



## Stainless Steel Pressure Regulator

**Model** 7200

### FEATURES

- Maintains full system pressure while running in by-pass.
- Offers pump protection against pressure fluctuations and system changes.
- Minimum pressure fluctuations with the alternating use of multiple guns and nozzles.
- Top adjusting knob and locking nut to secure exact pressure setting.
- No external moving parts. 316 Stainless Steel and FPM internal parts for temperature and liquid compatibility.

### SPECIFICATIONS

	U.S. Measure	Metric Measure
Flow Range .....	.5-5 GPM	(1.9-19 L/M)
Pressure Range.....	100-1200 PSI	(7-85 BAR)
Maximum Temperature.....	180°F	(82°C)
Inlet Port.....	3/8" NPTF	(3/8" NPTF)
By-pass Port .....	3/8" NPTF	(3/8" NPTF)
Weight.....	1.2 lbs.	(.55 kg)
Dimensions.....	5.9 x 2.0"	(150 x 50.8 mm)

*“Customer confidence is our greatest asset”*

**SELECTION:** This **Pressure Regulator** is designed for systems with **single or multiple** pumps, solenoid (gate) valves, nozzles, standard or “weep” guns.

This regulator maintains established system pressure even when only one of several guns (nozzles) or solenoid (gate) valves is open or a nozzle is clogged, by-passing the unrequired flow.

It returns to established system pressure without delay upon squeezing the trigger gun(s) or opening the solenoid (gate) valve(s).

Select the specific model of regulator to meet both the desired system flow (combined nozzle flow rate requirement) and the desired system pressure.

Exercise caution when matching the system requirements to the regulator flow capacity and pressure rating. Operation below the minimum flow of the regulator causes the regulator to cycle. Operation beyond the rated regulator flow causes premature valve wear, regulator cycling and prevents attaining desired system pressure.

Select a high pressure nozzle sized to provide for both the desired **system flow** and pressure and **regulator by-pass**.

#### CAUTION

A MINIMUM BY-PASS FLOW of 10% of the REGULATOR RATED FLOW CAPACITY is required for proper regulator performance.

When properly set this regulator protects the pump from pressure extremes associated with obstructions in the discharge line, while maintaining the established system pressure. When no flow is required by the system, the regulator by-passes all the system flow. Pressure is held in the discharge line [between the regulator and gun(s) or solenoid valve(s)] **and at the pump** head ready for a quick return to high pressure operation.

**INSTALLATION:** This regulator operates properly when mounted in any direction, however, it is preferred to keep the plumbing to a minimum and the adjustment knob/bolt easily accessible. The best location is directly on the pump discharge manifold head. Plumbing to and from the regulator should be at least the size of the regulator ports and flexible, high pressure hose (minimum single wire braid) is required.

The standard **inlet connection** of this regulator is located at the **side**. The regulator can be mounted directly onto the discharge manifold head or in the discharge line using a “T” fitting.

The **by-pass connection** is on the **bottom** of the regulator and can be plumbed in one of the following methods. Note that prolonged by-pass can result in significant heat build-up and frequent by-pass can result in premature wear to the valve. A **MINIMUM BY-PASS OF 10%** is necessary for the regulator to operate properly.

#### CAUTION

If the entire output is directed through the regulator (zero by-pass) the “cushioning” feature of the by-pass liquid is eliminated and the regulator can malfunction or wear prematurely.

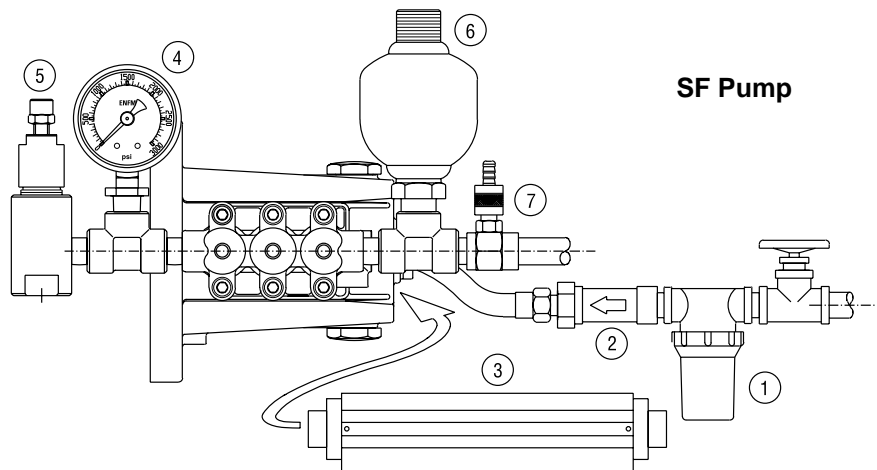
Check the amount of by-pass by disconnecting the by-pass line and measuring the flow into a graduated container.

**By-Pass to Reservoir:** Ideally the by-pass line should be directed to a reservoir with at least one baffle between the supply line to the pump (from the reservoir) and the return by-pass line (from the regulator into the reservoir). This baffle minimizes turbulence and air bubbles that could enter the pump inlet feed line. **The reservoir capacity should be 6 to 10 times the rated system flow per minute.**

**By-Pass to Pump Inlet:** Although not recommended, by-pass liquid can be returned to the inlet line of the pump or directly to a pump inlet port (**systems up to 10 GPM**). When using this method an *Inlet Pressure Regulator* should be installed on the inlet line to avoid excessive inlet pressure. Be certain the *Inlet Pressure Regulator* is **between** the pump inlet and the by-pass line connection. When using this method, a *Thermo Valve* should be installed in the by-pass line to protect the pump from temperature build-up and premature seal failure.

The by-pass line should be **connected to the pump inlet line at a gentle angle of 45° or less and no closer than 10 times the pump inlet port diameter** e.g. 1-1/2" port size = 15" distance from pump inlet port. **Refer to Technical Bulletin 64 for additional information on the size and length of the by-pass line.**

### TYPICAL INSTALLATION



**By-Pass to Drain:** If the by-pass is limited and infrequent, the by-pass can easily drain to an unpressurized drain line (to the ground).

It is recommended that a secondary protective device such as the *CAT PUMP Pop-Off Valve* be installed to assure pump protection should the regulator malfunction. Refer to Troubleshooting for more information on malfunction of regulator.

Preferred mounting of the *Prrrrr-o-lator* (pulsation dampener) is directly **on the Discharge Manifold Head**. When using the *Inlet Pressure Regulator*, mount the *Prrrrr-o-lator* **downstream from the regulator** to assure optimum performance of the regulator.

**CAUTION**

Oversizing the *Prrrrr-o-lator* may cause delayed response from the regulator.

**PRESSURE ADJUSTMENT:** Setting and adjusting the regulator pressure must be done with the system “on”. Start the system with the regulator backed off to the **lowest pressure** setting. Squeeze the trigger and read the pressure on the gauge at the pump. If more pressure is desired, release the trigger, turn adjustment knob/bolt one quarter turn, squeeze the trigger and read the pressure. Repeat this process until desired pressure is attained. Pressure fluctuation from this established system pressure is minimal with the opening of each additional gun.

Monitor the by-pass flow at each adjustment. If the by-pass flow, with all guns or valves open, drops below 10% of rated regulator flow, STOP ADJUSTMENT. The nozzle(s) selection is improperly sized to achieve the desired system pressure.

Proceed by accepting the attained pressure OR selecting a smaller or fewer nozzles OR increasing the pump RPM providing you stay within specifications OR selecting a larger pump or dual pumps.

Once the desired system pressure is reached, stop adjusting and set the top locking knob to hold the system pressure. **Do not read the pressure at the gun or nozzle for setting system pressure.** Check the nozzle(s) as part of regular maintenance and replace if worn. **Do not adjust regulator pressure setting to compensate for worn nozzle(s).**

Approximate Pressure Reading at Gauge	Gauge Between Pump/Regulator	Gauge Between Regulator/Gun-Nozz-Valve
System in operation (gun open)	system pressure	system pressure
System in by-pass (all guns, valves closed)	system pressure	system pressure

**TROUBLESHOOTING**

Cycling	<ul style="list-style-type: none"> <li>● Too little flow for valve specifications.</li> <li>● Air in system, poor connections.</li> <li>● Inlet seals in pump worn.</li> <li>● O-ring in gun worn.</li> </ul>
System will not build up to pressure	<ul style="list-style-type: none"> <li>● Nozzle worn.</li> <li>● Improper nozzle size for system specs.</li> <li>● Foreign material trapped in seat.</li> </ul>
Pressure drop	<ul style="list-style-type: none"> <li>● Nozzles worn.</li> <li>● Piston and seat in regulator worn.</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 by-pass	<ul style="list-style-type: none"> <li>● Minimum by-pass of 10% not present.</li> <li>● Excessive pressure adjustment made for worn nozzle. REPLACE NOZZLE. Reset system pressure.</li> </ul>
Leakage from regulator vent hole	<ul style="list-style-type: none"> <li>● O-ring around piston worn. Replace.</li> <li>● Piston Retainer scored. Replace as needed.</li> </ul>

**WARRANTY**

**90 Day Warranty**

Refer to complete Cat Pump Warranty for further information.

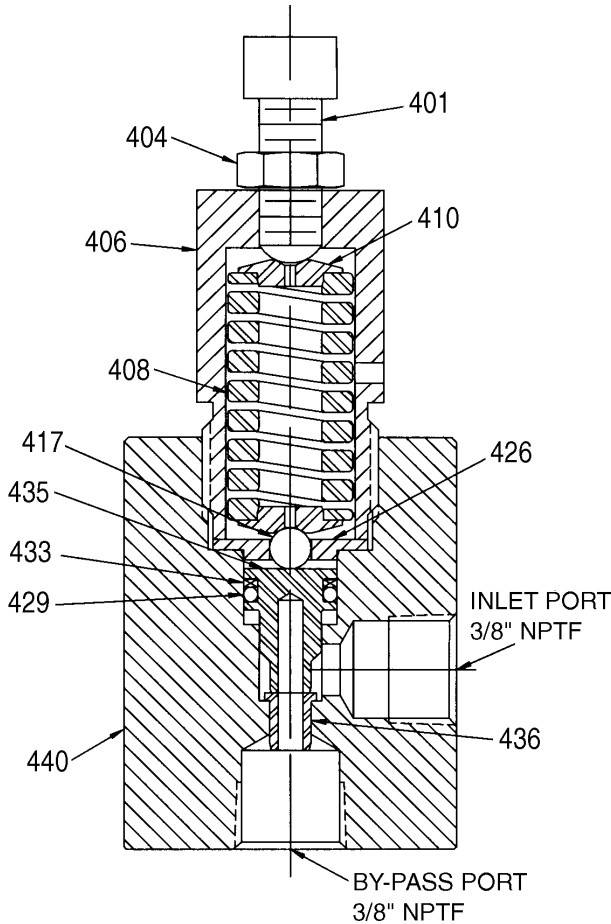
- |   |  |
|---|--|
| 1 Inlet Filter                                | 4 Pressure Gauge                             |
| 2 Inlet Pressure Regulator                    | 5 Pressure Regulator                         |
| 3 C. A.T. Tube<br>(Captive Acceleration Tube) | 6 Pulsation Dampener★<br>7 Chemical Injector |

★ Preferred mounting of Pulsation Dampener [Prrrrr-O-Lator] is directly on the discharge manifold of the pump. The preferred mounting of the by-pass hose [when returning to the inlet] is before the Pressure Reducing Valve. If this is not possible, then mount the Prrrrr-O-Lator after the Pressure Unloading Valve to prevent pressure spikes to the pump inlet.

These illustrations show the basic elements for a typical installation of a high pressure 2SF pump. **Not all components shown are required for all applications or systems.** Each component presents potential problems that too often are ascribed to a perfectly functioning pump, such as: a clogged strainer, a partially closed shut-off valve, a faulty gauge, or a malfunctioning regulator/unloader. Proper system installation, routine lubrication, monitoring and maintenance of components are your basic guarantees of optimum pump performance. CAT PUMPS does not assume any liability or responsibility for the design or operation of a customer’s high pressure system.

## EXPLODED VIEW

### Model 7200



## PARTS LIST

ITEM	PN	MATL	DESCRIPTION	QTY
401	—	SS	Screw, Adjusting	1
404	30933	S	Nut, Lock	1
406	—	BBCP	Body, Upper	1
408	33206	STL	Spring - 1200 PSI	1
410	—	BB	Retainer	2
417	34001	SSSS	Ball	1
426	—	BB	Guide	1
429	31140	FPM	O-Ring, Piston	1
433	31141	PTFE	Back-up-Ring, Piston	1
435	31209	SS	Piston	1
436	32102	SS	Seat	1
440	—	SS	Body, Lower	1
—	991647	SS	<i>Nipple, Hex (3/8x3/8 NPTM)</i>	1
—	991635	SS	<i>Tee (3/8\" NPTF)</i>	1

*Italics are optional items.*

MATERIAL CODES (Not Part of Part Number):

BB=Brass BBCP=Brass/Chrome Plated FPM=Fluorocarbon (Viton®)  
 PTFE=Polytetrafluoroethylene (Teflon®) S=304 Stainless SS=316 Stainless  
 STL=Steel SSS=416 Stainless SSSS=440 Stainless

Products described hereon are covered by one or more of the following U.S. patents 3558244, 3652188, 3809508, 3920356, 3930756 and 5035580

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