

Valtek Survivor Ceramic-lined Plates



Introduction

Valtek Survivor ceramic-lined plates provide superior abrasion resistance effectively reducing wear associated with high-pressure drop or abrasive applications. Survivor plates are commonly applied in erosive, slurry, abrasive sand, or other similar severe services. Depending on the materials selected and the application, plate life can be extended from weeks to months and even years. Due to the extremely hard ceramics used to line the holes, Survivor plates offer a number of notable advantages over standard metal plate designs:

- **Significantly longer wear** decreases replacement costs and inventory
- **Less downtime** means less disruption to production
- **Increased time-between-maintenance** saves maintenance costs and production losses.
- **Reliable service** provides more consistent system performance.

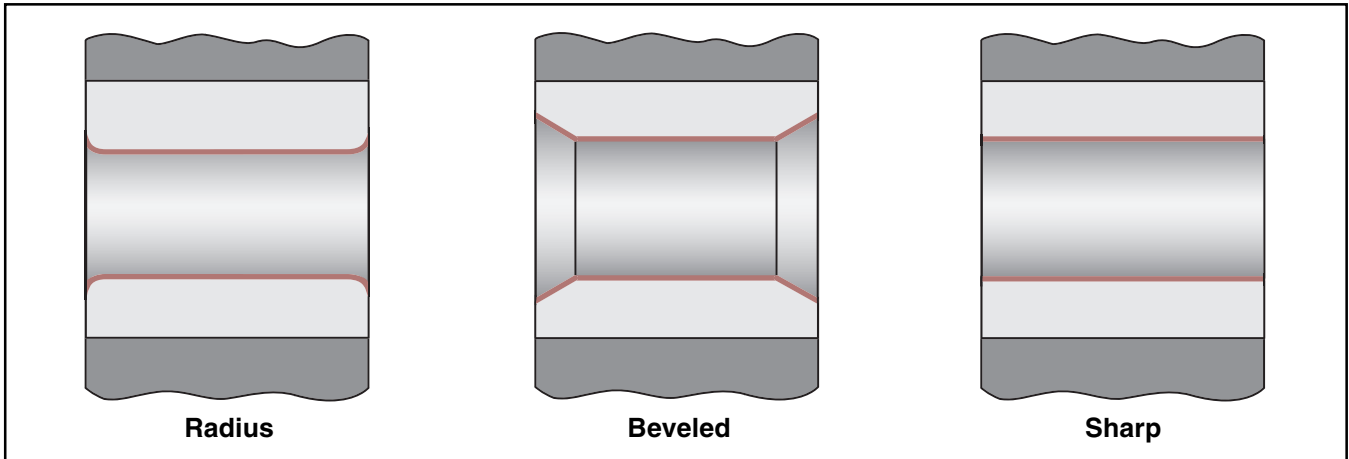


Figure 1: Insert Design Options

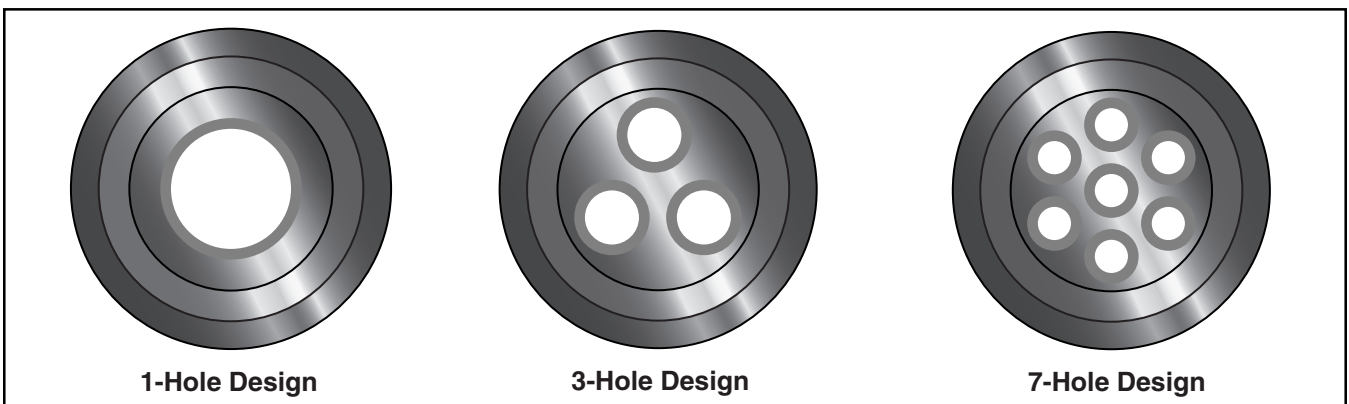


Figure 2: Lined-hole Number and Pattern Options

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Design

The Survivor plate's high wear resistance is provided by solid ceramic inserts (or liners) installed in each plate hole. As shown in Figure 1, these inserts are available in three designs, depending on the requirements of the application. Custom contours, such as an anti-cavitation contour, are available by contacting the factory. As a standard, these single-stage plates are available in one-, three- or seven-hole patterns (Figure 2); other custom-hole patterns are available by contacting the factory. As described in Table 1, Survivor plates and inserts are available in a wide range of materials, which are known for their ability to withstand corrosion and abrasive wear. To ensure the strongest bond between the ceramic insert and the base plate, proprietary attachment methods provide a sealed joint that does not require adhesives or threaded parts. Due to the custom nature of these designs, discharge coefficients and sizing assistance are available from the factory.

Table 1: Materials of Construction

Part	Materials		
Base Plate	316 stainless steel (standard for sizes 2 – 12-inch), carbon steel (standard for sizes 12 – 24-inch), titanium, Inconel, 17-4 PH, other alloys as required ¹		
Insert	Ceramic Material	Wear Resistance	Corrosion Resistance
	Silicon Carbide Refrax	Fair	Fair
	Partially Stabilized Zirconia (PSZ)	Good	Very good
	Tungsten Carbide	Excellent	Good
	Silicon Nitride	Exceptional	Excellent
	Silicon Carbide	Exceptional	Exceptional

1. For other alloy selections, contact factory.

Table 3: Dimensions (inches/mm)

Plate Size ¹ (inch)	A		B					
			ANSI Class 150		ANSI Class 300		ANSI Class 600	
1.5	0.8	19	3.4	86	3.8	95	3.8	95
2	0.8	19	4.1	105	4.4	111	4.4	111
3	0.9	22	5.4	137	5.9	149	5.9	149
4	0.9	22	6.9	175	7.1	181	7.6	194
6	1.3	32	8.8	222	9.9	251	10.5	267
8	1.4	35	11.0	279	12.1	308	12.6	321
10	1.9	48	13.4	340	14.3	362	15.8	400
12	2.4	60	16.1	410	16.6	422	18.0	457
14	2.4	60	17.8	451	19.1	486	19.4	492
16	2.4	60	20.3	514	21.3	540	22.3	565
18	2.4	60	21.6	549	23.5	597	24.1	613
20	2.8	70	23.9	607	25.8	654	26.9	683
24	2.8	70	28.3	718	30.5	775	31.1	791

1. Contact factory for DIN dimensions.

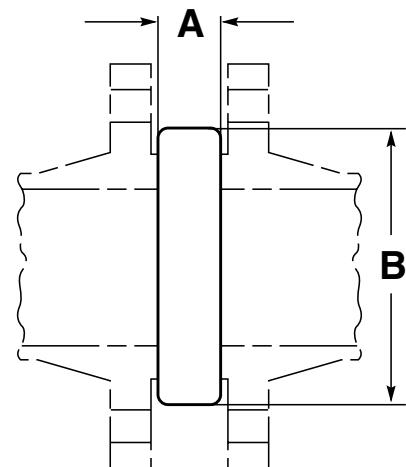
Table 2: Maximum C_v Capacities

Plate Size ¹ (inch)	Number of Lined Holes		
	1-hole	3-hole	7-hole
2	14	N/A	N/A
3	78	N/A	N/A
4	192	38	N/A
6	514	160	144
8	1072	366	365
10	1833	549	687
12	2797	894	1110
14	3355	1153	1185
16	4623	1463	1725
18	6095	2001	2366
20	7769	2622	3108
22	9646	3328	3543
24	11727	4117	4439

1. For DIN sizes, contact factory.

2. Refer to Figure 2

3. All C_v values listed are maximum values for size. Larger sized plates are available; contact the factory for details. For noise applications requiring attenuation, patterns with more holes may be desired; contact the factory for details.



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