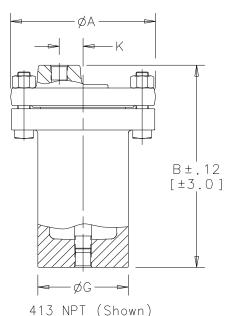
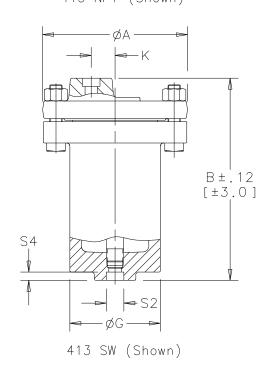
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Representative:					Order:
Customer:					Order:
Project:					
Requirements:					
				Ву:	Date:





LIST OF MATERIALS: MATERIAL NAME OF PART CAP & BODY FORGING ASTM A182 F22 CI. 3 INLET TUBE ASTM A53 COMPRESSED NON-ASBESTOS GASKET BOLTS ASTM A193 GRADE B7 ASTM A194 GRADE 2H NUTS SEAT, VALVE ASTM A564 17-4 PH H900 * VALVE RETAINER, VALVE ASTM A240 T304 ASTM A167 T304 LEVER GUIDE PIN ASSEMBLY T304 BUCKET ASTM A167 T304 W/ASTM A48 WEIGHT, WHEN APPLIED TECHNICAL INFORMATION MODEL NO. 415 416 413 1/2 [DN15] 1" [DN25] 1-1/2 [DN40] 3/4 [DN20] 1-1/4 [DN32] 2 [DN50] 1" [DN25] 1-1/2 [DN40] CONNECTIONS 8.63[219.1] 10.75[273.1] 12.50[317.5] "A" (FLANGE DIAMETER) "B" (HEIGHT) 12.19[309.5] 14.96[378.0] 17.65[448.3] "G" (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] 12 8 NUMBER OF BOLTS 9 WEIGHT, NPT Or SW Lbs [kg] 65[30] 126[57] 205[93] SW DIMENSIONS: S4 MIN. S2 1/2[DN15] .855[22] 3/8[10] 3/4[DN20] 1.065[27] OPTIONS: 1[DN25] 1.330[34] 1/2[13] 1-1/4[DN32] 1.675[43] CONNECTIONS - NPT, BSPT & SW 1-1/2[DN40] 1.915[49] INTERNAL CHECK VALVE 2[DN50] 2.406[61] 5/8[16] BVSW - LIQUID DRAINER

DESIGN INFORMATION MAX. ALLOWABLE PRESSURE (Vessel Design) psig[bar] of Pressure-Containing Parts at Indicated Temp.°F[°C] MAX. OPER. MODEL psi[bar] ⊕ SATURATED NO. -20+650 700 [371] 750 800 850 [454] 850 900 STEAM -29+3431 [398] [427] [482] 1050[72] 780[54] 1080[74] 965[67] 413 1200[83] 1000 415 1100[76] [69] 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

	Product	ENGLISH	CD No.	Date
Armstrong	TRAP _NPT,_BŞPT_&_SW	WEB Y N	1002	10/24/08
www.armstronginternational.com	413, 415 & 416 SERIES		Rev; A Sht. 1	By; paulg

	DIMENSIONS	& DATA	CERTIFIED	FOR:
Representa	tive:			Order:
Customer:				Order:
Project:				
Requiremen	ts:			
			By:	Date:
			LIST C	DF MATERIALS:
			NAME OF PART	MATERIAL
			CAP & BODY FORGING	ASTM A182 F22 CLASS 3
			INLET TUBE GASKET	ASTM A53 COMPRESSED NON-ASBESTOS
1			BOLTS NUTS	ASTM A193 GRADE B7 ASTM A194 GRADE 2H
	— ØA — ►		* SEAT, VALVE * VALVE	ASTM A564 17-4 PH H900
	— K —		RETAINER, VALVE LEVER	ASTM A240 T304 ASTM A167 T304
			GUIDE PIN ASSEMBLY BUCKET	T304 ASTM A167 T304 W/ASTM A48 WEIGHT, WHEN APPLIED
		Δ_	TECHNICA	AL INFORMATION
			MODEL NO.	413 FW 415 FW 416 FW
			FLG. CONNECTION	1/2 [DN15] 1" [DN25] 1-1/2 [DN40]
		BB + . 19	"A" (FLANGE DIAMETER) CL. 1/2 150 3/4	8.63[219.2] 10.75[273.1] 12.50[317.5] 13.74[349.0] 13.81[350.7]
		[+4.8 [-1.8]	E 1/2 1/2 1/4 2 300 1/4 300 1/4	13.93[353.8] 16.96[430.8] 19.90[505.5] 17.08[433.8] 19.90[505.5] 17.21[437.1] 19.83[503.7] 19.12[43.1] 19.83[503.7]
			1 600 1-1/2 CL. 1 Cl	1-1/2 14.24[361.7] 17.40[442.0] 2 14.43[366.5] 17.53[445.3] 14.49[368.0] 1-1/2 14.74[374.4] 17.65[448.3] 20.46[519.7]
			1500 1 1500 1-1/2 1500 1500 1500 1500 1500 1500 1500 150	
			"K" (© OUTLET TO © INLET) NUMBER OF BOLTS	1.44[36.6] 1.75[44.5] 2.13[54.1] 8 9 12
		V	WEIGHT, FLANGED (LBS) [kg]	70[31.8] 132[60] 211[96]
	— ØG — ▶		DESIGN	INFORMATION ABLE PRESSURE (Vessel Design) psig[bar]
413	FW (Shown)		MODEL psi[bar] of Pressur	e-Containing Parts at Indicated Temp.*F[*C] 700
			413 RF	1200[83] 1050 780 [72] [54]
			415 RF 1000 [69]	1100[76] 1080 965 [74] [67]
			416 RF 13	700[117] 1660 1350 990 [114] [93] [68]
			CONNECTION FLANGE	OPTIONS:
N ⁽	OTES: 1. DIMENSIONS ARE IN INCHES 2. FLANGE BOLT HOLES STRADI		CI. 150, INTERNAL CHECK VA	300, 600 & 900/1500
	3. ANSI B16.5	_	*Over 550 psi[37.9 bar]	
		Product	ASTM B348 Valve & Seat ENGLISH	CD No. Date
		TRAP	WEB	1002 10/21/08
Armstron	ng 413, 415	& 416 FW	SERIES YN Re:	

DIMENSIONS	&	DATA	CER	RTIF	ΊE	D	FOR:			
Representative:							Order:			
Customer:							Order:			
Project:										
Requirements:				_			_			
				Ву: 	IST	OF.	MATER	ıte: ıлı		
		=	NAM	IE OF			IVIA I LIX		. J . NTERIA	
		-		CAP & E		ORGING	ASTM A	105		1 -
			GASKET	BE			ASTM AS		NON-ASB	ESTOS
			BOLTS				ASTM A1	93 G	RADE B7	
			NUTS * SEAT, VA	LVE					-4 PH H90	20
		_	* VALVE RETAINER	. VALVE			ASTM ASC			
		-	LEVER				ASTM A1			
		-	GUIDE PI BUCKET	N ASSEME	3L Y		T304 ASTM A167 T304	W/AST	M A48 WEIGH	HT, WHEN APPLIE
ØA —		-		TEC	HNI	CAL	INFORM	ЛАТ	ION	
			M	ODEL	NO.					313 FW
			FLG.	CONNEC ⁻	TIONS		1/2 [DN15] 3/4 [DN20]	1/2 3/4 1*	[DN15] [DN20] [DN25]	1/2 [DN15 3/4 [DN20 1" [DN25
		_				GE DIAM	E T4E.R3)1 [109 . 5]	6.7	5[171.5]	8.00[203.2
	4		CL. 1.	/2 /4 CL /4 150 _	1/2 3/4 C		11.07[281.0 11.19[284.2	1 11 8	34[300.8]	13 24[336 3
					1 *	1 *		12.4	46[316.71	
			HS CL. 1, 2300 3,	/2 12	3/4 m 3	CL. 3/4	11.44[290.5 11.56[293.7] 12.0	03[305.6]	13.43[341.3
			m 1/2 1/2	/2	1* M	1.*	11.94[303.2	12.2	21[310.4]	13.62[346.1
			CL. 3/	CL. 600-	3/4	SL. 3/4	12.07[306.4] 12.2	28[312.0]	13.68[347.7
	3B +	.19	"G" (BOI			1 "	3-1/16[77.8] 4-3/	/4[120.7]	
		L		OF BOLT			9/16[14.3]	<u>ı 1−1</u> 6	/4[31.8]	1-7/16[36.5
	[+4 . [-1 .	8]	WEIGHT,	FLANGED ((LBS) [I	kg]	12[5.5]	32	2[14.5]	51[23.2]
	Ϊ.	, 0	M	ODEL	NO.		314 FW			316 FW
			FLG.	CONNEC	CTIONS	5	1 *[DN25] 1-1/4[DN32]	1-1	"[DN25] /4[DN32] /2[DN40]	1-1/2[DN40] 2[DN50]
		-	"A" (FLA	NGE DIAME	TER)		8.63[219.1] 15.44[392.1	_		11.88[301.6
			CL. 150 1-1	CL. 1.	-1/4 C	L. <u>1-1/2</u>	15.50[393.7] 16.8	73[423.3] 81[427.0]	19.12[485.8
				≥ 1		2	15.69[398.5	II	00[431.8]	19.06[484.2
	4		五 子 300 1-1			300 1-1/2	15.80[401.3] 17.1	12[435.0]	19.37[492.1
		_	# ¹	1		2	15.94[404.8]	25[438.2]	19.31[490.5
ØG —			CL. 1-1	74 CL.1- 600	-1/4 -1/2	$\frac{1-1/2}{2}$	16.12[410.0	17.4	43[443.0] 56[446.1]	19.69[500.1
312 FW (Shown)		-	"G" (BOD	OY OD)			5-3/4[146.1] 6-45	64[170.2]	
STZ TW (SHOWII)				OF BOLTS			1-7/16[36.5] 1-3	9	10
		-	WEIGHT,	FLANGED (73[33.2]		3[46.8]	184[83.6]
		=	.				<u>VFORMA</u>		DN .	
			MODEL F	MAX. OPER. osi[bar] ⊕ SATURATED	of Pres	ssure-Co	PRESSURE (Ventaining Par	ssel s at	Indicate	psig[bar] d Temp.°F[°C
NOTES:		_	9	STEAM	-20+ [-29+	343]	700[371]		0[398]	800[427]
1. DIMENSIONS ARE IN INCHES[mm] 2. FLANGE BOLT HOLES STRADDLE Q		-	310 4 312	100[28]	600		5]		30[50] 30[39]	500[34]
3. ANSI B16.5		-	313 314	650	1130	1080[7	74] 1120[77]	97	70[67] 90[68]	780[54] 810[56]
*Over 550 psi[37.9 bar] Use Titania	um	-	315	650 [45]	1015	[70]	965[67]	86	50[59]	690[48]
ASTM B348 Valve & Seat		-	316	En e	1100	[76]	1050[72]		10[65]	760[52]
		duct		ENGLI	_		CD No),		Date
	TR			-D	WEB Y I N		1002	-	10,	/23/08
Armstrong 310, 312, 313, 3	14,	<i>3</i> 15 & <i>3</i> 1	16 FW S	EKIES		Rev;	A Sh	t. 5	Ву;	paulg

DIMENSIONS & DAT	A CERTIFIED	FOR:
Representative:		Order:
Customer:		Order:
Project:		
Requirements:	Ву:	Date:
		MATERIALS:
	NAME OF PART	MATERIAL
K -	CAP & BODY FORGING INLET TUBE GASKET BOLTS NUTS	ASTM A105 ASTM A53 COMPRESSED NON-ASBESTOS ASTM A193 GRADE B7 ASTM A194 GRADE 2H
	* SEAT, VALVE * VALVE RETAINER, VALVE	ASTM A564 17-4 PH H900 ASTM A240 T304
B±.12	LEVER GUIDE PIN ASSEMBLY	ASTM A167 T304 T304
[±3.0]	BUCKET	ASTM A167 T304 W/ASTM A48 WEIGHT, WHEN APPLIED
	TECHNICAL	INFORMATION
	MODEL NO.	310 312 313
	CONNECTIONS	3/4 [DN20] 3/4 [DN20] 3/4 [DN20] 1" [DN25] 1" [DN25]
	"A" (FLANGE DIAMETER) "B" (HEIGHT)	4.31[109.5] 6.75[171.5] 8.00[203.2] 8.07[205.0] 10.21[259.6] 11.62[295.3]
312 NPT (Shown)	"G" (BODY OD) "K" (@ OUTLET TO @ INLET) NUMBER OF BOLTS	3-1/16[77.8] 4-3/4[120.7] 5-1/8[130.2 9/16[14.3] 1-1/4[31.8] 1-7/16[36.5 6 8
	WEIGHT, NPT Or SW Lbs [kg] MODEL NO.	10[4.5] 30[13.6] 50[22.7] 314 315 316
	CONNECTIONS	1*[DN25] 1-1/4[DN32] 1-1/4[DN32] 1-1/2[DN40] 1-1/2[DN40]
K → -	"A" (FLANGE DIAMETER)	8.63[219.1] 9.75[247.7] 11.88[301.6
	"B" (HEIGHT) "G" (BODY OD)	13.68[347.7] 14.99[380.7] 17.12[435.0 5-3/4[146.1] 6-11/16[169.9] 8-1/2[215.9
	"K" (@ OUTLET TO @ INLET) NUMBER OF BOLTS	1-7/16[36.5] 1-3/4[44.5] 2-1/8[54.0] 8 9 10
	WEIGHT, NPT Or SW Lbs [kg] SW DIMENSIONS:	70[31.8] 98[44.5] 179[81.4]
B±.12	PIPE S2 S4 MIN.	-
[±3.0]	1/2[DN15] .855[22] 3/8[10] 3/4[DN20] 1.065[27] 1[DN25] 1.330[34] 1-1/4[DN32] 1.675[43] 1-1/2[DN40] 1.915[49]	OPTIONS: CONNECTIONS - NPT, BSPT & SW INTERNAL CHECK VALVE
S4	2[DN50] 2.406[61] 5/8[16]	BVSW - LIQUID DRAINER
		NFORMATION PRESSURE (Vessel Design) psig[bgr]
	NO. SATURATED -20+650	PRESSURE (Vessel Design) psig[bar] Intaining Parts at Indicated Temp.°F[°C] 700[371] 750[398] 800[427]
ØG →	STEAM	
313 SW (Shown)	313 1080[314 650 1130[78]	
NOTES:	315 [45] 1015[70] 316 1100[76]	965[67] 860[59] 690[48] 1050[72] 940[65] 760[52]
1. DIMENSIONS ARE IN INCHES[mm] 2. ANSI B16.11	*Over 550 psi[37.9 bar] Us ASTM B348 Valve & Seat	
Product		CD No. Date
TRAP NPT BSPT & SW	WEB YIN 1	002 10/24/08
Armstrong www.armstronginternational.com 310, 312, 313, 314, 315 8	α 316 SERIES Rev;	A sht. 6 By; paulg