RETSCO RELIEF VALVE

TITAN CLASS 3” - “B”



- New Balanced, Hydraulically Cushioned Piston
- Innovative Seal Design
- Rugged Body Insert
- Minimal Downtime

RETSCO, LTD.

RETSCO LTD ● 7123 BREEN ROAD ● HOUSTON, TEXAS,77086 ● Telphone: (281) 931-7171 ● FAX: (281) 931-7101
www.retscoltd.com



The Titan Class "3"-

"B" Reset Relief Valve automatically snap to a full open position when the set pressure is reached.

The Titan Class Reset Relief Valves come equipped with a position release button that indicates at a glance whether the valve is open or closed.

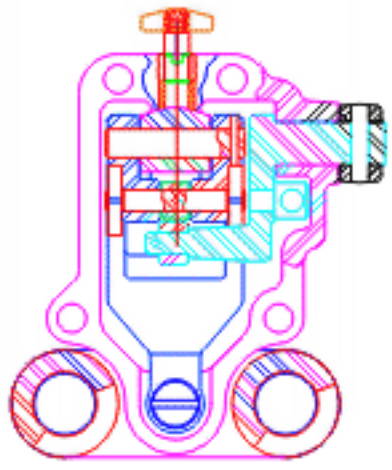
The Titan Class Reset Relief Valve is the best stand-alone mechanically operated reset relief valve in the market place today.

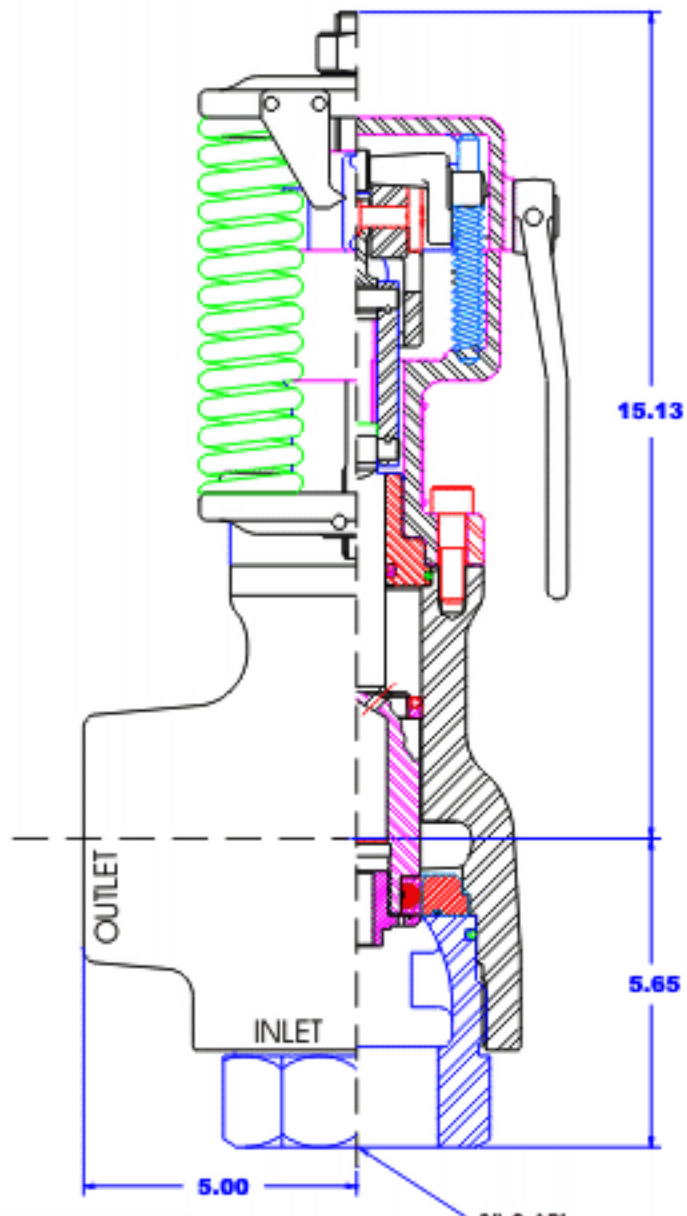
•Features:

- **Bonnet and top-loaded piston and seals can be removed while body is in line**
- **Minimum down time for repair**
- **New design improves seal life**
- **Rugged nickel alloy 718 body insert**
- **Innovative seal design to increase the number of resets without seal replacement**
- **Easy to adjust set pressure and reset**
- **Settings can be increased under pressure**
- **Hydraulically balanced and cushioned piston**

Specifications:

- **Set pressures:** 400 - 1500 psi
  750 - 2500 psi
  1500 - 5000 psi
- **Flow area:** CV= 148
- **Service type:** Standard,Nace MR-0175
- **Temp. Rating:** -20°- 225° F (-29 - 107°C)
- **Certification:** Available
- **U.S. Patent No:** 5,715,861





PRESSURE RATING	Assembly P/N
400 -1500 PSI	33000 - 01
750 - 2500 PSI	33000 - 02
1500 - 5000 PSI	33000 - 03

----API AND ANSI AND CUSTOM END CONNECTIONS AVAILABLE----

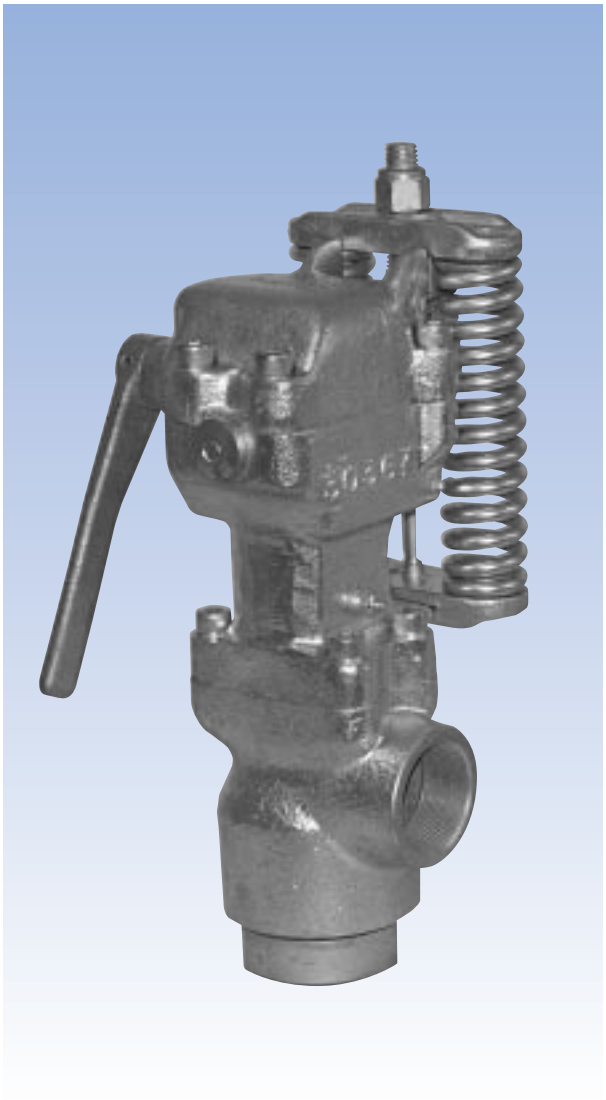
*****ASK ABOUT OUR RELIEF VALVE / PRESSURE GAUGE PACKAGE*****

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2" Type “B” Reset Relief Valve

Formerly Cameron

The RETSCO, Ltd. Type “B” reset relief valve is used as a safety relief valve on slush pumps, mud manifolds, and other equipment to protect against damaging pressure surges. The valve pressure setting is indicated by a pointer and is adjustable over the entire operating range.



- The pressure setting can be changed while the valve is under pressure.
- When the preset pressure is exceeded, the valve snaps to the fully open position. After pressure is relieved, the valve is closed by a trip-free reset lever.
- Setting accuracy is not affected by vibration, pressure surges, or valve operation.
- Pressure setting scales are available in psi, bars, and MPa.
- The stainless steel valve piston seats against an elastomer seal which is out of the direct path of flow.
- Rapid valve opening and isolation of the seal minimize erosion.
- The valve is fully enclosed for safety and to retain the protective grease coating on all moving parts in the bonnet assembly.
- No shear pins or other parts are needed for resetting to the closed position.
- A manual release button in the bonnet assembly permits easy and rapid opening of the valve regardless of line pressure.
- The position of the release button indicates whether the valve is open or closed.
- Relief pressure can be set at any value over the entire range of the valve.

2" Type “B” Reset Relief Valve

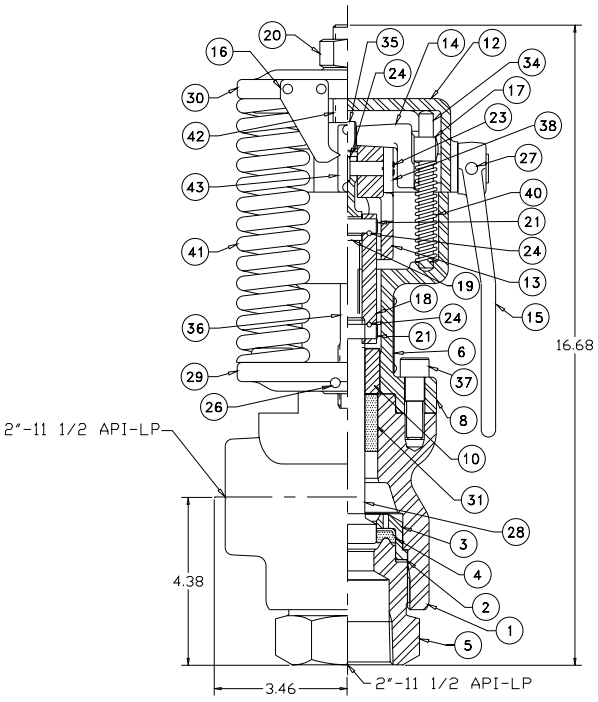
- Valve comes complete with material certification and traceability
- Valve is also available in H_2S service

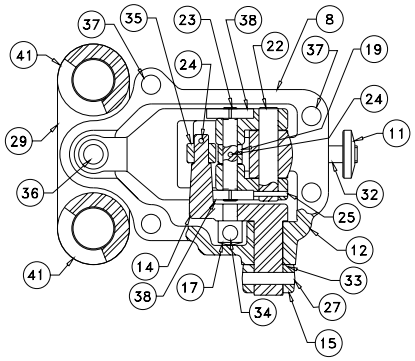
2" Type “B” Parts List

Formerly Cameron

Part Number: 30400

Assembly No.	Pressure Range
30400-01	750 – 2500 PSI
30400-02	1500 – 5000 PSI
30400-03	400 – 1500 PSI





ITEM	DESCRIPTION	PART No.
1	Body	20780
2	Sub Gasket	21792
3	Reset Relief Valve Retainer	20790
4	Reset Relief Valve Piston Seal	20788
5	Sub	20793-15
8	Bonnet Sub-Assembly*	31859
	Plain Sleeve Bearing (2 ea) for Bonnet Sub-Assembly	13229-08
9	Bushing for Release Button	31865
10	Stem Bushing	30369
11	Release Button	30396
12	Bonnet Cover	38159
	Plain Sleeve Bearing for Bonnet Cover	13229-12
13	Crank Assembly	38161
	Plain Sleeve Bearing (2 ea) for Crank Assembly	13229-13
14	Reset Crank	30373
15	Reset Handle	30377
16	Indicator	30379
17	Spring Keeper	30380
18	Lower Link	20786
19	Upper Link	31977
	Plain Sleeve Bearing for Upper Link	13229-10
20	Elastic Stop Nut	5953-34
21	Lower Link Pin	23545
22	Crank Pivot Pin	30381
23	Top Crank Pin	31975
24	1/8" Dia. Spirol Pin x 5/8" Lg. (6 ea)	20712-02
25	1/8" Dia. Spirol Pin x 7/8" Lg. (1 ea)	20712-03
26	1/4" Dia. Spirol Pin x 1-1/2" Lg. (2 ea)	20712-04
27	5/16" Dia. Spirol Pin x 1-3/8" Lg. (1 ea)	20712-13
28	Piston Assembly	20784
29	Lower Spring Retainer	30382
30	Upper Spring Retainer	30385
31	Cushion Ring	20795
32	Release Shaft	30397
33	O-Ring (MS-1004)	702640-21-01
34	Spring Guide Rod	30387
35	Reset Crank Roller	30388
36	Load Screw	30389
37	Socket Head Cap Screw (8 ea)	204044-10-14
38	Reset Lever Spring (2 ea)	20791
39	Release Button Spring	31868
40	Reset Crank Spring	30391
41	Load Spring (2 ea):	
	400psi-1500psi	20805-03
	750psi-2500psi	20805-02
	1500psi-5000psi	20805-01
42	Adjusting Stud	20798
43	Calibration Plate:	
	400psi-1500psi	31591
	750psi-2500psi	111342
	1500psi-5000psi	111343
44	Self-Tapping Phillips Head Screw (2 ea)	710242
45	Name Plate	30170
46	Release Button Bushing Retainer Ring	31869
47	#6 U-Drive Screw (6 ea)	111656
48	Straight Grease Fitting	5929-02
***	Repair Kit 2" Type B	309161-01
	Piston Seal	20788
	Cushion Ring	20795
	Sub Gasket	21792-15
	O-Ring	702640-21-01
	RRV Test Procedure	X-006130-01

*Complete Bonnet Assembly can be ordered under part number 30418

RETSCO RELIEF VALVE

TITAN CLASS “C” & “CH”



- New Balanced, Hydraulically Cushioned Piston
- Innovative Seal Design
- Rugged Body Insert
- Minimal Downtime

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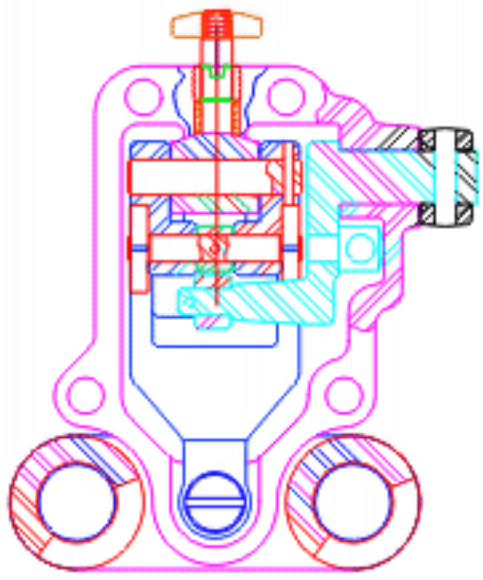


The Titan Class "C" Relief Valve automatically snaps to a full open position when the set pressure is reached.

The Titan Class Relief Valve comes equipped with a position release button that indicates at a glance whether the valve is open or closed.

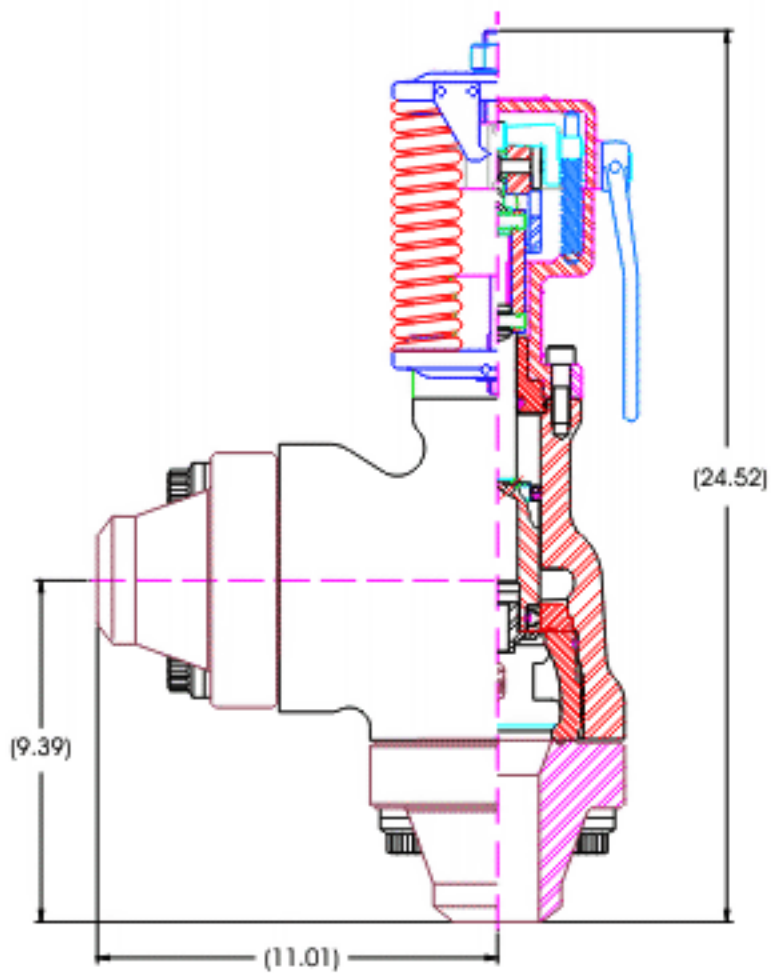
The Titan Class Relief Valve is the best stand-alone mechanically operated reset relief valve in the market place today.

- **Features:**
- Hydraulically balanced and cushioned piston
- Bonnet and top-loaded piston and seals can be removed while body is in line
- Minimum down time for repair
- New design improves seal life
- Rugged nickel alloy 718 body insert
- Innovative seal design to increase the number of resets without seal replacement
- Easy to adjust set pressure and reset
- Settings can be increased under pressure



Specifications:

- Set pressures: 400- 1500 psi
  750 - 2500 psi
  1500 - 5000 psi
  2500 - 6200 psi
- Flow area: CV= 148
- Service type: Standard, Nace MR-017
- Temp. Rating: -20°- 225° F (-29 - 107 °C)
- Certification: Available
- U.S. Patent No. 5,715,861



PRESSURE RATING	ASSEMBLY P/N	END CONNECTIONS			
		BUTT WELD		UNION	
		INLET	OUTLET	INLET	OUTLET
C 750 - 2500 PSI	34000-01	3"- SCH XXH	3"- SCH XXH	UNION ASSY AVAILABLE: 602, 1002, 1502	
C1500 - 5000 PSI	34000-02	3"- SCH XXH	3"- SCH XXH		
C 400 - 1500 PSI	34000-03	3"- SCH XXH	3"- SCH XXH		
C 750 - 2500 PSI	34000-01-01				
C 1500 - 5000 PSI	34000-02-01				
C 400 - 1500 PSI	34000-03-01				
CH 2500 - 6200 PSI	35000-01				

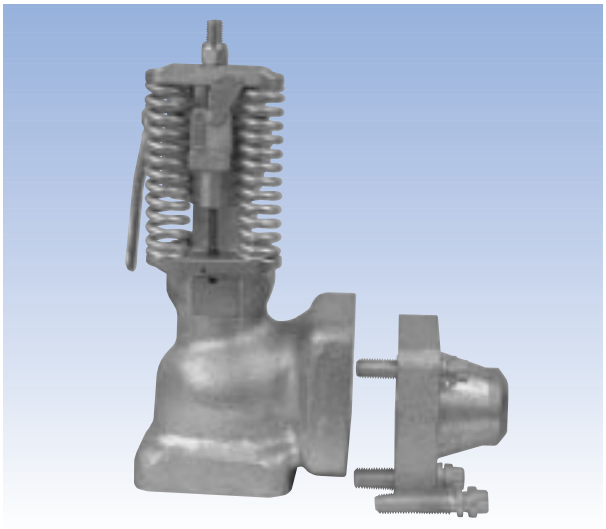
----AVAILABLE WITH : API / ANSI FLANGES, OR CUSTOM END CONNECTIONS----

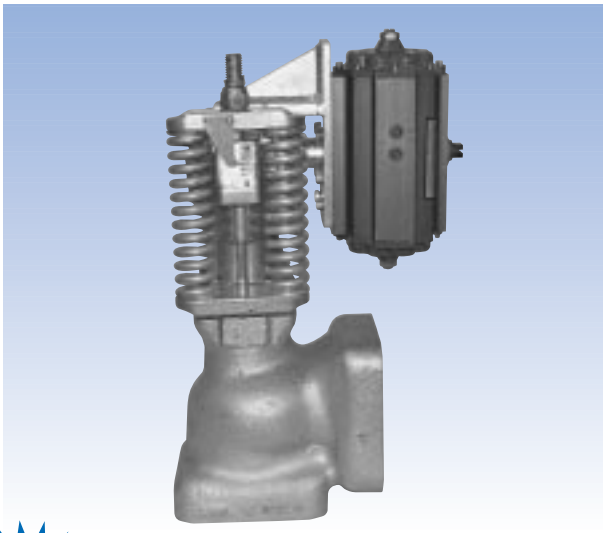
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www.retscoltd.com

3" Type “C & CH” Reset Relief Valve

The RETSCO, Ltd. flanged reset relief valve is used as a safety valve on slush pumps, mud manifolds and other equipment to protect against high pressure surges. The valve pressure setting is indicated by a pointer and is adjustable over the entire operating range.





NEW *Automated Reset for Remote Operation*

Increased reliability and service life

- The butt-welded flanges improve connection integrity.
- There are no load bearing threaded connections.
- Four bolt flange provides easier access to regularly serviced parts.
- Entire valve can be replaced or repaired with all piping in place.
- The pressure setting can be changed while the valve is under pressure.
- When the preset pressure is exceeded, the valve snaps to the fully open position. After pressure is relieved, the valve is closed by a trip-free reset lever.
- Setting accuracy is not affected by vibration, pressure surges, or valve operation.
- Pressure setting scales are available in psi, bars and MPa.
- The stainless steel valve piston seats against an elastomer seal which is out of the direct path of flow.
- Rapid valve opening and isolation of the seal minimize erosion.
- The bonnet assembly is fully enclosed and lubricated for safe smooth operation.
- When the manual release button is depressed, the valve opens quickly and easily regardless of line pressure.
- Retsco unitized connector assemblies can be ordered as an option on these valves. (See page 12)

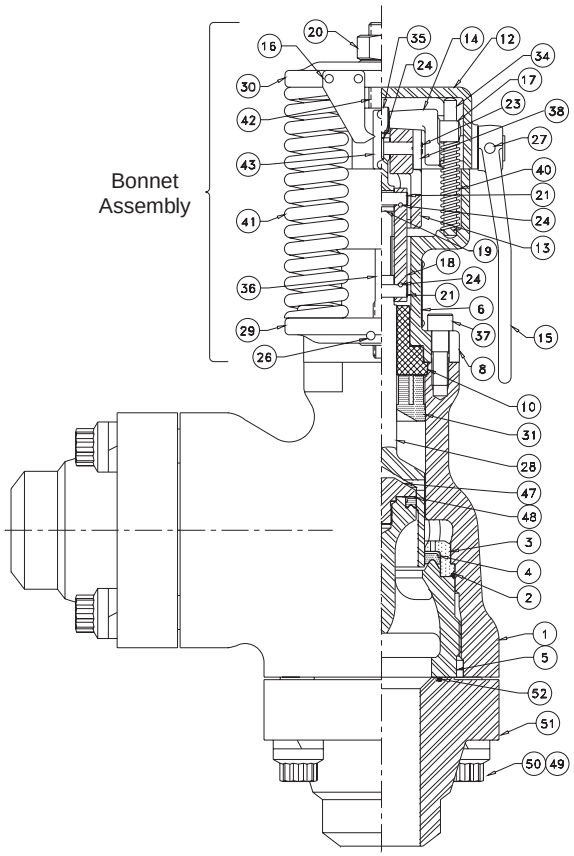
3" Type “C” Reset Relief Valve 400-5000 psi
3" Type “CH” Reset Relief Valve 2500-6200 psi

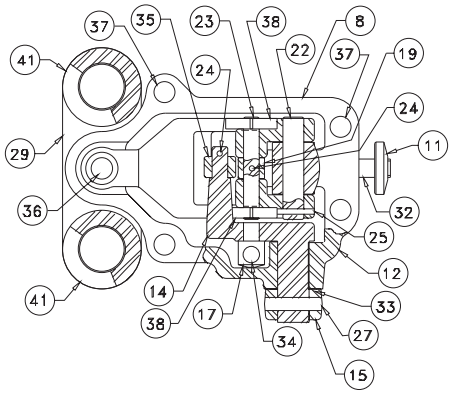
- Valve comes complete with material certification and traceability
- Valve has DNV type approval
- Valve is also available in H_2S service

3" Type “C & CH” Parts List

Formerly Cameron

Part Number: 31862
31879





Optional Configurations

*Complete Bonnet Assembly can be ordered under part number 31863.
Unitized Connector Assemblies See Page 12 for Parts List.

Assembly No.	Pressure Range
31862-01	750 – 2500 PSI
31862-02	1500 – 5000 PSI
31862-03	400 – 1500 PSI
31879	2500 – 6200 PSI

ITEM	DESCRIPTION	PART No.
1	Body	31858
2	O-Ring (MS-1004)	702640-24-31
3	Outer Retainer	30827
4	Piston Outer Seal	30833
5	Sub	31861
8	Bonnet Sub-Assembly*	31859
	Plain Sleeve Bearing (2 ea) for Bonnet Sub-Assembly	13229-08
9	Bushing for Release Button	31865
10	Stem Bushing	30828
11	Release Button	30396
12	Bonnet Cover Assembly F/3"	38159
	Plain Sleeve Bearing for Bonnet Cover	13229-12
13	Crank Assembly	38161
	Plain Sleeve Bearing (2 ea) for Crank Assembly	13229-13
14	Reset Crank	30373
15	Reset Handle	30377
16	Indicator	30379
17	Spring Keeper	30380
18	Lower Link (2 ea)	20786
19	Upper Link	31977
	Plain Sleeve Bearing for Upper Link	13229-10
20	Elastic Stop Nut	5953-34
21	Lower Link Pin (2 ea)	23545
22	Crank Pivot Pin	30381
23	Top Crank Pin	31975
24	1/8" Dia. Spirol Pin x 5/8" Lg. (6 ea)	20712-02
25	1/8" Dia. Spirol Pin x 7/8" Lg. (1 ea)	20712-03
26	1/4" Dia. Spirol Pin x 1-1/2" Lg. (2 ea)	20712-04
27	5/16" Dia. Spirol Pin x 1-3/8" Lg. (1 ea)	20712-13
28	Piston Assembly	30829
	Plain Sleeve Bearing	13229-10
29	Lower Spring Retainer	30382
30	Upper Spring Retainer	30385
31	Cushion Ring	31860
32	Release Shaft	30397
33	O-Ring (MS-1004)	702640-21-01
34	Spring Guide Rod	30387
35	Reset Crank Roller	30388
36	Load Screw	30389
37	Socket Head Cap Screw (8 ea)	204044-10-14
38	Reset Lever Spring (2 ea)	20791
39	Release Button Spring	31868
40	Reset Crank Spring	30391
41	Load Spring (2 ea):	
	400psi-1500psi	20805-03
	750psi-2500psi	20805-02
	1500psi-5000psi	20805-01
42	Adjusting Stud	20798
43	Calibration Plate:	
	400psi-1500psi	31591
	750psi-2500psi	111342
	1500psi-5000psi	111343
44	Self-Tapping Phillips Head Screw (2 ea)	710242
45	Name Plate	30170
46	Straight Grease Fitting	5929-02
47	Inner Retainer	30826
48	Piston Inner Seal	30831
49	Screw, 12 Pt., GR 8 (1"-8NC 12 Pt. external) (8 ea)	111676
50	Hi Collar Lock Washer (8 ea)	111680
51	3" XXH 4-Bolt SAE Type Flange (2 ea)	31852
52	Flange O-Ring (2 ea)	702640-23-71
53	Release Button Bushing Retainer Ring	31869
54	#6 U-Drive Screw (10 ea)	111656
55	Repair Kit 3” F-P/N 31862-02-01	31872-01
	O-Ring	702640-24-31
	Piston Outer Seal	30833
	Cushion Ring	31860
	Piston Inner Seal	30831
	RRV Test Procedure	X-006130-01
	Flange O-Ring	702640-23-71
	Handle O-Ring	702640-21-01

RETSCO RELIEF VALVE

TITAN CLASS “RX”

- New Balanced, Hydraulically Cushioned Piston
- Innovative Seal Design
- Rugged Body Insert
- Minimal Downtime



RETSCO, LTD.

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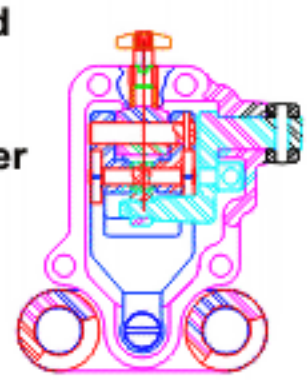
The Titan Class "RX" Reset Relief Valves automatically snap to a full open position when the set pressure is reached.

The Titan Class Reset Relief Valve come equipped with a position release button that indicates at a glance whether the valve is open or closed.

The Titan Class Reset Relief Valve is the best stand-alone mechanically operated reset relief valve in the market place today.

- **Features:**
- **Bonnet and top-Loaded Piston and Seals can be removed while Body Is in line**
- **Minimum Down Time for Repair**
- **New Design Improves Seal Life**
- **Rugged Nickel Alloy 718 body insert**
- **Innovative Seal Design to increase the number of resets without seal replacement**
- **Easy to Adjust Set Pressure and Reset**
- **Settings Can Be Increased Under Pressure**
- **Hydraulically balanced and cushioned piston**

- **Specifications:**
- **Set Pressures:** 2000 - 8000 psi
- **Flow Area:** CV= 148
- **Service Type:** Standard, Nace MR-0175
- **Temp. Rating:** -20°- 225° F (-29 -107°C)
- **Certification:** Available
- **U.S. Patent No.** 5,715,861



PRESSURE RATING	ASSEMBLY P/N	END CONNECTIONS			
		BUTT WELD		UNION	
		INLET	OUTLET	INLET	OUTLET
2000 - 8000 PSI	36000-02			3" – 1502 MALE	3" – 1502 FEMALE
2000 - 8000 PSI	36000-03	3 1/2" - XXH	3 1/2" - XXH		

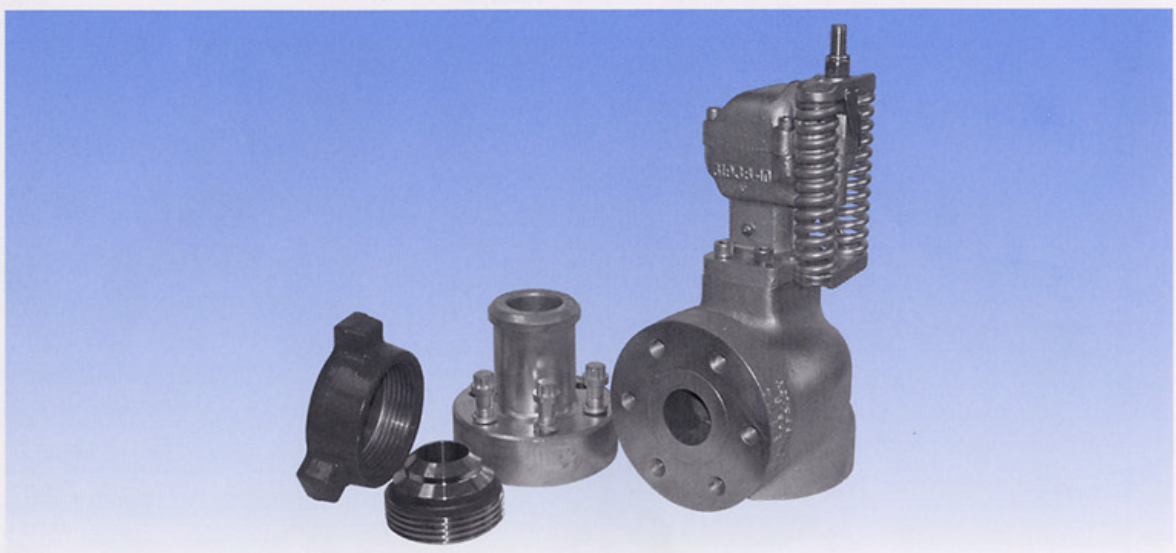
----API AND ANSI AND CUSTOM END CONNECTIONS AVAILABLE----

*****ASK ABOUT OUR RELIEF VALVE / PRESSURE GAUGE PACKAGE*****

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www.retscoltd.com

Type "RX" Reset Relief Valve

The RETSCO, Ltd. Type "RX" reset relief valve is used as a safety valve on slush pumps, mud manifolds and other equipment to protect against damaging pressure surges. The Type "RX" Flanged valve is manufactured and tested in dual operating ranges of 3000-7500 and 7000-10,000 psi. The relief pressure setting is 100 % adjustable over the entire range of the valve and is performed simply by turning a single nut. RETSCO's Flanged Type "RX" valve has the advantage of leaving piping in place when removed thanks to the innovative flange connectors which incorporate 1002 and 1502 male and female connection profiles. Not only does this design aid access for servicing but improves connection integrity.



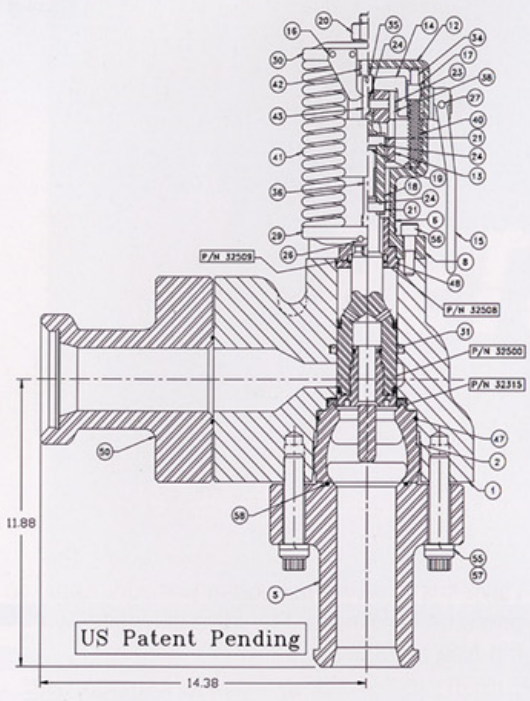
- Dual operating ranges, 3000-7500 psi and 7000-10,000 psi.
- 100% adjustable relief setting over entire pressure range.
- Flanged connection integrity.
- No load bearing connections exposed to flow.
- Accurate and durable.
- Hydraulic damping to protect linkage.
- Easy to adjust and reset.
- Stable performance with vibration and pressure surges.
- Clear visual indication of valve set/open status.
- The pressure setting can be changed while the valve is under pressure.
- Pressure scales are available in psi, bars and MPa.
- When the preset pressure is exceeded, the valve snaps to the fully open position. After the pressure is relieved, the valve is closed by a trip-free reset lever.
- Entire valve can be repaired or replaced with all piping in place.
- New piston design with integral seals for increased stability. (Patent Pending)
- Male and female 'unitized' mating flanged connectors incorporate 1002 and 1502 connection profiles.
- The bonnet assembly is fully enclosed and lubricated for safe, smooth operation.
- When the manual release button is depressed, the valve snaps open quickly and easily regardless of line pressure.

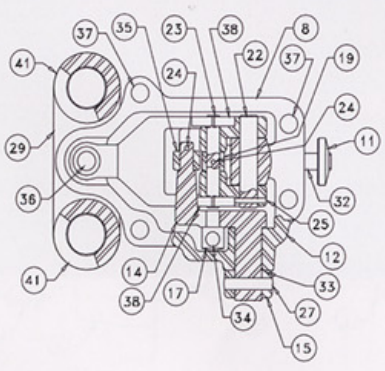
Type "RX" Reset Relief Valve

- Valve comes complete with material certification and traceability
- Valve has DNV type approval
- Valve is also available in H_2S service

Type "RX" Parts List

Part Number: 32400 32600





Assembly No.	Pressure Range
32400	3000 – 7500 PSI
32600	7000 – 10,000 PSI

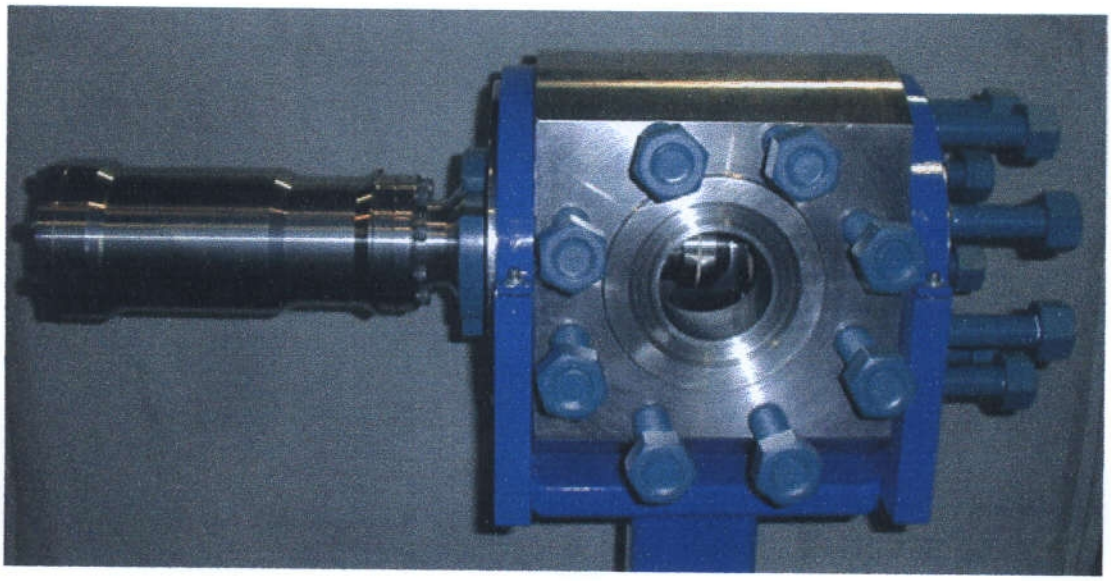
ITEM	QTY	DESCRIPTION	PART No.
1	1	Body	31950
2	1	Sub	31948
4	1	Piston Outer Seal	32315
5	1	Flange / 1502 Male Connector	31951
8	1	Bonnet Sub-Assembly for 5/8" Capscrews	31939
	1	Bearing for Bonnet Sub-Assembly	013229-08L
9	1	Bushing for Release Button	31865
10	1	Stem Bushing	32508
11	1	Release Button	30396
12	1	Bonnet Cover Ass'y f/3" RRV	38159
	1	Plain Sleeve Bearing for Cover	013229-12
13	1	Crank Ass'y	38161
	2	Plain Sleeve Bearing	13229-13
14	1	Reset Crank	30373
15	1	Reset Handle	30377
16	1	Indicator	30379
17	1	Spring Keeper	30380
18	2	Lower Link	20786
19	1	Upper Link Ass'y	31977
	1	Plain Sleeve Bearing	13229-10
20	1	Elastic Stop Nut	005953-34
21	2	Lower Link Pin	23545
22	1	Crank Pivot Pin	30381
23	1	Top Crank Pin	31975
24	6	1/8" Dia. Roll Pin x 5/8" Lg.	020712-02
25	1	1/8" Dia. Roll Pin x 7/8" Lg.	020712-03
26	2	1/4" Dia. Roll Pin x 1-1/2" Lg.	020712-04
27	1	5/16 Dia. Roll Pin x 1-3/8" Lg.	020712-13
28	1	Piston Assembly	32500
	1	Piston Body	32500-01
	1	Bearing for Piston	013229-10
	1	Piston Cap	32500-02
	1	Piston Seal Kit	32500-03
	1	Piston Lower Seal	32501
	1	Piston Shoulder Seal	32502
	1	O-Ring (Cap Face)	702640-03-20
	1	O-Ring (Inner Piston)	702640-21-40
	1	Piston Assembly Tool	32505
29	1	Lower Spring Retainer	30382
30	1	Upper Spring Retainer	30385
31	1	Upper Piston Seal	31908
32	1	Release Shaft	30397
33	1	O-Ring (MS-1004)	702640-21-01
34	1	Spring Guide Rod	30387
35	1	Reset Crank Roller	30388
36	1	Load Screw	30389
37	4	Bonnet Cover Screw	204044-10-14
38	2	Reset Lever Spring	20791
39	1	Release Button Spring	31868
40	1	Reset Crank Spring	30391
41	2	Load Spring	20805-01
42	1	Adjusting Stud	20798
43	1	Calibration Plate 3000-7500psi.	32510
44	2	Self-Tapping Phillips Head Screw	710242
45	1	Name Plate	30170-03
46	1	Straight Grease Fitting	5929-02
47	1	Exhaust Port O-Ring	702640-24-41
48	1	Piston Stem O-Ring	702640-23-01
49	1	Stem Seal	32509
50	1	Flange / 1502 Female Connector	31952
53	1	Release Button Bushing Retainer Ring	31869
54	6	#6 U-Drive Screw	111656
55	12	12-Point Cap Screw, 7/8" Diameter	111686
56	4	Socket Head Cap Screw, 5/8" Dia.	063150-10-14
57	12	Hi-Collar Lock Washer f/ 7/8" Screw	111690
58	2	Flange O-Ring	702640-23-71
—	—	Rubber Repair Kit (Type RX RRV Body)	32301
	2	Flange O-Ring	702640-23-71
	1	Outer RRV Piston Seal	32315
	1	Upper RRV Piston Seal	31908
	1	Piston Stem O-Ring	702640-23-01
	1	Handle O-Ring	702640-21-01
	1	Exhaust Port O-Ring	702640-24-41
	1	Stem Seal For Type "RX"	32509

RETSCO, INC.

7123 Breen Road • Houston, Texas 77086 • (281) 931-7171 • FAX (281) 931-7101

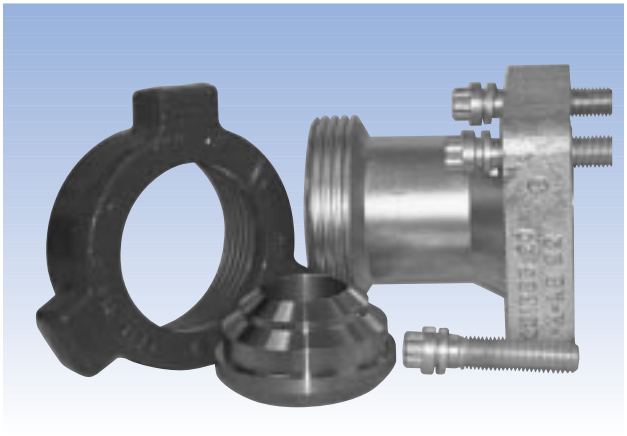
RETSCO'S NEW HIGH PERFORMANCE BX8000 RELIEF VALVE
(Mud Pump Relief Valve)

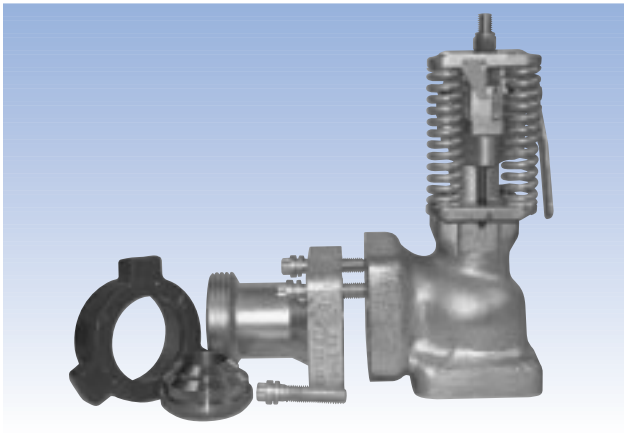
- A TOTALLY NEW RELIEF VALVE WITH AN ADVANCED DESIGN CONCEPT
- USER FRIENDLY
- ALL STAINLESS STEEL CONSTRUCTION
- VALVE OPERATES USING STANDARD RIG AIR PRESSURE
- RELIEVING DIRECTION IS 'FLOW-TO-CLOSE'
- ACCURACY TO WITHIN ± .2% FULL SCALE; 500-8000 PSI RANGE (NO SPRINGS TO CHANGE), OR ±16 PSI AT 8,000 PSI
- LONG STROKE ACTUATOR COMPLETELY REMOVES PISTON FROM FLOW PATH, LARGE Cv, QUIET OPERATION
- ALL WETTED COMPONENTS SERVICEABLE FROM BONNET END OF BODY (NO NEED TO REMOVE VALVE FROM LINE)
- LONG-LASTING PRIMARY PISTON SEALING ELEMENT
- NO DYNAMIC ELASTOMER SEALING ELEMENTS IN MEDIA
- STUDDED API 3-1/16 (BX-154) 10,000 PSI OR 3"-1502 UNION CONNECTIONS
- DURABLE, WEAR RESISTANT SLEEVE ELEMENT
- SYSTEM COMES COMPLETE WITH NICKEL ALLOY X-750 PRESSURE TRANSDUCER
- REMOTE SET POINT ADJUSTMENT AND VALVE RESETTING FROM DRILLER'S PANEL (STANDARD), REMOTE MONITORING OF VALVE POSITION (OPTIONAL)
- A MINIMUM NUMBER OF PARTS ARE REQUIRED FOR FIELD REPAIR
- PATENT PENDING



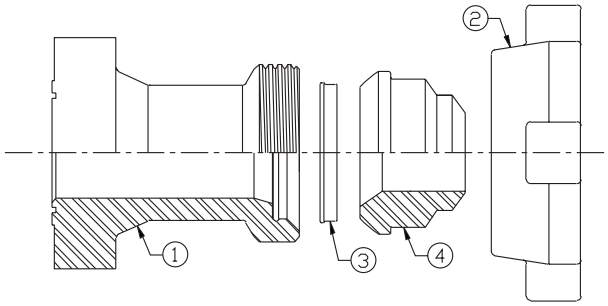
Retsco Unitized Connector Assemblies

Optional configuration for 3" Type C & CH Reset Relief Valves.



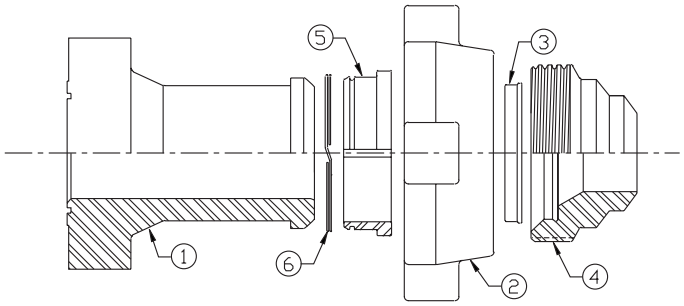


1002 – Hammer Union



Unitized Connector Assembly
Part No. 31893 (Flange 1002 Female)

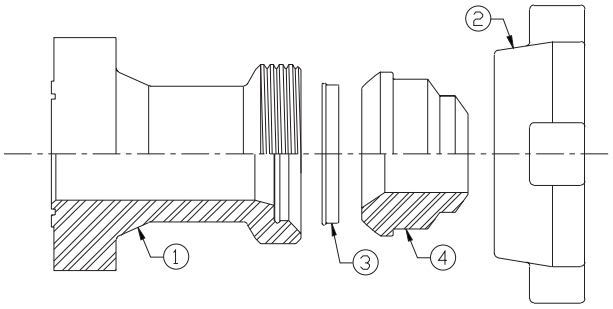
Item	Description	Part No.
1	Flange 1002 Female Connector	31892
2	Detachable Nut	31881
3	Nitrile Seal Ring	31884
4	Male Half (Butt Weld Prep Piece)	31880



Unitized Connector Assembly
Part No. 31894 (Flange 1002 Male)

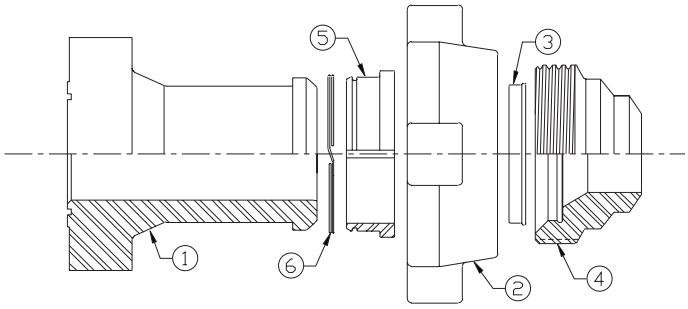
Item	Description	Part No.
1	Flange 1002 Male Connector	31891
2	Detachable Nut	31881
3	Nitrile Seal Ring	31884
4	Female Half (Butt Weld Prep Piece)	31871
5	Retainer Segments (3 ea. Included)	31926
6	Retainer Ring	31927

1502 – Hammer Union



Unitized Connector Assembly
Part No. 31885 (Flange 1502 Female)

Item	Description	Part No.
1	Flange 1502 Female Connector	31930
2	Detachable Nut	31925
3	Nitrile Seal Ring	31884
4	Male Half (Butt Weld Prep Piece)	31931



Unitized Connector Assembly
Part No. 31886 (Flange 1502 Male)

Item	Description	Part No.
1	Flange 1502 Male Connector	31929
2	Detachable Nut	31925
3	Nitrile Seal Ring	31884
4	Female Half (Butt Weld Prep Piece)	31932
5	Retainer Segments (3 ea. Included)	31926
6	Retainer Ring	31927