

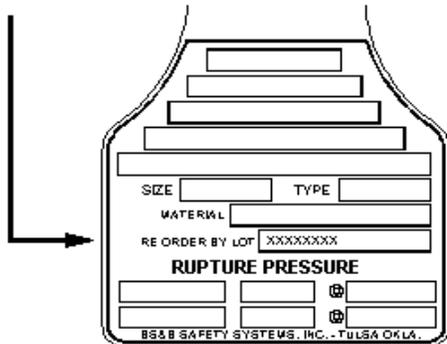


BS&B SAFETYSYSTEMS, INC.
BS&B SAFETYSYSTEMS LTD.

GFN RUPTURE DISK, NF-7RS AND NF-7R SAFETY HEAD INSTALLATION INSTRUCTIONS

**BULLETIN
77-5002I**

- ◆ **NEW INSTALLATIONS**
- ◆ **REPLACEMENT OF DISKS IN EXISTING INSTALLATIONS**
- ◆ **ORDER REPLACEMENT DISKS BY LOT NUMBER.**



Select Proper Location

1. **CAUTION - Vent to safe area.**
Check the location. Do not locate where personnel or property could be exposed to product being discharged through the Safety Head. Any equipment or property in the vicinity of discharge could be damaged.
2. Consider recoil or "kick-back." Recoil is the force the system will experience upon rupture. Recoil is approximately twice the disk rating (psig) times the relief area (in.²). Provide adequate support for piping and connections. If the discharge is free-vented, a baffle plate mounted on the Safety Head outlet with extra length studs will minimize recoil.
3. Provide adequate support for the downstream vent piping. The rupture disk should not be subjected to excessive structural bending stresses.

Before You Install The Rupture Disk:

1. **Inspect Flange**
Clean seating surfaces of both Safety Head flanges before installing rupture disk. Pits, dirt, or grit can damage rupture disk or cause leakage. If surfaces are rough, polish with a fine emery cloth. **DO NOT MACHINE!** Dimensions of the Safety Head are critical **DO NOT ALTER THEM.**

TYPE GFN RUPTURE DISKS



2. **Inspect Rupture Disk**
Handle rupture disk carefully - it is a precision instrument. Examine seating and prebulged surfaces before installing. **DO NOT INSTALL THE DISK IF THERE IS ANY DAMAGE IN THE DOME.** A damaged disk is any disk with visible nicks, dents, or scratches that show through. It must not be installed. Installation of a damaged disk may result in premature rupture of the disk.
3. The Safety Head size and ANSI bolting must match the companion flange size and ANSI rating.
4. Flange and disk materials should be compatible with your process.

CAUTION

Do not reinstall a disk that has been removed from a Safety Head fitting, even though it has not been ruptured. When stresses are relieved by unbolting; the "set" taken by the disk during its original installation may prevent a tight seal and affect performance if reinstalled. NF-7RS assemblies may only be removed from service and re-installed provided the pre-assembly cap screws are not removed and the disk is in good condition. **CORROSION AND SERVICE CONDITIONS MAY AFFECT DISK LIFE THUS REQUIRING PERIODIC CHANGE.**

See our web site at www.bsbsystems.com for updates

NF-7RS PRETORQUED INSTALLATION INSTRUCTIONS

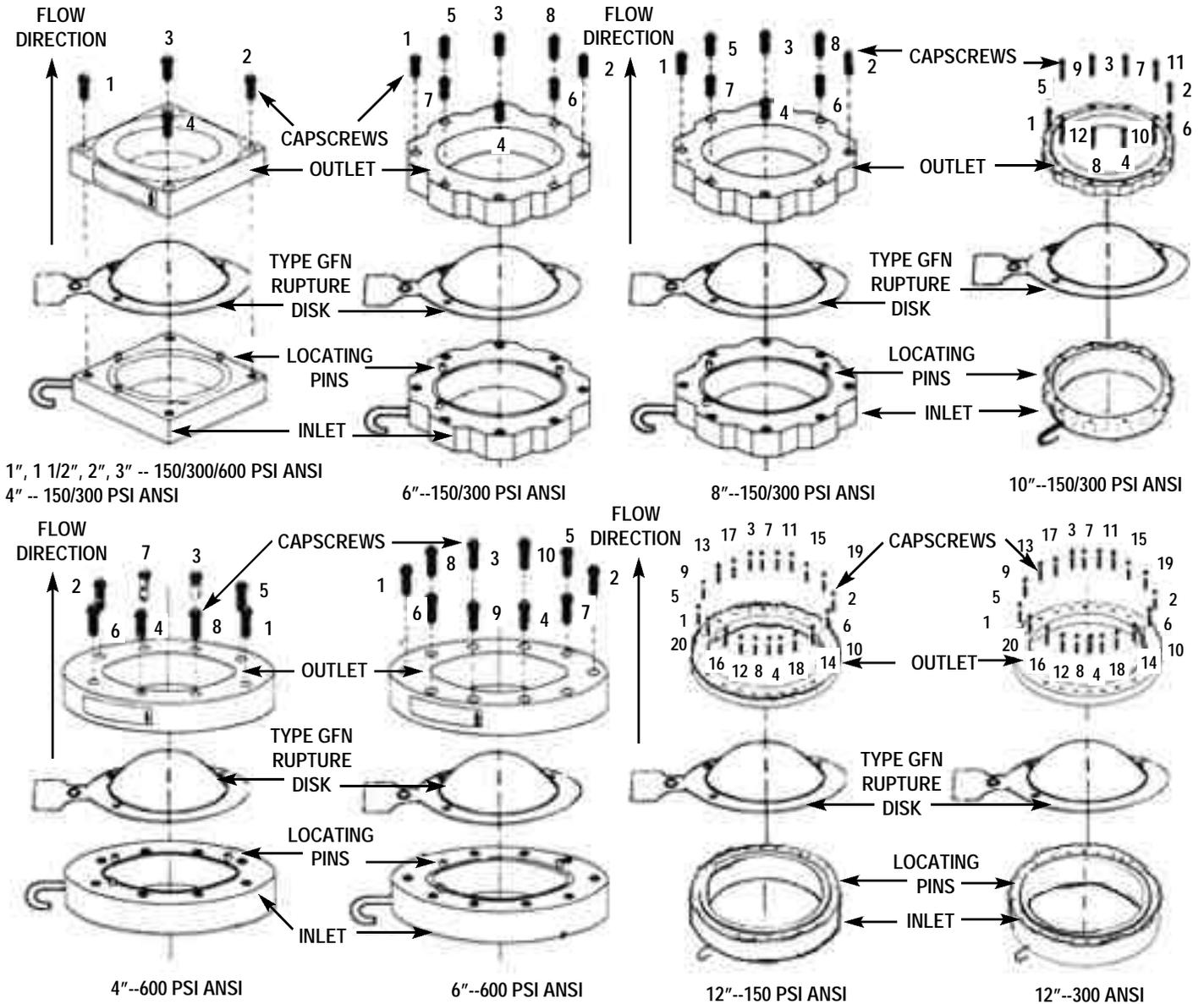


FIGURE I
SAFETY HEAD ASSEMBLIES
TYPE NF-7RS

PREASSEMBLE YOUR NF-7RS ASSEMBLY

(See appropriate figure for your assembly.)

1. Place inlet flange in position as shown, with pins UP.
2. Place NEW, UNDAMAGED rupture disk on inlet flange with dome facing up; locating pins will mate with the corresponding holes in the rupture disk.
3. Carefully place outlet flange in position as shown.
4. Assemble unit with recessed capscrews. 12 point high strength capscrews are supplied with this assembly. DO NOT SUBSTITUTE. A 12 point socket is required for preassembling the capscrews into the recess. Tighten all capscrews finger-tight before torquing.
5. Evenly torque the capscrews to the value listed in Torque Table I. As an example on a NF-7RS 1" Head, even torque can be achieved by applying 1/4 of desired final torque to capscrew (1) then apply 1/4 of desired final torque to capscrew (2) then apply 1/4 of the desired final torque to capscrew (3) then apply 1/4 of the desired final torque to capscrew (4). Continue pattern until all capscrews have the same torque. Repeat the pattern by torquing to 3/4 of the desired final torque. Then, using same pattern, torque to final specified torque as in Table I.

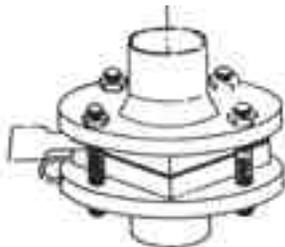
TORQUE TABLE I
NF-7RS PREASSEMBLY TORQUE

SIZE	SAFETY HEAD ANSI RATING	PREASSEMBLY CAPSCREW TORQUE (FT. LB.)		12 POINT SOCKET SIZE	SOCKET DRIVE	SUGGESTED SOCKET SOURCE SNAP-ON TOOLS
		DISK MATERIAL				
		ALUM.	OTHER			
1"	150	11	17	1/4	1/4	STMD-8
	300/600	-	60	3/8	3/8*	SF-121
	900/1500	-	60	3/8	3/8*	SF-121
1-1/2"	150	24	30	5/16	1/4	STMD-10
	300/600	-	60	3/8	3/8*	SF-121
	900/1500	-	65	3/8	3/8*	SF-121
2"	150	26	34	5/16	1/4	STMD-10
	300/600	-	65	3/8	3/8*	SF-121
	900/1500	-	100	1/2	3/8*	SF-161
3"	150	41	65	3/8	3/8*	SF-121
	300/600	-	65	3/8	3/8*	SF-121
	900	-	140	1/2	1/2*	SW-161
	1500	-	300	5/8	1/2*	SW-201
4"	150	75	102	7/16	3/8*	SF-141
	300	-	102	7/16	3/8*	SF-141
	600	-	65	3/8	3/8*	SF-121
	900	-	300	5/8	1/2*	SW-201
6"	150	47	60	3/8	3/8*	SF-121
	300	-	60	3/8	3/8*	SF-121
	600	-	102	7/16	3/8*	SF-141
	900	-	228	5/8	1/2*	SW-201
8"	150	70	84	7/16	3/8*	SF-141
	300	-	84	7/16	3/8*	SF-141
	600	-	228	5/8	1/2*	SW-201
10"	150	55	70	7/16	3/8*	SF-141
	300	-	70	7/16	3/8*	SF-141
	600	-	300	5/8	1/2*	SW-201
12"	150	22	29	5/16	3/8*	SF-101
	300	-	50	7/16	3/8*	SF-141
	600	-	150	1/2	1/2*	SW-161

*12 point, deep length, thinwall socket

Install The NF-7RS Pretorqued Assembly

1. Insert the preassembled NF-7RS Safety Head in the pressure system. MAKE SURE FLOW ARROW ON FLANGE POINTS THE DIRECTION YOU WANT FLOW TO OCCUR UPON RUPTURE. System pressure must be against concave side of disk.



NF-7RS INSTALLED IN COMPANION FLANGE

The NF-7RS nestles inside the bolting pattern of ANSI pipe flanges and the J-Bolt prevents the Safety Head from being installed incorrectly with respect to flow. The inlet companion flange must be radially drilled to accept the "J" bolt. Table IV on page 5 lists companion flange drilling dimensions.

2. Install studs with nuts. Tighten all nuts finger-tight before torquing. Evenly torque the studs to the values in Table II. Even torque can be achieved by applying 1/4 of desired final torque to each stud. Repeat pattern by torquing to 3/4 of the desired final torque. Then, using same pattern, torque to full specified torque.

TORQUE TABLE II
COMPANION FLANGE TORQUE FOR NF-7RS

SIZE	COMPANION FLANGE ANSI RATING	FLANGE STUD TORQUE (FT. LB.)
1"	150	20
	300/600	40
	900/1500	122
1-1/2"	150	25
	300/600	80
	900/1500	182
2"	150	40
	300/600	40
	900/1500	122
3"	150	50
	300/600	80
	900	122
4"	150	45
	300	90
	600	120
6"	150	200
	300	80
	600	80
8"	150	180
	300	272
	600	272
10"	150	75
	300	122
	600	272
12"	150	122
	300	182
	600	375

NOTES:

1. 12 inch pounds = 1 Foot Pound.
2. Torque values are based on free running and lightly oiled threads.
3. Torque values are for use with companion flanges that have a minimum yield strength of 25,000 PSI. Consult BS&B when using other flange materials such as glass lined, when suppliers recommend required maximum torque value which is lower than BS&B torque value.

NOTE: Install GFN Rupture Disks in NF-7RS or NF-7R Safety Heads only.

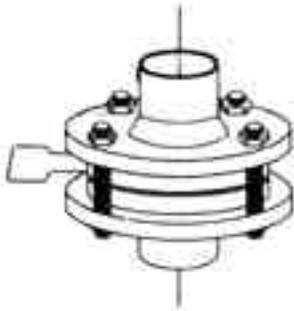
NF-7R QUIK-SERT INSTALLATION INSTRUCTIONS

PREASSEMBLE YOUR ASSEMBLY

1. Place inlet flange in position as shown, with pins UP.
2. Place NEW, UNDAMAGED rupture disk on inlet flange with dome facing up; locating pins will mate with the corresponding holes in the rupture disk.
3. Carefully place outlet flange in position as shown.
4. Assemble unit with alignment bars and capscrews. Tighten capscrews sufficiently to hold disk snugly in place between the two flanges.

Install the NF-7R Preassembly

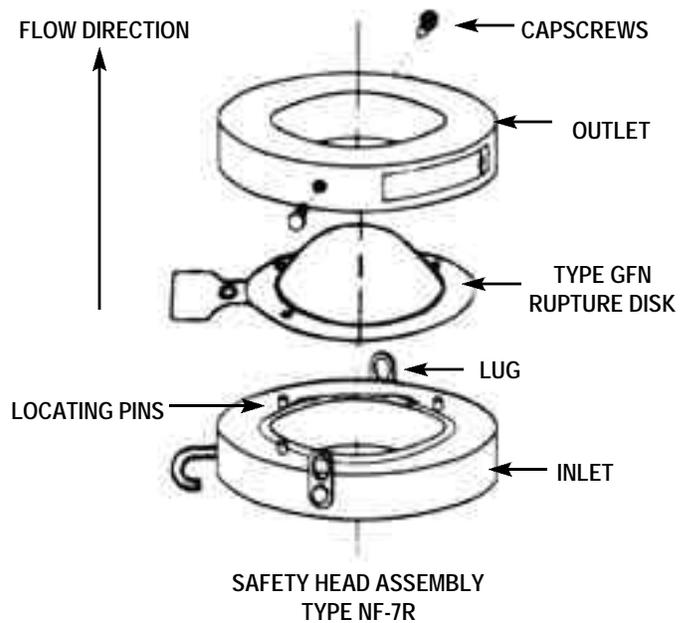
1. Insert the NF-7R Safety Head in the pressure system. MAKE SURE FLOW ARROW ON FLANGE POINTS THE DIRECTION YOU WANT FLOW TO OCCUR UPON RUPTURE. System pressure must be against concave side of disk



**NF-7R INSTALLED
IN COMPANION FLANGE**

The NF-7R nestles inside the bolting pattern of ANSI pipe flanges and the J-Bolt prevents the Safety Head from being installed incorrectly with respect to flow. The inlet companion flange must be radially drilled to accept the "J" bolt. Table IV on page 5 lists companion flange drilling dimensions.

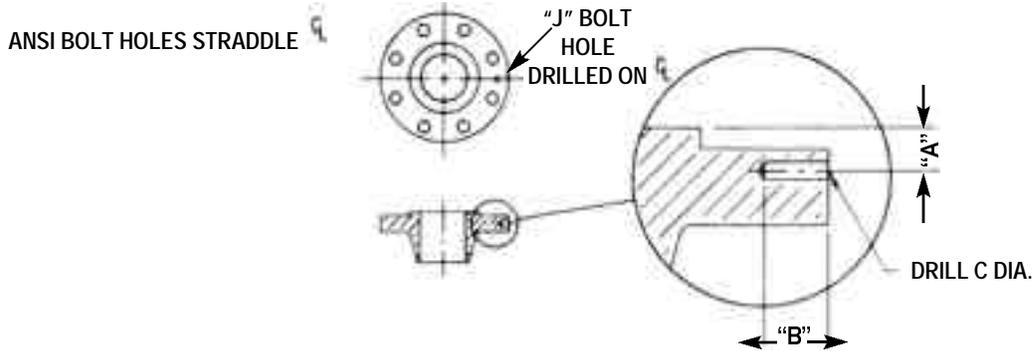
2. Install gaskets between NF-7R Safety Head and mating pipe flanges. BS&B recommends a hard compressed fiber gasket no greater than 1/32 of an inch thick for this application. However, the user is cautioned to select gasket materials adequate for the service conditions and the ability of the gasket to resist "cold flow." Gaskets that "cold flow" will allow torque relaxation which will cause low bursts. Gasketing is not critical when using the NF-7RS assemblies.
3. Install studs with nuts. Tighten all nuts finger-tight before torquing. Evenly torque the studs to the values in Table III below. Even torque can be achieved by applying 1/4 of desired final torque to each stud. Repeat pattern by torquing to 3/4 of the desired final torque. Then, using same pattern, torque to full specified torque.



**TORQUE TABLE III
COMPANION FLANGE TORQUE
FOR NF-7R**

SIZE	COMPANION FLANGE ANSI RATING	FLANGE STUD TORQUE (FT. LB.)	
		DISK MATERIAL	
		ALUMINUM	OTHER
1"	150	20	20
	300/600	-	40
	900/1500	-	122
1-1/2"	150	20	25
	300/600	-	80
	900/1500	-	182
2"	150	40	40
	300/600	-	40
	900/1500	-	122
3"	150	40	50
	300	-	80
	600	-	122
	900	-	272
4"	150	40	45
	300	-	90
	600	-	120
	900	-	200
6"	150	80	95
	300	-	95
	600	-	180
	900	-	272
8"	150	80	95
	300	-	122
	600	-	272
10"	150	100	122
	300	-	182
	600	-	375
12"	150	110	130
	300	-	272
	600	-	375

TABLE IV
COMPANION FLANGE "J" BOLT DRILLING
INLET COMPANION FLANGE ONLY



SIZE	ANSI FLANGE RATING	NF-7RS ASSEMBLIES			NF-7R ASSEMBLIES		
		A ± 1/32	B + 1/16 - 0	C	A ± 1/32	B + 1/16 - 0	C
1"	150	5/16	7/16	7/16	5/16	1/2	7/16
	300	7/16	1/2	7/16	7/16	7/16	7/16
	600	9/16	5/8	7/16	7/16	7/16	7/16
	900/1500	7/8	5/8	7/16	7/8	5/8	7/16
1 1/2"	150	3/8	7/16	7/16	7/16	1/2	7/16
	300	1/2	1/2	7/16	1/2	7/16	7/16
	600	9/16	1/2	7/16	1/2	7/16	7/16
	900/1500	7/8	5/8	7/16	7/8	5/8	7/16
2"	150	1/2	7/16	7/16	1/2	1/2	7/16
	300	9/16	11/16	7/16	1/2	5/8	7/16
	600	9/16	11/16	7/16	1/2	5/8	7/16
	900/1500	7/8	3/4	7/16	7/8	3/4	7/16
3"	150	11/16	7/16	7/16	5/8	1/2	7/16
	300	3/4	13/16	7/16	5/8	7/8	7/16
	600	3/4	13/16	7/16	5/8	5/8	7/16
	900	3/4	1	7/16	5/8	1	7/16
4"	150	11/16	9/16	7/16	11/16	1/2	7/16
	300	3/4	1 1/16	7/16	3/4	1/2	7/16
	600	3/4	9/16	7/16	3/4	1/2	7/16
	900	3/4	1	7/16	3/4	1	7/16
6"	150	3/4	9/16	7/16	3/4	1/2	7/16
	300	3/4	1 5/16	7/16	3/4	5/8	7/16
	600	3/4	9/16	7/16	3/4	5/8	7/16
	900	3/4	1	7/16	3/4	1	7/16
8"	150	5/8	1/2	5/8	5/8	1/2	5/8
	300	5/8	1 1/4	5/8	5/8	1 1/4	5/8
	600	5/8	3/4	5/8	5/8	1	5/8
10"	150	5/8	1/2	5/8	13/16	1/2	5/8
	300	5/8	1 1/4	5/8	13/16	1 1/4	5/8
	600	13/16	1	5/8	13/16	1	5/8
12"	150	5/8	5/8	5/8	13/16	5/8	5/8
	300	5/8	5/8	5/8	13/16	1 3/8	5/8
	600	13/16	1	5/8	13/16	1	5/8

WARRANTY

“THE EXPRESSED WARRANTIES HEREINAFTER GIVEN BY BS&B SAFETY SYSTEMS, INC. ARE EXCLUSIVE AND IN LIEU OF ALL WARRANTIES EXPRESSED OR IMPLIED, BY OPERATION OF LAW OR OTHERWISE INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE.

BS&B Safety Systems, Inc. warrants its products against defective workmanship and material under normal and proper use in service for twelve (12) months of the date of shipment when owned by the original purchaser and only when subjected to normal operating conditions outlined by purchaser when order is placed: except that, rupture disks are not guaranteed except to burst within specified pressure ranges at temperatures specified at time of sale.

Where the products involved include a rupture disk inside a rupture disk holder, each must be of the proper type to be utilized with its mating part as otherwise recommended by and manufactured by BS&B. Substitution of either a rupture disk or rupture disk holder not manufactured by BS&B voids the aforementioned warranty and BS&B SPECIFICALLY DISCLAIMS ANY AND ALL LIABILITY FOR DAMAGES, EITHER DIRECT OR INDIRECT, INCIDENTAL OR CONSEQUENTIAL, ARISING FROM THE USE OF ASSEMBLIES NOT WHOLLY COMPRISED OF BS&B MANUFACTURED PRODUCTS.

Except for the express warranty set forth herein, BS&B shall have no obligations or liabilities connected with or resulting from the sale, installation or use of the equipment supplied by BS&B and final determination of the suitability of the products for the use contemplated by the Buyer is the sole responsibility of the Buyer.”

There is no guarantee against corrosion or erosion caused by acids, chemicals, their fumes, or the like.



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BS&B Safety Systems, Inc. and BS&B Safety Systems Ltd. are here to assist you in providing a safe and efficient work place. For assistance on installation, audits, training or technical advice, please contact our Customer Service Department.

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