

## SAPAG

### Spring loaded, Thermal Relief, Fixed Blowdown, Replaceable Nozzle Safety Valve

#### Applications

The Sapag Series 7700 provides a complete and comprehensive range of safety valves for all industrial applications.

#### Features and Benefits

- Thermal expansion to API 520
- Certified capacity figures in accordance with ASME VIII for Air, Liquid and Steam
- Replaceable nozzle
- Rugged construction
- Test Gag supplied as standard

#### Scope

The Sapag Series 7700 are spring loaded, fixed blowdown, nominal capacity safety valves for use on vapour, gas and liquid overpressure protection. They are complementary to the 8400 series. The 7700 range is available with threaded, flanged, socket weld or butt weld connections, or in various combinations. NPT and ASME-ANSI connections are standard offerings but ends can be machined to any standard of choice.

#### Performance

The performance of the 7700 series is certified and authorised by independent, international authorities

- "UV" stamp (certified according to the rules of the ASME code, section VIII.)
- other approvals (a complete list is available from our Sales Organisation).



#### Technical data

##### Series 7700

##### Conventional

##### Metal or soft seated

Temperature range	: - 268°C to + 399°C
Pressure limits	: 344 barg
Steam	: 68.9 barg
Sizes	: 1/2" x 1" to 2" x 2"
Orifice	: 0.477 to 3.245 cm <sup>2</sup>

# Series 7700

## Thermal Relief Safety Valves

### Soft seated types (Optional)

Series 7700 is available with an O-ring soft seat design

Materials Codes	Temperature (°C)	Operating range	
		Pressure ( barg )	
		Minimum	Maximum
B : BUNA-N	-45.6 to 121	1.00	172.41
K : EPT	Saturated Steam (121.1)	1.00	172.41
P : TFE	-45.6 to 260	6.89	172.41
S : VITON	-17.8 to 204.4	1.00	172.41
V : KALREZ	-17.8 to 260	1.00	172.41

### Pressure limits

#### Series 7700

##### Threaded

77( )1( ) ( )1( ) ( 0,1,2 )	103.42 barg
77( )1( ) ( )5( ) ( 0,1,2 )	344.74 barg
77( )2( ) ( )1( ) ( 0,1,2 )	103.42 barg
77( )2( ) ( )5( ) ( 0,1,2,3 )	344.74 barg
77( )3( ) ( )2( ) ( 3,4 )	172.36 barg
77( )4( ) ( )1( ) ( 5,6 )	103.42 barg
77( )5( ) ( )1( ) ( 7 )	103.42 barg

Maximum back pressure 27.58 barg unless limited by application

#### Series 7700

##### Flanged

Maximum set point in accordance with the pressure limits of relevant flange standard (unless otherwise stated)

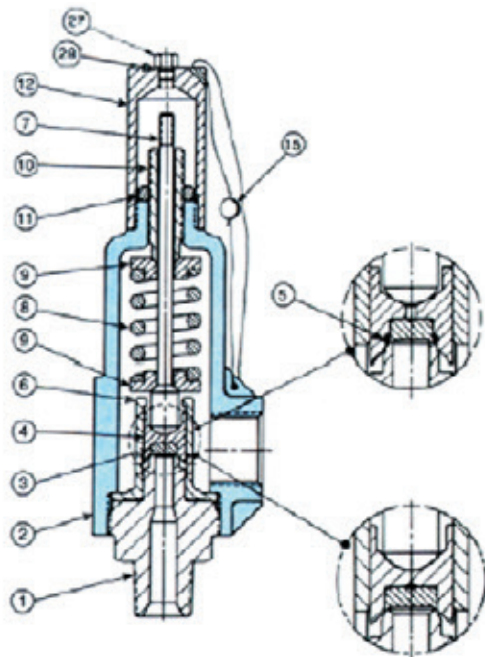
Maximum back pressure 27.58 barg or as limited by flange rating or application.

### Valve Designation

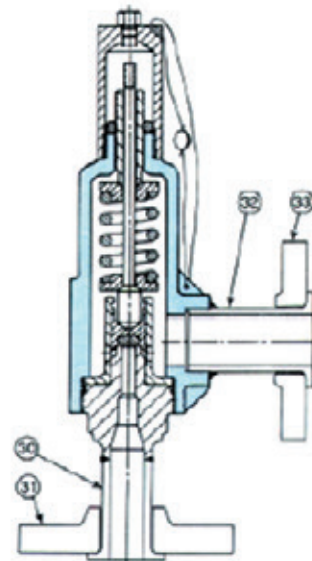
#### Series 7700

Special Feature	Type	Connection	Orifice Size	Cap	Material	Max. Set Pressure	Seat	Size
(X) Additional device	77	(M) Thrd Ext x Int	(1) 0.477 cm <sup>2</sup>	(A) Standard Cap. Thrd with Test gag	(0) Standard Materials	(1) 103.42 barg	(A) Metal	(0) 1/2" x 1"
(Y) Special material								
(Z) Special machining		(F) Thrd Int x Int	(2) 0.71 cm <sup>2</sup>	(F) Packed lever with Test gag	(1) All 316SS	(2) 172.36 barg	(B) Buna	(1) 3/4" x 1"
		(1) 150Rf x 150Rf	(3) 1.264 cm <sup>2</sup>		(2) All 316SS with Inconel spring	(5) 344.74 barg	(K) EPT	(2) 1" x 1"
		(2) 300#Rf x 150Rf	(4) 1.98 cm <sup>2</sup>		(3) Standard Bonnet with Monel trim and Inconel spring		(P) TFE	(3) 1" x 1 1/2"
		(3) 600Rf x 150Rf	(5) 3.245 cm <sup>2</sup>		(4) All Monel, with Inconel spring		(S) VITON	(4) 1 1/2 x 1 1/2"
		(4) 1500Rf x 300Rf			(5) Standard Bonnet with Hastelloy C trim and Inconel spring		(V) Kalrez	(5) 1 1/2" x 2"
		(5) 2500Rf x 300Rf			(6) All Hastelloy C			(6) 2" x 2"
					(7) NACE MR0175			(7) 1 1/2" x 2 1/2"

**7700 Conventional**



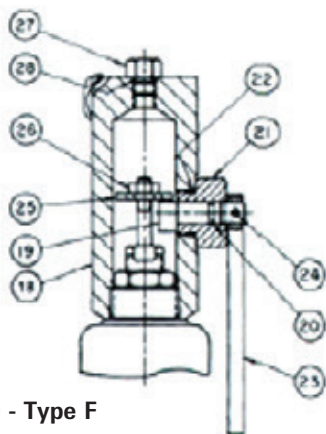
**Threaded Connections**



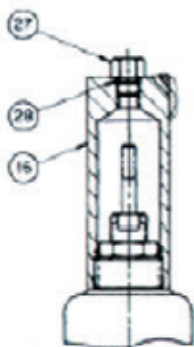
**Flanged Connections**

**Materials of construction - 7700 Conventional**

Material designation		Standard materials	
Part no.	Part name	(0) -45.6 to +399°C	(1) -268 to +260°C
1	Base	316 St. St.	316 St. St.
2	Cylinder	Carbon Steel SA-216 Gr. WCB	316 St. St. SA-351 Gr. CF8M
3 *	Disc Insert	316 St. St.	316 St. St.
4	Disc Holder	316 St. St. <sup>1</sup>	316 St. St. <sup>1</sup>
5 *	Seat O-ring	Specify	Specify
6	Guide	316 St. St.	316 St. St.
7	Spindle	416 St. St.	316 St. St.
8	Spring	17-7PH St. St.	316 St. St.
9	Spring Washers	416 St. St.	316 St. St.
10	Adjusting Bolt	416 St. St.	316 St. St.
11	Adjusting Bolt Nut	Carbon Steel	316 St. St.
12	Type A Cap	Carbon Steel	316 St. St.
27	Cap Plug	Steel	316 St. St.
28	Cap Plug O-ring (test rod not shown)	Viton	Viton
30	Lap Joint Stub End (Inlet)	316 St. St.	316 St. St.
31	Inlet Flange	Carbon Steel	316 St. St. <sup>1</sup>
32	Lap Joint Stub End (Outlet)	Carbon Steel	316 St. St. <sup>1</sup>
33	Outlet Flange	Carbon Steel	316 St. St. <sup>1</sup>



**7700 - Type F**



**7700 - Type A (Standard)**

\* Recommended spare parts

Other materials on application

**Note 1:** Low temperature limit for carbon steel flanges is -28°C . Use 316 Stainless Steel below -28°C.

**Materials of Construction - 7700 Type F/Type A (Standard)**

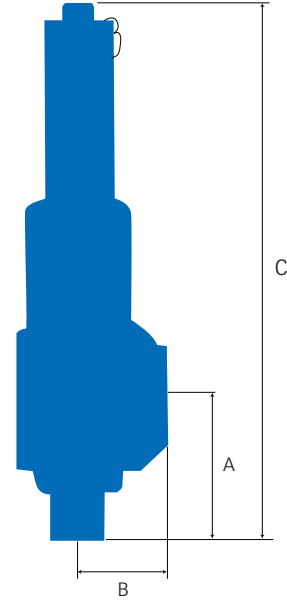
Material designation		Materials	
Part no.	Part name	(0)	(1)
16	Cap	Steel	316 SS
18	Cap	Steel	316 SS
19	Cam	416 SS	316 SS
20	Cam O-ring	Viton*	Viton*
21	Cam Sleeve	416 SS	316 SS
22	Cam Sleeve O-ring	Viton*	Viton*
23	Lever	Steel	Steel
24	Lever Pin	302 SS	302 SS
25	Spindle Nut	Steel	316 SS
26	Locknut	Steel (Plated)	300 Series SS
27	Cap Plug	Steel	316 SS
28	Cap Plug O-ring	Viton*	Viton*
29	Test Rod (not shown)	Steel (Plated)	Steel (Plated)

# Series 7700

## Thermal Relief Safety Valves

### Dimensions & Weights - Threaded NPT

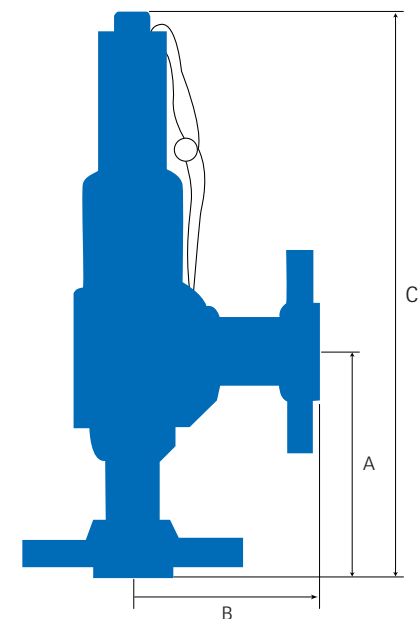
Valve Type	Connections		Dimensions			Approx. Weight kgs
	Size	Outlet	mm			
	Inlet	Outlet	A	B	C	
77M1A( )1A0	1/2	1	76	45	270	3
77M1A( )1A1	3/4	1	76	45	270	3
77M1A( )1A2	1	1	83	45	276	3
77M1A( )5A0	1/2	1	79	49	308	4
77M1A( )5A1	3/4	1	79	49	308	4
77M1A( )5A2	1	1	86	49	316	4
77M2A( )1A0	1/2	1	79	49	308	4
77M2A( )1A1	3/4	1	79	49	316	4
77M2A( )1A2	1	1	86	49	316	4
77F2A( )1A1	3/4	1	64	49	292	4
77F2A( )1A2	1	1	73	49	301	4
77M2A( )5A1	3/4	1	89	64	339	7
77M2A( )5A2	1	1	95	64	346	7
77M2A( )5A3	1	1-1/2	95	64	346	7
77F2A( )5A1	3/4	1	73	64	324	7
77F2A( )5A2	1	1	79	64	330	7
77F2A( )5A3	1	1-1/2	79	64	330	7
77M3A( )2A3	1	1-1/2	95	64	346	8
77M3A( )2A4	1-1/2	1-1/2	95	64	346	8
77F3A( )2A3	1	1-1/2	79	64	330	8
77F3A( )2A4	1-1/2	1-1/2	86	64	336	8
77M4A( )1A5	1-1/2	2	114	83	522	15
77M4A( )1A6	2	2	114	83	522	15
77F4A( )1A5	1-1/2	2	98	83	406	15
77F4A( )1A6	2	2	102	83	409	15
77M5A( )1A7	1-1/2	2-1/2	114	83	422	15
77F5A( )1A7	1-1/2	2-1/2	98	83	406	15



**7700**

# Series 7700

## Thermal Relief Safety Valves



7700

### Dimensions and Weights - Flanged - ANSI

Valve Type	Connections Size		Maximum Set Pressure	Ratings		Dimensions mm			Approx. Weight
	Inlet	Outlet	Barg <sup>1</sup>	Inlet	Outlet	A	B	C	kgs
7711A( )1A0	1/2	1	19.65	150	150	108	102	333	5
7721A( )1A0	1/2	1	51.02	300	150	108	102	333	5
7731A( )1A0	1/2	1	102.04	600	150	108	102	333	5
7711A( )1A1	3/4	1	19.65	150	150	108	102	333	5
7721A( )1A1	3/4	1	51.02	300	150	108	102	333	6
7731A( )1A1	3/4	1	102.04	600	150	108	102	333	6
7711A( )1A2	1	1	19.65	150	150	114	102	309	5
7721A( )1A2	1	1	51.02	300	150	114	102	309	6
7731A( )1A2	1	1	102.04	600	150	114	102	309	6
7741A( )5A1	3/4	1	255.45	1500	300 <sup>2</sup>	140	114	370	8
7751A( )5A1	3/4	1	344.74	2500	300 <sup>2</sup>	140	114	370	10
7741A( )5A2	1	1	255.45	1500	300 <sup>2</sup>	146	114	376	10
7751A( )5A2	1	1	344.74	2500	300 <sup>2</sup>	146	114	376	11
7712A( ) 1A0	1/2	1	19.65	150	150	111	108	341	6
7722A( ) 1A0	1/2	1	51.02	300	150	111	108	341	6
7732A( ) 1A0	1/2	1	102.04	600 <sup>3</sup>	150	111	108	341	6
7712A( ) 1A1	3/4	1	19.65	150	150	111	108	341	7
7722A( ) 1A1	3/4	1	51.02	300	150	111	108	341	7
7732A( ) 1A1	3/4	1	102.04	600	150	111	108	341	7
7712A( ) 1A2	1	1	19.65	150	150	117	108	347	7
7722A( ) 1A2	1	1	51.02	300	150	117	108	347	7
7732A( ) 1A2	1	1	102.04	600	150	117	108	347	7
7742A( )5A1	3/4	1	255.45	1500	300 <sup>2</sup>	152	127	404	12
7742A( )5A2	1	1	255.45	1500	300 <sup>2</sup>	159	127	411	13
7752A( )5A2	1	1	344.74	2500	300 <sup>2</sup>	159	127	411	14
7742A( )5A3	1	1-1/2	255.45	1500	300 <sup>2</sup>	159	146	411	13
7752A( )5A3	1	1-1/2	344.74	2500	300 <sup>2</sup>	159	146	411	16
7713A( )2A3	1	1-1/2	19.65	150	150	130	127	382	11
7723A( )2A3	1	1-1/2	51.02	300	150	130	127	382	11
7733A( )2A3	1	1-1/2	102.04	600	150	130	127	382	11
7743A( )2A3	1	1-1/2	172.36	1500	300 <sup>2</sup>	152	146	404	15
7713A( )2A4	1-1/2	1-1/2	19.65	150	150	140	127	392	12
7723A( )2A4	1-1/2	1-1/2	51.02	300	150	140	127	392	13
7733A( )2A4	1-1/2	1-1/2	102.04	600	150	140	127	392	13
7743A( )2A4	1-1/2	1-1/2	172.36	1500	300 <sup>2</sup>	152	146	404	17
7714A( )1A5	1-1/2	2	19.65	150	150	165	152	474	20
7724A( )1A5	1-1/2	2	51.02	300	150	165	152	474	21
7734A( )1A5	1-1/2	2	102.04	600	150	165	152	474	21
7714A( )1A6	2	2	19.65	150	150	171	152	481	21
7724A( )1A6	2	2	51.02	300	150	171	152	481	22
7734A( )1A6	2	2	102.04	600	150	171	152	481	22
7715A( )1A7	1-1/2	2-1/2	19.65	150	150	165	165	474	21
7725A( )1A7	1-1/2	2-1/2	51.02	300	150	165	165	474	23
7735A( )1A7	1-1/2	2-1/2	102.04	600	150	165	165	474	23

**Note 1**

Maximum Set Pressures shown are based on Carbon Steel Flanges at 38°C. Pressure limits for 316 St.St. Flanges may be lower.

Maximum Set pressure shown also for metal to metal seats only. For soft seats, refer to chart on page 2.

Maximum Set Pressure for Steam Service 68.95 barg

**Note 2**

Maximum Back Pressure 27.58 Barg or as limited by application

**Note 3**

ANSI CI 600 Flange Integral with base.