

# DATA SHEET

## HIGH-PRESSURE RELIEF VALVE



**Brass Model: 7196**



SPECIFICATIONS	U.S. Measure	Metric Measure
Maximum Flow	0–21 gpm	0–80 lpm
Pressure Range	725–7252 psi	50–500 bar
Maximum Relief Setting	7975 psi	550 bar
Maximum Temperature	140° F	60° C
Inlet Port	1/2" BSP(F)	1/2" BSP(F)
Bypass Port	3/8" BSP(F)	3/8" BSP(F)
Weight	3.22 lbs	1.46 kg
Dimensions	8.7 x 2.28 x 1.54"	221 x 58 x 39 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 to avoid excessive pressure on the pump when set relief pressure is reached.
- Designed for single or multiple gun or pump systems to protect from excessive pressure.

**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 1/2" 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 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.

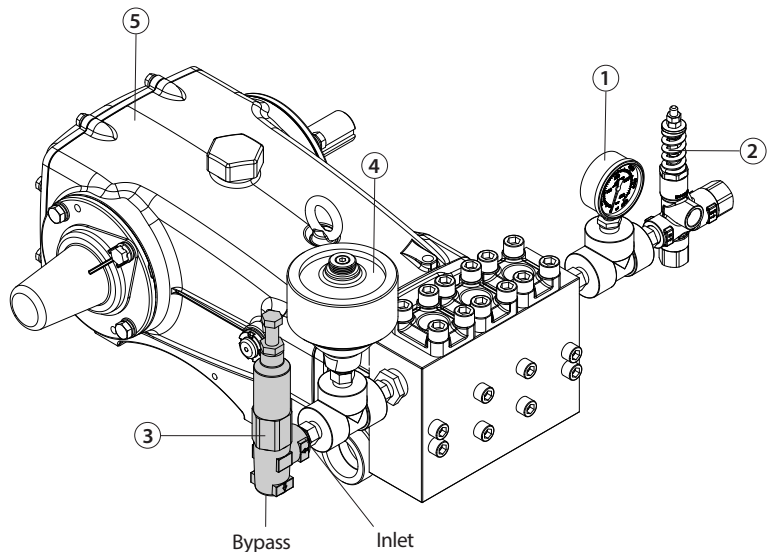
4. If more pressure is desired, release the trigger, adjust primary device by turning in a clockwise direction.
5. Squeeze the trigger and read the pressure.
6. Repeat this process until desired system pressure is attained.

### Setting the Relief Valve

1. Use a 22mm wrench to turn the pressure adjuster 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 pressure adjuster 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
2. Pressure-Sensitive Regulating Unloader (Primary Pressure Regulating Device)
3. Relief Valve (Secondary Pressure Relief Device)
4. Pulsation Dampener
5. Triplex Plunger Pump



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### SERVICING

#### Disassembly:

1. Disconnect bypass and inlet plumbing from relief valve.
2. Remove relief valve from pump.
3. Secure relief valve in a vise with stainless steel pressure adjuster facing up.
4. Remove stainless steel pressure adjuster with lock nut from spring housing.
5. Remove spring housing by unthreading from main body.
6. Remove upper spring retainer, spring, lower spring retainer and ¼" ball guide from main body.
7. Examine spring, spring retainers and ball guide for scale build up, fatigue or wear. Replace as needed.
8. Remove relief valve from vise and re-secure in vise with the bypass port facing up.
9. Remove bypassing fitting with backup ring and O-ring.
10. Remove relief valve from vise and re-secure in vise with the male thread end of body facing up.
11. Through the top, drive out piston with backup rings and O-ring and seat with O-ring.
12. Remove O-ring from seat and then slide first backup ring, O-ring and second backup ring from piston.
13. Examine seat, piston and bypass fitting for scale build up, fatigue or wear. Replace as needed.
14. Examine seat and bypass fitting O-rings 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 and then backup ring onto seat.
3. Remove relief valve from vise and re-secure in vise with bypass port facing up.
4. Lubricate and install first backup ring, O-ring and then second backup ring over large diameter of piston.
5. Install large diameter end of piston into main body and press into place.
6. Lubricate and install O-ring into outside groove of seat.
7. Position seat with small diameter hole down into the body and press into place.
8. Hand thread in bypass fitting with O-ring and backup ring into main body. Tighten with a wrench.
9. Remove relief valve from vise and re-secure with bypass port facing down.
10. Install ¼" ball guide on top of piston.
11. Install lower spring retainer on top of ball guide with raised surface facing up.
12. Install spring onto lower spring retainer.
13. Install upper spring retainer on top of spring with raised surface facing down.
14. Hand thread spring housing onto main body. Tighten with a wrench.
15. Hand thread pressure adjuster with lock nut into spring housing.
16. Remove relief valve from vise.
17. Re-install relief valve onto pump.
18. Reconnect bypass and inlet plumbing to the relief valve. Proceed to PRESSURE ADJUSTMENT section.

### TROUBLESHOOTING

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

## PARTS LIST

ITEM	P/N	MATL	DESCRIPTION	QTY
402	33833	SS	Adjuster, Pressure	1
403	33823	SS	Nut, Lock (M14x2)	1
408	33804	STL	Spring	1
409	33815	BB	Retainer, Spring (Upper)	1
410	33814	BB	Retainer, Spring (Lower)	1
412	33816	SS	Piston	1
414	—	PTFE	Backup Ring, Piston	2
415	—	NBR	O-Ring, Piston	1
425	—	BB	Housing, Spring	1
432	33825	SS	Ball, Guide (1/4")	1
436	33826	SS	Seat	1
437	—	NBR	O-Ring, Seat	1
440	—	BB	Body	1
441	—	PTFE	Backup Ring, Bypass Fitting	1
454	—	NBR	O-Ring, Bypass Fitting	1
455	33829	BB	Fitting, Bypass (3/8" BSP[F])	1
468	33840	NBR	Kit, O-Ring (Includes: 414, 415, 437, 441, 454)	1

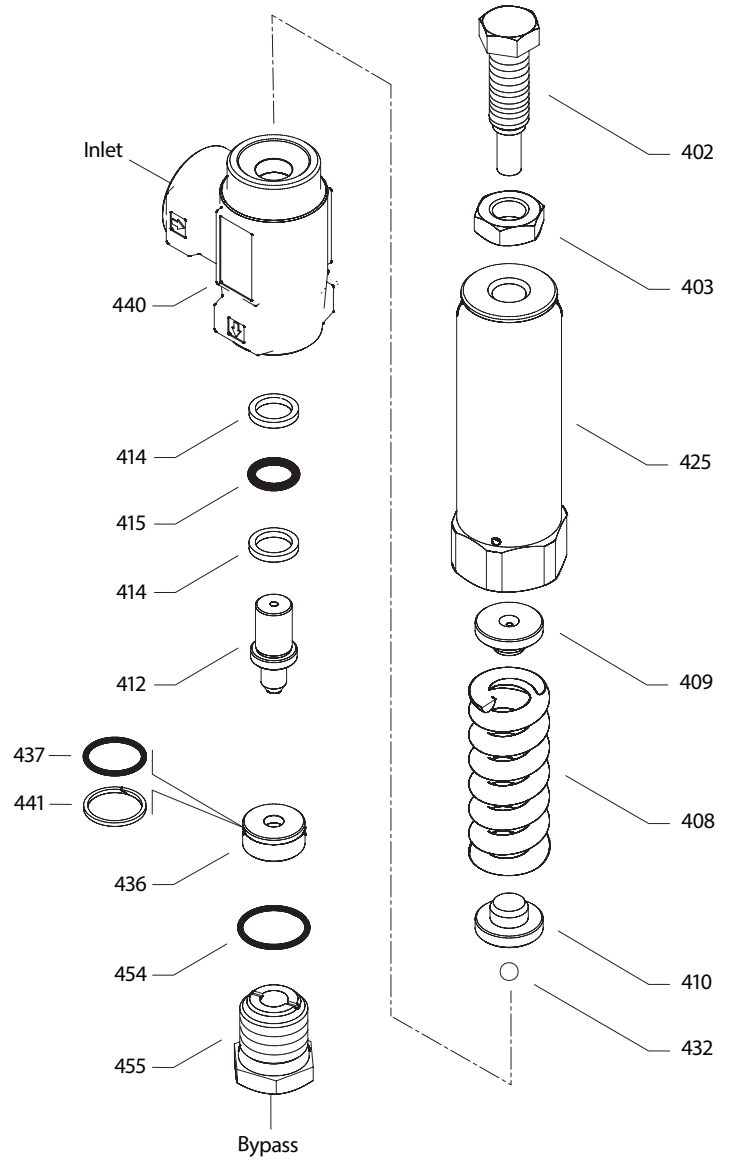
*Italics are optional items.*

MATERIAL CODES (Not Part of Part Number):

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

PTFE=Pure Polytetrafluoroethylene SS=316SS STL=Steel

## 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](http://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](http://www.catpumps.com/literature/cat-pumps-limited-warranty)