



Reyco Series RL14, RL40, & RL41
Direct Spring Acting Safety Relief Valves
for Gas, Liquid, and Steam Service



Reyco Series RL

**Direct Spring Acting Safety Relief Valves
for Gas, Liquid, and Steam Service**

About Reyco Valve Division

The Reyco line of direct spring acting pressure relief valves utilizes sound engineering principles and undergoes thorough testing and continuous quality control in manufacturing. These measures ensure that Reyco valves deliver the precision, durability, and value our customers expect and demand.

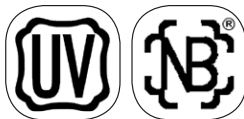
For more information about the complete line of products and services by Reyco Valve Division, visit our web site or contact the sales representative nearest you.

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Reyco valves are built to established industry standards and codes.

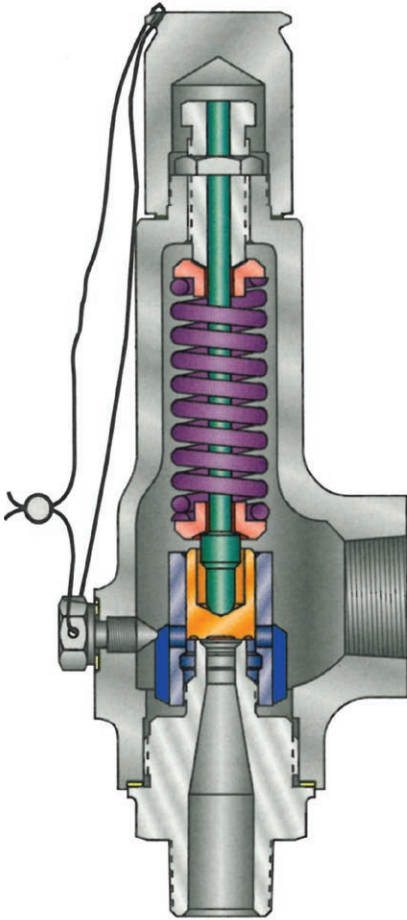


Direct Spring Acting Pressure Relief Valve

RL14, RLO14, RL40, RLO40, RL41, and RLO41 Series

Table of Contents

Operating Principles	4
Reyco Valve Diagram	
RL14 Series	6
RL40 and RL41 Series	7
Model Number Guide	8
Features and Benefits	10
Valve Selector	
RL14 and RLO14	11
RL40 and RLO40	12
RL41 and RLO41	13
Bill of Materials	
RL14 Series Standard Trim	14
RL40 and RL41 Series Standard Trim	15
RL14 Series Trim Options	16
RL40 and RL41 Series Trim Options	17
Accessories	
Lifting Levers and Cap Options	18
Additional Attachments	19
Lift Lever Materials	20
O-Ring Seals	22
O-Ring Selector Chart	23



RL14 Series Pressure Relief Valve

When considering the total cost of continued operation and maintenance, the RL Series is an economical choice for thermal relief or small capacity applications. It delivers proven performance and provides value to its users. Backed by an extensive repair and service organization network, customers receive high quality safety products that continue the unequalled reputation of Reyco Valve.

Reyco's RL14 Series is a conventional, top guided, single ring, unbalanced, pressure relief valve with the smallest orifice. Standard connection type is Male National Pipe Threading (Male NPT) × Female National Pipe Threading (Female NPT). The RL14 Series is used primarily for thermal relief applications. When an O-ring is added, the model changes to RLO14.

Series RL40 is a conventional, top guided, single ring, unbalanced pressure relief valve with larger orifices. Standard connection type is Female National Pipe Threading (Female NPT) × Female National Pipe Threading (Female NPT). When an O-ring is added, the model changes to RLO40.

Model RL41 is a conventional, top guided, single ring, unbalanced pressure relief valve with larger orifices. Standard connection type is Female National Pipe Threading (Female NPT) × Female National Pipe Threading (Female NPT). The RL41 Series is designed for pressures above 3,000 psig. When an O-ring is added, the model changes to RLO41.

Under normal system operation, the valve remains in the closed position because the spring force is greater than the system pressure acting on the internal base seating area. If system pressure increases to a point where the forces are equal, set pressure is reached. The disc lifts and fluid flows through the valve. When pressure in the system returns to a safe level, the valve closes.

Just prior to reaching set point, the pressure relief valve will leak system fluid into the valve body. Suddenly, the pressure relief valve opens at a rapid rate.

RL Series Operating Principals

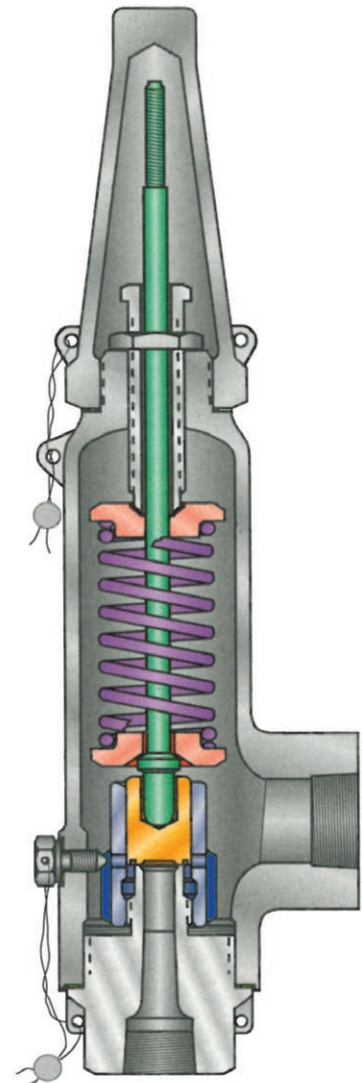
Although the opening is rapid and dramatic, the valve does not open fully at set point. The system pressure must increase above the set point to open the valve to its full lift and capacity position. Maximum lift and certified flow rates will be achieved within the allowable limits (overpressure) established by various codes and standards. All pressure relief valves are allowed an overpressure allowance to reach full rated flow. The allowable overpressure can vary from 10% to 21% on unfired vessels and systems, depending on the sizing basis and whether a fire condition is encountered.

Once the valve has controlled the pressure excursion, system pressure will start to reduce. System pressure must reduce below the set point before the spring force is able to close the valve again. The difference between the set pressure and the closing pressure is called the blowdown and is usually expressed as a percentage of set pressure. The typical blowdown of the RL Series is fixed. Simmer will usually begin at about 93% to 95% of set pressure, depending on seat condition, and spring range. This performance is typical and widely accepted in most industries.

Liquid Service Operation

On liquid service, a different dynamic situation exists. Liquids do not expand when flowing across orifices, and a small amount of fluid flow across the nozzle will produce a large local pressure drop at the nozzle orifice. This local pressure drop causes the spring to reclose the valve if the fluid flow is minimal. Liquids leaking into the huddling chamber can quickly drain out by gravity and prevent fluid pressure from building up in the secondary area of the huddling chamber. Liquid relief valves are thus susceptible to a phenomenon called chatter, especially at low fluid flow rates. Chatter is the rapid opening and closing of the pressure relief valve and is always destructive.

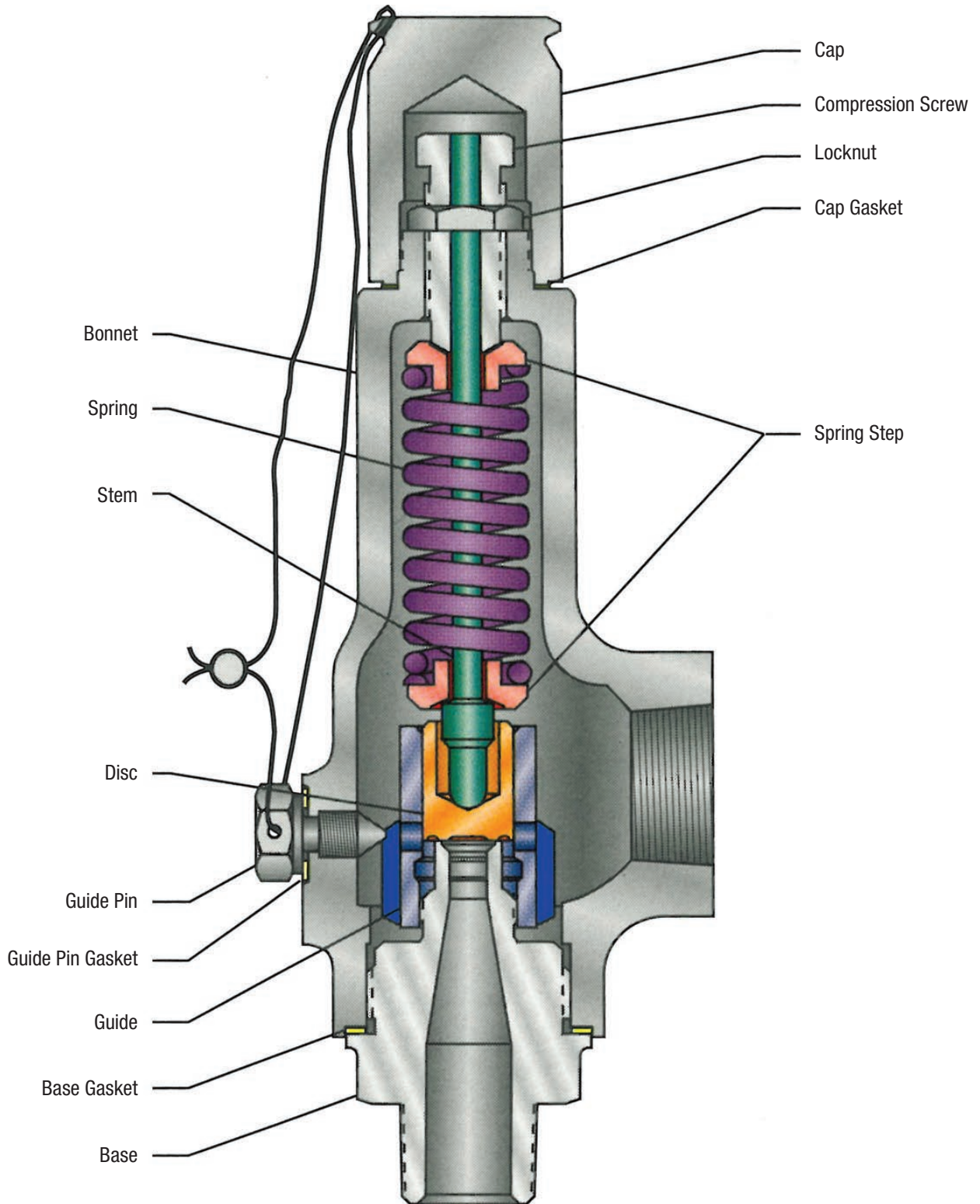
The liquid trim guide for the RL Series must be adjusted in order to meet the ASME Code Section VIII performance criteria of full rated liquid flow at 10% overpressure. Since no visible or audible pop is heard at set point, the RL Series liquid set pressure is defined as the pressure at which the first heavy flow occurs (a pencil sized steady stream of water that remains unbroken for approximately one inch).



RL40 & RL41 Series Pressure Relief Valve

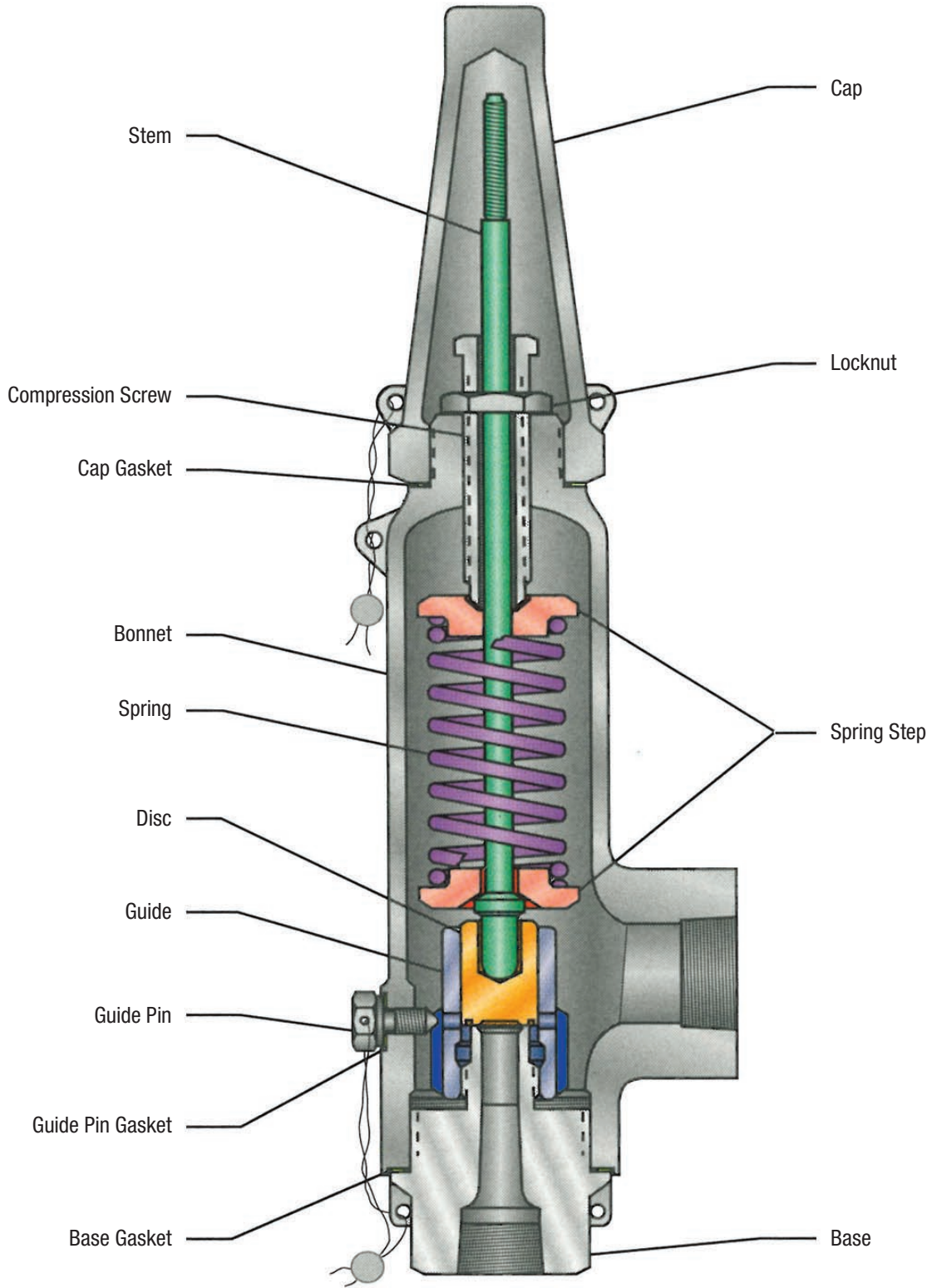
Reyco Valve Diagram

RL14 Series



Reyco Valve Diagram

RL40 and RL41 Series



RL Series Model Number Guide

Valve Type

- RL14** Conventional Valve
- RLO14** Conventional Valve, O-ring Seat (see note 1)
- RL40** Conventional Valve
- RLO40** Conventional Valve, O-ring Seat (see note 1)
- RL41** Conventional Valve
- RLO41** Conventional Valve, O-ring Seat (see note 1)

Inlet × Outlet Connections

- | | |
|---|--------------------------------------|
| A Female NPT × Female NPT | M ANSI Class 300 RF × 300 RF |
| B Male NPT × Female NPT | N ANSI Class 600 RF × 150 RF |
| D Socket Weld × Socket Weld | P ANSI Class 600 RF × 300 RF |
| E Butt Weld × Socket Weld (see note 2) | R ANSI Class 900 RF × 300 RF |
| J ANSI Class 150 RF × 150 RF | T ANSI Class 1500 RF × 300 RF |
| L ANSI Class 300 RF × 150 RF | V ANSI Class 2500 RF × 300 RF |

Orifice Sizing

- A** 0.077 in² (RL14 Model Only)
- B** 0.152 in² (RL40 and RL41 Model Only)
- C** 0.235 in² (RL40 and RL41 Model Only)
- G** 0.563 in² (RL40 Model Only)

Inlet × Outlet Sizing

- | | | |
|----------------------------|--------------------------|--------------------------|
| C 1/2 in × 1 in | F 3/4 in × 2 in | I 1 in × 2 in |
| D 3/4 in × 1 in | G 1 in × 1 in | J 1 1/2 in × 2 in |
| E 3/4 in × 1 1/2 in | H 1 in × 1 1/2 in | K 2 in × 2 in |

Materials and Trim (see note 3)

- S1** 316 SS Disc, Base, CS Bonnet, and Vanadium Spring
- S4** 316 SS Entire Valve
- H1** Hastelloy® C Disc and Base
- H4** Hastelloy® C Entire Valve
- M1** Monel® Disc and Base
- M4** Monel® Entire Valve
- SG** NACE MR-01-75 (Carbon Steel)
- SS** NACE MR-01-75 (Stainless Steel)

RL14 B A D S1 (Model number continued on next page)

RL Series Model Number Guide

Caps and Accessories (see note 4)

- 20 Screwed Cap without Gag
- 21 Screwed Cap with Gag
- 22 Open Lift Lever without Gag
- 23 Open Lift Lever with Gag
- 24 Packed Lift Lever without Gag
- 25 Packed Lift Lever with Gag
- 99 All other Materials, Caps, or Accessories

Design Revision

– Current Design

Service

- J ASME Section VIII Liquid
- K ASME Section VIII Gas and Vapors
- M Non Code Liquid
- N Non Code Gas, Vapor
- P Non Code Steam

Spring Material

- B Inconel X750
- C Chrome Vanadium
- G 316 Stainless Steel

Set Pressure, i.e.

- 0008 = 8 psig
- 0015 = 15 psig
- 0125 = 125 psig
- 3000 = 3000 psig

Notes

1. The standard soft seat material in RLO Models is Viton®.
2. Custom inlet/outlet welding nipple lengths upon request. 6-inch standard.
3. Duplex and other materials available upon request.
4. Codes 20-25 apply to Standard Materials only.

20 – K C 0200

Features and Benefits

Features and Benefits

- Precision lapped metal or soft seats provide premium seat tightness meeting or exceeding API 527 leakage standards.
- Materials of construction provide flexibility. CS, SS, Monel[®], Hastelloy[®] C, and other can be used in liquids, gases, corrosive media, H₂S and cryogenic services.
- ASME VIII compliance. Quality manufacturing and design meet certified relieving capacities by the National Board of Boilers and the Pressure Vessel Inspectors.
- Fourteen parts in RL14 Series provide simple reliable construction and ease of maintenance.
- RL40 and RL41 Series share common parts with Reyco's R and RB Series, reducing spare parts inventories.

General Specifications

- ASME VIII UV Certified
- 1/2-inch × 1-inch to 2-inch × 2-inch Inlet/Outlets
- 5 to 5,000 psig pressure range
- -400°F to +750°F temperature range
- Threaded, flanged, socket weld, and butt weld connections
- Metal or soft seats
- Standard accessories: lift levers and test gags
- Exotic materials (Monel[®] & Hastelloy[®] C) available
- Compliance to NACE MR-0175
- Oxygen cleaning (LOX, GOX)

Technical Data

RL14 Series

Vapor and Liquid Service

- Inlet: 1/2-inch to 1-inch
- Orifice: 0.077 inch²
- Fixed blowdown

RL40 Series

Vapor and Liquid Service

- Inlet: 3/4-inch to 2-inch
- Orifices: 0.152-inch², 0.235-inch², and 0.563-inch²
- Fixed blowdown

RL41 Series

Vapor and Liquid Service

- Inlet: 3/4-inch to 1 1/2-inch
- Orifices: 0.152-inch² and 0.235-inch²
- Fixed blowdown

Valve Selector

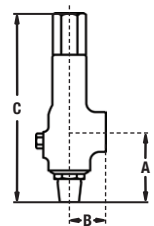
RL14 and RLO14

Specifications

Valve Size (inches)	Orifice Area (in ²)	Valve Model		Connections (RF or RTJ)		Max. Set Pressure ¹ (psig)			Max. Back Pressure (psig @ 100°F)	Valve Dimensions (inches)			Weight ² (lb)
		Conv.	O-Ring	Inlet	Outlet	100°F	400°F	750°F		A	B	Max. C	
1/2 × 1	0.077	RL14AAC	RLO14AAC	Female NPT	Female NPT	2900	2900	2900	400	2.63	1.85	9.49	4.3
3/4 × 1	0.077	RL14AAD	RLO14AAD	Female NPT	Female NPT	2900	2900	2900	400	2.63	1.85	9.49	4.3
1 × 1	0.077	RL14AAG	RLO14AAG	Female NPT	Female NPT	2900	2900	2900	400	2.63	1.85	9.49	4.3
1/2 × 1	0.077	RL14BAC	RLO14BAC	Male NPT	Female NPT	2900	2900	2900	400	3.15	1.85	10.05	4.3
3/4 × 1	0.077	RL14BAD	RLO14BAD	Male NPT	Female NPT	2900	2900	2900	400	3.15	1.85	10.05	4.3
1 × 1	0.077	RL14BAG	RLO14BAG	Male NPT	Female NPT	2900	2900	2900	400	3.40	1.85	10.30	4.3
1/2 × 1	0.077	RL14DAC	RLO14DAC	Socket Weld	Socket Weld	2500	2500	2500	400	welding extension lengths are customer specified			
3/4 × 1	0.077	RL14DAD	RLO14DAD	Socket Weld	Socket Weld	2500	2500	2500	400				
1 × 1	0.077	RL14DAG	RLO14DAG	Socket Weld	Socket Weld	2500	2500	2500	400				
1/2 × 1	0.077	RL14EAC	RLO14EAC	Butt Weld	Socket Weld	2500	2500	2500	400	welding extension lengths are customer specified			
3/4 × 1	0.077	RL14EAD	RLO14EAD	Butt Weld	Socket Weld	2500	2500	2500	400				
1 × 1	0.077	RL14EAG	RLO14EAG	Butt Weld	Socket Weld	2500	2500	2500	400				
1/2 × 1	0.077	RL14JAC	RLO14JAC	150 RF	150 RF	285	200	95	285	4.65	3.97	11.56	9.0
3/4 × 1	0.077	RL14JAD	RLO14JAD	150 RF	150 RF	285	200	95	285	4.72	3.97	11.56	9.0
1 × 1	0.077	RL14JAG	RLO14JAG	150 RF	150 RF	285	200	95	285	4.72	3.97	11.56	9.0
1/2 × 1	0.077	RL14LAC	RLO14LAC	300 RF	150 RF	744	635	505	285	4.65	3.97	11.56	10.0
3/4 × 1	0.077	RL14LAD	RLO14LAD	300 RF	150 RF	744	635	505	285	4.72	3.97	11.56	10.0
1 × 1	0.077	RL14LAG	RLO14LAG	300 RF	150 RF	744	635	505	285	4.72	3.97	11.56	10.0
1/2 × 1	0.077	RL14MAC	RLO14MAC	300 RF	300 RF	744	635	505	285	4.65	3.97	11.56	11.0
3/4 × 1	0.077	RL14MAD	RLO14MAD	300 RF	300 RF	744	635	505	285	4.72	3.97	11.56	11.0
1 × 1	0.077	RL14MAG	RLO14MAG	300 RF	300 RF	744	635	505	285	4.72	3.97	11.56	11.0
1/2 × 1	0.077	RL14NAC	RLO14NAC	600 RF	150 RF	1480	1270	1010	285	4.65	3.97	11.56	11.0
3/4 × 1	0.077	RL14NAD	RLO14NAD	600 RF	150 RF	1480	1270	1010	285	4.72	3.97	11.56	11.0
1 × 1	0.077	RL14NAG	RLO14NAG	600 RF	150 RF	1480	1270	1010	285	4.72	3.97	11.56	11.0
1/2 × 1	0.077	RL14PAC	RLO14PAC	600 RF	300 RF	1480	1270	1010	285	4.65	3.97	11.56	12.0
3/4 × 1	0.077	RL14PAD	RLO14PAD	600 RF	300 RF	1480	1270	1010	285	4.72	3.97	11.56	12.0
1 × 1	0.077	RL14PAG	RLO14PAG	600 RF	300 RF	1480	1270	1010	285	4.72	3.97	11.56	12.0
1/2 × 1	0.077	RL14RAC	RLO14RAC	900 RF	300 RF	2220	1847	1510	285	5.09	3.97	12.00	15.0
3/4 × 1	0.077	RL14RAD	RLO14RAD	900 RF	300 RF	2220	1847	1510	285	5.59	3.97	12.50	15.0
1 × 1	0.077	RL14RAG	RLO14RAG	900 RF	300 RF	2220	1847	1510	285	5.72	3.97	12.56	15.0
1/2 × 1	0.077	RL14TAC	RLO14TAC	1500 RF	300 RF	2500	2500	2500	400	5.09	3.97	12.00	15.0
3/4 × 1	0.077	RL14TAD	RLO14TAD	1500 RF	300 RF	2500	2500	2500	400	5.59	3.97	12.50	15.0
1 × 1	0.077	RL14TAG	RLO14TAG	1500 RF	300 RF	2500	2500	2500	400	5.72	3.97	12.56	15.0

Notes

1. Minimum operating temperature is -400°F.
2. Add one pound to listed weight for packed lift lever.
3. Steam valves set under 15 psig are not ASME code stamped. Minimum set pressure is 5 psig.
4. Maximum A and B dimensions ± 1/16-inch.
5. Temperatures above 450°F require alloy steel spring.



Valve Selector

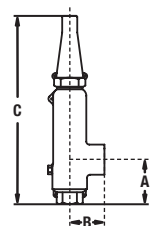
RL40 and RLO40

Specifications

Valve Size (inches)	Orifice Area (in ²)	Valve Model		Connections (RF or RTJ)		Max. Set Pressure ¹ (psig)			Max. Back Pressure (psig @ 100°F)	Valve Dimensions (inches)			Weight ² (lb)
		Conv.	O-Ring	Inlet	Outlet	100°F	450°F	750°F		A	B	Max. C	
3/4 × 1	0.152	RL40ABD	RLO40ABD	Female NPT	Female NPT	3000	3000	3000	400	3.62	2.88	15.49	15.0
1 × 1 1/2	0.235	RL40ACH	RLO40ACH	Female NPT	Female NPT	2000	2000	2000	400	3.62	2.88	15.49	15.0
1 1/2 × 2	0.563	RL40AGJ	RLO40AGJ	Female NPT	Female NPT	1500	1500	1500	400	4.00	2.88	17.35	24.0
2 × 2	0.563	RL40AGK	RLO40AGK	Female NPT	Female NPT	1500	1500	1500	400	4.00	2.88	17.35	24.0
3/4 × 1	0.152	RL40BBD	RLO40BBD	Male NPT	Female NPT	3000	3000	3000	400	4.00	2.88	15.89	16.0
1 × 1 1/2	0.235	RL40BCH	RLO40BCH	Male NPT	Female NPT	2000	2000	2000	400	4.00	2.88	15.89	16.0
1 1/2 × 2	0.563	RL40BGJ	RLO40BGJ	Male NPT	Female NPT	1500	1500	1500	400	4.38	2.88	17.75	25.0
2 × 2	0.563	RL40BGK	RLO40BGK	Male NPT	Female NPT	1500	1500	1500	400	4.38	2.88	17.75	25.0
3/4 × 1	0.152	RL40DBD	RLO40DBD	Socket Weld	Socket Weld	3000	3000	3000	400	welding extension lengths are customer specified			
1 × 1 1/2	0.235	RL40DCH	RLO40DCH	Socket Weld	Socket Weld	2000	2000	2000	400	welding extension lengths are customer specified			
3/4 × 1	0.152	RL40EBD	RLO40EBD	Butt Weld	Socket Weld	3000	3000	3000	400	welding extension lengths are customer specified			
1 × 1 1/2	0.235	RL40ECH	RLO40ECH	Butt Weld	Socket Weld	2000	2000	2000	400	welding extension lengths are customer specified			
3/4 × 1	0.152	RL40JBD	RLO40JBD	150 RF	150 RF	285	185	95	285	5.75	5.00	17.88	21.0
1 × 1 1/2	0.235	RL40JCH	RLO40JCH	150 RF	150 RF	285	185	95	285	5.75	5.38	17.88	23.0
1 1/2 × 2	0.563	RL40JGJ	RLO40JGJ	150 RF	150 RF	285	185	95	285	6.50	5.62	20.12	35.0
2 × 2	0.563	RL40JGK	RLO40JGK	150 RF	150 RF	285	185	95	285	6.75	5.62	20.38	37.0
3/4 × 1	0.152	RL40LBD	RLO40LBD	300 RF	150 RF	740	617	505	285	5.75	5.00	17.88	21.0
1 × 1 1/2	0.235	RL40LCH	RLO40LCH	300 RF	150 RF	740	617	505	285	5.75	5.38	17.88	23.0
1 1/2 × 2	0.563	RL40LGJ	RLO40LGJ	300 RF	150 RF	740	617	505	285	6.50	5.62	20.12	35.0
2 × 2	0.563	RL40LGK	RLO40LGK	300 RF	150 RF	740	617	505	285	6.75	5.62	20.38	43.0
1 × 1 1/2	0.235	RL40MVE	RLO40MVE	300 RF	300 RF	740	617	505	285	5.75	5.38	17.88	23.0
1 1/2 × 2	0.563	RL40MGG	RLO40MGG	300 RF	300 RF	740	617	505	285	6.50	5.62	20.12	41.0
3/4 × 1	0.152	RL40NBD	RLO40NBD	600 RF	150 RF	1480	1235	1010	285	5.75	5.00	17.88	21.0
1 × 1 1/2	0.235	RL40NCH	RLO40NCH	600 RF	150 RF	1480	1235	1010	285	5.75	5.38	17.88	23.0
1 1/2 × 2	0.563	RL40NGJ	RLO40NGJ	600 RF	150 RF	1480	1235	1010	285	6.50	5.62	20.12	41.0
2 × 2	0.563	RL40NGK	RLO40NGK	600 RF	150 RF	1480	1235	1010	285	6.75	5.62	20.38	43.0
1 1/2 × 2	0.563	RL40PGJ	RLO40PGJ	600 RF	300 RF	1480	1235	1010	285	6.50	5.62	20.12	35.0
3/4 × 1	0.152	RL40RBD	RLO40RBD	900 RF	300 RF	2220	1847	1510	285	6.62	5.00	18.75	27.0
3/4 × 1	0.152	RL40TBD	RLO40TBD	1500 RF	300 RF	3000	3000	2520	400	6.62	5.00	18.75	27.0
1 × 1 1/2	0.235	RL40TCH	RLO40TCH	1500 RF	300 RF	2000	2000	2000	400	6.62	5.38	18.75	29.0
1 1/2 × 2	0.563	RL40TGj	RLO40TGj	1500 RF	300 RF	2000	2000	2000	400	7.38	5.62	20.99	47.0
2 × 2	0.563	RL40TGK	RLO40TGK	1500 RF	300 RF	1500	1500	1500	400	7.62	5.62	21.25	49.0

Notes

1. Minimum operating temperature is -400°F.
2. Add one pound to listed weight for packed lift lever.
3. Steam valves set under 15 psig are not ASME code stamped. Minimum set pressure is 5 psig.
4. Maximum A and B dimensions ± 1/16-inch.
5. Temperatures above 450°F require alloy steel spring.



Valve Selector

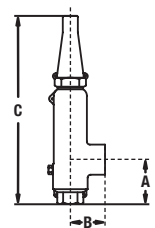
RL41 and RLO41

Specifications

Valve Size (inches)	Orifice Area (in ²)	Valve Model		Connections (RF or RTJ)		Max. Set Pressure ¹ (psig)			Max. Back Pressure (psig @ 100°F)	Valve Dimensions (inches)			Weight ² (lb)
		Conv.	O-Ring	Inlet	Outlet	100°F	450°F	750°F		A	B	Max. C	
3/4 × 2	0.152	RL41ABF	RLO41ABF	Female NPT	Female NPT	5000	5000	5000	400	4.00	2.88	17.35	15.0
1 × 2	0.235	RL41ACI	RLO41ACI	Female NPT	Female NPT	3000	3000	3000	400	4.00	2.88	17.35	15.0
3/4 × 2	0.152	RL41BBF	RLO41BBF	Male NPT	Female NPT	5000	5000	5000	400	4.38	2.88	17.75	16.0
1 × 2	0.235	RL41BCI	RLO41BCI	Male NPT	Female NPT	3000	3000	3000	400	4.38	2.88	17.75	16.0
1 × 2	0.235	RL41RCI	RLO41RCI	900 RF	300 RF	2220	1847	1510	400	5.38	5.38	18.88	27.0
3/4 × 2	0.152	RL41TBF	RLO41TBF	1500 RF	300 RF	3705	3170	2520	400	5.38	5.38	18.88	27.0
1 × 2	0.235	RL41TCI	RLO41TCI	1500 RF	300 RF	3000	3000	2520	400	5.38	5.38	18.88	31.0
3/4 × 2	0.152	RL41VBF	RLO41VBF	2500 RF	300 RF	5000	5000	4200	400	5.38	5.62	19.12	31.0
1 × 2	0.235	RL41VCI	RLO41VCI	2500 RF	300 RF	3000	3000	2520	400	5.38	5.62	19.12	31.0

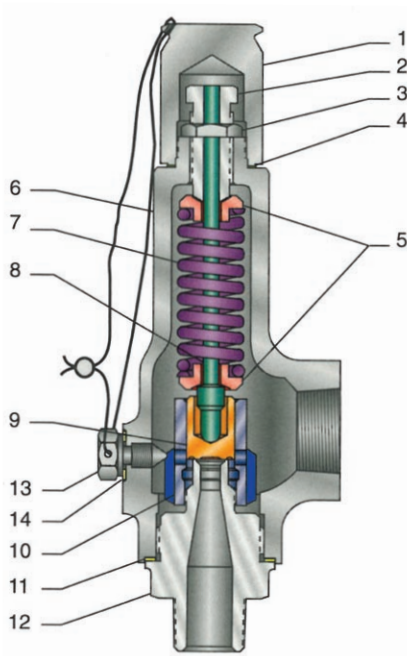
Notes

1. Minimum operating temperature is -400°F.
2. Add one pound to listed weight for packed lift lever.
3. Steam valves set under 15 psig are not ASME code stamped. Minimum set pressure is 5 psig.
4. Maximum A and B dimensions ± 1/16-inch.
5. Temperatures above 450°F require alloy steel spring.



Bill of Materials

RL14 Series Standard Trim



S1 Trim for RL14 Conventional Pressure Relief Valve

Part No.	Part Name	Materials
1	Cap	A108 CS
2	Compression Screw	A479 316 SS
3	Locknut	A479 316 SS
4	Cap Gasket	Soft Iron
5	Spring Steps	A479 316 SS
6	Bonnet	SA216 GR WCC CS
7	Spring	Chrome Vanadium (see note 2)
8	Stem	A479 316 SS
9	Disc	A479 316 SS
10	Guide	SA351 CF8M SS
11	Base Gasket	Soft Iron
12	Base	SA351 CF8M SS
13	Guide Pin Screw	A479 316 SS
14	Guide Pin Gasket	Soft Iron

Notes

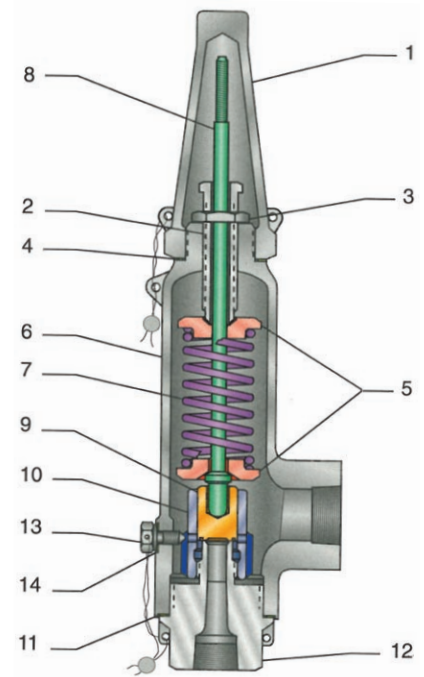
1. Steam valves set under 15 psig are not ASME code stamped.
2. Temperatures above 450°F require alloy steel spring.
3. Minimum set pressure is 5 psig.

Bill of Materials

RL40 and RL41 Series Standard Trim

S1 Trim for RL40 and RL41 Conventional Pressure Relief Valve

Part No.	Part Name	Materials
1	Cap	SA216 GR WCC CS
2	Compression Screw	A479 316 SS
3	Locknut	A479 316 SS
4	Cap Gasket	Soft Iron
5	Spring Steps	A479 316 SS
6	Bonnet	SA216 GR WCC CS
7	Spring	Chrome Vanadium (see note 2)
8	Stem	A479 316 SS
9	Disc	A479 316 SS
10	Guide	SA351 CF8M SS
11	Base Gasket	Soft Iron
12	Base	SA351 CF8M SS
13	Guide Pin Screw	A479 316 SS
14	Guide Pin Gasket	Soft Iron



Notes

1. Steam valves set under 15 psig are not ASME code stamped.
2. Temperatures above 450°F require alloy steel spring.
3. Minimum set pressure is 5 psig.

Bill of Materials

RL14 Series Trim Options

Standard and Monel® Trim for RL14 Series

Part Name	S1	S4	M1	M4
	Standard Trim	Entire Valve	Base and Disc	Entire Valve
	-20°F to +750°F	-400°F to +750°F	-20°F to +750°F	-320°F to +750°F
Cap	A108 CS	A479 316 SS	A108 CS	Monel® B164
Compression Screw	A479 316 SS	A479 316 SS	A479 316 SS	Monel® B164
Locknut	A479 316 SS	A479 316 SS	A479 316 SS	Monel® B164
Cap Gasket	Soft Iron	Monel®	Soft Iron	Monel®
Spring Steps	A479 316 SS	A479 316 SS	A479 316 SS	Monel® B164
Bonnet	SA 216 GR. WCC	SA351 CF8M 316 SS	SA 216 GR. WCC	Monel® A494
Spring	Chrome Vanadium	A313 316 SS	Chrome Vanadium	Monel® B164
Stem	A479 316 SS	A479 316 SS	A479 316 SS	Monel® B164
Disc	SA479 316 SS	SA479 316 SS	Monel® SB164	Monel® SB164
Guide	SA351 CF8M 316 SS	SA351 CF8M 316 SS	SA351 CF8M 316 SS	Monel® A494
Base Gasket	Soft Iron	Monel®	Soft Iron	Monel®
Base	SA351 CF8M 316 SS	SA351 CF8M 316 SS	Monel® A494	Monel® A494
Guide Pin Screw	A479 316 SS	A479 316 SS	A479 316 SS	Monel® B164
Guide Pin Gasket	Soft Iron	Monel®	Soft Iron	Monel®

Hastelloy® C and Sour Gas Trim for RL14 Series

Part Name	H1	H4	SG	SS
	Disc and Base	Entire Valve	Sour Gas NACE MR-01-75	Sour Gas NACE MR-01-75
	-20°F to +750°F	-20°F to +750°F	-20°F to +750°F	-20°F to +750°F
Cap	A108 CS	Hastelloy® C B574	A108 CS	A479 316 SS
Compression Screw	A479 316 SS	Hastelloy® C B574	A479 316 SS	A479 316 SS
Locknut	A479 316 SS	Hastelloy® C B574	A479 316 SS	A479 316 SS
Cap Gasket	Soft Iron	Hastelloy® C	Monel®	Monel®
Spring Steps	A479 316 SS	Hastelloy® C B574	A479 316 SS	A479 316 SS
Bonnet	SA 216 GR. WCC	Hastelloy® C A494	SA 216 GR. WCC	SA351 CF8M 316 SS
Spring	Chrome Vanadium	Hastelloy® C B574	Inconel® X750 B574	A313 316 SS
Stem	A479 316 SS	Hastelloy® C B574	A479 316 SS	A479 316 SS
Disc	Hastelloy® C B574	Hastelloy® C B574	A479 316 SS	SA479 316 SS
Guide	SA351 CF8M 316 SS	Hastelloy® C A494	SA351 CF8M 316 SS	SA351 CF8M 316 SS
Base Gasket	Soft Iron	Hastelloy® C	Monel®	Monel®
Base	Hastelloy® C A494	Hastelloy® C A494	SA351 CF8M 316 SS	SA351 CF8M 316 SS
Guide Pin Screw	A479 316 SS	Hastelloy® C B574	A479 316 SS	A479 316 SS
Guide Pin Gasket	Soft Iron	Hastelloy® C	Monel®	Monel®

Bill of Materials

RL40 and RL41 Series Trim Options

Standard and Monel® Trim for RL40 and RL41 Series

Part Name	S1	S4	M1	M4
	Standard Trim	Entire Valve	Base and Disc	Entire Valve
	-20°F to +750°F	-400°F to +750°F	-20°F to +750°F	-320°F to +750°F
Cap	SA 216 GR. WCC	SA351 CF8M 316 SS	SA 216 GR. WCC	Monel® A494
Compression Screw	A479 316 SS	A479 316 SS	A479 316 SS	Monel® B164
Locknut	A479 316 SS	A479 316 SS	A479 316 SS	Monel® B164
Cap Gasket	Soft Iron	Monel®	Soft Iron	Monel®
Spring Steps	A479 316 SS	A479 316 SS	A479 316 SS	Monel® B164
Bonnet	SA 216 GR. WCC	SA351 CF8M 316 SS	SA 216 GR. WCC	Monel® A494
Spring	Chrome Vanadium	A313 316 SS	Chrome Vanadium	Monel® B164
Stem	A479 316 SS	A479 316 SS	A479 316 SS	Monel® B164
Disc	SA479 316 SS	SA479 316 SS	Monel® SB164	Monel® SB164
Guide	SA351 CF8M 316 SS	SA351 CF8M 316 SS	SA351 CF8M 316 SS	Monel® A494
Base Gasket	Soft Iron	Monel®	Soft Iron	Monel®
Base	SA351 CF8M 316 SS	SA351 CF8M 316 SS	Monel® A494	Monel® A494
Guide Pin Screw	A479 316 SS	A479 316 SS	A479 316 SS	Monel® B164
Guide Pin Gasket	Soft Iron	Monel®	Soft Iron	Monel®

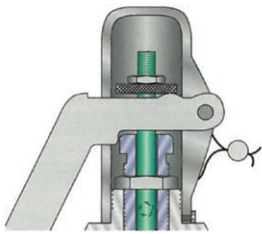
Hastelloy® C and Sour Gas Trim for RL40 and RL41 Series

Part Name	H1	H4	SG	SS
	Disc and Base	Entire Valve	Sour Gas NACE MR-01-75	Sour Gas NACE MR-01-75
	-20°F to +750°F	-20°F to +750°F	-20°F to +750°F	-20°F to +750°F
Cap	SA 216 GR. WCC	Hastelloy® C A494	SA 216 GR. WCC	A479 316 SS
Compression Screw	A479 316 SS	Hastelloy® C B574	A479 316 SS	A479 316 SS
Locknut	A479 316 SS	Hastelloy® C B574	A479 316 SS	A479 316 SS
Cap Gasket	Soft Iron	Hastelloy® C	Monel®	Monel®
Spring Steps	A479 316 SS	Hastelloy® C B574	A479 316 SS	A479 316 SS
Bonnet	SA 216 GR. WCC	Hastelloy® C A494	SA 216 GR. WCC	SA351 CF8M 316 SS
Spring	Chrome Vanadium	Hastelloy® C B574	Inconel® X750 B574	A313 316 SS
Stem	A479 316 SS	Hastelloy® C B574	A479 316 SS	A479 316 SS
Disc	Hastelloy® C SB574	Hastelloy® C SB574	SA479 316 SS	SA479 316 SS
Guide	SA351 CF8M 316 SS	Hastelloy® C A494	SA351 CF8M 316 SS	SA351 CF8M 316 SS
Base Gasket	Soft Iron	Hastelloy® C	Monel®	Monel®
Base	Hastelloy® C A494	Hastelloy® C A494	SA351 CF8M 316 SS	SA351 CF8M 316 SS
Guide Pin Screw	A479 316 SS	Hastelloy® C B574	A479 316 SS	A479 316 SS
Guide Pin Gasket	Soft Iron	Hastelloy® C	Monel®	Monel®

Accessories

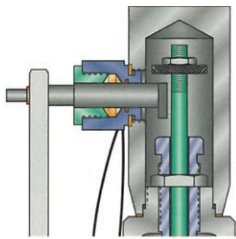
Lifting Levers and Cap Options

Standard construction of pressure relief valves include a screwed cap. However, a wide variety of cap styles are available, at extra charge, to meet the most rigid requirements. A lifting mechanism is recommended to test for correct valve operation at all times where corrosion, caking, or any deposit could prevent the opening operation of the pressure relief valve. Foreign particles will often lodge under the seats of the valve when it discharges. The ability to lift the valve immediately and flush the obstruction may prevent damage and eliminate the possible shutdown of the unit. Pressure relief valves for Section VIII require a lift lever on all air, steam, and hot water valves (over 140°F, 60°C).



Open Lift Lever – RL14, RLO14, RL40, RLO40, RL41, and RLO41

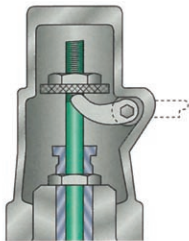
This design type is suitable where periodic testing of the valve in location is desired to assure its operation. When the valve discharges, the fluid media will escape to atmosphere around the open lift lever assembly. This cap is not recommended where back pressure is present, or the escape of vapors to atmosphere is undesirable.



RL14 Series

Packed Lift Lever – RL14, RLO14, RL40, RLO40, RL41, and RLO41

This design type should be selected when the valve is discharging to a header system or subject to back pressure. The cap unit is completely sealed to prevent leakage. This design should also be selected when media leaking to the atmosphere would be a hazard to personnel in the area.



RL40 and RL41 Series

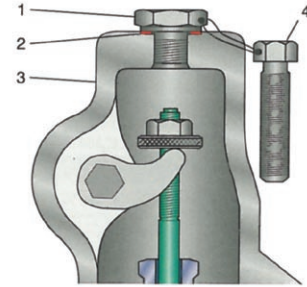
Accessories

Additional Attachments

Gag Screw Test Gag

A Test Gag forces the valve into the closed position. This can be necessary for start-up configurations.

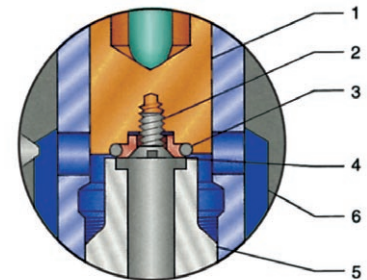
Caution: Test Gags must be removed prior to placing the pressure relief valve into service.



Part No.	Part Name	Materials
1	Gag Screw Plug	A479 316 SS
2	Gag Screw Gasket	Soft Iron
3	Cap (Packed or Threaded)	SA216 WCC CS
4	Gag Screw	A479 316 SS

O-ring Seat Seals – RLO14, RLO40, and RLO41

An O-ring seat seal is an effective seat leak stopper, even in the severest application, saving valuable product and maintenance costs.

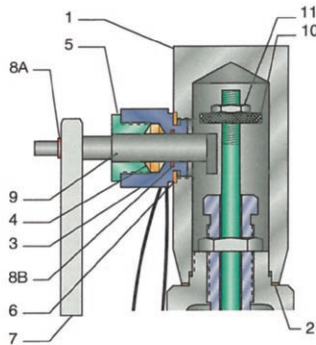


Part No.	Part Name	Materials
1	Disc	SA479 316 SS
2	Retainer Screw	316 SS
3	O-ring	Viton A
4	Disc Retainer	SA479 316 SS
5	Base	SA351 CF8M 316SS
6	Guide	SA351 CF8M 316SS

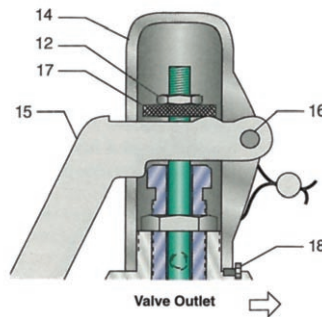
Accessories

Lift Lever Materials – RL14 Series

Packed Lift Lever



Open Lift Lever



Specifications

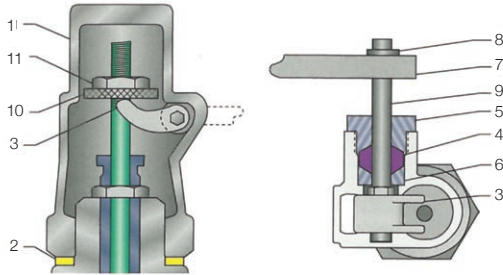
Packed Lift Lever	S1 Trims	S4 Trims	M4 Trim	H4 Trim
1. Cap	A108 CS	A479 316 SS	Monel® B164	Hastelloy® C B574
2. Cap Gasket	Soft Iron	Monel®	Monel®	Monel®
3. Gland Housing	A479 303 SS	A479 316 SS	Monel® B164	Hastelloy® C B574
4. Packing	Graphite	Graphite	Graphite	Graphite
5. Packing Gland	A479 416 SS	A479 316 SS	Monel® B164	Hastelloy® C B574
6. Housing Gasket	Soft Iron	Monel®	Monel®	Monel®
7. Lever	A108 CS	A108 CS	A108 CS	A108 CS
8A. Lever Retaining Ring	Carbon Steel	Carbon Steel	Carbon Steel	Carbon Steel
8B. Packing Retaining Ring	Carbon Steel	Stainless Steel	Stainless Steel	Stainless Steel
9. Shaft	A479 303 SS	A479 316 SS	Monel® B164	Hastelloy® C B574
10. Lifting Disc	A479 316 SS	A479 316 SS	Monel® B164	Hastelloy® C B574
11. Jam Nut	18-8 SS	18-8 SS	Monel® B164	Hastelloy® C B574

Open Lift Lever	S1 Trims	S4 Trims	M4 Trim	H4 Trim
12. Jam Nut	18-8 SS	18-8 SS	18-8 SS	18-8 SS
13. Cotter Pin	Carbon Steel	Carbon Steel	Carbon Steel	Carbon Steel
14. Cap	Brass	Brass	Brass	Brass
15. Lever	A108 CS	A108 CS	A108 CS	A108 CS
16. Lever Pin	A108 CS	A108 CS	A108 CS	A108 CS
17. Lifting Disc	A479 316 SS	A479 316 SS	A479 316 SS	A479 316 SS
18. Set Screw	Carbon Steel	Carbon Steel	Carbon Steel	Carbon Steel

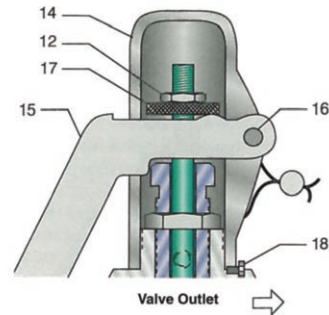
Accessories

Lift Lever Materials – RL40 and RL41 Series

Packed Lift Lever



Open Lift Lever



Specifications

Packed Lift Lever	S1 Trims	S4 Trims	M4 Trim	H4 Trim
1. Cap	A216 GR. WCB	A351 GR. CF8M SS	Monel® A494	Hastelloy® C A494
2. Cap Gasket	Soft Iron	Monel®	Monel®	Hastelloy® C
3. Yoke	A216 GR. WCB	A351 GR. CF8M SS	Monel® A494	Hastelloy® C B574
4. Packing	Graphite	Graphite	Graphite	Graphite
5. Packing Gland	A479 316 SS	A479 316 SS	Monel® B164	Hastelloy® C B574
6. Collar	A108	A479 316 SS	Monel® B164	Hastelloy® C B574
7. Lever	A108 CS	A108 CS	A108 CS	A108 CS
8. Lever Retaining Ring	A108 CS	A108 CS	A108 CS	A108 CS
9. Shaft	A479 316 SS	A479 316 SS	Monel® B164	Hastelloy® C B574
10. Lifting Disc	A479 303 SS	A479 303 SS	Monel® B164	Hastelloy® C B574
11. Jam Nut	A479 303 SS	A479 303 SS	Monel® B164	Hastelloy® C B574

Open Lift Lever	S1 Trims	S4 Trims	M4 Trim	H4 Trim
14. Jam Nut	18-8 SS	18-8 SS	18-8 SS	18-8 SS
15. Cotter Pin	Carbon Steel	Carbon Steel	Carbon Steel	Carbon Steel
16. Cap	Brass	Brass	Brass	Brass
17. Lever	A108 CS	A108 CS	A108 CS	A108 CS
18. Lever Pin	A108 CS	A108 CS	A108 CS	A108 CS
19. Lifting Disc	A479 316 SS	A479 316 SS	A479 316 SS	A479 316 SS
20. Set Screw	Carbon Steel	Carbon Steel	Carbon Steel	Carbon Steel

O-ring Seat Seals – RLO Series

O-ring seat seals are effective seat-leak stoppers, even in the severest application, saving valuable product and maintenance costs. The O-ring seat seal assures maximum tightness at pressures closer to the critical set pressure than is possible in a standard metal-to-metal seat valve.

Reyco's O-ring seat seals are available in all RL Series Valves. These seals can be used up to the set pressure limit of the individual valve. A material selection chart for temperature ratings of the various O-ring materials can be found on the following page.

An O-ring seat seal can solve the following problems:

1. Leakage caused by corrosion

Corrosive fluids may erode sealing surfaces and cause damaging leakage. O-ring seat seal safety relief valves resist such corrosive action through the proper use of O-ring materials to seal against leakage, as well as shield and protect the valve's optically flat, metal-to-metal surfaces.

2. Simmer from pressure buildup

Almost all pressure relief valves go through a characteristic "simmering stage" before sufficient pressure in the huddling chamber "pops" it open. During momentary surges and pressure buildups, the valve frequently simmers without popping. During this period, the valve disc is floating. When pressure recedes, the seating surfaces often become misaligned, causing leakage. The O-ring seat seal overcomes this problem and permits tight closure after the pressure drops below simmer. Should the valve pop, the valve recloses completely and tightly, pop after pop, without damaging the O-ring.

3. High operating pressures

In process applications, operating pressures are often close to valve set pressures. As the system pressure nears valve set pressure, the net spring force affecting seat tightness is greatly reduced. Reyco's O-ring seat seal design permits higher operating pressures while maintaining absolute tightness.

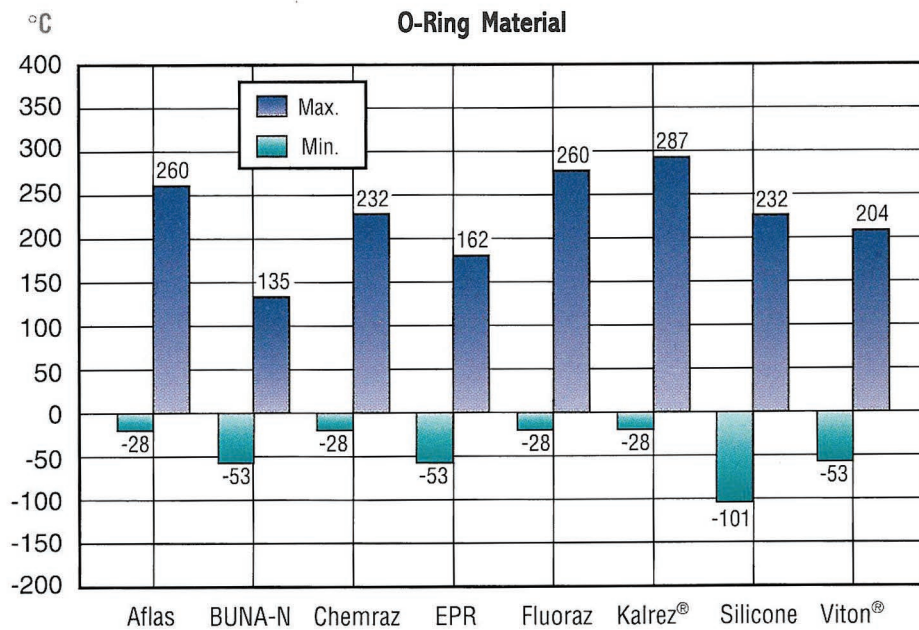
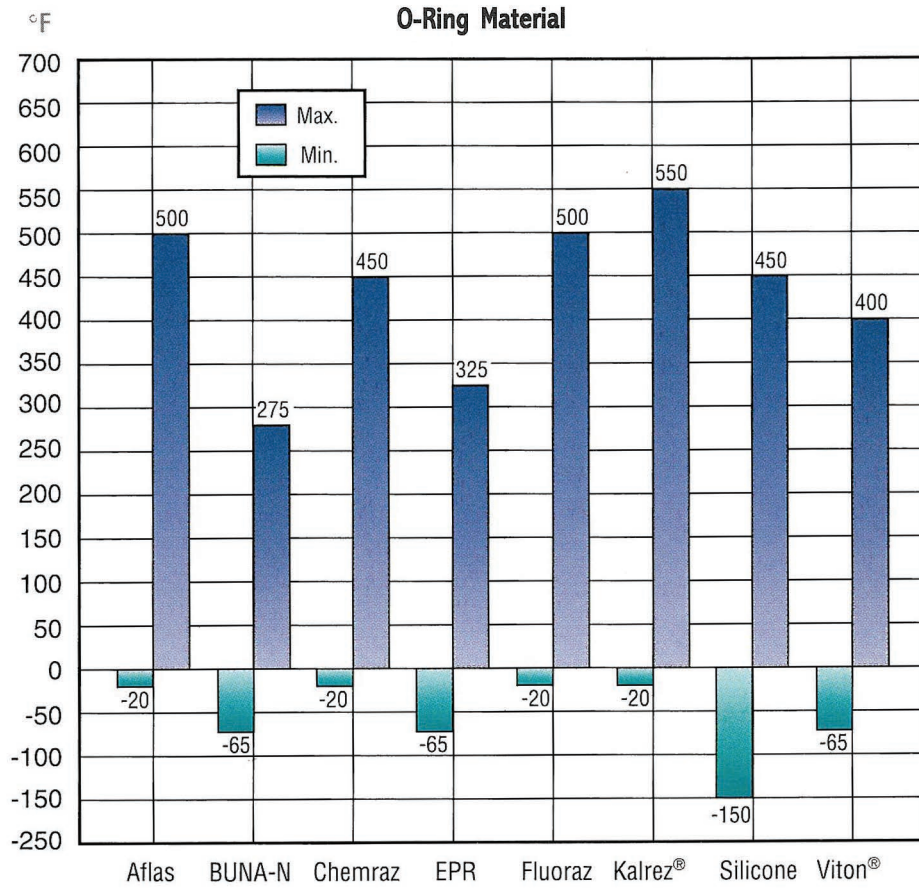
4. Leakage from light fluids

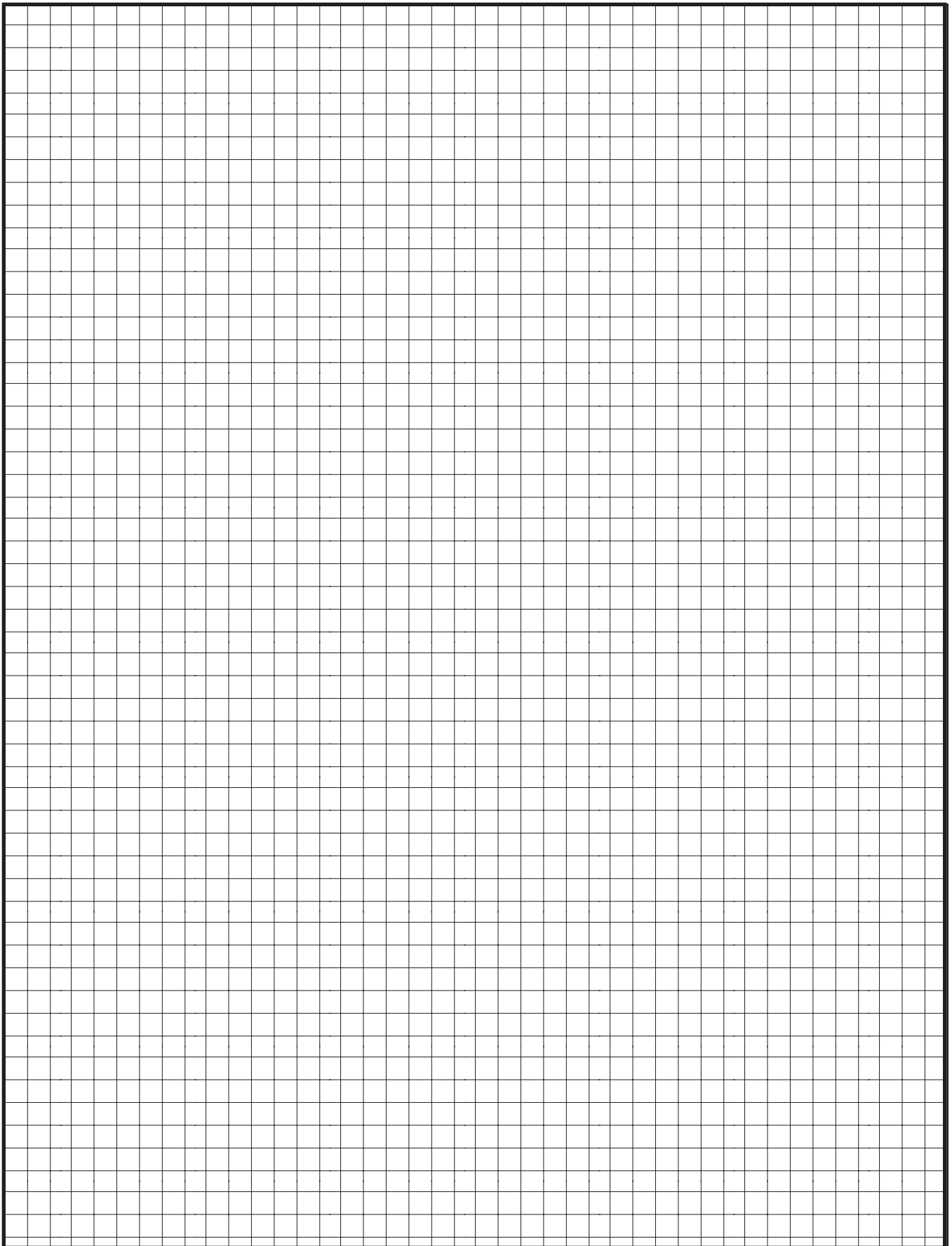
Fluids such as hydrogen, helium, light hydrocarbons and anhydrous ammonia are light and difficult to contain. They easily infiltrate the metal-to-metal type seat, resulting in costly leaks. The Reyco O-ring seat seal eliminates such leakage.

5. Metal-to-metal seat damage

Occasionally, minute particles of foreign matter are carried in the flow medium, damaging the metal-to-metal seat during valve closure. The O-ring seat seal absorbs the full impact of such particles and minimizes seat damage and deformation of mating metal surfaces.

O-ring Selector Chart – RLO Series







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