DATA SHEET
RELIEF VALVES

The Pumps with Nine Lives

Stainless Steel Models: **890700, 890702, 890704, 890706, 890709, 890718, 890731**



Model 890706 Shown

FEATURES

- Provides backup protection as a primary or secondary pressure relief valve to ensure complete pressure relief for maximum pump and system protection.
- All stainless steel construction ensures corrosion resistance against saltwater and a wide range of chemicals.
- The lightweight, compact design quickly and conveniently mounts directly into the discharge line for high-pressure protection.
- Features FPM seals and O-rings on all models for improved chemical compatibility.

SPECIFICATIONS	U.S. Measure	Metric Measure
890700		
Flow Range	30–180 gpm	114–681 lpm
System Pressure Range	1000–3000 psi	69–207 bar
Maximum Relief Setting	3750 psi	258 bar
Weight	22.75 lbs	10.30 kg
Dimensions	12.73 x 5.25"	323 x 133 mm
890702		
Flow Range	25–210 gpm	95–795 lpm
System Pressure Range	500–2000 psi	34–138 bar
Maximum Relief Setting	2500 psi	172 bar
Weight	22.75 lbs	10.30 kg
Dimensions	12.73 x 5.25"	323 x 133 mm
890704		
Flow Range	45–320 gpm	170–1211 lpm
System Pressure Range	500–2000psi	34–138 bar
Maximum Relief Setting	2500 psi	172 bar
Weight	28.75 lbs	13.04 kg
Dimensions	17.91 x 5.25"	455 x 133 mm
890706		
Flow Range	15–260 gpm	56–984 lpm
System Pressure Range	250–1000 psi	17–69 bar
Maximum Relief Setting	1250 psi	86 bar
Weight	28.75 lbs	13.04 kg
Dimensions	17.91 x 5.25"	455 x 133 mm
890709		
Flow Range	20–60 gpm	76–227 lpm
System Pressure Range	1500–4000 psi	103–276 bar
Maximum Relief Setting	5000 psi	345 bar
Weight	22.75 lbs	10.30 kg
Dimensions	12.73 x 5.25"	323 x 133 mm
890718		
Flow Range	10–50 gpm	38–189 lpm
System Pressure Range	1000–8000 psi	69–552 bar
Maximum Relief Setting	10000 psi	689 bar
Inlet Port	2" NPT(M)	
Bypass Port	2" NPT(F)	
Weight	22.75 lbs	10.30 kg
Dimensions	12.73 x 5.25"	323 x 133 mm
890731		
Flow Range	15–75 gpm	56–284 lpm
System Pressure Range	100–400 psi	7–28 bar
Maximum Relief Setting	500 psi	34 bar
Weight	22.75 lbs	10.30 kg
Dimensions	12.75 x 6.12"	323 x 155 mm

COMMON SPECIFICATIONS*	
Inlet/Outlet Port	2" NPT(F)
Bypass Port	2" NPT(M)

*Except for Model 890718

PARTS LIST

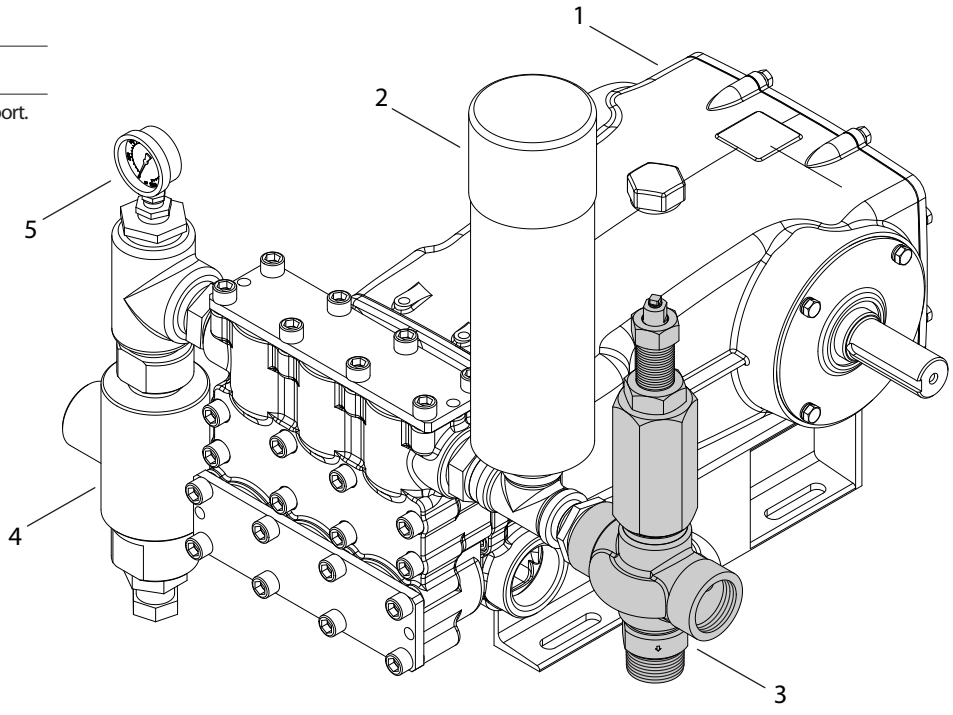
ITEM	DESCRIPTION	MTL	QTY	890700	890702	890704	890706	890709	890718	890731
402	Screw, Adjustment	SS	1	890861	890861	890860	890860	890861	890861	890861
403	Nut, Locking	SS	1	890871	890871	890871	890871	890871	890871	890871
408	Washer, Spring	STZP	(*)	890836 (18)	890836 (18)	890836 (42)	890836 (36)	890836 (20)	890836 (18)	890858 (19)
412	Assembly, Piston	SS	1	890830	890830	890831	890831	890830	890830	890830
414	Backup Ring, Piston	PTFE	1	—	—	—	—	—	—	—
415	Piston Seal, Quad Ring	FPM	1	—	—	—	—	—	—	—
418	Stem, Shock	S	1	890740	890740	890741	890741	890740	890740	890740
419	O-Ring, Shock Stem	FPM	2	—	—	—	—	—	—	—
420	Plug, Shock Stem	SS	1	890889	890889	890889	890889	890889	890889	890889
425	Cap, Body	SS	1	890851	890851	890852	890852	890851	890851	890851
436	Seat	SS	1	—	—	—	—	—	—	—
437	O-Ring, Seat	FPM	1	—	—	—	—	—	—	—
438	Spacer, Seat	SS	1	NA	NA	890829	890829	NA	NA	NA
440	Body	SS	1	890801	890801	890802	890802	890801	890801	890801
455	Fitting (2" NPT[M])	SS	1	890810	890810	890808	890808	890810	890809	890810
468	Kit, Repair (Includes: 414, 415, 419)	FPM	1	890743	—	890742	890742	—	—	—

(*) = See individual quantity
It is recommended to replace spring washers as a set.
Material Codes (Not Part of Part Number): FPM = Fluorocarbon, PTFE = Pure Polytetrafluoroethylene, S = 304SS, SS = 316SS, STZP = Steel/Zinc Plated

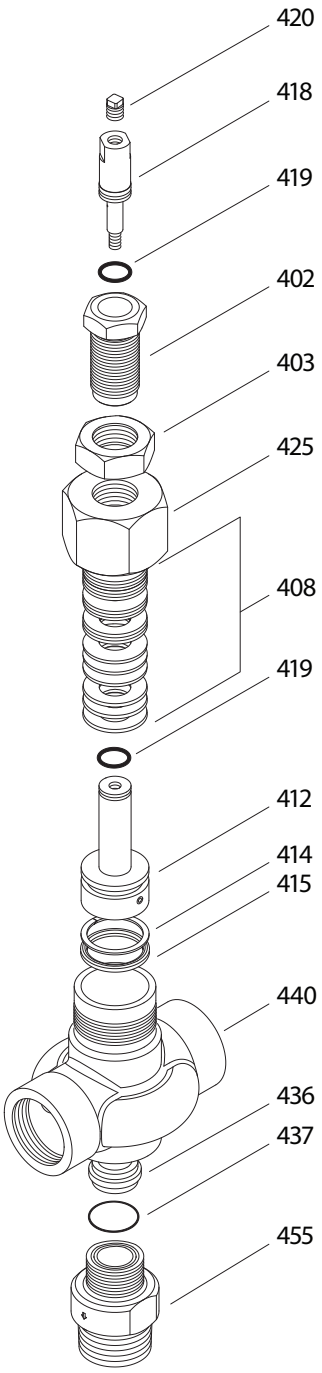
TYPICAL INSTALLATION (All models except 890718*)

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

* On model 890718 use the male threaded port as the inlet port.



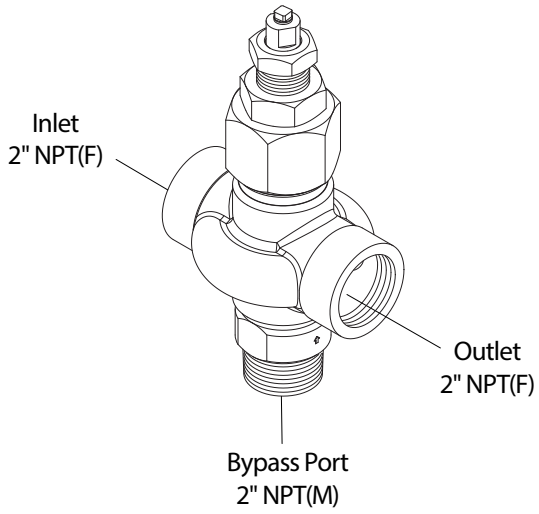
EXPLODED VIEW



PLUMBING VIEWS

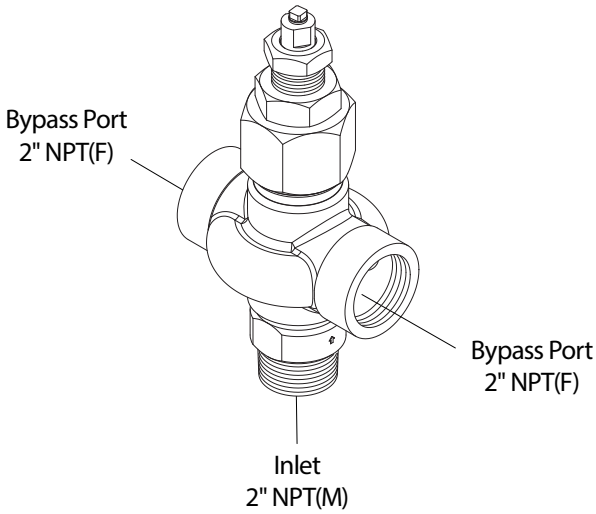
MODELS

890700, 890702, 890704,
890706, 890709, 890731



MODEL

890718



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

SELECTION

These valves can be used as either a primary or secondary pressure control valve. Select a relief valve to meet or exceed the system's flow and pressure requirements.

INSTALLATION

If used as a primary pressure control valve, the relief valve should mount to the discharge port of the pump manifold. If unavailable, plumb the relief valve parallel to the high-pressure line upstream from the pump. The bypass flow from the relief valve should be plumbed back to a reservoir or the pump's inlet.

If used as a secondary pressure control valve, the relief valve should mount to the discharge port of the pump manifold, opposite the primary pressure regulating device. If unavailable, plumb the relief valve parallel to the high-pressure line upstream from the primary pressure regulating device. The bypass flow from the relief valve should be left open or drained to the floor. If the secondary pressure control valve opens and relieves, the bypassing fluid needs to be visible to the operator so they can address the cause of the relief. Do not route the bypass flow from the secondary relief valve back to a reservoir or the pump's inlet.

OPERATION

These relief valves provide primary or secondary backup protection for complete pressure relief and maximum pump and system protection.

PRESSURE ADJUSTMENT

Setting and adjusting the primary and secondary relief valves must be done while the system is running. Set the primary pressure regulating device to its minimum setting by turning the adjustment screw counter-clockwise.

On the secondary relief valve, hand-thread the locking nut away from the body cap counter-clockwise. Turn the adjusting screw clockwise to the highest pressure setting, then counter-clockwise slightly so the valve is not bottomed out. With the system on and running, slowly actuate the flow downstream. Adjust the primary pressure regulating device clockwise to increase the system operating pressure to the desired set point.

Note: If visible water starts to drip from the secondary relief valve's bypass port during this process, check to ensure the secondary relief valve is set to its maximum pressure setting.

While the system is operating at full pressure, slowly turn the secondary relief valve's adjusting screw counter-clockwise until a small amount of water is dripping from it. Adjust a half-turn clockwise until the dripping stops; no more than three half-turns should be required. Cycle the downstream flow on and off to check for any leaks. A closing trigger gun or solenoid valve may create a pressure spike and cause the relief valves to leak. Re-adjust as necessary. Hand-thread the lock nuts clockwise up to the body caps, then tighten them to lock them in place. The primary relief valve is now set to the system operating pressure, and the secondary relief valve is now set approximately 25% over the system pressure.

TROUBLESHOOTING

Problem	Probable Cause	Solution
Excessive pressure fluctuations	• Valve is improperly set • Air in System	• Repeat adjustment procedure • Check Connections
Valve cycles	• Seat, ball or piston stem is worn • O-ring seat damaged	• Replace as needed • Replace as needed
Leaking out top of valve	• O-rings on piston stem worn out or damaged	• Replace as needed
Pressure spikes	• Spring compressed • Restricted bypass or no bypass	• Back-off shock stem cap and reset • Clean out or resize bypass line

⚠ 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

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