

**TruSeal Valve
Product Information**

**TruSeal double block
and bleed plug valves
are a product of
The Orbit Valve
Division of
Cooper Cameron Valves**

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Contamination is Avoided in Multi-Products Manifolds

Multi-Products Manifolds

The TruSeal positive shut-off, double block and bleed valve was developed for multi-products fuel manifolds. Busy manifolds must operate frequently, switching from product to product, often with power actuators and sometimes without human supervision. Valves that can be trusted to seal drop-tight, every time, will avoid the expensive consequences of contaminated fuel.



Meter Block Valves Hold the Key to Accurate Measurements

Liquid fuels that move through pipeline manifolds are reliably segregated by provable, zero-leakage, TruSeal valves. Every TruSeal valve in the manifold has assured double block and bleed shut-off that proves total isolation of each product. By using TruSeal valves, gasoline, diesel, kerosene, jet fuel, heating oil and LPG as well as crude oil and natural gas are **protected from contamination.**

Meter Stations

Flow meters require calibration to verify their accuracy. During meter calibration (proving), every closed valve in the meter system must seal drop tight. Even a small leak will cause errors in the meter calibration. The incorrect meter factor will persist until the next proving operation and incorrect flow measurement can cost huge sums of money!

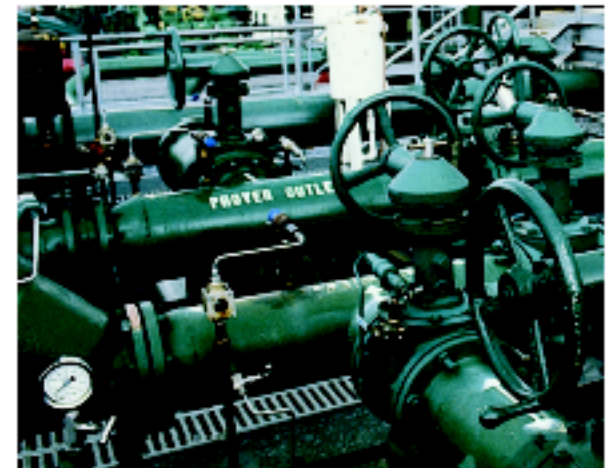
Every TruSeal valve in the meter station can be quickly and easily shown to be holding leak-tight. That means **correct calibration...every time.**

The Provable Zero-Leakage Double Block & Bleed Plug Valve With Retracting Seals

Problems With Other Valves

In meter block service, the differential pressure across each closed valve is very low. There is no assistance from line pressure to "energize" or compress floating seals to make them hold tight. Unless the body cavity in a ball valve is vented, the seals typically rely on springs to press them against the ball. The ball valve may be leaking, until the user opens the bleed. Then the reduction of body pressure introduces a hydraulic force on the seat that may stop the leak. The user can form a false impression that the ball valve is holding tight, when in reality, it leaks.

In contrast, the mechanical wedge-action of the TruSeal plug compresses both the upstream and the downstream seals firmly against the valve body, needing no help from line pressure. **TruSeal valves hold with consistent zero-leakage.**



TruSeal Valves Work in Meter Systems... Ordinary Valves Don't!

Tank Storage Isolation

Fuel in storage tanks is exposed to the risk of contamination and loss-of-volume unless the tank isolation valves can be checked for zero-leakage. Tank-side valves are operated frequently but assuring tank integrity without TruSeal can be troublesome and expensive.

Hydrant Isolation

Fuel hydrants at busy airports must be regularly pressure tested to check the integrity of the pipes, flanges and gaskets. But the only time this inspection can be performed is in the few hours each night when the airport is closed.

On some occasions, sections of the hydrant must be isolated for extension, modification or repair. Or it may become necessary to isolate, section by section, to find the location of a leak. Airports don't have the time to drain fuel from the lines or to swing line blinds for traditional line block, but the entire hydrant must be isolated and pressurized to prove that it is safe.

TruSeal valves are the **recognized Hydrant Valves for airport service** because:

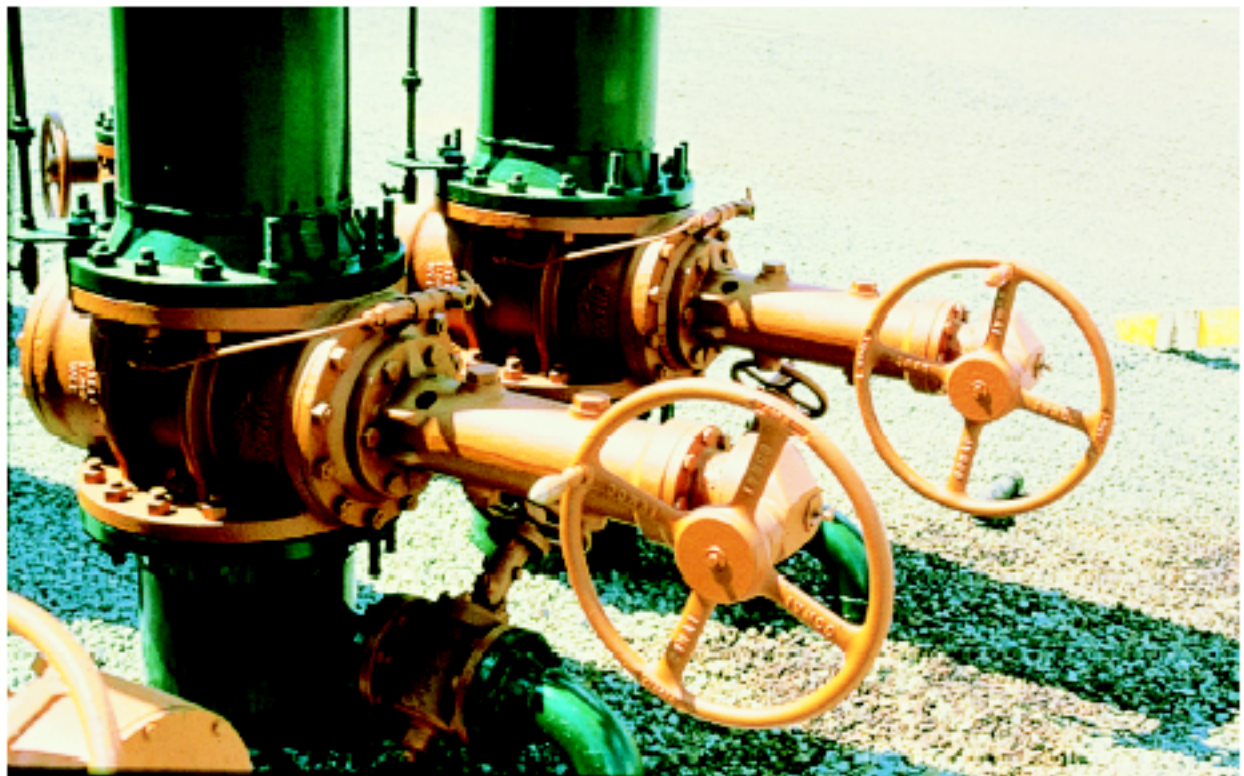
- ♦ They close quickly and easily.
- ♦ They require very little maintenance.
- ♦ They hold with zero-leakage.

The hydrant pressure-test can begin as soon as the valves are closed, since the TruSeal valves show that the hydrant is totally isolated.

Using line blinds (or "skillet plates") for segregation involves a long, costly and perhaps hazardous operation of drain-down, lock-out and tag-out. Traditional gate valve DBB will produce constant loss of fuel from the open bleed. TruSeal valves offer simple, provable, **tank-side isolation** and they give absolute assurance of valve integrity.



Tank-Side Isolation Maintains Product Integrity



Buried Hydrants Require Regular Pressure Tests

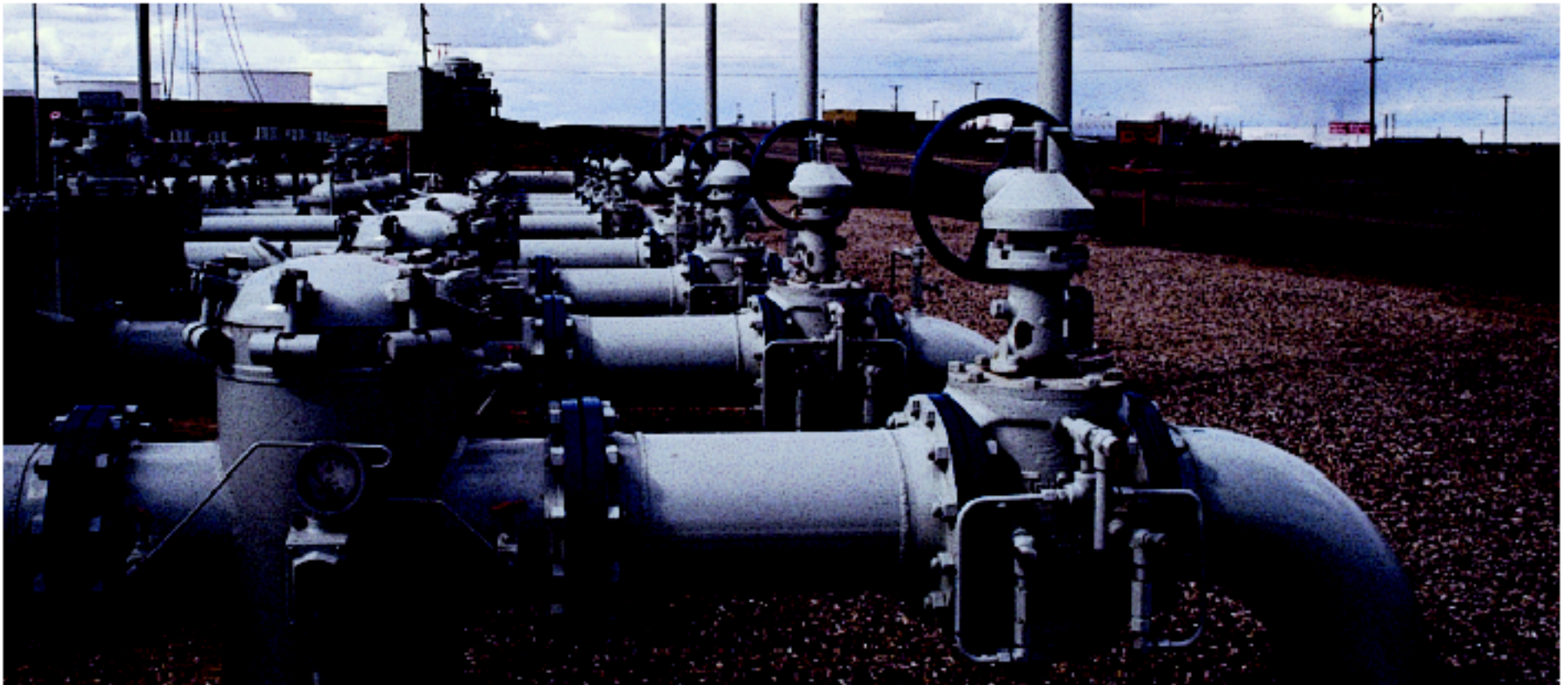


User Assets Must Be Protected at the Custody Transfer or Battery Limit Positions

Battery Limit Isolation

When different companies share a common pipe system, provable isolation is essential to protect the assets of each user. TruSeal valves ensure zero-leakage, allowing each company to verify the **safe custody of its fuel and protect against contamination or loss.**

Government taxation inspectors can witness the drop-tight segregation of fuels provided by the TruSeal valve, confirming that tax-free and taxed fuels are honestly stored and segregated.



Firesafe Protection of Life and Property is a TruSeal Daily Task

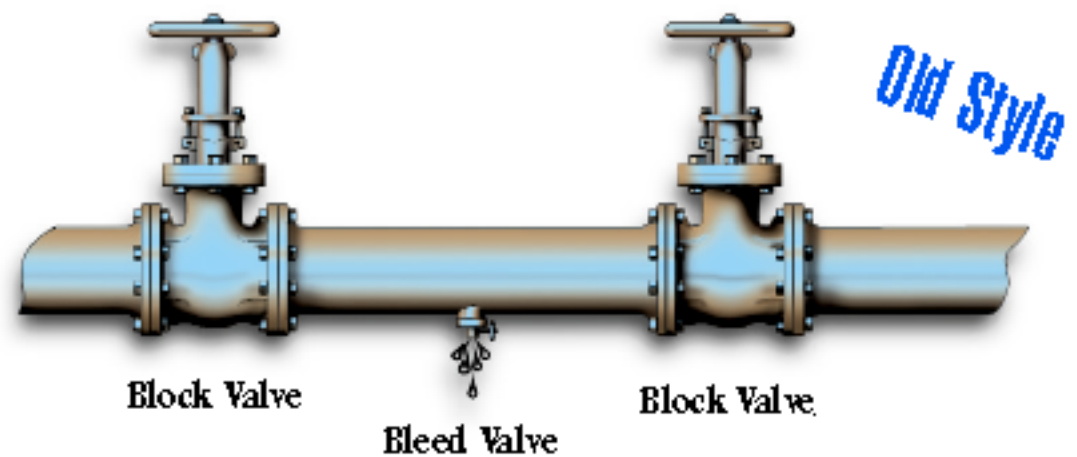
Safety Isolation

Safety regulations demand total, provable isolation of equipment before maintenance, cleaning or repair. Fuel handling may use pumps, compressors, filters, strainers, mixers, blenders, heat exchangers, meters and control devices. All of these may require safe isolation during repair, while the plant continues to run.

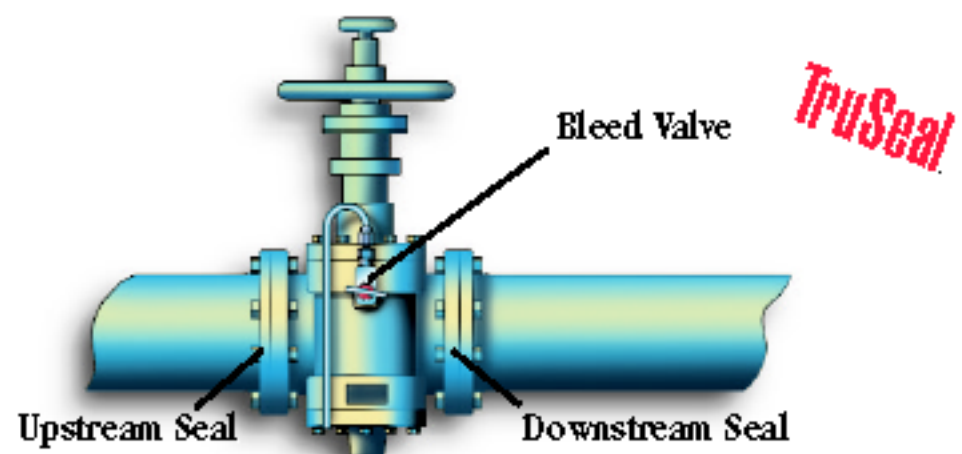
TruSeal valves have two independent resilient seals, both of which can be checked to prove complete, safe isolation. Plus, every TruSeal valve has four firesafe contact surfaces that prevent a fire incident from becoming a disaster.

TruSeal valves are approved by the safety departments of governments and energy companies for the **safe isolation of plant and equipment during maintenance.**

What Double Block and Bleed Means



Traditional double block and bleed requires the use of two block valves separated by a spool. A bleed valve is used to drain the spool when both valves are closed to prevent fuel from the high pressure line leaking into the low pressure line.



The TruSeal valve provides the same function as the traditional double block and bleed but without product wastage through the open bleed. The upstream and downstream seals provide the same function as the two block valves. The body bleed serves only to prove that the seals are holding tight.

The TruSeal Valve

Loading-Unloading

Fuel loading/unloading may require hundreds of open/close strokes of the connection valves every day. The valves typically operate against full pump pressure on every stroke, and they must close without leakage.

Safety and environmental concerns demand that the fuel is absolutely and totally contained within the pipe, yet the valves must operate quickly and easily.

TruSeal valves have two resilient seals that fully retract from their seated position without any seal rubbing...even at full differential pressure. Plug turning is effortless AND slam-proof!



Fuel Loading Hazards Are Eliminated

Countless loading facilities depend on TruSeal valves for safe, reliable, zero-leakage shut-off at rail, truck and shipside manifolds. From Alaska to Argentina; from Sidney to Sicily; from New York to New Zealand, fuel movement managers have

discovered TruSeal valves are the only valves they can trust to deliver real dependability at their loading manifolds.

Sales and Service Around the World, Around the Clock

Everything mechanical requires attention from time to time. TruSeal valve service and support personnel are located around the world to provide users with repair facilities, training, spare parts and applications advice.

Contact the company at any address on the back cover of this catalog

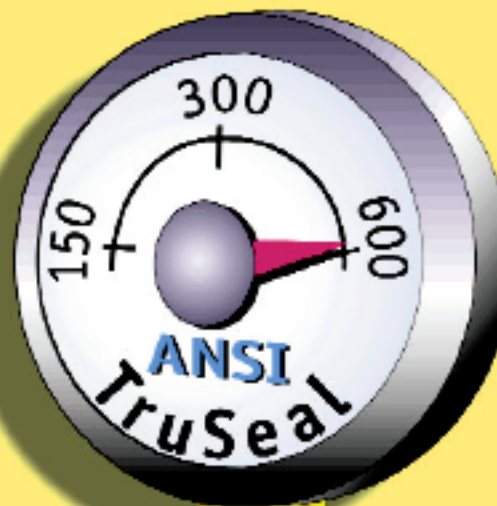
Sizes



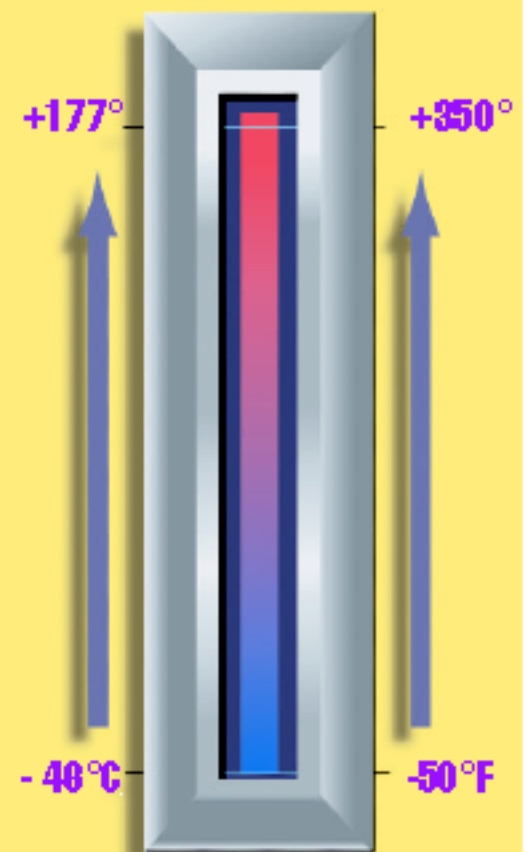
2 to 36 inch
50 to 900mm

Pressures

150 ANSI
to
600 ANSI

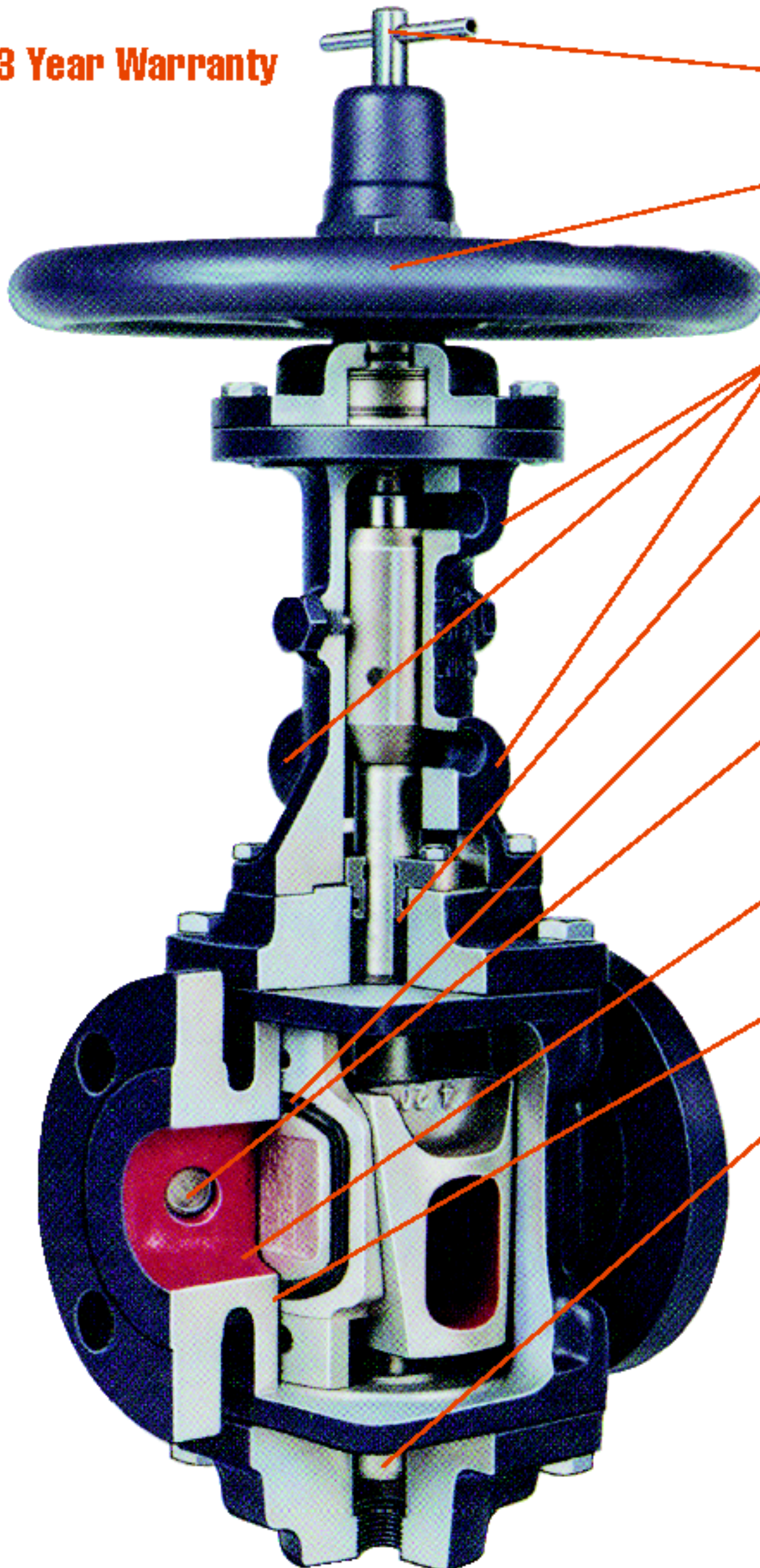


Temperatures



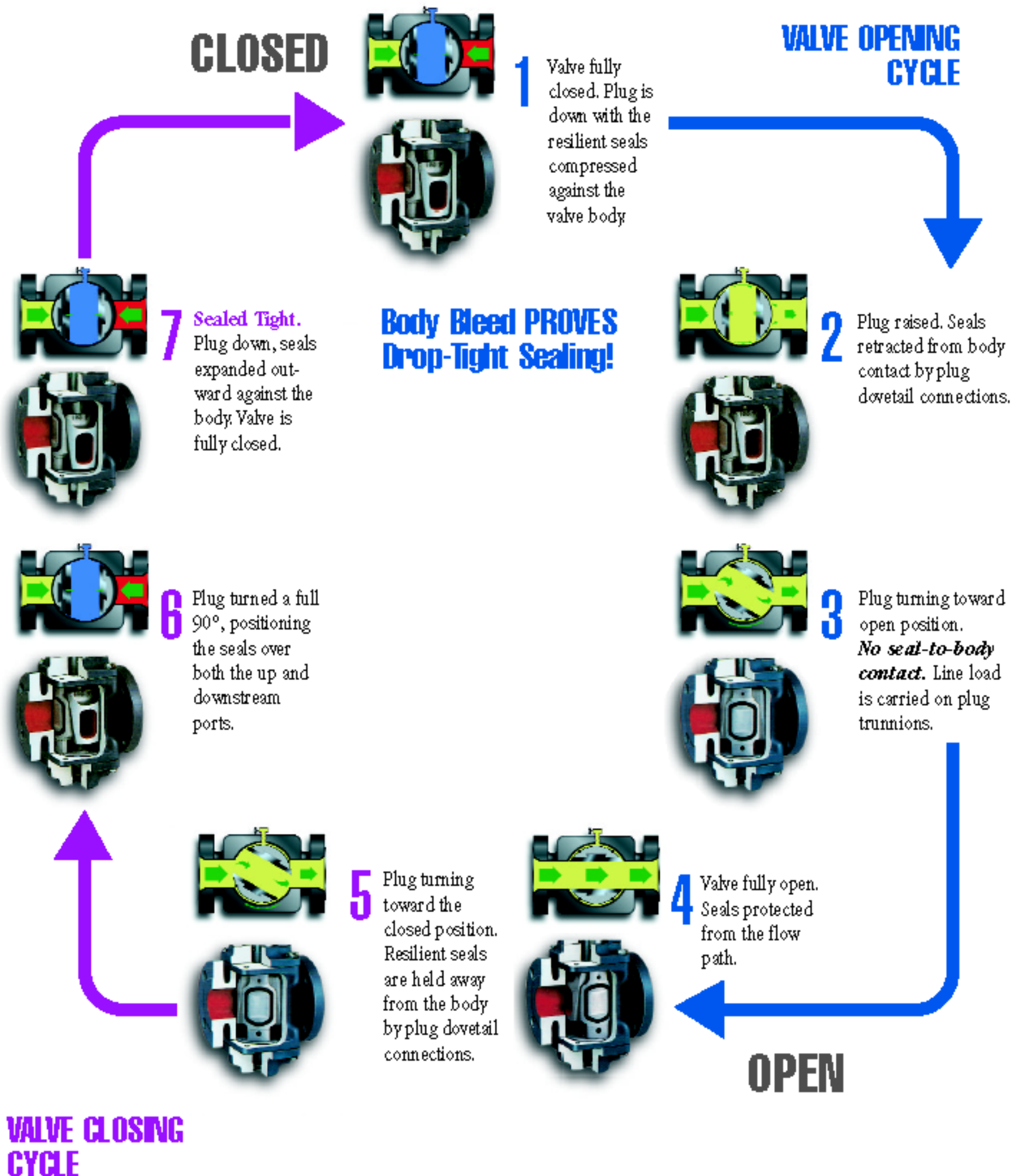
A Full Range of Choices.

3 Year Warranty



- 1 Positive Position Indicator.** The indicator flag cannot be misaligned, as required in specification API 599.
- 2 Low Torque/Slam-Proof Operation With Easy Turning Hand Wheel.** TruSeal operator will not allow the plug to slam. This eliminates the risk of line shock, water hammer and injury to workers.
- 3 Accessory Mounting Pads.** Optional limit switches or automatic body bleed can be mounted at these points.
- 4 Positive Stem Sealing.** The deep stuffing box with fire safe graphite rings plus packing gland O-rings, assure positive emission control.
- 5 Bubble Tight Sealing.** Frictionless, non-lubricated compressive sealing, upstream and downstream, assures total segregation.
- 6 Body Pressure Relief.*** This optional accessory provides the means to relieve body pressure without emission into the atmosphere and prevents thermal pressure plug-lock.
- 7 Advanced Port Design.** Flow contours at the entry and exit ports, plus attention to plug shape have minimized pressure drop.
- 8 Fire Safe.** Metal seating surfaces match the body shape for metal-to-metal sealing both upstream and downstream.
- 9 Double Trunnion Design.** Positive seal retraction during opening and closing is assured by tough trunnions at the bottom and top of the plug.
- 10 Body Bleed.** (Optional) Proves seals are holding drop-tight with zero-leakage. Positive segregation is assured.
- 11 In-Line Repairable.** Bottom and top entry for fast and simple replacement of seals.

**Ordinary double sealed valves seldom need body pressure relief because their seals leak. TruSeal zero-leak valves will trap liquid or gas in the body cavity when closed. Thermal changes at the valve can increase the internal body pressure, causing possible opening resistance.*



In-Line Repair



For ease of maintenance and repair, TruSeal has **bottom and top access**. If there is clear space below the valve, (see dimension L, pages 8 - 13), remove the lower plate. The seals will slide off the dove-tail on the plug faces.

If bottom access is not convenient, **top entry** is also provided.

WARNING: Do not attempt any repairs on TruSeal valves unless you are certain the line pressure has been removed and line contents drained from the valve and the line and the body cavity!

Failure to follow these instructions could result in injury to personnel, or cause hazardous product to be vented from the valve.

For complete instructions on installation and repair, request a copy of TruSeal Installation Manual from **Orbit Valve Company**. See back cover for locations.

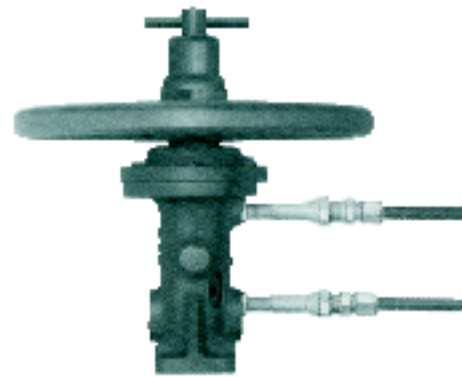
Position Switches



Open/closed position switches for geared models only.

Fully enclosed, explosion proof SPDT or DPDT contacts.

20 amp @ 125, 250 or 480 VAC
1/2 amp @ 125 VDC

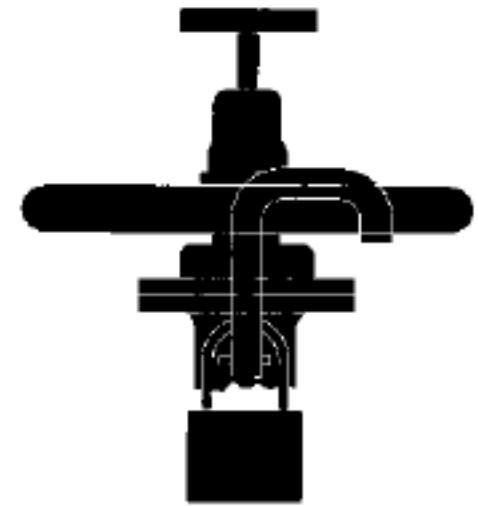


Open/closed position indicating switches for both handwheel and gear operated models.

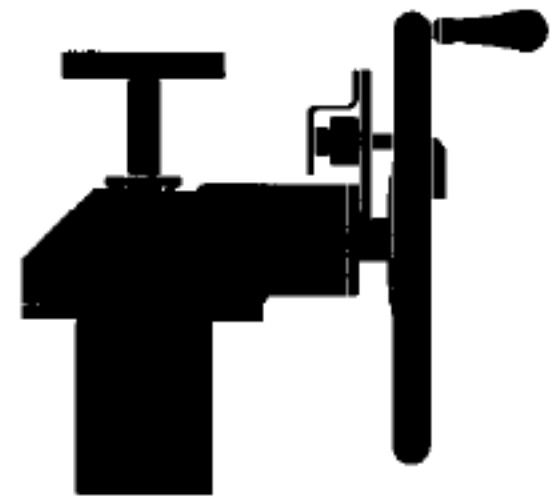
Fully enclosed, explosion proof SPDT or DPDT contacts.

2 amp @ 240 VAC
50 milliamps @ 24 VDC

Locking Devices



Locking device for hand operators



Locking device for gear operators



Chainwheel Drive



Manual Bleed Valve (MBV)

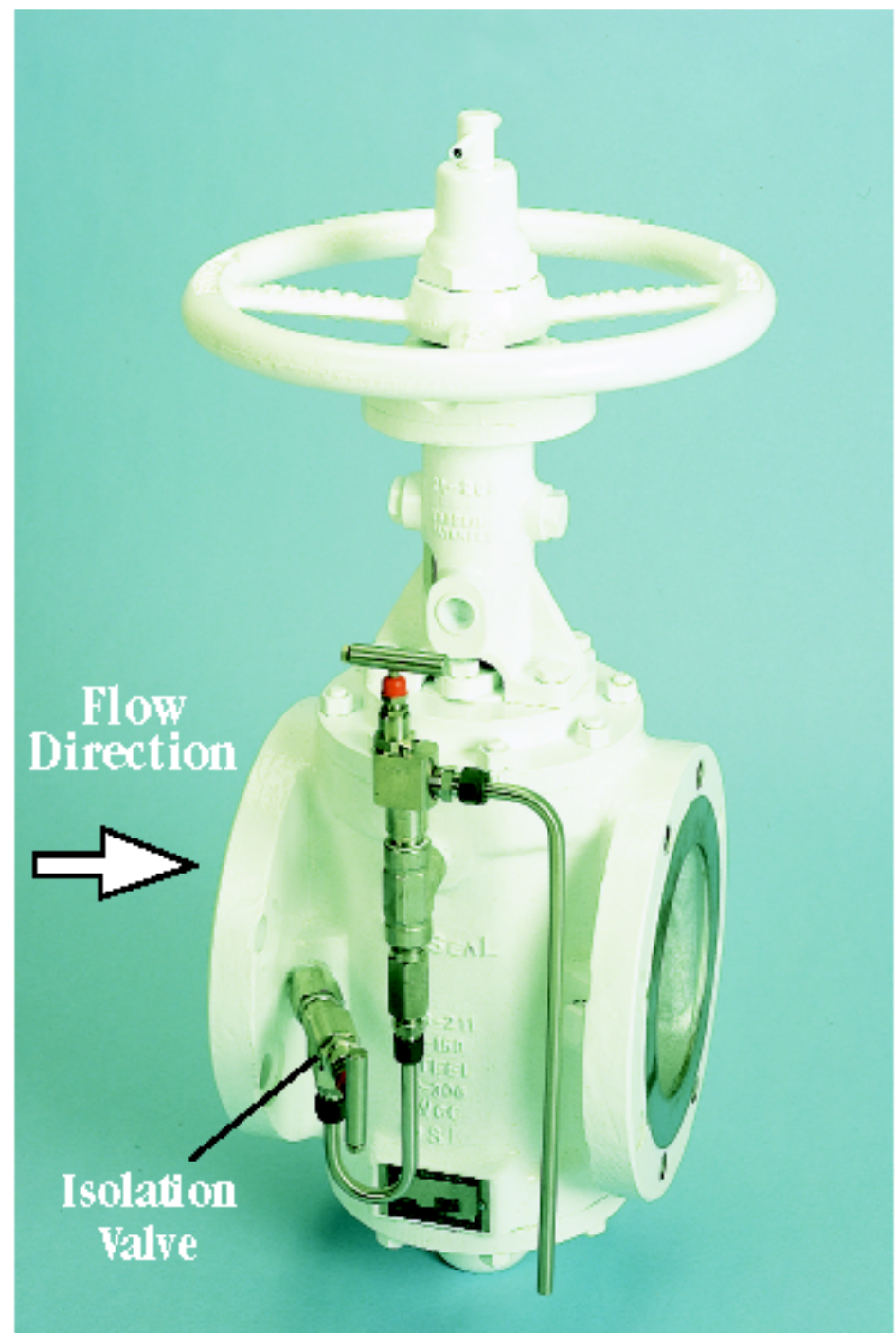
The simplest bleed valve for hand operated TruSeal valves. When TruSeal is closed, open the body bleed valve to verify drop-tight sealing. Close MBV before opening the TruSeal.

CAUTION! Bleed outlet should be piped for proper drainage to a pit, reservoir or other suitable disposal system to prevent hazardous or unsightly spills of the body liquid. Note the "goose neck" vent pipe that prevents drainage of the body liquid.

* Thermal relief systems are designed to relieve excess pressure rise in the body cavity of a closed valve due to increasing ambient temperature which causes expansion of the liquid in the valve.

** The relief valve is set to open at 25 psi differential on all valves regardless of their working pressure. With the TruSeal closed, the relief valve will open at 25 psi above up-stream pressure. This system functions only when the TruSeal valve is closed and the isolation valve is open.

All bleed systems are shown on a 6-inch 150 Class valve.
(For illustration purposes only)



Manual Bleed Valve with Thermal Relief (MTR)*

The Manual Bleed proves drop-tight sealing. The Thermal Relief Valve releases any thermal expansion of the body liquid, safely and automatically back into the line. Relief set at 25 psi differential.**

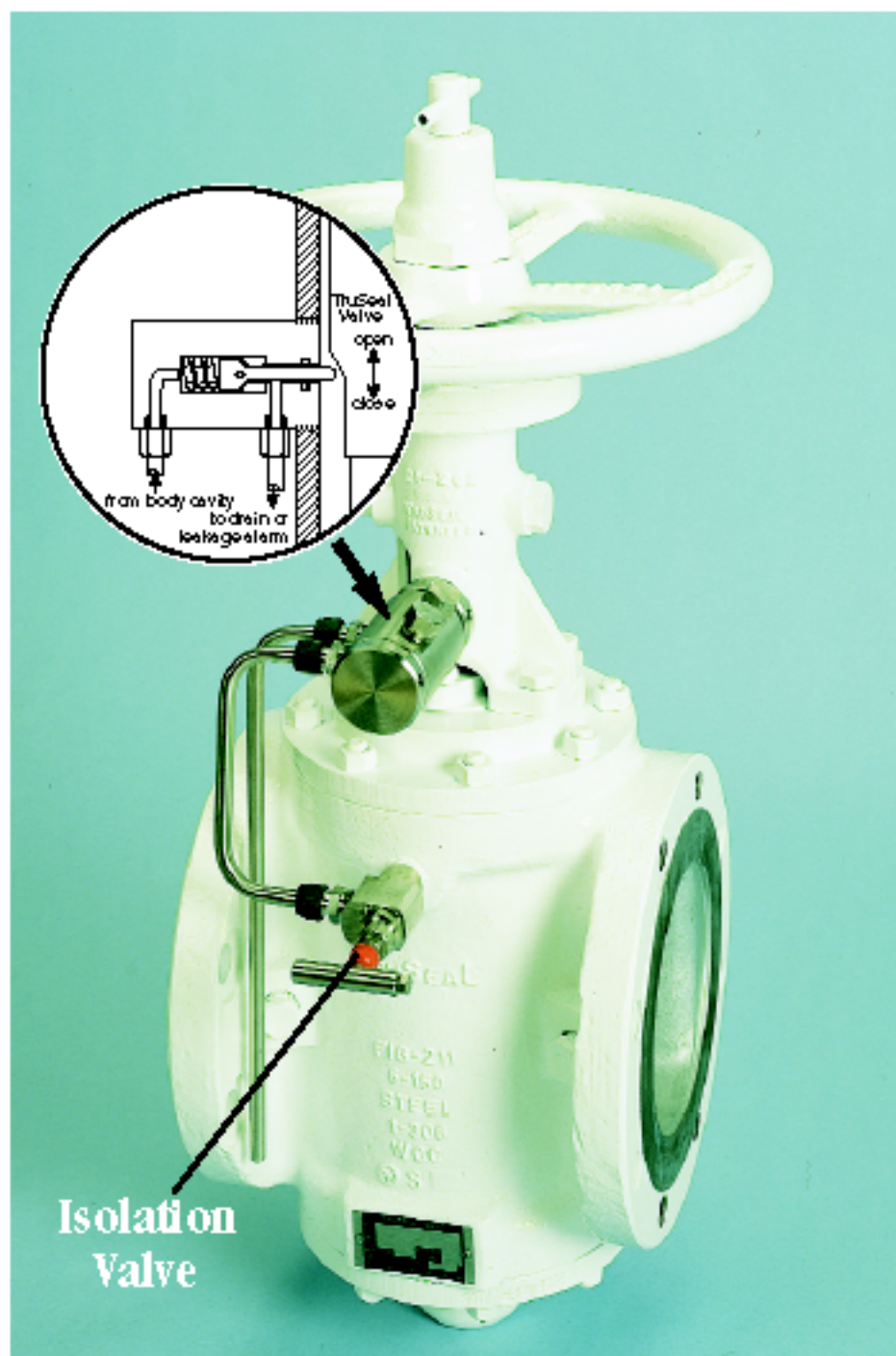
NOT ILLUSTRATED:

Thermal Relief to Body (TRB)*

With the TruSeal closed the Thermal Relief Valve releases any thermal expansion of the body liquid, safely and automatically, back into the line. Relief set at 25 psi differential.**

Thermal Relief to Atmosphere (TRA)*

Similar to TRB except thermal relief is set at 50 psi above pipeline rated pressure and is vented to atmosphere.



Automatic Body Bleed Valve (ABV)

A plunger-actuated check valve is opened by the coupling cam as the TruSeal is closed. This system removes the human element from seal checking procedures, making it completely automatic.

As an optional feature, the isolation valve may be padlocked "open" to ensure total double block and bleed integrity, avoiding any risk of human error in sealing verification.***

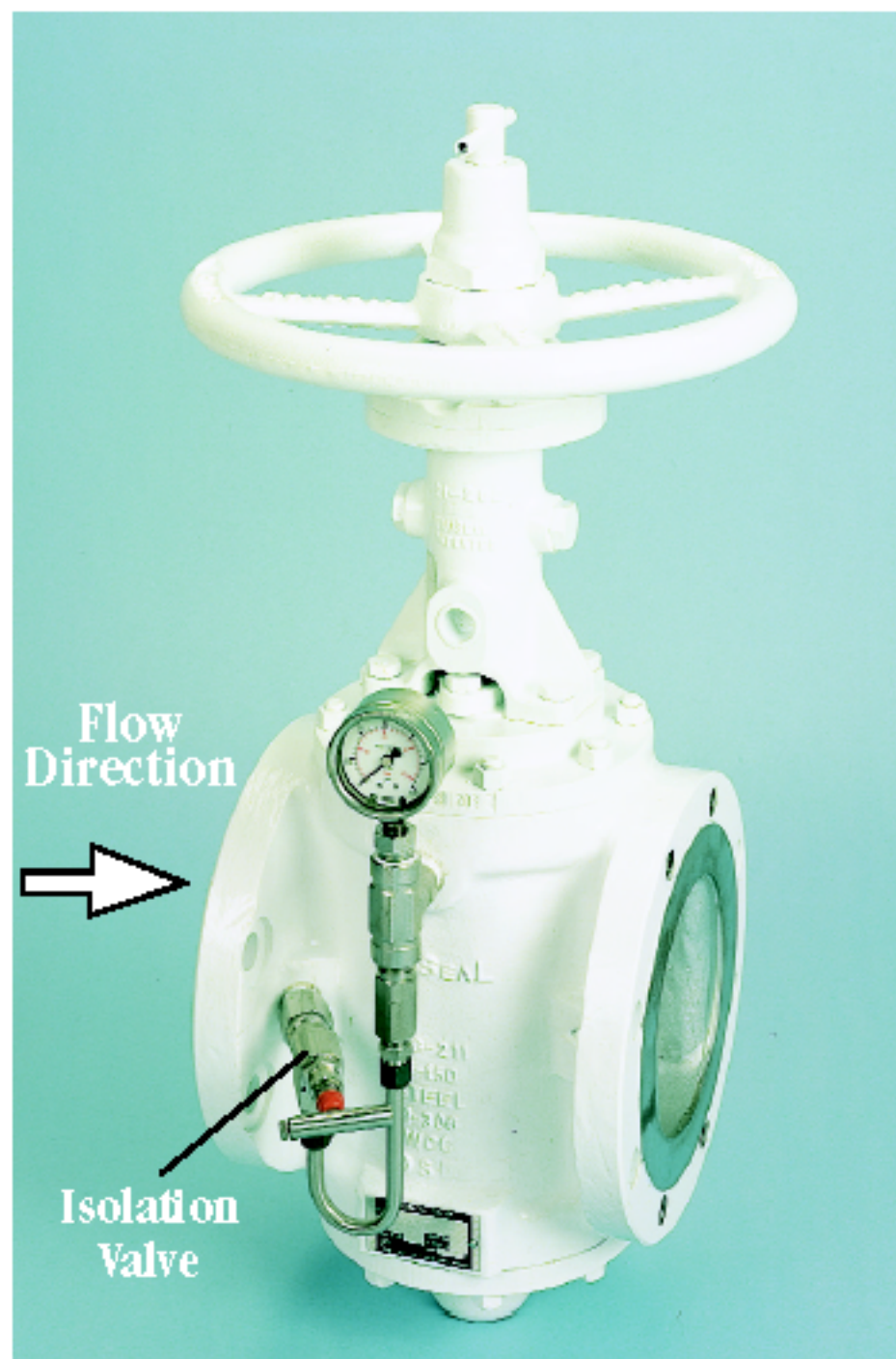
(Position of the ABV is not as illustrated. Actual location of the ABV is directly above the flange.)

NOT ILLUSTRATED:

Manual Bleed Valve with Gauge (MBG) Liquids Only

A Manual Bleed Valve is combined with a gauge when emission to atmosphere is undesirable. The gauge shows the pressure inside the body cavity at all times and can be used as an indication of seal tightness.

Consult **Orbit Valve** for the typical pressure change that can be expected when closing any particular size of TruSeal valve.



Thermal Relief Valve with Gauge (TRG)** (Liquids Only)

A Thermal Relief Valve, to relieve any body pressure which may build up due to thermal change, is combined with a gauge to indicate tight seals. No emissions to atmosphere. No sump system required. Relief set at 25 psi differential.**

*** CAUTION: As the TruSeal valve approaches its closed position, a cam opens the Automatic Bleed Valve allowing fluid to escape. When the valve reaches its fully closed position, the spurting liquid should cease, showing positive verification of double sealing. A proper sump system is required because spilled liquid or vented gas could be unsightly or hazardous.

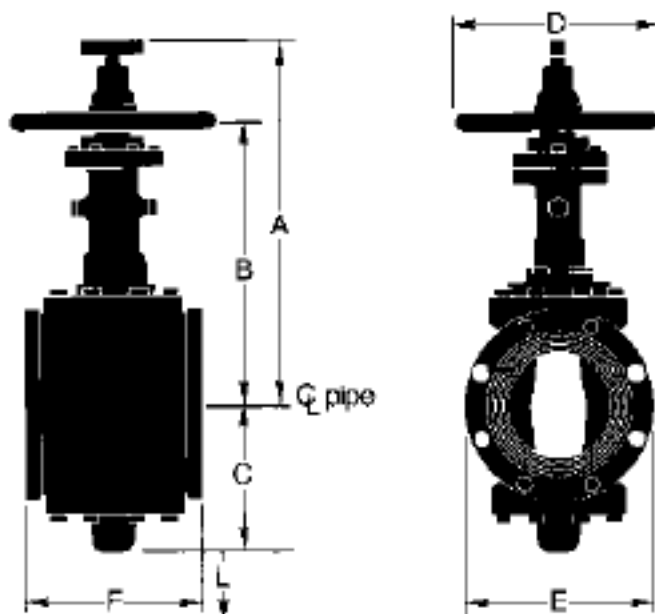
CAUTION: All automated TruSeal valves require some form of body pressure relief (TRB/TRA/MTR/ABV/TRG), otherwise the valve may be difficult to open or may stick in the closed position.

SIZE INCHES MM	A	B	C	D	E	F	L	Flange diameter	Face to face	Clearance to remove slugs from bottom	Steam or handwheel shaft diameter	Blow coefficient C in G.P.M. (U.S.)	No. & size of tapped holes per flange (NPT)	No. & size of lower plate drain holes (NPT)	Approximate weight in lbs. & kg.	Figure Number
HANDWHEEL OPERATED																
2 50	16⅞ 413	11⅞ 302	5 127	10 254	6 152	7 178	3 76				¼ 22	6	200	-	1-½ 60	211-201
3 80	16⅞ 413	11⅞ 302	5 127	10 254	7⅞ 191	8 203	3 76				¼ 22	6	205	-	1-½ 75	211-201
4 100	17⅞ 435	12⅞ 321	6⅞ 162	10 254	9 229	9 229	5 127				¼ 22	6	590	-	1-½ 95	211-201
6 150	22⅞ 571	16⅞ 426	8⅞ 219	14 356	11 279	10⅞ 266	8 203				1⅞ 29	8	1254	4 ¾-10	2-½ 99	211-202
8 200	25⅞ 657	19⅞ 499	10⅞ 267	16 406	13⅞ 343	11⅞ 292	10 254				1⅞ 25	7	2309	4 ¾-10	2-½ 154	211-203
10 250	27 686	20⅞ 521	12⅞ 311	16 406	16 406	13 330	12 305				1⅞ 25	8	3750	4 ¾-9	2-½ 217	211-203
12 300	39⅞ 1006	33⅞ 857	13⅞ 349	20 508	19 483	14 355	15 381				1⅞ 41	14	4693	4 ¾-9	2-½ 333	211-404
GEAR OPERATED																
6 150	23⅞ 590	18⅞ 463	8⅞ 219	10 254	11 279	10⅞ 266	8 203				¼ 22	15	1254	4 ¾-10	2-½ 91	211-202G
8 200	27⅞ 708	20⅞ 531	10⅞ 267	14 356	13⅞ 343	11⅞ 292	10 254				¼ 22	20	2309	4 ¾-10	2-½ 179	211-203G
10 250	29 737	22 559	12⅞ 311	14 356	16 406	13 330	12 305				¼ 22	23	3750	4 ¾-9	2-½ 229	211-203G
12 300	33⅞ 857	25⅞ 654	13⅞ 349	16 406	19 483	14 355	15 381				¼ 22	21	4693	4 ¾-9	2-½ 345	211-204G
14 350	34⅞ 879	26⅞ 676	15⅞ 394	16 406	21 533	15 381	16 406				¼ 22	24	5600	4 1-8	2-½ 408	211-204G
16 400	43⅞ 1114	33⅞ 860	19⅞ 495	20 508	23⅞ 597	16 406	18 457				1⅞ 29	38	6978	8 1-8	2-½ 590	211-205G
18 450	43⅞ 1114	33⅞ 860	19⅞ 495	20 508	25 635	17 432	18 457				1⅞ 29	38	7050	8 1½-8	2-½ 600	211-205G
20 500	62 1575	44 1119	23⅞ 597	36 914	27⅞ 699	32** 812**	22 559				1⅞ 25	63	16299	-	2-1 3015	211-426M
24 600	70⅞ 1795	54⅞ 1375	25⅞ 655	24 610	32 813	36** 919**	24⅞ 631				1⅞ 25	247	28400	-	2-1 3896	211-427G
30 750	64⅞ 1632	46⅞ 1175	26⅞ 667	36 914	38⅞ 984	60** 1524**	27 686				1⅞ 45	58	32700	-	2-1 3922	711-250KS
36 900	67⅞ 1721	49⅞ 1264	30⅞ 772	36 914	46 1169	68** 1727**	33 838				1⅞ 45	58	46300	-	2-1 7500	711-250KS

NOTE: All body bleed holes are 1/2" NPT except 20" and larger which have 1" bleed holes in valve throat. Dimensions are for reference only. Request certified drawings when required. **Manufacturer's standard face to face dimension. 30" and 36" valves have reduced round hole plug port.

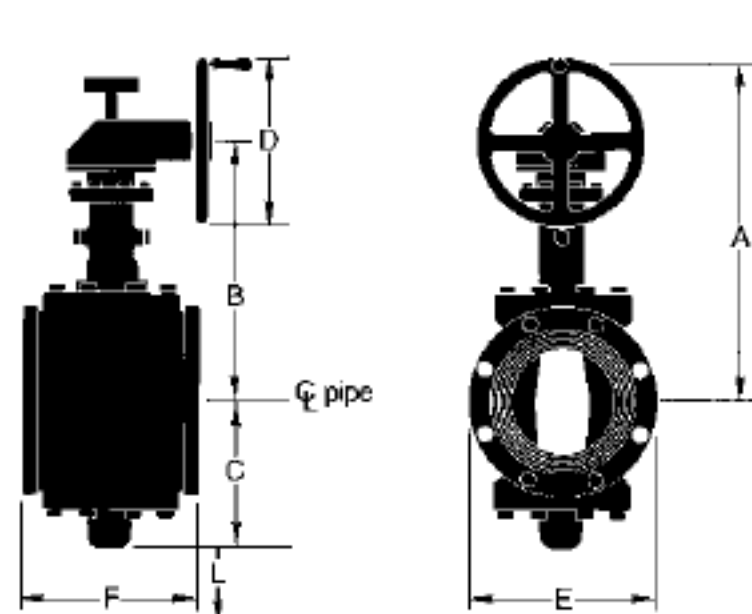
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Hand Wheel Operated



Recommended for all sizes up to and including 10" (250mm)

Gear Operated



Recommended for all sizes 12" (300mm) and larger

REDUCED PORT

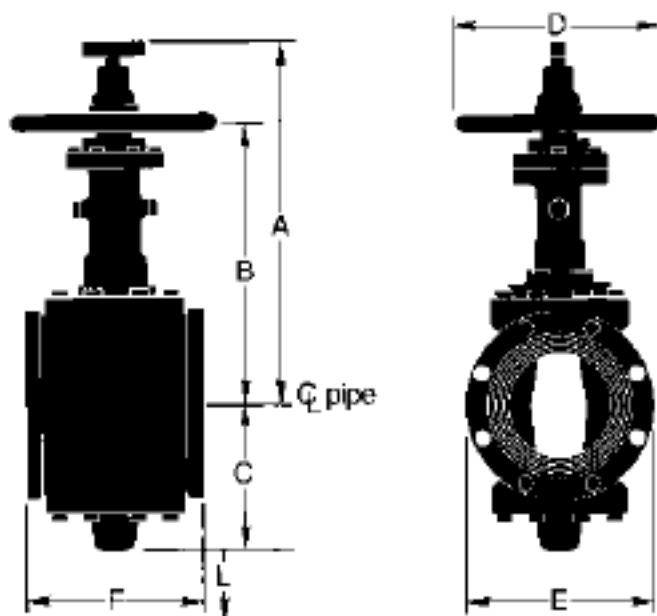
ANSI 300

SIZE INCHES #	Centerline to highest point	Centerline to lowest point	Handwheel diameter	Flange diameter	Rise to face	Clearance to remove slugs from bottom	Stem or handwheel shaft diameter	Number of turns for full travel	Flow coefficient C _v in G.P.M. (U.S.)	No. & size of tapped holes per flange (NPT)	No. & size of lower plate drain holes (NPT)	Approximate weight in lbs. & kg.	Figure Number	
	A	B	C	D	E	F	L							
HANDWHEEL	2 50	16½ 413	11½ 302	5 127	10 254	6½ 165	8½ 216	3 76	¾ 22	6	210	-	1-½ 29	65 221-201
	3 80	16½ 413	11½ 302	5 127	10 254	8½ 210	11½ 293	3 76	¾ 22	6	220	-	1-½ 41	90 221-201
	4 100	20½ 527	15 381	5½ 130	14 356	10 254	12 305	6 152	1½ 29	5	620	-	1-½ 66	145 221-202
	6 150	24½ 623	18½ 460	8 203	16 406	12½ 318	15½ 403	9 228	1½ 35	6	1302	-	1-½ 125	275 221-203
	8 200	37½ 945	31½ 794	11½ 293	20 508	15 381	16½ 419	9 228	1½ 41	13	2674	4 ¾-9	1-½ 258	570 221-404
GEAR OPERATED	4 100	21½ 545	16½ 419	5½ 130	10 254	10 254	12 305	6 152	¾ 22	10	620	-	1-½ 70	155 221-202G
	6 150	26½ 676	19½ 498	8 203	14 356	12½ 318	15½ 403	9 228	¾ 22	18	1302	-	1-½ 136	300 221-203G
	8 200	31½ 797	23½ 594	11½ 293	16 406	15 381	16½ 419	9 228	¾ 22	20	2674	4 ¾-9	1-½ 270	595 221-204G
	10 250	41½ 1057	33½ 854	12½ 321	16 406	17½ 445	18 457	12 305	¾ 22	42	4200	4 1-8	2-½ 331	730 221-404G
	12 300	51½ 1301	39½ 997	17½ 438	24 610	20½ 521	19½ 502	14 356	1½sp 35	45	5507	-	2-½ 551	1215 221-409M
	14 350	55½ 1419	43½ 1114	18 457	24 610	23 584	30 762	16 406	1½sp 34	76	7000	-	2-½ 680	1500 221-406G
	16 400	59½ 1508	41½ 1051	20½ 514	36 914	25½ 648	33 838	18 457	1½ 29	63	8300	-	2-½ 848	1870 221-426M
	18 450	59½ 1508	41½ 1051	20½ 518	36 914	28 711	36 914	18 457	1½ 35	63	8400	-	2-½ 900	1985 221-426M
	20 500	64½ 1648	52½ 1343	22½ 581	24 610	30½ 775	39 991	21 533	1½ 35	247	17500	-	2-½ 1839	4100 221-427G
	24 600	71 1825	52½ 1341	24½ 629	36 914	36 914	52 1321	24 610	1½ 45	58	21800	-	1-1 3529	8000 721-250KS
30 750	73½ 1867	55½ 1408	27½ 702	36 914	43 1092	65 1651	28 711	1½ 45	58	33900	-	2-1 6804	15000 721-250KS	

NOTE: All body bleed holes are 1/2" NPT except 20" and larger which have 1" bleed holes in valve throat. Dimensions are for reference only. Request certified drawings when required. 24" and 30" valves have reduced round hole plug port.

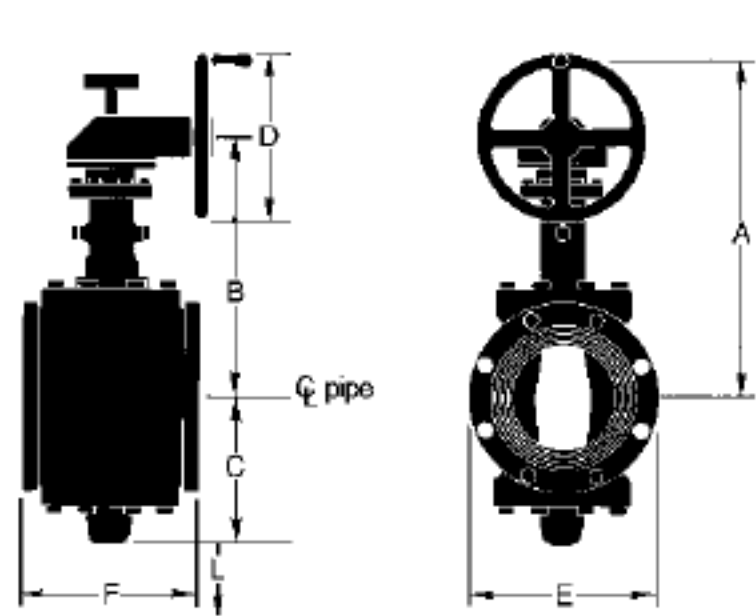
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Hand Wheel Operated



Recommended for all sizes up to and including 6" (150mm)

Gear Operated



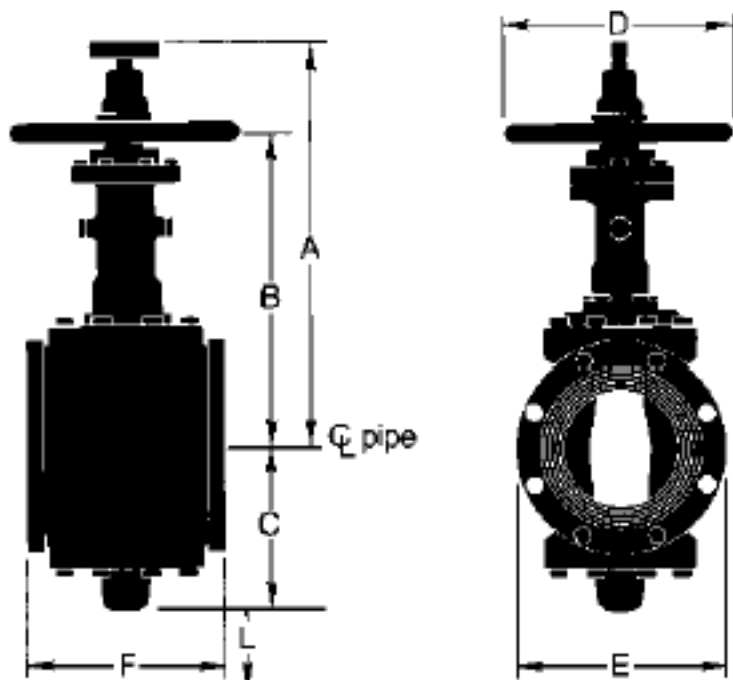
Recommended for all sizes 8" (200mm) and larger

SIZE INCHES MM	Centerline to highest point	Centerline to of handwheel	Centerline to lowest point	Centerline to centerline	Handwheel diameter	Flange diameter	Face to face	Clearance to remove flaps from bottom	Stem or handwheel shaft diameter	Number of turns for full travel	Flow coefficient C _v in G.P.M. (U.S.)	No. & size of tapped holes per flange (UNF)	No. & size of lower plate drain holes (NPT)	Approximate weight in lbs. & kg.	Figure Number
	A	B	C	D	E	F	L								
HAND WHEEL															
2 50	19% 489	13% 352	5% 130	14 356	6% 165	11% 292	3 76		1% 29	5	290	-	1-1/2	115 52	241-202
3 90	19% 489	13% 352	5% 130	14 356	8% 210	14 356	3 76		1% 29	5	300	-	1-1/2	135 61	241-202
4 100	24% 622	18 457	7% 197	16 406	10% 273	17 432	4 102		1% 35	5	850	-	1-1/2	240 109	241-203
GEAR OPERATED															
2 50	20% 517	15% 390	5% 130	10 254	6% 165	11% 292	3 76		1/2 22	10	290	-	1-1/2	120 54	241-202G
3 90	20% 517	15% 390	5% 130	10 254	8% 210	14 356	3 76		1/2 22	10	300	-	1-1/2	140 63	241-202G
4 100	26% 673	19% 485	7% 197	14 356	10% 273	17 432	4 102		1/2 22	15	850	-	1-1/2	265 120	241-203G
6 150	30% 776	22% 573	11% 293	16 406	14 356	22 559	8 203		1/2 22	24	2550	-	1-1/2	575 262	241-204G
8 200	48% 1232	36% 927	16% 419	24 610	16% 419	26 660	7 179		1% 35	81	5300	-	2-1/2	1200 545	241-425M
10 250	56% 1427	38% 970	17% 439	36 914	20 508	31 797	11 279		1% 35	63	8200	-	2-1/2	1665 755	241-426M
12 300	56% 1432	38% 975	18% 473	36 914	22 559	33 839	12 305		1% 32	50	6200	-	2-1	2550 1157	741-100KS
14 350	79% 2030	48 1219	19% 505	36 914	23% 603	35 889	14 356		1% 45	53	7950	-	2-1	3100 1406	741-250KS
16 400	65% 1675	47% 1219	19% 505	36 914	27 686	39 991	14 356		1% 45	53	10050	-	2-1	4300 1930	741-250KS

NOTE: All body bleed holes are 1/2" NPT except 12" and larger which have 1" bleed holes in valve front. Dimensions are for reference only. Request certified drawings when required. 12" through 16" valves have reduced round hole plug port.

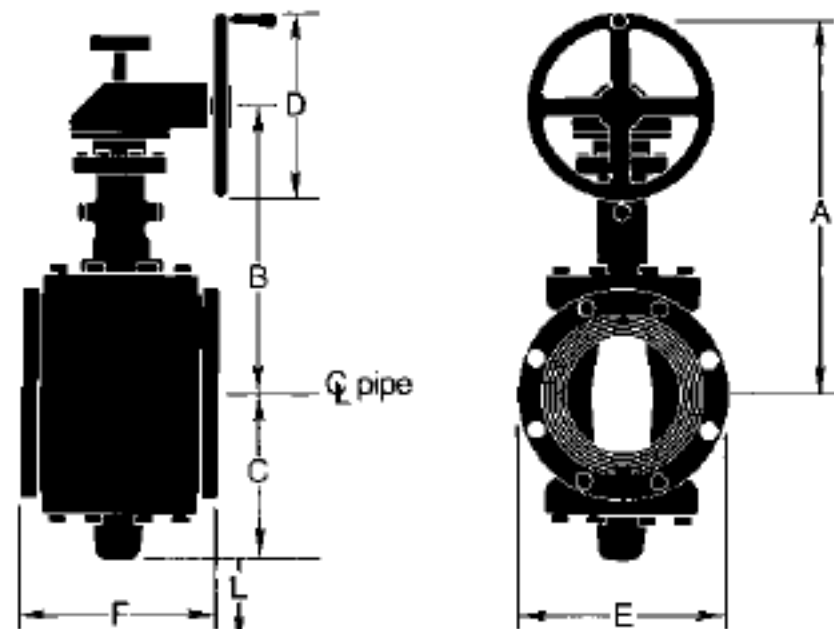
Metrics printed in blue.

Hand Wheel Operated



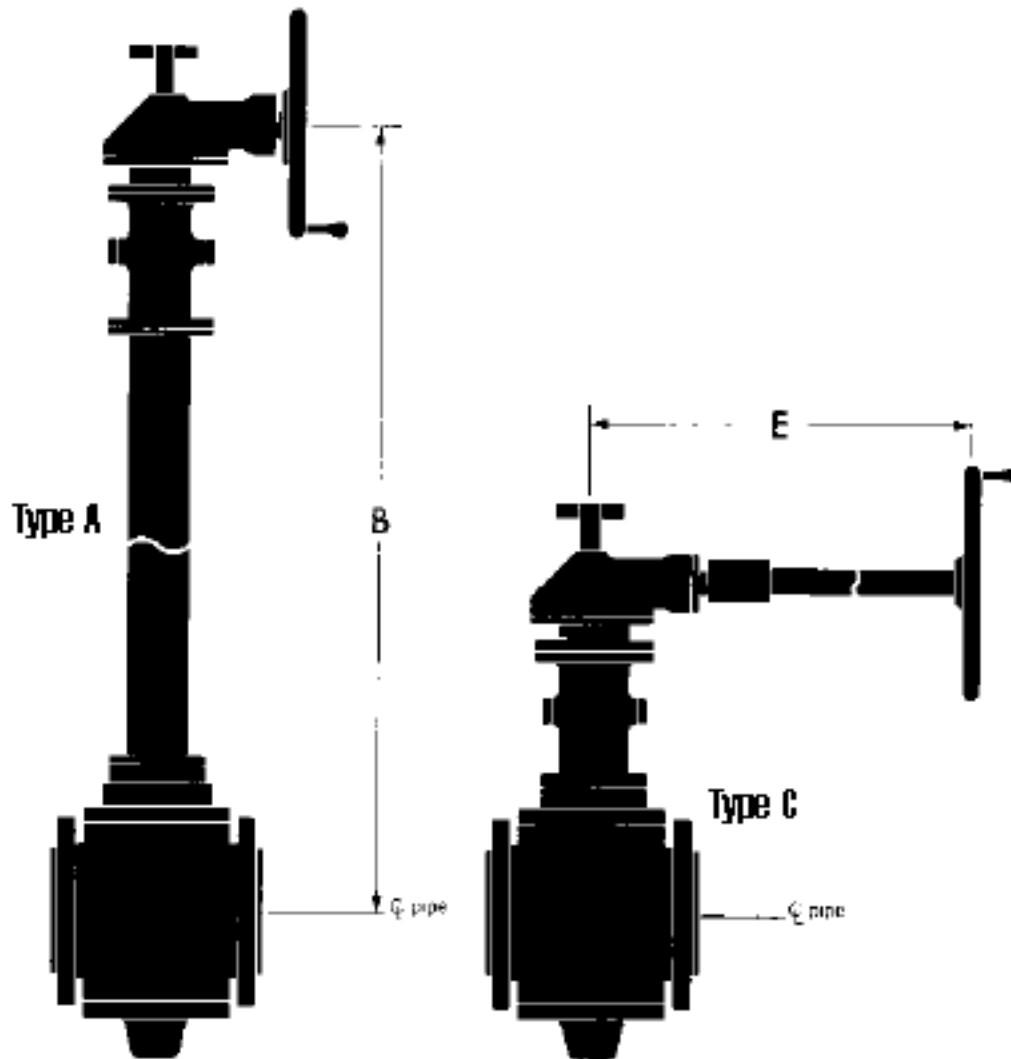
Recommended for all sizes up to and including 4" (100mm)

Gear Operated



Recommended for all sizes 6" (150mm) and larger.

Gear Extensions



- When ordering vertical extensions, always specify dimension "B" desired.

- Dimension "B"**: Centerline of pipe to center of handwheel.

- Extension type "A" is required for underground burial.

- When ordering lateral type "C" extensions, always specify dimension "E" desired.

- Dimension "E"**: Vertical centerline of valve to the centerline of handwheel plane.

- Extension type "C" should be supported if dimension "E" is more than 36" (100 cm).

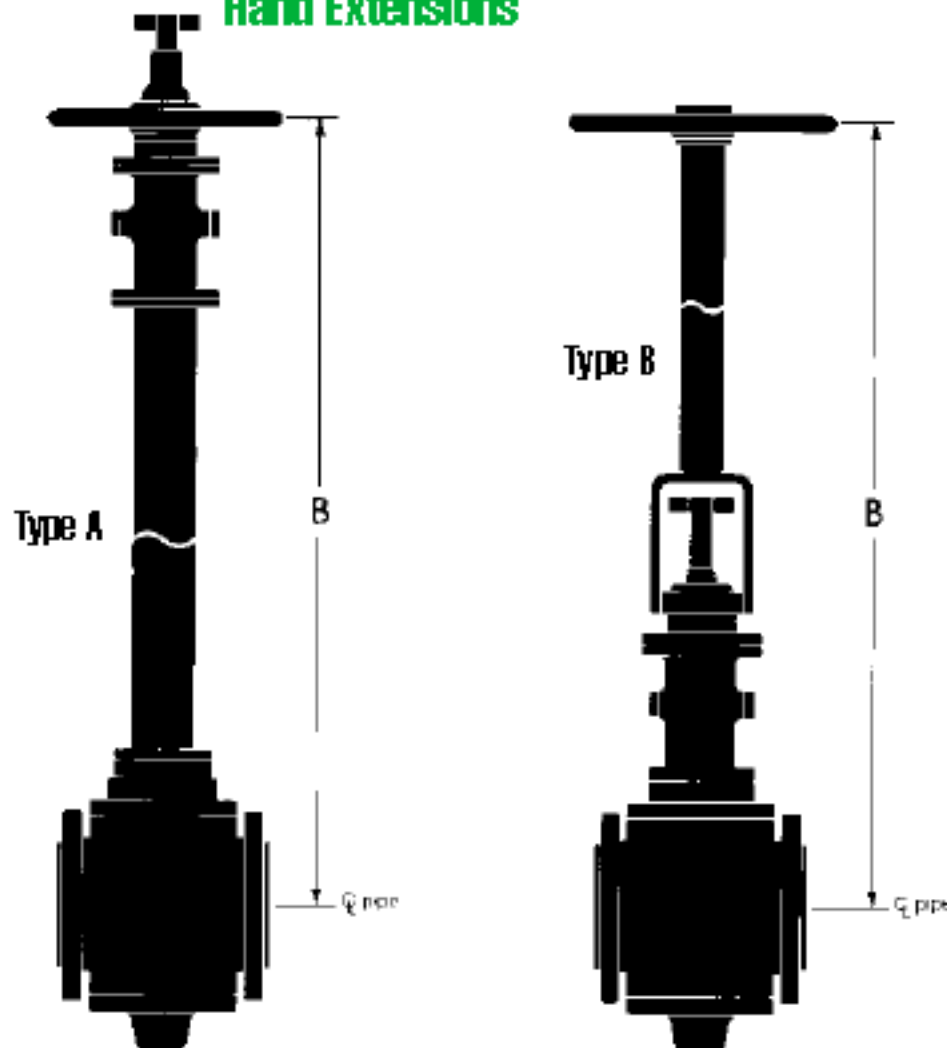
Specify when ordering:

- Valve size, rating, figure number, operator type, extension type, and dimensions desired.

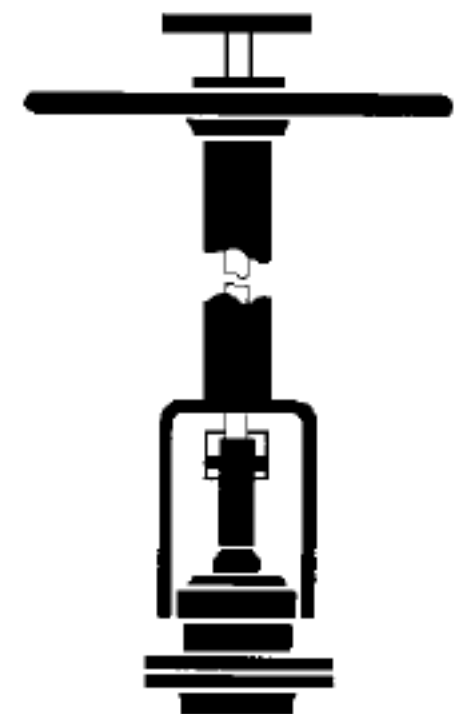
Body bleed extensions can be provided, if required.

Typical materials for extensions: ASTM A-106 GR.B, SCH 80 pipe or equivalent.

Hand Extensions



Optional Flag Extension For Type "B" Extension

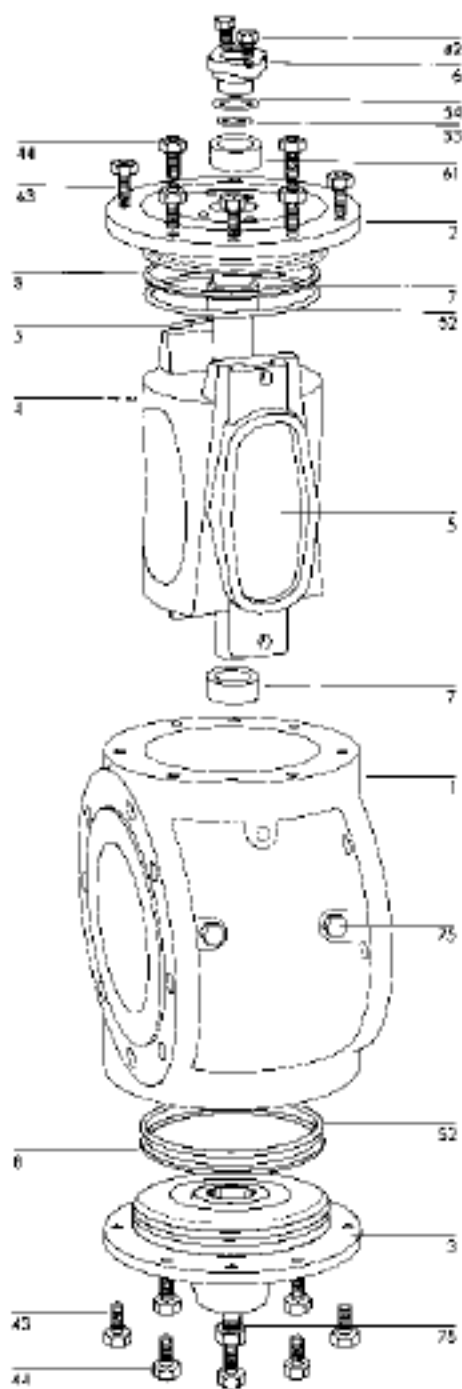


Note: Extensions are also available for power actuated valves.

Standard Valve Materials

NO.	DESCRIPTION	MATERIAL SPECIFICATIONS*
11	Body	ASTM A-216 GR WCC Steel with Chrome Plated Bore
12	Bonnet	ASTM A-216 GR WCC or ASTM A-105 Forged Steel
13	Lower Plate	ASTM A-216 GR WCC or ASTM A-105 Forged Steel
14	Plug	ASTM A-536 GR 80-55-06 Ductile Iron or WCC Steel**
15	Slip	ASTM A-536 GR 65-45-12 Ductile Iron or NiResist
16	Packing Gland	ASTM A-216 GR WCC
17	Bushing	ASTM A-436 Type 1 NiResist
18	Gasket	Stainless Steel/Graphite Spiral Wound - or Graphite
42	Packing Gland Bolt	ASTM A-193 GR B7 Steel
43	Body Stud	ASTM A-193 GR B7 Steel
44	Body Nut	ASTM A-193 GR 2H Steel
52	Body O-Ring	Viton* (used prior to 1998)
53	Inner Gland O-Ring	Viton*
54	Outer Gland O-Ring	Viton*
61	Packing Set	Graphite
75	Body Drain Pipe Plug	Steel

*Materials subject to change without notice. **E lectroless Nickel Metal. Viton is a registered trademark of Du Pont.



Reduced Port TruSeal valves have reduced bore with nominal plug port area 65%

The port shape has been optimized to achieve streamlined flow and lowest pressure drop. Pressure drop for any TruSeal valve may be calculated using the value of flow coefficient (C_v) listed on pages 10-12 of this catalog.

$$\text{Pressure Drop } (\Delta P) = G \left(\frac{Q}{C_v} \right)^2 \text{ for Liquids}$$

G = Specific Gravity of Liquid
 Q = Flow Rate in U.S. gpm
 C_v = Flow Coefficient

MARKINGS AND STANDARDS (where applicable)**

OPERATING TEMPERATURE RANGE

Standard Trim
 -0°F to +390°F (-18°C to +177°C)
 Special materials may change the temperature range.

SPECIAL OPTIONS

Low temperature steel, A-352 GR IDC.
 (-90°F / -66°C)
 Stainless Steel
 Nickel plated body bore.
 PTFE/Teflon seals.
 NACE Trim
 Special Trim for Ammonia, MTEE, Alcohol, etc.

SPECIFICATIONS

ANSI B 16.5
 Steel Pipe Flanges and Flanged Fittings. Flange Dimensions.
 ANSI B 16.10
 Face-to-Face and End-to-End Dimensions of Ferrous Valves
 ANSI B 31.3
 Chemical Plant and Petroleum Refinery Piping.

ANSI B 31.4

Liquid Petroleum Transportation Piping Systems.

API 6D
 Pipeline Valves. Pressure Test Specification.

API 598
 Valve Inspection and Test. Optional Test Specification.

API 599
 Steel Plug Valves.

API 600
 Steel Gate Valves.

API 607
 Fire Test for Soft-Sealed Ball Valves.

API 6FA
 Fire Test for Valves.

EXXON BP 3-13-1
 Fire Safe Plug Valves.

EXXON EXES 3-14-1-2A
 Soft Sealed Ball Valves. (Fire safe) Partial burn test.

MIL-V-1200 3E
 U.S. Government Plug Valve Specification.

MARKINGS

Cast Numbers on the Side of the Body
 Indicate Valve Size and Pressure Class.

211 = ANSI 150 Reduced Rectangular Port
 221 = ANSI 300 Reduced Rectangular Port
 241 = ANSI 600 Reduced Rectangular Port
 721 = ANSI 300 Reduced Round Port
 ...etc.

EXAMPLE:
 4-211 is 4" Nominal Pipe Bore Size, ANSI Class 150.

GRADE OF STEEL
 E cast on the side of the body: WCC, IDC, etc.

SERIAL NUMBER
 E stamped on the edge of one flange and on the ram plate.

Consult TruSeal Installation and Maintenance Manual for service information.

**See dimensional data for variations.

Hand Operator 200 Series

Patented

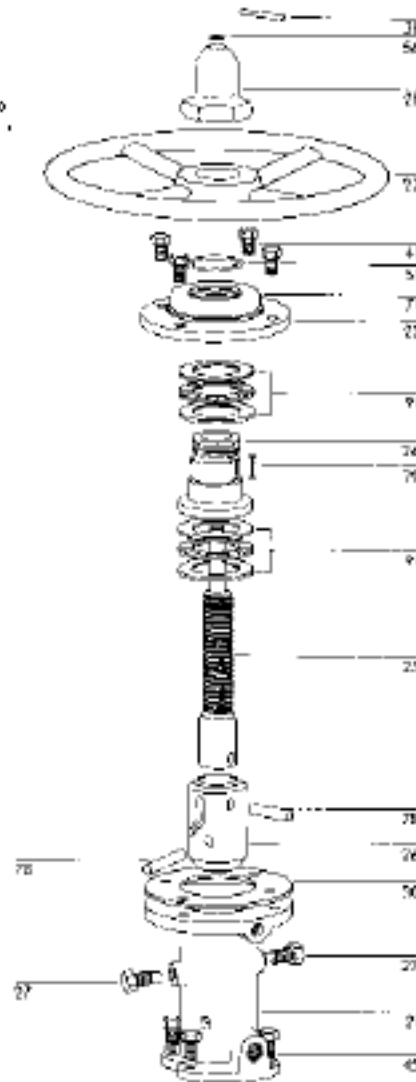
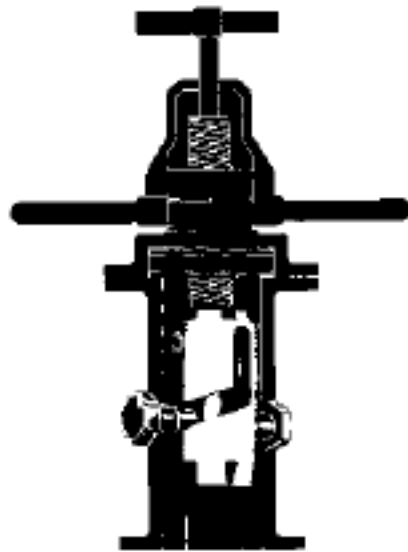
Slam-Proof

Torque-Magnifying

Easy To Maintain

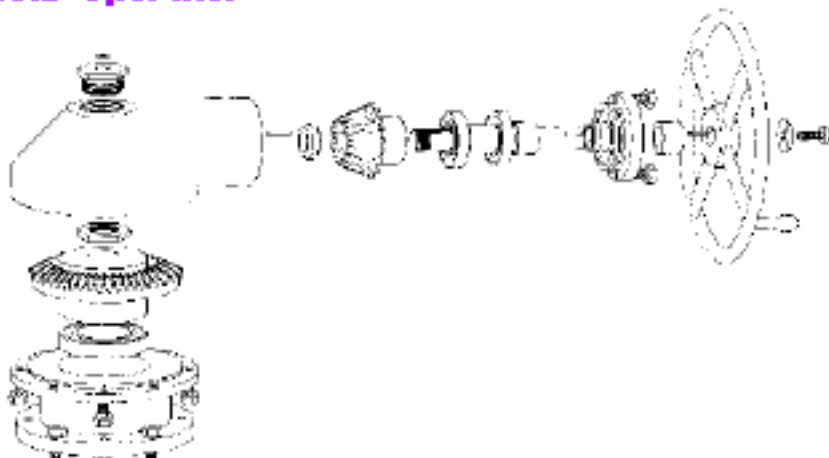
Approximately 3 turns of the handwheel will rotate the plug 90°.

Additional turns will expand the seals.



NO.	DESCRIPTION	NO.	DESCRIPTION
21	Operator Housing	38	Indicator Flag Fin
22	Bearing Cap	41	Bearing Cap Bolt
23	Handwheel	45	Operator Housing Bolt
24	Drive Nut	51	Bearing Cap O-Ring
25	Stem	56	Dust Cap O-Ring
26	Coupling Cam	78	Coupling Fin
27	Cam Pin	79	Handwheel Key
28	Dust Cap	91	Thrust Bearing Assembly

Gear Operator



Hand Operator 400 Series

Patented

Slam-Proof

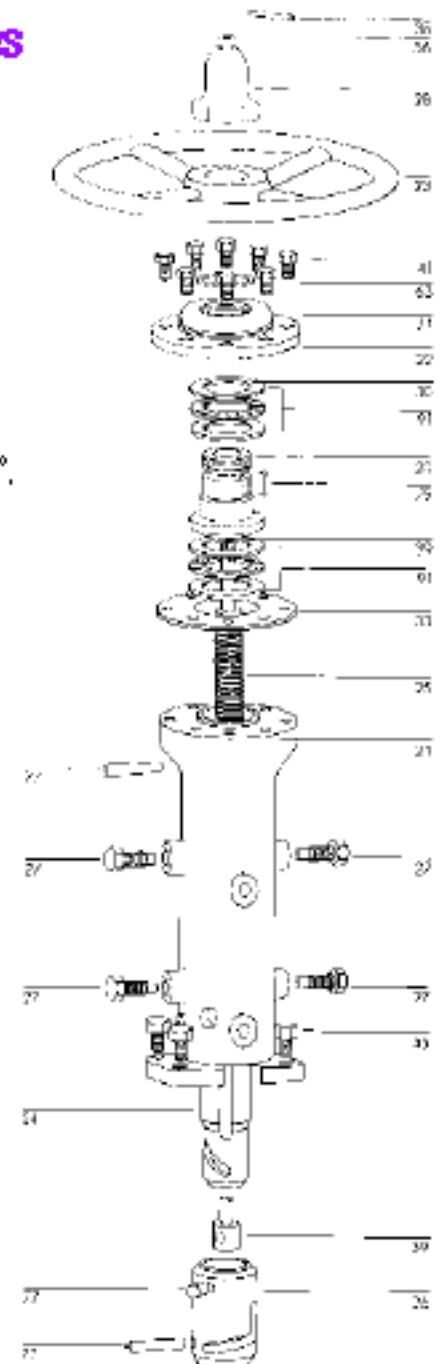
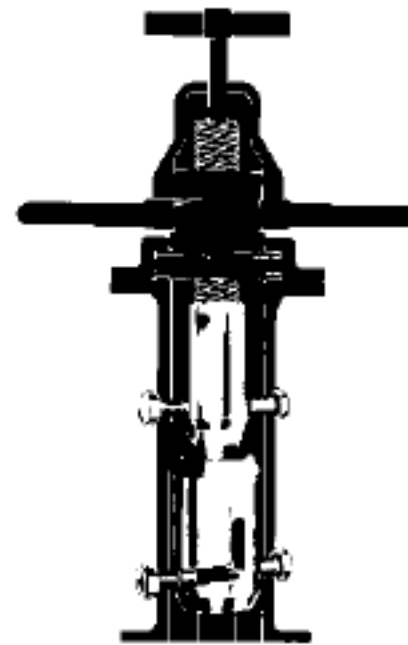
Extra Torque-Magnifying

Double Cam Drive System

Easy to Maintain

Approximately 6 turns of the handwheel will rotate the plug 90°.

Additional turns will expand the seals.



NO.	DESCRIPTION	NO.	DESCRIPTION
21	Operator Housing	38	Indicator Flag Fin
22	Bearing Cap	39	Indicator Flag Rod
23	Handwheel	41	Bearing Cap Bolt
24	Drive Nut	45	Operator Housing Bolt
25	Stem	56	Dust Cap O-Ring
26	Coupling Cam	63	Bearing Cap O-Ring
27	Cam Pin	77	Coupling Fin
28	Dust Cap	79	Handwheel Key
29	Drive Nut	91	Thrust Bearing Assembly

The operator designs illustrated here do not apply to valves in sizes:

- ANSI 150 30" and larger
- ANSI 300 24" and larger
- ANSI 600 12" and larger.

Consult TruSeal Installation and Maintenance Manual for complete service information.

Electric Actuators

TruSeal valves accept most commercially available electric motor operators.

All automated TruSeal valves require some form of body pressure relief (TRB/TRA/MTR/ABV/TRG), otherwise the valve may be difficult to open or may stick in closed position.

Choice of Motor Size

The best selection of valve, gearing and motor operator will depend on numerous factors including:

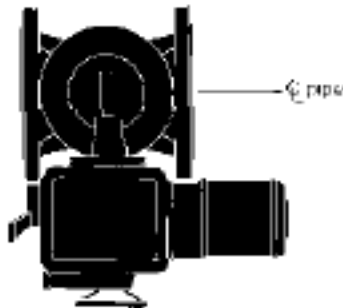
- ♦ pipeline pressure
- ♦ operating speed
- ♦ environmental conditions
- ♦ handwheel accessibility
- ♦ available power

Selecting the correct motor is a specialist task.

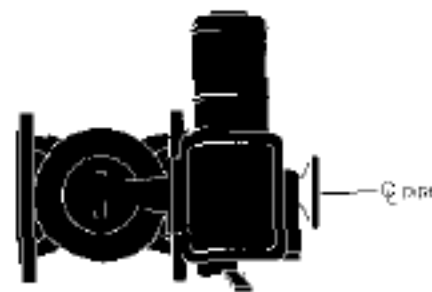
Consult your TruSeal representative for free technical advice.



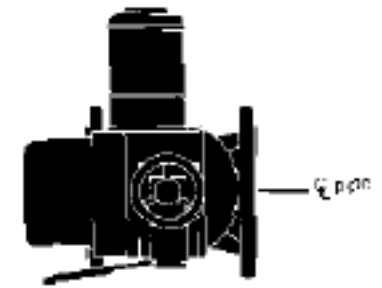
Typical Mounting Configurations*



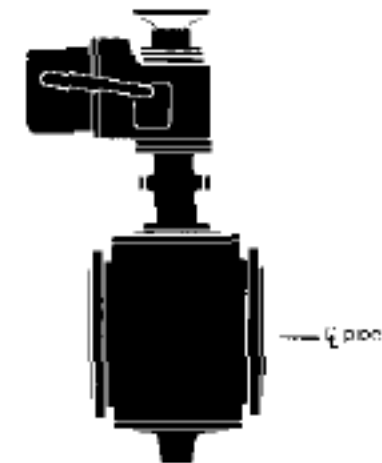
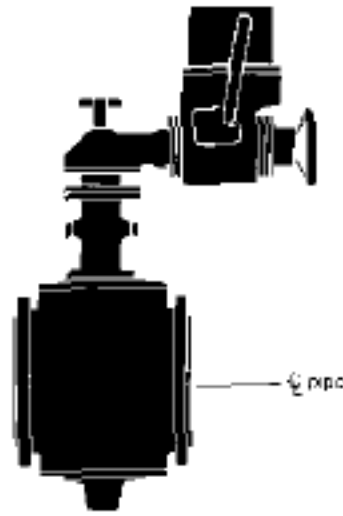
Style "A": Actuator mounted parallel to pipe line.



Style "B": Actuator mounted at right angle to pipe line.



Style "C": Actuator top mounted at right angle to pipe line. Note absence of bevel gearing.



*Specific handwheel location will depend on type of actuator used.

Orbit Valve Company builds pneumatic actuators that can be fitted to TruSeal valves for reliable, economic power operation. When you specify a complete actuated valve package, the entire system is built, tested and guaranteed by Orbit Valve Company.

Only a few of the available power operation choices are shown on this page. For complete information contact the company office nearest you for alternate packages.

Spring-close Piston Actuator

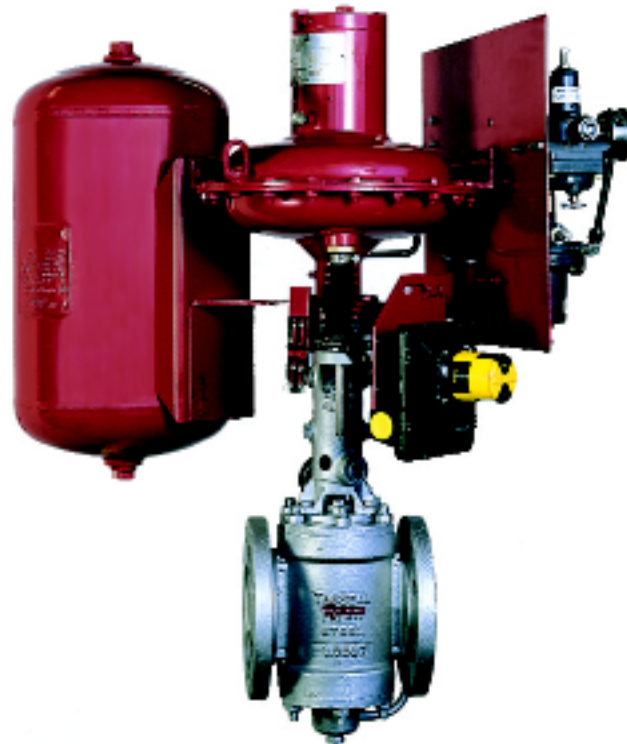
- For emergency shut-down service.
- Air-to-open. Spring-to-close.
- Fitted with gas/oil speed control snubber system and two-way manual override handwheel.
- Valve can be mechanically locked closed or mechanically locked open.
- Limit switches can be fitted for remote indication of the valve position.



Spring-close Piston Actuator

Double-acting Diaphragm Actuator with Reservoir Tank

- For continued operation in case of air supply failure.
- Piston-type grease snubber for speed control.
- Position indicator limit switch for local and remote indication of valve position.
- Fitted with a complete instrumentation package for:
 - ◆ Fail Open or
 - ◆ Fail Close or
 - ◆ Fail in Last Position



Double-acting Diaphragm Actuator with Reservoir Tank

Spring-close Diaphragm Actuator

- For emergency shut-down service.
- Air-to-open. Spring-to-close.
- Fitted with integral gas/oil speed control snubber system.
- Position indicator limit switches for local and remote indication of valve position.
- Fitted with a complete instrumentation package for:
 - ◆ Close on Loss of Air Supply
 - ◆ Close on Loss of Signal
 - ◆ Open on Command
 - ◆ Close on Command
- Pressure gauge is included for proof of zero-leak shut-off.



Spring-close Diaphragm Actuator



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ORBIT VALVE
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