



# Installation Instructions

## For 30° Angle Seated Bolted Type Rupture Disk Holders

Rupture Disk Series: PB, D & TLD

---

### 1) **WARNING**

- a) Read the complete instructions before attempting to install the rupture disk and holder assembly.
- b) It is the user's responsibility for the design of adequate venting and installation of adequate vent piping or directional flow after rupture occurs with the rupture disk as intended. When size is specified, ZOOK Enterprises, LLC, ZOOK Europe Ltd. or ZOOK Canada Inc. assumes that adequate provisions have been made by the purchaser and/or user for proper venting of a system to relieve the specific pressure. Locate the rupture disk where people or property will not be exposed to the system discharge in the event of rupture. Vent toxic or flammable fumes to a safe location to prevent personnel injury or property damage.
- c) It is the user's responsibility to specify the burst pressure rating at the coincident temperature at which the rupture disk is to be used. A rupture disk is a temperature sensitive device. The burst pressure of the rupture disk is directly affected by its exposure to the coincident temperature. Failure to utilize a rupture disk at the specified coincident temperature could cause premature failure or overpressurization of the system.
- d) Particles may discharge when the rupture disk ruptures. These particles may be part of the rupture disk itself, or other environmental matter in the system. It is the user's responsibility to ensure that the particles are directed to a safe area to prevent personnel injury or property damage.
- e) Rupture disk service life is affected by corrosion, creep and fatigue, and physical damage. These conditions will derate the rupture disk to a lower pressure. The user should be prepared to handle a premature failure of the rupture disk. The media or other environmental conditions should not allow for any build-up or solidification of media on the rupture disk. This may increase the burst rating of the rupture disk.
- f) ZOOK rupture disks, when installed in their respective holders correctly, will provide a very good seal for liquids and most gases or vapors. However, ZOOK Enterprises, LLC, ZOOK Europe Ltd., or ZOOK Canada Inc. cannot guarantee the leakage rate of the disk seal without prior knowledge of the requirement and details of the piping layout. Consult ZOOK Enterprises, LLC, ZOOK Europe Ltd., or ZOOK Canada Inc. for guidance if leakage is critical to the installation.
- g) The customer and/or its installer shall be responsible for the proper installation of rupture disk device into a system. Recommended torque values do not consider piping stress or alignment.
- h) Customer and/or its installers shall be responsible for improper installation and physical damage resulting therefrom, including, but not limited to, damage resulting from leakage, improper torquing, and/or failure to follow installation instructions.
- i) ZOOK Enterprises, LLC, ZOOK Europe Ltd. or ZOOK Canada Inc. standard Terms and Conditions of Sale apply unless otherwise stated in writing by the manufacturer.

### 2) **Holder Inspection and Preparation – New Holders**

- a) Carefully remove the rupture disk holder from its packaging and disassemble by removing the pre-assembly tab screws for insert type holders, or pre-assembly capscrews for bolted type holders, and lift the outlet flange up and set aside. Discard the brown shipping paper sandwiched between the two halves of the holder.
- b) Wipe with a clean cloth and suitable solvent to remove all rust inhibitors and foreign material.
- c) Inspect the seat area for any scratches, dents, or nicks. Imperfections on these surfaces can cause leaks. DO NOT USE if any scratches, dents or nicks are detected, contact ZOOK immediately for instructions.
- d) The holder must not be machined or modified in any way without prior written approval from ZOOK.

### 3) **Holder Inspection and Preparation – Existing Holders**

- a) For existing installations remove the complete assembly (disk and holder) from the piping by removing the companion flange studs and nuts and place on a clean flat surface.
- b) Disassemble the assembly by removing the pre-assembly tab screws for insert type holders, or preassembly capscrews for pre-torque and bolted type holders, and lift the outlet flange up and set aside.
- c) Remove the used rupture disk from the holder.
- d) Inspect the holder's mating surfaces for foreign material. Remove any adhered gasket material from the previous installation and clean the gasket surfaces of the holder thoroughly. Dirt and grit on these surfaces can cause leaks.
- e) Inspect the seat area for any scratches, dents, or nicks. Imperfections on these surfaces can cause leaks. DO NOT SCRAPE OR SCRATCH any seating surface. If wiping these surfaces with a clean cloth and suitable solvent does not remove surface residue, fine emery cloth or steel wool may be utilized. Care should be exercised not to exert sufficient pressure on the emery cloth or steel wool to cut or groove these sealing surfaces. DO NOT USE if any scratches, dents or nicks cannot be removed, contact ZOOK immediately for instructions.
- f) The holder must not be machined or modified in any way without prior written approval from ZOOK.

#### 4) Assembly of the Rupture Disk and Holder

- a) **CAUTION:** All ZOOK Rupture Disks are recommended for installation into holders manufactured by ZOOK ONLY.
- b) **CAUTION:** Rupture disks are precision instruments and must be handled with extreme care. Rupture disks should be installed only by qualified personnel familiar with rupture disks and proper piping practice.
- c) **CAUTION:** ZOOK does not recommend reinstalling a rupture disk that has been removed from its holder. Reinstallation may adversely affect the sealing capabilities and/or the performance of the rupture disk.
- d) Place the holder inlet on a clean flat work surface with the flow arrows pointing up from the work surface.
- e) Carefully remove the disk from its package.
- f) Examine the disk carefully before installation. **DO NOT USE IF THERE IS ANY INDICATION OF DAMAGE.** Handle with extreme care.
- g) Place the disk on the inlet so the convex (dome) side of the disk and the flow direction arrows pointing up from the work surface. There should be a slight rock of the disk from side to side. **DO NOT USE A GASKET.**
- h) Carefully place the outlet on the rupture disk with the flow direction arrows pointing up from the work surface.
- i) Carefully rotate the outlet to align the preassembly screw holes (on the O.D. of the inlet and outlet) or pre-assembly capscrew holes.
- j) For "insert" type assembly 7A holders, fasten the assembly together by reinstalling the pre-assembly tabs and screws as shown in Figure 1. The pre-assembly screws should be snug, NOT wrench-tight. The inlet and outlet halves of the holder should remain parallel to each other.
- k) For "bolted" type assembly 1 thru 9 holders, fasten the assembly together by reinstalling the pre-assembly capscrews as shown in Figure 2 snug, NOT wrench-tight. The inlet and outlet halves of the holder should remain parallel to each other.

#### 5) Installation of the Assembly (Disk and Holder) into the System

- a) To achieve a high degree of success in attaining accurate burst pressures and a leak-free joint, several steps are required. **It is imperative that a regimented bolt-up procedure is applied.**
  - 1) Inspect the Companion Flanges:
    - (1) Before installing the assembly into the system, ensure that the companion flange gasket surfaces are clean and free from all rust, corrosion, and foreign material. The allowable imperfections in the flange gasket surface should not exceed the depth of the surface finish grooves, and that the radial marks are no deeper than the depth of the flange surface finish and less than 50% in length of the overall gasket sealing surface width.
    - (2) To assure proper sealing of the assembly and flange gaskets parallelism, flatness, and waviness should be within 0.008" (0.2mm) or better.
  - 2) Insert the assembly between the companion flanges insuring that **ALL FLOW ARROWS POINTING IN THE PROPER DIRECTION.** The concave hollow side of the disk should be facing towards the process pressure.
  - 3) Install new gaskets between the assembly and the companion flanges. We recommend compressed fiber gasket no greater than 1/16" (1.6mm) thick. The user is cautioned to select a gasket material that is suitable for the intended service and will resist "cold flow". In the event of cold flowing of the gaskets, the assembly torque will relax in non-pretorqueable holders, which can result in erratic bursting of the rupture disk and/or leakage.
  - 4) Do not apply any compounds to the gasket or seating surfaces.
  - 5) Reinstall companion flange studs and nuts, making sure they are free of any foreign matter, and well lubricated. Lubricate the nut bearing surfaces as well. Lubrication is not required if PTFE coated fasteners are used.
  - 6) **WARNING:** If the assembly is installed upside down, the burst pressure may exceed the marked burst pressure. **PAY CLOSE ATTENTION TO THE DIRECTIONAL ARROWS ON THE DISK AND HOLDER.**
  - 7) **WARNING:** The disk tag is designed to provide critical information about the Rupture Disk only and should NOT be used as a hand hold to lift or adjust the assembly during installation. This practice can damage the disk resulting in failure of the disk below its marked burst pressure.
  - 8) Run-up all nuts finger tight while maintaining parallelism in accordance with 5.a.1.2.
  - 9) Using a torque wrench, develop the required torque incrementally in a minimum of four (4) steps in a crisscross pattern. The initial torque should be no more than 30% of the final required torque listed in table #1A & #1B. After following this sequence, a final tightening should be performed bolt-to-bolt to ensure that all bolts have been evenly torqued.
    - (1) The use of hardened washers will enhance the installation by reducing the friction due to possible galling of the nut bearing surfaces.
  - 10) Verify parallelism is in accordance with 5.a.1.2.
  - 11) Companion flange torque values should be verified periodically at the system temperature.

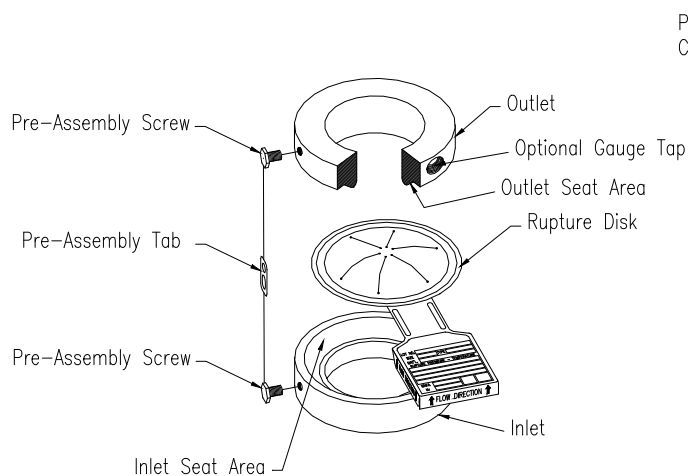


Figure No. 1

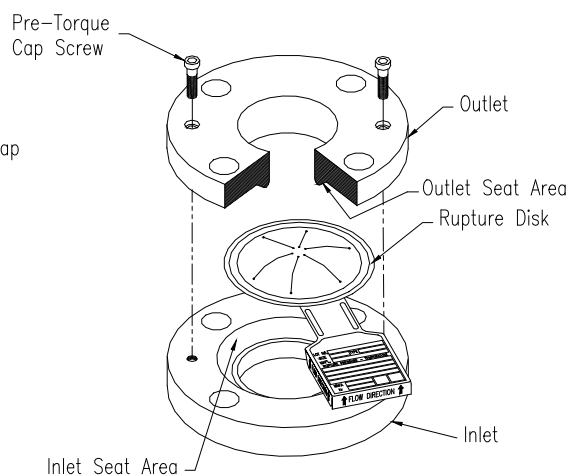


Figure No. 2

Table #1A – Recommended Torque Table							
Size		Flange Series		Companion Flange Bolting Torque			
IN	MM	ANSI	DIN	FT-LB		N-M	
				Teflon Seal	All Metal (Plastic Liner)	Teflon Seal	All Metal (Plastic Liner)
1/2"	13	150	10/16	5	9	8	12
		300	25/40	5	9	8	12
		600	64/100	5	9	8	12
		900		30	34		
		1500	160	30	34	24	29
			250			36	39
3/4"	20	150	10/16	16	14	20	18
		300	25/40	20	17	20	17
		600	64/100	20	17		
		900		86	85		
		1500	160	86	85		
			250				
1"	25	150	10/16	15	28	19	36
		300	25/40	20	36	20	37
		600	64/100	20	36	27	49
		900		60	100		
		1500	160/250	60	100	59	98
			250				
1-1/2"	38	150	10/16	18	30	31	51
		300	25/40	32	40	36	46
		600	64/100	32	40	36	46
		900		140	160		
		1500	160	140	160	120	137
			250			149	171
2"	50	150	10/16	72	96	98	131
		300	25/40/64	40	48	109	131
		600	100	40	48	137	164
		900		110	152		
		1500	160	110	152	268	371
			250			134	185
3"	80	150	10/16	96	110	66	75
		300	25/40/64	72	80	82	91
		600	100	72	80	102	114
4"	100	150	10/16	60	100	82	137
		300	25/40	60	100	68	114
		600	64	110	152	134	185
			100			161	223

Note 1 - Torque values assume the threads are lightly oiled and free running.

Note 2 - For some installation increased torque may be required for sealing. Consult ZOOK for increased torque values.

Note 3 - Companion flange torque values should be verified periodically at the system temperature.

Table #1B – Recommended Torque Table							
Size		Flange Series		Companion Flange Bolting Torque			
IN	MM	ANSI	DIN	FT-LB		N-M	
				Plastic Component	All Metal	Plastic Component	All Metal
6"	150	150	10/16	75	160	107	229
		300	25/40	56	100	150	268
		600	64	60	108	160	289
			100			107	192
		900					
8"	200	150	10/16	140	260	133	248
		300	25	120	200	185	308
			40			222	370
		600	64/100	116	208	200	358
10"	250	150	10/16	140	260	216	401
		300	25	124	212	262	448
			40			295	204
		600	64/100				
12"	300	150	10/16	160	280	246	431
		300	25	150	260	207	358
			40			232	403
		600	64/100				
14"	350	150	10/16	200	360	264	475
		300	25	140	240	271	465
			40			301	516
		600	64/100				
16"	400	150	10/16	180	276	285	437
		300	25	172	264	334	512
			40			367	563
		600	64/100				
18"	450	150	10/16	200	380	285	
		300	25	190	360	334	
			40			367	737
		600	64/100				
20"	500	150	10/16	180	350	203	542
		300	25				
			40			389	
		600	64/100				
24"	600	150	10/16	240	480	279	745
		300	25/40				
		600	64/100				

Note 1 - Torque values assume the threads are lightly oiled and free running.

Note 2 - For some installation increased torque may be required for sealing. Consult ZOOK for increased torque values.

Note 3 - Companion flange torque values should be verified periodically at the system temperature.