

A background image of a warehouse aisle filled with tall metal shelving units. The shelves are stocked with various industrial valves and components. Some shelves have white labels with letters like 'B', 'C', 'D', and 'E'. There are also signs that say 'NO STORAGE ABOVE TOP OF THIS BEAM'. The image is slightly faded to allow the text to stand out.

# General Valve®

Twin Seal Valves

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## TABLE OF CONTENTS

### GENERAL VALVE® TWIN SEAL™

Introduction.....	4
The Evolution of Double Block & Bleed.....	5
The Provable Zero-Leakage Double Block & Bleed Plug Valve with Retracting Seals.....	6
How the Twin Seal Works.....	8
DIMENSION TABLES	
Truseal 200.....	9
Twin Seal 8800.....	10
Twin Seal 800.....	11
Twin Seal 900.....	12
Twin Seal 400.....	13
Seat & Reseat Valve.....	14
TWIN SEAL SEAT & RESEAT	
Seat & Reseat 1600.....	15
Seat & Reseat 1500.....	16
Electric Actuators.....	17
Truseal Pneumatic Actuators.....	18
Limit Switches.....	19
Mechanical Extensions.....	19
Direct Burial - Underground.....	20
Pressure Relief System.....	21
Standard Materials.....	23
How to Order.....	24
Aftermarket Services.....	25
Trademark Information.....	26



Little Rock, AR

**Cameron's Valves & Measurement (V&M)** group is a leading provider of valves and measurement systems to the oil and gas industry. The group's products are primarily used to control, direct and measure the flow of oil and gas as it is moved from individual wellheads through flow lines, gathering lines and transmission systems to refineries, petrochemical plants and industrial centers for processing.

The Engineered & Process Valves division provides a wide range of valves for use in natural gas, LNG, crude oil and refined products transmission lines. The traditional CAMERON® fully-welded ball valve product line has been combined with the GROVE®, RING-O®, TOM WHEATLEY®, ENTECH™ and TK® product lines. This broad offering has significantly strengthened Cameron's ability to serve as a single source for a wide scope of customer requirements. The division also provides critical service valves for refinery, chemical and petrochemical processing businesses and for associated storage terminal applications, particularly through the ORBIT® and GENERAL VALVE®. These brands are complimented by WKM® and TBV™ valve products and considerably expand the scope of this division's product offerings.

Cameron is the world's leading manufacturer of high-integrity, positive Shut-off Double Block & Bleed valves which serve the pipeline, liquid bulk terminals, aviation fueling, refining, oil / gas production and custody transfer for the petroleum and oil and gas industries.

## GENERAL VALVE® Twin Seal™

### THE EVOLUTION OF DOUBLE BLOCK & BLEED CONTINUES...

Introduced in 1941, TWIN SEAL™ valves, were the first to meet the rigid requirements of double block & bleed service - more than 68 years ago.

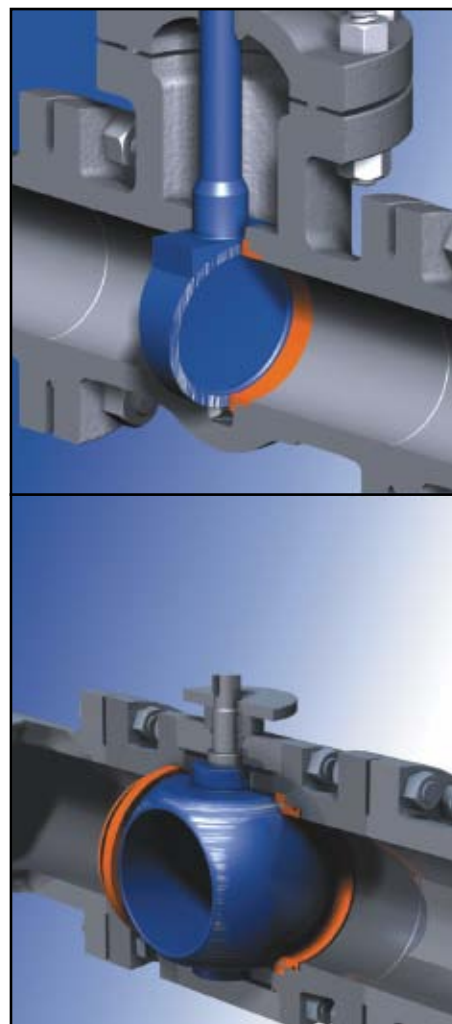
In the years since, subtle yet significant design refinements have been made to improve the valve's performance. Superior design innovations, pride in manufacturing workmanship and the selection of the best materials, support Cameron's commitment to excellence and complete customer satisfaction.

The TWIN SEAL replaces this antiquated two-valve system with just one double seated bubble-tight valve. The upstream and downstream seals provide the same function as the two block valves. The body (serving as a spool piece) bleed verifies seal integrity.



The age-old double block & bleed system (as shown above) required the use of two valves and a spool piece. A bleed valve was used to drain the spool and verify seal integrity.

**TWIN SEAL'S totally retracted slip design eliminates wear, minimizes leakage risk, reduces maintenance and saves money.**



### Scored seating segments

Seal abrasion is inherent in the design of most ball and gate valves. In most instances, the seats are ground or wedged against metal every time the valve cycles. Any foreign material lodged between the seats and ball or gate will score the seating surfaces. Once the seating segment is scored, product loss and contamination results. The TWIN SEAL avoids abrasion by having both independent slips totally retracted from the body bore during cycling.

## GENERAL VALVE® Twin Seal™

### THE PROVABLE ZERO-LEAKAGE DOUBLE BLOCK & BLEED PLUG VALVE WITH RETRACTING SEALS

#### TWIN SEAL Advantages

In meter block service, the differential pressure across each closed valve is very low. There is no assistance required from the 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 the 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 TWIN SEAL plug compresses both the upstream and the downstream seals firmly against the valve body, needing no help from the line pressure.

**TWIN SEAL valves hold with consistent zero-leakage.**

#### 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 TWIN SEAL valve in the meter station can be quickly and easily shown to be holding leak-tight. That means correct calibration every time.



Contamination is avoided in multi-products manifolds.

#### Multi-Product Manifolds

The TWIN SEAL positive shut-off, double block & bleed valve was developed for multi-products fuel manifolds.

Busy manifolds must be operated frequently, switching from product to product, often with power actuators and sometimes without supervision. Valves that can be trusted to seal drop-tight, every time, will prevent the expensive consequences of contaminated fuel.

Liquid fuels that move through pipeline manifolds are reliably segregated by provable, zero-leakage, TWIN SEAL valves.

Every TWIN SEAL valve in the manifold has assured double block and bleed shut-off that proves total isolation of each product.

By using TWIN SEAL valves, gasoline, diesel, kerosene, jet fuel, heating oil and LPG as well as crude oil and natural gas are protected from contamination.



## GENERAL VALVE® Twin Seal™

### THE PROVABLE ZERO-LEAKAGE DOUBLE BLOCK & BLEED PLUG VALVE WITH RETRACTING SEALS

#### 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 TWIN SEAL can be troublesome and expensive. 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 double block & bleed may produce loss of fuel from the open bleed. TWIN SEAL valves offer simple, provable, tank-side isolation. There is an assurance of valve integrity.

#### 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. Generally speaking 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.

**TWIN SEAL 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
- They hold a verifiable bubble tight seal

The hydrant pressure-test can begin as soon as the valves are closed, since the TWIN SEAL valves ensure that the hydrant is isolated.

#### 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. TWIN SEAL 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!

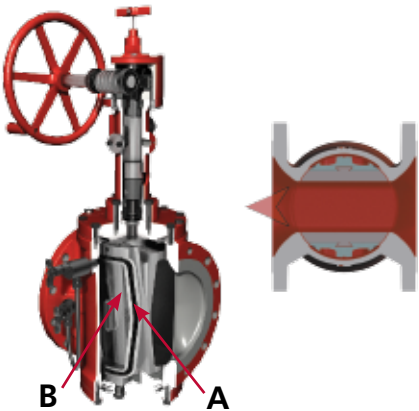
#### Fuel Loading Hazards are Eliminated

Countless loading facilities depend on TWIN SEAL valves for safe, reliable, zero-leakage shut-off at rail, truck and ship load manifolds. From Alaska to Argentina; from Sidney to Sicily; from New York to New Zealand, fuel movement managers have discovered TWIN SEAL valves are the valves they can trust to deliver real dependability at their loading manifolds.

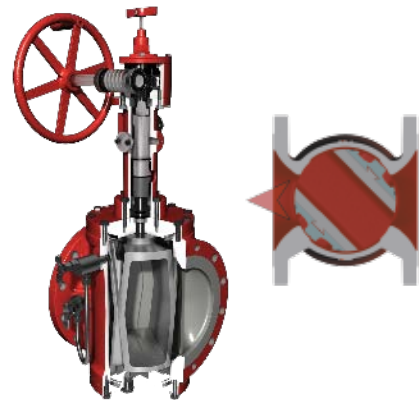


## GENERAL VALVE® Twin Seal™

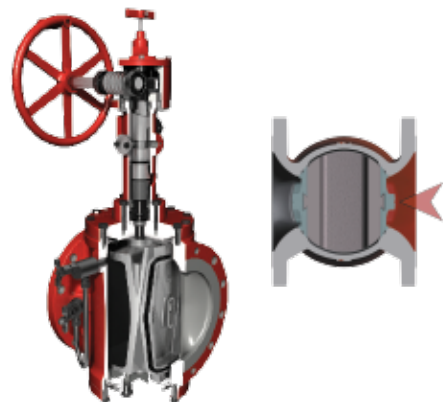
### HOW THE TWIN SEAL WORKS



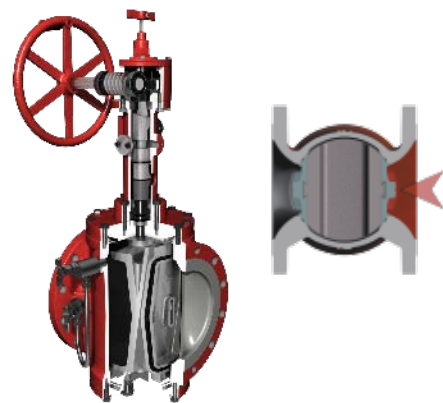
1. The internal design is very simple. Seals (A) are permanently bonded into the slips (B) which are mounted on a central plug. In the open position the slip seals are completely out of the flow.



2. Turning the operator handwheel clockwise rotates the plug assembly 90° to block flow. During rotation, clearance is maintained between the seal and the valve body, allowing free movement and avoiding abrasion.



3. When the operator is turned further clockwise, the tapered plug begins to lower, forcing the slips against the body initiating the verifiable seal. Because the seals never drag in well maintained valves, the valve requires less torque to cycle.



4. In the closed position, the slip seals are expanded, compressing the slip seals until metal-to-metal seating is effected. Because it is mechanical, the TWIN SEAL doesn't rely on line pressure differential to help make its seal. It even seals in vacuum service.

### Simple, in-line field maintenance keeps costs down

A big advantage of TWIN SEAL'S design is that it permits "in-line" servicing. By simply removing the valve bonnet or lower plate (after the line is depressurized and drained), all models may be repaired from top or bottom without removing the valve from the line. Cameron offers a Slip Exchange Program. Contact your local sales representative for details.

**WARNING:** Do not attempt any repairs on TWIN SEAL valves unless you are certain the line pressure has been removed and the 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.

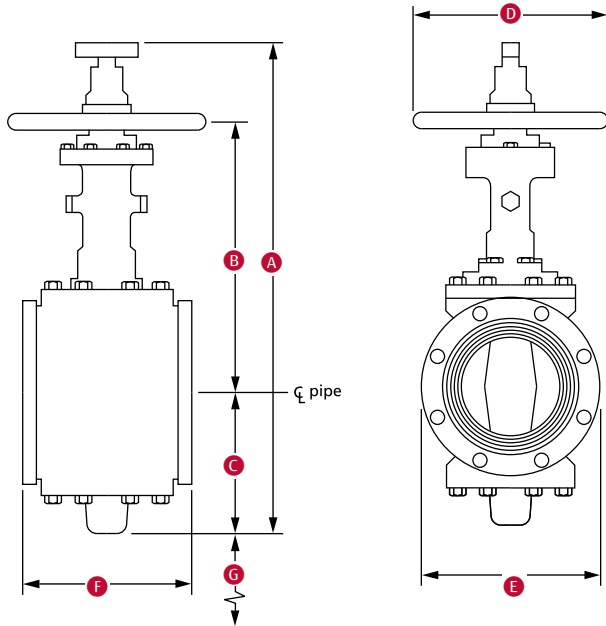
For complete instructions on installation and repair, request a copy of **TWIN SEAL Installation Manual** from your local Cameron Sales Office.

# GENERAL VALVE® Twin Seal™

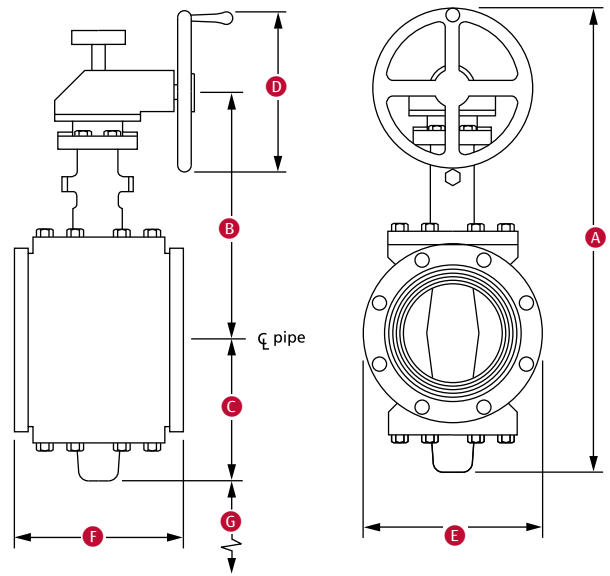
## TRUSEAL 200

(General Valve® Truseal™ is a Companion Design to the General Valve® Twin Seal™)

Handwheel Operated



Gear Operated



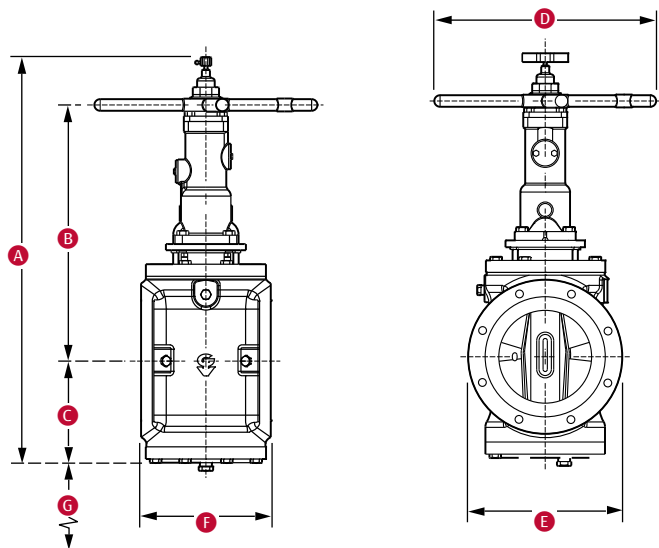
Dimensions in. (mm)				Maximum Overall Height	Center- line of Valve to Centerline of Hand- wheel	Centerline of Valve to Lowest Point	Hand- wheel Diameter	Flange Diameter	Face to Face	Minimum Clearance to Remove Slip from Bottom	Approx- imate Weight	Flow Coefficient
Class	Size	Model	Oper	A	B	C	D	E	F	G	lb. (kg)	C <sub>v</sub> in GPM
ASME 150 Hand Operated	2 (50)	211	201	21 1/4 (540)	11 7/8 (302)	5 (127)	10 (254)	6 (152)	7 (178)	3 (76)	60 (27)	200
	3 (80)	211	201	21 1/4 (540)	11 7/8 (302)	5 (127)	10 (254)	7 1/2 (191)	8 (203)	3 (76)	75 (34)	205
	4 (100)	211	201	23 1/2 (597)	12 5/8 (321)	6 3/8 (162)	10 (254)	9 (229)	9 (229)	5 (127)	95 (43)	590
	6 (150)	211	202	31 1/8 (790)	16 3/4 (426)	8 5/8 (219)	14 (356)	11 (279)	10 1/2 (266)	8 (203)	195 (88)	1254
ASME 300 Hand Operated	2 (50)	221	201	21 1/4 (540)	11 7/8 (302)	5 (127)	10 (254)	6 1/2 (165)	8 1/2 (216)	3 (76)	65 (29)	210
	3 (80)	221	201	21 1/4 (540)	11 7/8 (302)	5 (127)	10 (254)	8 1/4 (210)	11 1/8 (283)	3 (76)	90 (41)	220
	4 (100)	221	202	25 7/8 (657)	15 (381)	5 1/8 (130)	14 (356)	10 (254)	12 (305)	6 (152)	145 (66)	620
ASME 600 Hand Operated	2 (50)	241	202	24 3/4 (629)	13 7/8 (353)	5 1/8 (130)	14 (356)	6 1/2 (165)	11 1/2 (292)	3 (76)	115 (52)	290
	3 (80)	241	202	24 3/4 (629)	13 7/8 (353)	5 1/8 (130)	14 (356)	8 1/4 (210)	14 (356)	3 (76)	135 (61)	300
	4 (100)	241	203	31 7/8 (810)	18 (457)	7 3/8 (187)	16 (406)	10 3/4 (273)	17 (432)	4 (102)	240 (109)	850
ASME 150 Gear Operated	6 (150)	211	202G	31 7/8 (810)	18 1/4 (464)	8 5/8 (219)	10 (254)	11 (279)	10 1/2 (267)	8 (203)	200 (91)	1254
ASME 300 Gear Operated	4 (100)	221	202G	26 5/8 (676)	16 1/2 (419)	5 1/8 (30)	10 (254)	10 (254)	12 (305)	6 (152)	155 (70)	620
ASME 600 Gear Operated	2 (50)	241	202G	25 1/2 (648)	15 3/8 (391)	5 1/8 (130)	10 (254)	6 1/2 (165)	11 1/2 (292)	3 (76)	120 (54)	290
	3 (80)	241	202G	25 1/2 (648)	15 3/8 (391)	5 1/8 (130)	10 (254)	8 1/4 (210)	14 (356)	3 (76)	140 (64)	300
	4 (100)	241	203G	33 7/8 (861)	19 1/2 (495)	7 3/8 (187)	14 (356)	10 3/4 (273)	17 (432)	4 (102)	265 (120)	850



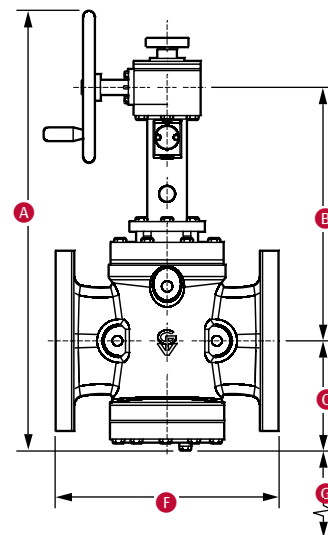
# GENERAL VALVE® Twin Seal™

## TWIN SEAL 8800

Handwheel Operated



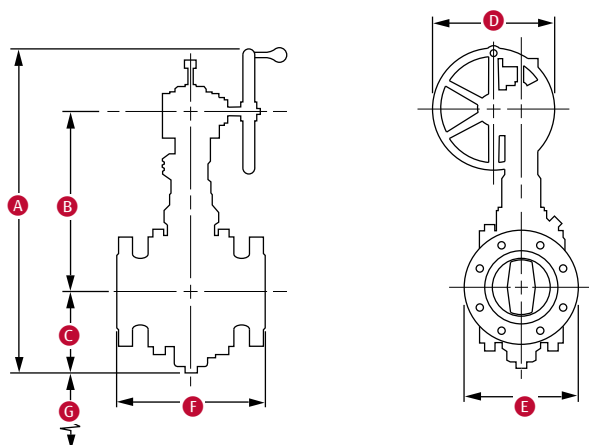
Gear Operated



Dimensions in. (mm)				Maximum Overall Height	Center- line of Valve to Centerline of Hand- wheel	Centerline of Valve to Lowest Point	Hand- wheel Diameter	Flange Diameter	Face to Face	Minimum Clearance to Remove Slip from Bottom	Approx- imate Weight	Flow Coefficient
Class	Size	Model	Oper.	A	B	C	D	E	F	G	lb. (kg)	CV in GPM
ASME 150 Hand Operated	8 (200)	8811	625H	36 (914)	23 (584)	9 (229)	20 (508)	13 1/2 (343)	11 1/2 (292)	12 1/2 (318)	385 (175)	2420
ASME 300 Hand Operated	6 (150)	8821	625H	32 1/2 (826)	21 (533)	7 1/2 (191)	20 (508)	12 1/2 (318)	15 7/8 (403)	9 (229)	250 (113)	1770
ASME 150 Gear Operated	8 (200)	8811	625G	39 3/4 (1010)	23 (584)	9 3/4 (248)	14 (356)	13 1/2 (343)	11 1/2 (292)	12 1/2 (318)	405 (184)	2420
	10 (250)	8811	625G	42 (1067)	24 (610)	11 (279)	14 (356)	16 (406)	13 (330)	15 (381)	518 (235)	3578
	12 (300)	8811	751G	53 (1346)	30 1/2 (775)	13 (330)	20 (508)	19 (483)	14 (356)	17 (432)	790 (358)	4000
	14 (350)	8811	751G	56 1/4 (1429)	31 3/4 (806)	14 3/4 (375)	20 (508)	21 (533)	15 (381)	19 (483)	995 (451)	5500
	16 (400)	8811	1261G	64 (1626)	38 (965)	16 1/4 (413)	20 (508)	23 1/2 (597)	16 (406)	22 (559)	1340 (608)	7000
	18 (450)	8811	1261G	64 1/4 (1632)	38 (965)	16 1/4 (413)	20 (508)	25 (635)	17 (432)	23 (584)	1407 (638)	7000
	20 (500)	8811	1261G	68 (1727)	39 3/4 (1010)	16 1/4 (413)	20 (508)	27 1/2 (699)	32 (813)	26 (660)	2860 (1297)	15700
	24 (600)	8811	1261G	72 3/4 (1848)	41 1/2 (1054)	21 1/2 (546)	20 (508)	32 (813)	36 (914)	28 (711)	3830 (1737)	24000
ASME 300 Gear Operated	6 (150)	8821	625G	36 (914)	21 1/4 (540)	7 3/4 (197)	14 (356)	12 1/2 (318)	15 7/8 (403)	9 (229)	312 (142)	1770
	8 (200)	8821	751G	43 (1092)	27 (686)	9 (229)	20 (508)	15 (381)	16 1/2 (419)	11 (279)	587 (266)	3000

# GENERAL VALVE® Twin Seal™

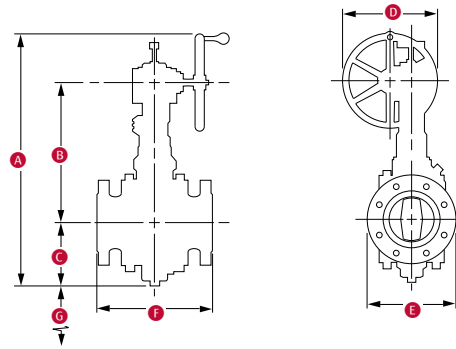
## TWIN SEAL 800



Dimensions in. (mm)	Class	Size	Model	Oper.	Maximum Overall Height	Center-line of Valve to Centerline of Hand-wheel	Centerline of Valve to Lowest Point	Hand-wheel Diameter	Flange Diameter	Face to Face	Minimum Clearance to Remove Slip from Bottom	Approximate Weight lb. (kg)	Flow Coefficient CV in GPM
ASME 150 Gear Operated		28 (700)	C811	1276G	108 1/2 (2756)	60 1/2 (1537)	32 (813)	32 (813)	36 1/2 (927)	60 (1524)	30 (762)	13000 (5897)	31000
		30 (750)	CC811	1276G	108 1/2 (2756)	60 1/2 (1537)	32 (813)	32 (813)	38 3/4 (984)	60 (1524)	30 (762)	13900 (6305)	33000
		36 (900)	C811	1500G	121 (3073)	76 (1930)	34 (864)	32 (813)	46 (1168)	78 (1981)	30 (762)	20600 (9344)	48000
ASME 300 Gear Operated		10 (250)	C821	751G	52 (1321)	29 (737)	12 1/2 (318)	20 (508)	17 1/2 (445)	18 (457)	13 (330)	888 (403)	3540
		12 (300)	C821	1261G	63 1/2 (1613)	36 1/2 (927)	16 1/2 (419)	20 (508)	20 1/2 (521)	19 3/4 (502)	16 (406)	1414 (641)	4700
		14 (350)	C821	1261G	58 1/2 (1486)	34 1/2 (876)	14 1/2 (368)	20 (508)	23 (584)	30 (762)	15 (381)	1990 (903)	6000
		16 (400)	CA821	1261-7G	61 (1549)	36 1/2 (927)	14 (356)	20 (508)	25 1/2 (648)	33 (838)	19 (483)	2662 (1207)	9400
		18 (450)	CA821	1261-7G	71 (1803)	40 1/2 (1029)	20 1/2 (521)	20 (508)	28 (711)	36 (914)	13 (330)	3550 (1610)	11500
		20 (500)	CA821	1276G	88 1/2 (2248)	48 (1219)	24 1/2 (622)	32 (813)	30 1/2 (775)	39 (991)	14 (356)	4155 (1885)	16300
		24 (600)	CA821	1276G	92 (2337)	50 1/2 (1283)	25 1/2 (648)	32 (813)	36 (914)	52 (1321)	17 (432)	8150 (3697)	27000
		28 (700)	CA821	1500G	114 (2896)	70 (1778)	28 (711)	32 (813)	36 1/4 (921)	65 (1651)	12 (305)	12800 (5806)	32000
		30 (750)	CA821	1500G	120 (3048)	71 (1803)	32 1/2 (826)	32 (813)	43 (1092)	65 (1651)	28 (711)	15300 (6940)	33500
ASME 600 Gear Operated		6 (150)	C841	751G	45 (1143)	26 (660)	9 (229)	20 (508)	14 (356)	22 (559)	10 (254)	696 (316)	2265
		8 (200)	CA841	755G	48 (1219)	27 (686)	11 (279)	20 (508)	16 1/2 (419)	26 (660)	12 (305)	1102 (500)	3600
		10 (250)	CB841	1261-7G	62 1/2 (1588)	36 1/2 (927)	16 (406)	20 (508)	20 (508)	31 (787)	8 (203)	1974 (895)	5100
		12 (300)	CB841	1261-7G	64 1/2 (1638)	38 (965)	17 (432)	20 (508)	22 (559)	33 (838)	10 (254)	2532 (1148)	9300
		14 (350)	C841	1276G	82 1/2 (2096)	47 (1194)	19 1/2 (495)	32 (813)	23 3/4 (603)	35 (889)	10 (254)	4100 (1860)	9500
		16 (400)	CA841	1276G	83 (2108)	47 (1194)	19 1/2 (495)	32 (813)	27 (686)	39 (991)	14 (356)	4300 (1950)	11000
		20 (500)	C841	1500G	106 (2692)	66 (1676)	23 1/2 (597)	32 (813)	32 (813)	47 (1194)	14 (356)	9500 (4309)	16500
		24 (600)	C841	1500G	114 (2896)	72 (1829)	26 (660)	32 (813)	37 (940)	55 (1397)	12 (305)	15000 (680)	27000
ASME 900 Gear Operated		2 (50)	C851	625 G	33 (838)	19 (483)	7 (178)	14 (356)	8 1/2 (216)	14 1/2 (368)	3 1/2 (89)	180 (82)	160
		3 (80)	C851	625 G	34 (864)	19 (483)	8 (203)	14 (356)	9 1/2 (381)	15 (381)	4 (102)	230 (127)	250
		4 (100)	C851	625G	37 1/2 (953)	20 (508)	10 (254)	14 (356)	11 1/2 (292)	18 (457)	6 (152)	397 (180)	650
		6 (150)	C851	755G	47 1/2 (1207)	26 (660)	11 1/2 (292)	20 (508)	15 (381)	24 (610)	7 1/2 (191)	975 (442)	2400
		8 (200)	C851	1261-7G	63 1/2 (1613)	37 (940)	16 1/2 (419)	20 (508)	18 1/2 (470)	29 (737)	10 (254)	1440 (653)	4200
		10 (250)	C851	1276G	88 1/2 (2248)	51 1/2 (1308)	21 (533)	32 (813)	21 1/2 (546)	33 (838)	10 (254)	3600 (1633)	5500
ASME 1500 Gear Operated		2 (50)	C861	625 G	33 (838)	19 (483)	7 (178)	14 (356)	8 1/2 (216)	14 1/2 (368)	3 1/2 (89)	180 (82)	160
		3 (80)	C861	625G	34 (864)	19 (483)	8 (203)	14 (356)	10 1/2 (267)	18 1/2 (470)	4 (102)	280 (127)	250

# GENERAL VALVE® Twin Seal™

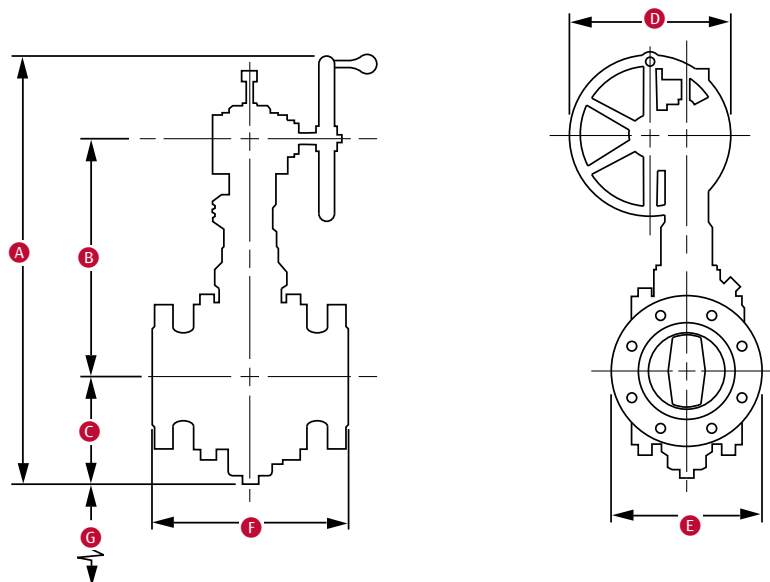
## TWIN SEAL 900 FULL BORE PIGGABLE



Dimensions in. (mm)				Maximum Overall Height	Centerline of Valve to Centerline of Handwheel	Centerline of Valve to Lowest Point	Handwheel Diameter	Flange Diameter	Face to Face	Minimum Clearance to Remove Slip from Bottom	Approximate Weight
Class	Size	Model	Oper.	A	B	C	D	E	F	G	lb. (kg)
ASME 150	2 (50)	C911	501 TS	26 (660)	15 (381)	6 (152)	10 (254)	6 (152)	10 1/2 (267)	5 (127)	216 (98)
	3 (80)	C911	501 TS	28 (711)	16 (406)	7 (178)	10 (254)	7 1/2 (191)	13 1/2 (343)	5 (127)	320 (145)
	4 (100)	C911	501 TS	32 (813)	17 1/2 (445)	7 (178)	10 (254)	9 (229)	17 (432)	5 (127)	401 (182)
	6 (150)	C911	625 TS	38 (965)	21 (533)	10 (254)	14 (356)	11 (279)	21 (533)	7 1/2 (191)	522 (237)
	8 (200)	C911	751 TS	48 (1219)	27 1/2 (699)	10 1/2 (267)	20 (508)	13 1/2 (343)	25 (635)	9 (229)	861 (390)
	10 (250)	C911	751 TS	52 1/2 (1334)	29 (737)	13 1/2 (343)	20 (508)	16 (406)	31 (787)	11 (279)	1275 (578)
	12 (300)	A1911	1261 TS	60 (1524)	35 (889)	15 (381)	20 (508)	19 (483)	36 (914)	14 (356)	1670 (757)
	14 (350)	C911	1261 TS	61 1/2 (1562)	36 (914)	15 1/2 (394)	20 (508)	21 (533)	34 (864)	15 (381)	2406 (1091)
	16 (400)	C911	1261 TS	64 (1626)	37 (940)	17 (432)	20 (508)	23 1/2 (597)	35 (889)	17 (432)	3006 (1363)
	18 (450)	C911	1261.7 TS	78 (1981)	44 1/2 (1130)	23 1/2 (597)	20 (508)	25 (635)	48 (1219)	18 (457)	5700 (2585)
	20 (500)	C911	1261.7 TS	78 1/2 (1994)	44 1/2 (1130)	24 1/2 (622)	20 (508)	27 1/2 (699)	48 (1219)	17 (432)	6165 (2796)
	24 (600)	C911	1276 TS	108 1/2 (2756)	60 1/2 (1537)	32 (813)	32 (813)	32 (813)	60 (1524)	30 (762)	12800 (5806)
ASME 300	2 (50)	C921	501 TS	26 (660)	15 (381)	6 (152)	10 (254)	6 (152)	11 1/8 (283)	5 (127)	350 (159)
	4 (100)	C921	501 TS	29 1/2 (749)	16 1/2 (419)	7 1/2 (191)	10 (254)	10 (254)	18 (457)	6 (152)	365 (165)
	6 (150)	C921	625 TS	38 (965)	21 (533)	10 (254)	14 (356)	12 1/2 (318)	22 (559)	8 (203)	615 (279)
	8 (200)	C921	1261 TS	55 (1397)	33 (838)	12 (305)	20 (508)	15 (381)	27 (686)	9 (229)	1255 (569)
	10 (250)	CA921	1261 TS	58 1/2 (1486)	34 1/2 (876)	14 (356)	20 (508)	17 1/2 (445)	32 1/2 (826)	12 (305)	1800 (816)
	12 (300)	CA921	1261.7 TS	59 (1499)	35 (889)	14 (356)	20 (508)	20 1/2 (521)	38 (965)	16 (406)	2500 (1134)
	16 (400)	C921	1276 TS	83 (2108)	48 (1219)	19 (483)	32 (813)	25 1/2 (648)	35 (889)	16 (406)	4000 (1814)
	18 (450)	C921	1276 TS	106 1/2 (2705)	67 (1702)	23 1/2 (597)	32 (813)	28 (711)	48 (1219)	15 1/2 (394)	6400 (2903)
	20 (500)	CA921	1276 TS	89 1/2 (2273)	50 1/2 (1283)	23 (584)	32 (813)	30 1/2 (775)	48 (1219)	19 (483)	7000 (3175)
ASME 600	2 (50)	C941	625 TS	32 1/2 (826)	19 (483)	6 1/2 (165)	14 (356)	6 1/2 (165)	13 (330)	6 (152)	400 (181)
	4 (100)	C941	625 TS	34 (864)	19 1/2 (495)	8 (203)	14 (356)	10 3/4 (273)	17 (432)	6 (152)	610 (277)
	6 (150)	C941	751 TS	47 (1194)	27 (686)	10 1/2 (267)	20 (508)	14 (356)	22 (559)	8 (203)	1100 (499)
	8 (200)	C941	1261 TS	63 (1600)	37 (940)	16 (406)	20 (508)	16 1/2 (419)	26 (660)	10 (254)	2150 (975)
	10 (250)	C941	1261 TS	64 1/2 (1638)	38 1/2 (978)	16 (406)	20 (508)	20 (508)	31 (787)	12 (305)	3100 (1406)
	12 (300)	C941	1276 TS	83 (2108)	47 (1194)	19 1/2 (495)	32 (813)	22 (559)	33 (838)	10 (254)	4200 (1905)
	14 (350)	C941	1500 TS	106 (2108)	66 (1676)	26 (660)	32 (813)	27 (686)	39 (991)	15 (381)	9500 (4309)
	16 (400)	C941	1500 TS	106 (2692)	66 (1676)	24 (610)	32 (813)	27 (686)	39 (991)	16 (406)	9500 (4309)
	20 (500)	C941	1500TS	114 (2896)	72 (1829)	29 1/2 (749)	32 (813)	32 (813)	55 (1397)	20 (508)	14000 (6350)

# GENERAL VALVE® Twin Seal™

## TWIN SEAL 400 SHORT PATTERN



Dimensions in. (mm)				Maximum Overall Height	Center- line of Valve to Centerline of Hand- wheel	Centerline of Valve to Lowest Point	Hand- wheel Diameter	Flange Diameter	Face to Face	Minimum Clearance to Remove Slip from Bottom	Approx- imate Weight	Flow Coefficient
Class	Size	Model	Oper.	A	B	C	D	E	F	G	lb. (kg)	CV in GPM
ASME 150	18 (450)	C411	1261 TS	67 (1702)	38 1/2 (978)	18 (457)	20 (508)	25 (635)	17 (432)	17 (432)	1488 (675)	7000
	20 (500)	C411	1261 TS	70 (1778)	40 (1016)	20 (508)	20 (508)	27 1/2 (699)	18 (457)	22 (559)	2658 (1206)	8500
	24 (600)	C411	1261 TS	74 1/2 (1892)	42 1/2 (1080)	22 (559)	20 (508)	32 (813)	20 (508)	28 (711)	3326 (1509)	11250
ASME 600	18 (450)	C441	1276 TS	82 1/2 (2096)	47 (1194)	19 1/2 (495)	32 (813)	29 1/4 (743)	39 (991)	10 (254)	4300 (1950)	10200

## GENERAL VALVE® Twin Seal™

SEAT & RESEAT VALVE LETS YOU CHANGE SEALS IN MINUTES,  
WITHOUT DRAINING THE LINE

TWIN SEAL Seat and Reseat Valve eliminates line draining, line flushing, vacuum trucks and product losses.

### Valve in Closed Position

Resilient seals form bubble-tight shut-off on upstream and downstream ports, and secondary metal-to-metal seats provide sufficient shut-off to meet fire safety requirements.

The bonnet-mounted manual or automatic bleed valve verifies zero leakage, shut-off.

### Valve in Open Position, Product In Line

After seating segments are mechanically retracted from the ports, the plug is rotated 90 degrees and reseated into tapered body seats in the *open* position and a metal-to-metal seat is formed.

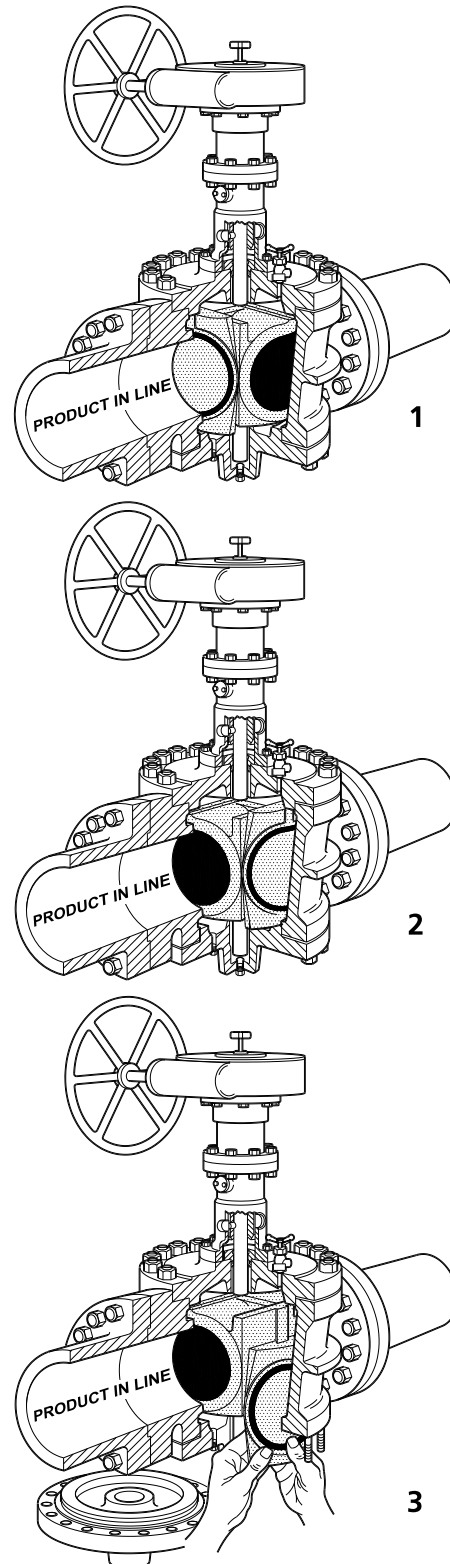
Line rouge (sediment) from "pigging" is prevented from settling in the body cavity.

### Valve Still in Open Position, Product In Line

The body bleed feature verifies there is no pressure in the body cavity. The line need not be drained.

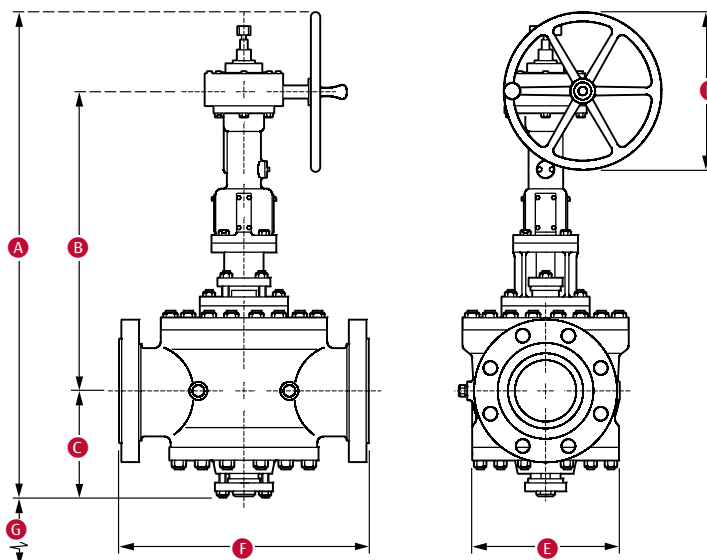
The bottom plate can now be removed safely and new seating segments can be slipped into position.

Only commonly used hand tools are needed for the entire procedure.





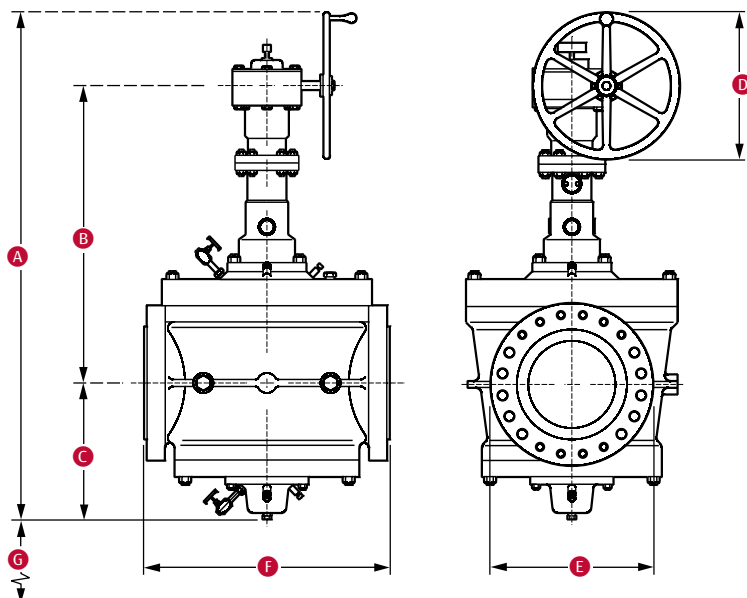
# GENERAL VALVE® Twin Seal™ SEAT & RESEAT 1600 REDUCE BORE



Dimensions in. (mm)			Maximum Overall Height	Centerline of Valve to Centerline of Handwheel	Centerline of Valve to Lowest Point	Handwheel Diameter	Flange Diameter	Face-to-Face	Minimum Clearance to Remove Slip from Bottom
Class	Size	Model	A	B	C	D	E	F	G
ASME 150	8 (200)	C1611	47 1/2 (1207)	27 (686)	10 1/2 (267)	20 (508)	13 1/2 (343)	16 1/2 (419)	7 1/2 (191)
	12 (300)	C1611	58 1/2 (1486)	36 (914)	13 (330)	20 (508)	19 (483)	32 1/2 (826)	11 1/2 (292)
ASME 300	6 (150)	C1621	37 (940)	22 (559)	8 (203)	14 (356)	12 1/2 (318)	15 7/8 (403)	5 (127)
	8 (200)	C1621	47 1/2 (1207)	27 (686)	10 1/2 (267)	20 (508)	15 (381)	16 1/2 (419)	7 1/2 (191)
	10 (250)	C1621	51 (1295)	29 1/2 (749)	11 1/2 (292)	20 (508)	17 1/2 (445)	18 (457)	12 (305)
	12 (300)	C1621	58 1/2 (1486)	36 (914)	13 (330)	20 (508)	20 1/2 (521)	32 1/2 (826)	11 1/2 (292)
	14 (350)	C1621	54 1/2 (1384)	32 (813)	13 (330)	20 (508)	23 (584)	30 (762)	12 (305)
	20 (500)	C1621	95 1/2 (2426)	57 (1448)	22 1/2 (572)	32 (813)	30 1/2 (775)	46 (1168)	12 (305)
ASME 600	6 (150)	C1641	37 (940)	22 (559)	8 1/2 (216)	14 (356)	14 (356)	22 (559)	5 (127)
	8 (200)	C1641	47 (1194)	27 1/2 (699)	9 1/2 (241)	20 (508)	16 1/2 (419)	26 (660)	7 1/2 (191)
	10 (250)	C1641	64 1/2 (1638)	38 (965)	16 1/2 (419)	20 (508)	20 (508)	31 (787)	11 1/2 (292)
ASME 900	6 (150)	C1651	57 1/2 (1461)	35 1/2 (902)	12 (305)	20 (508)	15 (381)	24 (610)	5 (127)
	8 (200)	C1651	71 (1803)	44 1/2 (1130)	17 (432)	20 (508)	18 1/2 (470)	29 (737)	5 (127)
	10 (250)	C1651	87 (2210)	53 1/2 (1359)	18 (457)	32 (813)	21 1/2 (546)	33 (838)	8 (203)
	14 (350)	C1651	106 (2692)	70 (1778)	20 (508)	32 (8130)	29 1/2 (749)	-	15 (381)
ASME 1500	3 (80)	CA1661	46 (1168)	33 1/2 (851)	5 1/2 (140)	14 (356)	10 1/2 (2670)	18 1/2 (470)	3 1/2 (89)
	4 (100)	CA1661	57 1/2 (1461)	36 (914)	11 1/2 (292)	20 (508)	12 1/4 (311)	21 1/2 (546)	4 1/2 (114)
	6 (150)	CA1661	56 (1422)	34 (864)	12 1/2 (318)	20 (508)	15 1/2 (394)	27 3/4 (705)	5 (127)

# GENERAL VALVE® Twin Seal™

## SEAT & RESEAT 1500 FULL BORE PIGGABLE



Dimensions in. (mm)			Maximum Overall Height	Centerline of Valve to Centerline of Handwheel	Centerline of Valve to Lowest Point	Handwheel Diameter	Flange Diameter	Face-to-Face	Minimum Clearance to Remove Slip from Bottom
Class	Size	Model	A	B	C	D	E	F	G
ASME 150	18 (450)	C1511	95 1/2 (2426)	56 (1422)	23 1/2 (597)	32 (813)	25 (635)	48 (1219)	16 1/2 (419)
	20 (500)	C1511	105 (2667)	65 1/2 (1664)	23 1/2 (597)	32 (813)	27 1/2 (699)	48 (1219)	16 (406)
	24 (600)	C1511	92 (2337)	51.5 (1308)	32 (813)	32 (813)	32 (813)	60 (1524)	30 (7620)
ASME 300	6 (150)	C1521	48 (1219)	28 (711)	10 (254)	20 (508)	12 1/2 (318)	15 7/8 (403)	9 1/2 (241)
	10 (250)	C1521	66 1/2 (1689)	44 (1118)	13 (330)	20 (508)	17 1/2 (445)	32 1/2 (826)	10 1/2 (267)
	18 (450)	C1521	106 1/2 (2705)	67 (1702)	23 1/2 (597)	32 (813)	28 (711)	48 (1219)	15 1/2 (394)
	24 (600)	C1521	122.5 (3112)	77.5 (1969)	29 (737)	32 (813)	36 (914)	60 (1524)	19 (483)
ASME 600	6 (150)	C1541	49 1/2 (1257)	29 (737)	10 1/2 (267)	20 (508)	14 (356)	22 (559)	8 (203)
	8 (200)	C1541	63 (1600)	37 (940)	16 (406)	20 (508)	16 1/2 (419)	26 (660)	10 (254)
	10 (250)	C1541	64 1/2 (1638)	38 1/2 (978)	16 (406)	20 (508)	20 (508)	31 (787)	12 (305)
	12 (300)	C1541	82 (2083)	47 (1194)	19 (483)	32 (813)	22 (559)	33 (838)	14 (356)
	16 (400)	C1541	107 (2718)	66 (1676)	25 (635)	32 (813)	27 (686)	44 1/2 (1130)	15 (381)
ASME 900	6 (150)	C1551	67 1/2 (1715)	42 1/2 (1080)	15 (381)	20 (508)	15 (381)	24 (610)	4 (102)
	8 (200)	C1551	72 1/2 (1842)	45 (1143)	18 (457)	20 (508)	18 1/4 (464)	29 (737)	4 1/2 (114)
	10 (250)	C1551	80 (2032)	46 (1168)	18 (457)	32 (813)	21 1/2 (546)	33 (838)	7 (178)
	12 (300)	C1551	108 (2743)	70 (1778)	22 1/2 (572)	32 (813)	24 (610)	38 (965)	7 1/2 (191)
ASME 1500	6 (150)	C1561	66 (1676)	41 (1041)	15 (381)	20 (508)	15 1/2 (394)	27 3/4 (705)	2 1/2 (64)
	8 (200)	C1561	84 1/2 (2146)	50 1/2 (1283)	18 (457)	32 (813)	19 (483)	32 3/4 (832)	4 1/2 (114)
	10 (250)	C1561	108 1/2 (2756)	71 1/2 (1816)	21 1/2 (546)	32 (813)	23 (584)	39 (991)	5 (127)
	12 (300)	C1561	108 1/2 (2756)	71 1/2 (1816)	22 (559)	32 (813)	26 1/2 (673)	44 1/2 (1130)	6 1/2 (165)

## GENERAL VALVE® Twin Seal™

### ELECTRIC ACTUATORS

TWIN SEAL valves accept most commercially available multi-turn electric motor operators.

All automated TWIN SEAL valves require some form of body pressure relief because of thermal expansion (see page 17 & 18) (MBV / DTR / ABV / etc.); otherwise the valve may be difficult to *open* or may stick in the *closed* position.

#### Choice of Motor Size

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

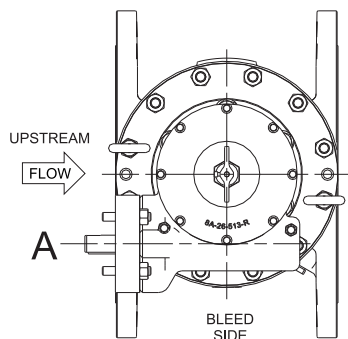
- Pipeline Pressure
- Operating Speed
- Environmental Conditions
- Handwheel Accessibility
- Available Power

Selecting the correct motor is a specialist task. Consult your TWIN SEAL representative for free technical advice.

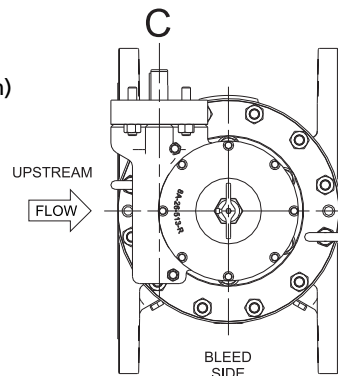


### Typical Mounting Configurations

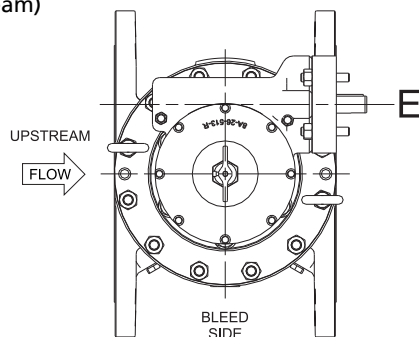
Orientation "A"  
(Upstream)  
STANDARD



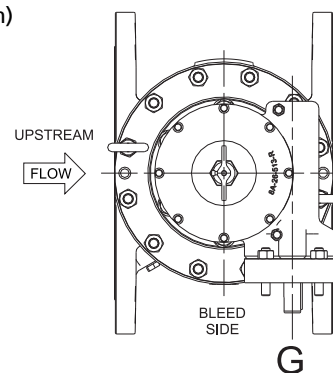
Orientation "C"  
(90° from Upstream)



Orientation "E"  
(180° from Upstream)



Orientation "G"  
(270° from Upstream)



# GENERAL VALVE® Twin Seal™

## PNEUMATIC ACTUATION

Cameron builds pneumatic actuators that can be fitted to its valves for reliable, economic power operation. When you specify a complete actuated valve package, the entire system is built, tested and guaranteed. Only a few of the available power operation choices are shown on this page. For complete information contact the Cameron office nearest you for alternative packages.

### Spring-Close Piston Actuators

- 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



### 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 close or
  - Fail in last position



### Spring-Close Diaphragm Actuator

- 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



## GENERAL VALVE® Twin Seal™

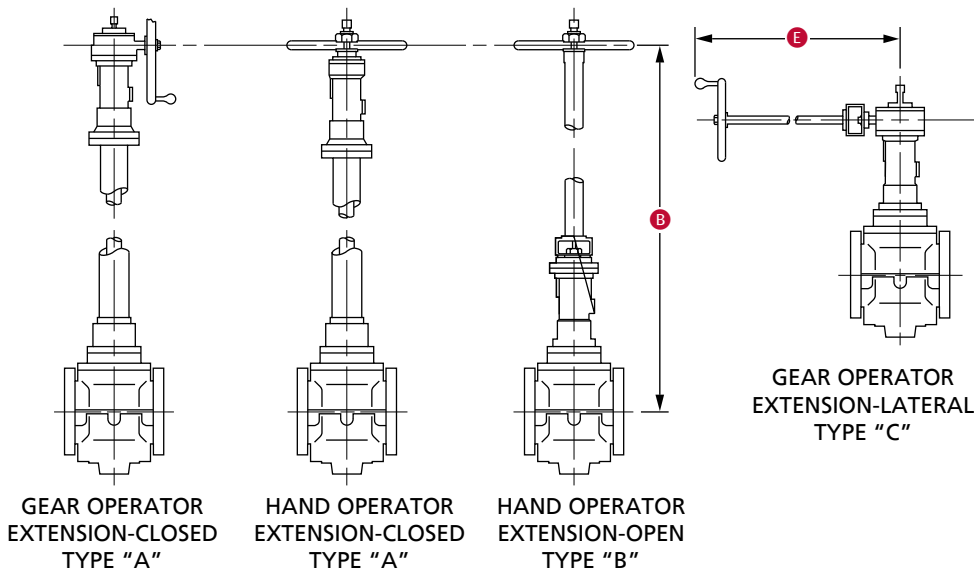
### LIMIT SWITCHES

TWIN SEAL can be fitted with switches or sensors to provide *open / closed* position indication of the valve.

The switches or sensors are housed within a proprietary enclosure which meets the latest National and International electrical and explosion proof standards.



### MECHANICAL EXTENSIONS



TWIN SEAL makes both vertical and lateral extensions or combinations of both. When ordering, always specify dimension B or E.

Type A Extension is suitable for underground burial. Type C extension should be supported if dimension E is over 36 in. (900 mm).

TWIN SEAL valves, both hand-operated and gear-operated, can be supplied with chainwheels to operate elevated valves from below.

The chainwheels have an extra deep channel in which the chain runs to assure that the chain will not climb off the track.

The chain is supplied fully trimmed to eliminate barbs, and is galvanized to withstand corrosive conditions.

When ordering chainwheels, provide the size and series of the valve and the length of chain required.



## GENERAL VALVE® Twin Seal™

### DIRECT BURIAL – UNDERGROUND

Patented TWIN SEAL extended bonnet valves greatly simplify maintenance in underground applications while providing dependable double block and bleed shut-off.

Most underground valves are difficult to maintain and service, requiring excavation or a costly access pit. System designers often must compromise valve placement to overcome this maintenance problem.

With TWIN SEAL extended bonnet valves, however, the designer has the freedom to put the valves in their ideal locations. Installation costs are minimized.

#### Easy, Inexpensive Maintenance

Once extended bonnet valves have been installed, maintenance can be performed from above ground without a pit and without excavating.

Unbolting and lifting the bonnet raises the valve plug and slips to ground level. Slip replacement is quick and easy, and downtime is minimal. Once the slips have been replaced, lower the assembly back into position and bolt down the bonnet.

TWIN SEAL hydraulic extension systems are available for installations where standard Type A, B, and C extensions are not practical.

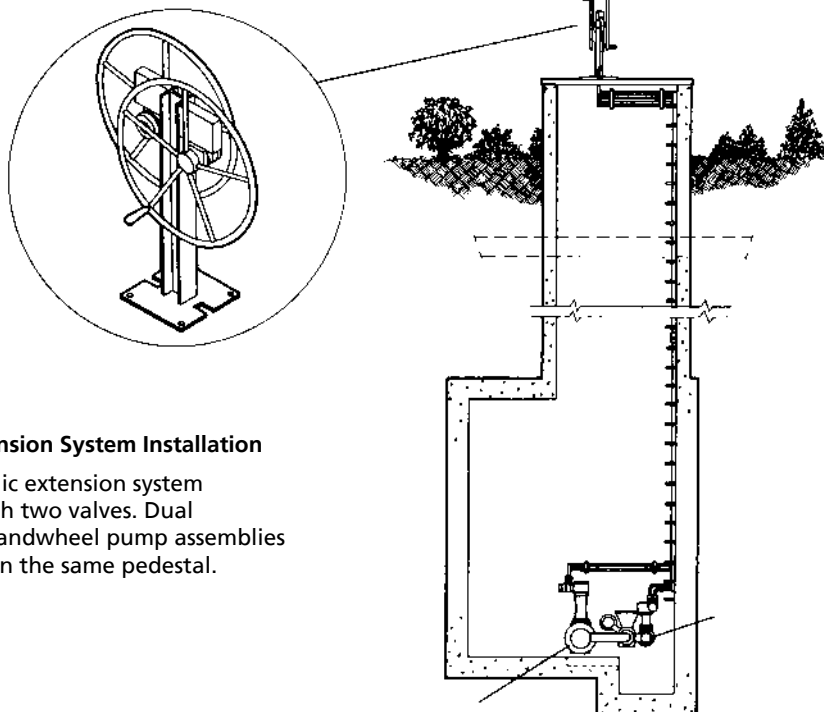
Since the self-contained hydraulic extension systems are manually-hydraulically operated, there are virtually no limitations on length and orientation.

The hydraulic extension for gear operators is essentially a hydrostatic transmission.

The pump is driven by a handwheel, and the pressure created is transmitted to the hydraulic motor mounted on the gear operator.

This approach allows the system designer maximum flexibility since the only connections between the handwheel and valve are hydraulic tubes.

There is no limitation on the number of corners turned between the valve and handwheel.



#### Hydraulic Extension System Installation

Typical hydraulic extension system installation with two valves. Dual above-grade handwheel pump assemblies are mounted on the same pedestal.

## GENERAL VALVE® Twin Seal™

### PRESSURE RELIEF SYSTEMS

To satisfy the requirements of API 6D, a pressure relief device must be provided on all double block and bleed valves in liquid service.

When the TWIN SEAL valve is seated and completely filled with liquid, even a slight increase in temperature due to the sun's rays will result in a significant increases in the body cavity pressure resulting from thermal expansion, therefore all TWIN SEAL valves in liquid service must always be installed with a pressure relief device.

#### Manual Bleed (MBBV)



A manual body bleed valve is included on this TWIN SEAL. This bleed valve installed in the body cavity is only opened after the TWIN SEAL is *closed*. Seal effectiveness can be immediately evaluated. This bleed valve must be *closed* before the TWIN SEAL is *reopened*.

#### Safety Bleed / DTR (Standard)



The differential thermal relief system is arranged as shown. The integral relief valve, mounted in the upper relief/vent manifold, routes excess pressure to the upstream throat of the valve. The standard relief valve is set to open at 25 psi above upstream pressure. This system functions only when the valve is *closed*. A manual body bleed, also integrally mounted in the upper relief / vent manifold, is opened only to vent and to verify seal integrity. An isolation valve installed in the upstream throat tap is also included in this system. It must be left *open* to permit the relief system to relieve pressure upstream.

#### Safety Block / DTR



The safety block / DTR functions exactly the same as the basic safety bleed. However, all working components are housed in a virtually indestructible compact carbon steel manifold. The benefits of this incident control equipment are: fire safety, complete component access for maintenance purposes, all socket welded joints, heavy wall pipe and incident control.

## GENERAL VALVE® Twin Seal™

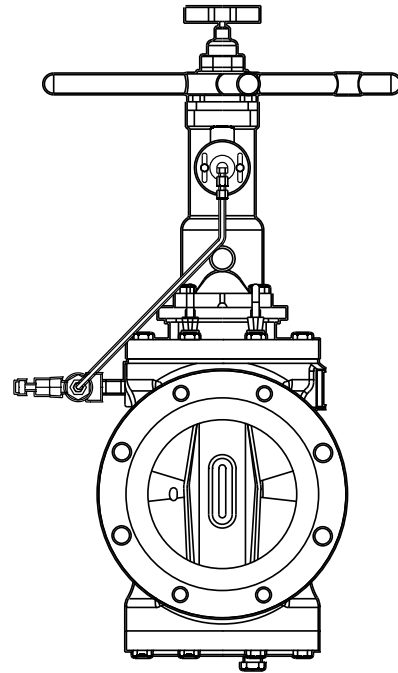
### PRESSURE RELIEF SYSTEMS

The Automatic Body Bleed Valve (ABBV) provides visual, positive assurance that the TWIN SEAL has sealed completely at each cycling operation and prevents thermal pressure buildups in the body cavity.

An automatic bleed valve connected to the body cavity of the main valve is mechanically *opened* by the valve operator when the TWIN SEAL is seated.

Seal integrity is indicated by viewing the discharge of the bleed valve.

When the TWIN SEAL is *opened*, the bleed valve is automatically *closed* by the combination of line pressure and the spring in the bleed valve.



### Line Relieving Safety Bleed / DTR

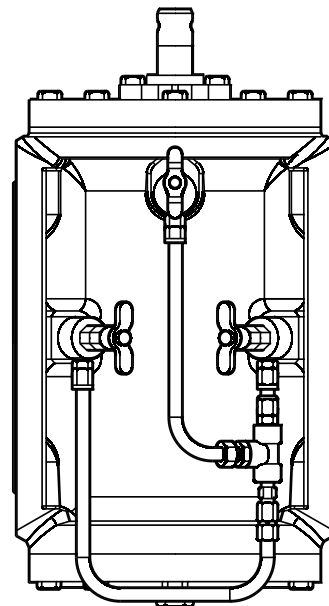
The Line Relieving / Differential Thermal Relief (LR / DTR) provides all the same features as a basic DTR with one additional function, it pressure protects the downstream piping.

A relief valve (25 psid standard) is connected to the downstream throat tap via the lower tee.

When the TWIN SEAL is seated and the downstream piping is sealed bubble-tight, the piping faces thermal over pressurization.

The throat tap accesses this piping and directs any over pressurization upstream.

An additional isolation valve is installed downstream for maintenance purpose.



## GENERAL VALVE® Twin Seal™

### STANDARD MATERIALS OF CONSTRUCTION

Valve Series	200	8800	400 / 800 / 900 / 1500 / 1600
Body	Cast Carbon Steel - ASTM A216 WCC <sup>(1)</sup>	Cast Carbon Steel - ASTM A216 WCC <sup>(1)</sup>	Cast Carbon Steel - ASTM A216 WCB <sup>(1)</sup>
Bonnet/Lower Plate	Carbon Steel - ASTM A216WCC <sup>(2)</sup>	Carbon Steel ASTM A36 <sup>(2)</sup>	Carbon Steel ASTM A36 <sup>(2)</sup>
Plug	Ductile Iron ASTM A536 Gr. 80-55-06 <sup>(3)</sup>	Ductile Iron ASTM A395 Gr. 60-40-18 <sup>(3)</sup> for valve sizes 8 in. to 12 in. Larger sizes ASTM A216 WCC <sup>(3)</sup>	Cast Carbon Steel ASTM A216 WCB <sup>(3)</sup>
Stem	Ductile Iron ASTM A536 Gr. 80-55-06 <sup>(3)</sup>	ASTM A564 Type 630 17-4 PH SS for valve sizes 8 in. to 12 in.	Cast Carbon Steel ASTM A216 WCB <sup>(3)</sup>
Slips	Manganese Phosphated Coated Ductile Iron ASTM A536 Gr. 65-45-12	Manganese Phosphate Coated Ductile Iron ASTM A395 Gr. 60-40-18	Manganese Phosphate Coated Ductile Iron ASTM A395 Gr. 60-40-18
Gland	ASTM A216 WCC	ASTM A747 17-4 PH SST 6"-10", 12"-24" ASTM A36 Plate <sup>(2)</sup>	ASTM 487
Gland Packing	Graphite	Graphite	Graphite
Body Fire Seals	Graphite	Graphite	Graphite
O-Rings & Slip Seals	See trim selection	See trim selection	See trim selection
Fasteners	ASTM A193 Gr. B7 / 2H	ASTM A193 B7	ASTM A193 Gr. B7 / 2H

Note: <sup>(1)</sup> Chrome Plated Bore. <sup>(2)</sup> Or Industry Equivalent. <sup>(3)</sup> Electroless Nickel Coated. Materials subject to change without notice.

Proper seal selection includes a number of considerations such as media, pressure class, valve type, differential pressure, low temperature, high temperature, seal type, etc. To that end we have included a selection of slip seal materials and a brief list of considerations:

Fluoro Elastomers Slip Seal Materials			For more info ask for GVMPS
V	Viton	Our Standard Material Since 1958	3037
V9	Viton 90 Durometer	Standard HIDP	3042
VFR	Fiber Reinforced Viton	Optional HIDP	3033
VGF	Viton GF	Viton with Enhanced Chem. Resistance	3043
VGLT	Viton GFLT	Low Temp Viton GF	3044
VGLT9	Viton 90 Durometer GFLT	HIDP Low Temp Viton GF	3059
Nitrile Elastomers Slip Seal Materials			
H	Nitrile	Our Original Standard Material	3048
H9	Nitrile 90 Durometer	HIDP Nitrile	3049
LH	Low Temp Nitrile	Low Temp Nitrile	3050
H5	Modified Nitrile	Reformulate Gasoline Seal Material	3053
Specialty Slip Seal Materials			
C	Epichlorohydrin	Good Low Temp Material	3054
E	Ethylenepropylene	Ammonia but not Hydrocarbon	3057
UHS	Fluorosilicone	Good High and Low Temp	3032
RZL	Rezilon	HIDP RFG	3034
AFL	AFLAS	Amines, exp. decomp., steam, 450° F	3045
GVX	VTR 6279	Ultra Chemical Resistant	3047
T	Teflon	Good for just about anything	3041

All specifications and materials are subject to change without notice.

TWIN SEAL, GVM, REZILON, VFR, GVX, BEST VALVE BEST VALUE, WHEN LEAKS MATTER, SEAT AND RESEAT, HGO, GOSP, SAFETY BLEED, SAFETY BLOCK AND SAFETY CHECK, VITON and TEFLON are registered trademarks of their respective owners.

## GENERAL VALVE® Twin Seal™

### HOW TO ORDER

X X	-	X X X X	-	X X X	-	X X X
Valve Bore Size		Model		Operation Type Hand or Gear		Specify Other Options & Trim
in.		200		H - Hand		Locking Devices
mm		8800		G - Gear		Switches - Limit / Indicator
		800		MO - Motor Operated - specify		Special Bleed Systems
		900		MA - Motor Adapted - specify		Special Trims
		400		HGO - Hydraulic Gear Operator		Special Seal Material
		1600				Stem / Handwheel Extensions
		1500				



## **CAMSERV™ AFTERMARKET SERVICES**



Cameron's Aftermarket Services' goal is to help our customers lower the total cost of valve ownership. To that end we offer a full range of services from over twenty-five Service Centers worldwide and can provide experienced personnel trained to meet the specific service requirements of each valve type.

### **Aftermarket Services**

- Supplies replacement valves and parts:
  - Maintains a full inventory of new and reconditioned valves for immediate delivery
  - Provides factory warranty support for all Cameron OEM brands as well as service for most other valves
- Field Service & Technical Support
  - Field service technicians on call 24 hours a day 7 days a week to handle service issues wherever they arise
  - Provides equipment installation, field repairs, as well as track and perform scheduled maintenance
- Customer Property Repair
  - The Customer Property Repair program allows Cameron valve customers to store assets at our service centers throughout the world
  - Valves tracked in electronic database accessible through the Internet
- Remanufactured Products
  - Offers a broad range of API-compliant reconditioned equipment with fast delivery
- Total Valve Management
  - Supply and service automation and control packages
  - Assist with valve installation, commissioning and start-up



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CELCON	Hoechst Celanese Corporation
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HYCAR	Hydrocarbon Chemical and Rubber Company
HYDRIN	Zeon Chemicals USA, Inc.
HYPALON	E.I. DuPont De Nemours & Company
INCONEL	INCO Nickel Sales, Inc.
MONEL	INCO Alloys International, Inc.
NORDEL	E.I. DuPont De Nemours & Company
STELLITE	Stoody Deloro Stellite, Inc.
TEFLON	E.I. DuPont De Nemours & Company
VITON	E.I. DuPont De Nemours & Company



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