



## LO-V RUPTURE DISC ASSEMBLY

### DESCRIPTION

The Fike Lo-V is a bi-directional rupture disc that is designed to relieve undesired pressure conditions in two different directions. Certain types of applications, such as storage tanks, need protection from vacuum pressure as well as from potential overpressure. The primary relief can be via the reverse-buckling section, which is typically extremely low vacuum pressure, or the higher pressure-activated, forward-acting section. Depending on how the holder is oriented, the Lo-V can perform the tasks of two different rupture discs!



*Lo-V Rupture Disc and Bolt-Type Holder*

### NEGATIVE PRESSURE RELIEF

In a typical storage tank application, when there is negative system pressure that is nearing the marked reverse-acting burst pressure of the disc, the buckle sections begins to reverse, and the disc seal is contacted by the knife blades located in the holder inlet. This contact causes the seal to be penetrated at the touch point and a triangular pattern is cut to relieve the negative pressure. This buckle section controls the minimum to maximum vacuum relieving pressures. After reversing, the pre-punched holes in the perforated metal top section provide flow through the disc.

### POSITIVE PRESSURE RELIEF

The perforated metal top features 6 holes at the apex of the rupture disc. These holes control the burst pressure in a forward-acting burst scenario. The rupture disc itself has six pre-cut sections that, in relieving positive overpressure, will open in a flower petal arrangement allowing quick relief. The Lo-V is a non-fragmenting rupture disc and will withstand an 80% operating to stamped burst pressure ratio in the positive direction.

### HOLDER OPTIONS

Two Lo-V holder options are available for your applications:

Bolted Type holders are designed for installation between ANSI, JIS or DIN class flanges and are available in sizes 3" to 8". Proper rupture disc alignment is secured with the use of locator pins and the knife blade assembly is permanently affixed in the holder inlet. This holder is available in 316 Stainless Steel.

Sanitary Ferrule Type holders were the first of the knife blade rupture disc holders to be designed specifically with no crevices or ledges, making it one of the most current 3-A authorized devices in its class. This holder is designed to operate leak-free, helping to protect your process from contamination and the release of hazardous product into the surrounding environment. The included sanitary-type quick disconnect clamp allows for fast installation and rupture disc replacement. This holder is available in 316 Stainless Steel.

*Note: The Lo-V rupture disc and Lo-V (F) holder match up to the corresponding ferrule sizes shown in the table below.*

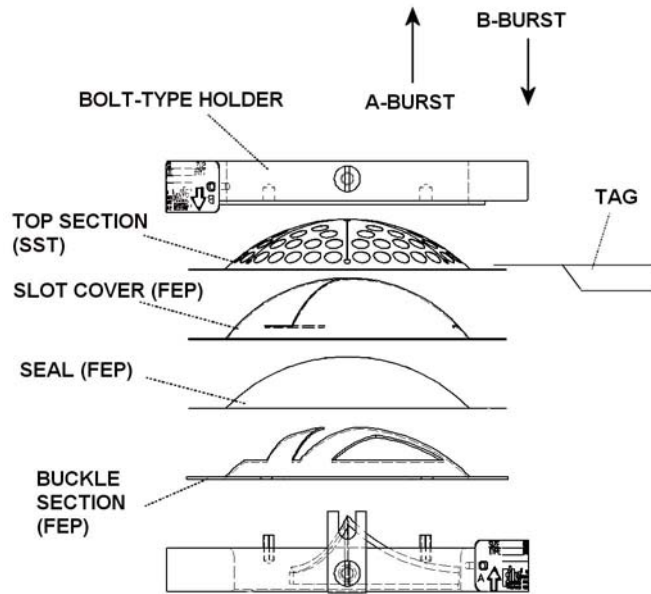
Rupture Disc Size (inches)	Corresponding Sanitary Ferrule Size (inches)
3	4
4	6
6	8
8	10

Form No. R.1.07.01-3

"A" DIRECTION (TOP SECTION) BURST PRESSURES

Disc Size	"A" Direction Burst Pressure Range					
	Top Section Material: 316L SST					
	Min. BP @ 72°F		Max BP Bolted Holder @ 72°F		Max BP Sanitary Holder @ 72°F	
	psig	barg	psig	barg	psig	barg
3"	8	.55	150	10	100	7
4"	7	.48	125	9	75	5.2
6"	4	.28	100	7	50	3.4
8"	3	.21	75	5.2	40	2.1

EXPLODED VIEW OF LO-V DISC AND BOLT-TYPE HOLDER



- A-burst:** High pressure direction
- B-burst:** Low pressure direction
- Top section:** The controlling element in the "A-burst" direction. Process pressure is applied to the top section through the seal
- Slot Cover:** Protects the seal from abrasion on the hole edges of the top section. Pre-slitted so it adds no strength to the burst pressure in either direction
- Seal:** The seal transfers differential pressure to either the top or the buckle section
- Buckle Section:** The controlling element "B-burst" direction. Pressure applied through the seal to the buckle section eventually results in reversal

"A" DIRECTION MANUFACTURING RANGES AND RUPTURE TOLERANCES

Burst Pressure		Mfg. Range	Rupture Tolerance	Performance Tolerance
psig	barg			
3 - 5.9	.21 - .41	± 40%	± 25%	± 2 psi (.14 barg)
6 - 8.9	.41 - .61		± 20%	
9 - 12.9	.62 - .89	± 30%	± 15%	
13 - 14.9	.9 - 1.02	+20/-10%	± 10%	
15 - 19.9	1.03 - 1.37		± 2%	
20 - 39.9	1.38 - 2.75	+14/-4%	± 5%	± 10psi (.69 barg)
40 - 50.9	2.76 - 3.51			
51 - 100.9	3.52 - 6.96	+10/-4%		
101 - 170	6.97 - 11.72	+7/-4%		

**“B” DIRECTION (BUCKLE SECTION) BURST PRESSURES AND TOLERANCES**

Disc Size	“B” Direction Burst Pressure Ranges and Rupture Tolerances				
	Initial Relief (in WC @ 72°F)				Rupture Tolerance
	Teflon Buckle Section		316 Buckle Section		
	Min	Max	Min	Max	
3	1	30	6	30	+6 in WC from initial relief rating
4	1	30	6	30	
6	1	30	6	30	
8	1	20	6	30	

**UNIQUE BLADE DESIGN OFFERS SUPERIOR RELIEF PERFORMANCE**



- Up to 3 times better flow relief in the “B-burst” or reverse direction
- Patents-pending blade design offers less resistance to cutting
- One less knife blade eliminates a weld joint and a potential trap for contaminants
- Sanitary-style holder and disc combination is 3-A authorized

**DESCRIPTION**

The unique Fike Lo-V holder design provides superior flow relief in the B-Burst direction. By removing the 3rd blade, the Lo-V holder actually becomes a single blade that is bent in the middle. Less blade in contact with the seal material means that there is less resistance to cutting and testing shows that this unique blade design relieves pressure up to 3 times more effectively than conventional 3-blade models! Another benefit to this design is that a critical weld joint is eliminated. Stringent sanitary requirements can make weld joints problematic, making it necessary to grind and polish them to prevent crevices that would otherwise be potential hideouts for material build-up. Fike's ferrule-style Lo-V holder has the most current 3-A authorization and is an excellent choice for your special applications.

**RECOMMENDED TEMPERATURE LIMITS**

Buckle Section	Temperature Limits	
Teflon	-40°F / 150°F	-40°C / 66°C
316SS	-40°F / 400°F	-40°C / 204°C

RELIEF AREA SPECIFICATIONS

Requested "B" Burst Pressure	"B" Direction Flow Area (in <sup>2</sup> ) by Size* at Maximum Relieving Pressure (i.e. Requested BP + 6 in WC)			
	3"	4"	6"	8"
1	.2	.56	1.54	3.74
2	.21	.57	1.63	3.85
3	.21	.58	1.72	3.95
4	.21	.59	1.8	4.06
5	.22	.6	1.89	4.17
6	.22	.6	1.98	4.28
7	.22	.61	2.06	4.39
8	.22	.62	2.15	4.5
9	.23	.63	2.23	4.61
10	.23	.63	2.32	4.72
11	.23	.64	2.41	4.82
12	.24	.65	2.49	4.93
13	.24	.66	2.58	5.04
14	.24	.66	2.66	5.15
15	.24	.67	2.75	5.26
16	.25	.68	2.84	5.37
17	.25	.69	2.92	5.48
18	.25	.7	3.01	5.58
19	.26	.7	3.1	5.69
20	.26	.71	3.18	5.8
21	.26	.72	3.27	5.91
22	.26	.73	3.35	6.02
23	.27	.73	3.44	6.13
24	.27	.74	3.53	6.24
25	.27	.75	3.61	6.34
26	.28	.76	3.7	6.45
27	.28	.76	3.78	6.56
28	.28	.77	3.87	6.67
29	.28	.78	3.96	6.78
30	.29	.79	4.04	6.89

The "A" direction flow is limited by the open area of the buckle section which is variable based on the "B" direction burst pressure

Disc Size	"A" Direction Flow Area		
	Specified Buckle Section Burst Pressure (in WC)		Area (in <sup>2</sup> )
	From	Up to	
3	1	10	6.11
	10	20	5.42
	20	30	4.74
4	1	10	11.66
	10	20	9.18
	20	30	6.71
6	1	10	28.14
	10	20	23.08
	20	30	18.02
8	1	10	47.98
	10	20	37.92
	20	30	27.87

*\*Note: Sanitary holder uses one disc size smaller than the mating ferrule size.*

