



(281) 482-4728 · www.scvvalve.com

# Full Port Swing Check Valves - API 6D

Class: 150 - 2500

Sizes: 2" - 36"





















**SCV VALVE** manufactures a premium array of check valves. Our products are manufactured and tested in accordance with respective API, ASME, and ANSI standards.

SCV Valve is a global leader in valve manufacturing for power, paper and pulp, oil and gas, and petro-chemical industries. SCV check valves have serviced critical backflow prevention applications for more than 40 years. From pipelines to chemical processing, SCV offers a complete line of full port swing checks in a variety of materials making them appropriate for many environments, temperatures and pressures, that will accommodate your most stringent needs. Our check valve product line has positioned SCV as a go-to source for all of your backflow prevention needs. The Full Port Swing Checks can be installed in horizontal or vertical, upward flow pipelines.

SCV utilizes a replaceable seat design for simple field service and replacement. Seat materials are selected based on valve application, media, temperature, pressure and other conditions. Standard seat materials are ASTM A105 in carbon steel designs and A352 LCC in stainless steel designs.

# Innovative Valve Solutions.®

# SCV Full Port Swing Check Valves

Product Preview

# For more information call us @ (281) 482-4728 or visit our website @ www.scvvalve.com

# Full Port Swing Check Valves - API 6D

- Basic Design: API 6D & ANSI B16.34
- Wall Thickness: API 6D
- Face-to-Face Dimension: ANSI/ASME B16.10
- Flange End Dimension: ANSI/ASME B16.5 (2' to 24") MSS SP-44 (26" & up)
- Butt-Weld End Dimension: ANSI/ASME B16.25
- Inspection & Testing: API 6D

# **Design Features**

SCV Full Port Swing Check Valves are all designed to operate without any assistance, reacting to dominate flow direction. Minimal forward flow will instantly open the valve disc, while zero flow closes the valve disc preventing backflow. Optional mechanical devices (manual levers or gear operators) are available to manually or remotely open or close the valve. The full port design results in lower turbulence and pressure drops than competitors. Full Port Swing Check Valves are fully "piggable" to accommodate inspection and cleaning devices. Available sizes range from 2" thru 36" in Classes 150 thru 2500.

## **Optional Features**

- Extended Shaft Gland/Seal Assembly
- Extended Shaft Cover
- Lock Open Lever
- Lock Open Gear
- Slam Retarder



Note: Not recommended for throttling applications.

Note: SCV reserves the right to change any technical design and dimensional data without prior notice. Please contact SCV to

confirm all Dimensions and Data offered in this catalog.



SCV Valve's product lines include commodity valves as well as specialty valves in all sizes, pressure classes & metallurgy; including carbon steel, stainless steel & exotic alloys. The valve types include:

- Thru Conduit Gates Slab & Expanding Gate Designs
- 3-Piece Trunnion Mounted Balls
- Floating Balls
- Wedge Gates
- Globes
- Full Port Swing Checks
- Piston Checks
- Dual Plate Checks Wafer & Luq Designs
- Pressure Balanced Lubricated Plugs

SCV Valve's high quality standards demand 100% pressure testing of every valve to insure its reliability and full customer satisfaction. We pride ourselves with high quality products, timely deliveries, and competitive prices.

# Company History

The SCV valve brand was established in 1972. The primary focus of the Company was to provide full inline field service for valve maintenance as well as in house valve modifications. While serving the Power Industry, Paper & Pulp, Oil & Gas, and the Petro Chemical Industry; through years of dedication and commitment to quality and service, SCV had become one of the largest full range, field service companies, with a reputation for superior quality.

In the mid 1970s, the SCV brand entered the valve manufacturing industry, primarily serving the Power Industry. Since that time, the SCV brand has expanded its products to cover a broad range of valves. SCV Valve holds the API 6A & API 6D Monogram, API Q1 Quality Management System, and ASME "R" stamp. The manufacturing facility, sales and projects office is located in Santa Fe, Texas.

# Mission Statement

SCV Valve is committed to consistently providing products that meet or exceed customer and regulatory specifications. SCV Valve aims to enhance customer satisfaction through implementing the highest levels of quality standards while assuring full conformity to those requirements.

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# Complete Product Line

Call SCV Valve today @ [281] 482-4728 for all your valve needs or visit us on the web @ www.scvvalve.com.

# THRU CONDUIT GATES - SLAB & EXPANDING Design: API 6D Sizes: 2" - 42" Class: 150 - 1500 Standard stock. Design: API 6A Sizes: 9", 11" & 13-5/8" Pressure: 2000, 3000, 5000 Limited inventory availability. All sizes and pressure classes made to order.

# PISTON CHECKS Design: API 6D Sizes: 2" - 24" Class: 150 - 2500 Standard stock.



# 3-PIECE TRUNNION BALLS







## FLOATING BALL VALVES

**Design: B16.34** Sizes: 1/2" - 12"

Class: 150 - 1500 Standard stock.





# **Certifications & Registrations**

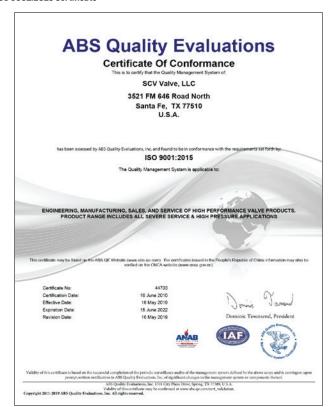
# **American Petroleum Institute (API)**

### **API 6A Certification**



Note: Extension letter available on our website.

### ISO 9001:2015 Certificate



# **Canadian Registration Number**

- Alberta
  - 0C07063.2
- · British Columbia - 0007063.21
- New Brunswick
  - 0C07063.27
- OCO7063.20
- Northwest Territory
  - 0007063.25
- New Foundland & Laborador Novascotia
  - OCO7063.27

# **API 6D Certification**



Note: Extension letter available on our website

### **CE PED Certificate**



- Nunavut - 0C07063.2N
- Manitoba - 0C07063.24
- Ontario
  - 0007063.25
- Yukon - 0007063.2
- · Prince Edward island - 0007063.29

# SCV Figure Number Chart Note: SCV Figure Chart is subject to change without notice.















Valve Type	Bore Size	Class	Body/Bonnet Conf.	Body Material	Obturator Material	Ends	Operator
BAL = Trunnion Ball Valve	50 = 1/2"	01 = 150	B = Bolted	02 = A352 LCC	01 = A352 LLC + 410	A = RF x WE	/ = N/A
CEG = Compact Expanding Gate Valve	75 = 3/4"	03 = 300	L = Lug Style	06 = A351 CF8M	02 = A352 LCC + ENP	B = RTJ x WE	B = Bare Stem
DCK = Dual Plate Check Valve	01 = 1"	04 = 400	P = Pressure Seal	08 = A216 WCC	06 = A216 WCC + ENP	D = RF x RTJ	D = Dual Acting Actuator
EPG = Expanding Gate Valve	15 = 1-1/2"	06 = 600	S = Seal Weld	10 = A216 WCB	09 = A351 CF8M	E = RTJ x RF	E = Electric Actuator
	02 = 2"	09 = 900					
FBV = Floating Ball Valve			T = Top Entry	11 = A352 LCB	10 = A216 + CR13	J = RTJ	G = Gear
FCK = Full Port Swing Check Valve	21 = 2-1/16"	15 = 1500	U = Union	12 = A350 LF2	11 = CR13 HF	K = WE x RF	H = Handwheel
GAT = Wedge Gate Valve	25 = 2-1/2"	20 = 2000		13 = A105	12 = A105 + CR13	L = WE x RTJ	I = Linear Actuator
GLB = Globe Valve	27 = 2-9/16"	25 = 2500		16 = A217 WC6	13 = A105 + ENP	R = RF	L = Lever
PCK = Piston Check Valve	03 = 3"	30 = 3000		30 = A29 4130	14 = A694 Gr. F60 + ENP	W = WE	
PLG = Lubricated Plug Valve	31 = 3-1/8"	50 = 5000		36 = A182 316	15 = A350 LF2 + ENP		
PSG = Parallel Slide Gate Valve	37 = 3-9/16"	10 = 10000		51 = A182 F51 Duplex	16 = A216 WCC + 316		
RSB = Rising Stem Ball Valve	04 = 4"			55 = A182 F55 Duplex	17 = 17-4 PH		
SCK = Conv. Port Swing Check Valve	41 = 4-1/16"			60 = A216 WCC + Inconel 625	20 = A216 WCB + Ni65		
TCG = Slab Gate Valve	05 = 5"			87 = A487 4C	23 = A182 316L + Stellite 21		
	51 = 5-1/8"			88 = A890-4A	34 = A182 304		
	06 = 6"				35 = A182 316 HF		
	71 = 7-1/16"				36 = A182 316		
	08 = 8"				41 = A182 F6A Class 2		
	09 = 9"				42 = A182 F6A + Nitride		
	10 = 10"				51 = A182 F51 Duplex		
	23 = 10-3/8"				52 = A351 CF8M + Stellite 6		
	11 = 11"				54 = A182 F51 Duplex + CoCr-A		
	12 = 12"				59 = A352 LCC + Stellite 6		
	19 = 12-3/8"				60 = A105 + HF		
	13 = 13-5/8"				61 = A105 + Nitride + Stellite 6		
	14 = 14"				62 = A105 + Inconel 625		
	16 = 16"				69 = A350 LF2 + Tungsten Carbide		
	17 = 16-3/4"				73 = A182 410 +Tungsten Carbide		
	18 = 18"				81 - A350 LF2 + Nitride + HF		
	20 = 20"				85 = A743 CA15 + Nitride		
	22 = 22"				88 = A890-4A		
	24 = 24"				96 = A216 WCB + CR13		
	26 = 26"				OU TIEST TO UNIE		
	28 = 28"						
	30 = 30"						
	32 = 32"						
	34 = 34"						
	36 = 36"						
	38 = 38"						
	40 = 40"						
	42 = 42"						
	48 = 48"						
	52 = 52"						
	56 = 56"						
	60 = 60"						
					•		













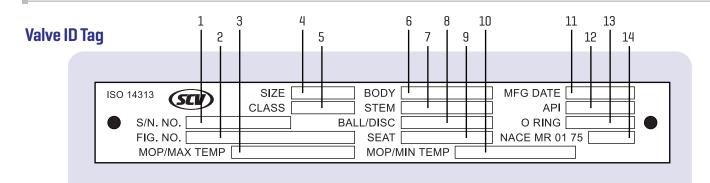


Bore Type	Seal Material	Seat Material	Seat Insert/Overlay Material	Stem Material	Packing Material	Service
= Full Port	A = Aflas	/ = N/A	B = Nickel Boron	/ = N/A	/ = N/A	A = Stem Extension
R = Reduced Port	B = Buna	08 = A216 WCB	D = Devlon	A = A350 LF2 + ENP	B = Braided Graphoil	C = Cryogenic
C = Conventional	E = EPDM	09 = A351 CF8M	F = PTFE	B = A105 + ENP	G = Graphite	D = *DPE x DPE
Γ = Regular Pattern	F = Fluorosilicone	11 = CR13 HF	G = RTFE - Glass filled	C = A182 F6a Class 2	T = Teflon	E = External Coating
J = Short Pattern	G = Graphite	13 = A105 + ENP	H = Hard Face (Stellite 6)	D = 17-4 PH	V = Viton Duck	F = Dampener
/ = Venturi Pattern	H = HNBR	14 = A105 + HF	K = PCTFE	F = A182 F316		G = Geothermal
	K = Kalrez	15 = A350 LF2 + ENP	N = Nylon	G = A182 F51 Duplex		H = High Temperature
	L = Lip Seal	16 = A350 LF2 + HF	P = Peek	H = A182 F56 Duplex		I = Internal Coating
	N = Neoprene	17 = 17-4 PH	R = RTFE - Carbon Filled	I = Inconel 625		J = **SPE x DPE
	P = Polyuerethane	30 = A29 4130	T = Tungsten Carbide	J = 17-4 + QPQ		L = Lock Open Device
	R = NBR	32 = A182 316L + HF	V = Viton			P = Pipe Pups
	S = Silicone	35 = A182 316/HF	3 = 316			S = Standard Service
	T = Teflon	36 = A182 316	W = UHMWE			X = Special
	U = Floursint	41 = A182 F6a Class 2				
	V = Viton	42 = A182 F6a Class 2 + HF				
	3 = 304 Ring	51 = F51 Duplex				
	4 = 304 / Graphite	52 = A182 F51 Duplex + HF				
	5 = 316 Ring	54 = A182 F51 Duplex + CoCr-A				
	6 = 316 / Graphite	55 = F55 Duplex				
	7 = Soft Iron Ring	91 = A105/HF				

# Sample Figure Numbers & Descriptions

			1													
	Figure No. Chart Column	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	Pressure Classes	Туре	Size	Class	Body Conf.	Body	Obturator	End	Oper	Bore Type	Seal	Seat.base	Seat/Insert	Stem	Packing	Service
	150, 300, 600	BAL	12	06	В	12	15	R	G	F	Н	15	D	Α	/	S
TRUNNION	12" 600 Trunnion Ball Valve, Bolted . 6D Design and Test, NACE MR-01-75			2 + ENP 0	bturator, RF Ends,	Gear Ope	rated, Full Bore, I	HNBR AE	D Seals, A	350 LF2 + ENP S	eat Base I	Material, Devlon S	Seat Inserts, A350 L	F2 + ENP S	tem, Standard	Service, API
BALL	900, 1500, 2500	BAL	12	15	В	12	41	J	G	F	Н	41	D	С	/	S
	12" 1500 Trunnion Ball Valve, Bolted Co Service, API 6D Design and Test, NACE				182 F6a Class 2 Ob	turator, R1	J Ends, Gear Oper	ated, Full	Bore, HNE	IR AED Seals, A18	2 F6a Class	s 2 Seat Base Mati	erial, Devlon Seat Inse	rts, A182 Fl	6a Class 2 Stem	, Standard
	ALL	FBV	12	01	В	10	36	R	L	F	3	36	R	F	/	S
FLOATING BALL	12" 150 Floating Ball Valve, Bolted C Design, API 598 Test, NACE MR-01-7			WCB Boo	ly, A182 F316 Obti	ırator, RF	Ends, Lever Oper	rated, Fu	l Bore, A1	82 F316 Seat Ba	ise Materi	al, Devlon Seat In	serts, A182 F316 St	em, Standa	ard Service, AP	1 608
DUAL PLATE	ALL	DCK		06	W	10	09	R	1	C	/	08	Н	/	1	S
WAFER CHECK	12" 600 Dual Plate Check Valve, War NACE MR-01-75 Compliant	fer Config	uration, /	A216 WCB	Body, A351 CF8M	Obturato	r, RF Ends, Conve	entional E	lore, A216	WCB Seat Base	Material,	Hardface Seat Ov	erlay, Standard Ser	vice, API 59	14 Design, API S	598 Test,
	ALL	TCG	12	06	В	08	13	R	В	F	V	13	R	D	V	S
SLAB GATE	12" 600 Thru Conduit Slab Gate Valve Service, API 6D Design and Test, NAC				)5 + ENP Obturator	RF Ends,	Bare Stem, Full E	Bore, Vito	n AED Sea	ls, A105 + ENP Se	eat Base M	laterial, RTFE Sea	t Inserts, 17-4 PH St	em, Viton D	uck Packing, S	tandard
EXPANDING	ALL	EPG	12	06	В	08	06	R	В	F	٧	13	R	D	V	S
GATE	12" 600 Thru Conduit Expanding Gate				A216 WCC + ENP OI	oturator, R	F Ends, Bare Sten	n, Full Bor	e, Viton AE	D Seals, A105 + E	NP Seat Ba	ise Material, RTFE	Seat Inserts, 17-4 PH	Stem, Vitor	n Duck Packing,	Standard
	Service, API 6D Design and Test, NACE  ALL	FCK	12	ιτ 06	В	08	16	R	1	Е	V	11	W	,	1	S
FULL PORT	12" 600 Full Port Swing Check Valve								) Seals C	R13 HF Seat Bas	e Material		ts Standard Service	API 6D De	esion and Test	_
SWING CHECK	MR-01-75 Compliant	, 501.007		, 500,,,,,		31000,111	1		, , , , , ,			, 11011 0001 111001	ro, otaniaara oor riot	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		111102
	150, 300, 600, 900	PCK	12	06	В	08	61	R	/	C	٧	14	Н	/	/	S
PISTON CHECK	12" 600 Piston Check Valve, Bolted MR-01-75 Compliant	4216 WC(	C Body, A	105 + Nitri	ide + HF Obturator	, RF Ends,	Coventional Bor	e, Viton A	ED Seals,	A105 Seat Base	Material,	Hardface Seat Ov	verlay, Standard Ser	vice, API 60	Design and To	est, NACE
T IOTON OHLON	1500, 2500	PCK	12	15	В	08	61	R	1	С	٧	41	Н	/	/	S
	12" 1500 Piston Check Valve, Bolted Test, NACE MR-01-75 Compliant	A216 W0	CC Body, i	A105 + Nit	ride + HF Obturato	r, RF Ends	s, Coventional Bo	re, Viton	AED Seal:	s, A182 F6a Clas	s 2 Seat B	ase Material, Har	dface Seat Overlay,	Standard S	ervice, API 6D	Design and
LUBRICATED	ALL	PLG	12	06	В	10	84	R	L	С	V	1	/	/	G	S
PLUG	12" 600 Lubricated Plug Valve, Bolto	ed A216 V	VCB Body	, A743 CA1	L5 Obturator, RF E	nds, Lever	Operated, Cover	ntional B	ore, Viton	AED Seals, Stand	dard Servi	ce, API 6D Desigr	and Test, NACE MR	-01-75 Con	npliant	
	ALL	GAT	12	06	В	10	7	R	Н	С	4	14	Н	С	G	S
WEDGE GATE	12" 600 Wedge Gate Valve, Bolted A Stem, Graphite Packing, Standard S							erated, C	onvention	nal Bore, 304 + G	raphite Ga	sket, A105 Seat	Base Material, Hard	ace Seat 0	lverlay, A182 F	6a Class 2
	ALL	GLB	12	06	В	10	60	R	Н	С	4	14	Н	С	G	S
GLOBE	12" 600 GlobeValve, Bolted A216 Wt Graphite Packing, Standard Service,							entional	Bore, 304	+ Graphite Gask	et, A105 S	eat Base Materia	ıl, Hardface Seat Ove	erlay, A182	F6a Class 2 St	em,

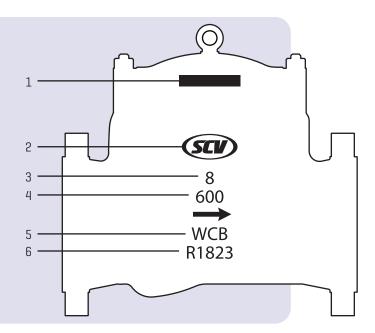
# Valve ID Tag & Valve Markings Identification



No.	Figure Number Code	Description
1	Serial Number	Identifies certified manufacturers serial number
2	Figure Number	Identifies the detailed valve configuration (valve type, bore size, pressure class, materials, etc.)
3	MOP/Max. Temp.	Identifies the maximum operating pressure in PSI and maximum operating temperature in Fahrenheit
4	Size	Identifies bore size
5	Pressure Class	Identifies pressure classifications per API requirements
6	Body Material	Identifies body metal material composition (A105, WCB, F51, CF8M, etc.)
7	Stem Material	Identifies stem material composition (A105, 410SS, 17-4pH, etc.)
8	Ball/Disc Material	Identifies ball/disc material composition (A105, 316SS, ENP, etc.)
9	Seat Material	Identifies seat material composition (PEEK, Teflon, Nylon, etc.)
10	MOP/Min. Temp.	Identifies the maximum operating pressure in PSI and minimum operating temperature in Fahrenheit
11	Manufacturing Date	Identifies the date the valve manufacturing completion date
12	API Conformance	Identifies API conformance (600, 6D, 6A, etc.)
13	O Ring	Identifies the O Ring material composition (Viton, Viton GLT, etc.)
14	NACE MR 01 75	Identifies corrosion resistance

# **Valve Markings**

No.	Valve ID Components
1	Tag
2	Brand
3	Size
4	Pressure Class
5	Body Material
6	Heat Number













# Full Port Swing Check Valves - API 6D Class: 150 - 2500/Sizes: 2" - 36"

Design	and Manufacturing Standards
Basic Design	API 6D & ANSI B16.34
Wall Thickness	API 6D
Face-to-Face Dimension	ANSI/ASME B16.10
Flange End Dimension	ANSI/ASME B16.5 (2' to 24") MSS SP-44 (26" & up)
Butt-Weld End Dimension	ANSI/ASME B16.25
Inspection & Testing	API 6D



# **Optional Features**

# **Extended Shaft Gland/Seal Assembly**

The gland seal assembly is standard for extended shaft valve designs and bolts to the valve body to allow for lock open lever, lock open gear, slam retarder, or extended shaft cover installation. It also features a shaft seal and a lubricant /sealant injection port.

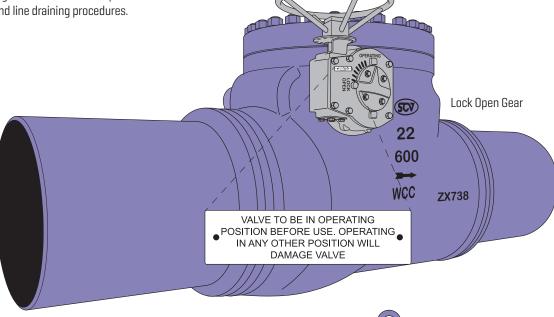
# **Extended Shaft Cover**

Used to protect the extended shaft when lock open devices are not being utilized.

# **Lock Open Lever**

Used on smaller diameter valves, with lighter discs, to manually lock the disc in the open position for pigging, inspection, and line draining procedures.

Sizes: 2" thru 16"



WCC

Lock Open Lever

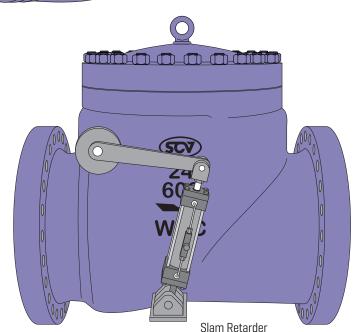
# **Lock Open Gear**

Used on larger diameter valves, with heavier discs, to manually lock the disc in the open position for pigging, inspection, and line draining procedures.

Sizes: 18" thru 36"

# Slam Retarder

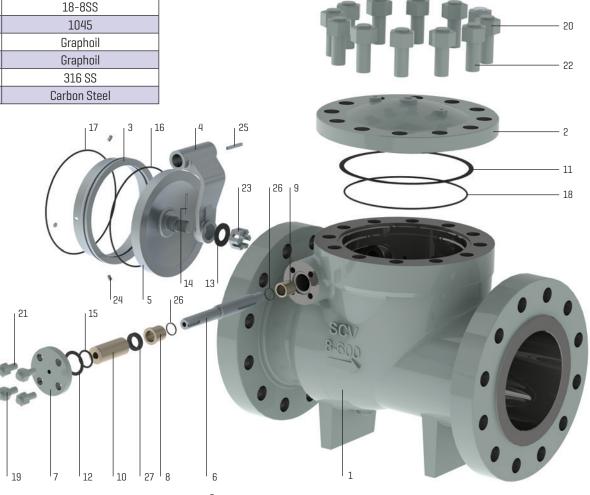
Used to decelerate the disc during closing to prevent slamming against the seat during backflow situations which could result in valve damage or malfunction. A hydraulic assembly with an adjustable governor regulates the speed of closure.



# Full Port Swing Check Valves - API 6

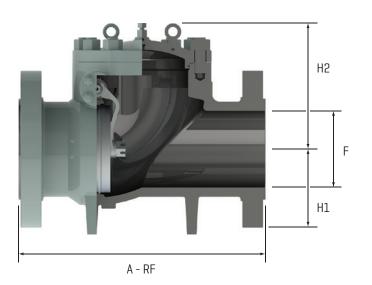
No.	Part	WCC							
1	Body	A216 WCC							
2	Bonnet	A105							
3	Seat	410 + HF							
4	Arm	A216 WCC							
5	Disc	A216 WCC + 316							
6	Shaft	316 SS							
7	End Cap	A105							
8	Bearing	Nitronic 60							
9	End Bearing	Nitronic 60							
10	Spacer	A105							
11	Gasket	SS Graphite							
12	Gasket	SS Graphite							
13	Washer	304 SS							
14	Pin	304 SS							
15	O-Ring	VITON							
16	0-Ring	VITON							
17	O-Ring	VITON							
18	0-Ring	VITON							
19	Stud	A193 B7M							
20	Stud	A193 B7M							
21	Heavy Hex Nut	A194 2HM							
22	Heavy Hex Nut	A194 2HM							
23	Slotted Hex Nut	A194 2HM							
24	Set Screw	18-8SS							
25	Key	1045							
26	Graphoil Rope	Graphoil							
27	Graphoil Rope	Graphoil							
28	NPT Plug	316 SS							
29	Eye Bolt	Carbon Steel							

# [ Expanded View & Bill of Materials ]



# Full Port Swing Check Valve Dimensions Size: 2" - 36"

Class: 150 - 2500







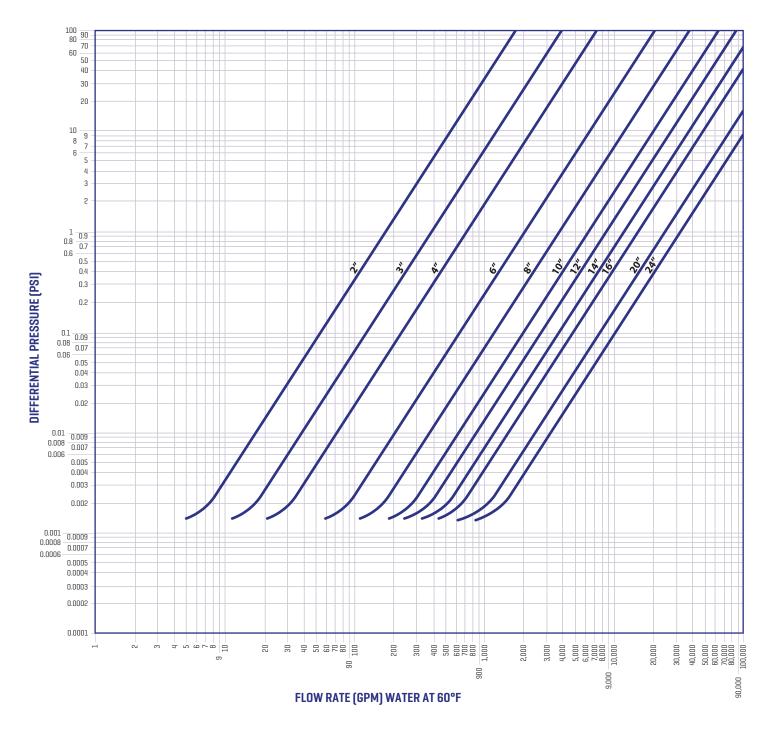
	SIZE	NPS	2	2.5	3	4	6	8	10	12	14	16	18	20	24	28	30	36
	SIZE	DN	50	65	80	100	150	200	250	300	350	400	450	500	600	700	750	900
	A - RF	IN	8.0	9.5	9.5	11.5	14.0	19.5	24.5	27.5	31.0	34.0	38.5	38.5	51.0	57.0	60.0	77.0
	A-KF	MM	203	241	241	292	356	495	622	699	787	864	978	978	1295	1448	1524	1956
0	A - BW	IN	8.0	9.5	9.5	11.5	14.0	19.5	24.5	27.5	31.0	34.0	38.5	38.5	51.0	57.0	60.0	77.0
5(	A-DW	MM	203	241	241	292	356	495	622	699	787	864	978	978	1295	1448	1524	1956
H	E	IN	2.01	/	2.99	4.02	5.98	7.99	9.92	11.89	13.15	15.28	17.17	19.29	23.31	1	/	/
S	,	MM	51	/	76	102	152	203	252	302	334	388	436	490	592	1	1	1
ASS	H1	IN	1.93	4.02	2.56	3.19	4.21	5.59	6.77	7.56	8.9	9.76	10.83	12.13	14.37	21	22.5	26
Ø	пт	MM	49	102	65	81	107	142	172	192	226	248	275	308	365	533	571	600
占	H2	IN	4.25	6.4	5.67	6.89	9.45	11.14	14.37	16.3	17.8	19.37	20.79	22.74	27.17	40.0	45.2	53.1
	ΠZ	MM	108	163	144	175	240	283	365	414	452	492	528	575	690	1016	1149	1349
	WGT	LB	35	49	66	97	172	260	520	758	930	1398	1799	2165	3925	4521	4644	7389
	(RF)	KG	16	22	30	44	78	118	236	344	422	634	816	982	1780	2050	2108	3350
	WGT	LB	26	33	46	57	137	201	450	646	776	1195	1579	1879	3528	4300	4424	6946
	(BW)	KG	12	15	21	26	62	91	204	293	352	542	716	852	1600	1950	2008	3150

	SIZE	NPS	2	2.5	3	4	6	8	10	12	14	16	18	20	24	28	30	36
	SIZE	DN	50	65	80	100	150	200	250	300	350	400	450	500	600	700	750	900
	A - RF	IN	10.5	12.5	12.5	14.0	17.5	21.0	24.5	28.0	33.0	34.0	38.5	40.0	53.0	59.0	62.75	82.0
	A - KF	MM	267	318	318	356	445	553	622	711	838	864	978	1016	1346	1499	1594	2083
0	A - BW	IN	10.5	12.5	12.5	14.0	17.5	21.0	24.5	28.0	33.0	34.0	38.5	40.0	53.0	59.0	62.75	82.0
0	A-DW	MM	267	318	318	356	445	553	622	711	838	864	978	1016	1346	1499	1594	2083
3	-	IN	2.01	1	2.99	4.02	5.98	7.99	9.92	11.89	13.15	15.28	17.17	19.29	23.31	/	1	/
S	_	MM	51	1	76	102	152	203	252	302	334	388	436	490	592	/	1	/
S	H1	IN	1.89	4.0	2.56	3.11	4.21	5.59	6.5	7.99	9.13	10.04	11.22	12.28	14.76	21	22.5	26
Ø	пт	MM	48	102	65	79	107	142	165	203	232	255	285	312	375	533	571	600
占	H2	IN	4.41	7.1	5.83	7.09	9.88	12.28	14.76	16.73	18.23	19.88	21.3	23.03	27.52	45.2	50.0	60.6
	ΠZ	MM	112	180	148	180	251	312	375	425	463	505	541	585	699	1149	1270	1540
	WGT	LB	53	82	99	150	302	485	595	1092	1498	2095	2646	3304.5	4851	6174	7497	11025
	(RF)	KG	24	37	45	68	137	220	270	495	680	950	1200	1500	2200	2800	3400	5000
	WGT	LB	46	77	77	112	242	401	463	1014	1157	1764	2139	2688	3925	5292	6505	9482
	(BW)	KG	21	35	35	51	110	182	210	460	525	800	970	1220	1780	2400	2950	4300

# Full Port Swing Check Valve Dimensions

		MDC		0.5	2	"	C	0	10	12	14	10	10	00	0//	00	20
	SIZE	NPS DN	2 50	2.5 65	3 80	4 100	6 150	8 200	10 250	300	350	16 400	18 450	20 500	24 600	28 700	30 750
		IN	11.5	14.0	14.0	17.0	22.0	26.0	31.0	33.0	35.0	39.0	43.0	47.0	55.0	63.0	65.0
	A - RF	MM	292	356	356	432	559	660	787	838	889	991	1092	1194	1397	1600	1651
	A - RTJ	IN	11.62	14.12	14.12	17.12	22.12	26.12	31.12	33.12	35.12	39.12	43.12	47.25	55.38	63.5	65.5
	A-KIU	MM	295	359	359	435	562	664	791	841	892	994	1095	1200	1407	1613	1664
600	A - BW	IN	11.5	14.0	14.0	17.0	22.0	26.0	31.0	33.0	35.0	39.0	43.0	47.0	55.0	63.0	65.0
9		MM	292	356	356	432	559	660	787	838	889	991	1092	1194	1397	1600	1651
CLASS	F	IN	2.01	/	2.99	4.02	5.98	7.99	9.92	11.89	13.15	15.28	17.17	19.29	23.31	1 /	1
		MM IN	51 2.09	4.0	76 2.72	102 3.89	152 4.69	203 6.14	252 7.36	302 8.46	334 9.72	388 10.59	436 11.89	490 12.99	592 15.47	23.5	27.5
	H1	MM	53	102	69	86	119	156	187	215	247	269	302	330	393	597	698
		IN	4.92	8.6	6.36	7.48	10.51	13.43	15.87	18.23	20.67	22.24	24.69	26.69	31.34	53.1	56.3
	H2	MM	125	219	161.5	190	267	341	403	463	525	565	627	678	796	1349	1429
	WGT	LB	88	121	159	254	551	926	1349	1786	2426	3638	3969	6168	7197	9041	11025
	(RF)	KG	40	55	72	115	250	420	612	810	1100	1650	1800	2800	3264	4100	5000
	WGT	LB	68	99	132	176	452	805	1085	1577	1940	2955	3197	5177	5654	7718	9482
	(BW)	KG	31	45	60	80	205	365	492	715	880	1340	1450	2350	2564	3500	4300
	SIZE	NPS	2	2.5	3	4	6	8	10	12	14	16	18	20	24	28	30
	SIZE	DN	50	65	80	100	150	200	250	300	350	400	450	500	600	700	750
	A - RF	IN	14.5	15.0	15.0	18.0	24.0	29.0	33.0	38.0	40.5	44.5	48.0	52.0	61.0	69.0	73.0
		MM	368	381	381	457	610	737	838	965	1029	1130	1219	1321	1549	1753	1854
	A - RTJ	IN	14.62	16.62	16.62	18.12	24.12	29.12	33.12	38.12	40.88	44.88	48.5	52.5	61.75	69.9	73.9
		MM	371 14.5	422 15.0	422 15.0	460 18.0	613 24.0	740 29.0	841 33.0	968 38.0	1038 40.5	1140 44.5	1232 48.0	1333 52.0	1568 61.0	1775 69.0	1876 73.0
90	A - BW	IN MM	368	381	381	457	610	737	838	965	1029	1130	1219	1321	1549	1753	1854
		IN	2.05	701	2.99	4.02	5.98	7.99	9.92	12.01	12.68	14.68	1512	1051	1242	1/33	1004
	F	MM	52	1	76	102	152	203	252	305	322	373	1	1	1	1	1
CLASS	114	IN	4	5	3.03	3.7	8.86	6.42	7.72	8.98	10	10.83	16.5	18.0	26.5	25.25	30
	H1	MM	61	127	77	94	225	163	196	228	254	275	419	457	546	641	762
2	H2	IN	5.2	13.7	7.28	8.86	11.69	14.96	17.4	20	23.66	24.02	36.3	41.4	47.2	55.1	61.8
		MM	132	349	185	225	297	380	442	508	601	610	921	1051	1200	1400	1569
	WGT	LB	154	243	243	471	838	1375	2536	3197	3859	5336	7166	8820	12789		19955
	(RF)	KG	70	110	110	214	380	624	1150	1450	1750	2420	3250	4000	5800	7800	9050
	WGT (BW)	LB KG	110 50	192 87	187 85	383 174	662 300	1088	2095	2602	3197	4520	5954 2700	7275	9923 4500	14663 6650	16868 7650
								1 494	1 9511	i iixii	1 14511 1	211511 1		1 331111			
	()							494	950	1180	1450	2050		3300			
	SIZE	NPS	2	2.5	3		4	6	8	10	12	14	1	6	18	20	24
		NPS DN	2 50	2.5 65	3 80	1	4	6 150	8 200	10 250	12 300	14 350	1 40	6	18 450	20 500	24 600
		NPS DN IN	2 50 14.5	2.5 65 18.5	3 80 18.5	<b>1</b>	4 00 1.5	6 150 27.75	8 200 32.75	10 250 39.0	12 300 44.5	14 350 49.5	1 40 54	6 10 1.5	<b>18</b> <b>450</b> 60.5	<b>20</b> <b>500</b> 65.5	24 600 76.5
	SIZE A - RF	NPS DN IN MM	2 50 14.5 368	2.5 65	3 80 18.5 470	1 5 2 5 5	4	6 150 27.75 705	8 200 32.75 832	10 250 39.0 991	12 300 44.5 1130	14 350 49.5 1257	1 40 54 13	6 00 1.5	18 450 60.5 1537	20 500 65.5 1664	24 600 76.5 1943
0	SIZE	NPS DN IN	2 50 14.5	2.5 65 18.5 470	3 80 18.5	1 5 2 1 5 2 21	<b>4 00 1.5 4</b>	6 150 27.75	8 200 32.75	10 250 39.0	12 300 44.5	14 350 49.5	1 40 54 13	6 00 1.5 83	<b>18</b> <b>450</b> 60.5	<b>20</b> <b>500</b> 65.5	24 600 76.5
200	SIZE A - RF A - RTJ	NPS DN IN MM IN MM	2 50 14.5 368 14.62 371 14.5	2.5 65 18.5 470 18.62 473 18.5	3 80 18.5 470 18.6 473 18.5	10 2 2 21 5 5 5 2 2 2 2 2 2 2 2 2 2 2 2 2	4 00 1.5 46 62 49	6 150 27.75 705 28.0 711 27.75	8 200 32.75 832 33.13 841 32.75	10 250 39.0 991 39.38 1000 39.0	12 300 44.5 1130 45.12 1146 44.5	14 350 49.5 1257 50.25 1276 49.5	13 54 13 55 14	6 00 5 83 38 07	18 450 60.5 1537 61.38 1559 60.5	20 500 65.5 1664 66.38 1686 65.5	24 600 76.5 1943 77.62 1972 76.5
1500	SIZE A - RF	NPS DN IN MM IN MM IN MM	2 50 14.5 368 14.62 371 14.5 368	2.5 65 18.5 470 18.62 473	3 80 18.5 470 18.6 473 18.5	10 2 2 2 2 1 5 5 5 5 5 5 5 5	4 00 1.5 46 62 49 1.5	6 150 27.75 705 28.0 711 27.75 705	8 200 32.75 832 33.13 841 32.75 832	10 250 39.0 991 39.38 1000 39.0	12 300 44.5 1130 45.12 1146 44.5 1130	14 350 49.5 1257 50.25	1 40 54 13 55 14	6 00 5 83 38 07	18 450 60.5 1537 61.38	20 500 65.5 1664 66.38 1686	24 600 76.5 1943 77.62 1972
150	SIZE A-RF A-RTJ A-BW	NPS DN IN MM IN MM IN MM IN	2 50 14.5 368 14.62 371 14.5 368 2.01	2.5 65 18.5 470 18.62 473 18.5	3 80 18.5 470 18.6 473 18.5 470 2.99	1 5 2 21 5 5 2 2 1 5 5 4 4 4	4 00 1.5 46 62 49 1.5 46 02	6 150 27.75 705 28.0 711 27.75 705 5.75	8 200 32.75 832 33.13 841 32.75 832 7.64	10 250 39.0 991 39.38 1000 39.0 991 9.53	12 300 44.5 1130 45.12 1146 44.5 1130 15.35	14 350 49.5 1257 50.25 1276 49.5	13 54 13 55 14	6 00 5 83 38 07	18 450 60.5 1537 61.38 1559 60.5	20 500 65.5 1664 66.38 1686 65.5	24 600 76.5 1943 77.62 1972 76.5
S 150	SIZE A - RF A - RTJ	NPS DN IN MM IN MM IN MM IN MM	2 50 14.5 368 14.62 371 14.5 368 2.01 51	2.5 65 18.5 470 18.62 473 18.5 470	3 80 18.5 470 18.6 473 18.5 470 2.99	15 2: 2: 2: 2: 2: 2: 2: 3: 5: 5: 5: 3: 4: 1: 1: 1: 1: 1: 1: 1: 1: 1: 1: 1: 1: 1:	4 00 1.5 46 62 49 1.5 46 02	6 150 27.75 705 28.0 711 27.75 705 5.75 146	8 200 32.75 832 33.13 841 32.75 832 7.64 194	10 250 39.0 991 39.38 1000 39.0 991 9.53 242	12 300 44.5 1130 45.12 1146 44.5 1130 15.35 390	14 350 49.5 1257 50.25 1276 49.5 1257	1 40 54 13 55 14 54 13	66 00 1.5 83 38 07 :.5	18 450 60.5 1537 61.38 1559 60.5 1537 /	20 500 65.5 1664 66.38 1686 65.5 1664	24 600 76.5 1943 77.62 1972 76.5 1943
S 150	SIZE A-RF A-RTJ A-BW	NPS DN IN MM IN MM IN MM IN MM IN MM IN	2 50 14.5 368 14.62 371 14.5 368 2.01 51 2.83	2.5 65 18.5 470 18.62 473 18.5 470 /	3 80 18.5 470 18.6 473 18.5 470 2.99 76	1 5 2: 5 5 2: 5 5 5 4. 1 4. 4.	4 000 1.5 46	6 150 27.75 705 28.0 711 27.75 705 5.75 146 5.43	8 200 32.75 832 33.13 841 32.75 832 7.64 194 6.93	10 250 39.0 991 39.38 1000 39.0 991 9.53 242 8.35	12 300 44.5 1130 45.12 1146 44.5 1130 15.35 390 9.76	14 350 49.5 1257 50.25 1276 49.5 1257 /	1 40 54 13 55 14 54 13	6 00 5 83 38 07 5 83	18 450 60.5 1537 51.38 1559 60.5 1537 / / 19.0	20 500 65.5 1664 66.38 1686 65.5 1664 /	24 600 76.5 1943 77.62 1972 76.5 1943 /
LASS 150	SIZE  A-RF  A-RTJ  A-BW  F  H1	NPS DN IN MM	2 50 14.5 368 14.62 361 14.5 368 2.01 51 2.83 72	2.5 65 18.5 470 18.62 473 18.5 470 / / / 5.25	3 80 18.5 470 18.6 473 18.5 470 2.95 76 3.5	10	4 00 1.5 4662 49 1.5 46 002 002 117 006	6 150 27.75 705 28.0 711 27.75 705 5.75 146 5.43 138	8 200 32.75 832 33.13 841 32.75 832 7.64 194 6.93 176	10 250 39.0 991 39.38 1000 39.0 991 9.53 242 8.35 212	12 300 44.5 1130 45.12 1146 44.5 1130 15.35 390 9.76 248	14 350 49.5 1257 50.25 1276 49.5 1257 / / 16.25	1 4(0) 52 13 55. 14 54 13 17.	6	18 450 60.5 1537 51.38 1559 60.5 1537 / / 19.0 482	20 500 65.5 1664 66.38 1686 65.5 1664 / / 20.5 520	24 600 76.5 1943 77.62 1972 76.5 1943 / / 24.0 609
S 150	SIZE A-RF A-RTJ A-BW F	NPS DN IN MM IN MM IN MM IN MM IN MM IN	2 50 14.5 368 14.62 371 14.5 368 2.01 51 2.83 72 6.61	2.5 65 18.5 470 18.62 473 18.5 470 /	3 80 18.5.2 470 18.6 473 18.5 470 2.99 76 3.5 89	11 5 22 21 5 5 6 23 6 25 7 5 8 44 1 1 4 42 1 10	4 000 1.5 46	6 150 27.75 705 28.0 711 27.75 705 5.75 146 5.43	8 200 32.75 832 33.13 841 32.75 832 7.64 194 6.93	10 250 39.0 991 39.38 1000 39.0 991 9.53 242 8.35	12 300 44.5 1130 45.12 1146 44.5 1130 15.35 390 9.76	14 350 49.5 1257 50.25 1276 49.5 1257 /	1 40 54 13 55 14 54 13	6	18 450 60.5 1537 51.38 1559 60.5 1537 / / 19.0	20 500 65.5 1664 66.38 1686 65.5 1664 /	24 600 76.5 1943 77.62 1972 76.5 1943 /
LASS 150	SIZE  A-RF  A-RTJ  A-BW  F  H1	NPS DN IN MM	2 50 14.5 368 14.62 361 14.5 368 2.01 51 2.83 72	2.5 65 18.5 470 18.62 473 18.5 470 / / / 5.25 133 13.7	3 80 18.5 470 18.6 473 18.5 470 2.95 76 3.5	11	4 00 1.5 46	6 150 27.75 705 28.0 711 27.75 705 5.75 146 5.43 138 13.27	8 200 32.75 832 33.13 841 32.75 832 7.64 194 6.93 176 16.63	10 250 39.0 991 39.38 1000 39.0 991 9.53 242 8.35 212	12 300 44.5 1130 45.12 1146 44.5 1130 15.35 390 9.76 248 20.98	14 350 49.5 1257 50.25 1276 49.5 1257 / / 16.25 412 40.8	1 4(0) 54 13 55. 14 54 13 17. 43 42	6	18 450 60.5 1537 1538 1559 60.5 1537 / / 19.0 482 47.1	20 500 65.5 1664 66.38 1686 65.5 1664 / / 20.5 520 51.1	24 600 76.5 1943 77.62 1972 76.5 1943 / / 24.0 609 57.1
LASS 150	SIZE  A-RF  A-RTJ  A-BW  F  H1  H2	NPS DN IN MM IN MM IN MM IN MM IN MM IN MM	2 50 14.5 368 14.62 371 14.5 368 2.01 51 2.83 72 6.61 168 154	2.5 18.5 470 18.62 473 18.5 470 / / / 5.25 133 13.7 349 243 110	3 80 18.5 4770 18.6 473 18.5 470 2.99 76 3.5 89 88.82 224 375	10	4 000 1.1.5 446 .62 449 1.1.5 446 02 02 1.7 06 .3.32 62 62 62 00	6 150 27.75 705 28.0 711 27.75 705 5.75 146 5.43 138 13.27 337 1531 695	8 200 32.75 832 33.13 841 32.75 832 7.64 194 6.93 176 6.93 422.5 2624 1190	10 250 39.0 991 39.38 1000 39.0 991 9.53 242 8.35 212 19.69 500 4079 1850	12 300 44.5 1130 45.12 1146 44.5 1130 15.35 390 9.76 248 20.98 553 7336 3330	14 350 49.5 1257 50.25 1276 49.5 1257 / 16.25 41.8 40.8 1035 7938 3600	1 40 54 133 555,55 144 13 7 17. 17. 42 42 100 49	66   100   1	18 450 60.5 1537 1.1.38 1559 60.5 1537 / / 19.0 482 47.1 1197 4553 6600	20 500 65.5 1664 66.38 1686 65.5 1664 / / 20.5 520 51.1 1299 17971 8150	24 600 76.5 1943 77.62 1972 76.5 1943 / / 24.0 609 57.1 1451 25909 11750
LASS 150	SIZE  A-RF  A-RTJ  A-BW  F  H1  H2  WGT (RF)  WGT	NPS DN IN MM IN IN MM IN IN MM IN IN MM IN	2 50 14.5 368 14.62 371 14.5 368 2.01 51 2.83 72 6.61 168 154 70	2.5 6.5 18.5 470 18.62 473 18.5 470 / / 5.25 133 13.7 349 243 110	3 80 18.5 4770 18.6 473 18.5 470 2.95 76 3.5 89 8.82 224 375 170 298	1 1 2 2 10 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	4	6 150 27.75 705 28.0 711 27.75 705 5.75 146 5.43 138 13.27 337 1531 695 1234	8 200 32.75 832 33.13 841 32.75 832 7.64 194 6.93 176 16.63 422.5 2624 1190 2128	10 250 39.0 991 39.38 1000 39.0 991 9.53 242 8.35 212 19.69 500 4079 1850 3263.	12 300 44.5 1130 45.12 1146 44.5 1130 15.35 390 9.76 248 20.98 553 7336 3330 6080	14 350 49.5 1257 50.25 1276 49.5 1257 / 16.25 412 40.8 10.35 7938 3600 6251	1 40 54 133 555 144 13 17. 17. 43 42 49 85	6	18 450 60.5 1537 1.1.38 1559 60.5 1537 / / 19.0 482 47.1 1197 4553 6600 1.576	20 500 65.5 1664 66.38 1686 65.5 1664 / / 20.5 520 51.1 1299 17971 8150 14222	24 600 76.5 1943 77.62 1972 76.5 1943 / / 24.0 609 57.1 1451 25909 11750 19845
LASS 150	SIZE  A-RF  A-RTJ  A-BW  F  H1  H2  WGT (RF)	NPS DN IN MM	2 50 14.5 368 14.62 371 14.5 368 2.01 51 2.83 72 6.61 168 154	2.5 18.5 470 18.62 473 18.5 470 / / / 5.25 133 13.7 349 243 110	3 80 18.5 4770 18.6 473 18.5 470 2.99 76 3.5 89 88.82 224 375	1 1 2 2 10 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	4 000 1.1.5 446 .62 449 1.1.5 446 02 02 1.7 06 .3.32 62 62 62 00	6 150 27.75 705 28.0 711 27.75 705 5.75 146 5.43 138 13.27 337 1531 695	8 200 32.75 832 33.13 841 32.75 832 7.64 194 6.93 176 6.93 422.5 2624 1190	10 250 39.0 991 39.38 1000 39.0 991 9.53 242 8.35 212 19.69 500 4079 1850	12 300 44.5 1130 45.12 1146 44.5 1130 15.35 390 9.76 248 20.98 553 7336 3330	14 350 49.5 1257 50.25 1276 49.5 1257 / 16.25 41.8 40.8 1035 7938 3600	1 40 54 133 555,55 144 13 7 17. 17. 42 42 100 49	6	18 450 60.5 1537 1.1.38 1559 60.5 1537 / / 19.0 482 47.1 1197 4553 6600	20 500 65.5 1664 66.38 1686 65.5 1664 / / 20.5 520 51.1 1299 17971 8150	24 600 76.5 1943 77.62 1972 76.5 1943 / / 24.0 609 57.1 1451 25909 11750
LASS 150	SIZE  A-RF  A-RTJ  A-BW  F  H1  H2  WGT (RF)  WGT (BW)	NPS DN IN MM IN IN MM IN IN MM IN IN MM IN	2 50 14.5 368 14.62 371 14.5 368 2.01 51 2.83 72 6.61 168 154 70	2.5 65 18.5 470 18.62 473 18.5 470 / / 5.25 133 13.7 349 243 110 192 87	3 80 18.5 4770 18.6 473 18.5 470 2.95 76 3.5 89 8.82 224 375 170 298	1 1 2 2 10 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	4	6 150 27.75 705 28.0 711 27.75 705 5.75 146 5.43 138 13.27 337 1531 695 1234	8 200 32.75 832 33.13 841 32.75 832 7.64 194 6.93 176 16.63 422.5 2624 1190 2128	10 250 39.0 991 39.38 1000 39.0 991 9.53 242 8.35 212 19.69 500 4079 1850 3263.	12 300 44.5 1130 45.12 1146 44.5 1130 15.35 390 9.76 248 20.98 553 7336 3330 6080	14 350 49.5 1257 50.25 1276 49.5 1257 / 16.25 412 40.8 10.35 7938 3600 6251	1 40 54 133 555,55 144 13 7 17. 17. 43 42 42 49 85	6	18 450 60.5 1537 1.1.38 1559 60.5 1537 / / 19.0 482 47.1 1197 4553 6600 1.576	20 500 65.5 1664 66.38 1686 65.5 1664 / / 20.5 520 51.1 1299 17971 8150 14222 6450	24 600 76.5 1943 77.62 1972 76.5 1943 / / 24.0 609 57.1 1451 25909 11750 19845
LASS 150	SIZE  A-RF  A-RTJ  A-BW  F  H1  H2  WGT (RF)  WGT	NPS DN IN MM IN MM IN MM IN MM IN MM LB KG	2 50 14.5 368 14.62 371 14.5 368 2.01 51 2.83 72 6.61 168 154 70 110	2.5 65 18.5 470 18.62 473 18.5 470 / / 5.25 133 13.7 349 243 110 192 87	3 80 18.5.470 18.6 4770 18.5 4770 2.99 76 3.5 89 8.82 224 375 170 298	10	4	6 150 27.75 705 28.0 711 27.75 705 5.75 146 5.43 138 13.27 337 1531 695 1234 560	8 200 32.75 832 33.13 841 32.75 832 7.64 194 6.93 176 16.63 422.5 2624 1190 2128 965	10 250 39.0 991 39.38 1000 39.0 991 9.53 242 8.35 212 19.69 500 4079 1850 3263.	12 300 44.5 1130 45.12 1146 44.5 1130 15.35 390 9.76 248 20.98 553 7336 3330 6080 2760	14 350 49.5 1257 50.25 1276 49.5 1257 / 16.25 412 40.8 1035 7938 3600 6251 2835	1 40 54 133 555,55 144 13 7 17. 17. 43 42 42 49 85	6	18	20 500 65.5 1664 66.38 1686 65.5 1664 / 20.5 520 51.1 1299 17971 8150 14222 6450	24 600 76.5 1943 77.62 1972 76.5 1943 / / 24.0 609 57.1 1451 25909 11750 19845 9000
LASS 150	SIZE  A-RF  A-RTJ  A-BW  F  H1  H2  WGT (RF)  WGT (BW)	NPS DN IN MM	2 50 14.5 368 14.62 371 14.5 368 2.01 51 2.83 72 6.61 168 154 70 110 50 2	2.5 18.5 18.5 470 18.62 473 18.5 470 / / / / / / / / / / / / /	3 80 18.5 4770 18.6 473 18.5 470 2.99 76 3.5 89 8.82 224 375 170 298 135	10	4 00 1.5 46 .62 .49 1.5 46 02 02 02 17 06 .32 62 62 62 00 40 40 40 40 40 40 40 40 40	6 150 27.75 705 28.0 711 27.75 705 5.75 146 5.43 138 13.27 337 1531 695 1234 560 4 100 26.5	8 200 32.75 832 33.13 841 32.75 832 7.64 194 6.93 176 6.93 422.5 2624 1190 2128 965 6 150 36.0	10 250 39.0 991 39.38 1000 39.0 991 9.53 242 8.35 212 19.69 500 4079 1850 3263.	12 300 44.5 1130 45.12 1146 44.5 1130 15.35 390 9.76 248 20.98 553 7336 3330 6080 2760	14 350 49.5 1257 50.25 1276 49.5 1257 / 16.25 412 40.8 1035 7938 3600 6251 2835	1 40 54 133 555,55 144 13 7 17. 17. 43 42 42 49 85	66   100   1.5   1	18 450 60.5 1537 1.1.38 1559 60.5 1537 / / 19.0 482 47.1 1197 4553 6600 1.576 5250 12 62 62 62 62 62 62 62 62 62 62 62 62 62	20 500 65.5 1664 66.38 1686 65.5 1664 / / 20.5 520 51.1 1299 17971 8150 14222 6450	24 600 76.5 1943 77.62 1972 76.5 1943 / / 24.0 609 57.1 1451 25909 11750 19845 9000 16 400 68.0
LASS 150	SIZE  A-RF  A-RTJ  A-BW  F  H1  H2  WGT (RF)  WGT (BW)	NPS DN IN MM	2 50 14.5 368 14.62 371 14.5 368 2.01 51 2.83 72 6.61 168 154 70 110 50 2 50 17.75 451	2.5 65 18.5 470 18.62 473 18.5 470 / / 5.25 133 13.7 349 243 110 192 87	3 80 18.5 4770 18.6 473 18.5 470 2.99 76 3.5 89 8.82 224 375 170 298 135	1 1 5 5 2 2 2 2 1 1 5 5 5 2 2 2 1 1 5 5 6 2 2 2 1 1 5 5 6 2 2 2 1 1 5 5 6 2 2 2 1 1 5 5 6 2 2 2 1 5 6 6 1 3 3 1 5 5 5 6 2 2 2 1 5 5 7 8	4 00 1.5 46 .62 .49 1.5 46 02 02 02 17 06 .32 62 62 62 00 40 40 40 40 40 40 40 40 40	6 150 27.75 705 28.0 711 27.75 705 5.75 146 5.43 138 13.27 337 1531 695 1234 560 4 100 26.5 673	8 200 32.75 832 33.13 841 32.75 832 7.64 194 6.93 176 16.63 422.5 2624 1190 2128 965 6 150 36.0 914	10 250 39.0 991 39.38 1000 39.0 991 9.53 242 8.35 212 19.69 500 4079 1850 3263.	12 300 44.5 1130 45.12 1146 44.5 1130 15.35 390 9.76 248 20.98 553 7336 3330 6080 2760	14 350 49.5 1257 50.25 1276 49.5 1257 / 16.25 41.8 40.8 1035 7938 3600 6251 2835 10	1 40 54 133 555,55 144 13 7 17. 17. 43 42 42 49 85	66   100   1	18 450 60.5 1537 / 19.0 482 47.1 1197 4553 6600 1.576 6250 15 15 15 15 15 15 15 15 15 15 15 15 15	20 500 65.5 1664 66.38 1686 65.5 1664 / / 20.5 520 51.1 1299 17971 8150 14222 6450	24 600 76.5 1943 77.62 1972 76.5 1943 / / 24.0 609 57.1 1451 25909 11750 19845 9000 16 400 68.0 1727
CLASS 150	SIZE  A-RF  A-RTJ  A-BW  F  H1  H2  WGT (RF)  WGT (BW)	NPS DN IN MM IN IN MM IN	2 50 14.5 368 14.62 371 14.5 368 2.01 51 2.83 72 6.61 168 154 70 110 50 2 50 17.75 451 17.87	2.5 65 18.5 470 18.62 473 18.5 470 / / / 5.25 133 13.7 349 243 110 192 87	3 80 80 18.5 470 18.6 473 18.5 470 2.95 76 3.5 89 8.82 224 375 170 298 135 22.5 65 22.75 578 23.0	1 1 2 2 2 2 1 1 5 5 6 2 2 2 1 1 5 5 6 2 2 2 1 1 1 2 1 1 1 1 1 1 1 1 1 1 1 1	4 00 1.5 46 .62 .49 1.5 46 02 02 02 17 06 .32 62 62 62 00 40 40 40 40 40 40 40 40 40	6 150 27.75 705 28.0 711 27.75 705 5.75 146 5.43 138 13.27 337 1531 695 1234 560 4 100 26.5 673 26.88	8 200 32.75 832 33.13 841 32.75 832 7.64 194 6.93 176 16.63 422.5 2624 1190 2128 965 6 150 36.0 914 36.5	10 250 39.0 991 39.38 1000 39.0 991 9.53 242 8.35 212 19.69 500 4079 1850 3263.	12 300 44.5 1130 45.12 1146 44.5 1130 15.35 390 9.76 248 20.98 553 7336 3330 6080 2760 8 200 40.25 1022 40.87	14 350 49.5 1257 50.25 1257 49.5 1257 / / 16.25 412 40.8 3600 6251 2835 10 250 42.13 1070 50.88	1 40 54 133 555,55 144 13 7 17. 17. 43 42 42 49 85	66   100   1	18 450 60.5 1537 15.38 1559 60.5 1537 19.0 482 47.1 1197 4553 6600 1576 6250 15 62	20 500 65.5 1664 66.38 1686 65.5 1664 / / 20.5 520 51.1 1299 17971 8150 14222 6450	24 600 76.5 1943 77.62 1972 76.5 1943 / / 24.0 609 57.1 1451 25909 11750 19845 9000 16 400 68.0 1727 68.88
0 CLASS 150	SIZE  A-RTJ  A-BW  F  H1  H2  WGT (RF)  WGT (BW)  SIZE  A-RF  A-RTJ	NPS DN IN MM	2 50 14.5 368 14.62 371 14.5 368 2.01 51 2.83 72 6.61 168 154 70 110 50 2 50 17.75 451 17.87 454	2.5 65 18.5 470 18.62 473 18.5 470 / / / 5.25 133 13.7 349 243 110 192 87	3 80 18.5 4770 18.6 4773 18.5 4770 2.95 89 8.82 224 3775 1770 298 135 2.5 65 22.75 578 23.0 584	11 5 2: 5 2 2: 1 5 5 2: 5 5 2: 5 6 2: 5 1 4. 4 1 1 2: 10 2 10 6 6 3 3 5 5 2: 5 80 82.75 578 23.0	4 000 1.5 1.46 62 1.9 1.5 1.5 1.6 02 02 02 1.7 0.6 0.32 0.6 0.2 0.32 0.32 0.40 1.40 0	6 150 27.75 705 28.0 711 27.75 705 5.75 146 5.43 138 13.27 337 1591 695 1234 560 4 100 26.5 673 26.88 683	8 200 32.75 832 33.13 841 32.75 832 7.64 194 6.93 176 16.63 422.5 2624 1190 2128 965 6 150 914 36.5 927	10 250 39.0 991 39.38 1000 39.0 991 9.53 242 8.35 212 19.69 500 4079 1850 3263. 1480	12 300 44.5 1130 45.12 1146 44.5 1130 15.35 390 9.76 248 20.98 20.98 553 7336 3330 6080 2760 8 200 40.25 1022 40.87 1038	14 350 49.5 1257 50.25 1276 49.5 1257 / / 16.25 412 40.8 1038 3600 6251 2835 10 50.88 1292	1 40 54 133 555,55 144 13 7 17. 17. 43 42 42 49 85	66   100   1.5   1	18 450 60.5 1537 15.38 1559 60.5 1537 19.0 482 47.1 1197 4553 3600 1576 5250 15 15 15 15 62. 15 15 15 15 15 15 15 15 15 15 15 15 15	20 500 65.5 1664 66.38 1686 65.5 1664 / / 20.5 520 51.1 1299 17971 8150 14222 6450	24 600 76.5 1943 77.62 1972 76.5 1943 / / 24.0 609 57.1 1451 25909 11750 19845 9000 16 400 68.0 1727 68.88 1750
0 CLASS 150	SIZE  A-RF  A-RTJ  A-BW  F  H1  H2  WGT (RF)  WGT (BW)  SIZE  A-RF	NPS DN IN MM IN IN MM IN IN IN MM IN	2 50 14.5 368 14.62 371 14.5 368 2.01 51 2.83 72 6.61 168 154 70 110 50 2 50 17.75 451 17.87 454 17.75	2.5 65 18.5 470 18.62 473 18.5 470 / / / 5.25 133 13.7 349 243 110 192 87	3 80 18.5 4770 18.6 4773 18.5 4770 2.98 8.82 224 375 1770 2.98 135 2.5 65 22.75 578 23.0 584 22.75	11 5 2: 5 2 2: 1 5 5: 2: 1 5 5: 2: 1 6 2: 5 7 4: 1 1 4: 4 1 1: 2 2 10 6 6 8 3 8 0 22.75 578 23.0 584 22.75	4 000 1.5 1.46 62 1.9 1.5 1.5 1.6 02 02 02 1.7 0.6 0.32 0.6 0.2 0.32 0.32 0.40 1.40 0	6 150 27.75 705 28.0 711 27.75 705 5.75 146 5.43 138 13.27 337 1531 695 1234 560 4 100 26.5 673 26.88 683 26.5	8 200 32.75 832 33.13 841 32.75 832 7.64 194 6.93 176 16.63 422.5 2624 1190 2128 965 6 150 914 36.5 927 36.0	10 250 39.0 991 39.38 1000 39.0 991 9.53 242 8.35 212 19.69 500 4079 1850 3263. 1480	12 300 44.5 1130 45.12 1146 44.5 1130 15.35 390 9.76 248 20.98 20.98 553 7336 3330 6080 2760 8 200 40.25 1038 40.25	14 350 49.5 1257 50.25 1276 49.5 1257 / / 16.25 412 40.8 1033 3600 6251 2835 10 250 42.13 1070 50.88 1292 42.13	1 40 54 133 555,55 144 13 7 17. 17. 43 42 42 49 85	66   100   1	18 450 60.5 1537 15.38 1559 60.5 1537 19.0 482 47.1 1197 4553 6600 1576 5250 15 62. 15 62. 62. 62.	20 500 65.5 1664 66.38 1686 65.5 1664 / / 20.5 520 51.1 1299 17971 8150 14222 6450 4	24 600 76.5 1943 77.62 1972 76.5 1943 / / 24.0 609 57.1 1451 25909 11750 19845 9000 16 400 68.0 1727 68.88 1750 68.0
0 CLASS 150	SIZE  A-RF  A-RTJ  A-BW  F  H1  H2  WGT (RF) WGT (BW)  SIZE  A-RF  A-RTJ  A-BW	NPS DN IN MM	2 50 14.5 368 14.62 371 14.5 368 2.01 51 2.83 72 6.61 168 154 70 110 50 2 50 17.75 451 17.87 454 17.75 451	2.5 65 18.5 470 18.62 473 18.5 470 / / / 5.25 133 13.7 349 243 110 192 87	3 80 18.5 4770 18.6 4773 18.5 4770 2.95 89 8.82 224 3775 1770 298 135 2.5 65 22.75 578 23.0 584	1 1 5 5 2 1 1 5 5 2 1 1 5 5 5 2 1 1 5 5 5 1 5 5 1 1 1 1	4 000 1.5 1.46 62 1.9 1.5 1.5 1.6 02 02 02 1.7 0.6 0.32 0.6 0.2 0.32 0.32 0.40 1.40 0	6 150 27.75 705 28.0 711 27.75 705 5.75 146 5.43 138 13.27 337 1531 695 1234 560 4 100.5 673 26.88 683 26.5 673	8 200 32.75 832 33.13 841 32.75 832 7.64 194 6.93 176 16.63 422.5 2624 1190 2128 965 6 150 36.0 914	10 250 39.0 991 39.38 1000 39.0 991 9.53 242 8.35 212 19.69 500 4079 1850 3263. 1480	12 300 44.5 1130 45.12 1146 44.5 1130 15.35 390 9.76 248 20.98 553 7336 3330 6080 2760  8 200 40.25 1022 40.87 1038 40.25 1022	14 350 49.5 1257 50.25 1276 49.5 1257 / / 16.25 412 40.8 1035 3600 6251 2835 10 250 42.13 1070	1 40 54 13 55.5 14 54 13 7 7 7 17.7 43 42 10 108 49 49 85 39	66   100   1	18 450 60.5 1537 15.38 1559 60.5 1537 19.0 482 47.1 1197 4553 3600 1576 5250 15 15 15 15 62. 15 15 15 15 15 15 15 15 15 15 15 15 15	20 500 65.5 1664 66.38 1686 65.5 1664 / / 20.5 520 51.1 1299 17971 8150 14222 6450 4	24 600 76.5 1943 77.62 1972 76.5 1943 / / 24.0 609 57.1 1451 25909 11750 19845 9000 16 400 68.0 1727 68.88 1750
0 CLASS 150	SIZE  A-RTJ  A-BW  F  H1  H2  WGT (RF)  WGT (BW)  SIZE  A-RF  A-RTJ	NPS DN IN MM IN IN MM IN IN IN MM IN	2 50 14.5 368 14.62 371 14.5 368 2.01 51 2.83 72 6.61 168 154 70 110 50 2 50 17.75 451 17.87 454 17.75	2.5 65 18.5 470 18.62 473 18.5 470 / / / 5.25 133 13.7 349 243 110 192 87	3 80 18.5 4770 18.6 4773 18.5 4770 2.98 8.82 224 375 1770 2.98 135 2.5 65 22.75 578 23.0 584 22.75	11 5 2: 5 2 2: 1 5 5: 2: 1 5 5: 2: 1 6 2: 5 7 4: 1 1 4: 4 1 1: 2 2 10 6 6 8 3 8 0 22.75 578 23.0 584 22.75	4 000 1.5 1.46 62 1.9 1.5 1.5 1.6 02 02 02 1.7 0.6 0.32 0.6 0.2 0.32 0.32 0.40 1.40 0	6 150 27.75 705 28.0 711 27.75 705 5.75 146 5.43 138 13.27 337 1531 695 1234 560 4 100 26.5 673 26.88 683 26.5	8 200 32.75 832 33.13 841 32.75 832 7.64 194 6.93 176 16.63 422.5 2624 1190 2128 965 6 150 914 36.5 927 36.0	10 250 39.0 991 39.38 1000 39.0 991 9.53 242 8.35 212 19.69 500 4079 1850 3263. 1480	12 300 44.5 1130 45.12 1146 44.5 1130 15.35 390 9.76 248 20.98 20.98 553 7336 3330 6080 2760 8 200 40.25 1038 40.25	14 350 49.5 1257 50.25 1276 49.5 1257 / / 16.25 412 40.8 1035 7938 3600 6251 2835 10 250 42.13 1070 50.88 1292 42.13	1 40 54 13 55.5 14 54 13 7 7 7 17.7 43 42 10 108 49 49 85 39	66   100   1	18 450 60.5 1537 15.38 1559 60.5 1537 19.0 482 47.1 1197 4553 6600 1576 5250 15 62. 15 62. 62. 62.	20 500 65.5 1664 66.38 1686 65.5 1664 / / 20.5 520 51.1 1299 17971 8150 14222 6450 4	24 600 76.5 1943 77.62 1972 76.5 1943 / / 24.0 609 57.1 1451 25909 11750 19845 9000 16 400 68.0 1727 68.88 1750 68.0
0 CLASS 150	SIZE  A-RTJ  A-BW  F  H1  H2  WGT (RF)  WGT (BW)  SIZE  A-RF  A-RTJ  A-BW	NPS DN IN MM IN IN MM IN IN MM	2 50 14.5 368 14.62 371 14.5 368 2.01 51 2.83 72 6.61 168 154 70 110 50 2 50 17.75 451 17.87 454 17.75 451 1.65	2.5 65 18.5 470 18.62 473 18.5 470 / / / 5.25 133 13.7 349 243 110 192 87	3 80 18.5 4770 18.6 4773 18.5 4770 2.98 8.82 224 375 1770 2.98 135 2.5 65 22.75 578 23.0 584 22.75	1 1 5 5 2 1 1 5 5 2 1 1 5 5 5 1 1 1 1 1	4 000 1.5 1.46 62 1.9 1.5 1.5 1.6 02 02 02 1.7 0.6 0.32 0.6 0.2 0.32 0.32 0.40 1.40 0	6 150 27.75 705 28.0 711 27.75 705 5.75 146 5.43 138 13.27 337 1531 695 1234 560 4 100 26.5 673 26.88 683 26.5 673 3.42	8 200 32.75 832 33.13 841 32.75 832 7.64 194 6.93 176 16.63 422.5 2624 1190 2128 965 6 150 36.0 914 5.16	10 250 39.0 991 39.38 1000 39.0 991 9.53 242 8.35 212 19.69 500 4079 1850 3263. 1480	12 300 44.5 1130 45.12 1146 44.5 1130 15.35 390 9.76 248 20.98 553 7336 3330 6080 2760  8 200 40.25 1022 40.87 1038 40.25 1022 7.05	14 350 49.5 1257 50.25 1276 49.5 1257 / / 16.25 412 40.8 1035 3600 6251 2835 10 250 42.13 1070	1 40 54 13 55.5 14 54 13 7 7 7 17.7 43 42 10 108 49 49 85 39	66   100   1	18 450 60.5 1537 15.38 1559 60.5 1537 19.0 482 47.1 1197 4553 6600 1576 5250 15 62. 15 62. 62. 62.	20 500 65.5 1664 66.38 1686 65.5 1664 / / 20.5 520 51.1 1299 17971 8150 14222 6450 4 60 .0 .0 .7 .8 .8 .9 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0	24 600 76.5 1943 77.62 1972 76.5 1943 / / 24.0 609 57.1 1451 25909 11750 19845 9000 16 400 68.0 1727 68.88 1750 68.0
0 CLASS 150	SIZE  A-RF  A-RTJ  A-BW  F  H1  H2  WGT (RF) WGT (BW)  SIZE  A-RF  A-RTJ  A-BW	NPS DN IN MM	2 50 14.5 368 14.62 371 14.5 368 2.01 51 2.83 72 6.61 168 154 70 110 50 2 50 17.75 451 17.87 454 17.75 451 1.65 42 3.15 80	2.5 6.5 18.5 470 18.62 473 18.5 470 1 1 5.25 133 13.7 349 243 110 192 87	3 80 18.5 4770 18.6 473 18.5 470 2.99 76 3.5 89 8.882 224 375 170 298 135 22.5 65 22.75 578 23.0 584 22.75 578 7 7 6.0 152	1 1 5 2 2 21 5 5 5 2 2 1 1 5 5 5 7 8 2 3 0 5 8 4 2 2 7 5 5 7 8 2 3 0 5 8 4 2 2 7 5 5 7 8 2 3 0 5 8 4 2 2 7 5 5 7 8 2 3 0 5 8 4 2 2 7 5 5 7 8 2 3 0 5 8 4 2 2 7 5 5 7 8 2 3 0 5 8 4 2 2 7 5 5 7 8 2 3 0 5 8 4 2 2 7 5 5 7 8 2 3 0 5 8 4 2 2 7 5 5 7 8 2 3 0 5 8 4 2 2 7 5 5 7 8 2 3 0 5 8 4 2 2 7 5 5 7 8 2 3 0 5 8 4 2 2 7 5 5 7 8 2 3 0 5 8 4 2 2 7 5 5 7 8 2 3 0 5 8 4 2 2 7 5 5 7 8 2 3 0 5 8 4 2 2 7 5 5 7 8 2 3 0 5 8 4 2 2 7 5 5 7 8 2 3 0 5 8 4 2 2 7 5 5 7 8 2 3 0 5 8 4 2 2 7 5 5 7 8 2 3 0 5 8 6 2 8 6 2 8 8 6 9 8 9 8 9 8	4 000 1.5 1.46 62 1.9 1.5 1.5 1.6 02 02 02 1.7 0.6 0.32 0.6 0.2 0.32 0.32 0.40 1.40 0	6 150 27.75 705 28.0 711 27.75 705 5.75 146 5.43 138 13.27 337 1531 695 1234 560 4 100 26.5 673 26.88 683 26.5 673 3.42 87 4.65 118	8 200 32.75 832 33.13 841 32.75 832 7.64 194 6.93 176 6.93 176 6.93 422.5 2624 1190 2128 965 6 150 36.0 914 36.5 927 36.0 914 5.16 131 5.94 151	10 250 39.0 991 39.38 1000 39.0 991 9.53 242 8.35 212 19.69 500 4079 1850 3263. 1480	12 300 44.5 1130 45.12 1146 44.5 1130 15.35 390 9.76 248 20.98 553 7336 3330 6080 2760  8 200 40.25 1022 40.87 1038 40.25 1022 40.87 1038 40.25 1022 7.05 179 7.36 187	14 350 49.5 1257 50.25 1276 49.5 1257 / 16.25 412 40.8 1035 7938 3600 6251 2835 10 250 42.13 1070 50.88 1292 42.13 1070 50.88 1292 42.13 1070 50.88 1292 42.13 1070 50.88 1292 42.13 1070 50.88 1292 42.13 1070 50.88 1293 12	1 40 54 13 55.5 14 54 13 7 7 7 17.7 43 42 10 108 49 49 85 39	66   100   1	18 450 60.5 1537 / 19.0 4482 47.1 1197 4453 6600 1576 62. 159	20 500 65.5 1664 66.38 1686 65.5 1664 / / 20.5 520 51.1 1299 17971 8150 14222 6450 4 60 .0 75 88 897 .0 .0	24 600 76.5 1943 77.62 1972 76.5 1943 / / 24.0 609 57.1 1451 25909 11750 19845 9000 16 400 68.0 1727 68.88 1750 68.0 1727 / / / / / / / / / / / / /
0 CLASS 150	SIZE  A-RTJ  A-BW  F  H1  H2  WGT (RF)  WGT (BW)  SIZE  A-RF  A-RTJ  A-BW  F  H1	NPS DN IN MM IN	2 50 14.5 368 14.62 371 14.5 368 2.01 51 2.83 72 6.61 168 154 70 110 50 2 50 17.75 451 17.87 454 17.75 451 1.65 42 3.15 80 6.93	2.5 6.5 18.5 470 18.62 473 18.5 470 1 5.25 133 13.7 349 243 110 192 87	3 80 80 18.5 4770 18.6 4733 18.5 4770 2.95 76 3.5 1770 298 135 22.7 5578 23.0 584 22.75 5578 22.75 578 578 578 578 578 578 578 578 578 5	1 1 5 2 2 2 1 1 5 5 2 2 1 1 5 5 5 2 2 1 1 5 5 5 1 5 5 1 5 5 1 5 5 1 5 5 1 5 5 1 5 5 1 5 5 1 5 5 1 5 5 1 5 5 7 8 2 3 .0 5 8 4 4 2 2 .7 5 5 7 8 2 3 .0 5 8 4 2 2 .7 5 5 7 8 2 3 .0 5 8 4 2 2 .7 5 5 7 8 2 3 .0 5 8 4 2 2 .7 5 5 7 8 2 3 .0 5 8 4 2 2 .7 5 5 7 8 2 3 .0 5 8 4 2 2 .7 5 5 7 8 2 .4 4 6 2 2 .3 8 6 9 8 9 .9 2 2 .7 5 6 9 8 9 .9 9 2	4 000 1.5 1.46 62 1.9 1.5 1.5 1.6 02 02 02 1.7 0.6 0.32 0.6 0.2 0.32 0.32 0.40 1.40 0	6 150 27.75 705 28.0 711 27.75 705 5.75 146 5.43 138 13.27 337 1531 695 1234 560 4 100 26.5 673 26.88 683 26.5 673 3.42 87 4.65 118 11.22	8 200 32.75 832 33.13 841 32.75 832 7.64 194 6.93 176 2624 1190 2128 965 6 150 36.0 914 36.5 927 36.0 914 5.16 131 5.94 151 14.37	10 250 39.0 991 39.38 1000 39.0 991 9.53 242 8.35 212 19.69 500 4079 1850 3263. 1480	12 300 444.5 1130 45.12 1146 44.5 1130 15.35 390 9.76 248 20.98 553 7336 3330 6080 2760  8 200 40.25 1022 40.87 1038 40.25 1022 7.05 179 7.36 187 17.83	14 350 49.5 1257 50.25 1276 49.5 1257 / 16.25 412 40.8 1035 7938 3600 6251 2835 10 250 42.13 1070 50.88 1292 42.13 1070 8.78 223 9.06 230 21.26	1 40 54 13 55.5 14 54 13 7 7 7 17.7 43 42 10 108 49 49 85 39	66   100   1	18 450 60.5 1537 1.1.38 1559 60.5 1537 / / 19.0 4482 47.1 1197 4553 6600 1.576 6250 15 15 15 15 15 15 15 15 15 15 15 15 15	20 500 65.5 1664 66.38 1686 65.5 1664 / / 20.5 52.0 51.1 1299 17971 8150 14222 6450 4 60 .0 .0 .7 .8 .8 .8 .8 .8 .8 .8 .8 .8 .8	24 600 76.5 1943 77.62 1972 76.5 1943 / / 24.0 609 57.1 1451 25909 11750 19845 9000 16 400 68.0 1727 68.88 1750 68.0 1727 / / / / / / / / / / / / /
CLASS 150	SIZE  A-RTJ  A-BW  F  H1  H2  WGT (RF)  WGT (BW)  SIZE  A-RF  A-RTJ  A-BW  F  H1  H2	NPS DN IN MM	2 50 14.5 368 14.62 371 14.5 368 2.01 51 2.83 72 6.61 168 154 70 110 50 2 50 17.75 451 17.87 454 17.75 451 1.65 80 6.93 176	2.5 65 18.5 470 18.62 473 18.5 470 / / 5.25 133 13.7 349 243 110 192 87	3 80 80 18.5 4770 18.6 4773 18.5 4770 2.995 76 3.5 1770 2986 135 22.4 27.5 578 23.0 584 22.75 578 / / 6.0 152 16.5 419	1 1 5 5 2 2 21 5 5 5 2 2 1 1 1 1 1 1 1 1	4 000 1.5 1.46 62 1.9 1.5 1.5 1.6 02 02 02 1.7 0.6 0.32 0.6 0.2 0.32 0.32 0.40 1.40 0	6 150 27.75 705 28.0 711 27.75 705 5.75 146 5.43 138 13.27 337 1531 695 1234 560 4 100 26.5 673 26.88 683 26.5 673 3.42 87 4.65 118 11.22 285	8 200 32.75 832 33.13 841 32.75 832 7.64 194 6.93 176 2624 1190 2128 965 6 150 36.0 914 36.5 927 36.0 914 5.16 131 5.94 151 14.37 365	10 250 39.0 991 39.38 1000 39.0 991 9.53 242 8.35 212 19.69 500 4079 1850 3263. 1480	12 300 44.5 1130 45.12 1146 44.5 1130 15.35 390 9.76 248 20.98 553 7336 3330 6080 2760  8 200 40.25 1022 40.87 1038 40.25 1022 7.05 179 7.36 187 17.83 453	14 350 350 49.5 1257 50.25 1276 49.5 1257 / 16.25 412 40.8 1035 7938 3600 6251 2835 10 250 42.13 1070 50.88 1292 42.13 1070 8.78 223 9.066 230 21.26 540	1 40 54 133 55,5 144 13 17.7 43 42 100 108 49 85 39	66   100   1	18 450 60.5 1537 / 19.0 4482 47.1 1197 4453 6600 1576 62. 159	20 500 65.5 1664 66.38 1686 65.5 1664 / / 20.5 52.0 51.1 1299 17971 8150 14222 6450 4 60 .0 .0 .7 .8 .8 .8 .8 .8 .8 .8 .8 .8 .8	24 600 76.5 1943 77.62 1972 76.5 1943 / / 24.0 609 57.1 1451 25909 11750 19845 9000 16 400 68.0 1727 68.88 1750 68.0 1727 / / / / / / / / / / / / /
0 CLASS 150	SIZE  A-RTJ  A-BW  F  H1  H2  WGT (RF)  WGT (BW)  SIZE  A-RF  A-RTJ  A-BW  F  H1  H2  WGT	NPS DN IN MM	2 50 14.5 368 14.62 371 14.5 368 2.01 51 2.83 72 6.61 168 154 70 110 50 2 50 17.75 451 17.87 454 17.75 451 1.65 80 6.93 176 331	2.5 65 18.5 470 18.62 473 18.5 470 / / / 5.25 133 13.7 349 243 110 192 87	3 80 80 18.5 470 18.6 4770 18.6 4770 2.95 76 3.5 89 8.82 224 375 578 23.0 584 22.75 578 7	1 1 2 2 3 4 4 4 1 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1	4 000 1.5 1.46 62 1.9 1.5 1.5 1.6 02 02 02 1.7 0.6 0.32 0.6 0.2 0.32 0.32 0.40 1.40 0	6 150 27.75 705 28.0 711 27.75 705 5.75 146 5.43 138 13.27 337 1531 695 1234 560 4 100 26.5 673 26.88 683 26.5 673 3.42 87 4.65 118 11.22 285 1433	8 200 32.75 832 33.13 841 32.75 832 7.64 194 6.93 176 2624 1190 2128 965 6 150 36.0 914 5.16 131 5.94 151 14.37 365 3197	10 250 39.0 991 39.38 1000 39.0 991 9.53 242 8.35 212 19.69 500 4079 1850 3263. 1480	12 300 44.5 1130 45.12 1146 44.5 1130 15.35 390 9.76 248 20.98 553 7336 3330 6080 2760  8 200 40.25 1022 40.87 1038 40.25 1022 7.05 179 7.36 187 17.83 453 5622	14 350 350 49.5 1257 50.25 1276 49.5 1257 / 16.25 412 40.8 40.8 40.8 40.8 40.8 40.8 1035 7938 3600 6251 2835 10 250 42.13 1070 50.88 1292 42.13 1070 8.78 223 9.06 230 21.26 540 8709	1 40 54 133 55,5 144 13 17.7 43 42 100 108 49 85 39	66   100   1	18 450 60.5 1537 1.1.38 1559 60.5 1537 / / 19.0 4482 47.1 1197 4553 6600 1.576 6250 15 15 15 15 15 15 15 15 15 15 15 15 15	20 500 65.5 1664 66.38 1686 65.5 1664 / / 20.5 52.0 51.1 1299 17971 8150 14222 6450 4 60 .0 .0 .7 .8 .8 .8 .8 .8 .8 .8 .8 .8 .8	24 600 76.5 1943 77.62 1972 76.5 1943 / / 24.0 609 57.1 1451 25909 11750 19845 9000 16 400 68.0 1727 68.88 1750 68.0 1727 / / / / / / / / / / / / /
0 CLASS 150	SIZE  A-RTJ  A-BW  F  H1  H2  WGT (RF)  WGT (BW)  SIZE  A-RF  A-RTJ  A-BW  F  H1  H2  WGT (RF)	NPS DN IN MM	2 50 14.5 368 14.62 371 14.5 368 2.01 51 2.83 72 6.61 168 154 70 110 50 2 50 17.75 451 17.87 454 17.75 451 1.65 42 3.15 80 6.93 176 331 150	2.5 65 18.5 470 18.62 473 18.5 470 / / / 5.25 133 13.7 349 243 110 192 87	3 80 80 18.5 47.0 18.6 47.0 18.5 89 8.8 224 37.5 17.0 298 135 22.7 57.8 23.0 584 22.75 578 23.0 584 22.75 578 21.0 152 16.5 41.9 52.9 24.0	1 1 5 5 5 5 5 5 5 5 5 6 5 2 2 5 1 5 5 6 5 2 2 5 1 5 5 6 5 2 2 5 1 5 5 6 5 2 2 5 7 7 8 2 3 1 6 2 2 7 7 2 3 5 0 9 8 9 9 9 2 5 2 5 7 7 2 3 5 5 0 9 8 1 5 5 7 8 1	4 000 1.5 1.46 62 1.9 1.5 1.5 1.6 02 02 02 1.7 0.6 0.32 0.6 0.2 0.32 0.32 0.40 1.40 0	6 150 27.75 705 28.0 711 27.75 705 5.75 146 5.43 138 13.27 337 1531 695 1234 560 4 100 26.5 673 26.88 683 26.5 673 3.42 87 4.65 118 11.22 285 1433 650	8 200 32.75 832 33.13 841 32.75 832 7.64 194 6.93 176 16.63 422.5 2624 1190 2128 965 6 150 914 5.16 131 5.94 151 14.37 365 3197 1450	10 250 39.0 991 39.38 1000 39.0 991 9.53 242 8.35 212 19.69 500 4079 1850 3263. 1480	12 300 44.5 1130 45.12 1146 44.5 1130 15.35 390 9.76 248 20.98 553 7336 3330 6080 2760  8 200 40.25 1022 40.87 1038 40.25 1022 40.87 1038 40.25 1022 7.05 179 7.36 187 17.83 453 5622 2550	14 350 49.5 1257 50.25 1276 49.5 1257 / 16.25 40.8 1035 7938 3600 6251 2835 10 250 42.13 1070 50.88 1292 42.13 1070 8.78 223 9.06 230 21.26 540 8709	1 40 54 133 555 144 13 7 7 17. 43 42 100 49 85 39	66   100   1	18 450 60.5 1537 7 7 19.0 482 47.1 1197 4553 660 1.576 62 1.576 62 1.57 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	20 500 65.5 1664 66.38 1686 65.5 1664 / / 20.5 520 51.1 1299 17971 8150 14222 6450 4 60 .0 .7 .8 .8 .8 .9 .9 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0	24 600 76.5 1943 77.62 1972 76.5 1943 / / 24.0 609 57.1 1451 25909 11750 19845 9000 16 400 68.0 1727 68.8 1750 68.0 1727 / / / / / / / / / / / / /
0 CLASS 150	SIZE  A-RTJ  A-BW  F  H1  H2  WGT (RF)  WGT (BW)  SIZE  A-RF  A-RTJ  A-BW  F  H1  H2  WGT	NPS DN IN MM	2 50 14.5 368 14.62 371 14.5 368 2.01 51 2.83 72 6.61 168 154 70 110 50 2 50 17.75 451 17.87 454 17.75 451 1.65 80 6.93 176 331	2.5 65 18.5 470 18.62 473 18.5 470 1 1 5.25 133 13.7 349 243 110 192 87	3 80 80 18.5 470 18.6 4770 18.6 4770 2.95 76 3.5 89 8.82 224 375 578 23.0 584 22.75 578 7	1 1 2 2 3 4 4 4 1 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1	4 000 1.5 1.46 62 1.9 1.5 1.5 1.6 02 02 02 1.7 0.6 0.32 0.6 0.2 0.32 0.32 0.40 1.40 0	6 150 27.75 705 28.0 711 27.75 705 5.75 146 5.43 138 13.27 337 1531 695 1234 560 4 100 26.5 673 26.88 683 26.5 673 3.42 87 4.65 118 11.22 285 1433	8 200 32.75 832 33.13 841 32.75 832 7.64 194 6.93 176 2624 1190 2128 965 6 150 36.0 914 5.16 131 5.94 151 14.37 365 3197	10 250 39.0 991 39.38 1000 39.0 991 9.53 242 8.35 212 19.69 500 4079 1850 3263. 1480	12 300 44.5 1130 45.12 1146 44.5 1130 15.35 390 9.76 248 20.98 553 7336 3330 6080 2760  8 200 40.25 1022 40.87 1038 40.25 1022 7.05 179 7.36 187 17.83 453 5622	14 350 350 49.5 1257 50.25 1276 49.5 1257 / 16.25 412 40.8 40.8 40.8 40.8 40.8 40.8 1035 7938 3600 6251 2835 10 250 42.13 1070 50.88 1292 42.13 1070 8.78 223 9.06 230 21.26 540 8709	1 40 54 133 555 144 13 7 7 17. 43 42 100 49 85 39	66   100   1	18 450 60.5 1537 1.1.38 1559 60.5 1537 / / 19.0 4482 47.1 1197 4553 6600 1.576 6250 15 15 15 15 15 15 15 15 15 15 15 15 15	20 500 65.5 1664 66.38 1686 65.5 1664 / / 20.5 520 51.1 1299 17971 8150 14222 6450 4 60 .0 .7 .8 .8 .9 .9 .0 .0 .7 .8 .8 .9 .9 .9 .9 .9 .9 .9 .9 .9 .9	24 600 76.5 1943 77.62 1972 76.5 1943 / / 24.0 609 57.1 1451 25909 11750 19845 9000 16 400 68.0 1727 68.88 1750 68.0 1727 / / / / / / / / / / / / /

# Pressure Loss Curves for Swing Check Valves



Flow Coefficient fo	r Fully Open Valves
2	174
3	394
4	722
6	2,062
8	3,774
10	6,359
12	8,751
14	11,882
16	15,922
18	20,000
20	24,618
24	32,879

The equations listed are the basis for the above graph. The formulas can be used to find the actual flow coefficient for a given condition of flow.

Glossary of Terms								
Q	Flow Rate, Liquids - GPM							
Cv	Flow Coefficient							
<b>P</b> 1	Inlet Pressure							
P <sub>2</sub>	Outlet Pressure							
AP	Pressure Drop (P1 - P2)							
G	Specific Graqvity (Water = 1)							

# **Liquid (Incompressible Flow)**

$$C_v = Q \sqrt{\frac{G}{\Delta P}}$$
  $Q = C_v \sqrt{\frac{\Delta P}{G}}$   $\Delta P = \left[\frac{Q}{C_v}\right]^2 G$ 

# **Seal & Seat Pressure Temperature Chart**

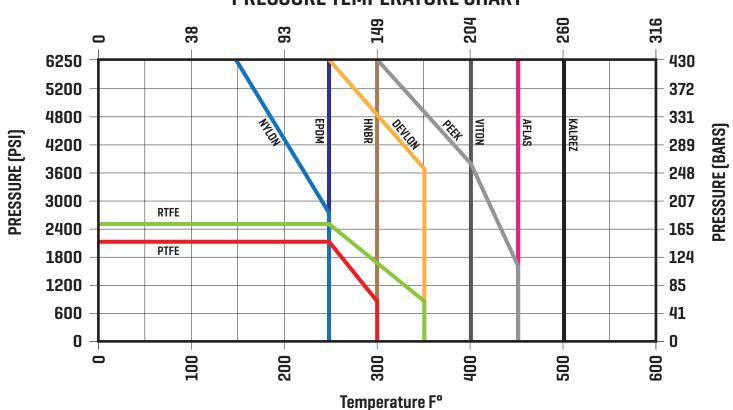
This chart depicts pressure and temperature ratings for common plastics and elastomers used in SCV Valve products.

# **SCV VALVE SOFT GOOD CHEMICAL COMPATIBILITY**

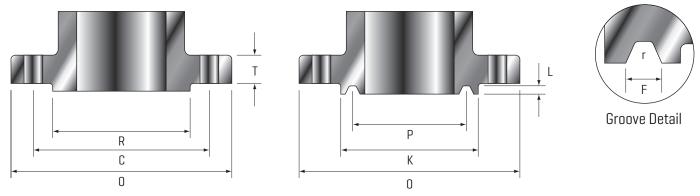
	S	EAL MATERIA	AL	SEAT MATERIAL						
	Viton	HNBR	Kalrez	RTFE	Nylon	Devlon	PEEK			
Amines	Х	Х	•	•	Х	X	•			
Ammonia	Х	Х	•	•	•	•	•			
Butane	•	•	•	•	•	•	•			
Carbon Dioxide	•	•	•	•	•	•	•			
Crude Oil	•	•	•	•	•	•	•			
Ethane	•	•	•	•	Х	X	•			
Ethylene	•	•	•	•	•	•	•			
Glycol	•	•	•	•	•	X	•			
Hydrocarbon	•	•	•	•	•	•	•			
Hydrogen	•	•	•	•	•	•	•			
Jet Fuel	*	*	•	•	Х	X	•			
Methane	•	•	•	•	•	•	•			
Natural Gas	•	•	•	•	•	•	•			
Nitrogen	•	•	•	•	•	•	•			
Propane	•	•	•	•	•	•	•			
Propylene	•	Х	•	•	•	•	•			

<sup>\*</sup> Viton OK for JP-3/4/5/6/8/9/10. \* HNBR OK for JP-3/4/5/6.

# PRESSURE TEMPERATURE CHART

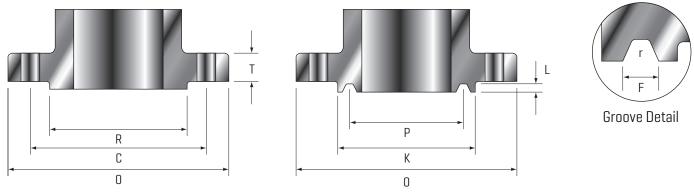


# Flange Dimensions - ANSI B16.5 & B16.47



				Raised		Drilling					Ring Joint	:	
Class	Size	Flg. Dia.	Flg. Thick.	Face Dia.	Bolt Clrcle Dia.	# of Bolts	Hole Dia.	Face Dia.	Pitch Dia.	Grv. Depth	Grv. Width	Btm. Radius	Ring No.
		0	T	R	C			K	P	L	F	r	
	2	6.00	0.75	3.62	4.75	4	0.75	4.00	3.250	0.250	0.344	0.03	R22
	2.5	7.00	0.88	4.12	5.50	4	0.75	4.75	4.000	0.250	0.344	0.03	R25
	3	7.50	0.94	5.00	6.00	4	0.75	5.25	4.500	0.250	0.344	0.03	R29
	4	9.00	0.94	6.19	7.50	8	0.75	6.75	5.875	0.250	0.344	0.03	R36
	6	11.00	1.00	8.50	9.50	8	0.88	8.62	7.625	0.250	0.344	0.03	R43
	8	13.50	1.12	10.62	11.75	8	0.88	10.75	9.750	0.250	0.344	0.03	R48
	10	16.00	1.19	12.75	14.25	12	1.00	13.00	12.000	0.250	0.344	0.03	R52
	12	19.00	1.25	15.00	17.00	12	1.00	16.00	15.000	0.250	0.344	0.03	R56
	14	21.00	1.38	16.25	18.75	12	1.12	16.75	15.625	0.250	0.344	0.03	R59
150	16	23.50	1.44	18.50	21.25	16	1.12	19.00	17.875	0.250	0.344	0.03	R64
	18	25.00	1.56	21.00	22.75	16	1.25	21.50	20.375	0.250	0.344	0.03	R68
	20	27.50	1.69	23.00	25.00	20	1.25	23.50	22.000	0.250	0.344	0.03	R72
	22	29.50	1.81	25.25	27.25	20	1.38	1	1	1	1	1	1
	24	32.00	1.88	27.25	29.50	20	1.38	28.00	26.500	0.250	0.344	0.03	R76
	26	34.25	2.69	29.50	31.75	24	1.38	1	29.500	0.500	0.781	0.060	R93
	28	36.50	2.81	31.50	34.00	28	1.38	1	31.500	0.500	0.781	0.060	R94
	30	38.75	2.94	33.75	36.00	28	1.38	1	33.750	0.500	0.781	0.060	R95
	32	41.75	3.19	36.00	38.50	28	1.62	1	36.000	0.562	0.906	0.060	R96
	34	43.75	3.25	38.00	40.50	32	1.62		38.000	0.562	0.906	0.060	R97
	36	46.00	3.56	40.25	42.75	32	1.62	1	40.250	0.562	0.906	0.060	R98
	2	6.50	0.88	3.62	5.00	8	0.75	4.25	3.250	0.312	0.469	0.03	R23
	2.5	7.50	1.00	4.12	5.88	8	0.88	5.00	4.000	0.312	0.469	0.03	R26
	3	8.25	1.12	5.00	6.62	8	0.88	5.75	4.875	0.312	0.469	0.03	R31
	4	10.00	1.25	6.19	7.88	8	0.88	6.88	5.875	0.312	0.469	0.03	R37
	6	12.50	1.44	8.50	10.62	12	0.88	9.50	8.312	0.312	0.469	0.03	R45
	8	15.00	1.62	10.62	13.00	12	1.00	11.88	10.625	0.312	0.469	0.03	R49
	10	17.50	1.88	12.75	15.25	16	1.12	14.00	12.750	0.312	0.469	0.03	R53
	12	20.50	2.00	15.00	17.75	16	1.25	16.25	15.000	0.312	0.469	0.03	R57
	14	23.00	2.12	16.25	20.25	20	1.25	18.00	16.500	0.312	0.469	0.03	R61
30(	16	25.50	2.25	18.50	22.50	20	1.38	20.00	18.500	0.312	0.469	0.03	R65
3	18	28.00	2.38	21.00	24.75	24	1.38	22.62	21.000	0.312	0.469	0.03	R69
	20	30.50	2.50	23.00	27.00	24	1.38	25.00	23.000	0.375	0.531	0.06	R73
	22	33.00	2.62	25.25	29.25	24	1.62	27.00	25.000	0.438	0.594	0.06	R81
	24 26	36.00 38.25	2.75 3.31	27.25 29.50	32.00 34.50	24 28	1.62 1.75	29.50 31.88	27.250 29.500	0.438	0.656 0.781	0.06	R77 R93
	28 30	40.75	3.56 3.75	31.50 33.75	37.00 39.25	28 28	1.75 1.88	33.88 36.12	31.500 33.750	0.500	0.781 0.781	0.06	R94 R95
	32	45.25	3.75	36.00	41.50	28	2.00	38.75	36.000	0.500	0.906	0.06	R95 R96
	34	45.25	4.12	38.00	43.50	28	2.00	40.75	38.000	0.562	0.906	0.06	R95
	36	50.00	4.12			32	2.00	43.00	40.250		0.906	0.06	R97 R98
	30	50.00	4.38	40.25	46.00	JC	C.1C	43.00	40.230	0.562	ี บ.ฮบช	מט.ט	кэв

# Flange Dimensions - ANSI B16.5 & B16.47



			. Raised D						Ring Joint					
Class	Size	Flg. Dia.	Flg. Thick.	Face Dia.	Bolt Circle Dia.	# of Bolts	Hole Dia.	Face Dia.	Pitch Dia.	Grv. Depth	Grv. Width	Btm. Radius	Ring No.	
		0	T	R	C	Doits	Dia.	K	P	L	F	r	110.	
	2	6.50	1.00	3.62	5.00	8	0.75	4.25	3.250	0.312	0.469	0.03	R23	
	2.5	7.50	1.12	4.12	5.88	8	0.88	5.00	4.000	0.312	0.469	0.03	R26	
	3	8.25	1.25	5.00	6.62	8	0.88	5.75	4.875	0.312	0.469	0.03	R31	
	4	10.75	1.50	6.19	8.50	8	1.00	6.88	5.875	0.312	0.469	0.03	R37	
	6	14.00	1.88	8.50	11.50	12	1.12	9.50	8.312	0.312	0.469	0.03	R45	
	8	16.50	2.19	10.62	13.75	12	1.25	11.88	10.625	0.312	0.469	0.03	R49	
600	10	20.00	2.50	12.75	17.00	16	1.38	14.00	12.750	0.312	0.469	0.03	R53	
9	12	22.00	2.62	15.00	19.25	20	1.38	16.25	15.000	0.312	0.469	0.03	R57	
	14	23.75	2.75	16.25	20.75	20	1.5	18.00	16.500	0.312	0.469	0.03	R61	
	16	27.00	3.00	18.50	23.75	20	1.62	20.00	18.500	0.312	0.469	0.03	R65	
	18	29.25	3.25	21.00	25.75	20	1.75	22.62	21.000	0.312	0.469	0.03	R69	
	20	32.00	3.50	23.00	28.50	24	1.75	25.00	23.000	0.375	0.531	0.06	R73	
	22	34.25	3.75	25.25	30.62	24	1.88	27.00	25.000	0.438	0.594	0.06	R81	
	24	37.00	4.00	27.25	33.00	24	2.00	29.50	27.250	0.438	0.659	0.06	R77	
	2	8.5	1.5	3.62	6.5	8	1	4.88	3.75	0.312	0.469	0.03	R24	
	2.5	9.62	1.62	4.12	7.50	8	1.12	5.39	4.250	0.312	0.469	0.03	R27	
	3	9.50	1.50	5.00	7.50	8	1.00	6.12	4.875	0.312	0.469	0.03	R31	
	4	11.50	1.75	6.19	9.25	8	1.25	7.12	5.875	0.312	0.469	0.03	R37	
	6	15.50	2.19	8.50	12.50	12	1.25	9.50	8.312	0.312	0.469	0.03	R45	
	8	18.50	2.50	10.62	15.50	12	1.50	12.12	10.625	0.312	0.469	0.03	R49	
0(	10	21.50	2.75	12.75	18.50	16	1.50	14.25	12.750	0.312	0.469	0.03	R53	
900	12	24.00	3.12	15.00	21.00	20	1.50	16.50	15.000	0.312	0.469	0.03	R57	
	14	25.25	3.38	16.25	22.00	20	1.62	18.38	16.500	0.438	0.656	0.06	R62	
	16	27.75	3.50	18.50	24.25	20	1.75	20.62	18.500	0.438	0.656	0.06	R66	
	18	31.00	4.00	21.00	27.00	20	2.00	23.38	21.00	0.500	0.781	0.06	R70	
	20	33.75	4.25	23.00	29.50	20	2.12	25.50	23.000	0.500	0.781	0.06	R74	
	24	41.00	5.50	27.25	35.50	20	2.62	30.38	27.250	0.625	1.062	0.09	R78	
	2	8.50	1.50	3.62	6.50	8	1.00	4.88	3.750	0.312	0.469	0.03	R24	
	2.5	9.62	1.62	4.12	7.50	8	1.12	5.38	4.250	0.312	0.469	0.03	R27	
	3	10.50	1.88	5.00	8.00	8	1.25	6.62	5.375	0.312	0.469	0.03	R35	
	4	12.25	2.12	6.19	9.50	8	1.38	7.62	6.375	0.312	0.469	0.03	R39	
	6	15.50	3.25	8.50	12.50	12	1.50	9.75	8.312	0.312	0.403	0.03	R46	
	8	19.00	3.62	10.62	15.50	12	1.75	12.50	10.625	0.373	0.656	0.06	R50	
1500	10	23.00	4.25	12.75	19.00	12	2.00	14.62	12.750	0.438	0.656	0.06	R54	
Ŋ	12	26.00	4.23	15.00	22.50	16	2.12	17.25	15.000	0.436	0.906	0.06	R58	
	14	29.50	5.25	16.25	25.00	16	2.38	19.25	16.500	0.625	1.062	0.09	R63	
	16	32.50	5.75	18.50	27.75	16	2.62	21.50	18.500	0.623	1.188	0.09	R67	
	18	36.00	6.38	21.00	30.50	16	2.88	24.12	21.000	0.688	1.188	0.09	R71	
	20 24	38.75 46.00	7.00 8.00	23.00 27.25	32.75 39.00	16 16	3.12	26.50 31.25	23.000 27.250	0.688 0.812	1.312	0.09	R75 R79	
		<del></del>			<del> </del>				-		·			
	2	9.25	2.00	3.62	6.75	8	1.00	4.48	4.000	0.312	0.469	0.030	R26	
	2.5	10.50 12.00	2.25	4.12	7.75		1.13	5.86	4.375	0.375	0.531	0.060	R28	
	3		2.62	5.00	9.00	8	1.25	6.61	5.000	0.375	0.531	0.060	R32	
2500	4	14.00	3.00	6.19	10.75	8	1.50	7.99	6.188	0.438	0.656	0.060	R38	
L	5	16.50	3.62	7.31	12.75	8	1.75	9.48	7.500	0.500	0.781	0.060	R40	
_ N	6	19.00	4.25	8.50	14.50	8	2.00	10.98	9.000	0.500	0.781	0.060	R47	
	8	21.75	5.00	10.62	17.25	12	2.00	13.38	11.000	0.562	0.906	0.060	R51	
	10	26.50	6.50	12.75	21.75	12	2.50	16.73	13.500	0.688	1.188	0.090	R55	
	12	30.00	7.25	15.00	24.38	12	2.75	19.48	16.000	0.688	1.312	0.090	R60	

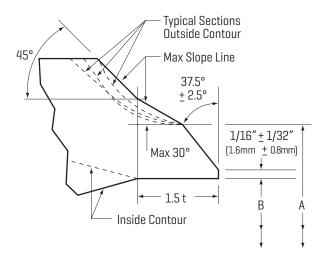
# **Butt-welding Dimensions - ANSI B16.25**

Nominal Pipe Size	Schedule Number	(Cast Ste	Outside Diameter (Cast Steel Valves) A		ninal Diameter B	Inside D	hined Diameter C	Nominal Wall Thickness t		
1 100 0120	or Wall	Inches	mm	Inches	mm	Inches	mm	Inches	mm	
3	XXS	3-19/32	91.282	2.300	58.42	2.409	61.19	0.600	15.24	
4	XXS	4-5/8	117.48	3.152	80.06	3.279	83.29	0.674	17.12	
5	160	5-11/16	144.46	4.313	109.55	4.428	112.47	0.625	15.88	
	XXS	0 11/10	111.10	4.063	103.20	4.209	106.91	0.750	19.05	
	120	0.05/00	170.0//	5.501	139.72	5.600	142.24	0.562	14.27	
6	160	6-25/32	172.34	5.189 4.897	131.80 124.38	5.327	135.31 128.83	0.719	18.26	
	100			7.439	188.93	5.072 7.546	128.83	0.864 0.594	21.95 15.09	
	120	-		7.189	182.60	7.327	186.11	0.719	18.26	
8	140	8-23/32	223.04	7.001	177.83	7.163	181.94	0.812	20.62	
	XXS			6.875	174.63	7.053	179.15	0.875	22.23	
	160			6.813	173.05	6.998	177.75	0.960	23.01	
	50			9.564	242.93	9.671	245.64	0.594	15.09	
	100			9.314	236.58	9.452	240.08	0.719	18.26	
10	120	10-15/16	277.81	9.064	230.23	9.234	234.54	0.844	21.44	
	140	_		8.750	222.25	8.959	227.56	1.000	25.40	
	160			8.500	215.90	8.740	222.00	1.125	28.58	
	60 80	_		11.626 11.376	295.30	11.725	297.82	0.562 0.688	14.27 17.48	
	100	-		11.064	288.95 281.03	11.507 11.234	292.28 284.34	0.844	21.44	
12	120	12-31/32	329.41	10.750	273.05	10.959	278.36	1.000	25.40	
	140	-		10.500	266.70	10.740	272.80	1.125	28.58	
	160			10.126	257.20	10.413	264.49	1.312	33.32	
	60			12.814	352.48	12.921	328.19	0.594	15.09	
	80	14-1/4		12.500	317.50	12.646	321.21	0.750	19.05	
14	100		361.95	12.126	308.00	12.319	312.90	0.938	23.83	
	120			11.814	300.08	12.046	305.97	1.094	27.79	
	140			11.500	292.10	11.771	298.98	1.250	31.75	
	160			11.188	284.18	11.498	292.05	1.406	35.71	
	60	-		14.688	373.08	14.811	376.20	0.656	16.66	
	80 100	-		14.314	363.58 354.03	14.484 14.155	367.89 359.54	0.844 1.031	21.44 26.19	
16	120	16-1/4	412.75	13.564	344.53	13.827	351.21	1.031	30.96	
	140			13.124	333.35	13.442	341.43	1.438	36.53	
	160	-		12.814	325.48	13.171	334.54	1.594	40.49	
	40			16.876	428.65	16.975	431.17	0.562	14.27	
	60	18-9/32		16.500	419.10	16.646	422.81	0.750	19.05	
	80			16.126	409.60	16.319	414.50	0.938	23.83	
18	100		464.34	15.688	398.48	15.936	404.50	1.156	29.36	
	120			15.250	387.35	15.553	395.05	1.375	34.93	
	140			14.876	377.85	15.225	386.72	1.562	39.67	
	160	<u> </u>		14.438	366.73	14.842	376.99	1.781	45.24	
	40 60	-		18.814 18.376	477.88 466.75	18.921 18.538	480.59 470.87	0.594 0.812	15.09 20.62	
	80			17.938	455.63	18.558	461.14	1.031	26.19	
20	100	20-5/16	515.94	17.438	442.93	17.717	450.01	1.281	32.54	
	120	1 20 0/10	010.01	17.000	431.80	17.334	440.28	1.500	38.10	
	140	-		16.500	419.10	16.896	429.16	1.750	44.45	
	160			16.064	408.03	16.515	419.48	1.969	50.01	
	30			22.876	581.05	22.975	583.57	0.562	14.27	
	40	]		22.626	574.70	22.757	578.03	0.688	17.48	
	60	1		22.064	560.43	22.265	565.53	0.969	24.61	
24	80	24-3/8	619.13	21.564	547.73	21.827	554.41	1.219	30.96	
	100	-, -		20.938	531.83	21.280	540.51	1.531	38.89	
	120	-		20.376	517.55	20.788	528.02	1.812	46.02	
	140	-		19.876	504.85	20.350	516.89	2.062	52.37	
	160	<u> </u>		19.314	490.58	19.859	504.42	2.344	59.54	

# **Butt-welding Dimensions - ANSI B16.25**

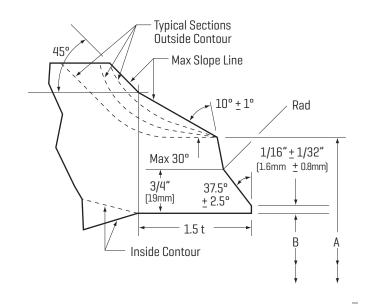
# Plain Bevel Butt-welding End for Pipe Wall Thickness is 7/8" (22.23mm) or less.

Welding end details for cast components for use without backing ring or with split backing ring.



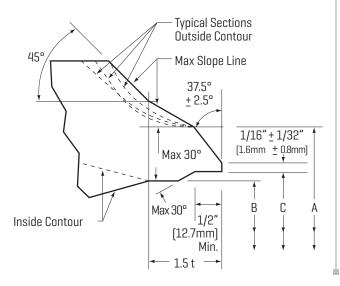
# Compound Bevel Butt-welding End for Pipe Wall Thickness Greater than 7/8" (22.23mm).

Welding end details for cast components for use without backing ring or with split backing ring.



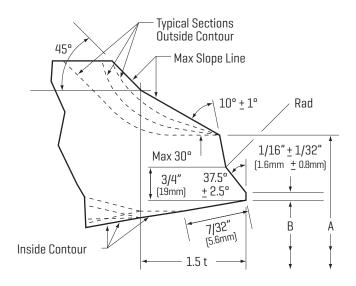
# Plain Bevel Butt-welding End for Pipe Wall Thickness is 7/8" (22.23mm) or less.

Welding end details for cast components for use with continuous rectangular or tapered backing ring.



# Compound Bevel Butt-welding End for Pipe Wall Thickness Greater than 7/8" (22.23mm).

Welding end details for cast components for use with continuous rectangular or tapered backing ring.



# Industry Standards for Valve Manufacturing

This information is for reference only.

### American Society of Mechanical Engineers (ASME)

ASME Code - Boiler & pressure vessel code

ASME A13.1 - Scheme for the identification of piping systems

ASME B1.1 - Unified inch screw threads, UN, & UNR thread form

ASME B1.5 - ACME screw threads

ASME B1.7M - Nomenclature, definitions, & letter symbols for screw threads

ASME B1.8 - Stub ACME screw threads

ASME B1.12 - Class 5 interference - fit thread

ASME B1.20.1 - Pipe threads, general purpose, inch

ASME B1.20.3 - Dry-seal pipe threads, inch

ANSI/ASME B16.1 - Cast iron pipe flanges & flanged fittings ANSI/ASME B16.5 - Pipe flanges & flanged fittings: NPS 1/2" - 24"

ASME B16.9 - Factory made wrought steel buttwelding fittings ANSI/ASME B16.10 - Face-to-face & end-to-end dimensions of valves

ASME B16.11 - Forged fittings, socket welding  $\boldsymbol{\Theta}$  threaded

ASME B16.20 - Metallic gaskets for pipe flanges: ring joint spiral wound & jacketed

ASME B16.21 - Non-metallic flat gaskets for pipe flanges

ASME B16.25 - Buttwelding ends

ANSI/ASME B16.33 - Manually operated metallic gas valves for use in gas piping systems up to 125 PSI (sizes NPS 1/2" - 2")

ANSI/ASME B31.1 - Power piping ANSI/ASME B31.3 - Process piping

ANSI/ASME B16.34 - Valves flanged, threaded & welding end

ANSI/ASME B16.36 - Orifice flanges

ANSI/ASME B16.38 - Large metallic valves for gas distribution (manually operated, NPS 2-1/2" - 12", 125 PSIG maximum)

ANSI/ASME B16.42 - Ductile iron pipe flanges & flanged fittings: classes 150 & 300

ANSI/ASME B16.47 - Large diameter steel flanges

ANSI B17.1 - Keys & keyseats

ANSI B18.2.2 - Square & hex nuts

ASME B31.4 - Pipeline transportation systems for liquid hydrocarbons & other ammonia & alcohols

ANSI/ASME B31.8 - Gas transmission & distribution piping systems

ANSI/ASME B36.10 - Welded & seamless wrought steel pipe

ANSI/ASME B36.19 - Stainless steel pipe ANSI FCI-2 - Control valve seat leakage

### American Society Non-destructive Test (ASNT)

ASNT-TC-1A - Recommended practice no. SNT-TC-1A 1996

### American Society for Testing and Materials (ASTM)

### American Petroleum Institute (API)

API RP 574 - Inspection practices for piping system components

API 589 - Fire test for evaluation of valve stem packing

API RP 591 - Process valve qualification procedure API 594 - Check valves-flanged, lug, wafer & buttwelding

API 597 - Steel venturi gate valves, flanged, buttwelding ends

API 598 - Valve inspection & testing

API 599 - Metal plug valves - flanged, welding ends

API 601 - Metallic gaskets for raised-face pipe flanges & flanged connections (double-jacketed corrugated & spiral wound)

API 600 - Bolted bonnet steel gate valves for petroleum & natural as industries "ISO adoption from ISO 10434"

API 602 - Steel gate, globe, & check valves for sizes DN100 and smaller for the petroleum & natural gas industries

API 603 - Corrosion-resistant, bolted bonnet gate valves-flanged & buttweld ends

API 604 - Ductile iron gate valves, flanged ends

API~605-Large-diameter~carbon~steel~flanges~(nominal~pipe~sizes~26"-60",~classes~75,150,300,400,600,69000)[replaced by ANSI/ASME B16.47]

API 606 - Compact steel gate valves, extended body (included in API 602) fire test for soft-seated quarter-turn valves "ISO adoption from ISO 10497-5 2004"

API 607 - Fire test for soft-seated quarter-turn valves "ISO adoption from ISO 10497-5 2004"

API 608 - Metal ball valves, flanged, threaded, & welding ends

API 609 - Butterfly valves-double flanged, lug- & wafer-type

API RP 941 - Steel for hydrogen service at elevated temperatures & pressures in petroleum refineries & petrochemical plants

API RP 520, Part 1 - Sizing, selection & installation of pressure relieving devices in refineries

API RP 520, Part 2 - Sizing, selection & installation of pressure relieving devices in refineries devices in refineries

API Spec 6A - Specification for wellhead & christmas tree equipment

API Spec 6D - Specifications for pipeline valves

API Spec 14D - Specifications for wellhead surface safety valves & underwater safety valves for offshore service

API 5B - Threading, gauging thread inspection of coring, tubing, & line pipe threads

API 6AM - Material toughness

API 6FA - Fire test for valves

API 6FC - Fire test for valves with backseats

API 6FD - Specification for fire test for check valves

API Q1 - Specification for quality programs for the petroleum, petrochemical,  $\theta$  natural gas

# National Association of Corrosion Engineers (NACE)

MR0175 - Sulfide stress cracking resistant metallic materials for oil field equipment

MRO103 - Materials resistant to sulfide street cracking in corrosive petroleum refining environments

### **Canadian Standards Association**

B51-97 - Boiler, pressure vessel, & pressure piping code

Z245.15-96 - Steel valves

CAN3-z299.4-85 - Quality assurance program - Category 4

CAN3-z299.3-85 - Quality assurance program - Category 3

### **British Standards Institute (BS)**

BS 1414 - Gate, wedge & double disk valves: steel

BS 1868 - Check valves: steel

BS 1873 - Globe & check valves: steel

BS 2080 - Flanged & buttweld end steel valves

BS 5146 - (withdrawn) Replaced by BS 6755 p.1 steel valves testing (1986) & BS 6755 p.2 (1984)

BS 5153 - Check: cast iron

BS 5159 - Ball: cast iron & carbon steel

BS 5160 - Globe & check: steel

BS 5163 - Gate, wedge & double disk: cast iron

BS 5351 - Ball: steel

BS 5352 - Globe & check: steel

BS 5418 - (withdrawn) Replaced by BS EN 19 (1992) marking: general purpose industrial

BS 5840 - Valve mating details for actuator operation

BS 6364 - Cryogenic

BS 6683 - Guide: installation & use of valves

BS 6755: Part 1 - Specification for production pressure testing requirements

BS 6755: Part 2 - Specification for fire type-testing requirements

BS FN 19 - Marking of general purpose industrial valves

### International Organization for Standardization

ISO 5211/1 - Industrial valves- part-turn actuator attachments

ISO 5211/2 - Part-turn valve actuator attachment-flange & coupling performance characteristics

ISO 5211/3 - Part-turn valve actuator attachment-dimensions of driving components

ISO 5752 - Metal valves for use in flanged pipe systems face-to-face & center-to-face dimensions

ISO 9000 - Quality management systems and fundamentals & vocabulary

ISO 10012-1 - Quality assurance requirements for measuring equipment

### **Manufacturers Standardization Society**

SP-6 - Standard finishes for contact faces of pipe flanges & connecting-end flanges of valves & fittings

SP-9 - Spot facing for bronze, iron & steel flanges

 $\mbox{SP-25}$  - Standard marking system for valves, fittings, flanges & unions

 $SP-42-Class\ 150\ corrosion\ resistant\ gate,\ globe,\ angle,\ 6\ check\ valves\ with\ flanged\ 6\ buttweld\ ends\ ends\ flanged\ 6\ buttweld\ ends\ ends\$ 

SP-44 - Steel pipeline flanges

SP-45 - Bynass & drain connections

SP-51 - Class 150/w corrosion resistant cast flanges & flanged fittings

SP-53 - Quality standard for steel castings & forgings for valves, flanges, & fittings & other giping components; magnetic particle exam method

SP-54 - Quality standard for steel castings for valves, flanges, & fittings and other piping components: radiographic

SP-55 - Quality standard for steel castings for valves, flanges other piping components-visual method for evaluation of surface irregularities

SP-60 - Connecting flange joint between tapping sleeves & tapping valves

SP-61 - Pressure testing of steel valves

SP-65 - High pressure chemical industry flanges & threaded stubs for use with lens gaskets

SP-67 - Butterfly valves

SP-69 - ANSI/MSS edition pipe hangers  $\vartheta$  supports, selection  $\vartheta$  application

SP-70 - Cast iron gate valves, flanged & threaded ends

SP-71 - Gray iron swing check valves, flanged & threaded ends

SP-72 - Ball valves with flanged or butt-welding ends for general service

SP-79 - Socket-welding reducer inserts SP-81 - Stainless steel, bonnetless, flanged knife gate valves

SP-82 - Valve pressure testing methods

SP-84 - Valves - socket welding & threaded ends

SP-85 - Cast iron globe & angle valves, flanged & threaded ends

SP-86 - Guidelines for metric data in standards for valves, flanges, fittings & actuators

SP-88 - Diaphragm valves

SP-91 - Guidelines for manual operation of valves

SP-92 - MSS valve user guide

SP-93 - Quality standard for steel castings & forgings for valves, flanges & fittings & other piping componentsliquid penetrant exam method

SP-94 - Quality standard for ferritic & martensitic steel castings for valves, flanges, & fittings and others piping components - ultrasonic exam method

SP-96 - Guidelines on terminology for valves & fittings

SP-98 - Protective coatings for the interior of valves, hydrants, & fittings

SP-99 - Instrument valves

SP-101 - Part-turn valve actuator attachment-flange and driving component dimensions & performance characteristics

SP-102 - Multi-turn valve actuator attachment: flange and driving component dimensions & performance characteristics

 $\mbox{SP-110}$  -  $\mbox{Ball}$  valves threaded, socket-welding, solder joint, grooved,  $\mbox{\ensuremath{\mathfrak{G}}}$  flared ends

SP-117 - Bellows seals for globe & gate valves

SP-118 - Compact steel globe and check valves-flanged, flangeless, threaded & welding ends (chemical & petroleum refinery service)

SP-120 - Flexible graphite packing system for rising stem steel valves (design requirements)

SP-121 - Qualification testing methods for stem packing for rising stem steel valves

# Terms & Conditions

### **Quotation Validity**

This quotation is valid for 30 days from the date quotation is sent. Validity on special metals, including Stainless Steel, is 14 days from the date the quotation is sent. All products offered from stock are subject to prior sale.

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### **Shipments**

All items quoted are EXW our Dock - [Ex Works - SCV Valve Facility Sante Fe, Texas 77510] - unless otherwise noted and agreed to in writing. Shipment may be billed either third party billing to the buyer or freight collect. Shipment dates offered above are forecasted delivery lead times and are estimated from the date payment terms [acceptable to seller] are established, clarification is received on all technical information, and resolution of customer's written approval of drawings is received [when required]. The equipment quoted shall be packed in accordance with seller's standard packing procedure unless otherwise noted and agreed to in writing by the seller.

### **Force Majeure**

If in the case of an act of God, war, riot, fire, explosion, flood, or any other circumstances of whatsoever nature which are beyond the control of the seller and which in any way affect the ability of the seller to fulfill its delivery obligations, the delivery is hindered, impeded, or delayed the seller shall be exponerated from all responsibilities and reserves the right to postpone the delivery beyond the original schedule.

### **Payment terms**

All terms are to be negotiated. Credit cards accepted [Master Card, Visa, American Express].

### **Purchase Orders**

All buyer's purchase orders supplied to the seller are to be written in the English language.

### **Prices**

All prices quoted are in USD as per the preceding pricing schedule. The minimum order value is \$5,000.00 (five thousand dollars), unless otherwise agreed to by seller. If for some reason any items are changed or additions to the order required, seller reserves the right to adjust prices accordingly. All sales are subject to approval of seller's credit department. If buyer fails to meet the agreed upon and established commercial terms of the contract, the seller may with-hold all subsequent deliveries until such time that the original commercial terms of the contract have been met by the buyer [or subsequent commercial terms have been agreed upon by the seller with the buyer].

### **Intellectual Property**

All specifications, illustrations, drawings, certificates, and other particulars supplied by seller remain the intellectual property of the seller and should not be disclosed to any third party without the prior written consent of seller.

### **Governing Law; Arbitration; Jurisdiction**

The terms and conditions of this quotation and any subsequent purchase order shall be construed, interpreted, and performed exclusively according to the laws of the State of Texas, USA. The courts of such state shall have exclusive jurisdiction out of all controversies arising out of or in connection with this agreement. The parties consent that process may be served upon them in any such action by registered mail at the address stated for Buyer on its purchase order, and upon SCV Valve at the address noted above in Santa Fe, Texas, or personally within or without the State of Texas. Any legal action with respect to any agreement must be commenced within one year after the cause of action has accrued. The provisions of the Uniform Commercial Code as adopted by the State of Texas, and not under the United Nations Convention on Contracts for the International Sale of Goods, shall apply.

### Warranty

All seller's products are guaranteed against defects in workmanship for a period of twelve [12] months after being placed in service, but not exceeding eighteen [18] months after shipment, when products are properly installed per seller specifications and used within the service and pressure range for which they were manufactured. Full risk of loss shall pass to the buyer upon delivery at FOB point, or destination port in case of CIF. This guarantee is limited to the replacement of any valve parts/components found to be defective either in material or workmanship. This guarantee does not extend to costs of labor, freight, or any other consequential charges. The unauthorized use of third party components and workmanship in seller's products voids this warranty.

## **Limitation of Liability**

The liability of the seller under this agreement or with respect to any products supplied or services performed pursuant to this agreement, whether in contract, in tort, in strict liability or otherwise, shall not exceed the purchase price paid by the buyer with respect thereto. In no event will the seller be liable in contract, in tort, in strict liability or otherwise for any special, indirect, incidental, or consequential damages. This is including but not limited to loss of anticipated profits or revenues, loss of use, non-operation or increased expense of operation of equipment, cost of capital, or claims from customer or buyer for failure or delay in achieving anticipated profits or products.

### Cancellation

No contract may be canceled by the buyer except upon written notice to seller and upon payment to seller of all costs incurred by the contract arising out of, or in connection with, the contract. Export of goods covered hereby is subject to United States Customs Control. Standard stocking items will be subject to a twenty-five percent [25%] restocking and/or cancellation charge. Non-standard stocking items will be subject to a one-hundred percent [100%] restocking and/or cancellation charge.

### **Cancellation Charge**

The following indicates the rates of cancellation charge of contract value for project manufactured items and/or special engineered items at various stages of production:

- · Time of cancellation: Order Acknowledgement and prior to Engineering engagement.
- · Time of cancellation: After start of engineering but prior to release to production.
- $\cdot \ \text{Time of cancellation: After release to production but prior to completion of fabrication.} \\$
- · Time of cancellation: After completion of fabrication.

Cancellation Charge: 10%

Cancellation Charge: 30%

Cancellation Charge: 80%

Cancellation Charge: 100%

### **Return of Goods**

No product shall be returned to seller without written authorization and shipping instructions having been obtained from seller. Products authorized for returns are to be shipped freight pre-paid to the SCV Valve Facility identified in writing, unless otherwise notified, and are subject to seller's standard re-stocking fees.

### **Documentation**

MTR's are available at no charge upon request. The seller's standard document package is per ISO 10474 3.1B requirements. Additional requested documentation is subject to charge.

### Inspection

The customer or his authorized representative may, with four [4] weeks prior notice given to seller, visually inspect products manufactured by seller. Such seller approved inspections will be carried out in accordance with seller's standard or seller approved customer inspection procedures. If any inspection or documentation requested by the customer is over and beyond the scope and criteria initially agreed to by the seller, any costs incurred by conducting such inspection or preparation of special documents shall be paid by the buyer prior to release of the items for shipment.

### Witness Hydro-testing

Witness hydro-testing is available at a cost. A scope of buyers inspection request is to be provided to seller at order placement. Late notice of such requested inspection is subject to additional costs. The cost associated with such witness hydro request is to be agreed on prior to any such testing taking place. Payment of this type of testing to be negotiated. Additionally, any costs associated with a third party inspector will not be at the sellers expense.

Rev: TC\_020118

The SCV valve brand was established in 1972 as a maintenance and modification company with the ability to provide full in-line valve service and repair. In the mid-1970's, after experiencing many shortcomings of other valve products in the industry, the first SCV valve was manufactured. Since that time, the SCV brand has been expanded its manufactured products to cover a broad range of valves. Industries served include the power, paper and pulp, oil and gas, and petro-chemical sectors.

SCV Valve takes sincere pride in our ability to manufacture both commodity and specialty valves that meet and exceed the needs of our customers. All sizes, pressure classes, and metallurgical compositions are managed in house utilizing the strictest quality control measures to ensure the customer's total satisfaction.

SCV Valve products include thru conduit gates, trunnion mounted balls, floating balls, wedge gates, full port swing checks, piston checks, and lubricated plugs. Valves utilized throughout the industry must meet rigorous quality and production standards.

SCV Valve has earned its API 6A, API 6D, ISO: 9001, CE-PED, and CRN certifications while operating under the API Q1 Quality Management System.

With years of dedication and commitment to quality, design, and service, SCV Valve has grown to be one of the premier valve manufacturers in the industry with the largest inventory of high pressure ball, gate, and check valves. We pride ourselves on our high quality products, timely delivery capabilities, and competitive prices.

On behalf of all of the members at SCV Valve, we thank you for the opportunity to earn your business.

Sincerely,

Sid McCarra President

SCV Valve, LLC

Since 1972, the SCV brand has been committed to providing quality flow control products to the Power, Paper & Pulp, Oil & Gas, and Petro Chemical industries.

As one of the largest valve manufacturers, SCV Valve's reputation is unparalleled for producing high quality commodity and specialty valves. Products range in sizes 1/2" - 48", in pressure classes from 150# - 2500# and are backed by timely deliveries and competitive prices.

Call SCV today at (281)482-4728 for all your valve needs or visit us on the web @ www.scvvalve.com.

# SALES, PROJECTS, ENGINEERING, MANUFACTURING, & WAREHOUSING

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Fax: [281] 482-9728

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