

DATA SHEET

HIGH-PRESSURE RELIEF VALVE



Brass Model: 7190



SPECIFICATIONS	U.S. Measure	Metric Measure
Flow Range	0–6.6 gpm	0–25 lpm
Pressure Range	508–5076 psi	35–350 bar
Maximum Relief Setting	5584 psi	385 bar
Maximum Temperature	140° F	60° C
Inlet Port	3/8" BSP(F)	3/8" BSP(F)
Discharge Port	3/8" BSP(F)	3/8" BSP(F)
Bypass Port	3/8" BSP(F)	3/8" BSP(F)
Weight	16.6 oz	0.47 kg
Dimensions	5.22 x 1.97 x 1.06"	132.5 x 50 x 27 mm

Use only at above specifications to ensure proper regulator life and performance.

FEATURES

- Functions as a secondary pressure relief valve to either an unloader or regulator for optimum system overpressure protection.
- Bypasses unused flow when set relief pressure is reached to avoid excessive pressure on the pump.
- Lightweight, compact design conveniently mounts directly into the discharge line.

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

SELECTION

Select a relief valve to meet or exceed the flow and pressure requirements of the system. This valve is to be used as a secondary pressure control device and does not replace a primary pressure control device like a regulator or unloader.

INSTALLATION

The relief valve should mount to the pump manifold's discharge port opposite the primary pressure control valve. If unavailable, plumb the relief valve parallel to the high-pressure line upstream from the primary pressure control valve.

The inlet connection is a $\frac{3}{8}$ " BSP(F) port. Arrows are marked on both sides of the body, indicating the flow direction. Liquid from the discharge of the manifold goes into this connection.

The bypass connection is a $\frac{3}{8}$ " BSP(F) port. Arrows are marked on both sides of the body, indicating the flow direction. The bypass flow from the Relief Valve should be left open or drained to the floor. Do not route the bypass flow back to the inlet of the pump.

OPERATION

The primary function of this relief valve is to relieve system pressure and bypass pumped liquid in the event the primary control valve fails.

Note: The relief valve is a secondary pressure control device. It does not replace a primary pressure control device like a pressure regulator or unloader.

PRESSURE ADJUSTMENT

Setting the Primary Pressure Regulating Device

Note: Pressure is not set at the factory

1. Setting and adjusting the primary pressure regulating device and relief valve must be done while the system is running.
2. Start the system with the primary pressure regulating device backed off to the lowest pressure setting (counterclockwise direction) and the relief valve set at the highest pressure setting (clockwise direction).
3. Squeeze the trigger and read the pressure on the gauge at the pump.

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

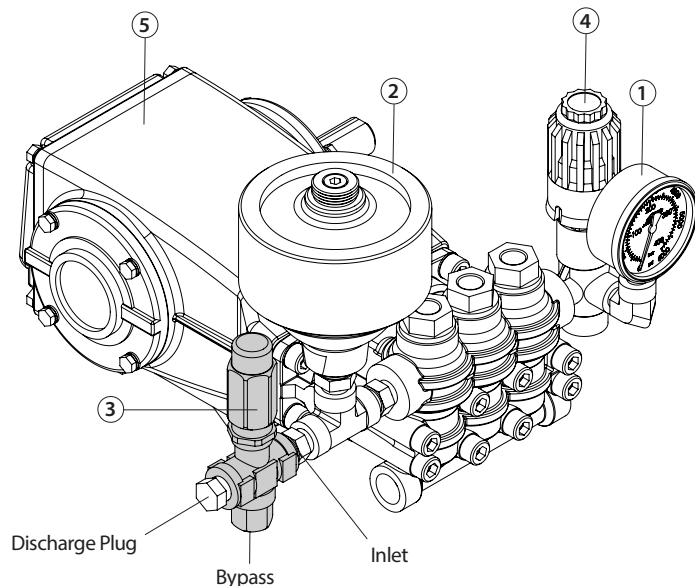
4. If more pressure is desired, release the trigger, adjust primary device by turning in a clockwise direction.
5. Squeeze the trigger and read the pressure.
6. Repeat this process until desired system pressure is attained.

Setting the Relief Valve

1. Use a 27mm wrench to turn the adjusting cap on the top of the relief valve in a counterclockwise direction until there is some visible liquid coming out of the bypass port.
2. Turn adjusting cap on the top of the relief valve in a clockwise direction until the visible liquid stops coming out.
3. Final adjustment for the relief valve should relieve at 200 psi above the system operating pressure.

TYPICAL RELIEF VALVE INSTALLATION

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



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SERVICING

Disassembly:

1. Disconnect bypass, inlet and discharge plumbing from relief valve.
2. Remove relief valve from pump.
3. Secure body of relief valve in a vise with brass adjusting cap facing up.
4. Remove brass adjusting cap.
5. Remove spring and spring retainer with ¼" ball guide. This ball guide is on the flat side of the spring retainer.
6. Examine spring, spring retainer and ball guide for scale build up, fatigue or wear. Replace as needed.
7. Remove relief valve from vise and re-secure in vise with the bypass port facing up.
8. Remove bypassing fitting with O-ring.
9. On the male threaded side of bypass fitting mark the seat surface with a marker. This will ensure that the seat is correctly installed during reassembly.
10. From the female threaded end of bypass fitting, use a tool that is slightly smaller in diameter to drive out seat from bypass fitting.
11. Examine seat and bypass fitting from scale build up, fatigue or wear. Replace as needed.
12. Examine seat and bypass fitting O-rings for cuts or wear. Replace as needed.
13. Remove relief valve from vise.
14. From the bypass side of the relief valve, use a needle nose pliers to remove piston.
15. Use a pick to remove the first backup ring, O-ring and then the second backup ring from valve body.
16. Examine piston for scale build up, scoring and wear. Replace as needed.
17. Examine O-ring and backup rings for cuts or wear. Replace as needed.

Reassembly:

1. Place bypass fitting on flat surface with male threaded end facing up.
2. Lubricate and install O-ring onto seat.
3. Position seat with marked side facing up and press into place.
4. Lubricate and install O-ring onto bypass fitting.
5. Place relief valve in vise with bypass port facing up.
6. Lubricate and install first backup ring into bypass port.
7. Lubricate and install O-ring into bypass port.
8. Lubricate and install second backup ring into bypass port.
9. Insert piston with flat end into bypass port through the O-rings and backup ring.
10. Hand thread bypass fitting into valve body. Tighten with wrench.
11. Remove relief valve from vise.
12. Reposition relief valve with bypass fitting facing down.
13. Install spring retainer with flat end down into valve body.
14. Position spring onto spring retainer.
15. Hand thread adjusting cap onto valve body.
16. Remove relief valve from vise.
17. Re-install relief valve onto pump.
18. Reconnect bypass, inlet and discharge plumbing to the relief valve.
19. Proceed to PRESSURE ADJUSTMENT section.

TROUBLESHOOTING

Excessive Pressure Fluctuations	<ul style="list-style-type: none">• Valve is improperly set Repeat adjustment procedure• Air in system, check connections
Valve continually bypasses	<ul style="list-style-type: none">• Seat or piston valve is worn Replace as needed• O-ring on seat is damaged Replace as needed
Leaking out the top of valve	<ul style="list-style-type: none">• Worn or cut O-ring around the piston stem

PARTS LIST

ITEM	P/N	MATL	DESCRIPTION	QTY
402	33404	BB	Cap, Adjusting	1
403	33327	BB	Nut, Lock	1
408	33329	STZP	Spring	1
410	33408	BB	Retainer, Spring	1
412	33409	S	Piston	1
414	—	PTFE	Backup Ring, Piston	2
415	—	NBR	O-Ring, Piston	1
432	33825	SS	Ball, Guide (1/4")	1
436	33383	S	Seat	1
437	—	FPM	O-Ring, Seat	1
440	—	BB	Valve, Body	1
454	—	NBR	O-Ring, Fitting	1
455	33405	BB	Fitting, Bypass	1
468	33435	NBR	Kit, O-Ring (Includes: 414, 415, 437, 454)	1

Italics are optional items.

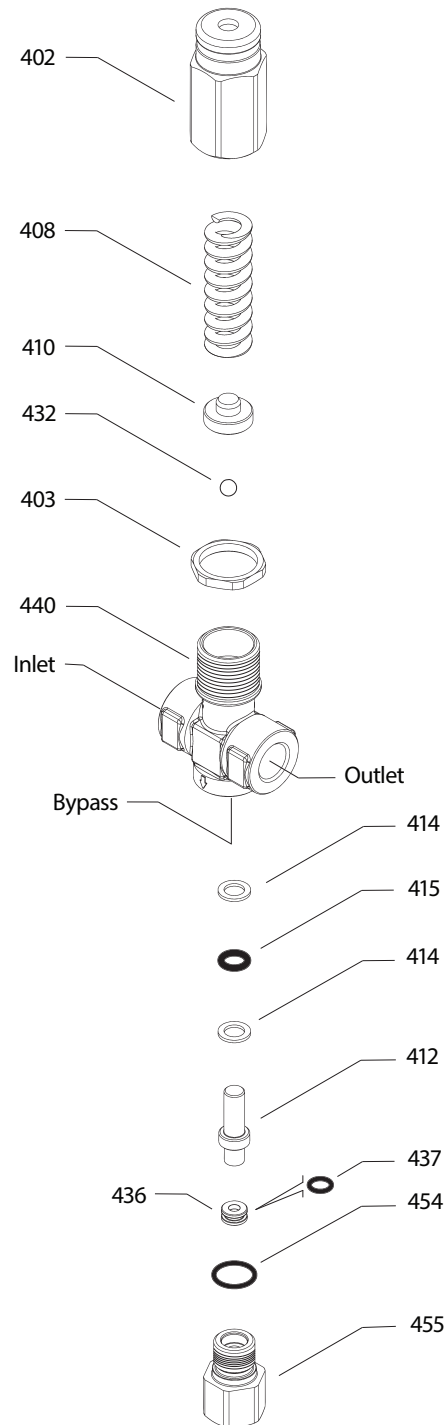
Material Codes (Not Part of Part No.):

BB=Brass FPM=Fluorocarbon NBR=Medium Nitrile (Buna-N)

PTFE=Pure Polytetrafluoroethylene S=304SS SS=316SS

STZP=Steel/Zinc Plated

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