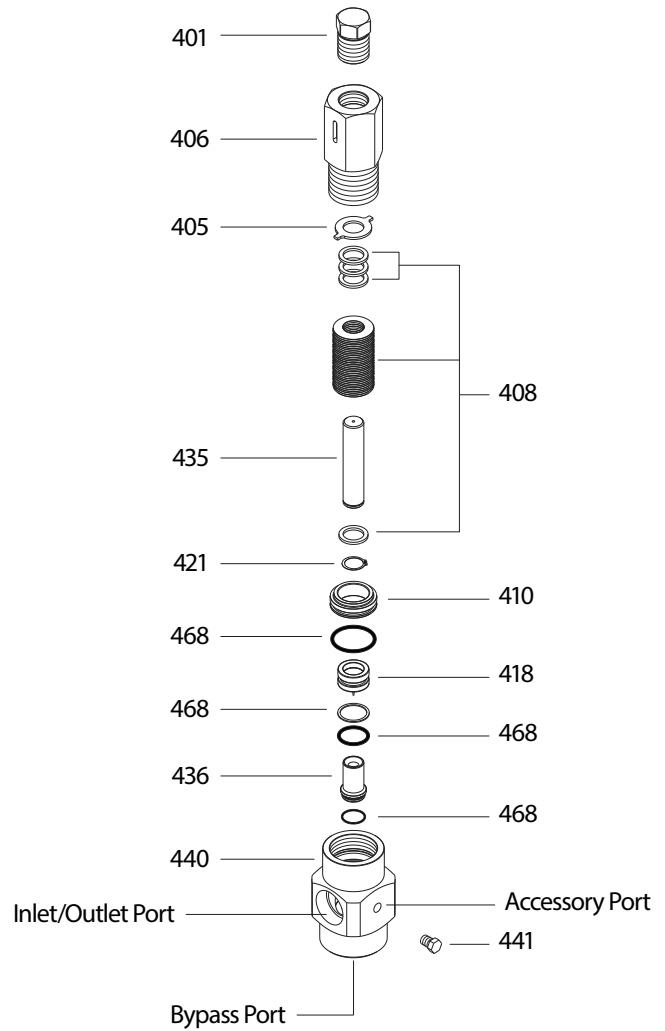
Excessive pressure fluctuations	<ul style="list-style-type: none"><li>• Too little flow for valve specifications</li><li>• Air in system, poor connections</li><li>• Worn low-pressure seals in the pump</li><li>• Worn O-ring in the gun</li></ul>
System will not build up to pressure	<ul style="list-style-type: none"><li>• Worn nozzle</li><li>• Improper nozzle size for system specifications</li><li>• Foreign material trapped in seat</li></ul>
Pressure drop	<ul style="list-style-type: none"><li>• Worn nozzle</li><li>• Worn regulator seat or piston</li><li>• Air in system, poor connections</li><li>• Insufficient flow to pump</li><li>• Filter clogged; check and clean regularly</li></ul>
Pressure spikes while in bypass	<ul style="list-style-type: none"><li>• Minimum bypass of 5% not present</li><li>• Excessive pressure adjustment made to compensate for worn nozzle. Replace nozzle and readjust system pressure</li></ul>
Leakage from regulator vent hole	<ul style="list-style-type: none"><li>• Piston retainer scored, or worn O-ring; service with O-ring kit</li></ul>

## PARTS LIST

ITEM	DESCRIPTION	P/N	MATL	QTY
401	Nut, Adjusting	—	BBR	1
405	Washer, Anti-Rotating	30719	STL	1
406	Body, Upper	—	STNP	1
408	Spring Set	76297	STL	1
410	Retainer, Piston	30665	SS	1
418	Piston, Conical	30730	SSB	1
421	Ring, Retainer	30714	STL R	1
435	Stem, Piston	30739	STL	1
436	Seat, Conical	30750	SSB	1
440	Body, Lower	—	SS	1
441	Plug (1/4" NPT[M])	701077	SS	1
468	<i>Kit, O-Ring</i>	30725	FPM	1

*Italics are optional items. R Components comply with RoHS Directive.*  
 Material Codes (Not Part of Part Number): BB=Brass FPM=Fluorocarbon  
 SS=316SS SSB=316SS Condition B STNP=Steel/Nickel Plated STL=Steel  
 It is recommended to replace spring washers and flat washers as a set.  
 Contact Cat pumps for optional NBR or EPDM O-Ring Kits.

## EXPLODED VIEW



### ⚠ CAUTIONS AND WARNINGS

All high-pressure systems require a primary pressure regulating device (e.g. regulator, unloader) and a secondary pressure relief device (e.g. pop-off valve, relief valve). Failure to install such relief devices could result in personal injury or damage to pump or property. Cat Pumps does not assume any liability or responsibility for the operation of a customer's high-pressure system.

Read all CAUTIONS and WARNINGS before commencing service or operation of any high-pressure system. The CAUTIONS and WARNINGS are included in each Service Manual and with each Accessory Data sheet. CAUTIONS and WARNINGS can also be viewed online at [www.catpumps.com/dynamic-literature/cautions-and-warnings](http://www.catpumps.com/dynamic-literature/cautions-and-warnings) or can be requested directly from Cat Pumps.

### WARRANTY

View the Limited Warranty online at [www.catpumps.com/literature/cat-pumps-limited-warranty](http://www.catpumps.com/literature/cat-pumps-limited-warranty)