

# DIMENSIONS & DATA CERTIFIED FOR:

Representative:

Order:

Customer:

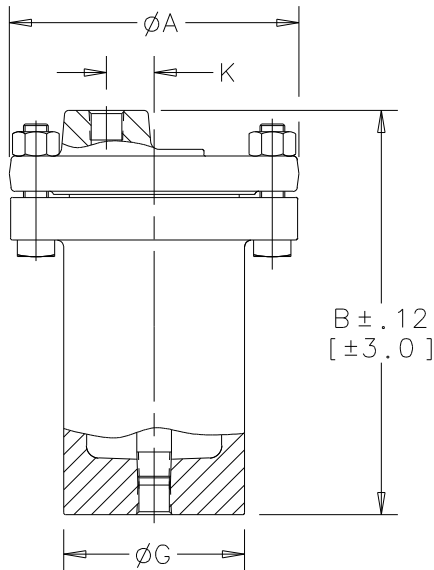
Order:

Project:

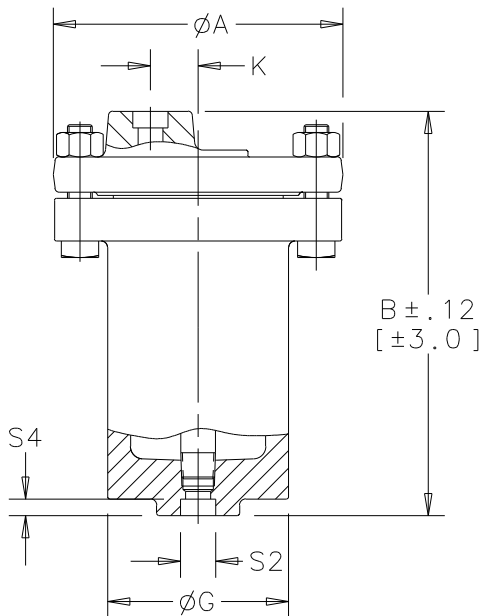
Requirements:

By:

Date:



413 NPT (Shown)



413 SW (Shown)

## LIST OF MATERIALS:

NAME OF PART	MATERIAL
CAP & BODY FORGING	ASTM A182 F22 Cl. 3
INLET TUBE	ASTM A53
GASKET	COMPRESSED NON-ASBESTOS
BOLTS	ASTM A193 GRADE B7
NUTS	ASTM A194 GRADE 2H
* SEAT, VALVE	ASTM A564 17-4 PH H900
* VALVE	
RETAINER, VALVE	ASTM A240 T304
LEVER	ASTM A167 T304
GUIDE PIN ASSEMBLY	T304
BUCKET	ASTM A167 T304 W/ASTM A48 WEIGHT, WHEN APPLIED

## TECHNICAL INFORMATION

MODEL NO.	413	415	416
CONNECTIONS	1/2 [DN15] 3/4 [DN20] 1" [DN25]	1" [DN25] 1-1/4 [DN32] 1-1/2 [DN40]	1-1/2 [DN40] 2 [DN50]
*A* (FLANGE DIAMETER)	8.63[219.1]	10.75[273.1]	12.50[317.5]
*B* (HEIGHT)	12.19[309.5]	14.96[378.0]	17.65[448.3]
*C* (BODY OD)	5.45[138.4]	6.88[174.6]	8.50[215.9]
*K* (¢ OUTLET TO ¢ INLET)	1.44[36.6]	1.75[44.5]	2.13[54.1]
NUMBER OF BOLTS	8	9	12
WEIGHT, NPT Or SW Lbs [kg]	65[30]	126[57]	205[93]

### SW DIMENSIONS:

PIPE SIZE	S2	S4 MIN.
1/2 [DN15]	.855[22]	3/8[10]
3/4 [DN20]	1.065[27]	1/2[13]
1 [DN25]	1.330[34]	
1-1/4 [DN32]	1.675[43]	
1-1/2 [DN40]	1.915[49]	
2 [DN50]	2.406[61]	5/8[16]

### OPTIONS:

CONNECTIONS - NPT, BSPT & SW
INTERNAL CHECK VALVE
BVSW - LIQUID DRAINER

## DESIGN INFORMATION

MODEL NO.	MAX. OPER. psi[bar] * SATURATED STEAM	MAX. ALLOWABLE PRESSURE (Vessel Design) psig[bar] of Pressure-Containing Parts at Indicated Temp.*F[°C]					
		-20+650 [-29+343]	700 [371]	750 [398]	800 [427]	850 [454]	900 [482]
413	1000 [69]	1200[83]			1050[72]	780[54]	
415		1100[76]			1080[74]	965[67]	
416		1700[117]		1660[114]	1350[93]	990[68]	

\*Over 550 psi[37.9 bar] Use Titanium  
ASTM B348 Valve & Seat

NOTES:

1. DIMENSIONS ARE IN INCHES[mm]  
ANSI B16.11



Armstrong  
www.armstronginternational.com

Product

TRAP  
NPT, BSPT & SW  
413, 415 & 416 SERIES

ENGLISH

WEB  
Y|N  
✓

CD No.

1002

Rev; A sht. 1

Date

10/24/08

By; paulg

# DIMENSIONS & DATA CERTIFIED FOR:

Representative:

Order:

Customer:

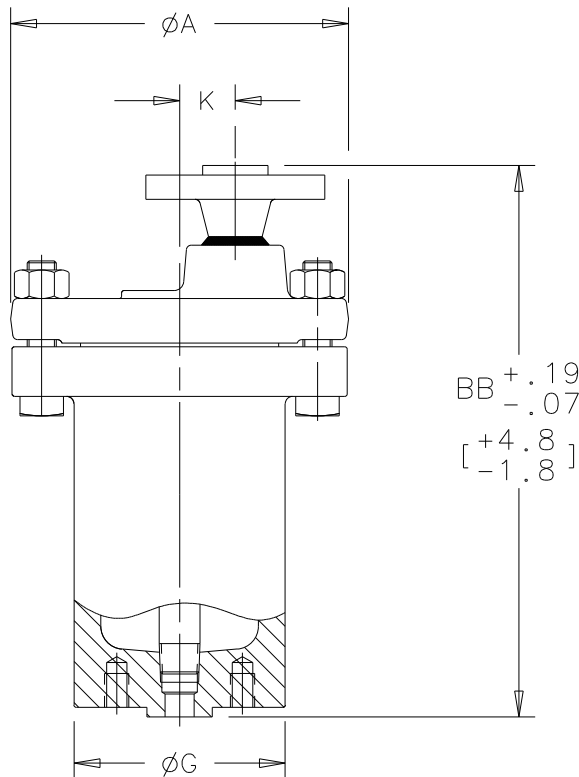
Order:

Project:

Requirements:

By:

Date:



413 FW (Shown)

- NOTES:
1. DIMENSIONS ARE IN INCHES[mm]
  2. FLANGE BOLT HOLES STRADDLE  $\phi$
  3. ANSI B16.5

## LIST OF MATERIALS:

NAME OF PART	MATERIAL
CAP & BODY FORGING	ASTM A182 F22 CLASS 3
INLET TUBE	ASTM A53
GASKET	COMPRESSED NON-ASBESTOS
BOLTS	ASTM A193 GRADE B7
NUTS	ASTM A194 GRADE 2H
* SEAT, VALVE	ASTM A564 17-4 PH H900
* VALVE	
RETAINER, VALVE	ASTM A240 T304
LEVER	ASTM A167 T304
GUIDE PIN ASSEMBLY	T304
BUCKET	ASTM A167 T304 W/ASTM A48 WEIGHT, WHEN APPLIED

## TECHNICAL INFORMATION

MODEL NO.	413 FW	415 FW	416 FW
FLG. CONNECTIONS	1/2 [DN15] 3/4 [DN20] 1" [DN25]	1" [DN25] 1-1/4 [DN32] 1-1/2 [DN40]	1-1/2 [DN40] 2 [DN50]
*A* (FLANGE DIAMETER)	8.63[219.2]	10.75[273.1]	12.50[317.5]
*BB* (HEIGHT)	CL. 1/2		
	150 3/4		
	1"		
	CL. 1/2		
	300 3/4	CL. 1"	
	1"	CL. 1-1/4	
	CL. 1/2	CL. 1"	CL. 1-1/2
	600 3/4	CL. 1-1/4	CL. 1-1/2
	1"	CL. 1-1/2	CL. 1-1/2
	CL. 1/2	CL. 1"	CL. 1-1/2
	900/ 3/4	CL. 900/ 1-1/4	CL. 900/ 1-1/2
	1500 1"	CL. 1500 1-1/2	CL. 1500 2
*G* (BODY OD)	5.45[138.4]	6.87[174.5]	8.50[215.9]
*K* ( $\phi$ OUTLET TO $\phi$ INLET)	1.44[36.6]	1.75[44.5]	2.13[54.1]
NUMBER OF BOLTS	8	9	12
WEIGHT, FLANGED (LBS) [kg]	70[31.8]	132[60]	211[96]

## DESIGN INFORMATION

MODEL	MAX. OPER. psi[bar] e SATURATED STEAM	MAX. ALLOWABLE PRESSURE (Vessel Design) psig[bar] of Pressure-Containing Parts at Indicated Temp.*F[*C]					
		-20+650 [-29+343]	700 [371]	750 [399]	800 [427]	850 [454]	900 [482]
413 RF	1000 [69]	1200[83]				1050 [72]	780 [54]
415 RF		1100[76]				1080 [74]	965 [67]
416 RF		1700[117]			1660 [114]	1350 [93]	990 [68]

### OPTIONS:

CONNECTION FLANGED: CL. 150, 300, 600 & 900/1500	<input type="checkbox"/>
INTERNAL CHECK VALVE	<input type="checkbox"/>
BVSW - LIQUID DRAINER	<input type="checkbox"/>

\*Over 550 psi[37.9 bar] Use Titanium  
ASTM B348 Valve & Seat



Product	ENGLISH	CD No.	Date
TRAP	WEB	1002	10/21/08
413, 415 & 416 FW SERIES	Y N		
	Rev; A	sht. 4	By; paulg

# DIMENSIONS & DATA CERTIFIED FOR:

Representative:

Order:

Customer:

Order:

Project:

Requirements:

By:

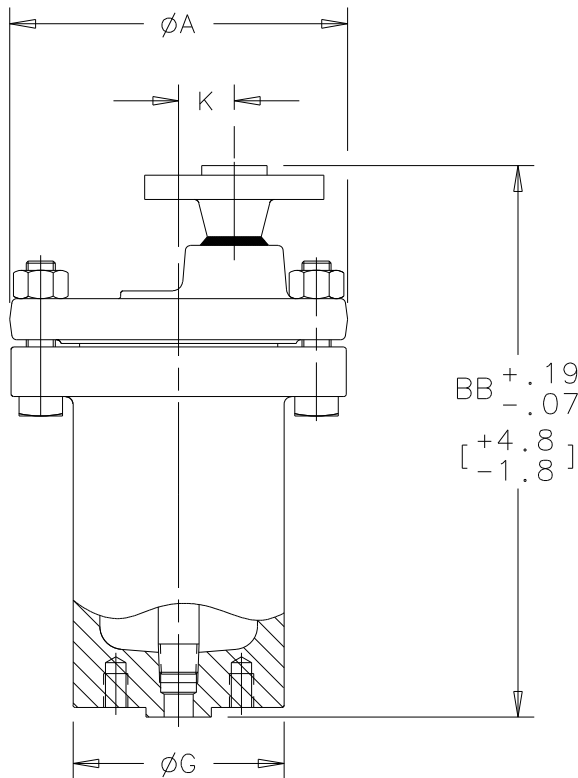
Date:

## LIST OF MATERIALS:

NAME OF PART	MATERIAL
CAP & BODY FORGING	ASTM A105
INLET TUBE	ASTM A53
GASKET	COMPRESSED NON-ASBESTOS
BOLTS	ASTM A193 GRADE B7
NUTS	ASTM A194 GRADE 2H
* SEAT, VALVE	ASTM A564 17-4 PH H900
* VALVE	
RETAINER, VALVE	ASTM A240 T304
LEVER	ASTM A167 T304
GUIDE PIN ASSEMBLY	T304
BUCKET	ASTM A167 T304 W/ASTM A48 WEIGHT, WHEN APPLIED

## TECHNICAL INFORMATION

MODEL NO.	310 FW	312 FW	313 FW
FLG. CONNECTIONS	1/2 [DN15] 3/4 [DN20]	1/2 [DN15] 3/4 [DN20] 1" [DN25]	1/2 [DN15] 3/4 [DN20] 1" [DN25]
*A* (FLANGE DIAMETER)	6.75[171.5] 8.00[203.2]		
*BB* (HEIGHT)	CL. 1/2 150 3/4	CL. 1/2 150 3/4	CL. 1/2 150 3/4
	CL. 1/2 300 3/4	CL. 1/2 300 3/4	CL. 1/2 300 3/4
	CL. 1/2 600 3/4	CL. 1/2 600 3/4	CL. 1/2 600 3/4
	CL. 1/2 600 3/4	CL. 1/2 600 3/4	CL. 1/2 600 3/4
*G* (BODY OD)	3-1/16[77.8]	4-3/4[120.7]	5-1/8[130.2]
*K* (Ø OUTLET TO Ø INLET)	9/16[14.3]	1-1/4[31.8]	1-7/16[36.5]
NUMBER OF BOLTS	6		
WEIGHT, FLANGED (LBS) [kg]	12[5.5]	32[14.5]	51[23.2]
MODEL NO.	314 FW	315 FW	316 FW
FLG. CONNECTIONS	1" [DN25] 1-1/4 [DN32]	1" [DN25] 1-1/4 [DN32] 1-1/2 [DN40]	1-1/2 [DN40] 2 [DN50]
*A* (FLANGE DIAMETER)	8.63[219.1] 9.75[247.7] 11.88[301.6]		
*BB* (HEIGHT)	CL. 1" 150 1-1/4	CL. 1" 150 1-1/4	CL. 1" 150 1-1/2
	CL. 1" 300 1-1/4	CL. 1" 300 1-1/4	CL. 1" 300 1-1/2
	CL. 1" 600 1-1/4	CL. 1" 600 1-1/4	CL. 1" 600 1-1/2
	CL. 1" 600 1-1/4	CL. 1" 600 1-1/4	CL. 1" 600 1-1/2
*G* (BODY OD)	5-3/4[146.1]	6-45/64[170.2]	8-1/2[215.9]
*K* (Ø OUTLET TO Ø INLET)	1-7/16[36.5]	1-3/4[44.5]	2-1/8[54.0]
NUMBER OF BOLTS	8		
WEIGHT, FLANGED (LBS) [kg]	73[33.2]	103[46.8]	184[83.6]



312 FW (Shown)

BB +.19  
-.07  
[+4.88  
-1.88]

**NOTES:**

1. DIMENSIONS ARE IN INCHES[mm]
2. FLANGE BOLT HOLES STRADDLE Ø
3. ANSI B16.5

\*Over 550 psi[37.9 bar] Use Titanium  
ASTM B348 Valve & Seat

## DESIGN INFORMATION

MODEL NO.	MAX. OPER. psi[bar] * SATURATED STEAM	MAX. ALLOWABLE PRESSURE (Vessel Design) psig[bar] of Pressure-Containing Parts at Indicated Temp.*F[*C]			
		-20+650 [-29+343]	700[371]	750[398]	800[427]
310	400[28]	770[53]		730[50]	600[41]
312		600[41]		560[39]	500[34]
313		1080[74]		970[67]	780[54]
314	650 [45]	1130[78]	1120[77]	990[68]	810[56]
315		1015[70]	965[67]	860[59]	690[48]
316		1100[76]	1050[72]	940[65]	760[52]



Product <b>TRAP</b> 310, 312, 313, 314, 315 & 316 FW SERIES	ENGLISH	CD No.	Date
	WEB Y   N ✓	1002	10/23/08
	Rev; A	sht. 5	By; paulg

# DIMENSIONS & DATA CERTIFIED FOR:

Representative:

Order:

Customer:

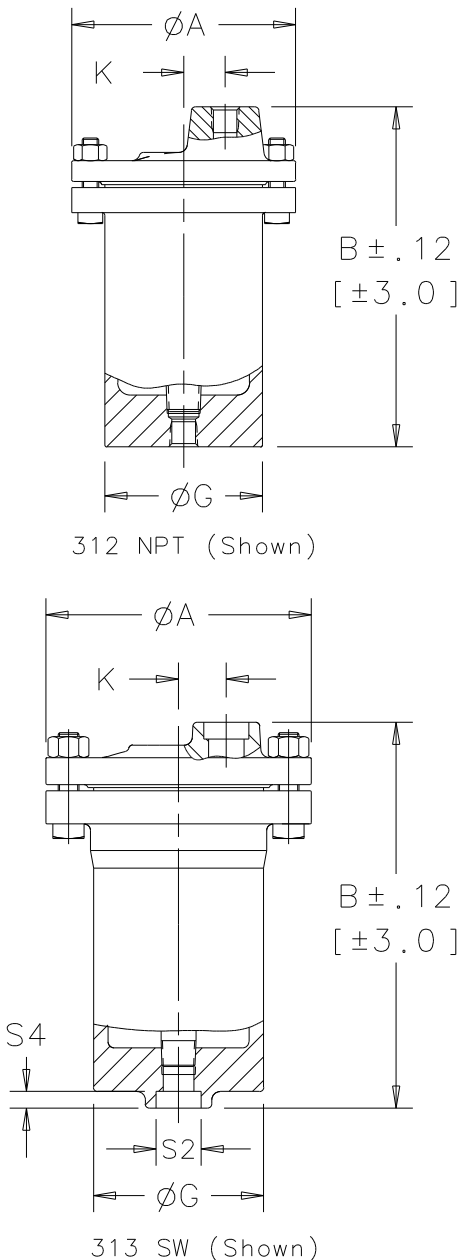
Order:

Project:

Requirements:

By:

Date:



312 NPT (Shown)

313 SW (Shown)

**NOTES:**

1. DIMENSIONS ARE IN INCHES[mm]
2. ANSI B16.11

## LIST OF MATERIALS:

NAME OF PART	MATERIAL
CAP & BODY FORGING	ASTM A105
INLET TUBE	ASTM A53
GASKET	COMPRESSED NON-ASBESTOS
BOLTS	ASTM A193 GRADE B7
NUTS	ASTM A194 GRADE 2H
* SEAT, VALVE	ASTM A564 17-4 PH H900
* VALVE	
RETAINER, VALVE	ASTM A240 T304
LEVER	ASTM A167 T304
GUIDE PIN ASSEMBLY	T304
BUCKET	ASTM A167 T304 W/ASTM A48 WEIGHT, WHEN APPLIED

## TECHNICAL INFORMATION

MODEL NO.	310	312	313
CONNECTIONS	1/2 [DN15] 3/4 [DN20]	1/2 [DN15] 3/4 [DN20] 1" [DN25]	1/2 [DN15] 3/4 [DN20] 1" [DN25]
*A* (FLANGE DIAMETER)	4.31[109.5]	6.75[171.5]	8.00[203.2]
*B* (HEIGHT)	8.07[205.0]	10.21[259.6]	11.62[295.3]
*G* (BODY OD)	3-1/16[77.8]	4-3/4[120.7]	5-1/8[130.2]
*K* (∅ OUTLET TO ∅ INLET)	9/16[14.3]	1-1/4[31.8]	1-7/16[36.5]
NUMBER OF BOLTS	6		8
WEIGHT, NPT Or SW Lbs [kg]	10[4.5]	30[13.6]	50[22.7]

MODEL NO.	314	315	316
CONNECTIONS	1" [DN25] 1-1/4 [DN32]	1" [DN25] 1-1/4 [DN32] 1-1/2 [DN40]	1-1/2 [DN40] 2 [DN50]
*A* (FLANGE DIAMETER)	8.63[219.1]	9.75[247.7]	11.88[301.6]
*B* (HEIGHT)	13.68[347.7]	14.99[380.7]	17.12[435.0]
*G* (BODY OD)	5-3/4[146.1]	6-11/16[169.9]	8-1/2[215.9]
*K* (∅ OUTLET TO ∅ INLET)	1-7/16[36.5]	1-3/4[44.5]	2-1/8[54.0]
NUMBER OF BOLTS	8	9	10
WEIGHT, NPT Or SW Lbs [kg]	70[31.8]	98[44.5]	179[81.4]

### SW DIMENSIONS:

PIPE SIZE	S2	S4 MIN.
1/2 [DN15]	.855[22]	3/8[10]
3/4 [DN20]	1.065[27]	
1 [DN25]	1.330[34]	1/2[13]
1-1/4 [DN32]	1.675[43]	
1-1/2 [DN40]	1.915[49]	
2 [DN50]	2.406[61]	

### OPTIONS:

- CONNECTIONS - NPT, BSPT & SW
- INTERNAL CHECK VALVE
- BVSW - LIQUID DRAINER

## DESIGN INFORMATION

MODEL NO.	MAX. OPER. psi[bar] * SATURATED STEAM	MAX. ALLOWABLE PRESSURE (Vessel Design) psig[bar] of Pressure-Containing Parts at Indicated Temp.*F[*C]			
		-20+650 [-29+343]	700[371]	750[398]	800[427]
310	400[28]	770[53]		730[50]	600[41]
312		600[41]		560[39]	500[34]
313		1080[74]		970[67]	780[54]
314	650 [45]	1130[78]	1120[77]	990[68]	810[56]
315		1015[70]	965[67]	860[59]	690[48]
316		1100[76]	1050[72]	940[65]	760[52]

\* Over 550 psi[37.9 bar] Use Titanium ASTM B348 Valve & Seat



Product	ENGLISH	CD No.	Date
TRAP NPT, BSPT & SW	WEB Y N	1002	10/24/08
310, 312, 313, 314, 315 & 316 SERIES	Rev; A	sht. 6	By; paulg