

WARNINGS

Read the complete instructions before attempting to install the rupture disk and holder assembly.

- a) *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.*
- b) *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 over-pressurization of the system.*
- c) *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 particles are directed to a safe area to prevent personnel injury or property damage.*
- d) *Rupture disk service life is affected by corrosion, fatigue and physical damage. These conditions may de-rate 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.*
- e) *The customer and/or its installer shall be responsible for the proper installation of rupture disk device into a system.*
- f) *Customer and/or its installers shall be responsible for improper installation and physical damage resulting there from, including, but not limited to, damage resulting from leakage, improper torqueing, and/or failure to follow installation instructions.*
- g) *Extraneous stresses from vent line, supports surrounding structure, and subsequent structural changes must not be allowed to cause excessive and/or unequal forces on the disk.*
- h) *Vent piping must be adequately supported to withstand forces generated during blow-down conditions*
- i) *ZOOK standard Terms and Conditions of Sale/Contract apply unless otherwise stated in writing by ZOOK.*

CAUTIONS

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.

Examine each disk carefully before installation. Handle with extreme care.

DO NOT USE IF THERE IS ANY INDICATION OF DAMAGE.

Refer to the appropriate ZOOK product bulletin for complete dimensions and product specifications/limitations.

Get the latest ZOOK installation guides and product literature on the worldwide web at www.zook.cc or follow this QR code on your smartphone to be connected directly to our website.



INSTALLATION PROCEDURE

To achieve accurate burst pressures and a leak-free joint, several steps are required. It is imperative that a proper bolt-up procedure is applied.

- 1) Inspect the Companion Flanges and Holder for cleanliness, damage and alignment:
 - a. Before installing the assembly into the system, ensure that the companion flange and holder sealing 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.
 - b. To assure proper sealing of the assembly and flange gaskets parallelism, flatness, and waviness should be within 0.008" (0.2mm) or less.
- 2) Check disk condition and specification prior to inserting the disk between the inlet and outlet insuring that ALL FLOW ARROWS ARE POINTING IN THE PROPER DIRECTION. Do not lift the disk using the disk tag – handle disk at the rim / edge.

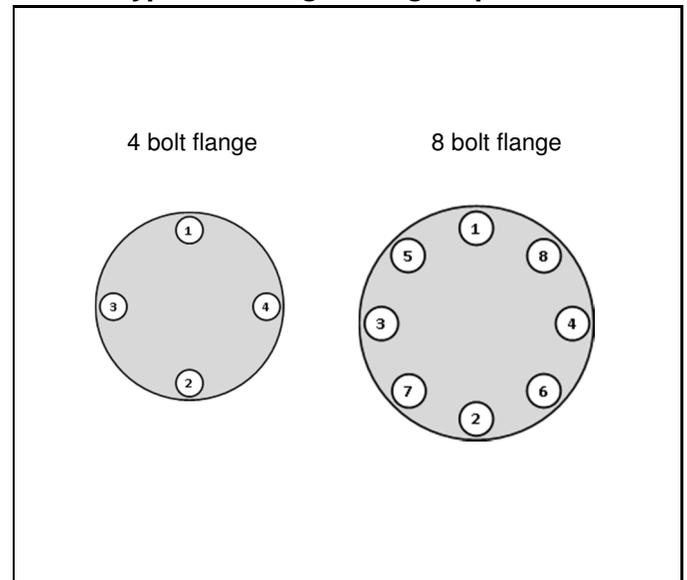
WARNING: If the rupture disk is installed upside down, the burst pressure may exceed the marked burst pressure. PAY CLOSE ATTENTION TO THE DIRECTIONAL ARROWS ON THE RUPTURE DISK ASSEMBLY

- 3) Install new gaskets between the rupture disk assembly and the companion flanges. ZOOK recommends compressed fiber gasket no greater than 1/8". 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, 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) Run-up all nuts finger tight while maintaining parallelism
- 7) Determine the recommended bolting torque from Table 1.
- 8) Using a calibrated torque wrench, apply torque incrementally in a minimum of three (3) passes [30%, 60%, 100% of specified recommended torque] using a crossing pattern tightening sequence (see diagrams below). After following this sequence, a final tightening should be performed using a circumferential pattern moving bolt-to-bolt to ensure that all bolts have been evenly torqued.
- 9) Verify parallelism is in accordance with 1) a. above.
- 10) Torqueing loss is inherent in any bolted joint. The combined effects of bolt relaxation, gasket creep, vibration in the system, thermal expansion and elastic interaction during bolt tightening contribute to torque loss. Companion flange torque values should be verified periodically at the system temperature.

Table 1 – Torque Values

NOMINAL		TORQUE FT-LB (N-m)			
SIZE		ANSI	DIN		
NPS	DN	150	PN6	PN10	PN16
1	25	9 (12.2)	7 (9.5)	9 (12.2)	
1 ½	40	12 (16.3)	12 (16.3)	15 (20.3)	
2	50	17 (23.0)	14 (19.0)	17 (23.0)	
2 ½	65	30 (40.7)	30 (40.7)	30 (40.7)	
3	80	34 (46.1)	34 (46.1)	17 (23.0)	
4	100	25 (33.9)	48 (65.1)	25 (33.9)	
6	150	46 (62.4)	N/A	46 (62.4)	
8	200	64 (86.8)	N/A	64 (86.8)	43 (58.3)
10	250	80 (108.5)	N/A	80 (108.5)	N/A
12	300	80 (108.5)	N/A	80 (108.5)	N/A

Typical bolt tightening sequences



Standard Conditions for Torque Calculations

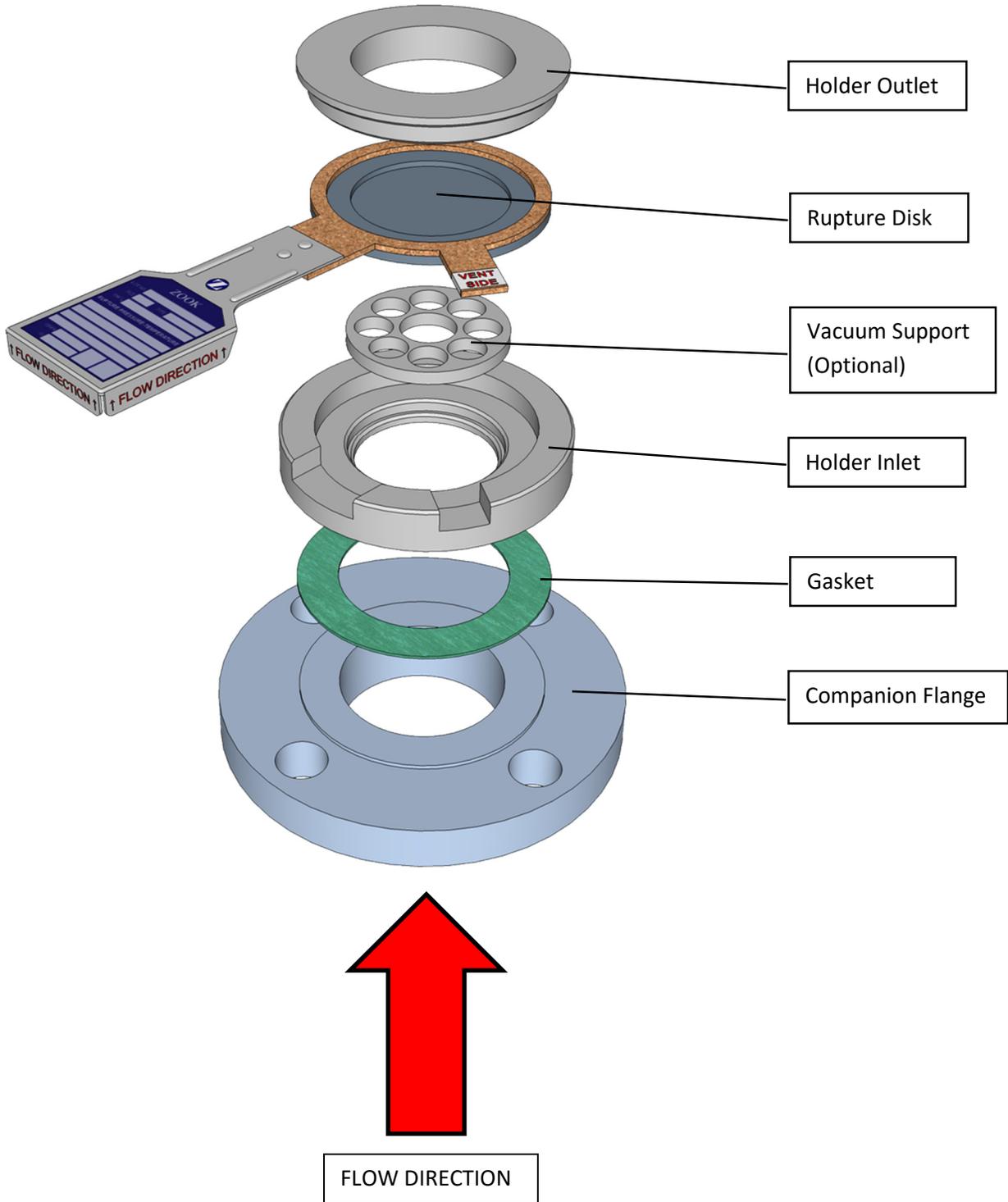
- a) The torque values provided above should be used with caution. Engineering judgment and experience is needed to allow for proper interpretation. Due to the inherent variations in the coefficient of friction, both in the threads and between the nut face and clamped surface, there is no single "correct" tightening torque for all circumstances. A range of values can be determined however given the anticipated frictional scatter. The amount of frictional scatter, which the engineer allows for when determining the clamp force and tightening torque, should be based upon experimental results taken from the application.
- b) Recommended torque values do not consider piping stress or alignment.
- c) Consult ZOOK for recommended torque values for non-standard conditions.

Actual field conditions may differ from room temperature conditions on which the above torque values are based on. In addition, these values are based on raised face welding neck flanges, free running treads and well lubricated bolts with a coefficient of friction of $\mu = 0.180$, 1/8" thk compressed fiber gaskets with design seating stress (γ) of 4400 psi and gasket factor (m) of 5.2. Re-torqueing of bolts may be necessary to nullify loss caused by gasket compression set. ASME Code Sect. VIII Div. 1 was followed for estimating required seating and operating bolt loads.

Typical RT2 series installation

Flanges and flange gaskets – user supply. Outlet flange and gasket omitted for clarity.

The disk tag is designed to provide critical information about the rupture disk and should NOT be used as a handle to hold, lift or adjust the assembly during installation. This practice can damage the disk resulting in failure of the disk.



ZOOK Enterprises, LLC

16809 Park Circle Drive
Chagrin Falls, Ohio USA 44022
Phone: +1 (800) 543-1043
Fax: +1 (440) 543-4930

ZOOK Canada Inc.

4400 South Service Road Burlington,
Ontario Canada L7L 5R8
Phone:+1 (800) 370-6057
Fax: +1 (905) 681-2885

ZOOK Europe, Ltd

Navigation House Bridge Street
Killamarsh Sheffield UK S21 1AL
Phone : +44 (1909) 5600999
Fax: +44 (1909) 560860

ZOOK Asia Sdn Bhd

Unit No 23A-05, Menara Landmark
Level 12, Jalan Ngee Heng
Phone : 0060 (7) 2910099
Fax: 0060 (7) 2910096