

November 2021

Spence Type DFA Flange-Type Drain Orifice Assembly

Introduction

This installation sheet covers the installation of Type DFA flange-type drain orifice assembly.

Product Description

Type DFA flange-type drain orifice assembly is an engineered, continuous flow device. The controlling element in the Drain Orifice Assembly is a flat stainless steel plate. The Assembly also consists of an inlet strainer-gasket, an orifice plate and an outlet gasket.

Specifications

Maximum Temperature
750°F / 399°C

Maximum Pressure
2500 psig / 172 bar

Installation



WARNING

Personal injury, property damage, equipment damage or leakage due to escaping steam or bursting of pressure containing parts may result if this equipment is over pressured or is installed where service conditions could exceed the limits given in the specifications or where conditions exceed any ratings of the adjacent piping or piping connections. To avoid such injury or damage, provide pressure-relieving or pressure-limiting devices (as required by the appropriate code, regulation or standard) to prevent service conditions from exceeding those limits.

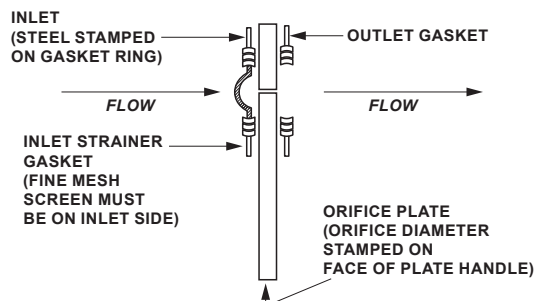


Figure 1. Type DFA Drain Orifice Flange Assembly

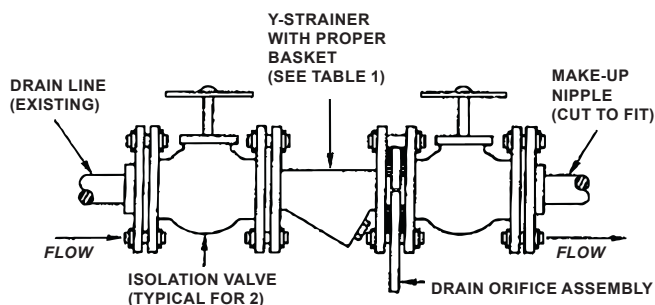


Figure 2. Typical Drain Orifice Flange Assembly Installation

Type DFA

Table 1. Y-Strainer Basket Requirements

ORIFICE DIAMETER		BASKET		REMARKS
In.	mm	In.	mm	
0.020 to 0.125	0.51 to 3.18	0.020 P	0.51	Mandatory
0.1285 to 0.1875	3.26 to 4.76	0.125 P	3.18	Mandatory
larger than 0.1875	larger than 4.76	----	----	----

Table 2. Acceptable Flanges

FLANGE TYPE	FLANGE PRESSURE RATING			
	150 psi / 10.3 bar	300, 400 and 600 psi / 20.7, 27.6 and 41.4 bar	900 and 1500 psi / 62.1 and 103 bar	2500 psi / 172 bar
Weld Neck	NPS 1/2 to 2 / DN 15 to 50	NPS 1/2 to 2 / DN 15 to 50	NPS 1/2 to 2 / DN 15 to 50	NPS 1/2 to 2 / DN 15 to 50
Socket Weld	NPS 1/2 to 2 / DN 15 to 50	NPS 1/2 to 2 / DN 15 to 50	NPS 1/2 to 2 / DN 15 to 50	NPS 1/2 to 2 / DN 15 to 50
Threaded	NPS 1-1/4 to 2 / DN 32 to 50	NPS 1-1/4 to 2 / DN 32 to 50	----	----
Slip On	NPS 1-1/4 to 2 / DN 32 to 50	NPS 1-1/2 to 2 / DN 40 to 50	----	----

The installation procedure for Type DFA:

1. A Y-strainer upstream of Type DFA is required unless the orifice diameter exceeds 0.1875 in. / 4.76 mm. See Table 1 for required basket size in the Y-strainer.
2. Type DFA is designed for use with ANSI B16.5 flanges. Only use Type DFA in acceptable type of flanges. See Table 2.
3. Include a 0.500 ± 0.0625 in. / 12.7 ± 1.59 mm flange separation when calculating the make-up nipple length.
4. Install Type DFA with the flow in the proper direction.
5. Carefully assemble the parts of Type DFA such as inlet strainer-gasket, orifice plate and outlet gasket.
6. Apply lubricant to all flange nuts and bolts to have proper sealing force.
7. Properly tighten Type DFA to ensure a leak-proof seal. Tighten according to recommended sequence. Use 25% increments to a minimum torque as indicated in Table 3.
8. Retighten the Type DFA after it reaches full temperature.

Replacement Parts Available

Type DFA replacement parts kit, Type DFR, consists of inlet strainer gasket and outlet gasket.

Table 3. Bolting Data

PRESSURE	FLANGE SIZE		NUMBER OF BOLTS	DIAMETER OF BOLTS		TORQUE	
	NPS	DN		In.	mm	ft-lbf	N•m
150 psi / 10.3 bar	1/2	15	4	1/2	12.7	30	40.7
	3/4	20	4	1/2	12.7	30	40.7
	1	25	4	1/2	12.7	30	40.7
	1-1/4	32	4	1/2	12.7	30	40.7
	1-1/2	40	4	1/2	12.7	30	40.7
	2	50	4	5/8	15.9	60	81.3
300, 400 and 600 psi / 20.7, 27.6 and 41.4 bar	1/2	15	4	1/2	12.7	30	40.7
	3/4	20	4	5/8	15.9	60	81.3
	1	25	4	5/8	15.9	60	81.3
	1-1/4	32	4	5/8	15.9	60	81.3
	1-1/2	40	4	3/4	19.1	100	135.6
	2	50	8	5/8	15.9	60	81.3
900 and 1500 psi / 62.1 and 103 bar	1/2	15	4	1/2	12.7	100	135.6
	3/4	20	4	1/2	12.7	100	135.6
	1	25	4	7/8	22.2	160	216.9
	1-1/4	32	4	7/8	22.2	160	216.9
	1-1/2	40	4	1	25.4	245	332.2
	2	50	4	7/8	22.2	160	216.9
2500 psi / 172 bar	1/2	15	4	3/4	19.1	100	135.6
	3/4	20	4	3/4	19.1	100	135.6
	1	25	4	7/8	22.2	160	216.9
	1-1/4	32	4	1	25.4	245	332.2
	1-1/2	40	4	1-1/8	28.6	355	481.3
	2	50	8	1	25.4	245	332.2



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