



# INSTALLATION INSTRUCTIONS

## For Flat Seated Bolted Type Z-POS/Z-VAC Series Disks and Holders

### 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 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 cannot guarantee the leakage rate of the disk seal without prior knowledge of the requirement and details of the piping layout. Consult ZOOK 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 standard Terms and Conditions of Sale apply unless otherwise stated in writing by the manufacturer.

### 2) HOLDER INSPECTION AND PREPARATION

- a) For new holders carefully remove the Rupture Disk holder from its packaging and place it on a clean flat surface with the knife-blades pointing up. The knife-blades are in the inlet half of the holder for the Z-VAC design and the outlet half of the holder for the Z-POS design).
  - a) Disassemble the holder by removing the pre-assembly tab screws and separating the inlet from the outlet.
  - b) Discard the metal shipping protector sandwiched between the two halves of the holder.
- b) For existing installations remove the complete assembly (disk and holder) from the piping by removing the companion flange studs and nuts and place it on a clean flat surface with the knife-blades pointing up (The knife-blades are in the inlet half of the holder for the Z-VAC design and the outlet half of the holder for the Z-POS design)
  - a) Disassemble the holder by removing the pre-assembly tab screws and separating the inlet from the outlet.
  - b) Remove and dispose of the used Z-POS/Z-VAC Rupture Disk.
  - c) 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.
- c) Examine the sealing surfaces very carefully. 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.
- d) Inspect the knife-blade points and edges. Knife-blade edges must be razor sharp and nick free, points must be sharp and undamaged for the disk to operate correctly. **DO NOT USE if the blades are dull, nicked, or damaged.** Consult the factory for replacement of dull or damaged blades.
- e) The holder must not be machined or modified in any way without prior written approval from ZOOK.

### 3) REMOVAL AND INSTALLATION OF REPLACEMENT BLADES (IF APPLICABLE)

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- a) The functionality of the Z-Pos / Z-Vac holder is dependant on the sharpness and integrity of the blades. Removal and replacement of the blade assembly should be carried out as follows (See FIGURE 1.5):
- b) **CAUTION:** – The knife-blades in the holder are extremely sharp. Be very careful when handling.
  - a) Remove, disassemble and inspect holder as listed in **Section 2**.
  - b) Remove protective cover from packaging and place over existing blades. Install the provided retaining clips and ¼-20 assembly screws as shown in Figure 1.1. The protective cover and retaining clips are included to provide protection to the installer and blades during assembly. The cover and screws should be discarded after the installation process.
  - c) Using a small hammer tap gently, from the backside on the flat edges of all three (3) blades as well as in the center. Take care not to strike any component of the holder other than the blade.
  - d) Once the blade and three (3) retaining plugs have come free of their bore, **carefully** remove the protective cover and blade.
  - e) Remove replacement blade from package and place them in the blade carrier holes. Align as shown in FIGURE 1.2.
  - f) Place the protective cover over the new blades. Install the Retaining Clips using ¼-20 screws.
  - g) Remove the three (3) teflon plugs from their packaging. The plugs must be aligned as shown in FIGURE 1.3.
  - h) Push the plugs in using a finger or thumb so that they are snug. **DO NOT** use excessive force.
  - i) Remove provided 7/32" Punch from package and use it in combination with a small hammer to gently tap plugs into their final location (the plugs should be flush or recessed in carrier holes to allow for proper mating and parallelism of the holder and disk faces). See FIGURE 1.4.
  - j) Remove and discard the protective cover and retaining clips.

#### 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) **CAUTION:** – The knife-blades in the holder are extremely sharp. Be very careful when handling.
- 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 knife-blade half of the holder on a flat surface with the blades facing up.
- h) Place the new Rupture Disk onto the holder (dome facing up) engaging the alignment holes in the disk flange and the alignment pins of the holder. **DO NOT USE A GASKET.**
- i) Position the remaining half of the holder onto the assembly, engaging the alignment holes and pins. Be careful not to damage the Rupture Disk.
- j) Secure the assembly together by installing the pre-assembly tabs and screws. The pre-assembly screws should be snug, NOT wrench-tight.

#### 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.**

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.
- b) Insert the assembly between companion flanges insuring that **ALL FLOW ARROWS POINTING IN THE PROPER DIRECTION.**

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- c) 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 **irratric** bursting of the Rupture Disk and/or leakage.
- d) Do not apply any compounds to the gasket or seating surfaces.
- e) Install 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.
- f) **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.**
- g) **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.
- h) Run-up all nuts finger tight while maintaining parallelism.

#### 6) COMPANION FLANGE TORQUING PROCEDURE

- a) 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 #1. After following this sequence, a final tightening should be performed bolt-to-bolt to ensure that all bolts have been evenly torqued. Under torquing can cause lower than expected burst pressures.
- b) The use of hardened washers will enhance the installation by reducing the friction due to possible galling of the nut bearing surfaces.
- c) Verify parallelism.
- d) Companion flange torque values should be verified periodically at the system temperature.

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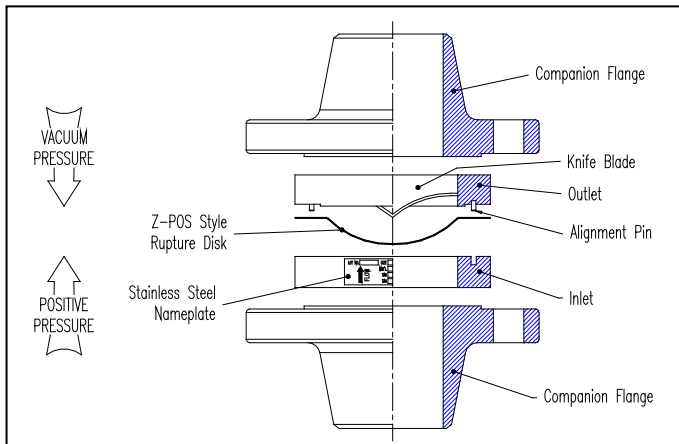
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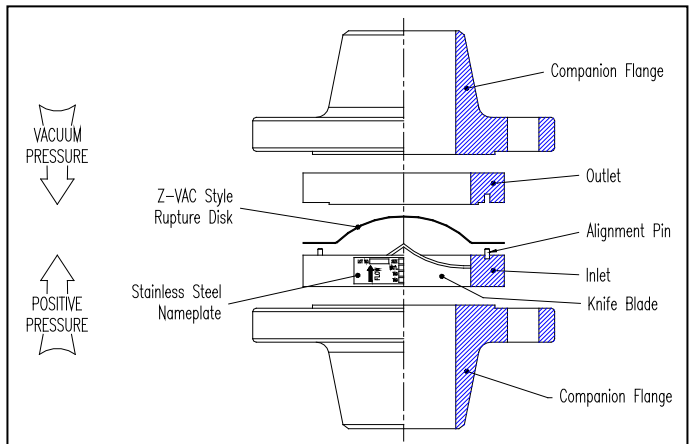
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| Torque Table 1 |       |               |       |                    |     |
|----------------|-------|---------------|-------|--------------------|-----|
| SIZE           |       | Flange Rating |       | Recommended Torque |     |
|                |       | ANSI          | DIN   | Ft. Lbs.           | NM  |
| 2"             | 50mm  | 150           |       | 40                 | 54  |
|                |       |               | 10/16 | 20                 | 27  |
| 3"             | 80mm  | 150           |       | 40                 | 54  |
|                |       |               | 10/16 | 20                 | 27  |
| 4"             | 100mm | 150           | 10/16 | 30                 | 41  |
| 6"             | 150mm | 150           |       | 40                 | 54  |
|                |       |               | 10/16 | 42                 | 67  |
| 8"             | 200mm | 150           |       | 50                 | 68  |
|                |       |               | 10    | 52                 | 70  |
|                |       |               | 16    | 35                 | 47  |
| 10"            | 250mm | 150           |       | 70                 | 95  |
|                |       |               | 10    | 63                 | 85  |
|                |       |               | 16    | 76                 | 103 |
| 12"            | 300mm | 150           |       | 80                 | 108 |
|                |       |               | 10    | 72                 | 98  |
|                |       |               | 16    | 86                 | 117 |



**Typical Z-POS Installation**



**Typical Z-VAC Installation**



FIGURE 1.1

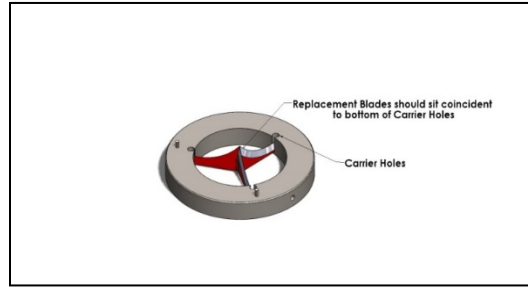


FIGURE 1.2

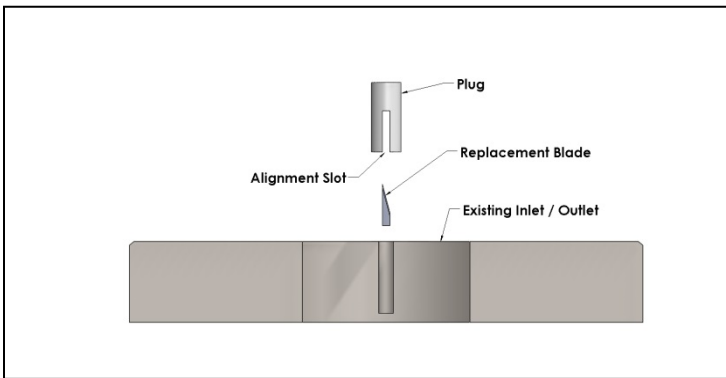


FIGURE 1.3

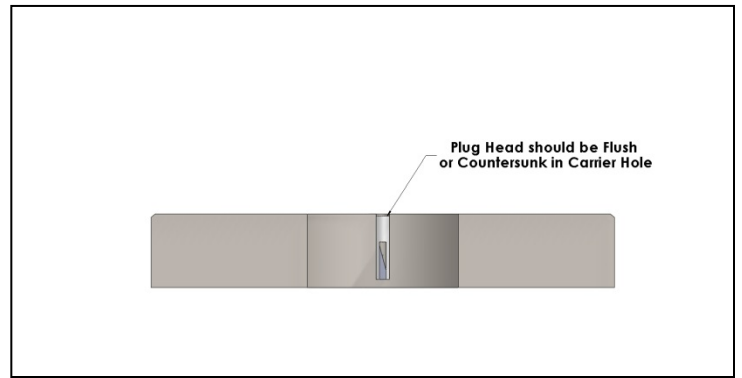


FIGURE 1.4

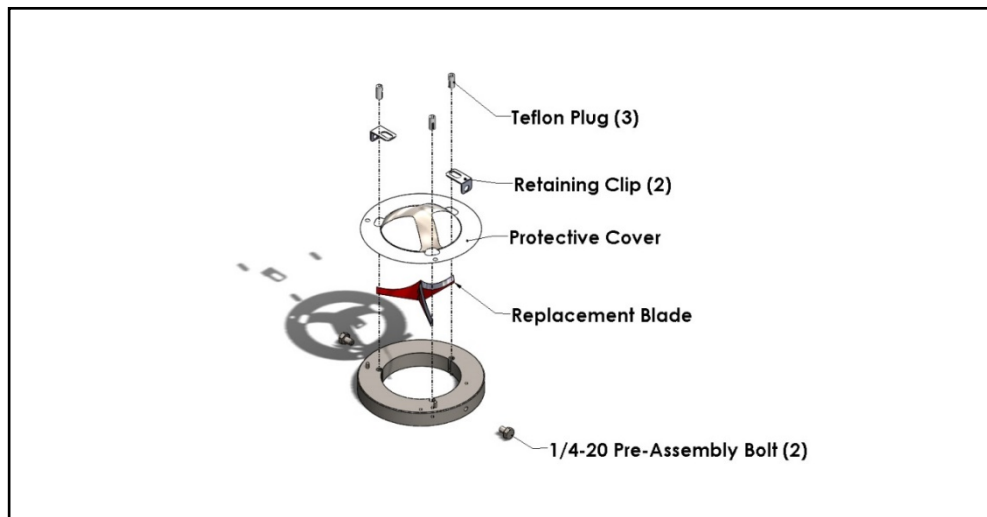


FIGURE 1.5