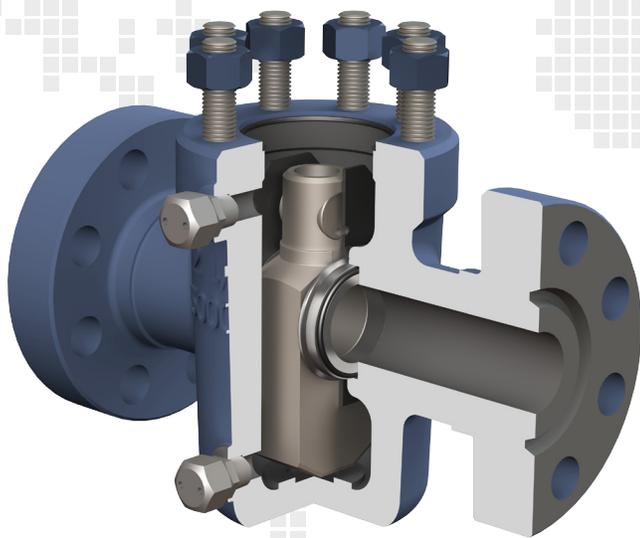


# MODEL CS-R

## Cast Body Reverse Acting Slab Gate Valves for Actuation



Cast Body Gate Valves



### INTRO

Omni Model CS-R cast-body reverse acting slab gate valves are designed to be used as surface safety valves for oil and natural gas wellhead, manifold or other critical service applications with operating pressures from 2,000 to 5,000 psi. An appropriate pneumatic, hydraulic or electric actuator is required in conjunction with the Model CS-R.

All Model CS-R reverse acting slab gate valves are API 6A 20th Edition monogrammed equipment and are available in bore sizes ranging from 2  $\frac{1}{16}$ " through 7  $\frac{1}{16}$ ".

### FEATURES

#### Adaptability

Model CS-R valves are designed to accept pneumatic, hydraulic or electric actuators from any manufacturer. Omni will provide interface drawings upon request. Omni has a complete line of pneumatic and hydraulic actuators and can deliver CS-R valves with actuators already mounted, ready for immediate deployment.

#### Operating Temperatures

Model CS-R valves are available with API 6A Temperature ratings of L (-50 F) through X (350 F). Valves for API Temperature rating X are pressure de-rated as required per Annex G of API 6A 20th Edition.

#### Reverse Acting Slab Gate

The reverse acting slab gate has the conduit opening on the upper portion of the gate. This means that the valve will be open when the gate is in the down position. The gate is moved to the down position by application of adequate control pressure to the actuator. Upon loss of control pressure, pressure acting on the gate and stem will cause the valve to close automatically. Under zero bore pressure conditions, valve closure is assisted by a spring contained in the actuator/bonnet assembly.

#### Full Through Conduit Bore

The full through conduit bore provides for smooth flow with minimal turbulence. It also provides an unobstructed passage for well intervention tools.

All Model CS-R valves are drift tested in accordance with API 6A 20th Edition requirements.

#### Seat Designs

The standard gate to seat and seat to body sealing interface is a slip-fit design, assisted by inserts in the face and o-rings in the rear of each seat. Metal-to-metal gate to seat and pressed-fit seat to body sealing is used for high-temp valves and is otherwise available upon request.

#### Grease Fittings

The valve body may be lubricated through the grease fittings provided in the valve body. All fittings meet the requirements of NACE MR0175.

#### Exposed Bolting

All exposed bolting meets the requirements of NACE MR0175.

# INTERNAL CONFIGURATION

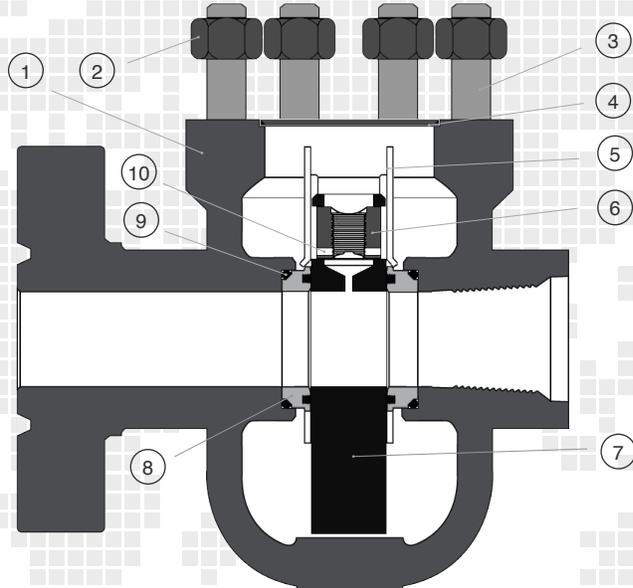
Valve depicted with one flanged and one threaded end.  
Internal components are identical.



Cast Body Gate Valves

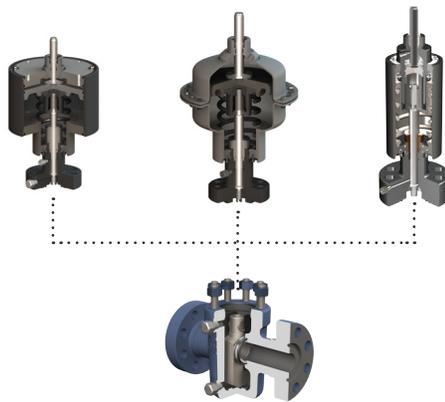
Component	Description	Qty
1	Valve Body	1
2	Nut	8
3	Stud	8
4	Bonnet Seal Ring	1 (VRK)
5	Gate Guide	2 (VRK)
6	Gate Nut	1 (VRK)
7	Reverse Acting Slab Gate	1 (VRK)
8	Seat	2 (VRK)
9	Seat Seal	2 (VRK)
10	Stem Pin	1 (VRK)

(VRK) = Valve Redress Kit Item



## OMNI GATE VALVES PREPARED FOR ACTUATOR:

Omni offers a complete line of pneumatic and hydraulic actuators for manifold and safety shutdown applications that can easily be provided in conjunction with Omni Model CS-R valves. All Omni actuators can be provided as actuated valve assemblies ready to be put into service or as actuators adapted to mount on valves from any valve manufacturer. Model CS-R valves are also designed to accept actuators from other manufacturers.



Full Assembly



Component	Description
DX	Pneumatic Diaphragm Actuator (Fail Safe)
PX	Pneumatic Piston Actuator (Fail Safe, Removable Manual Override)
PMX	Pneumatic Piston Actuator (Fail Safe, Integrated Manual Override)
HX	Hydraulic Piston Actuator (Fail Safe)
HWX	Hydraulic Piston Actuator (Fail Safe)
HDX	Hydraulic Piston Actuator (Fail Safe)

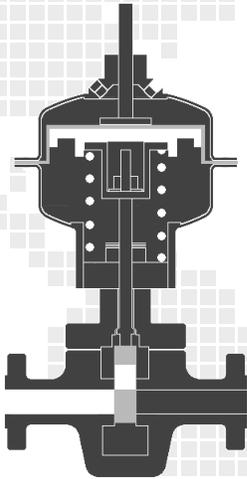
# FAIL-SAFE OPERATION

Fail "closed" operation is depicted

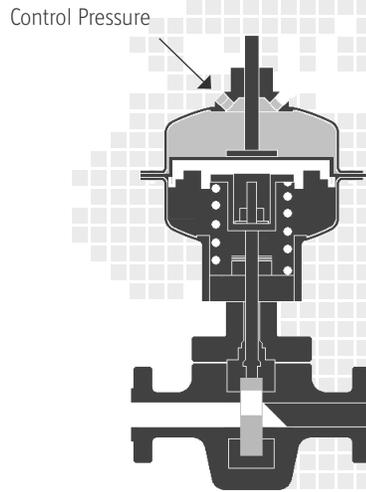
Fail "open" operation is available upon request



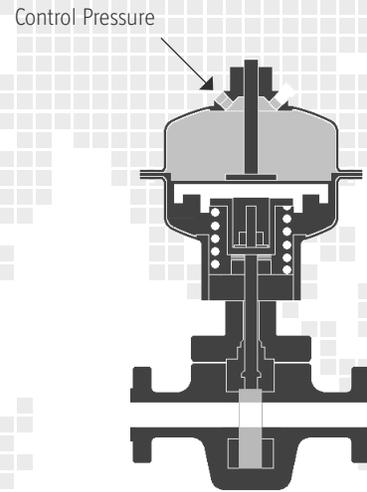
Cast Body Gate Valves



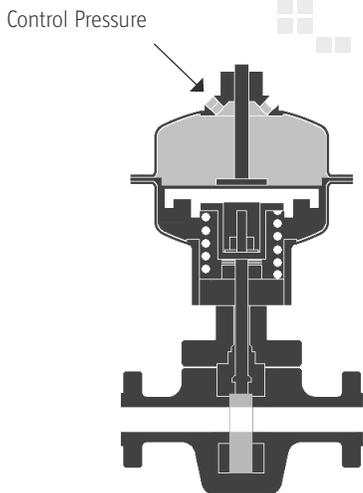
When no control pressure is applied to actuator, valve is in closed position (gate all the way up)



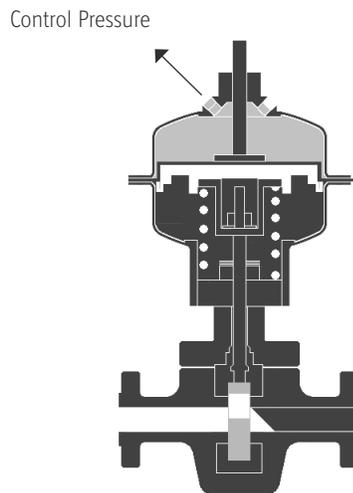
Upon application of adequate control pressure to the actuator, valve begins to open (gate moves down)



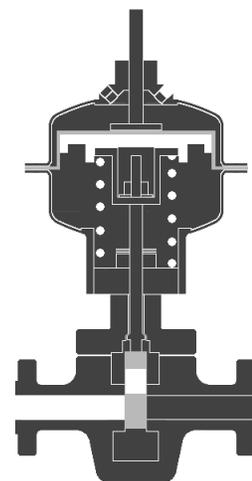
With continued application of adequate control pressure, valve moves to the fully open position (gate all the way down)



Valve remains in fully open position as long as adequate control pressure is present (gate all the way down)



Upon loss of control pressure, valve begins to close (gate moves up)

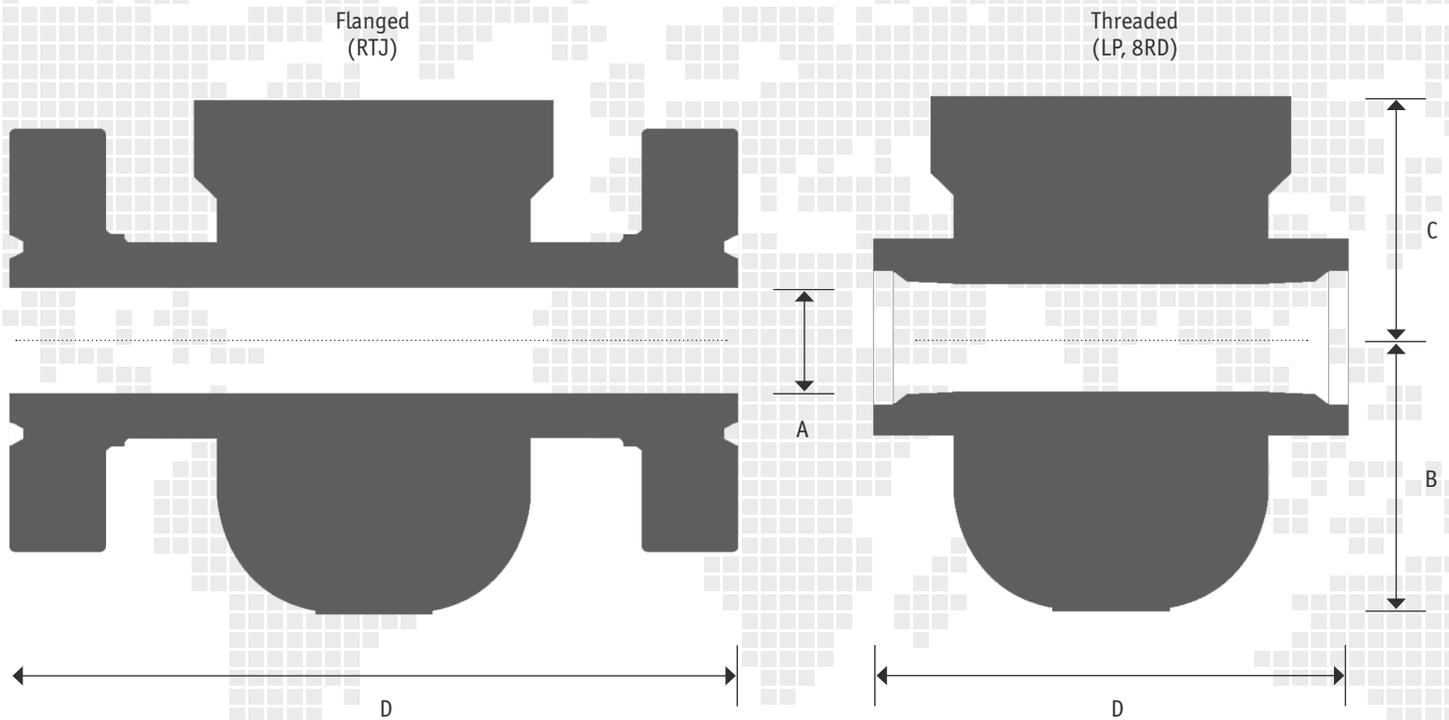


Valve fully closes and remains closed until application of control pressure to the actuator (gate all the way up)

# DIMENSIONAL DATA



## Cast Body Gate Valves



Valve Bore Size	Working Pressure (psi)	API Ring #	Common Dimensions								Flanged				Threaded			
			A		B		C		Stroke		D		Weight		D		Weight	
			in	mm	in	mm	in	mm	in	mm	in	mm	lbs	kgs	in	mm	lbs	kgs
2 1/16"	2,000	R23	2.06	52	4.81	122	4.84	123	2.57	65	11.62	295	85	39	9.62	244	57	26
	3-5,000	R24	2.06	52	5.06	128	4.84	123	2.57	65	14.62	371	127	58	9.62	244	79	36
2 9/16"	2,000	R26	2.56	65	5.62	142	5.62	143	3.08	78	13.12	333	159	72	10.25	260	95	43
	3-5,000	R27	2.56	65	5.93	150	5.62	143	3.08	78	16.62	422	194	88	10.25	260	122	55
3 1/8"	2,000	R31	3.12	79	6.93	176	7.12	181	3.8	97	14.12	358	171	78	11.38	289	137	62
	3,000	R31	3.12	79	7.31	185	7.12	181	3.8	97	17.12	434	234	106	11.38	289	166	75
	5,000	R35	3.12	79	7.31	185	7.12	181	3.8	97	18.62	437	265	120	11.38	289	166	75
4 1/16"	2,000	R37	4.06	103	8.62	219	8.32	211	4.8	122	17.12	435	342	155	13	330	278	126
	3,000	R37	4.06	103	9.06	230	8.32	211	4.8	122	20.12	511	414	188	13	330	315	143
	5,000	R39	4.06	103	9.06	230	8.32	211	4.8	122	21.62	549	446	202	13	330	315	143
5 1/8"	2,000	R41	5.12	130	11.62	295	10.04	255	5.97	152	22.12	562	617	280	N/A			
	3,000	R41	5.12	130	11.62	295	10.04	255	5.97	152	24.12	613	694	315				
	5,000	R44	5.12	130	11.62	295	10.04	255	5.97	152	28.62	727	756	343				
7 1/16"	2,000	R45	7.06	179	13.87	352	12.86	327	7.69	195	26.12	663	703	319				
	3,000	R45	7.06	179	13.87	352	12.86	327	7.69	195	28.12	714	769	349				
	5,000	R46	7.06	179	13.87	352	12.86	327	7.69	195	32	813	962	436				

# TRIM CHART



## Cast Body Gate Valves

Materials of construction listed below are as provided in Omni's standard valve configurations. Alternate materials are available upon customer request.

### NON-NACE TRIMS

### NACE TRIMS

API Mat'l Class	AA	BB	CC	DD-NL	EE-0,5	EE-1,5	EE-NL	FF-0,5	FF-1,5	FF-NL
Service	General	General	General	Sour	Sour	Sour	Sour	Sour	Sour	Sour
Trim	Standard	SS Trim	Full SS	Standard	SS Trim	SS Trim	SS Trim	Ful SS	Full SS	Full SS
Corrosive	No	Slightly	Moderate	No	Moderate	Moderate	Moderate	Highly	Highly	Highly
Avail API Temp	L to Y	L to Y	P to Y	L to Y	L to Y	L to Y	L to Y	P to Y	P to Y	P to Y

### COMPONENTS

Body	ASTM A487 CL 4 60K ALLOY	ASTM A487 CL 4 60K ALLOY	ASTM A217 or A487 CA-15 60K SS	ASTM A487 CL 4 60K ALLOY	ASTM A217 or A487 CA-15 60K SS	ASTM A217 or A487 CA-15 60K SS	ASTM A217 or A487 CA-15 60K SS			
Gate	AISI 4130 75K NITRIDED	AISI 410 SS 75K NITRIDED	AISI 410 SS 75K NITRIDED	AISI 4130 75K NITRIDED	AISI 410 SS 75K NITRIDED					
Seats	AISI 4130 75K NITRIDED	AISI 410 SS 75K NITRIDED	AISI 410 SS 75K NITRIDED	AISI 4130 75K NITRIDED	AISI 410 SS 75K NITRIDED					
Bonnet Seal Ring	AISI 1018/1020	AISI 316 SS	AISI 316 SS	AISI 1018/1020	AISI 316 SS					
Studs	ASTM A193 GR B7 or ASTM A320 GR L7	ASTM A193 GR B7 or ASTM A320 GR L7	ASTM A193 GR B7 or ASTM A320 GR L7	ASTM A193 GR B7M or ASTM A320 GR L7M						
Nuts	ASTM A194 GR 2H	ASTM A194 GR 2H	ASTM A194 GR 2H	ASTM A194 GR 2HM						

### NOTES

1	Nitriding is standard on all gates and seats. Tungsten Carbide, HF6 or other hardfacing techniques are also available.
2	Teflon inserts on seat faces are standard in Omni valves. Metal-to-metal seats are available upon request.
3	Charpy impact test results are provided as required by API according to the temperature rating and material class.
4	Materials for sour service trims conform to latest edition of NACE MR0175. Explanation for suffixes used for sour trims: 0,5 = 0.5 psi maximum partial pressure of hydrogen sulfide 1,5 = 1.5 psi maximum partial pressure of hydrogen sulfide NL = No limit to hydrogen sulfide exposure.
5	Omni reserves the right to use material class ZZ when customers request materials of construction that do not comply with current NACE MR0175/ISO standards.

All Model CS-R valves are available in API PSL-1 or PSL-2, PR-1 or PR-2. Please specify at time of order.

# MODEL CS-R

## Product Warranty



### Cast Body Gate Valves

#### LIMITED PRODUCT WARRANTY

All products manufactured or sold by Omni are warranted against defects of material and workmanship for a period of twelve (12) months from the date of installation or eighteen (18) months from date of shipment, whichever period first expires, when all such products are used in the service and within the pressure range for which they were manufactured.

In the case of products or parts not wholly of Omni's manufacture, Omni's liability shall be limited to the extent of Omni's recovery from the original manufacturer of such products or parts under its warranty or liability to Omni.

Any repair work performed by Omni is warranted for one year from completion of such repairs and applies only to work performed. If, within these specified periods, Omni receives notice from Buyer of any alleged defect in or nonconformance of any product or repair and if in Omni's sole judgment the product or repair does not conform or is found to be defective in material or workmanship, then, Buyer shall, at Omni's request, return the part or product F.O.B. to Omni's designated plant or service location.

Omni has no liability for removal or reinstallation of products or equipment. Omni, at its option and expense, shall repair or replace the defective part or product, or repay to Buyer the full price paid by Buyer for such defective part, repair or product. Any repayment of purchase price shall be without interest.

Omni's warranty liability, including defects caused by Omni's negligence, shall be limited to such repair, replacement or refund, and shall not include claims for labor costs, expenses of Buyer resulting from such defects, recovery under general tort law or strict liability or for damages resulting from delays, loss of use, or other direct, indirect, incidental or consequential damages of any kind.

Omni will not be responsible for failures of products which have been in any way tampered with or altered by anyone other than an authorized representative of Omni, failures due to lack of compliance with recommended maintenance procedures or products which have been repaired or altered in such a way (in Omni's judgment) as to affect the products adversely.



THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESS, STATUTORY OR IMPLIED, INCLUDING THE WARRANTY OF MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSE WHICH EXCEED THE FOREGOING WARRANTY.

If you have questions regarding this warranty or if you would like information about other Omni products and services please contact us at the address and phone numbers below.

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