

# CONSOLIDATED®

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CON-12 mm

## INSTALLATION & MAINTENANCE MANUAL

**Safety Relief Valves**

**Type 1980 and 1982**

INDUSTRIAL VALVES

**DRESSER**

**DRESSER VALVE AND CONTROLS DIVISION**  
INDUSTRIAL VALVE NORTH AMERICAN OPERATIONS  
ALEXANDRIA, LOUISIANA, USA

## SAFETY NOTICE

PROPER SERVICE AND REPAIR IS IMPORTANT TO THE SAFE, RELIABLE OPERATION OF ALL VALVE PRODUCTS. THE SERVICE PROCEDURES RECOMMENDED BY DRESSER INDUSTRIAL VALVE DIVISION AND DESCRIBED IN THIS INSTALLATION AND MAINTENANCE MANUAL ARE EFFECTIVE METHODS OF PERFORMING THE REQUIRED MAINTENANCE OPERATIONS. SOME OF THESE SERVICE OPERATIONS REQUIRE THE USE OF TOOLS SPECIFICALLY DESIGNED FOR THE PURPOSE. THESE SPECIAL TOOLS SHOULD BE USED WHEN AND AS RECOMMENDED.

IT IS IMPORTANT TO NOTE THAT THIS SERVICE MANUAL CONTAINS VARIOUS WARNINGS AND CAUTIONS WHICH SHOULD BE CAREFULLY READ IN ORDER TO MINIMIZE THE RISK OF PERSONAL INJURY OR THE POSSIBILITY THAT IMPROPER SERVICE METHODS WILL BE FOLLOWED WHICH MAY DAMAGE THE VALVE OR RENDER IT UNSAFE. IT IS ALSO IMPORTANT TO UNDERSTAND THAT THESE WARNINGS AND CAUTIONS ARE NOT EXHAUSTIVE. DIVD COULD NOT POSSIBLY KNOW, EVALUATE AND ADVISE THE CUSTOMER OR UTILITY OF ALL CONCEIVABLE WAYS IN WHICH SERVICE MIGHT BE DONE, OR THE POSSIBLE HAZARDOUS CONSEQUENCES OF EACH WAY. CONSEQUENTLY, DIVD HAS NOT UNDERTAKEN ANY SUCH BROAD EVALUATION. ACCORDINGLY, ANYONE WHO USES A SERVICE PROCEDURE OR TOOL WHICH IS NOT RECOMMENDED BY DIVD MUST SATISFY HIMSELF THOROUGHLY THAT NEITHER HIS SAFETY NOR VALVE SAFETY WILL BE JEOPARDIZED BY THE SERVICE METHOD HE SELECTS. CONTACT DRESSER IF THERE IS ANY QUESTION ON THE METHOD.

THE TESTING, INSTALLATION AND REMOVAL OF VALVE PRODUCTS MAY INVOLVE THE USE OF FLUIDS AT EXTREMELY HIGH PRESSURE AND TEMPERATURE. CONSEQUENTLY, EVERY PRECAUTION SHOULD BE TAKEN TO PREVENT INJURY TO PERSONNEL DURING THE PERFORMANCE OF ANY TEST, INSTALLATION OR REMOVAL SUCH AS, BUT NOT LIMITED TO, EAR DRUM PROTECTION, EYE PROTECTION, AND PROTECTIVE CLOTHING SUCH AS GLOVES, ETC. IN AND AROUND THE TESTING, INSTALLATION, OR REMOVAL AREA. DUE TO THE VARIOUS CIRCUMSTANCES AND CONDITIONS IN WHICH THESE OPERATIONS MAY BE PERFORMED ON OUR PRODUCTS, OR THE POSSIBLE HAZARDOUS CONSEQUENCES OF EACH WAY, DIVD COULD NOT POSSIBLY EVALUATE ALL CONDITIONS THAT COULD INJURE PERSONNEL OR EQUIPMENT, BUT DOES OFFER THESE SAFETY PRECAUTIONS AS AN ASSISTANCE ONLY.

BEFORE INSTALLING VALVE, READ PAGE 5 REGARDING INSTALLATION.

## SAFETY PRECAUTIONS

FOLLOW ALL PLANT SAFETY REGULATIONS BUT BE SURE TO OBSERVE THE FOLLOWING.

1. BE SURE TO LOWER THE WORKING PRESSURE BEFORE MAKING ANY VALVE ADJUSTMENT. THIS WILL AVOID POSSIBLE PERSONAL INJURY.
2. DO NOT STAND IN FRONT OF THE DISCHARGE SIDE OF A PRESSURE RELIEF VALVE WHEN TESTING OR OPERATING.
3. HEARING PROTECTION SHOULD BE USED WHEN TESTING OR OPERATING VALVE.
4. WEAR PROTECTIVE CLOTHING. HOT WATER CAN BURN AND SUPERHEATED STEAM IS NOT VISIBLE.
5. EXERCISE CAUTION WHEN EXAMINING A PRESSURE RELIEF VALVE FOR VISIBLE LEAKAGE.
6. WHEN REMOVING THE PRESSURE RELIEF VALVE DURING DISASSEMBLY, STAND CLEAR AND/OR WEAR PROTECTIVE CLOTHING TO PREVENT EXPOSURE TO SPRAY OR FLOW OF ANY CORROSIVE PROCESS MEDIUM WHICH MAY HAVE BEEN TRAPPED INSIDE. ENSURE VALVE IS ISOLATED FROM SYSTEM PRESSURE BEFORE VALVE IS REMOVED.

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## INTRODUCTION

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A safety relief valve is an automatic pressure actuated relieving device suitable for use either as a safety valve or relief valve, depending on application.

Safety relief valves are used on hundreds of different applications, including liquids and hydro carbons and, therefore, the valve is designed to meet many requirements. However, the valve cannot be used on steam boilers or superheaters, but may be used on process steam.

## STEAM FEATURES

**Design Simplicity** Consolidated Safety Relief Valves embody a minimum number of component parts, which results in a savings by minimizing spare parts inventory and simplifying valve maintenance. Contact the Parts Marketing Organization, P.O. Box 1430 Alexandria, La. for parts inventory planning assistance.

**Cap and Lever Interchangeability** - Many times it is necessary to change the type of cap or lever in the field after a valve has been installed. Consolidated Safety Relief Valves are supplied so they can be converted to any type of lever or cap desired.

**Simple Blowdown Adjustment** - The Consolidated single blowdown ring design makes it possible to set and test a valve that has been in service when it cannot be set on line and must be taken to the customer's shop. The ring can be positioned so that the set point can be observed although the volume of the testing media is very low. After the set pressure has been established proper blowdown can be attained by merely positioning the ring to its original position.

## HANDLING, STORAGE, AND PREINSTALLATION

1. Safety Relief Valves should be stored in a dry environment to protect them from the weather. They should not be removed from the skids or crates until immediately

prior to installation.

2. Flange protectors and sealing plugs should not be removed until the valve is ready to be bolted into the installation, i.e., both inlet and outlet.

3. Safety Relief Valves, either crated or uncrated, should never be subjected to sharp impact. This would be most likely to occur by bumping or dropping during loading or unloading from a truck or while moving with a power conveyor, such as a fork lift truck. While hoisting to the installation, care should be exercised to prevent bumping the valve against steel structures and other objects.

4. When Safety Relief Valves are uncrated and the flange protectors or sealing plugs removed immediately prior to installation, meticulous care should be exercised to prevent dirt and other foreign materials from entering the inlet and outlet ports while bolting in place.

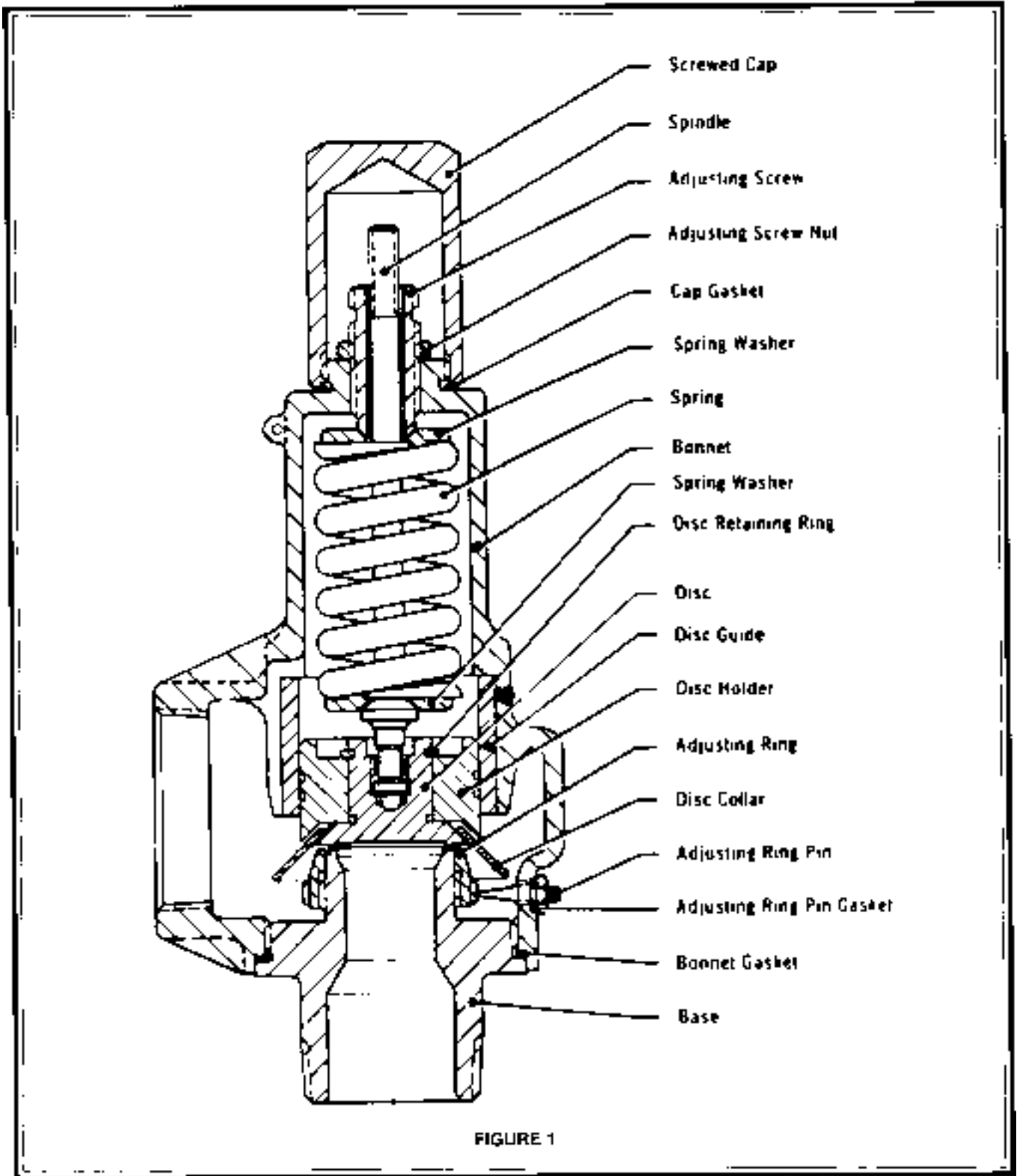
## INSTALLATION

Consolidated Safety Relief Valves are checked, set and adjusted at the factory. Inlet and outlet connections are protected for shipment and storage. Accumulation of sand, dirt, etc., in relief valve inlet ports will be carried across the seat while the valve is in operation and is frequently the cause of seat leaks and unsatisfactory operation. To prevent future trouble, store Safety Relief Valves in a clean dry place and do not remove the wooden skid or flange protectors until ready for installation.

Safety Relief Valves must be connected on full sized vessel nozzles as direct and close as possible to the vessel or pipeline. No stop valve should be placed between the pressure vessel and its relief valve except as permitted by code regulations. If a stop valve is located between the pressure vessel and Safety Relief Valve the stop valve port area should equal or exceed the nominal internal area associated with the pipe size of the safety relief valve inlet. Remove all dirt, sediment, or scale from the relief valve inlet port and vessel. The relief valve should be installed in a vertical position only (Per API-520).

The size of the discharge piping should never be less than the valve outlet size, and designed so as to limit built-up back pressure to a maximum of 10% of the valve

# INSTALLATION (Continued)



## INSTALLATION (Continued)

sel pressure. The arrangement should be as short and direct as possible. The outlet system should be designed and installed to eliminate all possible piping strains on the valve from various sources.

## DISASSEMBLY

(For parts identification refer to Figure 1)

1. Remove cap (lifting gear). Remove cap gasket.
2. Remove adjusting ring pin and gasket. If the existing valve action is to be restored, the position of the ring should be determined by turning it counterclockwise until it contacts the roof of the disc recording the number of notches that the ring is moved. Return to the original position below the disc upon reassembly.
3. Loosen adjusting screw locknut. Record the number of turns necessary to barely remove all spring compression. Remove compression screw from the bonnet. Return to original position when reassembling.
4. With valve base held in vise, loosen the bonnet to base connection (use strap wrench).  
**CAUTION:** Do not distort base.
5. Remove bonnet, disc assembly, spindle, spring and spring washer assembly from the base holding the spindle to be sure that the disc does not drop.
6. Remove disc assembly, spindle, spring and spring washers from bonnet.
7. Remove disc from spindle by engaging the drop-out threads and turning the disc counterclockwise.

## SEAT REPAIRING AND LAPPING

Reconditioning of the seating surface of the disc and base is accomplished by lapping with a flat cast iron ring lap coated with Grade No. 1000 KWIK-AK-SHUN Silicon-Carbide compound, or equivalent.

Lapping tools are listed in the Maintenance section.

The following method is recommended for lapping seats.

1. Keep the work clean.
2. Always use a fresh lap. If signs of wearing (out of flatness) is evident recondition the lap.
3. Apply a very thin layer of compound to the lap. This will prevent rounding off the edges of the seat.
4. Keep the lap squarely on the flat surface and avoid any tendency to rock the lap which will cause rounding of the seat.
5. When lapping, keep a firm grip on the part to prevent the possibility of dropping it and damaging the seat.

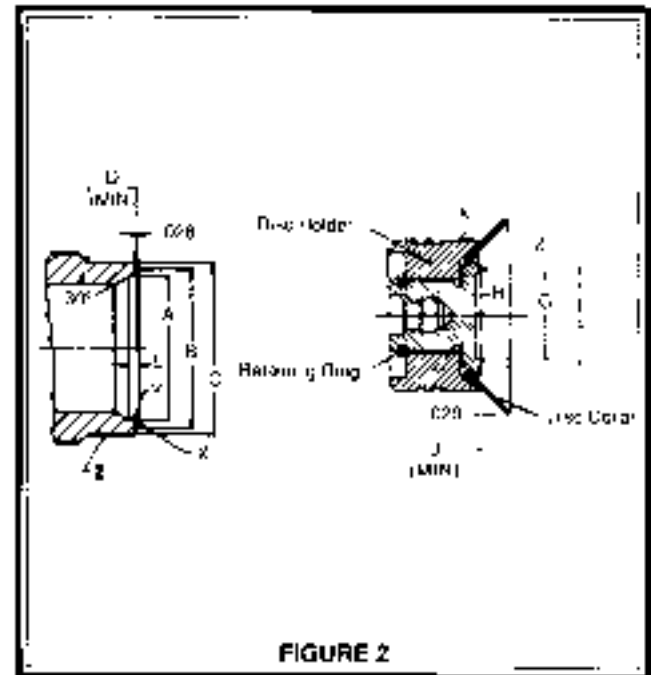


FIGURE 2

Size	A	B	C	D
1/2	.443	.487	.526	7/32
3/4	.590	.640	.701	7/32
1	.738	.802	8/4	22/64
1-1/2	1.180	1.294	1.399	13/32
2	1.511	1.634	1.784	31/64

Size	E	F	G	H
1/2	.031	.516	.414	.050
3/4	.041	.669	.561	.050
1	.050	.834	.706	.050
1-1/2	.079	1.339	1.139	.062
2	.111	1.680	1.465	.062

## SEAT REPAIRING AND LAPPING (Continued)

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6. Lap, using a reciprocating motion in all directions, at the same time apply uniform pressure and rotating the lap slowly.

7. Replace the compound frequently after wiping off the old compound, and apply more pressure to speed the cutting action of the compound.

8. To check the seating surfaces, remove all compound from both the seat and the lap. Then shine up the seat with the same lap using the lapping motion described above. Low sections on the seating surface will show up as a shadow in contrast to the shiny portion. If shadows are present, further lapping is necessary and only laps known to be flat should now be used. Only a few minutes will be required to remove the shadows.

9. When the lapping is completed, any lines appearing as cross scratches can be removed by rotating the lap, which has been wiped clean of compound, on the seat about its own axis.

10. The seat should now be thoroughly cleaned.

When the seats cannot be repaired by lapping, they can be remachined using dimensions given in Fig. 2. The following procedure can be used when machining the base seat:

1. Using a four-jaw chuck, align the base so that it is running true.

2. Take light cuts on the seat surface until all damage is removed. Reestablish the 0.028 inch and B dimension per Figure 2.

3. Lap the seat.

4. When minimum dimension "D" is exceeded, the base should be discarded.

### DISC SEAT REPAIR

To recondition the disc seat by lapping, it is necessary to disassemble the disc assembly. This is done in the following manner:

The disc is contained in the disc holder by a Truarc retaining ring. The ring may be removed by using a Truarc Plier #4. After removing the Truarc ring, the disc and disc collar can be removed from the disc holder.

The disc can now be lapped using the same procedure as described above.

If the disc is damaged to the extent that machining is necessary, the following procedure can be used:

1. Using a four-jaw chuck, align the disc insert so that it is running true.

2. Take light cuts on the seat surface until all damage is removed. Reestablish dimensions as shown in Fig. 2.

3. When "H" dimension has been reduced to 0.25, the disc insert should be replaced.

## REASSEMBLY

(For parts identification refer to Figure 1.)

1. Before reassembly, all parts should be cleaned. All burrs on guiding surfaces should be carefully removed.

2. Put a small amount of KOPR-Kote on the spindle lip and on the lower spring washer bearing. Thread the disc on the spindle and assemble spring and spring washers on the spindle.

3. Insert disc, spindle, spring and spring washer assembly into the bonnet.

4. Assemble adjusting ring to base (top of adjusting ring to flush with seat). Place a new bonnet gasket on the base.

5. Place a small amount of KOPR-Kote on the ball end of the adjusting screw.

6. Holding bonnet and spindle (so that disc will not drop) install bonnet assembly to base. Tighten bonnet on base with strap wrench.

7. Assemble compression screw and reestablish spring compression by first turning down the compression screw to take out all play and then add the same number of turns that it took to relieve the compression when the valve was disassembled.

8. Reestablish position of adjusting ring as follows:

## REASSEMBLY OF TYPE 1980 & 1982 VALVE (Continued)

- a. Using a pointed tool, turn the adjusting ring to the right slowly, thus raising the ring until it touches the disc.
  - b. Then, counting the notches, turn the adjusting ring to the left, thereby lowering the ring, until the original position is established.
9. Test valve per instructions outlined under "Testing."

### SETTING, TESTING AND ADJUSTMENTS

#### SAFETY RELIEF VALVE PERFORMANCE

Satisfactory safety relief valve operation requires that the valve seat shall be satisfactorily tight at the operating pressure (normally about 90% of the set pressure). On gases and vapors, the valve should pop at set pressure after the usual slight warning.

#### BLOWDOWN ADJUSTMENT (Reseating Pressure)

NOTE: UNLESS THE TEST STAND CAPACITY IS EQUAL TO OR GREATER THAN THAT OF THE VALVE, DO NOT ATTEMPT TO SET BLOWDOWN. SIMPLY RETURN THE ADJUSTING RING OR GUIDE TO THE ORIGINAL POSITION.

If longer or shorter blowdown is required, it can be obtained as follows:

- a. To increase blowdown (lower reseating pressure) the adjusting ring must be raised by moving the notches from left to right past the ring pin hole.
- b. To decrease blowdown (raise reseating pressure), the adjusting ring must be lowered by moving the notches from right to left past the ring pin hole.

#### SETTING AND TESTING AFTER RECONDITIONING

Before putting the reconditioned valve in service, it must be set to open at the required set pressure. Although the valve can be set on the service installation, it is more convenient to set the valve and check seat tightness on a test stand.

When using a test stand, the valve should be set to open at the cold differential set pressure as shown on the nameplate. The cold differential set pressure is the set pressure corrected to compensate for back pressure and/or operating temperature.

#### SETTING THE VALVE

Set the valve on clean air. Before mounting the valve on the test stand, remove all dirt, sediment or scale from the test tank nozzle and the inlet port of the valve. Be sure that the test gauge is accurate and has recently been calibrated on a dead weight gauge tester.

Mount the valve on the test stand. Slowly bring the pressure up in the test tank to the cold differential set pressure. If the valve opens before the desired pressure is reached, additional compression is required on the spring. Hold the spindle to prevent rotation and turn the adjusting screw clockwise. If the valve does not open at the desired pressure, maintain the required pressure in the test tank and slowly release the compression on the spring by turning the adjusting screw counterclockwise until the valve opens. Continue adjustment until the valve opens at the desired pressure. Be sure to hold the spindle when turning the adjusting screw. The spindle should be centrally located within the adjusting screw as hard rubbing of the spindle against the side of the adjusting screw as hard rubbing of the spindle against the side of the adjusting screw may cause poor valve action.

After the required set pressure is obtained, tighten the adjusting screw nut and repeat test. At least two repeat openings at the same pressure should be obtained to be sure that the valve is set accurately.

#### TEST EQUIPMENT

Test stands (Fig. 3) shall consist of a pressure source, a supply line with a throttle valve, and a receiver having the following features:

1. Outlet for attaching valve to be tested
2. Pressure gauge with a shut-off valve
3. Drain line with a shut-off valve
4. A volume in receiver adequate for the valve to be tested to achieve adequate operation



## SETTING, TESTING AND ADJUSTMENTS (Continued)

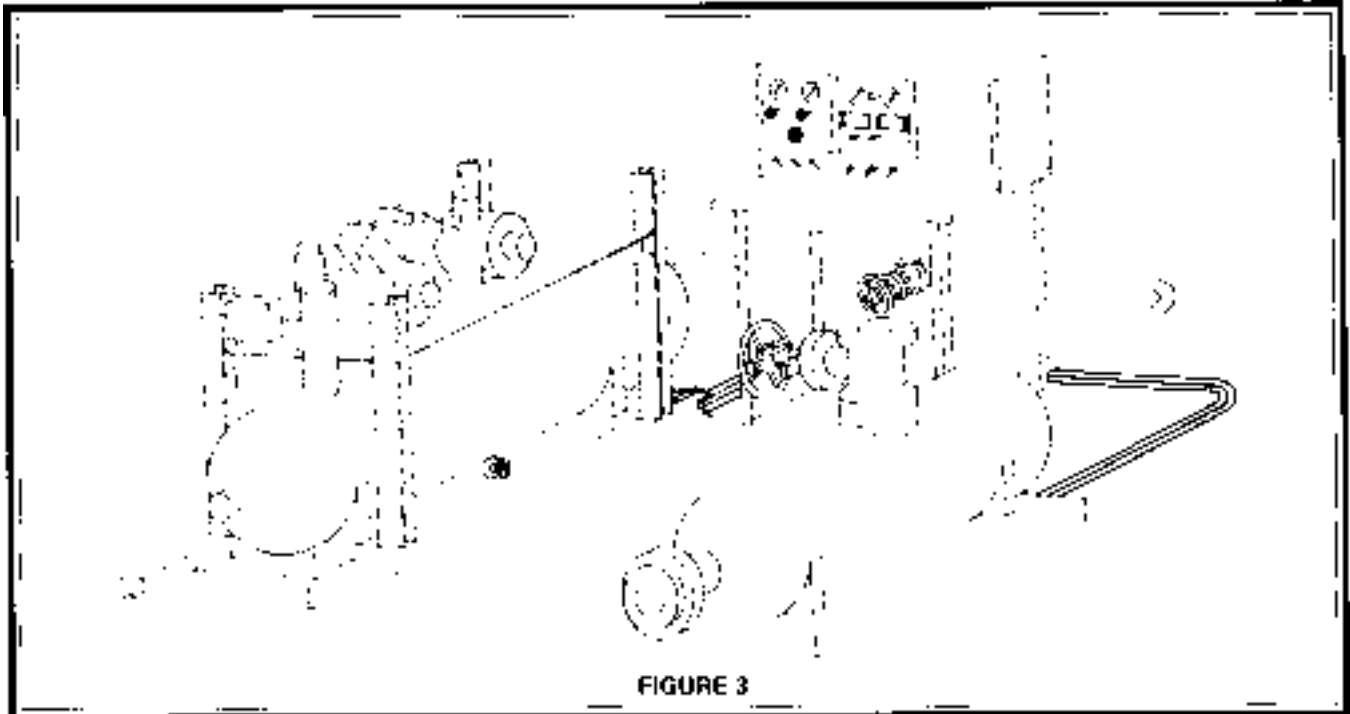


FIGURE 3

PROBLEM	PROBABLE CAUSE	CORRECTIVE ACTION
Valve leaking.	A. Damaged seat.  B. Part misalignment  C. Discharge stack binding on outlet.	A. Disassemble valve, lap seating surfaces replace disc, if required, as outlined in manual.  B. Disassemble valve, inspect contact area of disc and nozzle, lower spring washer or spindle, compression screw, spindle straightness, etc., as outlined in the manual.  C. Correct as required.
Simmer	A. Steam line vibrations.  B. Tapped seal too wide.	A. Investigate and correct cause.  B. Rework seal.
Chatter	A. Improper installation or valve sizing.  B. Built-up back pressure	A. Check for piping restrictions; check required capacity.  B. Check out piping for flow restriction.
No Action: Valve does not go into full lift. Valve does not close from full lift.	A. Foreign material trapped between disc holder & guide.	A. Disassemble valve and correct any abnormality as outlined in manual. Inspect system for cleanliness.

## SETTING, TESTING AND ADJUSTMENTS (Continued)

### COLD DIFFERENTIAL SET PRESSURE

When a Consolidated Safety Relief Valve is to be set on a test stand at room temperature and atmospheric back pressure and is to operate at a higher temperature and/or a higher back pressure, a set pressure adjustment is required. The adjusted set pressure is designated as the "Cold Differential Set Pressure."

### TEMPERATURE ADJUSTMENT

Safety relief valves set on air at atmospheric temperatures and to be used at higher temperatures should have the set pressure adjusted as follows.

Operating Temperature	Set Pressure
-20°F. to 250°F.	None
251°F. to 800°F.	+3%

### Examples of Cold Differential Set Pressure Calculations

(a) Set pressure 255 psig, temperature 300°F., back pressure atmospheric.  
 Set Pressure 255 psig plus 3% or value from Figure 4 Pressure Adjustment column ... 8 psig  
 Cold Differential Set Pressure ... 263 psig

(b) Set pressure 255 psig, temperature 300°F., constant pressure 15 psig.  
 Set Pressure ... 255 psig  
 minus constant back pressure ... 15 psig  
 differential pressure ... 240 psig  
 plus 3% or value from Figure 4  
 Pressure Adjustment column ... 7 psig  
 Cold Differential Set Pressure ... 247 psig

(c) Set pressure 255 psig, temperature 100°F., constant back pressure 15 psig.  
 Set Pressure ... 255 psig  
 minus constant back pressure ... 15 psig  
 Cold Differential Set Pressure ... 240 psig

The following table can be used for set pressure adjustment of valves with operating temperatures from 251°F. to 800°F.

Set Press.	Press. Adj.
1-16	0
17-49	1
50-83	2
84-117	3
118-150	4
151-183	5
184-217	6
218-250	7
251-283	8
284-317	9
318-350	10
351-383	11
384-417	12
418-450	13
451-483	14
484-500	15

FIGURE 4

## SEAT LEAKAGE

### A. AIR

The air-leakage test shall be performed with all connections and openings in the body and bonnet pressure-tight. The cap with gasket which covers the adjusting screw must be installed. Test valve for leakage using API test fixture. The API leakage test procedure is described below.

Per API Standard 527, (ANSI B142.1 /2), a standard test fixture consists of a piece of tubing 5/16" (7.94mm) x .032" (0.81mm) wall, one end of which is joined to an adaptor on the valve outlet and the other end of which is immersed 1/2" (12.70mm) below the surface of a reservoir of water.

The leakage rate for a valve with metal to metal seats shall be determined with the valve mounted vertically and using a standard test fixture as described above.

## SEAT LEAKAGE (Continued)

The leakage rate in bubbles per minute shall be determined with pressure at the safety relief valve inlet held at 90 percent of the set pressure immediately after popping for valves set 51 psig (3.517 bar) and above. On valves set at 50 psig (3.448 bar) and below, test for leakage at 5 psig (0.345 bar) below the set pressure immediately after popping. The test pressure shall be applied for a maximum of 1 minute.

**Tightness Standard.** The leakage rate in bubbles per minute shall not exceed the following.

Max. Leakage Rate (Bubbles Per Minute)	Approx. Leakage Rate (Std. Cu. Ft. Per 24 Hr.)
40	0.60 (16.99 liters)

### B WATER

When a metal-to-metal seat valve is tested using water as the test medium, there shall be no leakage, as determined by seeing or feeling, when pressure is held at 90% of set pressure.

### C STEAM

When a valve is checked for tightness using steam as the test medium, at 90% of the set pressure, there shall be no visual or audible leakage after the interior of the valve is allowed to dry after popping. If there is no visual or audible leakage, the valve is acceptable.

## HYDROSTATIC TESTING

When hydrostatic tests are required after installation of the safety relief valve, a test gag must be used. Very little force (fingertight) on the test gag is sufficient to hold hydrostatic pressures. Too much force applied to the gag may bend the spindle and damage the seat. After hydrostatic test the gag must be removed and replaced by the sealing plug furnished for this purpose. Test gags for Consolidated Safety Relief Valves can be furnished for all types of caps and lifting gears.

## MANUAL POPPING

After the valve has been installed and is in use, it may be necessary to pop it by hand or by pressure to make sure it has not become fouled by chemical action, such as corrosion, and that it continues to function properly. Consolidated Safety Relief Valves are furnished when so ordered with packed or plain lifting gears for hand popping.

## MAINTENANCE TOOLS AND SUPPLIES

### LAPPING TOOLS

The following tools are required for proper maintenance of Consolidated Safety Valve Seats.

A

VALVE SIZE	PART NUMBER
1/2	1672801
3/4	1672802
1	1672803
1 1/2	1672804
2	1672805

Ring laps and lapping plate may be purchased from Dresser Industrial Valve Operation, Alexandria, LA 71309.

B Lap Resurfacing Plate P/N 0439003

Note: Ring Laps - One set of three (3) Ring Laps is recommended for each size to assure ample flat laps are available at all times.

### C. Lapping Compounds

Brand	Grade	Grit	Lapping Function	Size Container	Part No.
Glover	1A	500	General	4 oz.	130-3
Glover	3A	500	Finishing	4 oz.	199-4
Kwik-Ak-Shun		1000	Polishing	1 lb.	199-11
				2 oz.	199-12

## **MAINTENANCE TOOLS AND SUPPLIES** (Continued)

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D Lubricant  
KOPH KOTE

### **SERVICE AND REPAIR PROGRAM**

#### **FACTORY REFURBISHING**

Many customers find it desirable to return their valves to the manufacturer for restoration or modernizing. Consolidated products returned to Dresser's valve renewal center in Alexandria, Louisiana are restored to original specifications and returned with a new valve warranty. An inventory of Consolidated service parts is available, enabling the return of refurbished valves within forty-eight hours after receipt.

In addition to valve restoration, the factory renewal center offers a host of unique services not authorized through any other channel. Examples are:

- 1) Seal bushing replacements on certain valve types.
- 2) Installation of updated retrofit kits on specific Consolidated valves.
- 3) Hydroset repairs, recalibration, and certification.
- 4) Specialty spring testing.
- 5) Repairs to valves in Nuclear applications.
- 6) Repairs to valve in use by the U.S. Government, Navy, and Coast Guard.

For more information on Dresser's Valve renewal services, please contact:

Manager, Valve Renewal  
(318) 640-6059

#### **SERVICE WARRANTY**

Factory repaired valves carry a warranty which covers workmanship and new parts installed during repair, for a period of one year from date of repair completion.

#### **DRESSER PRODUCT REPAIR BY UNAUTHORIZED SOURCES**

DIVD has authorized no outside repair companies, contractors, nor individuals to perform warranty repair

service on new products, field or factory repaired products of its manufacture. Therefore, customers contracting such repair services from unauthorized sources must do so at their own risk. Likewise, if any DIVD product fails to perform within the scope of its design, we must be notified and given the opportunity to inspect and correct the product. We will accept no backcharges for unauthorized repair sources performing corrective repairs on our products.

## SERVICE PARTS INVENTORY PHILOSOPHY

The basic objective in formulating a service parts inventory philosophy is to provide prompt service capability, thus preventing maintenance outage time extensions. To accomplish this, it is necessary to have immediate availability of the proper inventory of service parts for optimum valve quantities. This can be achieved at a minimum of cost by defining the inventory on a frequency of need basis.

To assist towards this objective, the Field Service and Repair Organization of Dresser Industries Industrial Valve and Instrument Division recommends that the following guidelines be utilized to establish meaningful inventory levels.

1. Identify the total number of safety valves in service by size, type number, temperature class, and serial number.

2. Identify the frequency of replacement tendency of specific parts.

**Class I** - Parts Most Frequently Replaced

**Class II** - Parts Less Frequently Replaced, but Critical in the Event of an emergency Requirement

**Class III** - Parts Seldom Replaced

**Class IV** - Hardware (e.g., nuts, bolts, pins, cap components, etc.)

**Class V** - Parts Practically Never Requiring Replacement

3. "Need Probability Coverage" is defined as the probable per cent (%) of total, uninterrupted operational time which can be expected by stocking predetermined valve component classifications.

Determine "need probability coverage" which is compatible with a specific company's operational objectives and service parts inventory investment philosophy. Then relate "need probability coverage" to parts classifications which will satisfy that need. Guidelines are as follows:

Parts Classification	Need Probability Coverage
Class I	70%
Class I & II	85%
Class I, II, & III	95%
Class I, II, III & IV	99%

4. Consult recommended spare parts list by valve type to determine quantity of parts for valves to be covered by the inventory plan

5. Select parts and specify quantities

### IDENTIFICATION AND ORDERING ESSENTIALS

When ordering service parts, please furnish the following information to insure receiving the correct replacement parts:

**Identify valve by:**

1. Size
2. Type
3. Temperature Class (Spring Selection)
4. Serial Number.

Example:

3/4"-1982 C-1

S/N TC75834

**Specify parts required by:**

1. Part Name
2. Part Number (if known)
3. Quantity

The correct part names may be obtained from Figure 1. All other required information will be found stamped on the nameplate attached to the bonnet of the valve. Typical nameplates are shown in Figure 5. Should the nameplate be lost, the valve type and serial number are stamped on the outlet flange.

CONSOLIDATED SAFETY RELIEF VALVE			
<div style="border: 1px solid black; padding: 2px; display: inline-block;">           ORIGINAL VALVE IDENTIFICATION         </div>			
SIZE	TYPE		
<input type="checkbox"/> SET PRESS	SERIAL NO.		<input type="checkbox"/>
<input checked="" type="checkbox"/> COLD SET PRESS	<input type="checkbox"/> BACK PRESS		<input type="checkbox"/> NB
<input type="checkbox"/> :EMP	<input type="checkbox"/> F. WATT.		<input type="checkbox"/>
CAP	<input type="checkbox"/> LBS / SQ <input type="checkbox"/> SAT. STEAM	<input type="checkbox"/> STD CU FT <input type="checkbox"/> 30 PSI AIR	
CAP	G.P.M.		
TAG			
S/N	DATE		

FIGURE 5

## RECOMMENDED SPARE PARTS

CLASS I	Qty. Parts/Size, Type & Material Valves in Service	Need Probability Coverage
1. Disc 2. Adjusting Ring Pin 3. Gaskets 3A. Cap 3B. Adjusting Ring 3C. Bonnet	1:1 1:1 1 Set/1	70%
<b>CLASS II</b> 4. Disc Holder 5. Retainer Ring 6. Spindle	1/5 1/5 1/5	85%
<b>CLASS III</b> 7. Spring Assembly 8. Compression Screw 9. Adjusting Ring	1/5* 1/5 1/5	95%
<b>CLASS IV</b> 10. Compression Screw Locknut 11. Cap (Specify Screwed, Packed, Plain) 12. Release Nut (Used on Packed or Plain Lever Only) 13. Release Locknut (Used on Packed or Plain Lever Only)	1/5 1/5 1/5 1/5	99%

\*NOTE: Consult Spring Selection Chart before ordering Springs to determine actual quantities required in view of pressure setting potential in each spring range.

### YOUR SAFETY IS OUR BUSINESS!!!

Dresser Industrial Valve & Controls Division has authorized no company nor individual to manufacture replacement parts for our valve products.

When ordering replacement valve parts, please specify in your purchase order: "All parts must be documented as new and sourced from Dresser Industrial Valve & Controls Division."

**BE SURE! BE SAFE!**