Consolidated™
1566 & 1566-2 Series
Hydroset Testing Device for Setting Safety Valves

Instruction Manual (Rev. A)

Baker Hughes

THESE INSTRUCTIONS PROVIDE THE CUSTOMER/OPERATOR WITH IMPORTANT PROJECT-SPECIFIC REFERENCE INFORMATION IN ADDITION TO THE CUSTOMER/OPERATOR'S NORMAL OPERATION AND MAINTENANCE PROCEDURES. SINCE OPERATION AND MAINTENANCE PHILOSOPHIES VARY, BAKER HUGHES (AND ITS SUBSIDIARIES AND AFFILIATES) DOES NOT ATTEMPT TO DICTATE SPECIFIC PROCEDURES, BUT TO PROVIDE BASIC LIMITATIONS AND REQUIREMENTS CREATED BY THE TYPE OF EQUIPMENT PROVIDED.

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Conversion Table

All the USCS values are converted to metric values using the following conversion factors:		
USCS Unit	**Conversion Factor**	**Metric Unit**
in.	25.4	mm
lb.	0.4535924	kg
in^2	6.4516	cm^2
ft^3/min	0.02831685	m^3/min
gal/min	3.785412	L/min
lb/hr	0.4535924	kg/hr
psig	0.06894757	barg
ft lb	1.3558181	Nm
°F	5/9 (°F-32)	°C

Note: Multiply USCS value with conversion factor to get metric value.

NOTICE

For valve configurations not listed in this manual, please contact your local *Green Tag*™ Center (GTC) for assistance.

Table of Contents

I. Product Safety Sign and Label System

If and when required, appropriate safety labels have been included in the rectangular margin blocks throughout this manual. Safety labels are vertically oriented rectangles as shown in the **representative examples** (below), consisting of three panels encircled by a narrow border. The panels can contain four messages which communicate:

- The level of hazard seriousness
- The nature of the hazard
- The consequence of human, or product, interaction with the hazard
- The instructions, if necessary, on how to avoid the hazard

The top panel of the format contains a signal word (DANGER, WARNING, CAUTION or ATTENTION) which communicates the level of hazard seriousness.

The center panel contains a pictorial which communicates the nature of the hazard, and the possible consequence of human or product interaction with the hazard. In some instances of human hazards the pictorial may, instead, depict what preventive measures to take, such as wearing protective equipment.

The bottom panel may contain an instruction message on how to avoid the hazard. In the case of human hazard, this message may also contain a more precise definition of the hazard, and the consequences of human interaction with the hazard, than can be communicated solely by the pictorial.

① **DANGER — Immediate hazards which WILL result in severe personal injury or death.**

② **WARNING — Hazards or unsafe practices which COULD result in severe personal injury or death.**

③ **CAUTION — Hazards or unsafe practices which COULD result in minor personal injury.**

④ **ATTENTION — Hazards or unsafe practices which COULD result in product or property damage**

① ② ③ ④

II. Safety Alerts

Follow all plant safety regulations, but be sure to observe the following:

- Always lower the working pressure before making any valve adjustment. When making ring adjustments, always gag the valve before making the adjustment. This will avoid possible personal injury.
- Do not stand in front of the discharge side of a safety valve when testing or operating.
- Hearing and eye protection should be used when testing or operating a valve.
- Wear protective clothing. Hot water can burn and superheated steam is not visible.
- When removing the safety valve during disassembly, stand clear and/or wear protective clothing to prevent exposure to splatter, or any corrosive process medium, which may have been trapped inside the valve. Ensure the valve is isolated from system pressure before the valve is removed.
- Exercise care when examining a safety valve for leakage.
- Prior to each actuation, assure that no personnel are near the valve. Steam escaping from the valve during actuation can possibly cause personal injury.
- When popping a safety valve for the first time, or after refurbishment, always be prepared to actuate the valve with the lever while standing in a safe place away from the valve. This may be done by fixing a rope to the lever for actuating the valve from a distance.
- Striking a valve which is under pressure can cause premature actuation. Never tamper with the valve when system pressure is near the valve set pressure.
- Before performing any machining on valve parts, consult Baker Hughes or its authorized representative. Deviation from critical dimensions can adversely affect valve performance.

III. Safety Notice

Proper installation and start-up is essential to the safe and reliable operation of all valve products. The relevant procedures recommended by Baker Hughes, and described in these instructions, are effective methods of performing the required tasks.

It is important to note that these instructions contain various “safety messages” which should be carefully read in order to minimize the risk of personal injury, or the possibility that improper procedures will be followed which may damage the involved Baker Hughes product, or render it unsafe. It is also important to understand that these “safety messages” are not exhaustive. Baker Hughes can not possibly know, evaluate, and advise any customer of all of the conceivable ways in which tasks might be performed, or of the possible hazardous consequences of each way. Consequently, Baker Hughes has not undertaken any such broad evaluation and, thus, anyone who uses a procedure and/or tool, which is not recommended by Baker Hughes, or deviates from Baker Hughes recommendations, must be thoroughly satisfied that neither personal safety, nor valve safety, will be jeopardized by the method and/or tools selected. Contact Baker Hughes if there are any questions relative to tools/methods.

The installation and start-up of valves and/or valve products may involve proximity to fluids at extremely high-pressure and/or temperature. Consequently, every precaution should be taken to prevent injury to personnel during the performance of any procedure. These precautions should consist of, but are not limited to, ear drum protection, eye protection, and the use of protective clothing, (i.e., gloves, etc.) when personnel are in, or around, a valve work area. Due to the circumstances and conditions in which these operations may be performed on Consolidated products, and the possible hazardous consequences of each way, Baker Hughes can not possibly evaluate all conditions that might injure personnel or equipment. Nevertheless, Baker Hughes does offer certain Safety Allerts, listed in Section II, for customer information only.

It is the responsibility of the purchaser or user of Baker Hughes valves/equipment to adequately train all personnel who will be working with the involved valves/equipment. For more information on training schedules, please call your local Green Tag Center (GTC). Further, prior to working with the involved valves/equipment, personnel who are to perform such work should become thoroughly familiar with the contents of these instructions.

IV. Warranty Information

Warranty Statement – Baker Hughes warrants that its products and work will meet all applicable specifications and other specific product and work requirements (including those of performance), if any, and will be free from defects in material and workmanship. Refer to Baker Hughes's Standard Terms of Sale, or specific contract for complete details on warranty and limitation of remedy and liability.

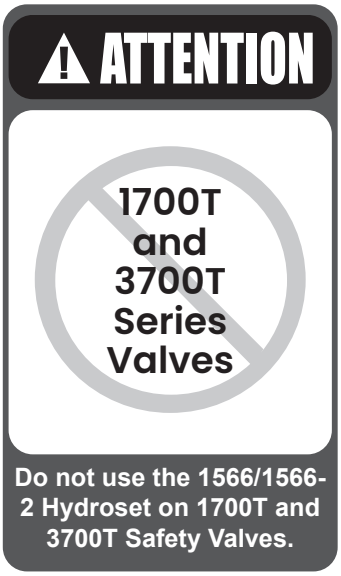
Defective and nonconforming items must be held for Baker Hughes's inspection and returned to the original F.O.B. point upon request.

Incorrect Selection or Misapplication of Products – Baker Hughes cannot be responsible for customer's incorrect selection or misapplication of our products.

Unauthorized Repair Work – Baker Hughes has not authorized any non-affiliated repair companies, contractors or individuals to perform warranty repair service on new products or field repaired products of its manufacture. Therefore, customers contracting such repair services from unauthorized sources must do so at their own risk.

Unauthorized Removal of Seals – All new valves and valves repaired in the field by Field Service are sealed to assure the customer of our guarantee against defective workmanship. Unauthorized removal and/or breakage of this seal will negate our warranty.

V. Introduction



The procedure for ensuring that a safety valve is operable, properly adjusted and provides overpressure protection, normally requires that the system be overpressurized to actuate (pop) the safety valve. Intentional overpressurization confirms valve set pressure, valve lift, valve reseat pressure, discharge stack (piping) design adequacy, and inlet piping (nozzle) design adequacy.

In many cases it is not possible, or desirable, to intentionally overpressurize a system. Therefore, some alternate technique is required and, in such cases, the 1566/1566-2 Hydroset valve tester may be used. The Hydroset is a test device that permits verification of the set pressure of a safety valve without overpressurization. However, the Hydroset will not provide other assurances that may be obtained through a system overpressure test. The Hydroset will only open the valve slightly and, thus, valve lift is not verified. Since full lift and full flow are not obtained when testing with the Hydroset, blowdown (reseat pressure) is not accurately verified.

It is recommended that the Hydroset be used only for confirming valve set pressure, once the valve has been adjusted by the use of full system overpressure. Establishing the initial set pressure of a valve with the Hydroset is not recommended, especially if the capability exists in the system to overpressurize and adjust the safety valve. Conversely, the use of the Hydroset for “in-service” testing may be more desirable than overpressurization, since it eliminates excessive noise, reduces test and outage times, and allows for better system control.

Note: Do not use the 1566/1566-2 Hydroset for inservice testing of 1700T and 3700T Series Safety Valves. For these valves, a 1566T Hydroset must be used. This operation manual is not applicable to the 1566T Hydroset.

VI. Use of Applicable Valve Manuals

This Hydroset Manual is to be used in conjunction with the maintenance manuals applicable to the Consolidated 1700, 3700 and 31700 Series Safety Valves. Each maintenance manual contains specific information concerning the assembly, operation, repair and in-service testing of a given valve type. Accordingly, with regard to the Hydroset Testing of 1700, 3700, or 31700 Series valves, the following relevant subjects are addressed in each of the involved maintenance manuals:

- Test media
- Temperature stability
- Ambient temperature
- Adjusting ring positions
- Time between valve openings
- Number of tests
- Seat tightness

VII. Codes and Standards

The ASME Boiler and Pressure Vessel Code permits the use of an “auxiliary assist device” for in-service testing of safety valves. Applicable code cases are as follows: ASME Code Section I (PG-72-2); ASME Code Section VIII (UG-134).

VIII . Operating Principles

The Hydroset is based on a force balance analysis of a safety valve. (See Figure 1.)

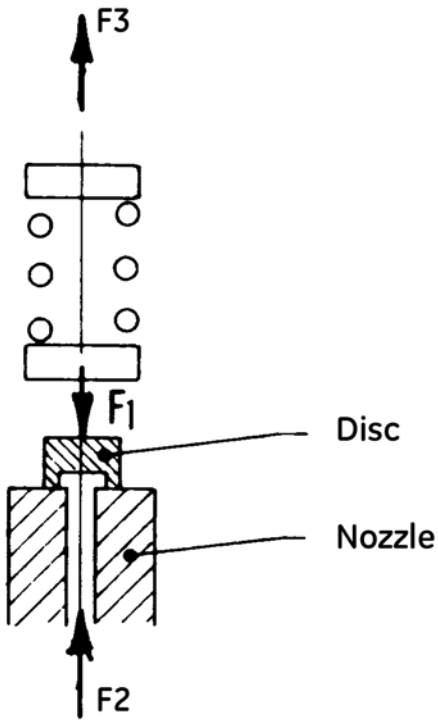


Figure 1

Force F1 is the spring load existing at the set pressure of the valve. (It is equivalent to the valve set pressure x the effective seat area.)

Force F2 is that system pressure existing at the time that the valve is adjusted. (It is equivalent to the inlet pressure x the effective seat area.)

Force F3 is generated by the Hydroset.

When pumping pressure is applied, an upward force is exerted on the pressure plate of the Hydroset and is transmitted to the valve spindle (F3, above). When force F3, plus upward force F2 (which is produced by inlet steam pressure), equals the downward spring force F1, the valve opens slightly. The value of the combined forces F2 and F3 (which is required to produce this slight opening) equates to and, thus, accurately identifies the set pressure of the valve being tested.

IX. Description of the Hydroset Test System

The Hydroset shown in Figure 2 (below) is a portable hydraulic lifting device specifically designed to determine the set pressure of Consolidated *Maxiflow*™ 1700, 3700 and 31700 safety valves. Its primary use, therefore, is not to determine the set pressure of other Consolidated safety valves or other manufacturers' safety valves. For convenience, the Hydroset is furnished in a carrying case, together with a yoke and turnbuckle.

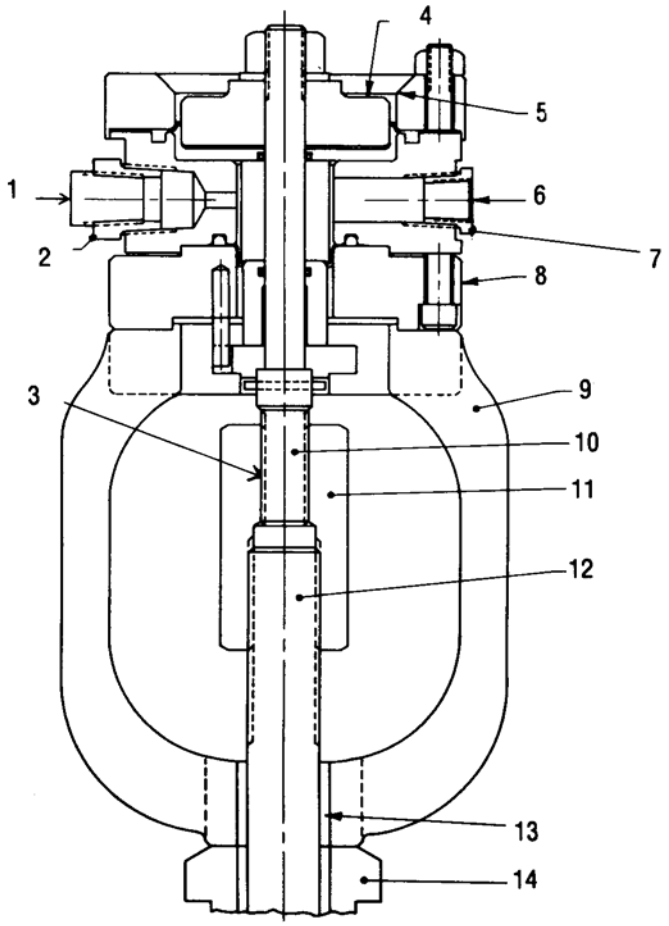


Figure 2

(Do not use this picture for Hydroset assembly and/or repair. It is for illustration purposes only)

Equipment List

Part No.	Nomenclature
1	Port 1/2 NPT (Plugged)
2	Brass Bushing 3/4 x 1/2 NPT
3	L.H. Threaded (Plugged)
4	Top of Pressure Plate
5	Bottom of Bevel Upper Flange
6	Port 3/8 NPT (Attach Hydraulic Hose Here)
7	Brass Bushing 1/2 x 3/8 NPT
8	Hydroset
9	Yoke
10	Hydroset Spindle
11	Turnbuckle
12	Valve Spindle
13	Equal Clearance Between Yoke and Spindle
14	Compression Screw

It should be noted that, currently, there are two Hydroset models: the 1566 and 1566-2, with the 1566-2 being the latest model. Whereas the 1566 is designed for hydraulic pressures not less than 500 psig, the 1566-2 is designed for hydraulic pressures not less than 50 psig. Maximum hydraulic pressure for both models is 2000 psig.

IX. Description of the Hydroset Test System (Cont.)

As shown in Figure 3 (below), the Hydroset system consists of the Hydroset unit mounted on a yoke, which rests on the top of the valve compression screw and is connected to the valve spindle with a turnbuckle. A hydraulic supply system consisting of a hydraulic hose, fittings, a hydraulic hand pump, and pressure gauges is connected to the Hydroset unit. The user may provide the hydraulic supply system or purchase the equipment from Baker Hughes. See Equipment List shown in the margin of this page.

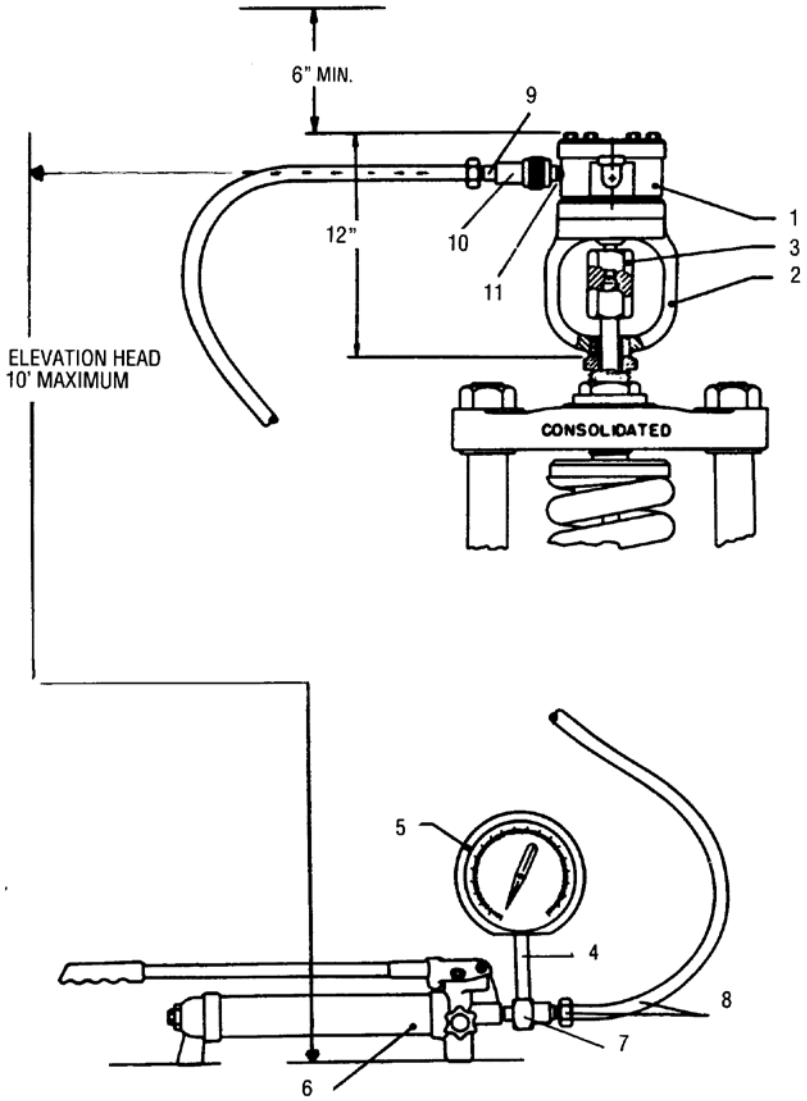


Figure 3 - Hydraulic Lift Assist Device Typical Installation

Equipment List

Part No.	Nomenclature
1	Hydroset unit, type 1566-2
2	Yoke, part number 4234301
3	Turnbuckle, select per Table 2 and 3
4	1/2 NPT pipe nipple, Schedule 80, 5 in. long, part number 4095001
5	Analog pressure gauge, 0-2000 psig, 5 psig minimum graduations, accuracy ±.25% full scale, part number 1815830
6	Hydraulic hand pump, general purpose, 0-2000 psig, part number 1815824
7	Gauge adaptor, 1/2 NPT (gauge port) x 1/4 FNPT (pump outlet) x FNPT (hose), part number 1815831
8	Hydraulic hose with fittings, 3/8 in. nominal size (inside diameter), 0-2000 psi, part number 1815829
9	37° flare pipe adaptor, 3/8 MNPT x 9/16-18 UNF-external, part number 1815825
10	Push-pull coupling, 3/8 FNPT, part number 1815827
11	Pipe adaptor, 3/8 MNPT ends, part number 1815826

X. Calibration of the Hydroset Test System

Each Hydroset is calibrated at the factory and provided with an applicable correction chart (see sample in Figure 4, below). The original calibration date of each unit is found on the nameplate. Since the recommended calibration interval is one (1) year, each Hydroset is to be returned to the factory for recalibration, annually.

The Hydroset and associated equipment should be stored in the unit carrying case. The case should be kept in a clean and dry environment, with an ambient temperature of -20°F to 140°F.

The Hydroset diaphragms, the pump seals, and the hydraulic hose are all subject to deterioration. The hydraulic hose should be neatly coiled to eliminate kinks and damage. Pressure gauges should be stored in shock absorbent material, with the clear face protected from possible damage due to mishandling.

ATTENTION: Do not strike or drop pressure gauges, since the accuracy of these gauges affect accuracy of set pressure determination.

Spec.	Reqd.
330	328
335	333
340	337
345	342
350	347
355	352
360	356
365	361
370	366
375	370
380	375
385	380
390	385
395	389
400	394
405	399
410	405

Spec.	Reqd.
470	467
475	472
480	478
485	483
490	488
495	493
500	498
505	503
510	508
515	513
520	518
525	523
530	528
535	533
540	538
545	543
550	548

Spec.	Reqd.
610	607
615	612
620	617
625	622
630	627
635	632
640	637
645	642
650	646
655	651
660	656
665	661
670	666
675	671
680	676
685	681
690	686

Figure 4 - Hydroset Calibration Chart Unit Serial No.

The Hydroset correction chart has been developed by Baker Hughes to accurately reflect the pressure characteristics of this Hydroset.

The correction chart is unique to this Hydroset and cannot be used in conjunction with any other unit.

To obtain the specified Hydroset pressure listed in the left hand column (i.e., “Spec”), you must input the required Hydroset pressure listed in the right hand column (i.e., “Reqd”).

XI. Pressure Test Gauges

A. Types of Gauges to be Used

Indicating pressure gauges used in pressure testing shall be connected directly to the Hydroset. If the indicating gauge is not readily visible to the operator controlling the pressure being applied, an additional indicating gauge shall be provided where it will be visible to the operator for the duration of the test.

Either analog type or digital type pressure gauges may be used. For the Hydroset hydraulic system, analog gauges having an accuracy or ±0.25% full scale are to be used. Gauges should be selected so that test pressure is in the middle 1/3 section of the gauge. Digital gauges shall have an accuracy of ±0.1% of span. Failure to provide proper gauges may result in set pressures outside ASME Code tolerance.

B. Calibration of Pressure Test Gauges

All test gauges shall be calibrated against a standard dead weight tester or a calibrated master gauge. The test gauges shall be calibrated before each test or series of tests.

ATTENTION: Do not use uncalibrated gauges.

A series of tests is that group of tests using the same pressure test gauge or gauges, which is conducted at the same site, within a period not exceeding two weeks.

C. Location of Pressure Gauges

Pressure gauges measuring steam pressure upstream of the safety valve should be connected to the pipe nozzle to which the valve is mounted. If pressure measurements are taken at any other location, then the pressure differential between the gauge location and the valve location should be established. This correction should be used in the calculations of the official set pressure of the safety valve.

A pressure gauge should be located on the Hydroset pump as shown in Figure 3. An elevation head not exceeding 10 feet is recommended.

XII. Pretest Planning, Formulas and Sample Calculation

A. Pretest Planning

Pretest planning is essential, and consists of:

1. Definition of inlet steam test pressure
2. Calculation of Hydroset hydraulic test pressure by using the formula in Section B
3. Determination of required Hydroset pressure using correction chart
4. Testing of pressure gauges at required test pressures to determine gauge error
5. Identification and definition of other test variables
6. Definition of post testing calculations.

Inlet steam test pressure must be defined and controlled within a specified tolerance. A steam test pressure of 70% to 80% of the valve set pressure is recommended. Steam test pressure must be maintained within 5 psi of the defined value. Further, hydraulic test pressure must be maintained within 5 psi of the calculated value.

XII. Pretest Planning, Formulas and Sample Calculation (Cont.)

B. Formula

(Set Pressure) = K x (Hydraulic Pressure) + (Steam Pressure), where K = valve constant per Table 1 (see in margin) and

$$\text{(Hydraulic Pressure)} = \frac{\text{(Set Pressure) - (Steam Pressure)}}{K}$$

Table 1
Valve Constants (K)

ORIFICE	CONSTANT
1	4.667
2	3.302
K	2.588
3	1.885
5	1.443
4	1.223
N	1.134
6	0.706
7, Q	0.452
8	0.352
R, RR	0.312

C. Sample Calculation

Hydroset test of a 1740 Maxiflow Safety Valve

Known Parameters
Desired Set Pressure = 2700 psig
Inlet Steam Pressure = 2088 psig

Determine if steam pressure is acceptable as compared to valve set pressure. (Between 70% to 80% is recommended.)

Steam Pressure x 100 = % of valve set pressure
Set Pressure

$\frac{2088}{2700}$ x 100 = 77.3% (which is acceptable)

Determine required hydraulic pressure.

$$\text{Hydraulic Pressure} = \frac{\text{(Set Pressure) - (Steam Pressure)}}{K}$$

$$\text{Hydraulic Pressure} = \frac{2700 - 2088}{1.223}$$

Hydraulic Pressure - 500 psig

Referring to the Hydroset correction chart, Figure 4 (on page 14), the required hydraulic pressure is 498 psig.

Results: With an inlet steam pressure of 2088 psig, make adjustments to the compression screw until valve lifts with a hydraulic pressure of 498 psig.

XIII. Set Pressure Testing

A. General Information

Set pressure testing of a safety valve can be efficiently accomplished by following the specific steps identified below.

B. Specific Steps

1. Pressure the valve inlet and heat up to required temperature profile.

ATTENTION: The Hydroset unit is not to be mounted to the valve during the heatup period.

The Hydroset unit and pump should not be used if the temperature of the unit and/or pump exceeds 120°F (48.9°C). If that temperature is exceeded during usage, these components should be cooled prior to further usage.

2. To prepare the unit for use, the pump, hose, gauge and Hydroset must be assembled and filled with hydraulic oil.

   Remove the Hydroset plug which is located on the side opposite the hose connection, and then lay Hydroset on its side with the open plug hole up.

   Fill pump with oil and pump system full. The open hole in the Hydroset must be filled completely to the top. Stroke the Hydroset unit by grasping the spindle and pushing/pulling on the spindle. This action will remove trapped air. Upon completion of the stroking, install the plug once again.

ATTENTION: During the filling operation, the pump must be refilled to prevent air from entering system. After filling, pump reservoir must not be more than 3/4 full. All air must be removed from the pump prior to beginning a setting operation.

Before testing, be sure the Hydroset piston is located at the bottom of its travel.

3. Remove cap and release nut from top of spindle per applicable valve Installation and Maintenance Manual, if not done previously. Scrap cotter pin.
4. Clean the top of compression screw, and remove any burrs with a file.
5. Place the Hydroset yoke on top of the valve compression screw, and then place the turnbuckle on the valve spindle. See Tables 2 and 3, on page 13, for the turnbuckle applicable to the valve being tested.
6. Rotate the turnbuckle 1/2 turn on the spindle.
7. Place the Hydroset unit over the turnbuckle and engage the Hydroset spindle threads in the left hand threads of the turnbuckle.

   Rotate the turnbuckle clockwise until the Hydroset unit is resting on the Hydroset yoke. The turnbuckle should be hand tightened only, and then backed off approximately one-half turn. Be sure that the valve spindle does not bind against the Hydroset yoke.
8. Prior to testing, insure that the hydraulic hose is not pinched, since this can be a possible source of error in gauge readings.
9. Pressurize the Hydroset to a value of 80% of the “expected” Hydroset test pressure value.

   From the 80% value, increase the Hydroset pressure at a slow rate until the valve lifts.

   Immediately upon valve lift, the Hydroset pressure should be relieved by utilizing the pump exhaust valve. If pressure is not immediately relieved, the valve may possibly chatter.
10. Record test data.
11. In order to verify test results, the procedure identified in Steps 9 and 10, above, should be repeated two (2) additional times, in order to provide three consecutive tests within ASME Code tolerances.

XIV. Turnbuckle Selection Charts

Table 2

R-RT-S Design Valve	Part No.
1715-1716-1717-1718-1719-1710	4038501
1712-1713	1826001
1725-1726-1727	4038501
1728-1729-1720	1826001
1735-1736-1737	4038601
1738-1739-1730	1826001
1745-1746-1747-1748-1749-1740	1826001
1755-1756-1757-1758-1759-1750	1826001
1722-1723	1826001
1732-1733	1826001
1742-1743	1826101
1752	1826101
1760	4231201
1765-1767	1826001
1775-1777	1826101
1785-1786	1826101
1705R-1706R	1826101
3 Ring Control and T Design	**Part No.**
1715 to 1719	4308701
1725 to 1729	4308701
1735 to 1736	4308701
1737 to 1739	4308601
1745 to 1749	4308601
1775 to 1776	1826001

Table 3

3700 Series	Part No.
3717	4038501
3737	1826001
3740	1826001
3747	1826001
3767	1826001
3777Q	1826101
3787	1826101
3707R	1826101
31700 Series	**Part No.**
31719A	4327201
31709KA	4327301
31739A	4327301
31749A-1	4327401
31749A-2	4231201
31759A	4327401
31709N	4231201

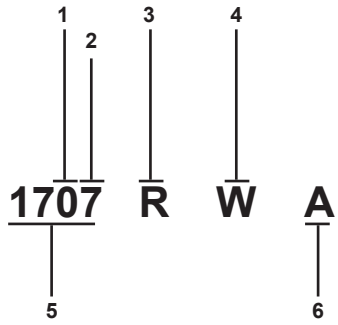


Figure 5

1. Orifice Indicator. Numeric number 1 thru 9, “O” when alpha indicator is used
2. Pressure Class
3. Orifice Alpha Indicator Omitted if numeric
4. Welded Inlet. Omit if Flanged Inlet
5. Type Number:
   1700 Series
   3700 Series
   31700 Series
6. Temp. Class: A thru E

XV. Manufacturer's Field Service and Repair Program

A. Field Service

Baker Hughes maintains the largest and most competent field service technicians in the industry. Service technicians are located at strategic points throughout the United States to respond to customer's requirements for service, even in the event of extreme off-hour emergency situations. Each service technician is factory trained and experienced in servicing Consolidated products.

It is highly recommended that the professional expertise of a field service technician be employed to make final field adjustments during the initial setting of all Consolidated valves.

For further information, please contact your local Green Tag Center.

B. Repair Facilities

The Baker Hughes Consolidated repair department, in conjunction with the manufacturing facilities, are equipped to perform specialized repairs and product modifications, e.g. bushing replacements, hydroset calibrations, electromatic relief valve repairs, code welding, pilot replacement, etc.

For further information, please contact your local Green Tag Center.

C. Maintenance Training

Rising costs of maintenance and repair in the utility and process industries indicate the need for trained maintenance personnel. Baker Hughes conducts service seminars that can help your maintenance and engineering personnel to reduce these costs.

Seminars, conducted either at your site, or at the Baker Hughes Consolidated training facility, provide participants with an introduction to the basics of preventative maintenance. These seminars help to reduce downtime, reduce unplanned repairs and increase valve safety. While they do not make "instant" experts, they do provide the participants with "Hands On" experience with Consolidated Valves. The seminar also includes valve terminology and nomenclature, component inspection, troubleshooting, setting and testing, with emphasis on the ASME Boiler and Pressure Vessel Code.

For further information, Please contact your local Green Tag Center.

XVI. Factory Refurbishing

Many customers find it desirable to return their Hydroset to Baker Hughes for refurbishment and calibration. To proceed with the refurbishment and testing of the lift assist device per OEM standards please follow the process noted below

All returns will be facilitated and sponsored through a Baker Hughes Green Tag Center (GTC). End Users should not send their units back directly to Baker Hughes. The GTC will be responsible for coordinating the return and shipment back to the End User.

How to Proceed:

1. End User contacts their nearest Baker Hughes GTC about refurbishment and calibration of their Hydroset.
2. End User prepares a Purchase Order to the GTC to begin the process; PO must be submitted prior to shipment
3. End User ships the equipment to the GTC or arrangements are made for pickup by the GTC.
4. Hydroset is refurbished and calibrated and returned to the GTC
5. The GTC returns the Hydroset to the End User.

Notes:

Direct Sales Office Locations

Australia
Brisbane
Phone: +61-7-3001-4319

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