EMERSON

KUNKLE VALVE

KUNKLE 6252 PRESSURE RELIEF VALVE MAINTENANCE MANUAL

THE INTENT OF THIS INSTRUCTION MANUAL IS TO INFORM QUALIFIED REPAIR PERSONNE OF MAINTENANCE INFORMATION NECESSARY TO PROPERLY AND SAFELY REPAIR THE MODEL 6252 PRESSURE RELIEF VALVE.

WARNING

REMOVAL OF THE SEAL WIRES IN AN ATTEMPT TO ADJUST AND OR REPAIR THIS PRODUCT BY NON-AUTHORIZED OR NON-QUALIFIED PERSONS VOIDS THE PRODUCT GUARANTEE AND MAY CAUSE DAMAGE TO EQUIPMENT AND SERIOUS INJURY OR DEATH.

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PRESSURE RELIEF VALVE MAINTENANCE MANUAL

GENERAL

The name of this product informs us of its importance. Without the use of safety vales, considerable danger exists. Pressure relief valves are built to withstand long periods of trouble free service. Under normal operating conditions and with scheduled maintenance, your valve should provide many years of safe and dependable operation. We must consider that although the valve is rugged in construction, it actually is a precision device and should be handled accordingly.

Since safety depends on correct operation, the valve described herein has been capacity certified by the National Board of Boiler and Pressure Vessel inspectors in accordance with Sections I, IV, and VIII/XIII of the ASME Boiler Code for steam, air and gas service.

MODEL IDENTIFICATION

Heavy-duty construction of high quality cast iron body and bonnet with SS semi nozzle trim. Bolted bonnet design for easy maintenance and a disc and semi nozzle lapped to optical flatness. Two control rings offer easy adjustability for precision opening with minimum pre-open or simmer and exact blowdown control. Heavy duty lift lever assembly for manually opening the valve.

Every valve is 100% tested/inspected for pressure setting, blowdown, and leakage. All adjustments are factory sealed to prevent tampering with blowdown and set pressure adjustments.

Model 6252 - Cast iron body/bonnet
Enclosed spring
Stainless Steel trim
Maximum pressure 250 PSIG
Maximum temperature 406° F

Model 6254 - Same as the 6252 except certified for ASME Code Section IV – Low-pressure steam heating boilers. Set at 15 PSIG only. J through P orifice only.

GLOSSARY

ACCUMULATION – The difference between the pressure at which a pressure relief valve disc begins to lift and the pressure at which the valve is fully open.

ADJUSTING RING – The part(s) of a pressure relief safety valve used to adjust the blowdown and to direct escaping steam toward or away from the valve disc: a pressure relief safety valve may have one or more adjusting rings.

COMPRESSION SCREW – The part of a pressure relief valve that is used to adjust tension of the spring.

BLOWDOWN – The difference between the actual popping pressure of a pressure relief valve and actual positive reseating pressure and is expressed as a percentage of set pressure.

CAPACITY – The amount of liquid, gases or vapors that a valve will flow at maximum accumulation.

CHATTERING – The condition in which a valve disc rapidly moves up and down on its seat.

FLUTTER – The abnormal, rapid reciprocating motion of the movable parts of a pressure relief valve in which the disc does not contact the seat.

LIFT – The distance that a valve disc moves from the closed position to the fully open position.

SIMMER – The audible or visible escape of fluid between the seat and disc at an inlet static pressure below the popping pressure and at no measurable capacity. It applies to pressure relief valves on compressible and non-compressible fluid systems.

MAINTENANCE

Periodic planned maintenance will ensure longer and better performance from any product. Always be careful during any phase of maintenance since carelessness can be very destructive and costly. Maintenance of the safety valves should include, but not be limited to the following:

1. Pretest – Testing of the valve prior to disassembly to determine opening point, blowdown, and seat tightness. Pre-test results will assist maintenance planning in determining service schedules.

2. Disassembly – inspect parts to determine extent of required repairs.

3. Repairs – Cleaning, reconditioning, replacement, lapping and minor machining of parts.

4. Assembly – Assembly of the valve and valve components.

5. Valve Testing – Set valve to the nameplate set pressure, blowdown and check seat tightness.

   Changes to valve nameplate set pressure and or service medium may require changing of spring and or other internal parts. Consult the Manufacturers Representative when making such changes.

MAINTENANCE OF THE PRODUCT SHOULD BE PERFORMED BY QUALIFIED REPAIR PERSONNEL AT FACILITIES HOLDING A NATIONAL BOARD VALVE REPAIR STAMP (VR).

DISASSEMBLY

Disassemble the safety valve for inspection and maintenance.

1. Remove the seal wire from the warn ring and guide pins. Then remove both ring pins by turning them counterclockwise.

   a. Placing a flat head screwdriver through the warn ring pin hole or valve outlet, count the number of notches as the ring is turned counterclockwise until it contacts the disc. Record and reference at assembly.

2. Remove seal wire from the lift yoke pin and remove pin and lift yoke. Loosen cap set screw by turning them counterclockwise, then unscrew the cap from bonnet by turning counter clockwise.

3. Remove the lifting disc nut and lift disc by turning them counterclockwise.

4. Before you remove the compression screw it is suggested that a measurement be taken from the top of the bonnet to the top of the compression screw. Record this measurement for reference at re-assembly. Loosen the compression screw locknut and release spring compression by turning the compression screw counterclockwise.

WARNING: BE SURE ALL SPRING COMPRESSION IS RELEASED PRIOR TO REMOVING THE VALVE BONNET.

5. Remove the bonnet bolts by turning counterclockwise and lift the bonnet up over the stem.

6. Remove the spring and spring steps from the stem.

7. Lift the stem assembly (disc, stem) from the valve body.

8. If the disc is to be replaced or relapped, unscrew the disc from the stem.

9. Remove the guide from the body by turning it counterclockwise until it is free of the body.

10. Remove the warn ring from the nozzle by turning it counterclockwise. In the event the ring sticks, slight tapping in the notches with a screwdriver should loosen it.

11. Removal of the sem-nozzle should only be performed if the nozzle is damaged to the extent that it needs to be replaced. Removal of the semi-nozzle may be accomplished by tapping on the ears of the semi-nozzle with a hammer and screwdriver, or a special socket wrench can be fabricated to remove the semi-nozzle. Please contact the factory for dimensions for semi-nozzle wrenches. To remove semi-nozzle, bolt the body down to an assembly bench, and using the applicable nozzle wrench, remove the semi-nozzle by turning it counterclockwise.

CAUTION: USE OF AIR DRIVEN IMPACT WRENCHES TO REMOVE THE SEMI-NOZZLE MAY WARP OR DISTORTS THE SEATING SURFACE, AND SHOULD BE AVOIDED.

INSPECTION OF VALVE AND PARTS

Visually inspect the valve and parts for signs of excessive wear, corrosion, erosion and any other damage, which may effect valve performance. Pay particular attention to the following areas:

Check valve body and bonnet material for erosion, corrosion and cracks.

Check condition of valve inlet and outlet gasket seating surfaces for heavy scoring and or pitting.

Check body bolts and compression screw for signs of wear, pitting and galling.

Check clearance between valve guide and disc. Maximum clearances listed in Table 2 of this manual.

Check total indicated runout (T.I.R) of stem. Maximum runout listed in Table 3 of this manual.

Check critical dimensions of the nozzle seat and disc.

Inspect spring for pitting, cracking and wear. Verify spring is correct for valve set pressure by using spring charts or by contacting the manufacturers Representative.

Parts which show signs of excessive pitting, wear, erosion, etc should be replaced in order to maintain valve performance and safe reliable service.

Table 2

GUIDE AND DISC HOLDER MINIMUM AND MAXIMUM TOLERANCES

Orifice Size	J	K	L	M	N	P	Q	R
Disc Min/Max. O.D	2.573 2.567	3.073 3.069	3.814 3.810	4.227 4.223	4.640 4.634	5.631 5.624	7.405 7.395	8.910 8.900
Guide Min/Max I.D	2.577 2.583	3.082 3.086	3.823 3.827	4.237 4.241	4.653 4.658	5.644 5.650	7.420 7.430	8.930 8.940

Note: IF DIMENSIONS OF DISC AND GUIDE EXCEED THAT WHICH IS SHOWN IN TABLE 2 THE PARTS MUST BE REPLACED.

Table 3

STEM TOTAL INDICATED RUNOUT

Orifice	J	K	L	M	N	P	Q	R
Dimension A	.005	.005	.005	.005	.005	.005	.005	.005
Dimension B	.010	.010	.010	.012	.012	.014	.020	.020

DISC AND NOZZLE SEAT MAITENANCE

Lapping of the disc is done by hand or machine. Hand lapping is accomplished using a ring lap. When using a ring lap be sure the lap covers the entire seating surface. Apply a thin even amount of compound to the ring lap and place it onto the disc. Begin lapping in a oscillating motion (back and forth) applying light even pressure, being careful not to rock the piece. Lap parts for 1 to 2 minutes. Remove ring lap and clean both parts thoroughly. Continue lapping sequence until disc seat surface exhibits a gray shadow across the entire surface.

Polishing is accomplished in much the same way with a few exceptions. Use a different ring lap for polishing. This will allow the seat to be polished quicker. Apply a thin even amount of polishing compound to the ring lap, begin polishing using a slow oscillating motion. Continue polishing until the ring lap begins to drag on the seat. Remove and clean both surfaces. Repeat polishing sequence until the seat exhibits a mirror like finish across the entire seat. The nozzle seat may be lapped using the same methods as the disc.

Lapping compound vary from coarse to very fine. Generally a medium compound is used first, then a very fine compound to finish.

Recommended lapping compounds:

#600 - #800 Medium (removing machine lines and minor seat damage)

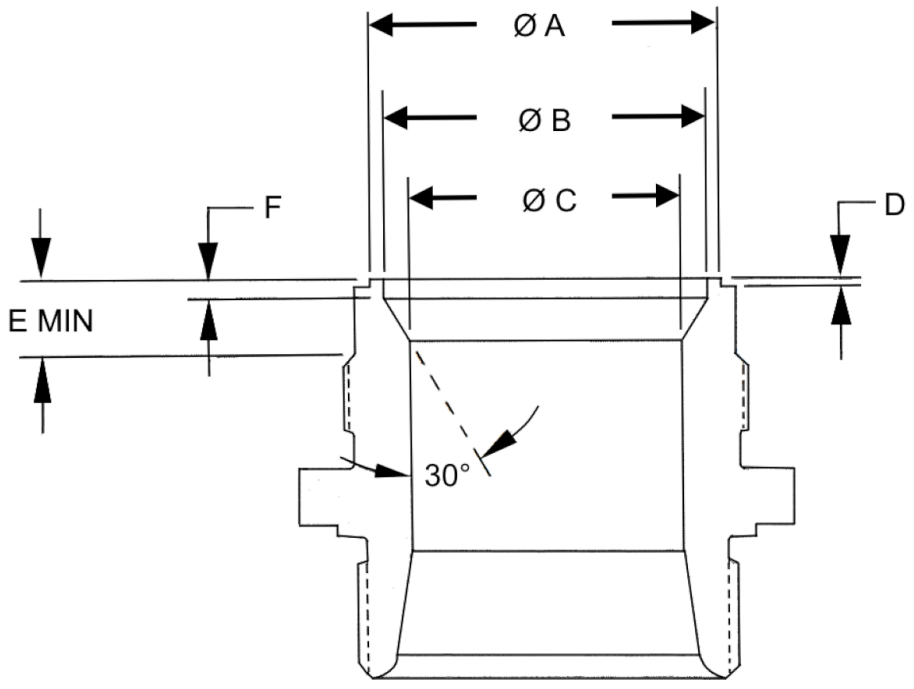
#1000 - #1200 Fine (Polishing).

Note: Coarse compounds may be obtained, however, be careful when using these since deeper scratches may occur from their use.

RECONDITIONING THE SEMI-NOZZLE

It is not recommended to remachine the semi nozzle seating surface because this may result in alteration of the design geometry. Parts damaged to the extent that lapping cannot restore the surfaces should be replaced. When machining has to be done in lieu of replacement, reference the following critical dimensions:

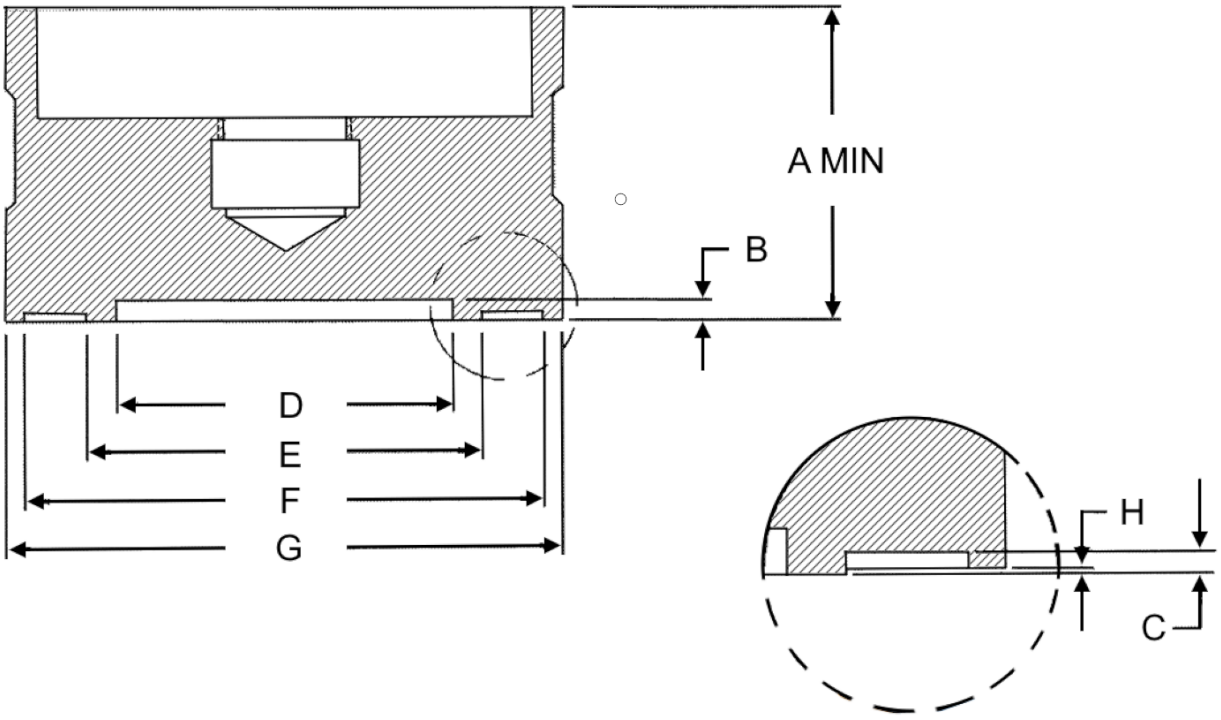
ORIFICE	∅A	∅B	∅C	D	E MIN	F
J	1.732 1.722	1.599 1.589	1.347 1.337	.045 .035	.350	.100 .090
K	2.069 2.059	1.910 1.900	1.610 1.600	.053 .043	.430	.119 .109
L	2.585 2.575	2.386 2.376	2.004 1.994	.065 .055	.530	.145 .135
M	2.902 2.892	2.679 2.669	2.251 2.241	.072 .062	.590	.164 .154
N	3.186 3.176	2.941 2.931	2.471 2.461	.079 .069	.660	.175 .165
P	3.863 3.853	3.566 3.556	2.995 2.985	.094 .084	.720	.211 .201
Q	5.079 5.069	4.688 4.678	3.945 3.935	.123 .113	.970	.277 .267
R	6.109 6.099	5.639 5.629	4.745 4.735	.146 .136	1.220	.332 .322



RECONDITIONING DISC SEAT

It is not recommended to remachine the disc-seating surface because this may result in alteration of the design geometry. Parts damaged to the extent that lapping cannot restore the seating surface should be replaced. When machining has to be done in lieu of replacement, reference the following critical dimensions:

	ORIFICE SIZE							
	J	K	L	M	N	P	Q	R
A	1.33	1.650	2.040	2.280	2.540	3.090	4.100	4.950
B	.100 .090	.109 .119	.137 .147	.154 .164	.170 .180	.207 .217	.274 .284	.331 .341
C	.043 .037	.051 .045	.063 .057	.070 .064	.081 .075	.083 .086	.118 .125	.141 .148
D	1.527 1.517	1.824 1.814	2.278 2.268	2.558 2.548	2.808 2.798	3.405 3.395	4.477 4.467	5.384 5.374
E	1.785 1.795	2.134 2.144	2.679 2.669	3.005 2.995	3.302 3.292	4.005 3.995	5.264 5.254	6.332 6.322
F	2.345 2.355	2.803 2.813	3.505 3.515	3.935 3.945	4.323 4.333	5.245 5.255	6.899 6.909	8.301 8.311
G	2.573 2.567	3.073 3.069	3.814 3.810	4.227 4.223	4.640 4.634	5.631 5.624	7.405 7.395	8.910 8.900
H	.002 .004	.002 .004	.002 .004	.002 .004	.002 .004	.002 .004	.010 .020	.010 .020



REASSEMBLY

1. Visually inspect all parts prior to assembly and remove all loose particles using air or an oil free cleaner. Pay particular attention to the seating surfaces on the disc and semi-nozzle (wipe surfaces with lint free towels).

2. Assemble the semi-nozzle into the valve body. This is accomplished by securing the body on the assembly stand and threading the nozzle into the body by turning it clockwise. Tighten the semi-nozzle using the applicable semi-nozzle wrench tool. Avoid using impact wrenches.

3. Place a small amount of antiseize compound onto the semi-nozzle threads and install the warn ring onto the nozzle until the top surface of the ring is below the nozzle seat. Be sure to wipe all antiseize compounds off of the nozzle seat area.

4. Apply a small amount of antiseize compound to the to the bottom bearing point of the stem and install the stem into the disc by turning it clockwise until it drops in past the disc threads.

5. To replace the guide, apply a small amount of antiseize compound to the starting threads of the guide and install it into the body by turning clockwise. Be sure the guide top surface is below the first three (3) guide threads of the body.

6. Wipe both seating surfaces with a lint free cloth then lower the stem and disc assembly into the body until the disc rests on the semi-nozzle seat. Be careful not to bang the seats together during installation to prevent seat damage.

7. Apply a small amount of antiseize compound to the spring bearing point of the stem. Install the spring steps onto the spring. Make sure that the spring steps are seating freely onto the spring by rotating each one side to side. Lower the spring assembly onto the stem until the bottom spring step seats on the bearing point of the stem.

8. Lower the bonnet onto the body and rotate until the bonnet vent is aligned with the center of the valve discharge flange. Install the bonnet bolts and tighten evenly.

9. Apply a small amount of antiseize compound to the bearing point of the compression screw and install the locknut onto the compression screw.

10. Install the compression screw into the bonnet by turning it clockwise by hand, until it contacts the spring step. Then turn compression screw an additional two turns.

11. Set guide and warn ring to setting recorded at disassembly or refer to Appendix A for recommended guide ring and warn ring settings. Note that warn ring and guide ring settings are used a starting positions only. Additional adjustments may be necessary to obtain required blowdown.

Once the warn ring and guide ring are set, install both ring pins into the hole provided in the body. Be sure to apply a small amount of antiseize compound to the threads of each pin. After tightening the ring pins check for proper engagement by ensuring that the warn and guide ring are free to move slightly back and forth within the notch.

TESTING

All valves are to be tested on the service medium for which they are intended. Steam valves on steam and air valves on air.

Prior to mounting the pressure relief valve to the test fixture we recommend the following steps be used:

1. Ensure that the test stand and test fixture is clean and free from any loose debris.

2. Check pressure gauges for proper calibration prior to testing any pressure relief valve.

3. Secure the valve inlet being sure to use all provided boltholes. Tighten down inlet flange evenly in order to prevent damage and to obtain a tight seal.

4. Preheat steam system including the accumulator and test vessel prior to testing.

5. Prior to obtaining a final set it is critical that the pressure relief valve is properly warmed up. Steam quality plays an important role for proper valve performance.

Note: When pipe nipples are used as part of the testing fixture be sure the nominal inside pipe diameter is equivalent or larger than the bore diameter (orifice diameter). Choking of the valve inlet and/or outlet can cause valve chattering, poor performance and false blowdown readings.

SETTING

1. Bring the system pressure up slowly (2 to 3 psig/sec) until set (pop) point is reached or 10% above set pressure is reached. If the pressure relief valve does not open at required set point, isolate the pressure relief valve and vent pressure.

2. To increase set pressures loosen locknut and turn the compression screw clockwise.

3. To decrease set pressures loosen locknut and turn compression screw counter clockwise.

WARNING: *Never attempt to adjust set pressure when valve inlet pressure is more than 50% of set pressure as damage to the valve seats may occur.*

4. Tighten the compression screw locknut after each set pressure adjustment to prevent movement of the compression screw during test.

5. Pop the valve a minimum of two (2) times after final adjustments to verify set pressure repeatability.

6. Follow ASME set pressure guidelines when setting pressure relief valves for ASME Code section “V”, “HV” and “UV”. Reference chart included in this manual.

BLOWDOWN ADJUSTMENT

It may be necessary to make warn ring and guide ring adjustments to obtain desired performance characteristics and blowdown.

In order to set the true blowdown the pressure relief valve must be tested on a properly sized and designed test system, or on the actual system that is to be used.

See Table 5 for required ASME setting as applicable.

Table 5

PERFORMANCE REQUIREMENTS

Code Section	Set Pressure	Blowdown Min/Max	Set Pressure Tolerance	Overpressure
Non-Code	<15	2 psi / 4 psi	+/- 1 psi	N/A
Power Boiler Section I "V"	15 - 66	2 psi / 4 psi	+/- 2 psi	2 psi
	67 - 70	2 psi / 6%		3%
	71 - 100	2 psi / 6%	+/- 3%	
	101 - 250	2% / 6%		
Heating Boiler Section IV "HV"	15	2 psi / 4 psi	+/- 2 psi	Overpressure to 20 psig
Unfired Pressure Vessel Section VIII/XIII "UV"	15 - 30	N/A	+/- 2 psi	3 psi
	31 - 70			10%
	71 - 250		+/- 3%	

WARN RING ADJUSTMENT

Moving the warn ring upward (counter clockwise) will enhance pop action, increase blowdown and reduce preopen.

Moving the warn ring downward (clockwise) will reduce blowdown and increase simmer.

Warn ring adjustment should be made 1 to 2 notches at a time.

GUIDE ADJUSTMENT

Moving the guide downward toward the nozzle seat will increase blowdown, sharpen pop action (high lift), and increase secondary lift.

Moving the guide upward will reduce blowdown.

Note that guide movement should be limited to three to five (3-5) notches per adjustment.

Use the Problem Performance problem Guide when making warn ring and guide ring adjustments.

PEFORMANCE PROBLEM GUIDE

Performance Problem	Cause	Solution
Valve flutters, will not pop.	Seat damage.	Disassemble, check seats.
Valve hangs up prior to reclose (drag).	Warn ring too high. Misalignment.	Lower warn ring see recommended ring setting chart. Disassemble valve, check parts for misalignment and free movement (stem and guide ring).
Valve has excessive preopen and will not pop.	Warn ring too low.	Adjust warn ring closer to nozzle seat.
Valve pops but has little or no lift.	Guide set too high. (above the guide).	Lower the guide. Be sure valve has correct parts: stem, spring.
Long blowdown.	*Warn ring too high. *Guide too low.	Raise warn ring. Raise guide.
Short blowdown.	*Warn ring too low. *Guide too high.	Raise warn ring. Lower guide.

SEAT TIGHTNESS TESTING

Seat tightness testing shall be performed on all valves after final set pressure and blowdown requirements have been met. Follow these safety precautions when performing seat tightness testing on steam and air.

1. Never place any part of your body near the discharge port of the valve.

2. Use limited volume of inlet pressure when performing seat tightness test, if test stand is so equipped.

Tightness requirements for steam:

- No visible signs of leakage for one minute with valve inlet pressure held at 90% of set pressure.

Tightness requirements for air:

- No audible leakage for one minute with inlet pressure held at 90% of set pressure.

INSTALLATION OF PLAIN LIFT CAP

1. Install the lifting disc nut and lifting disc onto the stem until each is fully engaged on the stem. Be sure the lifting disc is installed first.

2. Install the cap onto the bonnet by turning the cap clockwise until it is tight against the bonnet and lift lever is aligned with the back side of the valve. Thread in cap set screw.

3. Slide lift yoke into opening provided in the cap and insert the lift pin through the lift yoke and cap.

4. Check lift yoke setting by measuring the clearance between the lifting disc and the lobe of the lift yoke. The clearance should be 1/8" minimum, 1/4" maximum.

5. To adjust for proper clearance, remove the lift yoke and the cap and adjust the lifting disc to obtain proper clearance.

6. Once proper clearance is set, tighten the lifting disc nut against the lifting disc. This will prevent change of setting. Reinstall cap and tighten set screw. Install lift yoke and recheck clearance between lifting disc nut and lift yoke, to be sure setting has not changed.

RECOMMENDED SPARE PARTS

1. Disc
2. Stem
3. Semi-nozzle
4. Guide
5. Compression screw*

*Compression screw lengths may change with set pressure change. Always give pressure relief valve set pressure when ordering compression screw.

TOOLS

1. Semi-nozzle wrenches
2. Lapping blocks

REQUIRED ORDERING INFORMATION

When ordering valve components (parts), include the following information:

- Quantity
- Model designation
- Inlet/Outlet flange rating and facing
- Construction material
- Set pressure
- Maximum inlet temperature
- Allowable overpressure
- Service
- Required Capacity
- Accessories
- Code requirements

VALVE CONVERSIONS

Valve conversions are limited to changing set pressure and as necessary, springs, lift stops, discs, warn ring, and other internal parts may be required for set pressure changes.

Recommended Ring Settings for
Kunkle Models 6252 and 6254
J – Orifice

Low End of Spring Range	Warn Ring	Guide	High End of Spring Range	Warn Ring	Guide
(psig)	Nom.	Nom.	(psig)	Nom.	Nom.
10	15	-10	12	15	0
13	15	-10	16	15	+6
17	15	-10	21	15	+10
22	15	-10	24	15	0
25	15	-10	29	15	+7
30	15	-10	34	15	+6
35	15	-10	40	15	+8
41	16	-10	45	16	+6
46	16	-6	48	16	+4
49	16	-9	54	17	+6
55	16	-6	60	17	+6
61	17	-6	67	17	+6
68	17	-6	73	17	+3
74	17	-10	81	18	+2
82	17	-11	90	18	+3
91	18	-13	101	19	+5
102	18	-13	114	19	+6
115	19	-12	127	19	+6
128	19	-13	143	19	+7
144	20	-12	159	20	+6
160	21	-14	179	22	+6
180	22	-14	199	24	+4
200	24	-16	224	26	+4
225	26	-17	250	28	+2

Note: The warn ring setting is given in notches down from the disc. The guide ring setting is given in notches above(+) or below(-) flush with the disc.

The tolerances on the above settings are ±4 notches in either direction for either ring as required to get a good pop. Do not set rings outside of tolerance. If a good valve pop or acceptable blowdown cannot be achieved with the above ring settings please contact Kunkle.

Recommended Ring Settings for Kunkle Models 6252 and 6254 K – Orifice					
Low End of Spring Range	Warn Ring	Guide	High End of Spring Range	Warn Ring	Guide
(psig)	Nom.	Nom.	(psig)	Nom.	Nom.
10	4	-7	12	6	+16
13	4	-7	16	6	+16
17	5	-7	19	7	+12
20	5	-7	23	7	+16
24	5	-7	28	7	+16
29	6	-7	35	8	+16
36	6	-7	42	8	+16
43	6	-8	47	8	+6
48	6	-6	52	8	+6
53	6	-8	59	8	+10
60	7	-6	65	9	+6
66	7	-8	73	9	+6
74	7	-8	82	9	+6
83	8	-8	92	10	+6
93	8	-8	103	10	+6
104	8	-8	114	10	+6
115	9	-10	129	11	+6
130	10	-9	144	12	+6
145	10	-9	159	12	+6
160	10	-11	179	12	+6
180	12	-12	199	14	+6
200	14	-12	224	16	+4
225	16	-13	250	18	+4

Note: The warn ring setting is given in notches down from the disc. The guide ring setting is given in notches above(+) or below(-) flush with the disc.

The tolerances on the above settings are ±4 notches in either direction for either ring as required to get a good pop. Do not set rings outside of tolerance. If a good valve pop or acceptable blowdown cannot be achieved with the above ring settings please contact Kunkle.

Recommended Ring Settings for Kunkle Models 6252 and 6254 L – Orifice					
Low End of Spring Range	Warn Ring	Guide		High End of Spring Range	Warn Ring	Guide
(psig)	Nom.	Nom.		(psig)	Nom.	Nom.
10	10	-18		13	11	+8
14	11	-12		15	12	-2
16	12	-10		19	13	+4
20	13	-16		24	14	+8
25	14	-10		28	15	0
29	15	-8		33	16	+2
34	16	-10		38	17	+2
39	17	-16		44	18	+4
45	18	-12		51	19	+12
52	20	-12		61	21	+12
62	20	-12		69	21	+2
70	21	-6		76	23	+6
77	22	-11		85	22	+9
86	23	-8		95	24	+9
96	24	-8		106	24	+6
107	27	-8		117	28	0
118	33	-10		144	34	+12
145	38	-14		160	37	-1
161	39	-16		180	38	-2
181	40	-16		220	41	+10
221	40	-20		250	41	-4

Note: The warn ring setting is given in notches down from the disc. The guide ring setting is given in notches above(+) or below(-) flush with the disc.

The tolerances on the above settings are ±4 notches in either direction for either ring as required to get a good pop. Do not set rings outside of tolerance. If a good valve pop or acceptable blowdown cannot be achieved with the above ring settings please contact Kunkle.

Recommended Ring Settings for
Kunkle Models 6252 and 6254
M – Orifice

Low End of Spring Range	Warn Ring	Guide	High End of Spring Range	Warn Ring	Guide
(psig)	Nom.	Nom.	(psig)	Nom.	Nom.
10	6	-8	12	6	-4
13	6	-9	16	6	+2
17	7	-13	20	7	0
21	8	-11	24	8	+2
25	9	-11	29	9	+2
30	10	-10	36	10	+4
37	12	-8	45	12	0
46	13	-6	54	13	-2
55	14	-8	64	14	-4
65	15	-10	73	15	-13
74	16	-9	78	16	-13
79	17	-14	89	18	-6
90	18	-12	99	20	-7
100	19	-12	110	23	-8
111	22	-13	129	25	+1
130	25	-10	155	27	+16
156	29	-16	194	30	+20
195	32	-20	250	32	+20

Note: The warn ring setting is given in notches down from the disc. The guide ring setting is given in notches above(+) or below(-) flush with the disc.

The tolerances on the above settings are ±4 notches in either direction for either ring as required to get a good pop. Do not set rings outside of tolerance. If a good valve pop or acceptable blowdown cannot be achieved with the above ring settings please contact Kunkle.

Recommended Ring Settings for
Kunkle Models 6252 and 6254
N – Orifice

Low End of Spring Range	Warn Ring	Guide	High End of Spring Range	Warn Ring	Guide
(psig)	Nom.	Nom.	(psig)	Nom.	Nom.
10	7	-8	16	7	+12
17	8	-8	24	8	+12
25	9	-8	29	9	+7
30	10	-8	35	10	+8
36	12	-8	42	12	+8
43	13	-10	52	13	+12
53	14	-10	63	14	+12
64	16	-10	69	17	0
70	17	-10	76	18	+1
77	16	-10	85	19	+1
86	19	-11	94	20	-1
95	20	-12	107	22	0
108	21	-12	119	24	0
120	22	-12	134	26	0
135	23	-12	149	29	-1
150	24	-12	169	31	0
170	25	-12	189	34	-2
190	25	-12	209	29	-1
210	25	-12	250	31	+6

Note: The warn ring setting is given in notches down from the disc. The guide ring setting is given in notches above(+) or below(-) flush with the disc.

The tolerances on the above settings are ±4 notches in either direction for either ring as required to get a good pop. Do not set rings outside of tolerance. If a good valve pop or acceptable blowdown cannot be achieved with the above ring settings please contact Kunkle. Due to size and response time of these valves, it may not be possible to accurately measure the blowdown. When this occurs, use the ring / guide settings listed in the chart.

Recommended Ring Settings for
Kunkle Models 6252 and 6254
P – Orifice

Low End of Spring Range	Warn Ring	Guide		High End of Spring Range	Warn Ring	Guide
(psig)	Nom.	Nom.		(psig)	Nom.	Nom.
10	5	-19		14	10	+16
15	5	-19		17	7	0
18	5	-8		20	10	+6
21	5	-10		23	12	+2
24	5	-16		27	12	+2
28	5	-19		33	12	+10
34	5	-19		41	16	+20
42	6	-14		46	15	0
47	8	-10		52	16	+12
53	10	-5		57	17	+12
58	11	-8		64	18	+16
65	13	-6		69	18	+10
70	14	-16		77	19	+14
78	15	-16		85	20	+16
86	17	-16		95	22	+20
96	19	-6		100	30	+16
101	20	-18		109	25	+24
110	22	-16		122	27	+24
123	24	-16		137	29	+24
138	27	-16		154	32	+24
155	30	-16		172	34	+24
173	30	-16		189	35	+22
190	32	-16		214	36	+24
215	32	-16		235	35	+24
236	32	-16		250	35	0

Note: The warn ring setting is given in notches down from the disc. The guide ring setting is given in notches above(+) or below(-) flush with the disc.
The tolerances on the above settings are ±4 notches in either direction for either ring as required to get a good pop. Do not set rings outside of tolerance. If a good valve pop or acceptable blowdown cannot be achieved with the above ring settings please contact Kunkle.

Recommended Ring Settings for
Kunkle Models 6252
Q – Orifice

Low End of Spring Range	Warn Ring	Guide		High End of Spring Range	Warn Ring	Guide
(psig)	Nom.	Nom.		(psig)	Nom.	Nom.
10	5	-6		14	10	+16
15	5	-10		18	7	+10
19	6	-6		23	10	+14
24	6	-6		30	12	+20
31	7	-6		36	12	+16
37	7	-8		43	12	+18
44	8	-10		53	18	+20
54	9	-10		59	15	+8
60	10	-10		67	16	+14
68	11	-5		73	17	+10
74	12	-8		82	18	+12
83	13	-6		90	18	+8
91	14	-8		101	19	+10
102	16	-10		112	20	+8
113	17	-10		127	22	+10
128	19	-10		141	23	+8
142	22	-14		159	25	+8
160	24	-14		179	27	+8
180	27	-15		199	29	+8
200	28	-16		224	32	+8
225	32	-16		250	34	+8

Note: The warn ring setting is given in notches down from the disc. The guide ring setting is given in notches above(+) or below(-) flush with the disc.

The tolerances on the above settings are ±4 notches in either direction for either ring as required to get a good pop. Do not set rings outside of tolerance. If a good valve pop or acceptable blowdown cannot be achieved with the above ring settings please contact Kunkle.

Recommended Ring Settings
for Kunkle Models 6252
R – Orifice

Low End of Spring Range	Warn Ring	Guide		High End of Spring Range	Warn Ring	Guide
(psig)	Nom.	Nom.		(psig)	Nom.	Nom.
10	5	-12		14	7	-4
15	5	-12		18	10	+12
19	5	-8		22	10	+16
23	5	-10		27	12	+16
28	5	-12		32	12	+16
33	5	-12		39	14	+20
40	5	-12		46	16	+20
47	6	-12		51	16	+10
52	8	-12		56	17	+14
57	10	-12		61	18	+16
62	11	-12		68	18	+16
69	13	-12		75	18	+10
76	14	-16		84	19	+14
85	15	-16		93	20	+16
94	17	-16		105	22	+20
106	19	-16		118	23	+24
119	22	-16		133	25	+24
134	24	-16		148	27	+24
149	27	-16		166	29	+24
167	30	-16		184	32	+24
185	32	-16		209	34	+24
210	35	-16		234	35	+24
235	35	-16		250	35	+24

Note: The warn ring setting is given in notches down from the disc. The guide ring setting is given in notches above(+) or below(-) flush with the disc.

The tolerances on the above settings are ±4 notches in either direction for either ring as required to get a good pop. Do not set rings outside of tolerance. If a good valve pop or acceptable blowdown cannot be achieved with the above ring settings please contact Kunkle.

Revision History

Rev.	Date	Revised By	Approved By	Description
-				Initial Release
A	06/17/25	H. Wibowo	G. Satlik	Improved formatting and spelling; Removed model 6253 references. Disc dims. - pg. 10: L ori.: E was 2.682/2.672; N ori.: E was 2.302/2.292; Q ori.: H was .002/.004, G was 7.403/7.397; R ori.: H was .002/.004. Table 2: Q ori. Disc min/max was 7.403/7.397; R ori. Disc min/max was 8.909/8.901; R ori. Guide min/max was 8.930/8.940.