VALVE & ACTUATOR INTEGRITY MADE EASY

FIELD POCKET GUIDE

VALVE TECHNICIAN EDUCATION

VALVE & ACTUATOR SERVICES

VALVE CARE PRODUCTS

Sealweld®

SEALWELD CORPORATION INC.
#106, 4116 - 64TH AVE. S.E.
CALGARY, ALBERTA, CANADA
T2C 2B3
1-800-661-8465

SEALWELD (USA) INC.
#118, 15421 - VANTAGE PARKWAY W
HOUSTON, TEXAS, USA
77032
1-800-624-4301

Always innovative, always professional, always dedicated, Sealweld®... Valve & Actuator integrity made easy.

VALVE CAPACITY POCKET GUIDE

NEW VALVE COMMISSIONING PRODUCT CAPACITY

BALL VALVES

Inject approximately 1 oz of product per inch of valve diameter into each seat ring.

Example:

10" valve x 2 seats = 20 oz

PLUG VALVES

4"and smaller	1 oz per inch
6" to 8"	1.5 oz per inch
10" to 12"	2 oz per inch
14" to 18"	3 oz per inch
20" and larger	4 oz per inch

GATE VALVES

Mainline block valves: 1 oz per inch of diameter per seat.

Wellhead gate valves
Approximately 16 oz per inch of diameter to fill the body cavity.

VALVE SEAT SEALANT SYSTEM CAPACITY CHART

This chart will help Valve Technicians accurately calculate the volume required to service the following most common types of isolation valves. These values are listed in US fluid ounces.

SIZE VALVE	FULL SERVICE FROM EMPTY		MAINTENANCE TOP-UP	
	BALL/GATE VALVE	PLUG VALVE	BALL/GATE VALVE	PLUG
2"	4 (2 oz/seat)	2	1 (0.5 oz/seat)	0.5
3"	6 (3 oz/seat)	3	1.5 (0.75 oz/seat)	0.5
4"	8 (4 oz/seat)	4	2 (1 oz/seat)	1
6"	12 (6 oz/seat)	9	3 (1.5 oz/seat)	2
8"	16 (8 oz/seat)	12	4 (2 oz/seat)	3
10"	20 (10 oz/seat)	20	5 (2.5 oz/seat)	5
12"	24 (12 oz/seat)	24	6 (3 oz/seat)	6
14"	28 (14 oz/seat)	35	7 (3.5 oz/seat)	9
16"	32 (16 oz/seat)	48	8 (4 oz/seat)	10
18"	36 (18 oz/seat)	52	9 (4.5 oz/seat)	16
20"	40 (20 oz/seat)	80	10 (5 oz/seat)	18
24"	48 (24 oz/seat)	96	12 (6 oz/seat)	21
26"	52 (26 oz/seat)	—	13 (6.5 oz/seat)	—
30"	60 (30 oz/seat)	—	15 (7.5 oz/seat)	—
34"	68 (34 oz/seat)	—	17 (8.5 oz/seat)	—
36"	72 (36 oz/seat)	—	18 (9 oz/seat)	—
48"	96 (48 oz/seat)	—	24 (12 oz/seat)	—

* Always cross-reference these values with the valve manufacturer's operation and maintenance manuals. Certain models may require different quantities to top-up the seat sealant system.

BELOW GRADE VALVE RISER PIPE CAPACITY

¼" = 0.5 oz. / foot length
⅜" = 1.3 oz. / foot length
½" = 2.0 oz. / foot length
¾" = 4.0 oz. / foot length

VALVE CAPACITY POCKET GUIDE

INJECTION RATES FOR SEALWELD PUMPS

Hydraulic Handgun	Approximately 50 handle strokes per ounce
Screw-primed Supergun	Approximately 25 handle strokes per ounce
Mongoose	Approximately 11 handle strokes per ounce
Uni-Seal	3 to 5 seconds of foot pump operation per ounce (dependant upon viscosity)
Activ-8	3 to 5 seconds of foot pump operation per ounce (dependant upon viscosity)

LUBRICANT/SEALANT RECOMMENDATIONS

CLEANING AND FLUSHING

Valve Cleaner	Solvent-based product that softens old product and debris in hard-to turn valves.
Gold Flush	Purges loose debris from sealant passages and sealing surfaces.
Odyssey Solvent	Excellent at removing heavy deposits of grease, lubricants and heavy oils.

MAINTENANCE LUBRICANT

Equa-Lube 80	Preventative maintenance product for new and like-new valves, new valve commissioning and after hydro-testing to purge water from valve sealing surfaces.
Diablo 100	Viscous product used to service frequently-operated valves. Also used for commissioning and plug valve sealing.
Pinnacle 200	Synthetic body-filler product injected into the body cavity of wellhead gate valves.
Winter Lube 7030	For use in cooler climates where conventional sealant can be hard to pump. For maintenance on frequently operated valves, plug valve sealing, and on valves with minor seat/stem leakage.

MAINTENANCE LUBRICANT/SEALANTS OR SEMI-SEALANTS

Summit 7030	All-weather product for maintenance on frequently operated valves, plug valve sealing, and on valves with minor seat/stem leakage.
Total Lube 911	Viscous product for moderate seat leakage. Very high resistance to wash out and for plug valve sealing.

VALVE SEALING

BVS 5050	General valve sealant for major leaks in ball valves.
Winter-Seal 2525	Low temperature sealant for major leaks in cooler climates and liquid gases.

*Sealweld also carries a range of **STEM PACKING** products for use in most applications.

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VALVE & ACTUATOR
EDUCATION

11 STEPS OF CRITICAL VALVE INSPECTION

1. Valve Identification - Always use your company's Valve Identification Letter/Number Designation system to verify the proper valve is being inspected.

2. Make note of valve operating position – OPEN or CLOSED.

3. Inspect For Corrosion - Inspect valve and adjoining piping for blistering and/or bubbles in paint, specifically areas where paint has been damaged. Re-coat if required.

4. Leaks - Inspect any bolted or threaded connections on valve for leaks. Next, inspect all injection fittings, packing injector fittings and body drain/vent fittings. Finally inspect valve stem, valve bonnet, valve flanges and valve-body for leaks.

5. Valve Operation - Verify that the valve moves or operates as designed.
   *Best Practice: Operate valve at 25% of full operation
   *When possible, fully operate valve.

NOTE: Opening or Closing the wrong Valve could lead to Station/ Plant shutdown , damage equipment & other unsafe conditions.

11 STEPS OF CRITICAL VALVE INSPECTION

6. Valve Security – Inspect all locking devices, including locks and chains, for damage and replace if necessary.

7. Valve Accessibility – Verify valve is ALWAYS accessible in the event of an emergency and during normal operation.

8. Valve Stability - If valve is supported by wood, concrete or other support materials, inspect supports for damage.

9. Inspect for A.O.C. – Inspect valve for all other Abnormal Operating Conditions such as; broken valve stems, cracked or damaged valve bonnets and/or bonnet bolts, damaged injection fittings, excessive binding or torque, loose actuator mounting bolts etc.

   NOTE: *Valves that will not operate or seal as designed should be documented as an A.O.C.

10. Documentation of A.O.C. (as Identified in Step 9)

    NOTE: all A.O.C. on company valve report or on other relevant company Paperwork.

11. Verify Valve Position – Leave valve in the same position it was upon your arrival to site. Contact CONTROL if needed to verify valve's original position.

VALVE & ACTUATOR EDUCATION

Sealweld Corporation offers a variety of Valve & Actuator Training Programs including our fully certified Valve Pro Education Program and customized on-site Valve & Actuator training courses.

- Valve Pro is a two module program that combines Computer Based Training and Testing with Instructor-led classroom and hands-on competency testing.

- Valve & Actuator Training is offered in four course sessions:

  Valve 101
  Actuator 101
  Valve 102
  Actuator 102

Dependent on the Valve & Actuator Models used on your site and/or the attendees' knowledge level, Sealweld can adapt the courses or customize a new program to suit the needs of your organization. Our state-of-the-art hands-on training Lab located in Houston, Texas allows all levels of attendees to practice and learn valve and actuator basics, critical valve inspection and safe repair and troubleshooting techniques in a simulated filed environment with equipment in-line and under PRESSURE!

Please contact Sealweld's Training Department to discuss all your training needs and requirements.

ValvePro®

CERTIFIED VALVE EDUCATION

ValvePro® is a comprehensive educational program designed for all individuals involved with the creation, implementation and execution of Valve & Actuator repair and maintenance planning.

HERE'S WHAT TO EXPECT FROM THE VALVEPRO® TRAINING PROGRAM:

- Learn how to safely service valves in-line and under pressure.
- Learn how to prolong valve service life.
- Learn how to develop a Valve & Actuator maintenance program.
- Understand the importance of having a Valve & Actuator tracking system.
- Demonstrate your ability to comply with relevant Health and Safety legislation and operation qualifications.
- Learn to safely free seized ball, gate or plug valve.
- Seal stem and seat leakage from the most common makes and models of lubricated valves.
- Safely inject cleaners, lubricants, sealants and emergency sealants into valves under pressure.
- Avoid costly and dangerous mistakes by ensuring workers have the skills they need.
- Troubleshoot inoperable lubrication equipment.
- Practice in a state of the art hands on Valve & Actuator training lab.
- Instructors with combined field experience of 100 years.

AVAILABLE IN ENGLISH, SPANISH AND RUSSIAN

The University of Texas at Austin
Petroleum Extension (PETEX®)

VALVE & ACTUATOR
SERVICES

KEY POINTS FOR SAFE VALVE & ACTUATOR MAINTENANCE

1. ALWAYS get specific authorization from your supervisor or the control room BEFORE cycling (or operating) any valve in the system.
2. Do NOT open the body vent/drain fitting unless it is safe to do so. Visually inspect fitting for corrosion and that it is tightly installed.
3. Most gases are lethal in high concentrations. Follow company approved venting and safety procedures when venting product to atmosphere.
4. Always properly identify valves operating design - REMEMBER, some valves rotate open and close, while others travel open to close in a liner direction.
5. NEVER use excessive force or torque when trying to operate valves that have not been maintained properly. Excessive torque can bend or break a valves stem.
6. When applicable fully operate valve 3 - 5 times. Some valves are designed with seat ring inserts that act as a wiper. This helps keep the valves sealing surfaces clean.
7. ALWAYS have a high-pressure gauge on your injection equipment that is functioning properly.
8. Before servicing or performing maintenance on an actuator, always depressurized or shut off power supply.
9. Hydraulic actuators that cycle frequently, (3-5 times per week) should have oils monitored annually for contaminants and fluids replaced if necessary.
10. Some actuators exhaust high pressure gases as part of their operation design. Always wear appropriate PPE and keep any ignition sources away from the equipment.

CLEANING VALVES

Valves which hang up, are hard-to-turn or do not seal properly commonly require cleaning. Inject sufficient quantities of cleaner to displace all of the existing lubricant/sealant in the valve sealant system*. Leave the valve cleaner in the valve for a minimum of 30 to 40 mins and cycle the valve, if permitted, to ensure complete coverage. **NOTE:** the longer the valve is able to soak the more effective the cleaner will perform. ALWAYS displace the valve cleaner with equal quantities of lubricant/ sealant following cleaning. For problem valves, leave the cleaner inside the valve for several days and top-up frequently. Tests have repeatedly proven that periodic lubrication with valve cleaner prevents formation of gums and lacquers in valves, preventing costly repairs and down-time.

*** Consult the "Valve Lubricant/ Sealant Capacity Chart" on page 2. Remember to include riser pipe quantities when cleaning valves below grade.**

Sealweld's **Valve Cleaner Plus** is used as an internal valve cleaning compound in ball, gate and plug valves and will not cause damage to valve seat inserts. **Valve Cleaner Plus** is also ideal for use in hard-to-turn valves, to clean out a valves lubricant/sealant passage that may be restricted as well as below grade valves with rise pipe assemblies. **Valve Cleaner Plus** can be injected into a ball, gate or plug valve in the full open or full closed position. Excellent for use on ball and gate valves with seat leakage and/or to remove debris that may restrict the seat injection passages as well as remove any build up on or behind the seat ring, allowing the seat ring to return and seal against a clean ball or gate closure surface.

BEST PRACTICE

On valves with painted or damaged injection fitting attach a Sealweld **Mega-Lock** or **Leak-Lock Adapter** to fitting to allow better injection efficiency when injection liquid or semi-liquid products.

INJECTION TECHNIQUES

The best results are achieved by injecting while the valve is in the fully open or fully closed position. When attempting to seal a valve, if leakage persists, check the valve stops to ensure the valve is fully closed.

TOPPING-UP LUBRICANT/SEALANT

When performing routine maintenance, it is important to consistently top-up the lubricant/sealant in the valve sealant system. * The sealant system is a network of grooves and channels inside the valve leading to seal points around the ball, gate or plug. Quantities required to top-up any valve can vary greatly depending on the valve size, design, cycle frequency, service conditions and riser pipe height, if applicable. Always be sure to use correct volumes of grease.* Learn how to properly 'read' a high-pressure sealant injection gauge (mounted on the pump) to help determine when the sealant reaches the seal points.

*** Consult the "Valve Lubricant/ Sealant Capacity Chart" on page 2. Remember to include riser pipe quantities when cleaning valves below grade.**

COMMISSIONING NEW VALVES

Most new valves incur seal damage during storage and construction phases as this is commonly when foreign debris enters an isolation valve's sealing mating surface. Sealweld has developed proven and effective procedures for eliminating this debris, as well as procedures for after valve and line hydro-testing, procedures for pigging applications to help protect and maintain a valves seat sealant passages and double block and bleed feature.

New Valve Commissioning has been included in the **ValvePro®** - Valve Technician Certification program.

Call Sealweld® for more information.

All of our technical papers are available on our web site at www.sealweld.com

ROUTINE VALVE MAINTENANCE

- Annual /Routine Preventative Maintenance
- Actuator/Gearbox Maintenance
- Seat Seal Integrity Testing
- Critical Valve Inspection and Documentation

INLINE & UNDER PRESSURE TROUBLESHOOTING

- Emergency Valve Sealing
- Seized & Hard-to-Turn Valves
- Seat and Stem Leakage
- Body/Flange Leakage
- Actuators and Controls

VALVE & ACTUATOR REPAIRS

- Refurbishing Worn Mechanical Parts
- Stem Seal Change-Out
- Diagnosis and Onsite Complete Actuator Rebuilds
- In-house Repairs of Manual Gearboxes and Actuators
- Procurement & Installation of Replacement Parts and Seals
- Mod Kits & Upgrades

NEW VALVE & ACTUATOR COMMISSIONING

- Fitting Inspection & Replacement
- Seat Lubrication
- Seat Integrity Testing & Inspection
- Actuator Installation
- Set Actuator Limits and Stops
- Installation of Power Gas and Pilot connections

Recommended

Allow plenty of time to soak (a minimum of 4 hrs if possible). For difficult applications allow the cleaner to soak for anywhere from 24 hrs to 7 days if possible

DURING THE MANUFACTURING PROCESS, OUR PRODUCT DO NOT COME INTO CONTACT WITH FOOD SUBSTANCES!

SEALWELD® ODYSSEY INDUSTRIAL CLEANING SOLVENT

DESCRIPTION

Sealweld® Odyssey Cleaning Solvent is a heavy-duty synthetic industrial cleaning solvent. Excellent at removing heavy deposits of grease, lubricants and heavy oils as well as sludge and dirt from metal parts. Odyssey Cleaning Solvent will not harm metal, most types of rubber, plastic or concrete. Effective for dissolving asphaltene build-up and has many other uses in the industrial marketplace. Odyssey Cleaning Solvent does not contain water, is non water-soluble, and leaves behind a protective barrier that inhibits spot rust.

Designed for use as a valve body flushing solvent for seized or hard-to-turn valves

- Environmentally Friendly
- Non-Flammable
- Non-Hazardous
- Non-Polluting

Product Specifications

Temperature Range	- 79˚C to + 81˚C - 110˚F to + 178˚F

SEALWELD® VALVE CLEANER PLUS

An environmentally friendly product designed to clean valve seal faces and internal sealant passages.

DESCRIPTION

Valve Cleaner Plus is a combination of solvent and semi-synthetic lubrication oils. This formulation is injected directly into the seat sealant system to clean important seal faces and/or sealant passages reducing torque in hard to turn plug valves that have not been maintained.

Cycle the valve (if permitted) to ensure complete coverage and allow the valve cleaner to soften old sealants and remove residual build-up from seal points. Valves with severe or persistent leakage may require additional wait time. The best results are achieved by displacing the valve cleaner with equal quantities of lubricant or sealant after cleaning.

Designed for use at refineries, wellheads, pump or compressor stations and in gas distribution systems.

- Environmentally Friendly
- Non-Flammable
- Non-Hazardous
- Non-Carcinogenic
- Non-Ozone Depleting

Product Specifications

Temperature Range	- 40˚C to + 204˚C - 40˚F to + 400˚F

BEST PRACTICE

Allow Sealweld Valve Cleaner Plus time to soak 4hrs - 2 wks.

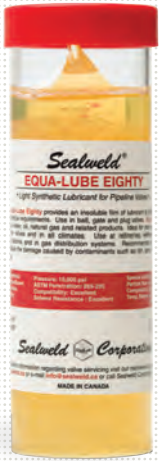
DURING THE MANUFACTURING PROCESS, OUR PRODUCT
DO NOT COME INTO CONTACT WITH FOOD SUBSTANCES!

EQUA-LUBE EIGHTY

Our most economical and lightweight synthetic lubricant is ideal for commissioning new pipeline valves.

DESCRIPTION

Sealweld® **Equal-Lube Eighty** creates an insoluble lubricant film protecting critical seal faces and reducing torque requirements. The immediate injection of **Equa-Lube Eighty** after hydrostatic testing at the valve factory or repair facility extends the valve service life as it will purge all test water from the seat pockets where corrosion commonly occurs. It also protects against damage from pipeline contaminants such as: dirt, sand, line scale and welding slag at start-up. This product is insoluble in water, crude oil, natural gas, condensate and related by-products.



Recommended for use in ball, gate and plug valves with little to no wear as well as in orifice fittings. Use in new valves, wellhead valves, at refineries, pump and compressor stations and in gas distribution systems.

Ideal for year-round use and in all climates.

Product Specifications

Base Oil	Synthetic
Colour	Amber/ Brown
Composition	Semi-liquid
Temperature Range	- 40˚C to + 149˚C - 40˚F to + 300˚F

PINNACLE #200

PREMIUM SYNTHETIC WELL HEAD BODY FILLER

Sealweld® **Pinnacle #200** is a synthetic well head body filler lubricant containing special additives to inhibit rust, corrosion and oxidation inside valve body cavities as well as reduce friction on moving parts. This product has excellent resistance to breakdown and washout in drilling fluids, sour gas and other typical drilling by-products.

Wellhead gate valves are subject to extensive damage from debris such as sand and rock entering sensitive sealing areas. The excellent adhesive properties of Sealweld® **Pinnacle #200** help to protect seat and stem seals from premature breakdown and washout by forming a barrier around these abrasive particles. Exceptional for hydraulic fracturing applications that produce very extreme operating conditions.

Recommended for use in wellhead gate valves, stem seals, gearboxes and bearing assemblies.

Product Specifications

Base Oil	Synthetic
Colour	Red
Particle Size	Micronized
Temperature Range	- 18˚C to + 204˚C 0˚F to + 400˚F

SEALWELD® DIABLO

A premium synthetic valve lubricant formulated for use in liquid and gas applications in plug, gate and ball valves.

Mixed with specialized thickeners, Sealweld® **Diablo** remains tacky inside the sealant systems of many types of valves and is resistant to washout. For use in all kinds of pipeline transmission systems, gas distribution systems and at pump/compressor stations.

DIABLO #90

DESCRIPTION

For use with aliphatic hydrocarbons, natural gas, crude oil and distillates, liquid hydrocarbons and refined products such as kerosene. This product is not recommended for use in sour gas applications. **Diablo #90** can be used in any pump that accepts J-sized sticks and is also available in 10 lb and 40 lb pails.

Product Specifications

Color	Amber
Temperature Range	- 29˚C to + 232˚C - 20˚F to + 450˚F

DIABLO #100

DESCRIPTION

For use with aromatic hydrocarbons, alkyl substituted aromatics, xylene, 1, 2, 4-trimethylbenzene, butane, propane, gasoline and applications with H_2S concentrations up to 20%. An exceptional plug valve sealant that has excellent anti-oxidization properties.
Available in bulk drums, J-sized sticks, 10 lb and 40 lb pails.

Product Specifications

Color	Dark Amber
Temperature Range	- 29˚C to + 204˚C - 20˚F to + 400˚F

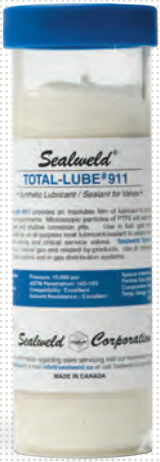
LUBRICANTS / SEALANTS

DURING THE MANUFACTURING PROCESS, OUR PRODUCT DO NOT COME INTO CONTACT WITH FOOD SUBSTANCES!

SEALWELD®
TOTAL-LUBE #911

Our superior grade synthetic lubricant sealant designed specifically for worn valves with minor leakage problems.

DESCRIPTION



Sealweld® **Total-Lube #911** creates an insoluble lubricant film to protect seal faces and reduce torque requirements. Microscopic PSP particles will seal minor scratches on sealing surfaces and shallow corrosion pits up to 0.010". It is designed specifically as an all-purpose seat lubricant sealant to extend maintenance intervals in severe and critical service valves. **#911** is insoluble in water, oil, natural gas, related by-products and suitable for use in H_2S service less than 20% concentration.

For use in ball, gate, and plug valves as well in orifice fittings. Recommended for use at refineries, wellheads, pump or compressor stations.

Product Specifications

Base Oil	Synthetic
Colour	White
Particle Size	Micronized
Composition	Semi-liquid
Temperature Range	- 29˚C to + 232˚C - 20˚F to + 450˚F

SUMMIT #7030

A synthetic-based lubricant/sealant recommended for year-round use in many types of services. Also suitable in winter climates where conventional sealants become stiff and too difficult to pump.

DESCRIPTION

Sealweld® **Summit #7030** is designed for use in frequently operated valves prone to wash out, valves with wear and minor leaks on-seat sealing surfaces, and energizing ball valve stems. Unique additives create excellent pumping ability and lower operating torque in severe operating conditions. It is formulated to remain insoluble in water, oil and all types of hydrocarbon services including natural gas, condensate, related by-products and refined petroleum products.

For use in ball, gate and plug valves. Recommended for use on: above and below ground valves such as blow-down valves, pig launching and receiving valves and in refineries, wellheads, pump or compressor stations and in gas distribution systems. It is also suitable for use in H_2S service less than 20% concentration.

Product Specifications

Base Oil	Synthetic
Colour	Grey
Particle Size	Micronized
Temperature Range	- 40˚C to + 205˚C - 40˚F to + 400˚F

WINTER-LUBE #7030

All-purpose synthetic valve lubricant/sealant specifically formulated to remain soft in sub-zero climates that can also be used year round in many types of services.

DESCRIPTION

Sealweld® **Winter-Lube #7030** is designed specifically for use in winter climates where conventional sealants become stiff and difficult to pump. Unique additives create excellent low-temperature pumping ability and lower operating torque in severe operating conditions. It is formulated to remain insoluble in water, oil and all types of hydrocarbon services including natural gas, condensate, related by-products and refined petroleum products.

For use in ball, gate and plug valves. Recommended for use on: above and below ground valves such as blow-down valves, pig launching and receiving valves and in refineries, wellheads, pump or compressor stations and in gas distribution systems. It is also suitable for use in H_2S service less than 20% concentration.

Product Specifications

Base Oil	Synthetic
Colour	Grey
Particle Size	Micronized
Temperature Range	- 40˚C to + 205˚C - 40˚F to + 400˚F

ARCTIC LUBE

A synthetic-based lubricant designed specifically for use in extremely low temperature applications where conventional lubricants and sealants become too stiff to pump.

DESCRIPTION

Sealweld® **Arctic-Lube #3070** contains unique additives to allow for excellent sealing of minor leaks, ease of low-temp injection and lowered valve breakout torque in the most severe operating conditions.

Arctic-Lube #3070 has passed cold box testing and is currently used in field operation in Arctic regions. Formulated to remain insoluble in all types of hydrocarbon service including; H_2S, condensate, crude oil, related by-products and refined petroleum products. Inject **Arctic-Lube #3070** into ball, gate and plug valves where liquefied gases are transmitted or ambient temperatures plummet and valve operation is inhibited. Also for use in blowdown valves, pig launcher/receivers, refineries, wellheads, pump or compressor stations and gas distribution systems.

Product Specifications

Base Oil	Synthetic
Colour	Grey
Particle Size	Micronized
Composition	Semi-liquid
Temperature Range	- 60˚C to + 205˚C - 76˚F to + 400˚F

DURING THE MANUFACTURING PROCESS, OUR PRODUCT
DO NOT COME INTO CONTACT WITH FOOD SUBSTANCES!

SEALWELD®
WINTER-SEAL #2525

A synthetic valve sealant designed for use in extremely cold climates. **Winter-Seal #2525** is comparable to **#5050** sealant in sealing ability yet remains soft and pliable at cold temperatures. It can also be custom blended into **XH, XXH, XXXH** grades.

DESCRIPTION

Sealweld® **Winter-Seal #2525** utilizes the same base formula as **Winter-Lube #7030** with added PSP particles to improve the sealing ability. **#2525** reduces torque and provides reliable sealing in leak passages up to 0.030". May also be used as a secondary stem sealant when the ambient temperature makes pumping conventional sealants difficult and time consuming. **#2525** is designed to remain insoluble in all types of hydrocarbon services including natural gas, condensate, related by-products, crude oil and refined petroleum products. Suitable for use in H_2S service less than 5% concentration.

Product Specifications

Base Oil	Synthetic
Colour	Dark Grey
Particle Size	Semi-micronized
Temperature Range	- 40°C to + 205°C - 40°F to + 400°F

SEALWELD® BALL VALVE SEALANT #5050

A synthetic sealant recommended for use in pipeline valves with more severe leakage problems.

DESCRIPTION

Sealweld® **Ball Valve Sealant #5050** is formulated with PSP particles to seal scratches in sealing surfaces up to 0.030". It will not harden or plug off conventional giant button-head sealant injection fittings.

For use in ball, gate and plug valves, orifice fittings, valve stems and seat seals with moderate to severe leakage problems. Recommended for use at refineries, wellheads, pump or compressor stations, and in gas distribution systems. Suitable for use in crude oil, H_2S, CO_2, water/brine solutions, natural gas, oil, related by-products and refined petroleum product pipelines.

#5050 is also available in heavier grades for severely leaking valves and emergency valve sealing conditions.

Extra heavy grades are blended with increasing amounts of PSP. **#5050** and heavier grades are designed for use by qualified technicians ONLY. Contact Sealweld® for consultation prior to application of these products.

Product Specifications

Base Oil	Synthetic
Colour	Green
Particle Size	Semi-micronized
Composition	Semi-liquid
Temperature Range	- 29˚C to + 232˚C - 20˚F to + 450˚F

SEALWELD® EXTRA HEAVY BALL VALVE SEALANT #5050

A synthetic emergency sealant for ball and gate valves with SEVERE leakage problems and pipeline valve stems in extreme service conditions.

Always use the lightest grade sealant before progressing to heavier, more aggressive sealants to avoid complications with sealant fittings and internal passages.

DESCRIPTION

Heavier grades of **#5050** are designed for use by qualified technicians ONLY. Contact Sealweld® for consultation prior to application of these products.

These heavy sealants are not recommended for use in plug valves except for emergencies. The intense sealing ability of this compound may restrict internal sealant passages and/or plug them completely if used incorrectly. Sealant MUST be purged from the system after use. These products are not recommended for use in small diameter plug valves.

Product Specifications

Base Oil	Synthetic
Colour	Green
Particle Size	Semi-micronized
Composition	Semi-liquid
Temperature Range	- 29˚C to + 232˚C - 20˚F to + 450˚F

*Also available in different strength

XH = Extra Heavy

XXH = Extra Extra Heavy

XXXH = Extra Extra Extra Heavy

XXXXH = Extra Extra Extra Extra Heavy

DURING THE MANUFACTURING PROCESS, OUR PRODUCT
DO NOT COME INTO CONTACT WITH FOOD SUBSTANCES!

EXTREME LOW-TEMPERATURE LUBRICANT D-1014

A synthetic valve lubricant with extremely light consistency, designed for extreme-cold LNG/LPG and similar applications. **D-1014** is available with or without PSP and customized into extra heavy grades.

DESCRIPTION

Sealweld® **Low-Temperature Lubricant D-1014** is a proprietary blend of synthetic materials formulated with low-temperature additives. **D-1014** significantly reduces torque requirements, counters the extreme drying effects produced by liquefied petroleum gases and continues to lubricate long after other types of lubricants have washed out. Recommended for use in LNG/LPG services including propane, butane, ethane, ethylene and related by-products. Ideal for use in ball, gate, plug and wellhead valves and gearboxes left offline in extreme climate conditions that must be available for actuation. Excellent for use in pig traps and launchers.

Product Specifications

Base Oil	Synthetic
Colour	Grey
Temperature Range	- 54˚C to + 204˚C - 75˚F to + 400˚F

HIGH TEMPERATURE ETERNA-LUBE #1000

An anti-seize compound and high-temperature lubricant used in severe service conditions. For use in gear boxes, stem extensions and steam service.

DESCRIPTION

Sealweld® **Eterna-Lube #1000** is a superior multi-use, anti-seize compound formulated to provide rust and corrosion protection for all metal surfaces by forming a protective coating. It is enhanced with additives that create an impenetrable barrier to withstand extreme heat, pressure and friction, reduce torque requirements and eliminate wear. **Eterna-Lube #1000** is waterproof, non-melting, highly resistant to chemicals and gases (except oxygen) and will not harden.

HIGH TEMPERATURE ETERNA-LUBE #1000

Eterna-Lube #1000 is designed as a valve seat lubricant for high-temperature services including hydrocarbons, hot air and steam.

For use in valve stems, gear boxes, expansion joints, conveyor belts, air motors, pumping mechanisms, all threaded connections, hand and motor-operated valves, gaskets, flanges, O-rings, bushings, bearings, rollers, gears, transmission boxes, chains, drives, automotive chassis, low speed wheel bearings, universal joints, electric motors, compressors, hoists, turbines, winches, furnaces, burner assemblies, regulators, pumps, control chests, headers, cylinder head assemblies, gasket manifold assemblies, stud assemblies, fuel injectors, pre-combustion chambers, valve cages, turbo charger fittings, guides, fine thread tubing, compressor cages, silencer piping, shaft coupling bolts, keyways, spark plugs, torque rod pins and lubes, air cylinder assemblies, pneumatic cylinder shafts, liquid fuel pumps, air slides and axle shafts.

NOT recommended for use in high-speed bearings.

Product Specifications

Base Oil	Synthetic
Colour	Silver Grey
Temperature Range	- 40˚C to + 1093˚C - 40˚F to + 2000˚F

HIGH TEMPERATURE STEAM SHIELD 2000

A unique specialty synthetic valve lubricant tested and proven to remain stable at extremely high temperatures

DESCRIPTION

Sealweld® **Steam Shield 2000** is a proprietary blend of synthetic ingredients that can withstand temperatures up to +398˚C or +750˚F with minimal thermal decomposition.

Steam Shield 2000 creates an insoluble film of synthetic lubricant to protect valve seal faces and reduce torque requirements. It is non-melting and insoluble in water, steam and related by-products. **Steam Shield 2000** was originally tested in California and Alberta's steam-enhanced recovery projects as a valve and stuffing box sealant and demonstrated excellent results. The viscosity allows for ease of application using a brush, grease pump or automatic injection equipment.

Recommended specifically for valves used for steam injection and heavy oil recovery. It is also recommended for use in building steam-heating systems, geothermal service, etc. Ideal for use in university, hospital and other institution steam-heating systems.

Product Specifications

Base Oil	Synthetic
Colour	Black
Particle Size	< 4 Microns
Composition	Semi-liquid
Temperature Range	- 30˚C to + 400˚C - 21˚F to + 750˚F

STEAM SHIELD 2000

SAGD

SAGD is a thermal method for recovering heavy oil developed in Alberta, Canada. The process uses twin horizontal wells drilled and extended into the base of a reservoir with the horizontal steam injector placed directly above the horizontal production well. The mobilized oil drains by gravity to the lower well and is produced to the surface.

CASE STUDY

The original field pilot began in spring of 2002. Several wellhead valves were filled with **Steam Shield 2000** lubricant and then put into service. Steam was then injected into the formation at +295˚C / +563˚F continuously for the first year. At the first maintenance interval the same wellhead valves were re-lubricated with additional lubricant.

Observations: **Steam Shield 2000** remained exceptionally stable with marginal or zero break down or hardening. It helped to dissipate the heat caused by the extreme high-temperature steam injection and hot oil production. The presence of this inert lubricant helped prevent internal seat seal damage, wash-outs and cuts normally associated with this high-temperature and high-pressure service.

Wellhead valves lubricated by **Steam Shield 2000** will experience prolonged valve service life. Wellhead valves in nearby fields, using the same SAGD technology, displayed extensive seal damage and in many cases severe seat leakage. These valves were injected with conventional high-temp lubricants or none at all.

High-temperature wellhead repair costs become prohibitively expensive, especially when considering the cost of lost production revenue. Protect your company's investment -- use **Steam Shield 2000** on SAGD wellheads at your facility.

VALVE STEM PACKING

DURING THE MANUFACTURING PROCESS, OUR PRODUCT DO NOT COME INTO CONTACT WITH FOOD SUBSTANCES!

SLICK STICKS

A moldable valve stem packing stick used in wellhead gate valves, plug valves and as a supplemental pump gland packing.

DESCRIPTION

Sealweld® **Slick Sticks** are formed from a moldable packing putty with a proprietary blend of PSP particles that bond to form a durable yet replaceable seal. **Slick Sticks** provide maximum sealing and lubricating efficiency when injected into plug and gate valves with bolt style packing injector fittings, stems, stuffing boxes, pump and packing glands and expansion joints. **Slick Sticks** are insoluble in water, oil, sweet or sour natural gas and related by-products.

Recommended for use at: refineries, wellheads, pump or compressor stations and in gas distribution systems.

Note: When using Slick Sticks on centrifugal pumps, the maximum surface speed of the shaft should not exceed 1,000 RPM. i.e. Maximum shaft size and speed is 2.25 inch diameter shaft rotating at 1,800 RPM.

Product Specifications

Temperature Range	- 40˚C to + 260˚C - 40˚F to + 500˚F

STEAM SHIELD STICKS

An extreme high-temperature valve stem and pump packing.

DESCRIPTION

Steam Shield Sticks are blended with PSP particles for extremely high-temperature sealing capabilities.

Also available in Hi-Temp Packing & Stem Packing.

Product Specifications

Temperature Range	- 22˚C to + 400˚C - 8˚F to + 750˚F

PACK KING #301

Moldable plastic valve stem packing sticks. Similar to Slick Sticks with a higher concentration of PSP.

DESCRIPTION

Sealweld® **Pack King #301** is a putty-type packing compound made from a 100% synthetic base formulated as an injectable packing for valve stems, packing glands and stuffing boxes. It is designed to mold around valve stems and pump rods to form a drip-tight seal where other sealing procedures have proven ineffective. **Pack King #301** exhibits an extremely low coefficient of friction and is resistant to most chemicals, solvents, exotic products and is ideal for condensate service. **Pack King #301** is also available in bulk containers for use as a flange sealant.

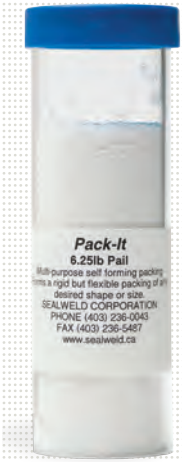
Product Specifications

Temperature Range	- 29˚C to + 250˚C - 20˚F to + 500˚F

PACK-IT PARTICLE PAK

A multi-purpose, self-forming packing made with specifically processed granulated PSP.

DESCRIPTION



Sealweld® **Pack-It** is a granular packing made with specially processed PSP. It compacts to form a rigid but flexible self-sealing packing which will conform to any size or type of shaft, rod or stuffing box. Simple to apply yet durable in service, this product ends the need for expensive inventories of various sizes of packing rings. **Pack-It** will not decompose, oxidize, deteriorate and compensates for wear by remolding itself when the packing gland is adjusted. It may also be used as a valve stem packing on all valves, including ball, gate, plug, check, globe, motor and control valves regardless of service. Use in conjunction with conventional rope packings to extend packing life and eliminate leakage at start-up.

Product Specifications

Temperature Range	- 240˚C to + 250˚C - 400˚F to + 500˚F

TIGER-PAK F

TIGER-PAK "F" is a pliable, injection-gun type plastic bulk packing with a high TFE content and a non-asbestos binder blended with a chemical and solvent resistant synthetic oil and selected anti-extrusion fibers. This matrix is formulated to energize split-box type V-packing gland designs and forms a positive stem seal at pressures up to 30,000 PSI. The effective temperature range is from -20˚F to 450˚F.

DESCRIPTION

TIGER-PAK "F" is a special formulation for fuels. It is suitable for application on regular and premium no lead gasoline, regular leaded gasoline, diesel fuel (all grades), Jet A fuel, distillate petroleum solvents, oils, LPG. natural gas and MTBE.

Properties

Type	Plastic Bulk
Corrosion	None
Moisture Content	Nil
Metal Adhesion	Non-Coating
Grades Available	Stick, Strips
Color	Dark Green

TIGER-PAK FF

TIGER-PAK "FF" is a pliable, injection-gun type plastic bulk packing with a high TFE content and a non-asbestos binder blended with a chemical and solvent resistant synthetic oil and selected anti-extrusion fibers. This matrix is formulated to energize split-box type V-packing gland designs and forms a positive stem seal at pressures up to 30,000 PSI. The effective temperature range is from -20˚F to 450˚F. **"FF"** is the same formulation as **TIGER-PAK "F"**, but with smaller anti-extrusion particles for ease of injection through ball check fittings primarily in wellhead applications.

DESCRIPTION

TIGER-PAK "FF" is a special formulation for fuels. It is suitable for application on regular and premium no lead gasoline, regular leaded gasoline, diesel fuel (all grades), Jet A fuel, distillate petroleum solvents, cyclohexane, oils, LPG. natural gas, dry hydrogen and MTBE.

Properties

Type	Plastic Bulk
Corrosion	None
Moisture Content	Nil
Metal Adhesion	Non-Coating
Grades Available	Stick, Strips
Color	Dark Green

TIGER-PAK BLUE

TIGER-PAK BLUE is a pliable, injection-gun type plastic bulk packing with a high TFE content and a non-asbestos binder blended with a chemical and solvent resistant synthetic oil and selected anti-extrusion fibers. This matrix is formulated to energize split-box type V-packing gland designs and forms a positive stem seal at pressures up to 30,000 PSI. The effective temperature is from -85˚F to 600˚F.

DESCRIPTION

TIGER-PAK BLUE is suitable for application on distillate petroleum solvents, crude oil, LPG, natural gas, steam and aqueous solutions, glycols, water, vegetable oils, dilute acids, alkalies, Carbon Dioxide, Hydrogen Sulfide, and hydro-lubes.

For unleaded gasoline, MTBE and natural gas condensate service **TIGER-PAK "F"** is recommended.

Properties

Type	Plastic Bulk
Corrosion	None
Moisture Content	Nil
Metal Adhesion	Non-Coating
Grades Available	Stick, Strips
Color	Blue

TIGER-PAK WELLHEAD

TIGER-PAK WELLHEAD is a pliable, injection-gun type plastic bulk packing with a high TFE content and a non-asbestos binder blended with a chemical and solvent resistant synthetic oil and selected anti-extrusion fibers. This matrix is formulated to energize wellhead gland designs and forms a positive seal. The effective temperature range is from -65˚F to 450˚F.

DESCRIPTION

TIGER-PAK WELLHEAD is suitable for application on distillate petroleum solvents, crude oil, some fuels, natural gas, steam and aqueous solutions, glycols, water, vegetable oils, dilute acids, alkalies, Carbon Dioxide, Hydrogen Sulfide, and hydro-lubes.

For unleaded gasoline, MTBE, LPG and natural gas condensate service **TIGER-PAK "F"** or **"FF"** is recommended.

Properties

Type	Plastic Bulk
Corrosion	None
Moisture Content	Nil
Metal Adhesion	Non-Coating
Grades Available	Stick, Strips
Color	Light Green

PUMPS

CAUTION

Our injection hoses are generally 1/2”- 27 grease thread, using alternate sizes can lead to failure under pressure

SEALWELD® HIGH-PRESSURE SEALANT INJECTION PUMPS

Sealweld® can repair all makes of high-pressure sealant injection pumps. We carry a vast inventory of parts and also provide instructions for the completion of your own repairs. Our pump technicians complete repairs in our facilities as well as on-site field repairs

SEALANT INJECTION PUMP COMPARISONS

Pump	Type	Max. Dischg	Loaded Cap.	Dischg Vol (Approx.)
SuperGun	M	15,000 PSI	16 oz	1 oz / 25 Strokes
Hydraulic	M	10,000 PSI	10 oz	1 oz / 50 Strokes
ACTIV-8®	P/H	10,000 PSI	10 lb (5 QUART)	16 oz / < 2 Mins
Uni-Seal™	P/H	10,000 PSI	16 oz	16 oz / < 2 Mins
SuperSeal	P	6,500 10,000 PSI	40 lb (5 Gallon)	Variable
Mongoose	M	10,000 PSI	11.5 oz	1 oz / 11 Strokes

M = Manual, P = Pneumatic, H = Hydraulic

BEST PRACTICE

Always use a high pressure gauge to ensure that pumps function/ relieve properly and that the valve stem and seat injection systems are not overpressured.

NEVER USE AN AUTOMOTIVE-TYPE GREASE PUMP FOR INJECTION INTO A VALVE UNDER PRESSURE!

MONGOOSE

The **Mongoose** is the smallest frame-mounted manual injection pump in the pipeline service industry today. The patent pending, assembly design makes filling the barrel extremely quick and easy when using packing, liquid flushes, sealant and lubricant sticks, and valve cleaners. One ounce of product is dispensed for every 11 strokes of the pump which makes it extremely accurate when servicing smaller valves or energizing stem seals. The removable handle adapts to the foot pump bar to allow for hand operation in tow positions and also secures the breech-lock handle for easy transport. An optional magnetized wheel assembly makes moving the **Mongoose** easier when servicing valves in a large yard or facility

Product Specifications

Output Pressure	10,000 PSI
Barrel Capacity	11.5 oz (340ML)
Curb Weight	39 lbs (18 kg)
Discharge Rate	1 oz / 11 Strokes
Accessories	
Removable Magnetic Wheel Assembly	
Ez-Loader Adapter	

HYDRAULIC HAND-HELD PUMP

FEATURES INCLUDE:

- Discharges 1 oz of sealant easily with every 50 strokes.
- Generates up to 10,000 PSI when required.
- Self-priming hydraulic action makes manual injection simple.
- Reloads easily with a 12 oz cartridge from **EZ-Loader**.
- For use with liquids, flange sealants, stem packings, J' sticks, Gun-Packs and all types of sealants.

The Sealweld® **Hydraulic Hand-Held Pump** has a locking handle to prevent piston damage; is lightweight and extremely portable. The compact size makes it easy to keep one in your general toolbox or behind the seat of your pickup for quick top-ups and emergency sealing jobs between regular maintenance intervals.

This pump ships ready for loading and field use right out of the box with an 18" hose, buttonhead coupler and 15,000 PSI high-pressure gauge. It is perfect for pumping small quantities of valve cleaner, lubricant or sealant. No toolbox is complete without one.

Description

Hydraulic Hand-Held Pump - Complete
Includes: 18 inch high-pressure hose assembly with 15,000 PSI gauge

HYDRAULIC HAND-HELD PUMP KITS

KIT #1: O-RING REPAIR KIT

This kit contains all the o-rings you'll need to extend the service life of this hand-held pump.

KIT #2: MINOR REPAIR KIT

Includes all of the O-Ring Repair Kit parts plus the parts required to repair or replace the major sub-assemblies quickly in the field.

KIT #3: MAJOR REPAIR KIT

This complete kit includes all of the parts in the O-Ring and Minor Repair Kits, plus body and piston pump parts.

SUPERGUN®
SCREW-PRIMED PUMP

The patented Sealweld® **SuperGun® Pump** is designed for many years of rugged use.

FEATURES INCLUDE:

- Discharges 1 ounce of sealant easily with every 25 strokes.
- Generates up to 15,000 PSI when required.
- Large capacity barrel holds 33% more than other similar hand-held injection pumps.
- Field-replaceable piston head cartridge. Optional Oversized piston cartridge available bringing discharge rate to 1oz per 15 strokes.
- Reloads easily with a 12 or 16 oz cartridge from **EZ-Loader**.
- Pumps gun packs and all types of cartridge and bulk lubricants and sealants.

SUPERGUN®
SCREW-PRIMED PUMP

The Sealweld® **SuperGun® Pump** has an extra long lever handle to make high-pressure injection easy. It is lightweight and very portable. The screw-primed design indicates how much product remains in the barrel and the high-pressure check valve system prevents dangerous "kicks" caused by back pressure.

Designed to withstand the rigors of field use and every pump is tested prior to shipment. Durability, easy to carry and faster pumping make it the valve technician's favorite hand-held and high-pressure sealant injection pump for topping-up procedures when only small quantities of lubricant are required.

Description
Includes: 18 inch high-pressure hose assembly with 15,000 PSI gauge.
Plastic Carrying Case - optional

SUPERGUN® PUMP KITS

KIT #1: SUPERGUN® REPAIR KIT

This kit contains a variety of replacement parts needed to extend the service life of this popular hand-held pump.

UNI-SEAL™

The fastest hand-held air/ hydraulic injection pump on the market.

The **Uni-Seal™** pump has an air/ hydraulic motor that can be powered by compressed air, bottled air or natural gas*

Up to 10,000 PSI is quickly generated by stepping on the foot pedal making this pump ideal for servicing large diameter valves.

The high speed action of the **Uni-Seal™** pump makes it ideal for "popping" the plug out of it's seat in tapered plug valves that become hard-to-turn.

*** Consult your company's safety policy BEFORE operating with natural gas.**

*** May void warranty.**

Product Specifications

Maximum Inlet Air Pressure	120 PSI
Recommended Air Volume	20 CFM
Maximum Discharge Pressure	10,000 PSI
Delivery Rate	16 oz / 50 sec.
Re-load	**EZ-LOADER**
Sealant Capacity	12 and 16 oz cartridges
Weight	25 lbs
100% Guarantee	1 Year - Normal use
Repairable	In shop

UNI-SEAL™

Features include:

- Pneumatic portable hand-held pump that is suitable for pumping J & K Sticks, stem packing, gun pack, liquids and all types of cleaners, lubricants and sealants in bulk, or cartridge with the **EZ-Loader**.
- Simplify Valve Maintenance
- Reduces valve maintenance costs
- Powered by the most reliable and easily serviced pump available

UNI-SEAL™ PUMP KIT

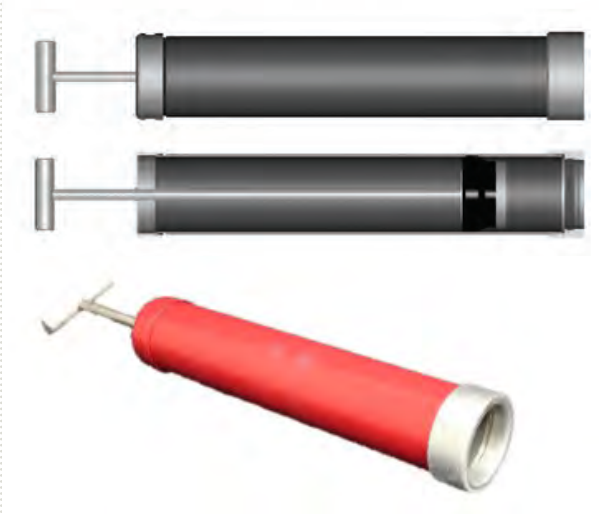
KIT #1: UNI-SEAL™ MINOR REPAIR KIT

This kit contains many spare O-Rings to extend the service life of this pump.

EZ-LOADER

The Sealweld® **EZ-Loader** was designed to make loading cartridges quick and easy. To operate, pull back the T-handle, insert a cartridge, screw on the adapter and transfer the lubricant/sealant into the high-pressure pump barrel. No waste, no mess and easy to store.

The use of cartridge type lubricant/sealants has been found to greatly reduce the risk of product contamination and trapped air in all pumps.



Description

Fits **Hydraulic Hand-Held Pump**, **SuperGun Pump**, **Uni-Seal™**

Fits Alemite 6268, Rockwell 400A, Mongoose Loader

EZ-LOADER OPERATING INSTRUCTIONS

1. Remove Pump from valve.
2. Relieve any internal pump pressure.
3. In case of:
   A) Sealweld® **SuperGun Pump** - remove head.
   B) Sealweld® **Uni-Seal** - remove top cap.
   C) Any **Hydraulic Hand Pump** - remove top cap.
4. In all cases, make sure piston or cups are at the top of the sealant barrel.
5. Remove **EZ-Loader** adapter ring, remove cap from sealant cartridge and place open end into **EZ-LOADER**.
6. Pull until cartridge is completely inside **EZ-LOADER** with T-HANDLE as illustrated.
7. When cartridge is completely inside **EZ-LOADER**, remove PULL TAB from cartridge and attach adapter.
8. Push T-HANDLE until product is flush with adapter ring and thread the **EZ-LOADER** assembly to the sealant barrel.

   NOTE: Leave the threaded connection loose, as this will allow the air trapped between the sealant and piston cup to escape. Gently push the **EZ-LOADER** T-HANDLE forward until contact is made between sealant and piston cups; this forces the trapped air to escape through loose threads.
9. Tighten **EZ-LOADER** assembly to sealant barrel and follow the pump loading instructions.

ACTIV-8®

The Sealweld® **ACTIV-8®** is the favorite pump of professional valve technicians. It is capable of drawing product directly from a 10 lbs pail and is capable of running on compressed air, bottled air or natural gas in an emergency*

- Generates up to 10,000 PSI injection pressure.
- Controls the quantity of lubricant/sealant being injected; prevents over-lubrication.
- Rugged steel frame and pneumatic tires make this pump ideal for field and plant work.
- Simple design makes field repairs quick and easy.
- Delivers lubricant/sealant at up to 16 oz every 50 seconds.
- High speed action cuts valve maintenance time by up to 75% on large diameter valves and at facilities with many valves such as those on transmission lines and large plants.
- Delivers valve cleaners, lubricants and sealants faster than any other pump on two wheels.
- Complete with 10' sealant hose, swivels and coupler, 15,000 PSI gauge and guard. Longer hoses are available on request.
- Built-in air filter/lubricator system.

*** Consult your company's safety policy BEFORE operating with natural gas.**

ACTIV-8®

Product Specifications

Maximum Inlet Air Pressure	120 PSI
Recommended Air Volume	20 CFM
Maximum Discharge Pressure	10,000 PSI
Delivery Rate	16 oz/ +/- 50 sec
77% Fewer Moving Parts	Less wear
Re-load Time	1-2 mins
Sealant Capacity	10 lbs / 5 quarts
Air/ Hydraulic Motor	Serviceable world-wide
100% Guarantee	1 Year - Normal use
Repairable	In the field or shop

NOTE: The air/hydraulic motor may be powered by natural gas in an emergency, it is not recommended and may void warranty.

SPECIALTY TOOLS
& EQUIPMENT

PLUG VALVE SOCKET SET & TORQUE MULTIPLIER

A socket set designed to evenly distribute torque across the stem for all sizes of plug valves. Also reduces valve replacement, disruption of services, and risk of injury.

For use when a plug valve becomes too difficult to operate with a standard valve wrench.

TORQUE MULTIPLIER WRENCH

Storage Case

Gear ratio 20.25:1

3200 ft. lb. Output

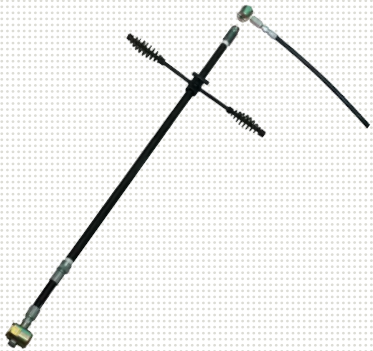
1/2" Input Drive

NOTE: The handle or other anchor plate serves as a "reaction bar" and must be placed against a strong fixed object.

- Designed to loosen seized plug valves that have not been turned in years.
- Adjustable torque range can be reset according to the valve manufacturer's maximum torque rating and is determined by size, material, and valve model.
- Use to avoid costly shutdowns and reduce injury to maintenance personnel.

SEAL-O-SCOPE

The **Seal-O-Scope** gives technicians a way of servicing hard-to-reach valves in elevated areas, vaults, gas plants, pipeline compressor stations and below-grade distribution systems. This pipe extension features a high pressure hose fitted with a multi-directional buttonhead coupler to reach fittings on valves installed in areas where conventional injection equipment can't reach.



Product Specifications

FITTING	½" 316 Stainless Steel Flow Wolf
PIPE	½" SCH 80 x 3' Carbon Steel ASTM A106 Available in custom lengths
HOSE	½"F x ¼"F, NPT x 8" long Available in 4,800 and 10,000 PSI
COUPLER	3-way Giant Buttonhead
OPTIONAL ACCESSORIES	
Articulating mirror	
Intrinsically-safe flashlight	
Mounted camera	

CYCLONE RECOVERY TANK

Recommended for use when blowing down valve bodies in natural gas pipelines to capture liquids.

For use during normal valve servicing procedures. Connect the cyclone tank via high-pressure hoses to the body vent or blow-down assembly where the cyclonic action will separate gas and liquids. The tank will collect the various liquids associated with the transportation of natural gas including gas liquids, water, condensate and compressor/ turbine oil and the contents can then be taken to a recycling depot to test for contamination. The clean oil can be recycled and the contaminated product sent to the nearest hazardous waste disposal site for safe disposal.

The tank is NOT a pressure vessel; ALL gas pressure is vented to atmosphere through the 4" vent cap on the top.

The **Cyclone Tank** is complete with all necessary piping, baffles and valves, including sight glass/level indicator and 7 foot hinged stack extension.

Order Details

Description

Sealweld® Cyclone Tank Model APL06

AUSCILLATER™ PORTABLE VALVE FLUSHING CART

DESIGNED FOR THE SAFE INJECTION OF FLUSHING LIQUIDS INTO PRESSURIZED VALVES AND VESSELS. PROVEN TO FLUSH OUT CLOGGED RISER PIPES ON LARGE DIAMETER BURIED VALVES AND FLUSH FOREIGN DEBRIS FROM VALVE BODIES AND CRITICAL SEAL FACES.

Excellent for flushing contaminants out from critical internal seals before and after pigging exercises which will extend valve seal life.

The **Auscillater™ Pump** is a 8SFD-40 Liquid Pump with Arctic Modification Drive Assembly and a 24 gallon capacity tank. It has a fluid reservoir with fill port, air drive regulator, air drive filter, air drive gauge, speed control valve, return to tank valve and an outlet regulator capable of 3 gpm at 2,000 PSI. The relief valve is intended to be downstream of the outlet regulator, to drain back to the tank and its hydraulic accumulator is suitable for diesel fuel. The isolation valve for accumulator and outlet pressure gauge are all housed in a metal cart frame with panel-mounted gauges and wheels.

Parts are available for order upon request.

Order Details

Description

Portable Valve Flushing Cart

FITTINGS &
ADAPTERS
SEALWELD
FLOW WOLF 2.0

SETTING THE STANDARD FOR INJECTION FITTINGS OEM & RETROFITS

Sealweld's valve sealants are designed to achieve a reliable temporary seal in valves that are not performing to their intended specifications. A Valve Technician's ability to safely inject an emergency-sealing compound into a problematic valve is directly affected by the quality and throughput capability of the fitting installed on the valve.

Valve manufacturing and testing standards have continually improved yet the standards for inner check and injection fittings have not kept pace. As a result the majority of injection and body vent fittings currently installed on valves have not been designed or tested to any consistent industry standard.

Valves are:

- Designed & manufactured to an industry standard
- Performance tested to an industry standard
- Have threads that are designed and built to an industry standard
- Have material traceability with clearly marked Heat Codes

As part of our ZEROMAX Best Practices mindset Sealweld® believes that valve fittings should also meet these rigorous design and performance requirements as fittings are an essential part of the valve pressure boundary. Sealweld® has extensive knowledge and documented root cause analyzes of the failures occurring with the use of conventional valve fittings. Sealweld's progressive and corrective action plan was developed in cooperation with oil and gas producers, pipeline operators and though extensive collaboration with local and international regulatory bodies. Our design has been independently validated and performance tested to ensure that we are manufacturing valve fittings capable of meeting or exceeding the demands of the global energy industry.

FITTINGS & ADAPTERS BEST PRACTICES

Sealweld® designs and manufactures a broad range of specialized valve fitting adapters. Our most popular styles are illustrated on the following pages. In addition to those listed we have many more different styles and combinations available.

BEST PRACTICES

- Never remove a valve fitting from a valve under pressure.
- Certain valve fittings, such as combination fittings found on plug valves, have additional independent check valves. Always request permission, obtain additional training, and consult the original valve manufacturer before replacing a valve fitting.
- Never stand directly in front of the valve fitting.
- Always use a backup wrench when removing steel caps and when installing adapters.
- Never take chances with safety. When in doubt...ask.

The fittings and adapters illustrated on the following pages are only a few of the many hundreds of different designs, styles, and materials grades we are capable of manufacturing. If you have any question, please contact Sealweld®

SETTING NEW VALVE FITTING STANDARDS

DANGEROUS AND SUB-STANDARD VALVE FITTING ARE THE #1 CAUSE OF RECORDABLE INCIDENTS & ACCIDENTS FACED BY VALVE TECHNICIANS

The Flow Wolf Series of fittings offer:

- Complete material traceability (back to the mill supply)
- Made from code referenced materials, e.g. ASTM A 479 stainless steel, conforming to NACE MR0175 / ISO 15156. (also available in AISI 1215 / EN1 A carbon steel)
- Manufactured with code complaint threads e.g. meeting ASME B.20.1-2013
- Designed to be validated & tested to ASME Section VIII, div. I
- Compliant with Canadian Standards Associations' B51-14
- High through-put flow design that will not plug with viscous sealants
- High quality cap that offers line-pressure sealing
- Current Canadian Registration Numbers (e.g. OH 17587.5)

QUALITY Control & Assurance Management Systems

- ISO 9001-2008 QAS Certificate A1339CAN
- Alberta Boiler Safety Association Certificate of Authorization Permit AQP -5141

The NEW Flow Wolf 2.0 offers:

- Standard hydrostatic testing : 3250 psi / 225 bar
- Fugitive Emission Testing - bubble testing (sample is submerged and air or gas test at 90PSI with ZERO visible leaks)

Sealweld offers other performance testing... contact us and we may meet your requirements

SEALWELD®
FLOW WOLF 2.0

DESCRIPTION

The latest version of the **Flow Wolf 2.0** Injection Fitting addresses many of the deficiencies in typical injection fitting design and performance throughout the industry. Sealweld has implemented a strict set of criteria for code compliant designs, machining, assembly & testing and material traceability. The **Flow Wolf 2.0** is at the leading edge of modern pipeline valve fitting standards.

- State-of-the-art machining, the highest performing ball and seat sealing ever observed allowing for a true 'bubble-tight' seating without hydrostatic assistance.
- Rigorous quality-controlled assembly and testing under the most current ISO standard.
- Complete traceability guarantees the material will always be appropriate for the service it's intended for.

The **Flow Wolf 2.0** builds upon the proven design and performance characteristics of the original. The Sealweld original threaded cage design has been utilized and standardized by many leading pipeline gas transmission companies across the world allowing technicians to safely and confidently inject extremely aggressive sealants at high pressure when valves start to show signs of leakage. The safety vent cap creates a precise secondary metal-to-metal seal in the event that contamination prevents the internal ball check from properly seating. The giant buttonhead flange and cap threads allow for a safe, robust and reliable connection when using standard slip-on and screw-on injection couplers.

FLOW WOLF® FITTINGS

The Flow Wolf® original threaded-cage design has been incorporated into many of our popular fitting and adapter designs including:

- Sealant injection fittings
- Body grease fittings
- Internal check valves
- Leak-Lock adapters
- Cameron®, WKM®, Daniel® and other specialty adapters
- Quad-Seal fittings and more!

DESCRIPTION

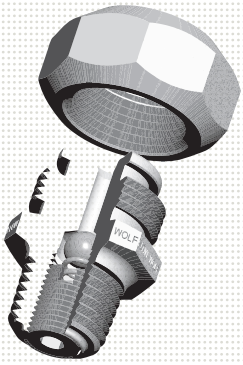


Illustration only. Actual design may vary by model.

The **Flow Wolf®** design was developed by Sealweld to allow the injection of a super heavy sealant compound into severely leaking valves as the manufacturer's sealant fittings plugged off immediately and subsequent high-pressure at times resulted in the "blow-out" of the check valve mechanism.

The **Flow Wolf®** design is now in use in pipeline valves around the globe and preferred by many of the world's largest pipeline operators. This design is also available by special request when you order new valves from all the world's leading valve manufacturers.

Be sure to specify: All valve Lubricant & Sealant fittings shall be Sealweld® **Flow Wolf®**

FLOW WOLF® FITTINGS

Product Specifications

BUTTONHEAD FLANGE
For Giant Buttonhead Coupler

ORIGINAL THREADED-CAGE DESIGN
Prevents check valve blow-out
Available in sizes 1/4" to 1/2"

"SAFETY VENT" CAP
With secondary metal-to-metal seal

"POSITIVE SEAL" THREADS
For screw-on coupler or valve bleed-down tool

REDUCES INJECTION PRESSURE
Up to 60%

ONE-PIECE BODY
Withstands more pressure than common two-piece fittings

THREADED CAGE
Reduces the risk of cyclic fatigue by distributing the force across many threads

FLOW WOLF® FITTINGS

FLOW WOLF® 1/4" BUTTONHEAD FITTING

The 1/4 inch **Flow Wolf**® vented cap, single check, sealant injection fitting with giant buttonhead, comes in stainless steel ONLY. The tapered thread ensures a tight fit. Perfect for small ball and gate valves and suitable for high-pressure service.

FLOW WOLF® 3/8" BUTTONHEAD FITTING

The 3/8 inch **Flow Wol**f® vented cap, single check, sealant injection fitting with giant buttonhead, comes in both stainless and carbon steel.

It is suitable for high-pressure service.

FLOW WOLF® 1/2" BUTTONHEAD FITTING

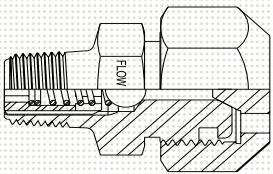
The 1/2 inch **Flow Wolf**® vented cap, single check, sealant injection fitting with giant buttonhead, comes in both stainless and carbon steel.

This fitting is the industry standard for ball valve fittings and is suitable for high-pressure service.

FLOW WOLF® 1/2" SCREW-ON BODY FITTING

This 1/2 inch **Flow Wolf**® vented cap, single check, screw-on sealant injection fitting does not have a giant buttonhead flange. This design is most often used on wellhead gate valves or when using screw-on couplers.

It is suitable for high-pressure service.



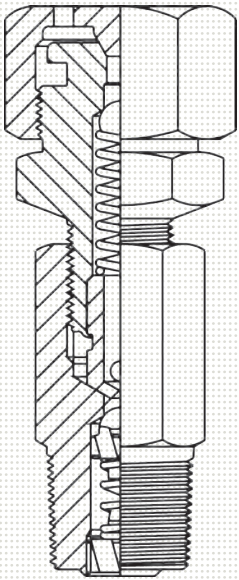
FLOW WOLF® QUAD SEAL FITTINGS

Sealweld® is proud to introduce the latest advancement in sealant injection fitting design technology; the **Flow Wolf®** - **Quad-Seal Injection Fitting**.

DESCRIPTION

The Sealweld® **Quad-Seal Injection Fitting** eliminates leakage to atmosphere and harmful fugitive emissions during the maintenance routine and when the valve is unattended. It is ideal for use on offshore platforms, inside buildings, compressor and meter stations, or when handling hazardous or toxic gases and/or liquids.

The all-stainless steel construction eliminates the risk of plating failure which can occur on all types of standard carbon steel. The thin plating is often worn off through use and the bare steel then begins to rust and corrode, rendering the fitting unusable and potentially dangerous.



This special design and material combination extend the service life of the fitting many times over. Reduce fitting replacement costs in all types of valves and wellhead equipment by installing the **Quad-Seal Injection Fitting** on your valves.

FLOW WOLF® QUAD SEAL FITTINGS

This fitting is designed to be LEAK-FREE and allow the technician to safely remove the cap and attach the pump with ZERO risk of product leakage to atmosphere. Unscrew the upper section (one full turn) to open the metal-to-metal seal between the upper and lower sections, then begin pumping. Close the metal-to-metal seal (one full turn) before detaching the pump. Replace the steel cap to provide reliable double-isolation.

RECOMMENDED FOR:

SEVERE service, including (but not limited to):

H2S, C02, NGL/ LPG, SAGD, steam, enclosed spaces, sub-sea applications, etc.

*** Seal material specification is determined by intended service. Custom orders accepted.**

Thread	Material
1/4" - 18 NPT	316 Stainless Steel
3/8" - 18 NPT	316 Stainless Steel
1/2" - 14 NPT	316 Stainless Steel

Product Specifications

316 STAINLESS STEEL CONSTRUCTION
For long life and superior corrosion resistance

4 INDEPENDENT METAL-TO-METAL SEALS
For maximum seal reliability

2 DOUBLE-ISOLATION CHECK VALVES
With verification capability

FLOW WOLF® THREADED CAGE
Allows heavy sealants to be injected in an emergency

2 COLLAPSE-PROOF SPRINGS
Reduce injection pressures

INERNAL CHECK VALVES

BEFORE commissioning a new valve it is important to make sure it contains a top-quality internal check valve. When ordering a new valve specify to the manufacturer that you want Sealweld® **Flow Wolf®** Internal Check Valves.

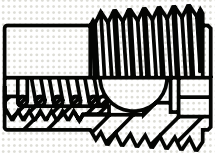
Sealweld® **Flow Wolf®** Internal Check Valves are ONLY manufactured from stainless steel and all include the **Flow Wolf®** threaded-cage to ensure that the ball check is NOT accidentally injected into the valve when pumping heavy sealant.

A working check valve is CRITICAL to ensuring valves can be serviced under pressure safely. Internal check valves will remain in place for years and must stand up to direct contact with process conditions which may involve corrosive environments. In addition, when the check valve is corroded, it is much more difficult to remove an internal check valve than a standard fitting.

Ensure years of safe service by insisting on Sealweld® **Flow Wolf®** Internal Check Valves.

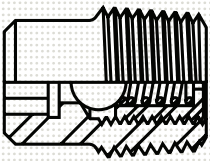
INERNAL CHECK VALVES

FLOW WOLF® 1/4" INTERNAL CHECK VALVE



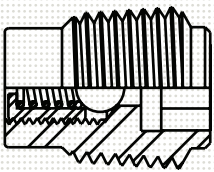
Thread	Material
1/4" - 18 NPT	Stainless Steel

FLOW WOLF® 3/8" INTERNAL CHECK VALVE



Thread	Material
3/8" - 18 NPT	Stainless Steel

FLOW WOLF® 1/2" INTERNAL CHECK VALVE



Thread	Material
1/2" - 14 NPT	Stainless Steel

BODY VENT / DRAIN FITTINGS

TC3 STYLE

The conventional body vent/drain fitting does not allow for the removal of the stinger which is held in place with pins. The Sealweld version is ideal for blowing-down ball valves or releasing pressure from the body of a gate valve during normal service and has a large opening to prevent freeze-up during depressurization.

It is available from stock in stainless steel ONLY. Other materials are available by special request.

Thread	Material
1/2" NPT	Stainless Steel
3/4" NPT	Stainless Steel
1" NPT	Stainless Steel
1-1/2" NPT	Stainless Steel

Product Specifications

WEATHER SEAL O-RING
Prevents water from entering fitting.

SPRING PINS
Prevent removal of bolt.

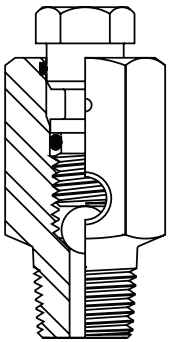
THREAD SEAL O-RING
Prevents leakage through threads

COARSE THREAD
Prohibits thread damage

THREADED VENT HOLE
Pipe leakage away from work site

REDUCED BORE HOLE
Prevents jamming of ball

.316 STAINLESS STEEL BODY
.316 STAINLESS STEEL BOLT
Prevents corrosion, extend service life



BODY VENT / DRAIN FITTINGS

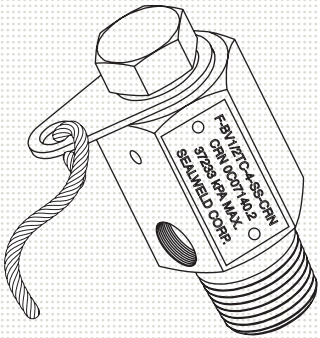
TC4 STYLE

This design is similar to the **TC3** with an added stainless steel ring and cable. It is designed to replace the existing carbon steel bleeder on hinged closures where plating failure has rendered the existing fitting inoperable.

The **TC4** is available from stock in stainless steel ONLY. Other materials are available by special request.

Thread	Material
1/2" NPT	Stainless Steel
3/4" NPT	Stainless Steel
1" NPT	Stainless Steel
1-1/2" NPT	Stainless Steel

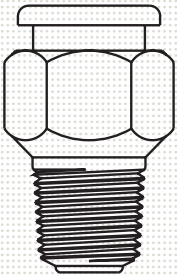
Disclaimer: Material selections suggested in this catalog are based on historical sales information ONLY. It is the responsibility of your engineering team to make the final decision on the suitability of materials used for fittings on valves in your system. We have the capability to manufacture fittings out of various materials (e.g. Inconel) and grades. The carbon steel and stainless steel fittings referenced in this catalogue should work in most field conditions.



GIANT BUTTONHEAD FITTING

SW STYLE

A standard one-piece body carbon steel buttonhead fitting designed for use in enclosed, non-corrosive service areas. Larger sizes come with a double-ball check; the smallest size has a single-ball check.



Thread	Material
1/8" - 27 NPT	Carbon Steel
1/4" - 18 NPT	Carbon Steel
3/8" - 18 NPT	Carbon Steel
1/2" - 14 NPT	Carbon Steel

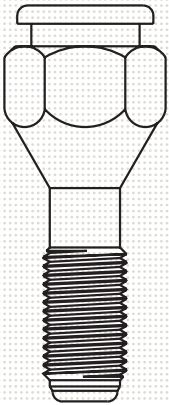
Notes: *Stainless Steel Material is also available by special request. The* ***FlowWolf®*** *design with these thread styles by special request.*

GIANT BUTTONHEAD FITTING

RN SYTLE

When servicing a plug valve with an injection pump: back the fitting out of the valve slightly, then inject sealant into the fitting then disconnect the coupler from the fitting. If you need additional lubricant/sealant injected and you do not have injection equipment with you, screw the fitting further into the valve and the lubricant/sealant will be injected as if you were using a packing injector.

This style of fitting is available in carbon steel ONLY. Stainless steel or other materials are available by special request.



Thread	Material
1/4" - 18 NPS	Carbon Steel
3/8" - 18 NPS	Carbon Steel
1/2" - 14 NPS	Carbon Steel
3/4" - 14 NPS	Carbon Steel

Notes: *Stainless Steel Material is also available by special request. The* ***FlowWolf*** *design with these thread styles is also available by request but not in stock.*

GIANT BUTTONHEAD FITTING

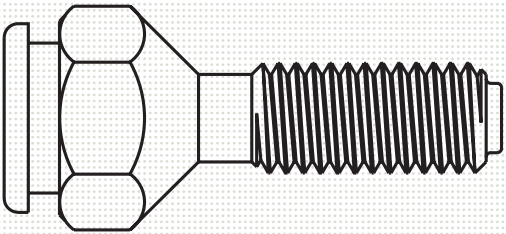
NH FITTINGS

Features include:

- One-piece body
- Double-ball check
- Designed for use in plug valves
- Use as a plunger for injecting sealant sticks or simply attach to your pump using a side-entry or a top-entry giant buttonhead coupler

Combination fittings can be used as a standard injection fitting when attached to an injection pump or can be used as a packing injector by simply screwing the fitting further into the valve.

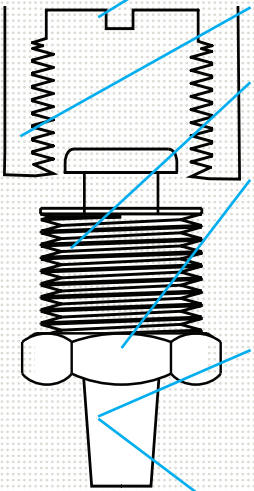
This style of fitting is available in carbon steel ONLY. Stainless steel or other materials are available by special request.



Thread	Material
3/8" - 16 UNC	Carbon Steel
1/2" - 13 UNC	Carbon Steel
5/8" - 11 UNC	Carbon Steel
3/4" - 10 UNC	Carbon Steel

CUSTOM DESIGNED VALVE FITTINGS & ADAPTERS

Due to the absence of global design standards for valve fittings many different designs are currently in service. In an effort to improve plant, platform and pipeline safety, a site survey should be completed and new valve fittings manufactured for replacement during your next scheduled outage. **Are your valve fittings in compliance with current regulations?**



STEEL CAP
- vented with metal to metal seal

GIANT BUTTONHEAD
- matches your pump couplers

CAP THREADS
- match your screw-on style couplers and vent tools

WRENCH FLAT STENCILS IDENTIFYING
- Material certification traceability
- Material Grade
- Manufacturer
- Design-code Reference

CHECK VALVE DESIGN
- Check valve type and material
- Spring material and design
- Threaded cage for maximum flow characteristics and anti-blowout protection
- Crimped retainer backup

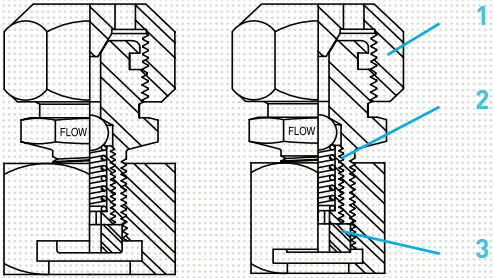
CONNECTING THREAD TYPE
- NPT, NPTF, NPS, UNC, UNF, BS, METRIC
- Pressure Seals
- Fire Safe Seals

FLOW WOLF® MEGA-LOCK

The **Flow Wolf® Mega-Lock** is designed for use on giant and small buttonhead fittings to add a secondary check valve to allow for continued valve service in-line and under pressure. Utilizing a large PTFE gasket it is ideal for severely damaged buttonheads and difficult to inject liquids and cleaners. As an emergency sealing device it fits on a leaking or damaged giant buttonhead fitting using a replaceable gasket seal.

Seal type: PTFE Gasket

Available from stock in stainless steel



1 Steel Cap - Prevents leakage when unattended.

2 Flow Wolf® threaded cage for safely injecting emergency sealants.

3 PTFE Gasket – ideal for severely damaged buttonheads and hard to hold liquids and cleaners.

Material
Stainless Steel - Giant Buttonhead
Stainless Steel - Small Buttonhead
PTFE MEGA - LOCK GASKET giant buttonhead style
PTFE MEGA-LOCK GASKET small buttonhead style

FLOW WOLF® LEAK-LOCK METAL SEAT

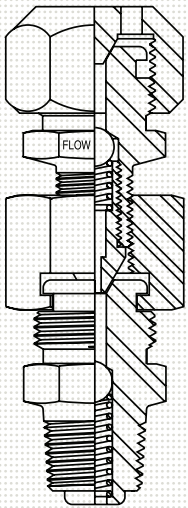
LEAK-LOCK METAL SEAT ADAPTERS

The **Flow Wolf® Leak-Lock Metal-Seat Adapter** is designed for use on capped fittings ONLY. It provides an additional check valve so you can continue to service the valve in-line and under pressure.

Seal type: Metal-to-Metal

The new **Flow Wolf®** style **Leak-Lock Adapter** has the same features of a regular **Leak-Lock Adapter** plus an additional metal-to-metal seal (with cap). It will accept liquids and allow flow of heavy sealants without plugging off.

Available in
Stainless Steel - Giant Buttonhead
Stainless Steel - Small Buttonhead



FLOW WOLF® LEAK-LOCK ADAPTER

FLOW WOLF® LEAK-LOCK ADAPTER #1

Emergency Sealing Device for Buttonhead Fittings

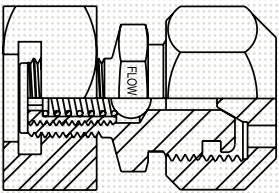
Convert leaking or damaged fittings into safe fittings without shutdown or loss of production. The Sealweld® **Leak-Lock Adapter** is not a permanent repair device but should be used until a scheduled turn-around or for extended periods while the pipeline is depressurized and the leaking fitting can be replaced safely. It is also designed for use on damaged Buttonhead fittings.

The **Leak-Lock Adapter** can be used in applications where a second independent check valve is required to comply with safety codes or company policies.

As an emergency-sealing device it fits on a leaking or damaged giant buttonhead fitting and utilizes a replaceable gasket seal.

Ideal for old or leaking fittings or when needed to transition from giant buttonhead fitting to a threaded coupler.

Seal type: Gasket



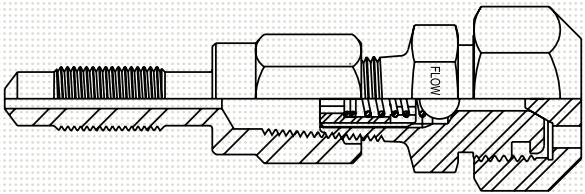
FLOW WOLF® LEAK-LOCK ADAPTER #2

An emergency sealing device that converts a small buttonhead fitting to a giant buttonhead fitting utilizing a replaceable gasket seal.

Seal type: Gasket

DANIEL ORIFICE FITTING ADAPTER

Specially designed for Daniel Senior Orifice fittings as well as to inject sealant into a standard gate valve stem similar to a combination fitting. Allows a Valve Technician to inject Valve Cleaner Plus to clean the internal valve sealing surfaces and can be used to inject **Total-Lube #911** or **#5050** sealants in the event of an emergency.



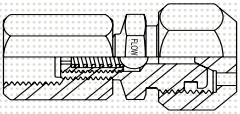
Description	Material
Top Only	Stainless Steel
With Bottom	Stainless Steel
Top Only	Carbon Steel
With Bottom	Carbon Steel

SCREW-ON ADAPTER

CAMERON SCREW-ON ADAPTER

Allows you to transition from a small Cameron capped fitting thread connection to a standard giant buttonhead fitting or screw-on style. Can be left on permanently to simplify servicing of Cameron valves.

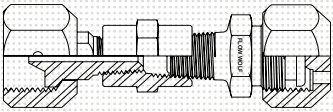
Available from stock in carbon steel ONLY. Stainless steel or other materials are available by special request.



FLOW WOLF® SCREW-ON ADAPTER

Transitions from a traditional standard screw-on fitting (body grease fitting) typically found on wellhead gate valves to a standard large buttonhead fitting. Allows you to quickly service a valve without changing the adapter on your injection equipment and extend the fitting length to access hard-to-reach fittings.

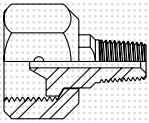
Available from stock in carbon steel ONLY. Stainless steel or other materials are available by special request.



FLOW WOLF® SCREW-ON ADAPTER

Screw-on coupler provides a tight metal-to-metal seal and is ideal for injecting heavy sealants or when working in high-pressure or sour service.

Available in carbon steel ONLY.



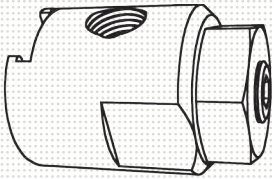
BUTTONHEAD COUPLER

TOP-ENTRY BUTTONHEAD COUPLER

Allows easy entry to buried or confined valves.

Features - metal button with spring.

Available in carbon steel ONLY.

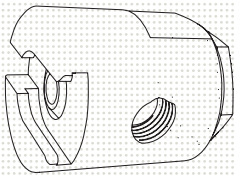


GIANT BUTTONHEAD COUPLER

Allows you to quickly attach to a standard giant buttonhead fittings for fast servicing.

Features - metal button with spring.

Available in carbon steel ONLY.



STAINLESS STEEL OR OTHER MATERIALS AVAILABLE BY SPECIAL REQUEST

PACKING INJECTOR

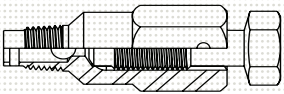
PRESSURE RELIEF TOOL

This specialty tool is used to un-seat the ball-check in packing injectors to relieve excess gland pressure.

Available from stock in carbon steel ONLY. Stainless steel or other materials are available by special request.

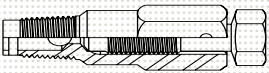
1/4" PACKING INJECTOR

Available from stock in carbon steel and stainless steel. Other materials and are available by special request.



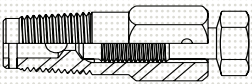
3/8" PACKING INJECTOR

Available from stock in carbon steel and stainless steel. Other materials and are available by special request.



1/2" PACKING INJECTOR

Available from stock in carbon steel and stainless steel. Other materials and are available by special request.



MCEVOY©-STYLE FITTING

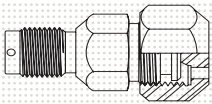
A specialized body cavity fitting for **McEvoy©** valves that fits a **McEvoy©** 7/8" – 14 UNS screw-on coupler thread.

Available from stock in carbon steel ONLY. Stainless steel or other materials are available by special request.

MCEVOY©-STYLE GIANT BUTTONHEAD

A specialized sealant fitting for a **McEvoy©** valves that fits a standard giant buttonhead fitting and screw-on coupler thread.

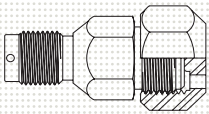
Available from stock in carbon steel ONLY. Stainless steel or other materials are available by special request.



MCEVOY©-STYLE SCREW-ON FITTING

A specialized body cavity fitting for **McEvoy©** valves that fits a standard 1" – 14 UNS screw-on coupler thread.

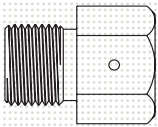
Available from stock in carbon steel ONLY. Stainless steel or other materials are available by special request.



MCEVOY©-STYLE SCREW-ON ADAPTER

A screw-on adapter that converts a **McEvoy©** 7/8" screw-on coupler thread to a standard 1" – 14 UNS coupler thread.

Available from stock in carbon steel ONLY. Stainless steel or other materials are available by special request.



SEALWELD® FLOW WOLF® VALVE FITTING ADAPTER KIT

This kit is a MUST for every valve technician. It features an assortment of our most popular adapters for attaching hose assemblies to different styles of valve fittings.

D-FW-KIT-06 – Flow Wolf® Adapter Kit

Sealweld® can also customize an adapter kit specifically to meet the needs of the valves at any facility.

Photograph of D-FWKT 1

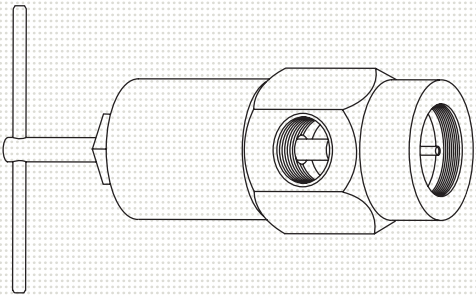
SEALWELD® SCREW-ON BODY VENT TOOL

Specifically designed to un-seat the ball-check in body grease and sealant injection fittings.

A MUST for technicians servicing many types of wellhead gate valves.

It is also ideal for equalizing pressure when servicing wellhead gate valves.

Available in carbon steel ONLY.

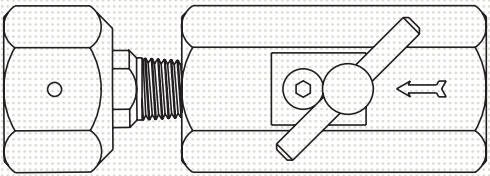


SCREW-ON RELIEF VALVE COUPLER

A screw-on style coupler that combines a one-way check valve with a release tool. Also includes a built-in needle valve fro isolating the hose assembly from a leaking check valve in the body grease fitting.

Ideal for servicing wellhead gate valves, quickly and easily. If an old or inferior fitting fails during service, the coupler can be safely left on until the next scheduled shutdown. It is recommended to keep a few extra couplers on hand in the event of fitting failure.

Available in carbon steel ONLY. Stainless steel or other materials are available by special request.



HIGH-PRESSURE GAUGE ASSEMBLY

ALWAYS use a high-pressure sealant injection pump with a high-pressure gauge attached. Regularly maintain gauges as required to ensure accuracy in the case of and emergency. Gauge comes complete with a rubber guard to extend service life.

HIGH-PRESSURE HOSE ASSEMBLIES

All hoses are assembled and certified in-house. ALWAYS use a high-pressure hose and high-pressure threaded connections.

Most hoses are offered in 1/2" x 27 threaded fittings; using incompatible threads and sizes can cause injury.

Custom hose lengths are available for order in 5' increments.

GLOSSARY

ALL WELDED CONSTRUCTION

A valve construction in which the body is fully welded and cannot be disassembled and/or repaired in the field.

AMBIENT TEMPERATURE

The temperature of the surrounding environment.

ANSI – American National Standard Institute

ANSI facilitates the development of American National Standards by overseeing the creation and use of standards for a wide variety of items, including the design, fabrication, and testing of pressure piping, systems, and components for various pipeline services.

API SPEC 6D/ISO 14313

An Oil & Gas specification that specifics the construction and testing of pipeline valves which most manufacturers follow.

ASME – American Society of Mechanical Engineers

A professional organization which publishes technical books, papers, codes and standards. Of principal interest is the ASME Boiler and Pressure Vessel Code which is referenced for many aspects of valve manufacturing and performance testing.

ASTM – American Society for Testing & Materials

A standards development organization that serves as a forum for developing of national and international standards. ASTM standards prescribe physical and chemical analysis of all basic metals and alloys used in valve construction. The valves of most manufacturers have components whose materials correspond to ASTM standards.

BACK SEAT

A shoulder on the stem of a valve which seals against a mating surface inside the bonnet with the valve in open position to permit replacement under pressure of stem seals or packing (most commonly rope packing).

GLOSSARY

BALL VALVE

A unidirectional form of a quarter-turn valve which uses a floating ball mechanism to control the flow. When the ball's hole is in line it is opened and when the ball pivots 90 degrees by the valve handle it is closed.

BAR

A metric unit of pressure. One bar is equal to 14.5 PSI.

BELLEVILLE SPRING

A spring used in some ball valves to push the seats against the ball.

BELOW GRADE SERVICE

An application in which valves are installed on a flow system with pipe and valves buried below ground level.

BLOW DOWN VALVE (BDV)

A small valve that is installed on the above-grade end of an extended pipe or drain line. This valve also serves to vent body cavity pressure in the "block-and-bleed" mode.

BODY DRAIN FITTING

Allows field personnel to remove trash or liquids from the body cavity of a valve during maintenance or troubleshooting.

BODY FILL

A maintenance procedure in wellhead service where lubricant is injected into the body of gate valve to keep trash/debris clear to extend life of valve.

BODY RELIEF VALVE (BRV)

An optional relief valve installed on ball valves used in liquid service to provide relief of excess body pressure caused by thermal expansion.

GLOSSARY

BODY VENT/BLEED FITTING

The vent or bleed fitting will be found on the body of a valve and allows field personnel to test the integrity of a valve with the block and bleed seat design.

BOLTED BONNET

A bonnet connected to a valve body by bolts.

BOLTED CONSTRUCTION

Valve construction where pressure shell elements are bolted together and can be taken apart and repaired in the field.

BORE (or PORT)

The inside diameter of the smallest opening through a valve. The diameter of the hole in the gate or ball of a valve and also the diameter of seat rings.

BUBBLE-TIGHT SHUTOFF

Describes the sealing capability of a valve. During air pressure testing of a new or reconditioned valve in the closed position, any leakage of a gaseous test media past the seats is quantified as it is bubbled through water. To qualify as "bubble-tight", no bubbles should be observed in a prescribed time span.

BURST PRESSURE

The ultimate pressure (in kPa or PSI) at which of a stressed element or pressure-containing vessel or fitting ruptures.

BYPASS

A system of pipes and valves permitting the diversion of flow or pressure around a line valve.

CAPACITY

Amount of product required to fill a pump or valve.

GLOSSARY

CHECK VALVE

A valve which allows for product flow through a pipeline in only one direction.

CHEVRON PACKING

A type of packing used in packing boxes consisting of a combination of "V" cross-section rings. Commonly found on gate valves.

CLASS

A designation of pressure capability and materials of construction detailed in ANSI/ASME B16.5.

CLOSURE ELEMENTS

The moving part of a valve positioned in the flow stream which allows the ability of flow through the valve when opened or prevents flow when reaching downstream of valve when closed.

CONTROL VALVE

A valve that controls a process variable, such as pressure, flow or temperature, by modulating its opening in response to a signal from a controller.

CORROSION

The deterioration of a material due to chemical action.

CRUDE OIL

Unrefined oil directly from the well.

CWP

Cold Working Pressure.

DEBRIS

A particle or material which is foreign to the product.

GLOSSARY

DEPARTMENT OF TRANSPORTATION (DOT) REGULATIONS

A federal regulatory body that sets forth minimum safety requirements for the transportation of hazardous gases or liquids by pipeline.

DIFFERENTIAL PRESSURE

The difference in pressure across a valve in a pressurized line under flowing conditions.

DISCHARGE VALVE

A valve located at a compressor station which allows gas to travel downstream once it has been pressured. Located on a unit (compressor) outside of the building.

DISTRIBUTION LINE

Pipeline which distributes gas to the service lines of consumers. Usually it is small in diameter (12" and under) and low pressure.

DOUBLE BLOCK-AND-BLEED

The capability of obtaining a seal across the upstream and downstream seat rings of a valve when the body pressure is bled off to the atmosphere through blow down valves or vent plugs. Useful in testing the integrity of seat seals and performing minor repairs under pressure.

EMO – Electric Motor Operated

The actuation of a valve using electricity as a power source.

EROSION

The mechanical wearing away of a metal surface part due to fluid impingement. The presence of entrained solid particles accelerates this process.

GLOSSARY

ESDV – Emergency Shutdown Valve

A valve or a system of valves, when activated, initiate a shutdown of the plant, process, or platform they are tied to.

EXPANDING GATE VALVE

A gate valve compromised of a separate gate and segment, As the valve operates and the gate and segment collapses this allows the gate to travel open or closed without touching the seats. In the fully closed and fully open positions the gate and segment are forced against the seats. Continued downward movement on the gate causes the gate and segment to expand against the seats. When the valve reaches its full open or closed position the gate and segment seal off against the seats allowing a tight shut off.

EXTENDED BLOW DOWN VALVE (BDV)

Used on below grade valves where the drain plug is inaccessible; the line is piped above grade. Line pressure is used to blow out condensates and other debris that settle in the bottom of the body cavity.

EXTERNAL COATING

Coating applied to protect valves against various environments – sea air, salt water, earth burial, and normal air exposure.

FAIL SAFE VALVE

A valve designed to operate to a preferred position (open or closed) in order to avoid an undesirable consequence in a piping system.

FE – Flanged End.

FITTING

Any device used for connecting elements in fluid or gas lines and related equipment, i.e., elbows, tees, nipples, unions, flanges, etc.

GLOSSARY

FLANGE

A cast or formed pipe fitting consisting of a projecting radial collar with bolt holes to provide a means of attachment to piping components having a similar fitting; the end piece of flanged-end valves.

FLOATING BALL

A ball valve having a non-trunnion mounted ball. The ball is free to float between the seat rings and uses pipeline flow to force ball and seat mating surfaces together.

FLOW

Product in motion in a conducting line.

FLOW METER

An instrument used to measure flow rate or total flow or both.

FLOW RATE

The volume or weight of a fluid passing through a pipeline or conductor per unit of time, i.e., 3,000 barrels of oil per day; 4MMCF of gas per hour.

FLOW TURBULENT

The random flow of fluid in which the velocity at a certain point in the fluid varies irregularly.

FLUID

Any non-solid substance that can be made to flow. Both liquids and gases are considered fluids.

FORCE

Force is a quantitative description of the interaction between two physical bodies, such as an object and its environment. The product of unit force (PSI) and the area over which it acts. Expressed in Newtons or pounds.

GLOSSARY

FRICTION

The resistance to motion between two contacting surfaces or physical bodies. Friction is also developed between a flowing fluid and the inner wall of the conducting pipe – resulting in a drop in pressure.

FULL OPENING

Describes a valve whose bore (port) is nominally equal to the bore of the connecting pipe.

GAS

A compressible fluid such as air, hydrogen, nitrogen, etc.

GATE

The closure element of a gate valve.

GATE VALVE

A straight-through pattern valve whose closure element is a wedge or parallel-sided slab situated between two fixed seating surfaces with means to move it in or out of the flow stream in a direction perpendicular to the pipeline axis.

GAUGE PRESSURE

An instrument, usually with a threaded connection, for measuring and indicating the pressure in a piping system at the point at which it is connected.

GLAND (or GLAND BUSHING)

That part of a valve which retains or compresses the steam packing in a stuffing box (where used) or retains a stem O-ring, lip seal, or stem O-ring bushing. Can sometimes be manually adjusted.

INDICATOR

Most commonly the indicator is found on the top of the valve gearbox, actuator, or valve stem. Indicator shows whether the valve is in the open or close position.

GLOSSARY

INJECTION RATE

Rate, generally in ounces per stroke or minute, in which product is discharged from injection equipment.

J OR K STICK

Semi-Solid lubricants that have special thickeners added to them in order to be extruded in multiple lengths and diameters that are then wrapped in plastic sheeting for easy removal for loading into handheld injection pumps.

LIQUEFIED NATURAL GAS (LNG)

Natural gas in the liquid state. For the gas to remain liquefied the temperature must be maintained in the cryogenic region. The liquid occupies far less volume than an equivalent volume of gas and can be readily transported by ship and stored ashore in insulated tanks to await re-gasification.

LOCK UP PRESSURE

The differential pressure required to produce a tight shutoff in a regulator. Usually a few PSI.

LOCKING DEVICE

A mechanism provided on valve operators to prevent unauthorized operation or tampering.

LIQUID PETROLEUM GAS (LPG)

Gases such as butane or propane in the liquid state. LPG, under relatively low pressure, remains liquid at normal ambient temperature.

LIQUIDS

A nearly incompressible fluid that conforms to the shape of its container but retains a (nearly) constant volume independent of pressure.
Common liquids injected in service: valve flushes, odyssey solvent, WD-40, Marvel Mystery oil, etc.

GLOSSARY

LUBRICANT

A product such as maintenance grease that is injected into a valve to reduce break out torque/friction internally and keep emergency sealant injection system clear of debris.

LUBRICANT/SEALANT

A viscous product used for maintenance in worn and/or frequently operated valves. Used for light leakage in ball and gate valves and as a plug valve sealant.

LUBRICATED PLUG VALVE

The introduction of lubricant into a plug valve allows the unseating of the closure element (tapered plug). The lubricant is also part of the plug valves seating design and should be replenished.

LUBRICATION FITTING

Also known as "grease fitting"; strategically placed on the valve body and allows lubrication of critical valve components during maintenance.

LUBRICATION SEATS

Seats which are equipped with a lubricant injecting system.

MANUAL GEAR OPERATOR (MGO)

A gear operator that is operated manually (with a hand wheel).

MAXIMUM ALLOWABLE OPERATING PRESSURE (MAOP)

Determined in accordance with piping codes, DOT regulations, etc.

GLOSSARY

MAXIMUM WORKING PRESSURE (MWP)

The maximum working pressure (pounds per square inch) at which a valve can be operated. The maximum working pressure for various pressure classes, per Table 2.1 of API 6D, within temperature limits of -20°F and +100°F (-29°C and +38°C) are as follows:

CLASS	MWP (CWP)
150	275
300	720
400	960
600	1440
900	2160
1500	3600
2500	6000

MECHANICAL SEAL

A shutoff in a valve that is accomplished by a mechanical means rather than with fluid or line pressure. Examples of mechanical seals include: the wedging action of a gate against the seats or the seat springs pushing the seat against the ball or in a valve.

METAL-TO-METAL SEAL

The seal produced by metal-to-metal contact between the sealing face of the seat ring and the closure elements without benefit of a synthetic seal.

METER RUN

A section of pipeline in which a meter in installed to measure the volume of fluid passing through the line.

MILL TEST CERTIFICATES

MTRs are provided by a steel mill, indicating the chemical analysis and physical properties of a specific batch of steel.

GLOSSARY

NACE – National Association of Corrosion Engineers

The technical association that publishes papers, articles and standards on all aspects of material corrosion in process conditions. It is considered the definitive reference for valve materials specification and selection for corrosive environments e.g. H_2S/sour gas service.

NON-RISING STEM

A gate valve having its stem threaded into the gate. As the stem turns the gate moves but the stem does not rise. Stem threads are exposed to line fluids.

NATIONAL PIPE TAPERED (NPT)

A uniform standard governing the dimensions of tapered pipe threads.

OPERATOR

A device that converts manual, hydraulic, pneumatic or electrical energy into mechanical motion to open and close a valve.

O-RING

An elastomeric or synthetic seal ring of circular cross-section.

OUTSIDE SCREW AND YOKE (OS&Y)

A valve in which the fluid does not come into contact with the steam threads. The stem-sealing element is between the valve body and the stem threads.

PACKING

A synthetic fibrous material inserted into a valve stem stuffing box, which, when compressed provides a tight seal where the stem migrates through the stuffing box.

GLOSSARY

PACKING INJECTION FITTING

Allows the injection of a packing product into the stem area of a valve to stop a stem leak.

PIG

A device forced down the pipeline using pressure that are used to clean sections of pipe of all foreign material and debris. Can also be used for inspection of pipe integrity.

PISTON EFFECT

The sealing principle involved in utilizing line pressure to effect a seal across the floating seats of some valves.

PLUG

The rotating closure element of a plug valve. Also a threaded fitting used to close off and seal an opening into a pressure-containing chamber e.g., pipe plug.

PLUG VALVE

A quarter-turn valve whose closure element is usually a lubricated tapered plug having a rectangular port.

PNEUMATIC

Pertaining to, or using, air or gas.

POLY PAK STEM SEAL (A Parker Seal Company Product)

An O-ring energized lip seal that replaces the O-ring stem seal in certain gate valves. Also used for stem seals in some ball valves.

POSITION INDICATOR

Any external device that visually indicates the open and closed position of a valve.

GLOSSARY

POWER OPERATOR

Powered valve operators are of the following general types: Electric Motor, Pneumatic or Hydraulic Motor, Pneumatic or Hydraulic Cylinder. Operators can either be adapted directly to the valve stem or side mounted on existing gear or scotch yoke operators.

POWER SOURCE

Way in which injection pump is driven/build pressure. Manually by hand or foot or pneumatic.

PRESSURE DROP

Decrease in pressure along the direction of flow in a piping system caused by: fluid friction, restrictions, and change-of-direction fittings. Pressure drop is related to velocity, specific gravity, viscosity and the size and roughness of the pipe interior.

PRESSURE RATING

The amount of pressure the injection pump is capable of safely building.

PRESSURE SWITCH

A switch (usually electric) activated by a rise or drop in pressure. A transducer.

PRESSURE TEST

A test using specified pressures of liquid or gases, typically used to verify the sealing, integrity, design standards, etc., of a particular product.

PSI (psi)

And abbreviation for "pounds per square inch". The force per unit area exerted against a resisting body.

PSP

Proprietary Sealing Particles

GLOSSARY

RELIEF VALVE

A quick acting, spring-loaded valve that opens (relieves) when the pressure exceeds the spring setting. Often installed on the body cavity of ball and gate valves to relieve thermal overpressure in liquid services.

REMOTE CONTROL

The operation of a valve or other flow control device from a point at a distance from the device being controlled. Can be accomplished by electrical, pneumatic or hydraulic means.

RESILIENT SEAT

A valve seat containing a soft seal, such as an O-ring, to assure tight shutoff.

RESTRICTION TO FLOW

Potential causes of restriction include: ambient temperature, hose length, and viscosity of product.

RISING STEM

A valve stem which rises as the valve is opened.
Most commonly found on orbit and gate valves.

RISING STEM GATE VALVE

A style of valve that operates in a linear direction: open and closed and up and down.

STEAM ASSISTED GRAVITY DRAINAGE (SAGD)

A Thermal method for recovering heavy oil that uses twin horizontal wells drilled and extended into the base of a reservoir with the horizontal steam injector placed directly above the horizontal production well. The mobilized oil drains by gravity to the lower well and is produced to the surface.

GLOSSARY

SAFETY VALVES

A quick opening pop action valve used for fast relief of excessive pressure.

SCHEDULE

A system for indicating the wall thickness of pipe. The higher the schedule numbers the thicker the wall for a certain pipe size.

SCOTCH YOKE OPERATOR

A quarter-turn operator for use on quarter-turn valves using a scotch yoke mechanism rather than gears. The scotch yoke has a torque output at the beginning and ending of its stroke that is generally twice the magnitude of the torque output in the center of its stroke.

SEALANT

A viscous grease/lubricant impregnated with additives, such as Sealweld's PSP's, that bridges the gap/damage in seat sealing surfaces to achieve a seal.

SEAT

The part of a valve against which the closure element (gate, ball) affects a tight shutoff. In many ball and gate valves it is a floating member containing a soft seating insert.

SELF RELIEVING

The process whereby excessive internal body pressure, in some valves, is automatically relieved into either the upstream or downstream line by forcing the seats away from the closure elements. Most commonly found trunnion-mounted ball valves and slab gate valves.

SEMI-LIQUID LUBRICANT

Non-liquid lubricants that maintain a viscosity and pent range after sheering. (Maintenance lubricants/greases).

GLOSSARY

SHORT PATTERN VALVE

A valve whose face-to-face dimension is less than the API 6D standard.

SHUTOFF VALVE

A valve designed only for on/off service. Not a throttling valve. Sometimes referred to as a "block valve".

SLAB GATE

A gate having flat, finely finished, parallel faces.; closure element slides across the seat and uses line pressure to obtain tight shut off.

SLURRY SERVICE

An application involving a flow medium consisting of small solid particles suspended in a liquid. Coal slurry, consisting of about equal parts of coal and water, is transported by pipeline from coalmines to Dower plants where the coal is de-watered and burned. A specially modified GOVE B5 ball valve is offered for this service.

SOUR GAS

Natural gas containing significant amounts of hydrogen sulfide (H_2S). Requires special product.

SPUR GEAR

The simplest of gears. In a gear set the pinion and ring gear are aligned on parallel shafts.

STEM

A valves component connected to valve closure which allows operator to open or close valve.

GLOSSARY

STEM EXTENSION

The equipment applied to below grade valves to provide above-grade accessibility to operating gear, blow down, and seat lubrication systems.

STEM INDICATOR (or VPI – Visible Position Indicator)

A position-indicating rod supplied with gate valves. It extends from the top of the valve stem. Rod up indicates the valve is open while rod down indicates the valve is closed.

STEM NUT

A one or two-piece nut which engages the stem threads of a valve and transmits torque from an operator to the valve stem.

STEM PACKING

Is a material product that is injected into the stem area of a valve to help re-energize or create a tight seal between factory packing rings (most commonly metal or teflon rings).

STEM PACKING FITTING

Fitting is found in the stem area of ball, gate, and plug valves and allows field personnel to inject stem packing products to address the leak at the stem area.

STOP COLLAR

The collar on a ball valve that restricts the ball to 90° of a rotation from the fully closed position.

STUFFING BOX

The annular chamber provided around a valve stem in a sealing system into which deformable packing is introduced.

SUCTION VALVE

A valve located at a compressor station where the gas enters the unit (compressor) located outside of the building.

GLOSSARY

SWEET GAS

Natural gas having no significant hydrogen sulfide content.

SWING CHECK VALVE

A check valve in which the closure element is a hinged clapper that swings or rotates about a supporting shaft.

THREADED ENDS

Internally threaded end connections supplied on some valves. Usually National Pipe Tapered pipe threads, e.g. NPT.

THROTTLING

The intentional restriction of flow by partially closing or opening a valve. A wide range of throttling is accomplished automatically in regulators and control valves.

THROTTLING A VALVE

Is the action required to control line flow through a valve when the valve is in a partial position; somewhere between full open and full closed.

THROUGH CONDUIT

An expression characterizing valves when in the open position, wherein the bore presents a smooth uninterrupted interior surface across seat rings and through the valve port, thus affording minimum pressure drop. There are no cavities or large gaps in the bore between seat rings and body closures or between seat rings and ball/gate. Consequently, there are no areas that can accumulate debris to impede pipeline cleaning equipment or restrict the valve's motion.

TOP ENTRY

The design of a particular valve or regulator where the unit can be serviced or repaired by leaving its body in the line and accessing its internals by removing a top portion of the unit.

GLOSSARY

TORQUE

The effort required to operate a valve. Usually expressed in "pound-feet" and in reference to the stem nut, handwheel or operator pinion shaft.

TRANSMISSION LINE

A main pipeline transporting oil or gas from wells or storage fields to refineries, loading docks or distribution companies. Generally, the pipeline is bigger than 6" and the pressure greater than 150 PSI.

TRIM

Commonly refers to the valve's working parts and to their materials.

TRUNNION

The part of the ball valve that holds the ball on a fixed vertical axis on which the ball rotates. The torque requirements of a trunnion mounted ball valve are significantly less than for a floating ball design.

TURNS TO OPERATE

The number of complete revolutions of a handwheel or a pinion shaft of a gear operator required to stroke a valve from the fully open to fully closed or vice versa.

TWO-INCH SQUARE OPERATING NUT

A nut attached to the valve stem or to the pinion shaft of a gear operator. Equipped valves are usually situated below grade in road boxes and are operated by long-handled "T" wrenches.

U-CUP (RING PACKING)

A "U" cross-section ring located in the tail end of certain ball valve seats to retain the grease in an emergency seat seal system.

GLOSSARY

UNDERGROUND STORAGE

The storage of natural gas or other fluids underground.

VALVE

A mechanical piece of equipment that isolates injection of pipe and controls the flow of liquid on gas products.

VALVE ANCHOR

An engineered device that minimizes lubrication from line flow and line pressure.

VALVE BODY

The part of a valve that houses the closure element (ball, gate, plug) and is connected to the pipeline.

VALVE BONNET

A valve bonnet can be found on the top or bottom of a valves body. The valve bonnet allows the valve to be disassembled when "isolated" and the closure element or seal is replaced.

VALVE CLEANER

A product injected with the intention of breaking down or dissolving trapped lubricants/sealants in seat sealant injection passages.

VALVE CLOSURE ELEMENT

Most common closure elements are ball, gate, and plug. The closure element is used to shut off line flow (closed) or to allow line flow to pass through (open) and travel downstream.

VALVE FLUSH

Product is injected to add lubricity or re-energize existing lubricants trapped in seat sealant injection passages.

GLOSSARY

VALVE HANDLE

Also known as a "valve wrench" which allows a valve to be operated manually.

VALVE SUPPORTS

An engineered device that support the weight of a valve.

VENT PLUG (or VENT PLUG ASSEMBLY or SAFETY VENT PLUG)

A special pipe plug having a small allen wrench-operated vent valve. These special plugs are located at the bottom of most ball valves. With the line valve closed (and under pressure) the body cavity pressure can be vented through this small valve check the tightness of seat seals or to make minor repairs. Having vented body pressure the vent plug may be removed to blow out debris and foreign material or to flush the body cavity. Some gate valves, whose purpose is venting the body cavity, have separate drain valves installed.

VENTURI VALVE

A reduced bore valve; a valve having a bore smaller in diameter than the inlet or outlet. For example: an 8" x 6" x 8" valve has 8" inlet and outlet connections, while the ball seats are 6". The flow through a Venturi valve will be reduced because of the smaller port. Venturi valves can often be economically substituted for plug valves.

VISCOSITY

A quantity expressing the internal friction, as measured by the force per unit area resisting a flow in which adjoining surfaces have in a unit of speed relative to one another.

WATER-OIL-GAS (WOG)

Used in connection with a pressure rating. This: 100 WOG indicates the rated pressure is 100 psi in water, oil, or gas service at normal ambient temperatures.

GLOSSARY

WEATHERPROOF

Describes a valve operator or other device that is protected against intrusion of water, sand, dust, or other atmospheric contamination.

WEDGE GATE

A gate whose seating surfaces are inclined to the direction of closing thrust so that mechanical force on the stem produces tight contact with the inclined seat rings.

WELD END (WE)

The end connection of a valve which is to be installed by welding into the line. To prepare the end bevel it is necessary to know the well thickness and specified minimum yield strength of the connecting pipe.

WINTERIZING OR WINTERIZATION

Actions of preventative maintenance to prepare components such as: gearbox, actuator, etc. by removing water and replacing with lubricant for severe cold.

WRENCH OPERATED (WO)

The operation of a valve by means of a handle or lever. Used on smaller size and lower pressure class valves.

WORM GEARS

Gears used to transmit motion or power between right angle shafts when a high-ratio reduction is necessary. The worm is smaller gear that drives the larger ring gear. Worm threads resemble screw threads and are available in various leads and pitches.

GLOSSARY

YOKE

The part of a gate valve which serves as a spacer between the bonnet and the operator or actuator.

ZERK FITTING

Low pressure, automotive style grease fitting commonly found on gearboxes but NOT on sealant injection system of ball, gate or plug valves.

REFERENCE MATERIALS

ANSI CLASSES

Nominal Pipe Size NPS *(inches)*	Class 150				
	Diameter of Flange *(inches)*	No. of Bolts	Diameter of Bolts *(inches)*	Diameter of Bolt Holes *(inches)*	Bolt Circle *(inches)*
1/4	3-3/8	4	1/2	0.62	2-1/4
1/2	3-1/2	4	1/2	0.62	2-3/8
3/4	3-7/8	4	1/2	0.62	2-3/4
1	4-1/4	4	1/2	0.62	3-1/8
1-1/4	4-5/8	4	1/2	0.62	3-1/2
1-1/2	5	4	1/2	0.62	3-7/8
2	6	4	5/8	0.75	4-3/4
2-1/2	7	4	5/8	0.75	5-1/2
3	7-1/2	4	5/8	0.75	6
3-1/2	8-1/2	8	5/8	0.75	7
4	9	8	5/8	0.75	7-1/2
5	10	8	3/4	0.88	8-1/2
6	11	8	3/4	0.88	9-1/2
8	13-1/2	8	3/4	0.88	11-3/4
10	16	12	7/8	1	14-1/4
12	19	12	7/8	1	17
14	21	12	1	1.12	18-3/4
16	23-1/2	16	1	1.12	21-1/4
18	25	16	1-1/8	1.25	22-3/4
20	27-1/2	20	1-1/8	1.25	25
24	32	20	1-1/4	1.38	29-1/2

Table (1)

Nominal Pipe Size NPS *(inches)*	Class 300				
	Diameter of Flange *(inches)*	No. of Bolts	Diameter of Bolts *(inches)*	Diameter of Bolt Holes *(inches)*	Bolt Circle *(inches)*
1/4	3-3/8	4	1/2	0.62	2-1/4
1/2	3-3/4	4	1/2	0.62	2-5/8
3/4	4-5/8	4	5/8	0.75	3-1/4
1	4-7/8	4	5/8	0.75	3-1/2
1-1/4	5-1/4	4	5/8	0.75	3-7/8
1-1/2	6-1/8	4	3/4	0.88	4-1/2
2	6-1/2	8	5/8	0.75	5
2-1/2	7-1/2	8	3/4	0.88	5-7/8
3	8-1/4	8	3/4	0.88	6-5/8
3-1/2	9	8	3/4	0.88	7-1/4
4	10	8	3/4	0.88	7-7/8
5	11	8	3/4	0.88	9-1/4
6	12-1/2	12	3/4	0.88	10-5/8
8	15	12	7/8	1	13
10	17-1/2	16	1	1.12	15-1/4
12	20-1/2	16	1-1/8	1.25	17-3/4
14	23	20	1-1/8	1.25	20-1/4
16	25-1/2	20	1-1/4	1.38	22-1/2
18	28	24	1-1/4	1.38	24-3/4
20	30-1/2	24	1-1/4	1.38	27
24	36	24	1-1/2	1.62	32

Table (2)

REFERENCE MATERIAL

ANSI CLASSES

Nominal Pipe Size NPS *(inches)*	Class 400				
	Diameter of Flange *(inches)*	No. of Bolts	Diameter of Bolts *(inches)*	Diameter of Bolt Holes *(inches)*	Bolt Circle *(inches)*
1/4	3-3/8	4	1/2	0.62	2-1/4
1/2	3-3/4	4	1/2	0.62	2-5/8
3/4	4-5/8	4	5/8	0.75	3-1/4
1	4-7/8	4	5/8	0.75	3-1/2
1-1/4	5-1/4	4	5/8	0.75	3-7/8
1-1/2	6-1/8	4	3/4	0.88	4-1/2
2	6-1/2	8	5/8	0.75	5
2-1/2	7-1/2	8	3/4	0.88	5-7/8
3	8-1/4	8	3/4	0.88	6-5/8
3-1/2	9	8	7/8	1	7-1/4
4	10	8	7/8	1	7-7/8
5	11	8	7/8	1	9-1/4
6	12-1/2	12	7/8	1	10-5/8
8	15	12	1	1.12	13
10	17-1/2	16	1-1/8	1.25	15-1/4
12	20-1/2	16	1-1/4	1.38	17-3/4
14	23	20	1-1/4	1.38	20-1/4
16	25-1/2	20	1-3/8	1.5	22-1/2
18	28	24	1-3/8	1.5	24-3/4
20	30-1/2	24	1-1/2	1.62	27
24	36	24	1-3/4	1.88	32

Table (3)

Nominal Pipe Size NPS *(inches)*	Class 600				
	Diameter of Flange *(inches)*	No. of Bolts	Diameter of Bolts *(inches)*	Diameter of Bolt Holes *(inches)*	Bolt Circle *(inches)*
1/4	3-3/8	4	1/2	0.62	2-1/4
1/2	3-3/4	4	1/2	0.62	2-5/8
3/4	4-5/8	4	5/8	0.75	3-1/4
1	4-7/8	4	5/8	0.75	3-1/2
1-1/4	5-1/4	4	5/8	0.75	3-7/8
1-1/2	6-1/8	4	3/4	0.88	4-1/2
2	6-1/2	8	5/8	0.75	5
2-1/2	7-1/2	8	3/4	0.88	5-7/8
3	8-1/4	8	3/4	0.88	6-5/8
3-1/2	9	8	7/8	1	7-1/4
4	10-3/4	8	7/8	1	8-1/2
5	13	8	1	1.12	10-1/2
6	14	12	1	1.12	11-1/2
8	16-1/2	12	1-1/8	1.25	13-3/4
10	20	16	1-1/4	1.38	17
12	22	20	1-1/4	1.38	19-1/4
14	23-3/4	20	1-3/8	1.5	20-3/4
16	27	20	1-1/2	1.62	23-3/4
18	29-1/4	20	1-5/8	1.75	25-3/4
20	32	24	1-5/8	1.75	28-1/2
24	37	24	1-7/8	2	33

Table (4)

REFERENCE MATERIAL

ANSI CLASSES

Nominal Pipe Size NPS *(inches)*	Class 900				
	Diameter of Flange *(inches)*	No. of Bolts	Diameter of Bolts *(inches)*	Diameter of Bolt Holes *(inches)*	Bolt Circle *(inches)*
1/2	4-3/4	4	3/4	0.88	3-1/4
3/4	5-1/8	4	3/4	0.88	3-1/2
1	5-7/8	4	7/8	1	4
1-1/4	6-1/4	4	7/8	1	4-3/8
1-1/2	7	4	1	1.12	4-7/8
2	8-1/2	8	7/8	1	6-1/2
2-1/2	9-5/8	8	1	1.12	7-1/2
3	9-1/2	8	7/8	1	7-1/2
4	11-1/2	8	1-1/8	1.25	9-1/4
5	13-3/4	8	1-1/4	1.38	11
6	15	12	1-1/8	1.25	12-1/2
8	18-1/2	12	1-3/8	1.5	15-1/2
10	21-1/2	16	1-3/8	1.5	18-1/2
12	24	20	1-3/8	1.5	21
14	25-1/4	20	1-1/2	1.62	22
16	27-3/4	20	1-5/8	1.75	24-1/2
18	31	20	1-7/8	2	27
20	33-3/4	20	2	2.12	29-1/2
24	41	20	2-1/2	2.62	35-1/2

Table (5)

Nominal Pipe Size NPS *(inches)*	Class 1500				
	Diameter of Flange *(inches)*	No. of Bolts	Diameter of Bolts *(inches)*	Diameter of Bolt Holes *(inches)*	Bolt Circle *(inches)*
1/2	4-3/4	4	3/4	0.88	3-1/4
3/4	5-1/8	4	3/4	0.88	3-1/2
1	5-7/8	4	7/8	1	4
1-1/4	6-1/4	4	7/8	1	4-3/8
1-1/2	7	4	1	1.12	4-7/8
2	8-1/2	8	7/8	1	6-1/2
2-1/2	9-5/8	8	1	1.12	7-1/2
3	10-1/2	8	1-1/8	1.25	8
4	12-1/4	8	1-1/4	1.38	9-1/2
5	14-3/4	8	1-1/2	1.62	11-1/2
6	15-1/2	12	1-3/8	1.5	12-1/2
8	19	12	1-5/8	1.75	15-1/2
10	23	12	1-7/8	2	19
12	26-1/2	16	2	2.12	22-1/2
14	29-1/2	16	2-1/4	2.38	25
16	32-1/2	16	2-1/2	2.62	27-3/4
18	36	16	2-3/4	2.88	30-1/2
20	38-3/4	16	3	3.12	32-3/4
24	46	16	3-1/2	3.62	39

Table (6)

REFERENCE MATERIAL

ANSI CLASSES

Nominal Pipe Size NPS *(inches)*	Class 2500				
	Diameter of Flange *(inches)*	No. of Bolts	Diameter of Bolts *(inches)*	Diameter of Bolt Holes *(inches)*	Bolt Circle *(inches)*
1/2	5-1/4	4	3/4	0.88	3-1/2
3/4	5-1/2	4	3/4	0.88	3-3/4
1	6-1/4	4	7/8	1	4-1/4
1-1/4	7-1/4	4	1	1.12	5-1/8
1-1/2	8	4	1-1/8	1.25	5-3/4
2	9-1/4	8	1	1.12	6-3/4
2-1/2	10-1/2	8	1-1/8	1.25	7-3/4
3	12	8	1-1/4	1.38	9
4	14	8	1-1/2	1.62	10-3/4
5	16-1/2	8	1-3/4	1.88	12-3/4
6	19	8	2	2.12	14-1/2
8	21-3/4	12	2	2.12	17-1/4
10	26-1/2	12	2-1/2	2.62	21-1/4
12	30	12	2-3/4	2.88	24-3/8

Table (7)

REFERENCE MATERIAL

ANSI PRESSURE CLASSES

Temperature (°F)	ANSI Pressure Class (lb)						
	150	300	400	600	900	1500	2500
	Hydrostatic Test Pressure (psig)						
	450	1125	1500	2225	3350	5575	9275
-20 to 100	285	740	990	1480	2220	3705	6170
200	260	675	900	1350	2025	3375	5625
300	230	655	875	1315	1970	3280	5470
400	200	635	845	1270	1 900	3170	5280
500	170	600	800	1200	1795	2995	4990
600	140	550	730	1095	1640	2735	4560
650	125	535	715	1075	1610	2685	4475
700	110	535	710	1065	1600	2665	4440
750	95	505	670	1010	1510	2520	4200
800	80	41 0	550	825	1235	2060	3430
850	65	270	355	535	805	1340	2230
900	50	170	230	345	515	860	1430
950	35	105	140	205	310	515	860
1000	20	50	70	105	155	260	430

Table (8)

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INFO@SEALWELD.COM

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INFO@VALVEPRO.COM