



# Installation, Operation, Inspection and Maintenance Manual



## **PRESSURE RELIEF VALVE MODELS:**

JS75 & JS75S  
JS75H & JS75HS  
JS165H & JS165HS

JS75XH & JS75XHS  
JS75L & JS75LS  
JS165L & JS165LS

JS75XL & JS75XLS  
JS75LT & JS75LTS  
JS165LT & JS165LTS

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## 1.0 Introduction

The Kelso external pressure relief valve raises the bar on **best available and safest technology** for the railroad transportation industry. With thousands of units in service, our PRV has demonstrated reliable, safe and effective with limited maintenance and repair.



### 1.1 Precautions

The JS Series Pressure Relief Valves (PRVs) can be used as a safety device in the storage and transportation of a wide variety of fluids, many of which are hazardous materials and could cause serious injury or damage. Only personnel which are properly qualified should install, repair or rebuild the JS Series PRV's. Only certified parts from Kelso or one of its authorized representatives should be used in the JS Series PRV's. The JS Series PRV's may be installed on DOT tank cars that carry hazardous chemicals and may travel under pressure.



**Read these instructions prior to performing periodic maintenance or repairs.**

### 1.2 Regulations

Kelso valves are used in contact with a variety of products, many of which are hazardous. The acceptance and transportation of products are regulated by DOT and AAR in the U.S.A and in Canada by CTC and Transport Canada. Regulations of other governmental bodies must be complied with. All personnel should be familiar with and follow these

regulations. Nothing in these instructions is intended to conflict with or supersede these regulations.

**NOTE:** Specifications are subject to change without notice.

## 1.3 Technical Specifications

### 8 Bolt PRV:

Valve Model	Set Pressure (psig)*	Flow Rate (SCFM-Air)	Orifice Diameter (In)
JS75 & JS75S	75	20,571 @ 85 PSI	3.875
JS75H & JS75HS	75	25,635 @ 85 PSI	4.375
JS165H & JS165HS	165	28,213 @ 182 PSI	3.25
JS75XH & JS75XHS	75	30,061 @ 85 PSI	4.835

\*Start to discharge Pressure

Figure 1.3.1

Valve Model	Flow Area (Sq. Inches)	Weight (lbs.)	Flange Thickness (In)
JS75 & JS75S	11.79	59	.94
JS75H & JS75HS	15.0	68	.94
JS165H & JS165HS	8.3	70	1.13
JS75XH & JS75XHS	18.31	71	1.13

Figure 1.3.2



**The needle bearing assembly (if applicable) is rated for up to 450° F. The limiting factors of Kelso's Technologies PRV are the seal and spring drum.**

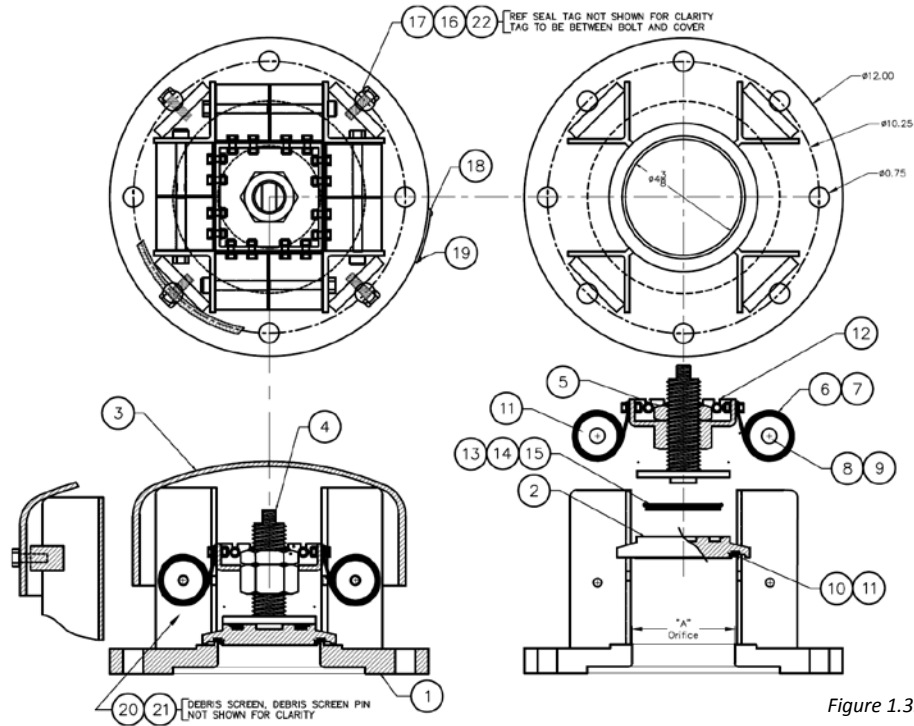


Figure 1.3.3

Item No.	Qty.	Description
1	1	Flange
2	1	Seal Disc
3	1	Cover
4	1	Adj. Screw
5	1	Jam Nut
6	4	Spring Drum
7	4	Spring Assembly*
8	4	Drum Bolts
9	4	Drum Bolt Lock Nut
10	1	Seal
11	1	Seal Retainer
12	1	Spring Block
13	1	Thrust Washer
14	1	Needle Bearing
15	1	Thrust Washer
16	4	Cover Bolt - 3/8"-16 x 1" Zinc Grade 5
17	4	Split Washer - 3/8" Zinc Grade 5
18	1	Nameplate
19	2	Nameplate Screw
20	1	Debris Screen
21	1	Debris Screen Pin
22	1	Seal Tag

Figure 1.3.4

\*The number of spring laminations can vary, replace with like assemblies.

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## 4 Bolt PRV:

Valve Model	Set Pressure (psig)*	Flow Rate (SCFM-Air)	Orifice Diameter (In)
JS75L & JS75LS	75	1681 @ 85 psi	1.13
JS165L & JS165LS	165	3445 @ 182 psi	1.13
JS75XL & JS75XLS	165	4089 @ 85 psi	2.05
JS75LT & JS75LTS	75	1681 @ 85 psi	1.13
JS165LT & JS165LTS	165	3445 @ 182 psi	1.13

\*Start to discharge Pressure

Figure 1.3.5

Valve Model	Flow Area (Sq. Inches)	Weight (lbs.)	Flange Thickness (In)
JS75L & JS75LS	1	21	.75
JS165L & JS165LS	1	22	.75
JS75XL & JS75XLS	3.32	18	.75
JS75LT & JS75LTS	1	18	.88
JS165LT & JS165LTS	1	18	.88

Figure 1.3.6

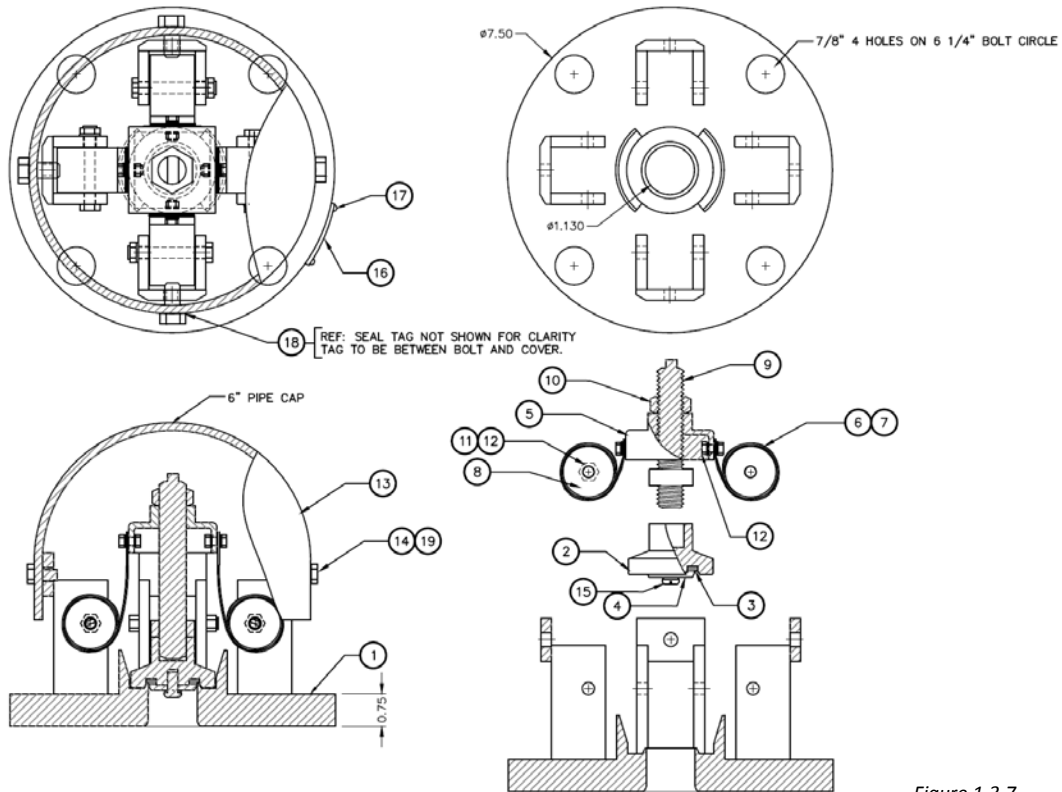


Figure 1.3.7

Item No.	Qty.	Description
1	1	Flange
2	1	Seal Disc
3	1	Seal
4	1	Seal Retainer
5	1	Spring Block
6/7	4	Spring Assembly*
8	4	Spring Drum
9	1	Adj. Screw
10	1	Jam Nut
11	4	Drum Bolt
12	8	Lock Nut
13	1	Cover
14	4	Cover Bolt - 5/16"-18 x 3/4" Zinc Grade 5
15	1	Retainer Bolt
16	1	Nameplate
17	2	Nameplate Screw
18	1	Seal Tag
19	4	Split Washer 5/16" Zinc Grade 5

Figure 1.3.8

\*The number of spring laminations can vary, replace with like assemblies.

## 1.4 Required Tools and Torque Values

### Required Tools

Sockets/Wrenches -	7/16, 1/2, 9/16, 13/16, 15/16, 1 5/8, 1 7/8
Cutting Pliers	Lint Free Cloth
Ratchet	400 Grit Alum. Oxide Emery Cloth
Screw Driver	Thread Locker
Torque Wrench	Anti-Seize
Wire Brush	Adjustable Wrench

### Torque Values

Item No.	Description	Torque Value
8	Drum Bolt/Nut	100 in.-lbs.
5	Jam Nut	25 ft.-lbs.
16	Cover Bolt	100 in.-lbs.
6,7	Spring Bolt	Wrench Tight

\*Torque value above are for the following valves: JS75, JS75S, JS75H, JS75HS, JS165H, JS165HS, JS75XH, JS75XHS

Figure 1.4.1

Item No.	Description	Torque Value
11	Drum Bolt/Nut	100 in.-lbs.
10	Jam Nut	100 in.-lbs.
14	Cover Bolt	100 in.-lbs.
6,7	Spring Bolt	Wrench Tight
15	Seal Retainer Bolt	20 in.-lbs.

\*Torque value above are for the following valves: JS75L, JS75LS, JS165L, JS165LS, JS75XL, JS75XLS, JS75LT, JS75LTS, JS165LT, JS165LTS

Figure 1.4.2

## 2.0 Valve Installation



Only companies and their personnel which are certified by the Association of American Railroads shall perform maintenance and testing of Kelso pressure relief valves, pursuant to either M1002 or M1003.

### 2.1 Preliminary Considerations



New valves are tested, adjusted and sealed at Kelso. If a new valve has been left in its original packaging, is undamaged and is not more than six months old, it may be installed on a tank car without retesting or recalibration. If the valve has exceeded six months, it must be returned for retesting and recalibration. Prior to installation, ensure that the valve remains clean and that the gasket sealing surfaces are not damaged in any way, shape or form.



## 2.2 Procedure

1. Prior to removing any valve or fitting from a tank, ensure that the internal pressure is at atmospheric and that personnel exposure to hazardous chemicals are eliminated.
2. When the securement bolts have been removed from the mounting flange, remove the valve and discard the old flange gasket.
3. The flange mating surface should be free from gouges, scrapes, and excessive corrosion. If the valve has a flat mating surface, clean the mating surface using a wire brush if scale, rust, adhesive, or dirt are evident. With a tongue and groove mating surface, ensure that while removing the old gasket no damage is done to the bottom of the groove. Any burrs, radial gouges and debris should be removed.
4. A new pressure relief valve should be kept in its original packaging to prevent damage to the valve or its components.
5. A test certificate should be available to verify the test date of the valve, if the last known test date was within six months, the valve can be installed without retesting or requalifying.
6. Place a new gasket on the tank mounting flange. Kelso Technologies does not supply the flange gasket, refer to the certificate of construction for the correct gasket type and material. Gasket material should be compatible with the chemical being shipped. Inspect the valve mating flange for defects as described in Paragraph 3 above. Install the valve on the mounting flange and secure using bolts, tightening to a prescribed torque of 100 to 180 foot pounds. Our suggested value is only to be used in the event your company does not have a procedure for this.
7. Once the pressure relief valve has been secured to the car, a suitable leak test should be performed to ensure the flange mating surfaces are pressure tight.

## 2.3 Leak Inspection

All newly installed valves must be tested under pressure to confirm that no leaks are present.



**WARNING:** Loose nuts, improper tongue seating in the flange, damaged and wrong size gaskets can result in leaks at the valve mating surfaces.

## 2.4 Valve Operation



Operation of all valves must conform to all applicable TC, AAR, DOT and other governmental bodies.



Kelso valves are spring loaded by a constant force set of springs and there are no provisions for manual activation. Valves are activated over pressurization, even on the rail tank car.

## 3.0 Disassembly

Prior to any servicing of a Kelso Valve, ensure all participating personnel have adequate personal protective equipment.

### 3.1 Procedure

1. Remove the dome cover securement bolts, all bolts should have a locking means, a split lock washer and Loctite. Lift the cover off, invert the cover and utilize as a container for the remainder of the valve parts (*Figure 3.1*).



2. If equipped remove the debris\bee screen. Screens are installed on the valve to prevent foreign material from entering the valve. A single pin secures the screen to the valve and can be removed by hand (*Figure 3.2*).

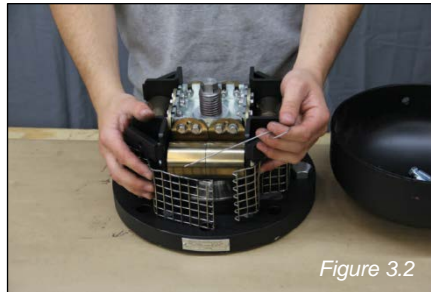


Figure 3.2

3. Loosen and remove the lock nut from the adjustment screw.
4. Rotate the adjustment screw counter clockwise, lowering the spring block. This will relieve the tension on the springs. Rotate the adjustment screw until the screw no longer holds the sealing disc to the valve seat (*Figure 3.3 & 3.4*).

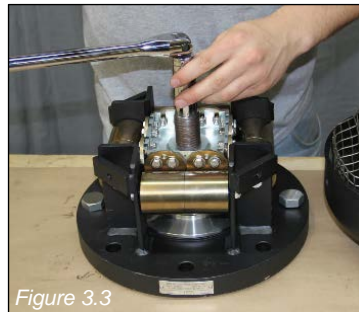


Figure 3.3

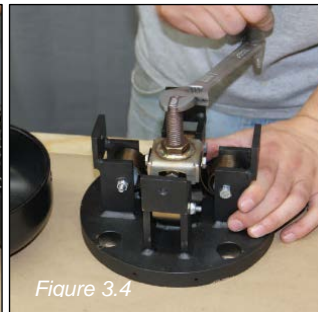


Figure 3.4

5. The spring block assembly is secured to the valve body by the drum bolts. Remove the lock nut from the drum bolt, then pull the drum bolt free from the spring assembly and valve body. If the drum bolts are not easily removed, place a slotted screw driver between the spring coil and the spring block, then lightly pry the drum away from the spring block. This allows for easier removal of the drum bolt (*Figure 3.5 – 3.8*).

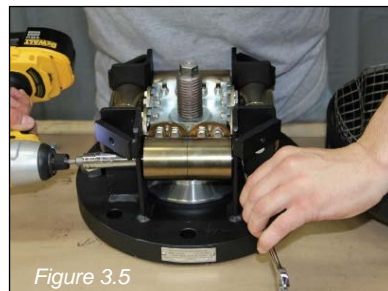


Figure 3.5

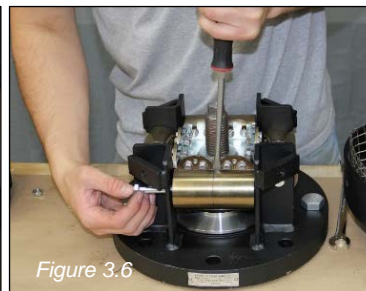
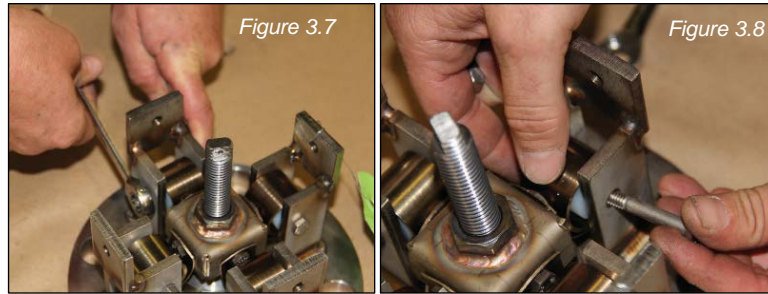
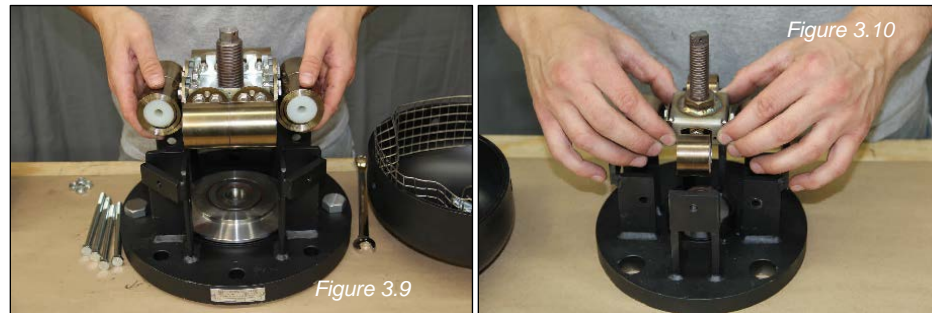


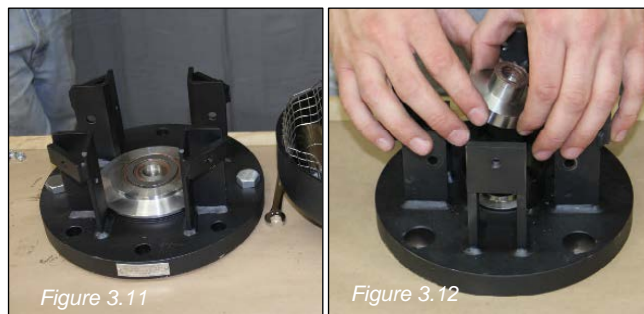
Figure 3.6



6. Lift the spring block assembly along with the adjustment screw from the valve body (*Figure 3.9 & 3.10*). If necessary, spring assemblies can be removed from the spring block by removing the securement bolts. During disassembly it is possible for the spring drum to slide free of the spring assembly, if this occurs simply tap the drum back into place.



7. The sealing disc can be lifted and removed from the valve body (*Figure 3.11 & 3.12*).



### 3.2 JS75, JS75S, JS75H, JS75HS, JS165H, JS165HS, JS75XH and JS75XHS Seal Disc Disassembly

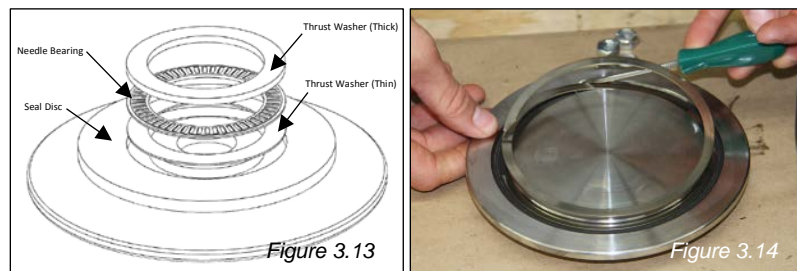
#### 3.2.1 Needle Bearing Disassembly

**Applies to: JS75H, JS75HS, JS75XH, JS75XHS, JS165H and JS165HS**

1. Remove the top thrust washer (thicker).
2. Remove the needle bearing.
3. Remove the bottom thrust washer (thinner) (*Figure 3.13*).

#### 3.2.2 Seal Removal

1. Turn the sealing disc over and remove the Spirolox® ring. Lift the end of the ring with a screw driver and uncoil the ring from the sealing disc (*Figure 3.14*).
2. Remove the elastomeric seal carefully with a non-abrasive tool. Do not damage the seal mating surface.



### 3.3 JS75L, JS75LS, JS165L, JS165LS, JS75XL, JS75XLS, JS75LT, JS75LTS, JS165LT and JS165LTS Seal Disc Disassembly

1. Turn the sealing disc over and remove the seal retainer bolt. Thread locker is used on the retainer bolt and may prove difficult to loosen. Use caution not to damage sealing disc if using a vise or other means to hold seal disc while loosening bolt.
2. Lift the retainer plate from the sealing disc.
3. Remove the elastomeric seal carefully with a non-abrasive tool (*Figure 3.15*). Do not damage the seal mating surface.



Figure 3.15



A seal removal kit can be obtained from Carolina Seal.

## 4.0 Inspection

The Valve and most components can be visually inspected without removal from the tank car, however, a proper inspection should be made whenever the valve is rebuilt or when suspect operation warrants.



Kelso utilizes a compound authentication procedure where by all seals are etched with the pedigree compound and tracing number. If the seal does not have etch, refer to the car owner for the proper pedigree compound.

## 4.1 Components

1. The elastomeric seal must be replaced when the valve is rebuilt. Upon inspection the seal should be secured and concentric in the sealing disc groove (*Figure 4.1 & 4.2*). For seals with etch, install with etch facing up, toward (against) sealing disc. The etch identifies the current seal pedigree compound and should be validated with the car owner specifications. If the seal is installed with etch down (away from) the sealing disc, it will not impact form, fit or function but it may impact the integrity of the etch. Impact of etch is not cause for condemnation. The seal should be free from tears, folds, abrasions, cracking and a buildup of debris. Replace when any of these defective conditions occur.



Figure 4.1

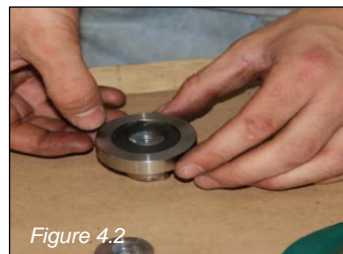


Figure 4.2



The seal has been manufactured with a proprietary composition and should only be replaced with Kelso supplied material.



It is recommended that any replacement parts be purchased through Kelso Technologies for form, fit and function.

2. The seal disc seat face should be smooth and free from scratches, nicks and gouges. The seat face should also be free from paint, dirt, rust and scale prior to the application of the elastomeric seal (*Figure 4.3 & 4.4*).

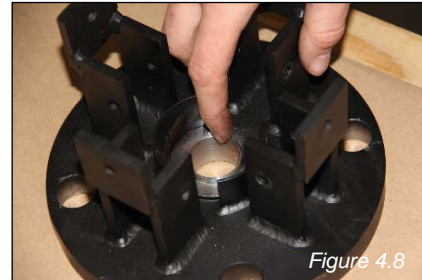


- a. JS75, JS75S, JS75H, JS75HS, JS165H, JS165HS, JS75XH and JS75XHS Seal Disc Inspection.
  - i. Visually inspect the thrust washers and needle bearing for any damage, this applies to the following: JS75H, JS75HS, JS75XH, JS75XHS, JS165H and JS165HS (*Figure 4.5*). The thrust washers should be flat, within .025" and not bent or folded. The needle bearing should not be compressed and be able to rotate freely.
  - ii. The Spirolox® retaining ring can be reused. If deformed or damaged replace (*Figure 4.6*).



If any component of the bearing assembly is damaged, the assembly should be replaced. Note: Not all models contain a bearing assembly.

3. The valve seat or the crown of the seat must be free from radial cuts, rust, and corrosion (*Figure 4.7 & 4.8*). The valve seat is most crucial for correct valve operation and any discontinuity can cause the valve to leak.

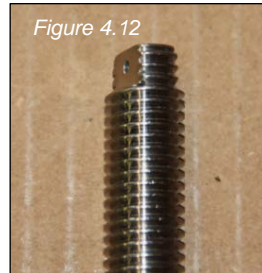
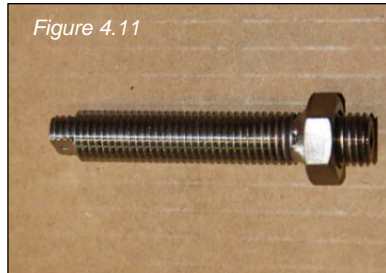


Repair work on pressure devices that involves machining, grinding, welding or other alterations/modifications can be performed only by the valve manufacturer, car owner or a user with the valve manufacturer's permissions. (AAR M-1002 Appendix A, Paragraph 3.11)

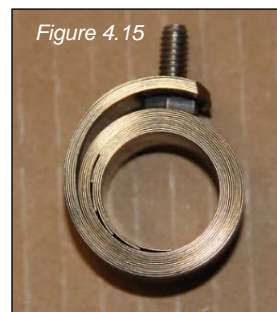
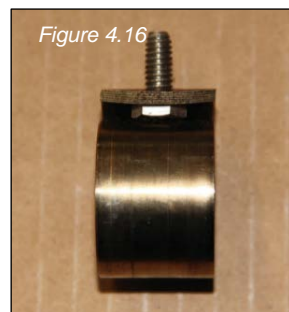
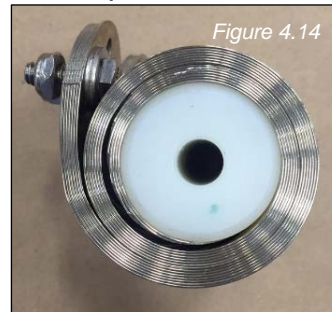
4. The adjustment screw should be removed from the spring block for examination of its threads. A visual exam is all that is needed for the adjustment screw. Some dings and wear are allowed as long as the parallel wrenching surfaces at the top of the screw remains square. If the surfaces become rounded, the adjustment screw must be replaced. The threads of the screw should be clean and lightly lubricated (*Figure 4.9, 4.10, 4.11 & 4.12*). An appropriate sized thread die can be used to correct small imperfections. If cracks and/or fractures are discovered, replace the screw. Verify that roll pins are present and secure, (if applicable). Nut shown in *Figure 4.11* should not be removed, this nut acts as a stop for the sealing disc.







5. To perform an adequate examination of the springs, it is not necessary to remove them from the spring block. The stainless steel springs should show no signs of pitting or corrosion. Exposed surfaces of the spring should be examined for cracking or any defect which could be a stress concentrator; a nick, gouge or an irregular bend. If one spring is defective then the complete spring assembly should be replaced. When replacing spring assembly, the number of spring laminations may vary, replace in kind. The springs should be cleaned of all foreign matter. The springs may relax from around the spring drum over time. This provides the appearance of gapping, however, it may be rectified during the rebuild and adjustment procedures. If rebuild and adjustment does not correct the gapping but the PRV passes its STDP and BBLT testing then the springs are not considered condemnable. (Figure 4.13, 4.14, 4.15 & 4.16). Note: During disassembly it is possible for the spring drum to slide free of the spring assembly, if this occurs simply tap the drum back into place.



6. The spring drum should be examined for signs of distress. The drum edges should not be flared or show signs of cracking. The bore through the drums should be round and wear of 1/32" or more will require replacement of the drum (*Figure 4.17*). Excessive wear can make for uneven adjustment and affect seal disc seating.

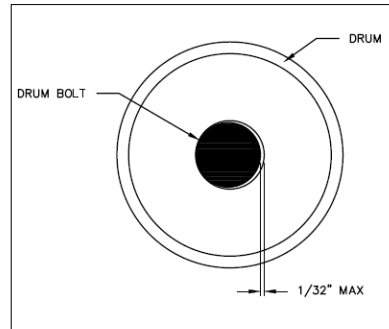


Figure 4.17



Kelso Technologies does not recommend the disassembly of constant force springs by field service personnel. Any damage or deterioration that may be present on the spring assembly will be apparent with a visual inspection.



DO NOT use steel abrasives or steel wire brushes to clean the spring, the stainless may become contaminated and corrode unnecessarily.

## 4.2 Cleaning

All components, excluding the spring assembly and spring drums, of the Kelso PRV may be cleaned using the following:

1. Wire brushes and/or clean towel / cloth
2. Low pressure water, glass bead, sand or soda blasting provided the blast media is not angular in form
3. A chemical / surfactant application, in conjunction with manufactures prescribed instructions, to achieve a desired result. It is suggested the chemical / surfactant be of neutral pH to ensure the integrity of the metal composition
4. Regardless of cleaning method, it is suggested that the parts be double rinsed and dried (w/ sanitary towel) prior to reinstallation and immediately after any chemical / surfactant application.



Disposal should be managed in accordance with all applicable state and federal regulations.

## 5.0 Assembly



Prior to assembly, inspect the valve seat on the valve body, ensure that the area contacting the seal is smooth and free of irregularities such as: nicks, gouges, depressions or porosity. Inspect the spring block assembly ensuring the spring bolts are tight and the spring drums are in place.

### 5.1 Procedure



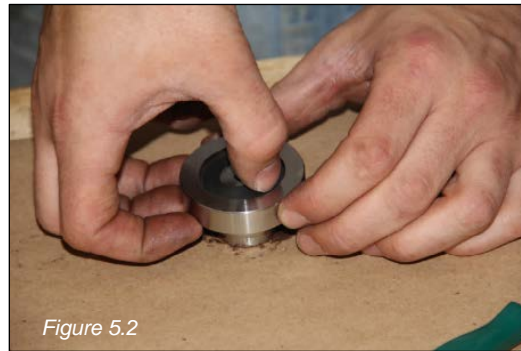
Kelso utilizes a compound authentication procedure where by all seals are etched with the pedigree compound and tracing number. If the seal does not have etch, refer to the car owner for the proper pedigree compound.

1. Insert seal into sealing disc and ensure the seal is seated. For seals with etch, install with etch facing up, toward (against) sealing disc.
  - a. JS75, JS75S, JS75H, JS75HS, JS165H, JS165HS, JS75XH and JS75XHS Seal Disc Assembly.
    - i. Install the Spirolox® retaining ring, be sure that the ring sits flat against the seal and is fully engaged in its groove (*Figure 5.1*).

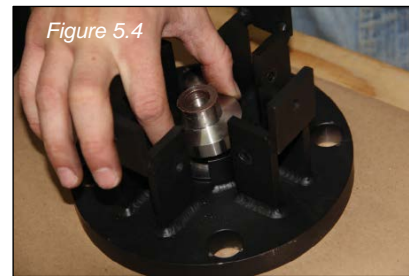
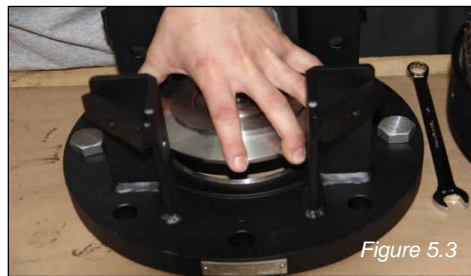


Figure 5.1

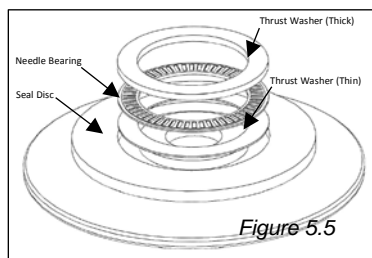
- b. JS75L, JS75LS, JS165L, JS165LS, JS75XL, JS75XLS, JS75LT, JS75LTS, JS165LT and JS165LTS Seal Disc Assembly.
      - i. Insert seal into sealing disc and ensure the seal is seated (*Figure 5.2*). For seals with etch, install with etch facing up, toward (against) sealing disc. Apply Loctite® or equivalent, to the threads of the retainer bolt. Install the seal retainer and retainer bolt. Torque bolt to prescribed value as shown in figure 1.4.

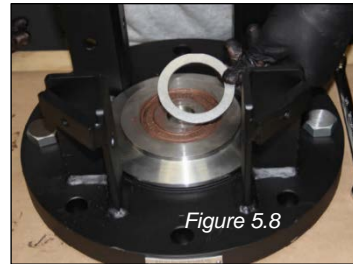
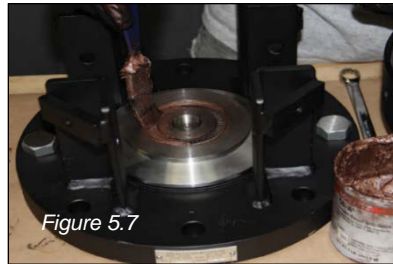


2. Place the sealing disc onto the valve body. The disc should sit freely between the flange guides (*Figure 5.3 & 5.4*).



3. Bearing Assembly, assemble per diagram (*Figure 5.5*). Applies to: JS75H, JS75HS, JS75XH, JS75XHS, JS165H and JS165HS.
  - a. Insert the thin thrust washer onto the seal disc (*Figure 5.6*).
  - b. Insert the needle bearing onto the thin thrust washer.
  - c. Pack the needle bearing with anti-seize (*Figure 5.7*).
  - d. Insert the thick thrust washer. It should rotate freely on top of the needle bearing ring (*Figure 5.8*).

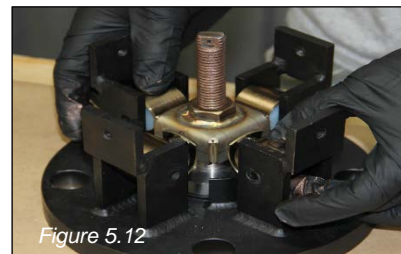




4. Apply a high quality moly-lube or equivalent to the adjustment screw threads (*Figure 5.9 & 5.10*).

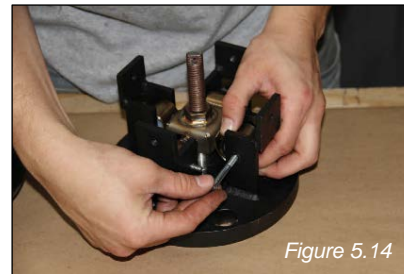
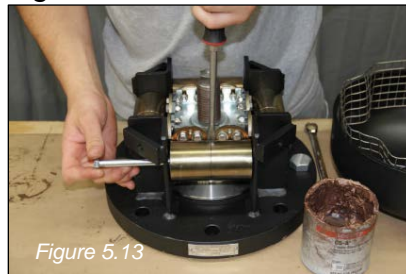


5. Thread adjustment screw into spring block assembly.
6. Place the spring block assembly onto the valve body (*Figure 5.11 & 5.12*).

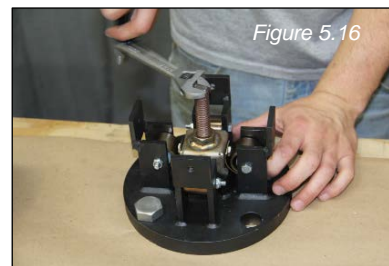
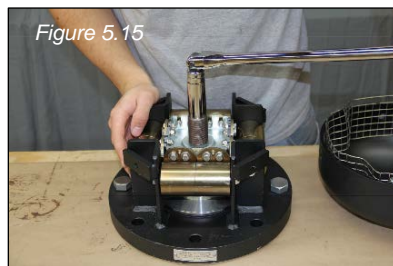


7. JS75, JS75S, JS75H, JS75HS, JS165H, JS165HS, JS75XH and JS75XHS Adjustment Screw Installation.
  - a. Ensure that the flat part of the adjustment screw is properly seated against the thrust washer.
8. JS75L, JS75LS, JS165L, JS165LS, JS75XL, JS75XLS, JS75LT, JS75LTS, JS165LT and JS165LTS Adjustment Screw Installation.
  - a. Ensure that the adjustment screw has properly seated in the screw guide on top of the sealing disc.
9. Insert the drum bolts (Grade 5, zinc plated for carbon steel valves and 18-8 SS for Stainless Steel Valves) through the body angles and the drums (*Figure 5.13 & 5.14*). Apply nylon insert nuts to the drum bolts and ensure the bolts

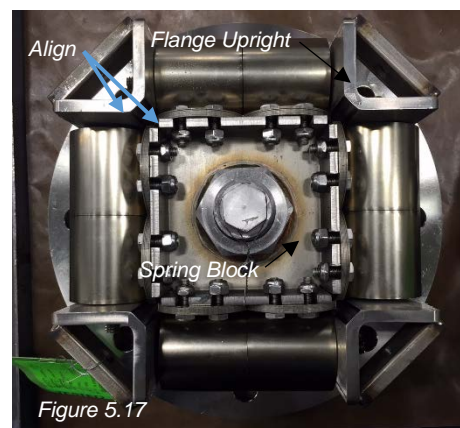
have been threaded through the nylon-insert portion of the nut. Torque bolts/nut to appropriate value as shown under Figure 1.4.



10. Place the valve on a clean flat surface. Clamp or bolt the valve down to facilitate initial positioning of the adjustment screw (Figure 5.15 & 5.16).

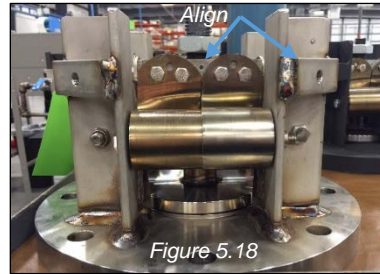


11. Rotate adjustment screw clockwise by until resistance is first encountered (at this point the springs are just beginning to deflect).
12. JS75, JS75S, JS75H, JS75HS, JS165H, JS165HS, JS75XH and JS75XHS Spring Block Location Set.
  - a. Rotate the adjustment screw clockwise until the top of the spring block is aligned with the top of the flange body angle upright (Figure 5.17).



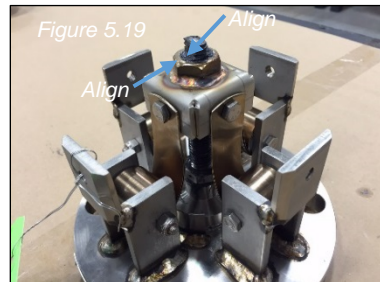


Note: On older style valves of this type, rotate the adjustment screw clockwise until the top of the spring block is aligned with the top of the dome cover attachment bracket (*Figure 5.18*). (The seal discs of these valves have a guide for the adjustment screw.)



13. JS75L, JS75LS, JS165L, JS165LS, JS75XL, JS75XLS, JS75LT, JS75LTS, JS165LT and JS165LTS Spring Block Location Set.

- a. Rotate the adjustment screw clockwise until the top of the spring block nut is aligned with the machined portion of the adjustment screw (*Figure 5.19*).



14. Install the jam nut on the adjustment screw by hand. Do not tighten. (This nut remains loose for valve testing).



With the springs set, the valve should be held before testing. This will allow the settling of the springs, disc and seal and should provide consistent opening and closing pressures. Valves should be kept in a warm environment, see Table 5.20 for dwell times.

Valve Type	Dwell Times
JS75, JS75S, JS75H, JS75HS, JS165H, JS165HS, JS75XH and JS75XHS	12 Hours
JS75L, JS75LS, JS165L, JS165LS, JS75XL, JS75XLS, JS75LT, JS75LTS, JS165LT and JS165LTS	24 Hours

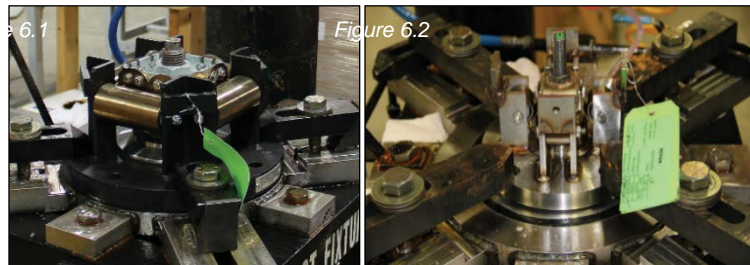
Table 5.20

## 6.0 Pressure Testing and Adjustment

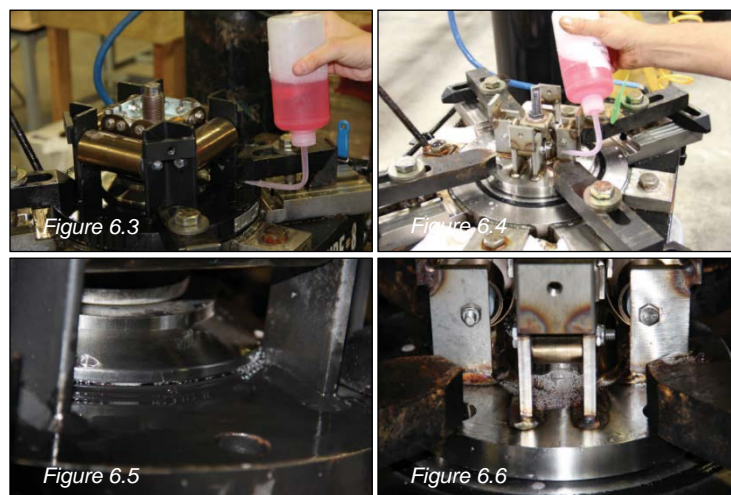


Refer to AAR publication “Regulations for Tank Cars”. Appendix A applies specifically to valves. This section prescribes the start to discharge pressure (STD), the vapor tight pressure (VTP) and their tolerances.

1. Bolt the valve onto a suitable test stand. Raise the pressure in the test stand and leak test the mating surface of the mounting flanges as well as any test stand fittings to ensure the device is not losing air at any point. Repair leaks and retest. Release the air from the test stand (*Figure 6.1 & 6.2*).



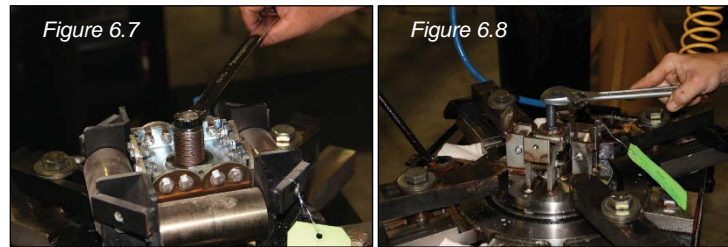
2. Spray the valve sealing disc with water or suitable leak test fluid until a continuous film of water is observed at the intersection of the sealing disc and the valve body (*Figure 6.3 & 6.4*). Maintain this film throughout the tests. Raise the pressure in the test stand until the first bubble is observed, slowly increase the pressure until “start to discharge is observed” (*Figure 6.5 & 6.6*).



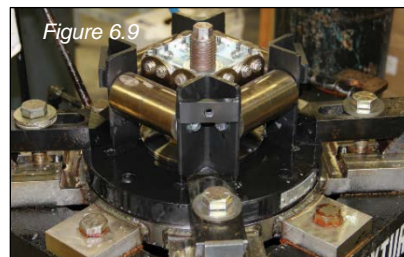


### 3. Adjustment:

- i) If the pressure indicated is below the acceptable AAR tolerance for valve setting, rotate adjustment screw clockwise and test again. Repeat until the desired set pressure for the valve being worked on has been established. See table 6.10 Record pressure (*Figure 6.7 & 6.8*).



- ii) If the pressure indicated is above the acceptable AAR tolerance for the valve setting, rotate adjustment screw counter-clockwise and test again. Repeat until the desired set pressure for the valve being worked on has been established. Record pressure (*Figure 6.9*).



- iii) With pressure remaining at the test stand, slowly start to lower the pressure until the “vapor tight pressure” has been observed. See table 6.10 Record pressure. If the vapor tight pressure is not less than the absolute minimum (80% of nominal set pressure) as established by AAR for the valve setting being worked on, continue. Otherwise investigate seal conditions and mating surfaces etc. to re- solve the problem.
- iv) Perform the “start to discharge” and the “vapor tight pressure” tests again, ensuring test results are consistent with initial results. Record pressures. It is advisable to use a suitable leak testing solution on the final test (*Figure 6.11*).

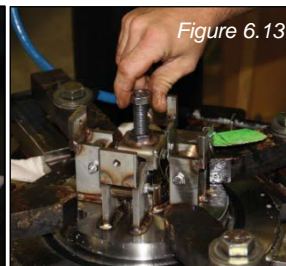
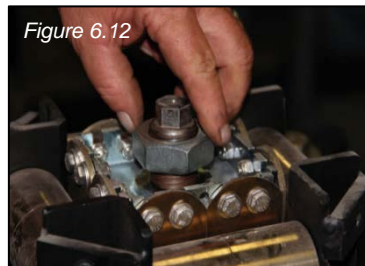
### Pressure Settings

Valve Model	STD	VTP (Minimum)
JS75/75S	72-78 psi	60 psi
JS75XL/XLS	72-78 psi	60 psi
JS75L/75LS	72-78 psi	60 psi
JS165L/165LS	161-169 psi	132 psi
JS75H/HS/XH/XHS	72-78 psi	60 psi
JS165H/HS	161-169 psi	132 psi

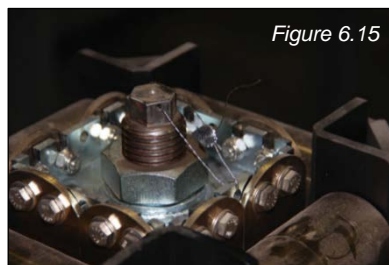
Table 6.10

### 6.1 Valve Completion

1. Turn adjustment screw jam nut clockwise until it binds with the spring block, locking the adjustment screw in a static position (*Figure 6.12, 6.13, & 6.14*). Torque to prescribed value as shown under figure 1.4.



2. Install numbered lead & wire seal through the jam nut and the spring block preventing unintentional adjustment of the valve (*Figure 6.15*). Install the debris screen (If applicable).



- All cover bolts should be installed with a split lock washer between the dome cap and the head of the bolt. Apply Loctite® 242 or equivalent to the cover bolts for added securement. Install all the cover bolts with only a few threads engaged (*Figure 6.16*). Then tighten the cover bolts in a crisscross pattern to the prescribed torque as shown in figure 1.4.



## 7.0 Maintenance

Under normal operating conditions, the JS Series PRV should not require maintenance until a periodic retest is required by code or there are signs of leakage through the valve (not leakage between the tank car and valve mounting flanges). DOT and AAR have set forth a retesting interval between tests. The JS Series PVR has been designed to minimize the valves exposure to any chemicals being shipped by mounting all components external to the tank. This advantage allows for immediate visual inspection of most components as well as quick access by emergency respondents.



These instructions only describe maintenance to a valve that has been removed from the tank car and is located in a suitable environment for retest. Kelso recommends all maintenance only be performed on valves that have been removed from the tank car.



NOTE: AAR requires that new seals be installed when a valve is rebuilt. (AAR M1002 Appendix D– 3.4)

### 7.1 Testing Valves in Storage

Valves that are factory set and sealed, have been left in their original packaging, are undamaged and are no more than six (6) months old, may be installed without being retested. If the valve has exceeded six months, it must be returned for retesting and recalibration.

## 7.2 Valve Repair

Repair work on pressure relief devices involving machining, grinding, welding or other alterations and modifications can only be performed by the valve manufacturer, the car owner or user with the valve manufacturer's permission. The flat gasket face on the valve body mounting surface or the gasket tongue may be machined to remove nicks and burns. (AAR M1002 Appendix A, Paragraph 3.11) Unless otherwise specified standard tolerances for decimal dimensions are +/- 0.003 in.



The tolerances on the gasket tongue must not be exceeded.

## 8.0 Special Guidelines



**Determining Applicable Pressure Values:**  
Refer to AAR publication "Regulations for Tank Cars". Appendix A applies specifically to valves. This section prescribes the start-to-discharge pressure (STD), the vapor-tight pressure (VTP), and their tolerances.



**Test Stand and Pressure Gauge Requirements:**  
It is recommended that the test stand mounting must be equivalent to the AAR M1002 figures in Appendix E for the valve being tested. The pressure gauge must meet the requirements of AAR M1002 Appendix D 4.5 "Test Gauge Standards" and must be date-tagged accordingly.

## 9.0 Warranty

See the Warranty Terms and Conditions.

## 10.0 Appendix

1. The Kelso JS75, JS75S, JS75H, JS75HS, JS165H, JS165HS, JS75XH and JS75XHS Pressure Relief Valves can be fitted with a flue. The flue can direct the flow from the valve upwards to vent through the top cover of the top fittings protection housing. The flue is designed to make the valve tamper-resistant. The flue is attached to the valve flange with (4) bolts and a cap covers the adjustable portion of the valve. Valves fitted with a flue will not have a dome cover.

2. Kelso Pressure Relief Valves can be outfitted with a debris screen. The debris screen aids in preventing foreign material and nesting insects from entering the valve. Screens are secured around the valve body by a single pin.
3. Teflon® ETFE Green Coatings are available for Kelso Pressure Relief Valves. These coatings are extremely tough, abrasion and chemical resistant. Coated surfaces should be free from nicks, chips and any other damage.

## 11.0 Revision Log

- Revision 1 – Section 7.2 added standard tolerance dimensions.
- Revision 2 – Section 4 (5) changed spring drum.
- Revision 3 – Section 4.0, 4.1, 5.1 and 5.1 1a and 1b seal etching.  
Figure 1.3.4 and 1.3.8 Added Size, Grade Cover Bolts/Washers
- Revision 4 – Section 4.0 and 5.1 removed date (2/24/2016) for seal etching.  
Updated footer to current address and phone.
- Revision 5 – Pressure Set table on page 25...minimum values changed to 80%.  
Values had been taken from EI's.