

ACCUSEAL[®]

SAFETY VALVES

SERIES ASV20 SAFETY RELIEF VALVES THREADED AND FLANGED



VALUE THROUGH PERFORMANCE!



Manufactured by E & S Manufacturing

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ACCUSEAL SERIES ASV20 SAFETY VALVES

OPERATION & FEATURES:

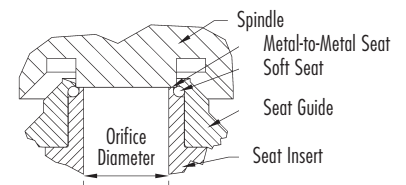
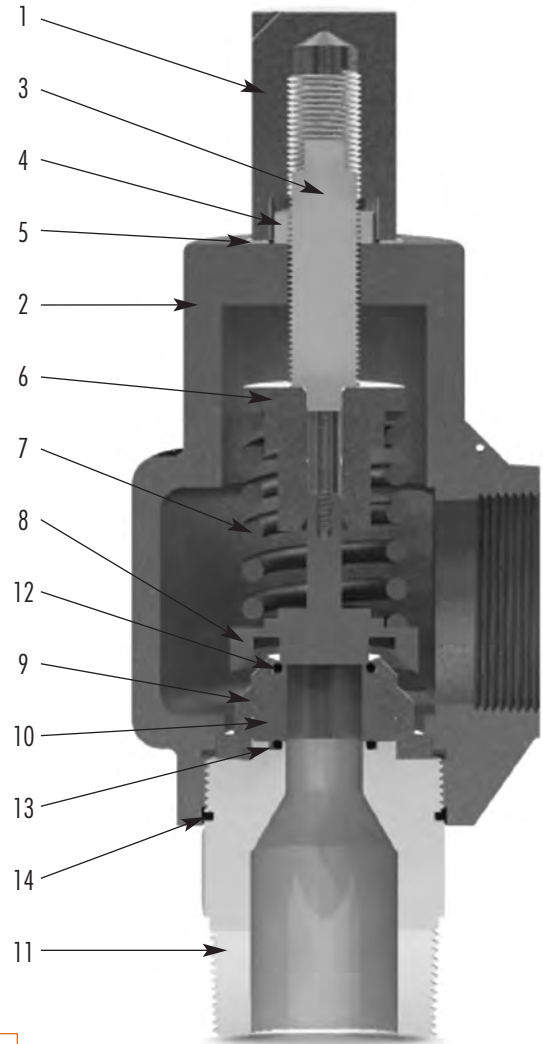
The Series ASV20 safety relief valves provide an economical solution for your pressure relief applications. They are ideal for a variety of gas/vapor and liquid services, including pipelines, separators, compressors, coolant circulation systems, as well as many unique OEM applications.

These are direct spring operated valves with a fixed blowdown. They utilize a soft seat to ensure bubble-tight seating. Pressure acting on the seat area overcomes the spring pre-load and opens the valve at the set pressure.

The spring, assisted by dome pressure, reliably closes the valve once the system pressure drops below the reseal pressure.

ASV20's open with minimal overpressure to assure protection of your personnel, your systems, and your investment.

ACCUSEAL offers value through reliable performance of products in service as well as from qualified, professional personnel supporting the product before and after delivery.



Seat Configuration

TECHNICAL DATA:

Construction:	Simple, minimal parts and seals Same configuration – gas or liquid service
Inlet Sizes:	1-1/2" to 2" Standard
Outlet Size:	2" Minimum, Standard
Connections:	Threaded and Flanged
Orifice Sizes:	F & G, interchangeable
Certifications:	NBBI, gas/vapor and liquid; Canadian Registered
Service Pressure Range:	15 – 2000 psig
Temperature Range:	-60° F to 550° F
Blowdown:	Fixed
Seals:	Standard sizes(3), easily replaceable
Services:	Standard, NACE, Stainless Steel, Special
Capacities:	High KA values

To Accuseal, Value means:

- *Reliable Product Performance*
- *Responsive Customer Support*
- *Competitive Pricing*
- *On-time Deliveries*

SERIES ASV20 MATERIALS OF CONSTRUCTION

ITEM	DESCRIPTION	QTY	SERVICE		
			STANDARD	NACE	STAINLESS STEEL
1	Cap ¹	1	Carbon Steel	Carbon Steel	316 SS
2	Body, 1.0"	1	WCB	WCB	CF8M
3	Pressure Adj Shaft ¹	1	Carbon Steel	Stainless Steel	316 SS
4	Lock Nut	1	Carbon Steel	Stainless Steel	316 SS
5	Seal Washer	1	Carbon Steel	Stainless Steel	316 SS
6	Spring Guide	1	316 SS	316 SS	316 SS
7	Spring	1	316 SS	Inconel	316 SS
8	Spindle	1	316 SS	316 SS	316 SS
9	Seat Guide	1	316 SS	316 SS	316 SS
10	Seat Insert	1	316/CF8M	316/CF8M	316/CF8M
11	Inlet Sub	1	Carbon Steel	Carbon Steel	316 SS
12	Soft Seat	1	Elastomer	Elastomer	Elastomer
13	Face Seal	1	Elastomer	Elastomer	Elastomer
14	Inlet Seal	1	Elastomer	Elastomer	Elastomer
15	Lock wire	1	Stainless Steel	Stainless Steel	Stainless Steel
16	Seal	1	Lead	Lead	Lead
17	Nameplate	1	Stainless Steel	Stainless Steel	Stainless Steel
18	Drive Pins	2	Stainless Steel	Stainless Steel	Stainless Steel
19	Shaft	1	Stainless Steel	Stainless Steel	Stainless Steel
20	Lock Nut, Lift Lever	1	Carbon Steel	Carbon Steel	Stainless Steel
21	Lock Nut, Shaft	1	Stainless Steel	Stainless Steel	Stainless Steel
22	Lock Washer	1	Stainless Steel	Stainless Steel	Stainless Steel
23	Lift washer, Lift Lever	1	Stainless Steel	Stainless Steel	Stainless Steel
24	Bushing, Lift Lever	1	316 SS	316 SS	316 SS
25	Roll Pin	1	Stainless Steel	Stainless Steel	Stainless Steel
26	Camshaft, Lift Lever	1	Stainless Steel	Stainless Steel	Stainless Steel
27	Seal	1	Elastomer	Elastomer	Elastomer
28	Seal	1	Elastomer	Elastomer	Elastomer
29	Seal	1	Elastomer	Elastomer	Elastomer
30	Handle, Lift Lever	1	Carbon Steel	Carbon Steel	Stainless Steel

1. Items 1, 3, & 19 through 30 are special for lift lever assembly & are to be ordered separately.

MATERIAL TEMPERATURE LIMITS - TYPICAL:

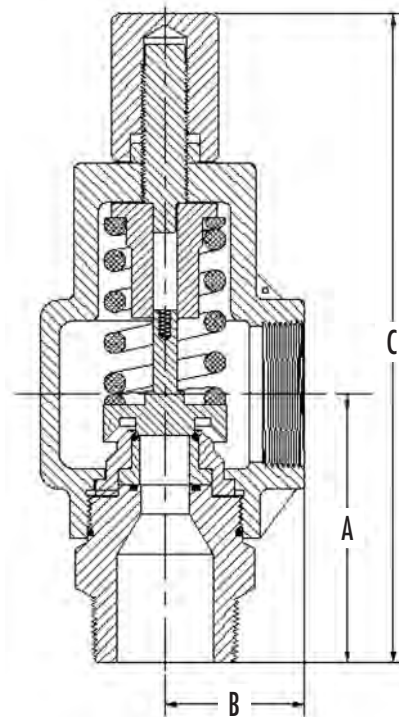
METALS	TYPE	DEGREES F	DEGREES C	ELASTOMERS	DEGREES F	DEGREES C
Carbon Steel	A108	-20 to 500	-29 to +260	Viton	-15 to +450	-23 to +232
	WCB	-20 to 500	-29 to +260	Nitrile	-65 to +250	-48 to +121
	LCC	-50 to 500	-46 to +260	EPDM	-65 to +325	-48 to +163
Stainless Steel	304/316	-423 to 650	-253 to +343	Neoprene	-35 to +225	-37 to +107
	17-7	-423 to 650	-253 to +343	Kalrez	0 to +500	-18 to +260
	CF8M	-423 to 650	-253 to +343	Chemraz	-22 to +500	-30 to +260
Inconel	X750	-423 to 750	-253 to +399	Aflas	+25 to +450	-4 to +232
Elgiloy		-423 to 750	-253 to +399			

SERIES ASV20 DIMENSIONS & WEIGHTS

THREADED - STANDARD:

INLET MNPT	OUTLET FNPT	PRESSURE RANGE (psig)	ORIFICE SIZE ¹	A (inches)	B (inches)	C (inches)	WEIGHT ² (lbs)
1-1/2"	2"	15 - 1190	F, G	4.33	3.25	10.50	30
		1191 - 2000		4.33	3.25	12.50	33
2"	2"	15 - 1190	F, G	4.33	3.25	10.50	30
		1191 - 2000		4.33	3.25	12.50	34

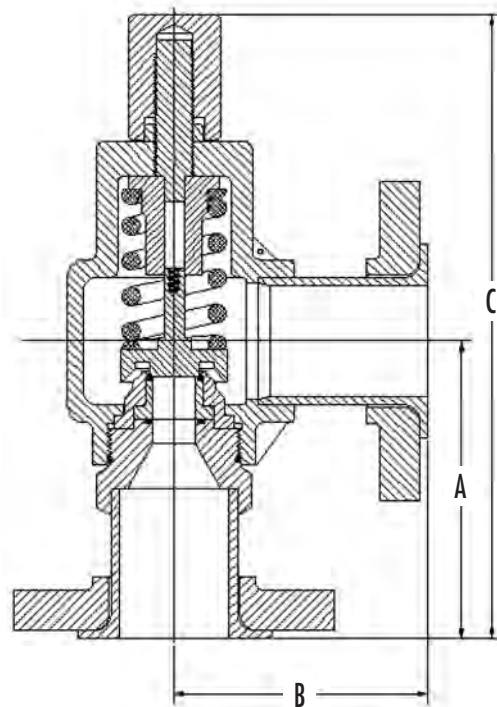
- F = .675" Diameter; A = .357 in²
G = .790" Diameter; A = .490 in²
- Estimated



FLANGED - STANDARD:

INLET ANSI#	OUTLET ANSI#	PRESSURE RANGE (psig)	ORIFICE SIZE ¹	A (inches)	B (inches)	C (inches)	WEIGHT ² (lbs)
1-1/2" 150#	2" 150#	15 - 285	F, G	4.88	4.88	11.00	35
1-1/2" 300#	2" 150#	286 - 740		4.88	4.88	11.00	37
1-1/2" 600#	2" 150#	740 - 1480		4.88	4.88	11.00	40
1-1/2" 600#	2" 300#	740 - 1480		4.88	4.88	11.00	42
1-1/2" 900#	2" 300#	1481 - 2000		6.12	6.75	13.00	45
2" 150#	2" 150#	15 - 285	F, G	5.13	4.88	11.26	36
2" 300#	2" 150#	286 - 740		5.13	4.88	11.26	38
2" 600#	2" 150#	740 - 1480		6.00	5.13	12.13	41
2" 600#	2" 300#	740 - 1480		6.06	6.38	14.19	44
2" 900#	2" 300#	1481 - 2000		6.06	6.38	14.19	48

- F = .675" Diameter; A = .357 in²
G = .790" Diameter; A = .490 in²
- Estimated

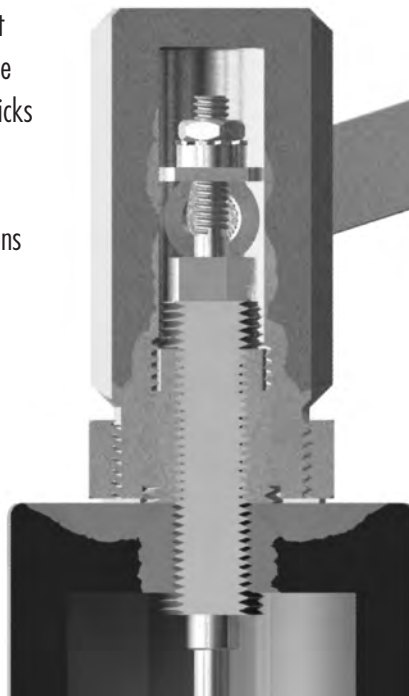


FLOW CAPACITIES:

For capacities in various fluids see the separate publication "ACCUSEAL Capacity Tables."

LIFT LEVER ASSEMBLY

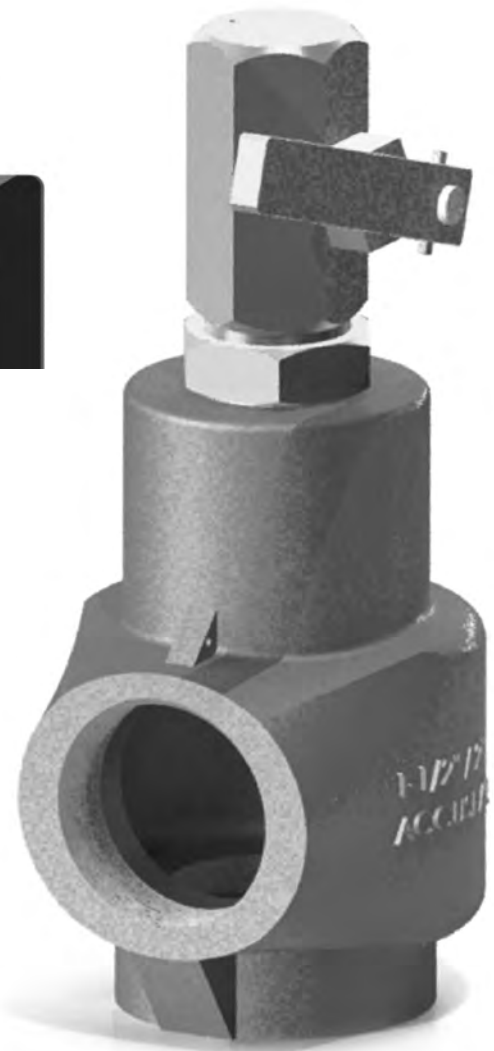
A lift lever assembly is available for all sizes to test the operation of the valve assembly. By turning the outer handle, the inner rod is lifted which in turn picks up the bottom of the spring, relieves the spring preload, and allows the inner piston to open. By ASME Code, lift levers are mandatory for applications in air, or water above 140° F. For all other applications, this feature is optional.



SPECIAL CONNECTIONS AND MATERIALS

ACCUSEAL offers special inlet and outlet connections, other than as shown on pages 3 & 4, to your exact specifications, as well as specialty alloys and elastomers to meet your special service conditions.

For Flanged valves, Lap Joint type flanges are provided as standard, as shown on page 5. If another type is preferred, discuss your needs with the Customer Service department.



OTHER ACCESSORIES

ACCUSEAL can also provide peripheral equipment to complete your relief valve installation, including gaskets, bolting, discharge piping, and vent caps.

For details, discuss the above options further with an ACCUSEAL sales specialist at (903) 247-0006.

SERIES ASV20 VALVE SIZING AND SELECTION

Typically, the required flow area is determined for the given flow conditions, and then a valve with an orifice flow area nearest to and greater than this area is selected. Pressure and temperature limitations as well as compliance of the valve materials must be considered.

Vapors or Gases (SCFM)

$$A_r = \frac{V (MTZ)^{1/2}}{6.32CK_gP_1} \quad (1)$$

Vapors or Gases (in lbs/hr)

$$A_r = \frac{W (TZ)^{1/2}}{CK_gP_1(M)^{1/2}} \quad (2)$$

Conversion (lbs/hr from SCFM)

$$W = \frac{MV}{6.32} \quad (3)$$

Liquids (GPM)

$$A_r = \frac{Q (G)^{1/2}}{38K_LK_v(P_1-P_2)^{1/2}} \quad (4)$$

Orifice Designation		F	G
Orifice Diameter(D)	inches	0.675	0.790
Orifice Area(A)	in ²	0.3577	0.4899
Certified Slope(S _g), (Gas/Vapor)		5.760	9.472
Equivalent Coefficient(K _g)		0.864	0.859
K _g A		0.309	0.421
Certified Flow Factor(F _L), (Liquid)		10.68	14.42
Equivalent Coefficient(K _L)		0.786	0.775
K _L A		0.281	0.379

1. Per ASME Boiler & Pressure Vessel Code Section VIII, Division 1.

Gas/Vapor

- A_r = Required Valve orifice area (in²)
- V = Flow Capacity (SCFM)
- W = Flow Capacity (lbs/hr)
- M = Molecular Weight of flowing media
- T = Inlet Temperature, absolute (°F + 460)
- Z = Compressibility factor (1 if unknown)
- C = Gas constant
- K_g = Equivalent Coefficient, gas/vapor = S_g/(18.331A)
- P₁ = Pressure at valve inlet during flowing (psia)
= Set Pressure + OverPressure + P_a
- P_a = Atmospheric pressure at the valve (psia)
(Typically = 14.7 psia, at sea level)
- S_g = Certified Slope Value, gas/vapor (scfm/psia) (See Table)

Liquid

- Q = Required liquid flow rate (GPM)
- G = Specific gravity of the liquid at service temperature
- F_L = Certified Flow Factor, liquid (gpm/(psid)^{1/2}) (See Table)
- K_L = Equivalent Coefficient, liquid = F_L/(38A)
- K_v = Viscosity Correction factor
- P₁ = Pressure at valve inlet during flowing (psia)
= Set Pressure + OverPressure + P_a
- P₂ = Pressure at discharge (psia)
= Backpressure + Atmospheric Pressure (psia)

EXAMPLES:

- GAS: Natural Gas, Sweet(C = 345, M = 19), Set pressure = 200 psig, V = 1200 scfm
Inlet Temperature = 100°F, 1-1/2" MNPT x 2" FNPT; K_g = .864; P₁ = 200 + .10 x 200 + 14.7 = 234.7 psia

$$\text{By Formula (1), } A_r = \frac{1200(19 \times 560)^{1/2}}{6.32 \times 345 \times .864 \times 234.7} = .280 \text{ in}^2$$

Select: ASV20 – F, with A = .3577 in²

Part Number: 18F681110N80610

- LIQUID: Water(G = 1.0, K_v = 1.0), Inlet Temperature = 160°F, Set Pressure = 400 psig,

Q = 250 gpm; 2" 300# RF x 2" 150# RF, with Lift Lever

P₁ = 400 + .10 x 400 + 14.7 = 454.7 psia, K_L = .775 (See Table above)

$$\text{By Formula (4), } A_r = \frac{250(1.0)^{1/2}}{38 \times .775 \times 1.00 \times (454.7 - 14.7)^{1/2}} = .405 \text{ in}^2$$

Select: ASV20 – G, with A = .4899 in², with Lift Lever

Part Number: 18G885550N90920

SERIES ASV20 PRODUCT NOMENCLATURE CODE

18 G88 111 ON7 06 1 0

PRODUCT CODE	ORIFICE INLET/OUTLET SIZE	CONNECTION TYPE	VALVE MATERIALS	SPRING RANGE	TYPE CAP	VARIATIONS
18	XYZ	XYZ	XYZ	XX	X	X
18=SRV CODE	X=ORIFICE SIZE F, G Y=INLET SIZE 6=1.5" 8=2" Z=OUTLET SIZE 8=2" A=2.5"* B=3"*	X=CONNECTION Type 1=M x F 2=F x F 3=M x M 4=F x M 5=Flanged Y=INLET Type 1=NPT 2=NPS 3=BSPT 4=BSPP 5=FL-RF 6=FL-RTJ Z=OUTLET Type 1=NPT 2=NPS 3=BSPT 4=BSPP 5=FL-RF 6=FL-RTJ	X=METALLIC MATERIAL CODE*(Body, Spring, Trim) See Table Below Y=O-RING MATERIAL N=Nitrile V=Viton K=Kalrez A=Aflas C=Chemraz E=EPDM(EPR) S=Special Z=DUROMETER 6= 60-69 7= 70-79 8= 80-89 9= 90-96 NACE© = NACE MR0175/ISO 15156-2	XX=SPRING RANGE 01- - - - -23 LOW- - -HIGH	X=CAP TYPE 1=Closed 2=Lift Lever	X=0-9 0=Std. 1=Inlet Port

*Flanged valves only

METALLIC MATERIAL CODE:

EXAMPLES:

X*	COMBINATION	BODY	SPRING	TRIM
0	CS Std	WCB CS	316/17-7	316
1	CS Low Temp	LCC CS	316/17-7	316
2	CS NACE	WCB CS	Inconel	316
3	CS NACE Low Temp	LCC CS	Inconel	316
4	SS Std	CF8M SST	316/17-7	316
5	SS NACE	CF8M SST	Inconel	316
6	CS/Monel	CS	Inconel	Monel
7	Monel	Monel	Inconel	Monel
8	CS/Hastelloy	CS	Hastelloy	Hastelloy
9	Hastelloy	Hastelloy	Hastelloy	Hastelloy
X	Special	Special	Special	Special

*Other Material combinations may be designated by an assigned letter (A,B, C, etc.)

THREADED VALVE	FLANGED VALVE
2" x 2" NPT CLOSED CAP	3/4" x 1" FLANGE RF Lift Lever
N2, Set at 200 psig	Air, Set at 450 psig, Inlet Port
18G88111ON70810	18F685552V90920
18=Product Type, SRV	18=Product Type, SRV
G=Orifice Designation	F= Orifice Designation
8=2" INLET	6=1.5" INLET
8=2" OUTLET	8=2" OUTLET
1=M x F	5=Flanged
1=NPT	5=RF
1=NPT	5=RF
0= Material Code, CS	2= Material Code, CS NACE
N=Nitrile	V=Viton
7=70 Durometer	9=90 Durometer
08= No. 8 spring(181-411 psig)	09= No. 9 spring(412-476 psig)
1=Closed Cap	2=Lift Lever, Closed
0=VARIATIONS	0=VARIATIONS

ACCUSEAL[®]

SAFETY VALVES

LIMITED PRODUCT WARRANTY:

The following warranty is exclusive and in lieu of all other warranties. Whether express, implied or statutory, including, but not by way of limitation, any warranty of merchantability or fitness for any particular purpose.

E&S Manufacturing warrants to each original buyer of products manufactured by E&S that such products are free from defects in material and workmanship under normal use and service for a period of two (2) years from the date of shipment provided that no warranty is made with respect to: Any product which has been repaired or altered in such a way in E&S's judgment, as to affect the product adversely; Any product which has, in E&S's judgment, been subject to negligence, accident or improper storage; Any product which has not been operated or maintained in accordance with normal practice and in conformity with recommendations and public specification of E&S; valve without nameplate, missing or removed.

E&S's obligation under this Warranty is limited to use reasonable efforts to repair, replace or, at it's option, refunding the purchase price. The cost of labor for installing a repair or replacement product shall be borne by Purchaser. Replacement parts provided under the terms of this Warranty are warranted for the remainder of the warranty period of the products upon which they are installed to the same extent as if such parts were original components thereof. Warranty services provided there under do not assume any liability for damages caused by any delays involving warranty service. For complete specification information, prices and name, address and telephone number of the E&S representative nearest you, call or write to us at the address below.

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