



Pressure Sensitive Regulating Unloader

Model ***7620***

FEATURES

- Provides system pressure setting and protection for single gun and pump — non-weep — installation.
- Compact size with auxiliary port for easy installation of gauge.
- Optional handle permits easy adjustments of pressure.
- Pressure sensitive feature permits wide range of flows and immediate pressure when gun opens.

SPECIFICATIONS

	U.S. Measure	Metric Measure
Flow Range	0.5-7.8 GPM	(1.9-29.5 L/M)
Pressure Range	100-3145 PSI	(7-220 BAR)
Maximum Temperature	194°F	(90°C)
Inlet Port	3/8" BSPM	(3/8" BSPM)
Discharge Port.....	3/8" BSPF	(3/8" BSPF)
By-pass Port.....	3/8" BSPF	(3/8" BSPF)
Auxiliary Port	1/4" BSPF	(1/4" BSPF)
Weight	1.22 lbs.	(0.55 kg)
Dimensions	3.2" x 1.5" x 4.7" (81 x 38 x 119.4 mm)	

“Customer confidence is our greatest asset”

SELECTION: This is a pressure sensitive **regulating unloader**. It is designed for systems with a **single** pump, solenoid (gate) valve, nozzle, and standard gun. **“Weep” guns are not recommended with this unloader.**

This unloader holds established system pressure in the discharge line when the trigger gun is closed or solenoid (gate) valve is closed or the nozzle is clogged, by-passing the unrequired flow. It returns to established system pressure without delay upon squeezing the trigger gun or opening the solenoid (gate) valve.

NOTE: For **multiple pump** systems, it is best to use a pressure regulator not an unloader.

Select the specific model of unloader 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 unloader flow capacity and pressure rating. Operation below the minimum flow of the unloader causes the unloader to cycle. Operation beyond the rated unloader flow causes premature valve wear, unloader cycling and prevents attaining desired system pressure.

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

CAUTION

A **MINIMUM BY-PASS FLOW** of 5% of the **UNLOADER RATED FLOW CAPACITY** is required for proper unloader performance.

When properly set this unloader 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 unloader by-passes all the system flow and relieves the load on the pump. Pressure is held in the discharge line (between the unloader and gun or solenoid valve) ready for a quick return to high pressure operation.

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

This a a flow through design unloader. The standard **inlet connection** of the 7620 is at the **back**. The unloader can be mounted directly in the discharge line.

The **by-pass connection** is at the **bottom** of the unloader 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 5%** is necessary for the unloader to operate properly.

CAUTION

If the entire output is directed through the unloader (zero by-pass) the “cushioning” feature of the by-pass fluid is eliminated and the unloader 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.

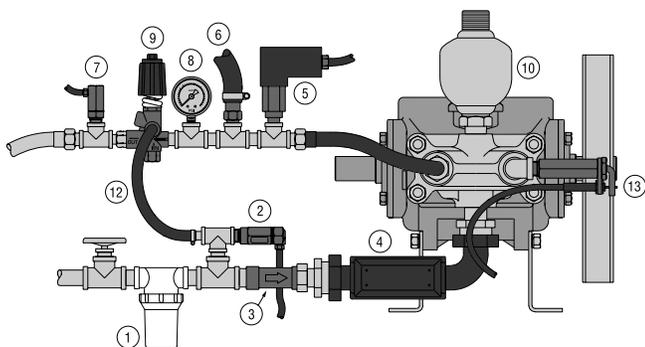
By-Pass to Reservoir: Ideally the by-pass line should be directed to a reservoir with at least one baffle between the supply line to the pump (from the reservoir) and the return by-pass line (from the unloader into the reservoir). This baffle minimizes turbulence and air bubbles that could enter the 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 fluid 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.

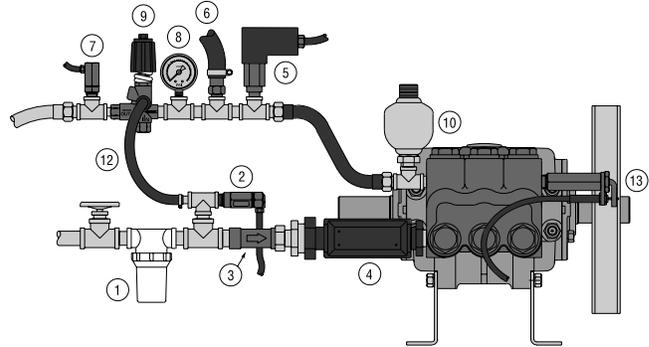
The by-pass line should be **connected to the pump inlet line at a gentle angle of 45° or less and no closer than 10 times the pump inlet port diameter** e.g. 1-1/2" port size = 15" distance from pump inlet port. **Refer to Technical Bulletin 64 for additional information on the size and length of the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

TYPICAL INSTALLATION

Piston Pump



Plunger Pump



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).

The **outlet connection** is located at the **front** of the unloader and marked with an arrow. Plumbing for the spray gun, nozzle or solenoid valve should be connected in from this discharge port. An auxiliary port is located on the side for direct mounting of a pressure gauge or pressure switch.

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

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

CAUTION

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

PRESSURE ADJUSTMENT: Setting and adjusting the unloader pressure must be done with the system “on”. Start the system with the unloader 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 adjusting nut one quarter turn, squeeze the trigger and read the pressure. Repeat this process until desired pressure is attained.

Monitor the by-pass flow at each adjustment. If the by-pass flow, drops below 5% of rated unloader flow, STOP ADJUSTMENT. The nozzle selection is improperly sized to achieve the desired system pressure.

Proceed by accepting the attained pressure OR selecting a smaller nozzle OR increasing the pump RPM providing you stay within specifications.

Once the desired system pressure is reached, stop adjusting and set the top locking nut 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 unloader pressure setting to compensate for a worn nozzle.**

Approximate Pressure Reading at Gauge	Gauge Between Pump/Unloader	Gauge Between Unloader/Gun-Nozzle-Valve
System in operation (gun open)	system pressure	system pressure
System in by-pass (gun closed)	low pressure 0-150 PSI	system pressure +200 PSI

TROUBLESHOOTING

Unloader cycles	<ul style="list-style-type: none"> ● Worn O-ring or check valve. ● Fitting leaking downstream. ● O-ring in gun worn.
Fluid leaking from bottom	<ul style="list-style-type: none"> ● O-ring for seat or inlet fitting cut or worn.
Fluid leaking from middle	<ul style="list-style-type: none"> ● O-ring for piston worn or cut.
Unloader will not come up to pressure	<ul style="list-style-type: none"> ● Not properly sized for system pressure. ● Foreign material in unloader. Clean Filter. ● Piston o-rings worn. ● Nozzle worn. ● Insufficient flow to pump.
Extreme pressure spikes	<ul style="list-style-type: none"> ● Adjusting nut turned completely into unloader. ● Restricted by-pass or no by-pass. ● System flow exceeds unloader rating.

WARRANTY

90 Day Warranty

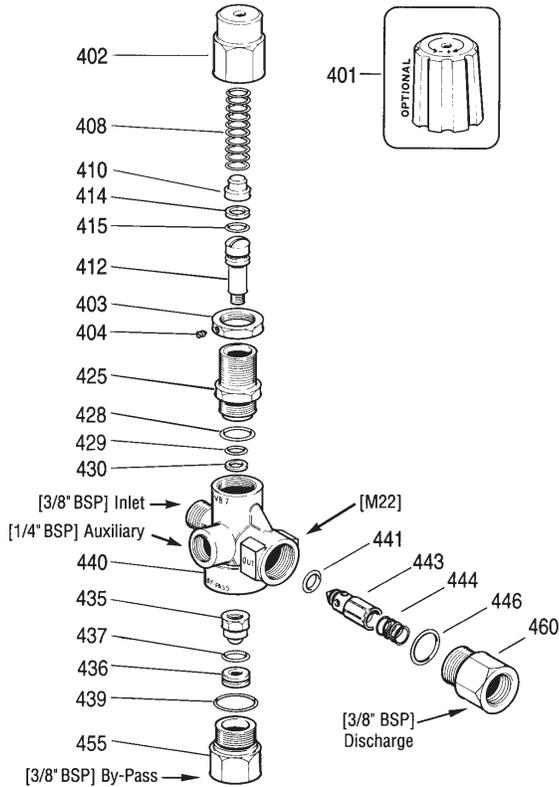
Refer to complete Cat Pump Warranty for further information.

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|---|-------------------------------|
| 1 Inlet Filter | 7 Quick Start Valve |
| 2 Thermo Valve | 8 Pressure Gauge |
| 3 Inlet Pressure Regulator | 9 Pressure Regulator/Unloader |
| 4 C. A.T. Tube
(Captive Acceleration Tube) | 10 Pulsation Dampener★ |
| 5 Pressure Switch | 11 Chemical Injector |
| 6 Pop-Off Valve | 12 By-pass Hose |
| | 13 Throttle Controller |

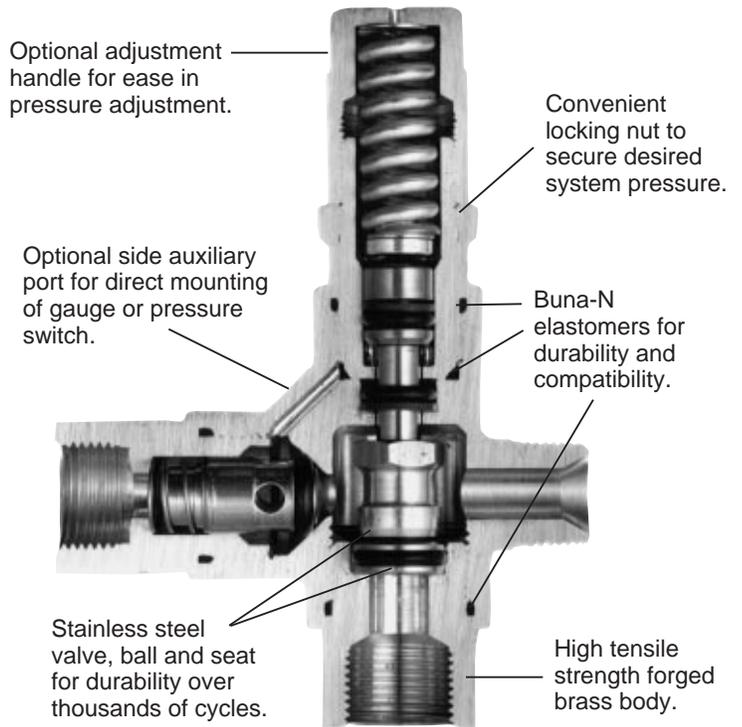
★ Preferred mounting of Pulsation Dampener [Prrrrr-O-Lator] is directly on the discharge manifold of the pump. The preferred mounting of the by-pass hose [when returning to the inlet] is before the Pressure Reducing Valve. If this is not possible, then mount the Prrrrr-O-Lator after the Pressure Unloading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

These illustrations show the basic elements for a typical installation of a high pressure piston or plunger 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



CUTAWAY



PARTS LIST

ITEM	PN	MATL	DESCRIPTION	QTY
401	32088	NY	Cap, Handle, Adjusting, Black	1
402	33859	BB	Cap, Adjusting	1
403	33857	BB	Nut, Locking (M18x1)	1
404	33061	STZP	Screw, Set (M4x4)	1
408	32094	STZP	Spring (Silver)	1
410	32819	BB	Spring, Guide	1
412	33860	S	Stem, Valve	1
414	—	PTFE	Back-up-Ring, Stem	1
415	—	NBR	O-Ring, Stem	1
425	33861	BB	Retainer, Piston	1
428	33043	NBR	O-Ring, Retainer	1
429	—	NBR	O-Ring, Stem	1
430	—	PTFE	Back-up-Ring, Stem	1
435	33853	S	Valve and Ball Assembly	1
436	33862	S	Seat	1
437	32008	NBR	O-Ring, Seat - 85	1
439	33044	NBR	O-Ring, By-pass Fitting - 85	1
440	—	BB	Body, Valve	1
441	32851	NBR	O-Ring, Flow Balancer	1
443	32852	BB	Valve, Check	1
444	33843	S	Spring, Valve, Check	1
446	—	NBR	O-Ring, Discharge Fitting	1
455	33846	BB	Fitting, By-pass (3/8" BSP)	1
460	33847	BB	Fitting, Discharge (3/8" BSP)	1
468	33098	NBR	Kit, O-Ring (Incls: 414, 415, 428, 429, 430, 437, 439, 441, 446)	1

Italics are optional items.

MATERIAL CODES (Not Part of Part Number): BB=Brass NBR=Medium Nitrile (Buna-N) NY=Nylon
PTFE=Polytetrafluoroethylene (Teflon®) S=304SS STZP=Steel/Zinc Plated

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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