Stainless Steel
High Pressure Relief Valves

Models

7034
7036
7037

FEATURES

- Provides system pressure setting and protection for single or multiple gun and pump systems.
- Lightweight, compact design quickly and conveniently mounts directly into discharge line.
- Provides back-up protection to primary relief valve for complete pressure relief and maximum pump and system protection.
- 316 Stainless Steel construction for strength and corrosion resistance.

SPECIFICATIONS

	U.S. Measure	Metric Measure
MODEL 7034		
Pressure Range	400 to 2200 PSI	(28 to 155 BAR)
MODEL 7036		
Pressure Range	800 to 4000 PSI	(55 to 275 BAR)
MODEL 7037		
Pressure Range	3000 to 5700 PSI	(210 to 400 BAR)

COMMON SPECIFICATIONS

Flow Range	1-21 GPM	(3.8 to 80 L/M)
Maximum Temperature	195°F	(90°C)
Inlet Ports (2)	1/2" NPTF	(1/2" NPTF)
Discharge Port	1/2" NPTF	(1/2" NPTF)
By-Pass Port	1/2" NPTF	(1/2" NPTF)
Weight	2.67 lbs.	(1.21 kg)
Dimensions	7.83 x 3.92 x 1.85"	(199 x 99.5 x 47 mm)

Relief Valve is stamped with a European safety pressure. Use only at above specifications to assure proper relief valve life and performance.

⚠ WARNING

All systems require both a primary pressure regulating device (i.e., regulator, unloader) and a secondary pressure safety relief device (i.e., pop-off valve, safety valve). Failure to install such relief devices could result in personal injury or damage to the pump or to system components. CAT PUMPS does not assume any liability or responsibility for the operation of a customer's high pressure system.

90 DAY WARRANTY

Refer to complete CAT PUMPS Warranty for further information.

SELECTION

This is a stainless steel high pressure relief valve to be used as a secondary pressure relief. Designed for systems with single or multiple guns or pumps, this relief valve should meet the desired system flow (combined nozzle flow rate requirement) and the desired system pressure.

INSTALLATION

The relief valve should be mounted at the discharge manifold between the primary regulating device and the pump and before any other accessories in the system.

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

There are two inlet connections for this relief valve, both are 1/2"NPTF sized ports. One is located at the bottom and has a arrow indicating the direction of flow and the word IN engraved into the body. The other inlet port is located on the back side. There is also an arrow indicating the direction of flow engraved into the body. Liquid from the discharge of the manifold goes through either connection.

The discharge connection for this relief valve is a 1/2"NPTF sized port and is located on the front side (hex end). There is an arrow and the word OUT engraved into the body indicating the direction of flow.

The by-pass connection of this relief valve is a 1/2"NPTF sized port and is located on the side. The word BY PASS is engraved into the body. By-Pass liquid is directed out this port and can be routed to a reservoir (preferred method) or to a drain or to the pump inlet.

OPERATION

The primary function of this relief valve is to relieve system pressure and by-pass pumped liquid in the event the primary valve should fail. If the primary valve fails to by-pass at set system pressure, this secondary relief valve will open and allow the liquid to by-pass.

PRESSURE ADJUSTMENT

Setting the Primary Pressure Regulating Device

1. Setting and adjusting the primary pressure regulating device and relief valve must be done with the system "on".
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.

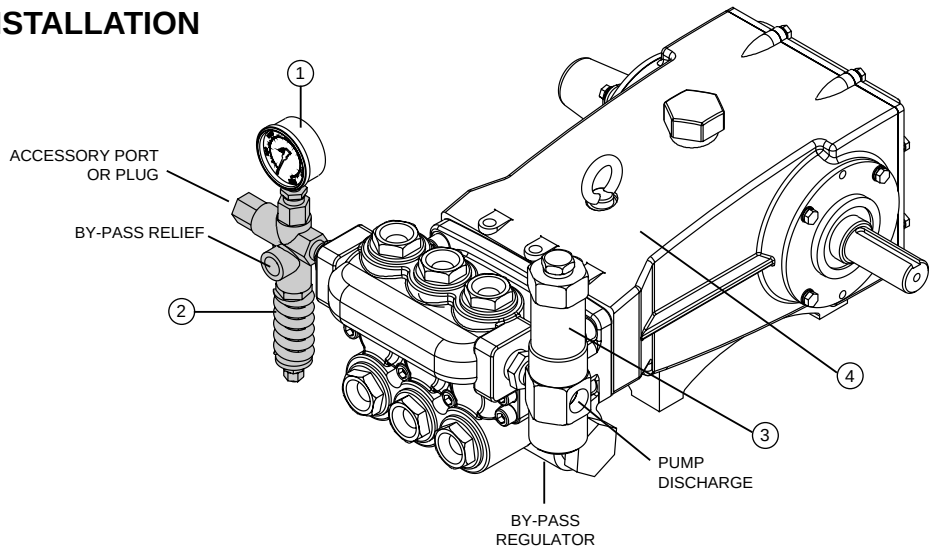
4. If more pressure is desired, release the trigger, adjust primary device by turning in a clockwise direction.
5. Squeeze the trigger and read the pressure.
6. Repeat this process until desired system pressure is attained.

Setting the Relief Valve

1. Turn adjusting nuts on the top of the relief valve in a counterclockwise direction in small increments until there is some visible liquid coming out of the by-pass port.
2. Turn adjusting nuts on the top of the relief valve in a clockwise direction until 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 Relief Valve
Secondary Safety Device
3 Pressure Regulator
Primary Regulating Device
4 Triplex Plunger Pump



SERVICING

Caution: Before commencing with service, shut off drive (electric motor, gas or diesel engine) and turn off water supply to pump. Relieve all discharge line pressure by triggering gun or opening valve in discharge line.

Disassembly:

1. Disconnect by-pass and discharge plumbing from relief valve.
2. Remove relief valve from pump and secure in a vise.
3. Remove two adjusting nuts, spring retainer and pressure spring from body. Examine pressure spring for fatigue or breaks and replace as needed.
4. Remove one nut on threaded piston stem.
5. Drive out piston pin from piston retainer.
6. Remove piston retainer with o-ring and back-up-ring from body. Examine o-ring and back-up-ring for cuts or wear and replace as needed.
7. Remove piston stem with o-ring and back-up-rings from body. Examine o-ring and back-up-rings for cuts or wear and replace as needed.
8. Remove inlet fitting with o-ring, spring and ball. Examine o-ring for cuts or wear and replace as needed. Examine spring for fatigue or breaks and replace as needed.
9. Tap out valve seat with o-ring from the top. Examine o-ring for cuts or wear and replace as needed.

Note: Inspect sealing areas within the internal body of the relief valve for grooves, pitting and wear. If damage is found, replace with new relief valve. If not, proceed with reassembly.

Reassembly:

1. Lubricate and install o-ring onto seat. Press seat into relief valve body from the bottom port with the chamfered surface facing down.
2. Lubricate and install o-ring onto inlet fitting. Apply antiseize lubricant (P/N 6119) onto threads of inlet fitting and body. Place spring into recessed port of inlet fitting and then place ball onto spring. Carefully thread inlet fitting with spring and ball into relief valve body.
3. Lubricate and install one o-ring into groove on piston stem. Place one back-up ring on each side of the o-ring. Lower piston stem into top port until completely seated.
4. Lubricate and install large o-ring onto outer diameter of piston retainer. Lubricate and install small back-up ring and then small o-ring into hole of threaded end of the piston retainer. Apply antiseize lubricant (P/N 6119) onto threads of piston retainer and body. Carefully thread piston retainer into relief valve body.

Note: Ensure that hole in piston stem aligns with slot on top of piston retainer.

5. Press in piston pin through slot in piston retainer and hole in piston stem.
6. Apply Loctite® 609 to threads of one nut and thread onto piston stem. Nut should thread down to last thread on piston stem.

Note: Model 7037 uses 3 lower nuts.

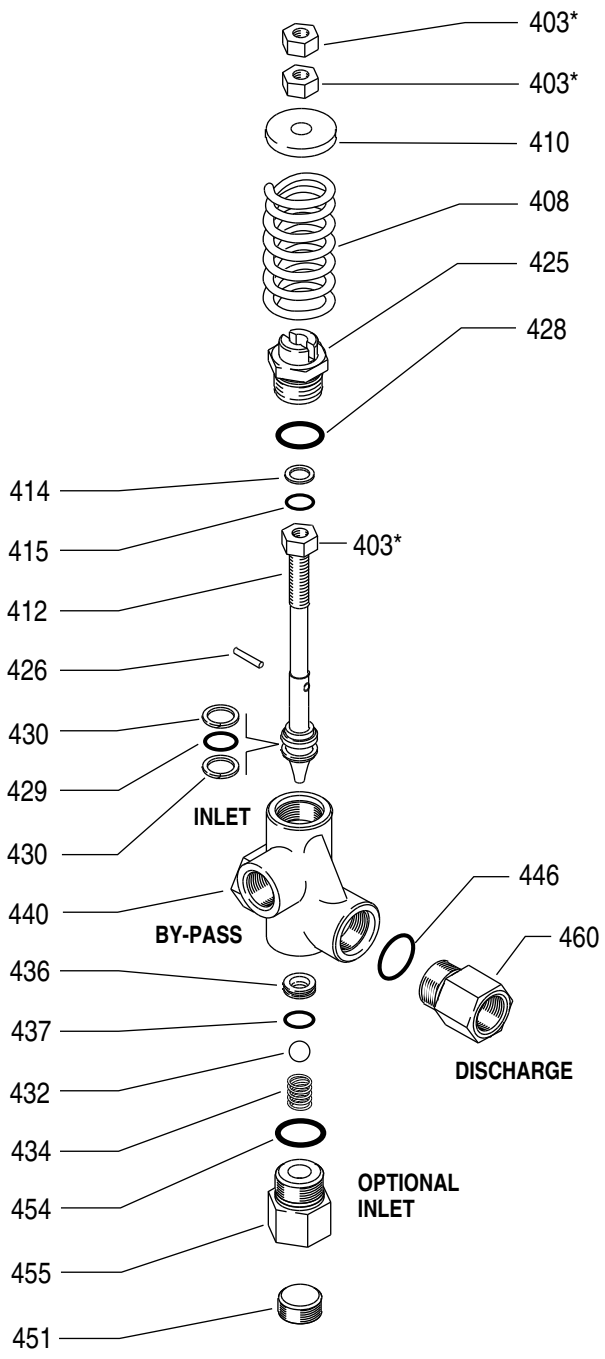
7. Install pressure spring over piston stem, then spring retainer with boss facing down. Thread on two hex nuts.
8. Reinstall relief valve onto pump.
9. Reconnect by-pass and discharge plumbing to pressure relief valve.
10. Proceed to PRESSURE ADJUSTMENT.

Loctite® is a registered trademark of the Henkel Corporation.

TROUBLESHOOTING

Valve chatters or cycles	• Valve is improperly set. Repeat adjustment procedure. • Air in system. Check connections.
Valve continually by-passes	• Seat, ball or piston stem is worn. Replace as needed. • O-Ring seat damaged. Replace as needed.
Leaking out the top of valve	• O-Rings on piston stem worn or cut. Replace as needed.
Pressure spikes	• Spring compressed. Do not adjust valve for worn nozzles. • Restricted by-pass or no by-pass.

EXPLODED VIEW



PARTS LIST

ITEM	P/N	MATL	DESCRIPTION	QTY
403	30115	S	Nut (M10)	3/4*
408	32324	STL	Spring, Pressure (Blue)	1
	32323	STL	Spring, Pressure (White)	1
	32344	STL	Spring, Pressure (Black)	1
410	30119	BB	Retainer, Spring	1
412	34586	SS	Stem, Piston	1
414	—	PTFE	Back up-Ring, Piston	1
415	—	FPM	O-Ring, Piston	1
425	30118	SS	Retainer, Piston	1
426	32326	S	Pin, Piston	1
428	—	FPM	O-Ring, Piston Retainer	1
429	—	FPM	O-Ring, Piston	1
430	—	PTFE	Back up-Ring, Piston	2
432	30117	SS	13/32" Ball	1
434	30113	SS	Spring, Ball	1
436	34509	SS	Seat	1
437	—	FPM	O-Ring, Seat	1
440	—	SS	Body	1
446	—	FPM	O-Ring, Fitting	1
451	34508	S	Plug (1/2" NPTM)	1
454	—	FPM	O-Ring, Fitting	1
455	34578	SS	Fitting, Inlet (1/2" NPTF)	1
460	34580	SS	Fitting, Discharge (1/2" NPTF)	1
468	*30166*	*FPM*	*Kit, O-Ring*	1
			(Incldes: 414. 415, 428, 429, 430, 437, 446, 454)	

Italics are optional items.

MATERIAL CODES (Not Part of Part Number):
BB=Brass FPM=Fluorocarbon PTFE=Pure Polytetrafluoroethylene
S=304SS SS=316SS STL=Steel

*Models 7034, 7036 use 1 lower nut and 2 upper nuts.
Model 7037 uses 3 lower nuts and 1 upper nut.

World Headquarters
CAT PUMPS
1681-94th Lane N.E. Minneapolis, MN 55449-4324
Phone (763) 780-5440 — FAX (763) 780-2958
e-mail: techsupport@catpumps.com
www.catpumps.com

International Inquiries
FAX (763) 785-4329
e-mail: intlsales@catpumps.com

The Pumps with Nine Lives

CAT PUMPS (U.K.) LTD.
1 Fleet Business Park, Sandy Lane, Church Crookham
FLEET, Hampshire, GU52 8BF, England
Phone Fleet 44 1252-622031 — Fax 44 1252-626655
e-mail: sales@catpumps.co.uk www.catpumps.co.uk

N.V. CAT PUMPS INTERNATIONAL S.A.
Heiveldekens 6A, B-2550 Kontich, Belgium
Phone 32-3-450.71.50 — Fax 32-3-450.71.51
e-mail: cpi@catpumps.be www.catpumps.be

CAT PUMPS DEUTSCHLAND GmbH
Buchwiese 2, D-65510 Idstein, Germany
Phone 49 6126-9303 0 — Fax 49 6126-9303 33
e-mail: catpumps@t-online.de www.catpumps.de

PN 993164 Rev C 11809