

DATA SHEET

HIGH-PRESSURE REGULATOR



Stainless Steel **7720**
Model:



SPECIFICATIONS	U.S.	Metric
Flow Range	0.5–10 gpm	1.9–37.8 lpm
Pressure Range	2,000–10,000 psi	138–689 bar
Maximum Temperature	180° F	82° C
Inlet Port	¼" NPT(F)	¼" NPT(F)
Discharge Port	¼" NPT(F)	¼" NPT(F)
Bypass Port	⅜" NPT(F)	⅜" NPT(F)
Weight	2.85 lbs	1.29 kg
Dimensions	5.82 x 2.25 x 1.63"	147.8 x 57.2 x 41.4 mm

FEATURES

- Compact, flow-through design with bottom bypass port allows for easy installation.
- Stainless steel conical piston and seat extend valve life by providing a consistently smooth flow that reduces wear and compensates for pressure spikes
- Low-bypass allows 95% use of system output.
- Stainless steel internal parts for durability and compatibility.
- Adjusting nut is easily accessible for convenient setting of system pressure.
- Regulator comes standard with FPM elastomers for compatibility with many liquids and temperatures up to 180° F.

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 requirement) and the desired system pressure.

NOTICE: Operation below the minimum rated flow of the regulator will cause cycling. Operation above the maximum rated flow of the regulator causes premature regulator wear, regulator cycling and prevents achieving 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 ideal. The preferred mounting location is directly onto the pump's discharge manifold head.

Since this is a flow-through design regulator, the inlet and discharge connections are interchangeable and are located on either side of the lower body. 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 of this regulator is located on the bottom. An arrow on the label indicates the direction of flow. Bypass liquid is directed out of 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 excess flow. Squeezing the trigger gun or opening the solenoid valve allows for a quick return to system pressure.

PRESSURE ADJUSTMENT

Note: Pressure is not set at the factory.

1. Setting and adjusting the regulator pressure must be done while the system is running.
2. Start the system with the regulator backed off to the lowest pressure setting (counterclockwise).
3. Increase the regulator pressure setting by turning the adjusting 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.

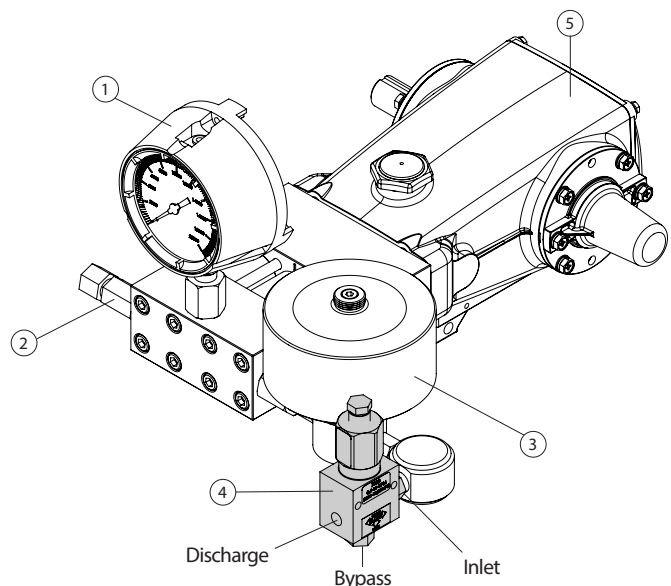
5. If more pressure is desired, release the trigger, turn adjusting nut one-quarter turn in a clockwise direction.
6. Squeeze the trigger and read the pressure again.
7. Repeat this process until desired system pressure is reached.

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.

TYPICAL REGULATOR INSTALLATION

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



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

SERVICING

Disassembly

1. Disconnect bypass, inlet and outlet 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. Remove spring set, anti-rotation washer and piston stem from upper body.
6. Remove lower body from vise and reposition in vise with bypass port facing up.
7. Remove conical seat with O-ring from lower body.

NOTICE: Exercise extreme caution to avoid contact and damage to the tapered surfaces of the conical seat and outside diameter and sharp tip of conical piston.

8. Remove packing seal and piston from lower body.

Note: With the regulator completely disassembled, inspect sealing area where the conical seat and packing seal makes contact within the lower body of the regulator for grooves, pitting and wear.

If damage is found, stop the repair and replace with new lower body or complete new regulator. If not, proceed with reassembly.

Reassembly

1. Place lower regulator body in a vise with the bypass port facing up.
2. Lubricate and install O-ring onto outside diameter of packing seal.
3. Insert piston into packing seal with contour facing same direction as V on seal.
4. Insert packing seal with O-ring and piston down into lower regulator body with tapered surface facing down.
5. Carefully press piston into place until properly seated.
6. Lubricate and install O-ring onto conical seat.
7. Thread conical seat with O-ring into lower body.
8. Remove lower body from vise and reposition into vise with bypass port facing down and larger threaded hole facing up.
9. Carefully press piston stem into lower body.
10. Place spring set onto piston stem and apply a light coat of oil.
11. Place flat washer on top of anti-rotation washer and then place in upper body. Align tabs on anti-rotation washer with slots of the upper body.
12. Slide upper body assembly over spring set and thread into lower body.
13. Re-install regulator onto pump.
14. Reconnect outlet, inlet and bypass plumbing to regulator.
15. Proceed to PRESSURE ADJUSTMENT.

TROUBLESHOOTING

Excessive Pressure Fluctuation	<ul style="list-style-type: none"> • Air in system, poor connections • Worn low-pressure seals in the pump • Worn O-ring in the gun
System will not build up to pressure	<ul style="list-style-type: none"> • Worn nozzle • Improper nozzle size for system specifications • Foreign material trapped in seat
Pressure drop	<ul style="list-style-type: none"> • Nozzle is worn • Worn piston and seat in regulator • Air in system, poor connections • Insufficient flow to pump • Filter clogged. Check and clean regularly • Fatigued or broken spring washers
Pressure spikes while in bypass	<ul style="list-style-type: none"> • Minimum bypass of 5% not present • Excessive pressure adjustment made for worn nozzle. Replace nozzle and reset system pressure
Leakage from regulator vent hole	<ul style="list-style-type: none"> • Worn O-ring around piston service with O-ring kit • Piston Retainer scored. Service with O-ring kit and or top slots, replace retainer • Fatigued or broken spring washers

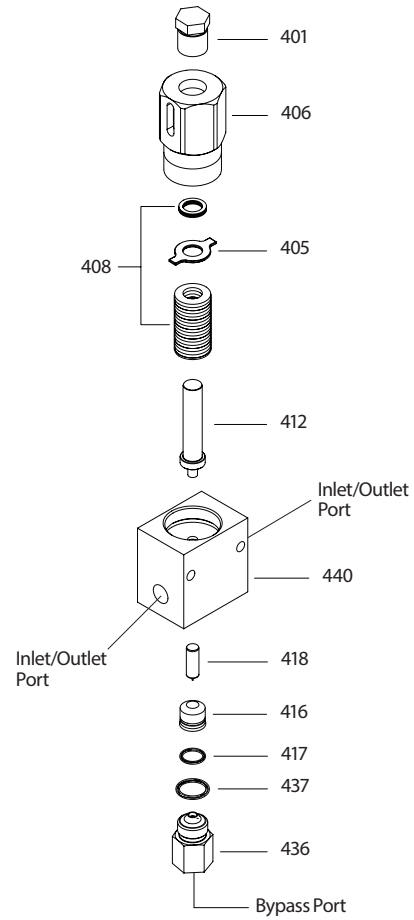
PARTS LIST

ITEM	PN	MATL	DESCRIPTION	QTY
401	30758	BB R	Nut, Adjusting	1
405	34491	STL	Washer, Anti-Rotation	1
406	—	STNP	Body, Upper	1
408	76710	STL	Set, Spring (Includes: Spring and Flat Washers)	1
412	31386	STL R	Stem, Piston	1
416	31444	UHMW	Seal, Packing	1
417	31474	FPM	O-Ring, Seal Packing-90D	1
418	31410	SSB R	Piston, Conical	1
436	31478	SSB R	Seat, Conical	1
437	31491	FPM	O-Ring, Seat-90D	1
440	—	SS R	Body, Lower	1
468	31440	FPM*	Kit, Seal and O-Ring (Includes: 416, 417, 437)	1

Italics are optional items. R Components with RoHS Directive.

* Review material codes for individual items (UHMW generally may be used as an alternative)
 Material Codes (Not Part of Part No.): BB=Brass FPM=Fluorocarbon SS=316SS
 SSB=316SS Condition B STL=Steel STNP=Steel/Nickel Plated
 UHMW=Ultra High Molecular Weight Polyethylene

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 or can be requested directly from Cat Pumps.

WARRANTY

View the Limited Warranty online at www.catpumps.com/literature/cat-pumps-limited-warranty