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HEZAVEH ARAK Co.

شرکت صنعتی و تولیدی هزاوه اراک (سهامی خاص)

Designer and Manufacturer of All Kinds of
Variable Spring Supports
Constant Spring Supports
Snubbers
Safety Valves
Rigid Strut
Clamp

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Valve Selection

How to find the right safety valve

The Spring Loaded Safety Relief valves Series 800

- The Conventional Type Series 810

- The Balance Bellows Type Series 840

- The Conventional Type Series 870 ACC. To Sec. I

The Pilot Operated Safety Relief Valves Series 400

- Pop Action Series 410

- Modulating Action Series 440

Thread Safety Relief Valves Series 200

- Series 210

- Series 240

General Information

The HEZAVEH ARAK Company (HACO) produces safety Relief valves and Spring support and Spring hangers for different industries such as oil and gas, power plants, refineries and petrochemical industries. The HACO safety valves are designed according to the API 520, ASME SEC. I and VIII. The safety valves products represent:

- Full range spring loaded and pilot operated safety relief valves according to API 526
- Designing special safety relief valves according to customers request
- Designing high set pressure safety valves for orifices Q, R and T

The Safety Valves From HACO

- Are designed to meet all applications which require API.
- Reach full lift quickly with max 10% over pressure
- Have maximum blowdown 5% for gas and steam and 20% for liquid services
- Are designed for protection of processes and pressure-containing equipment.
- Are manufactured with different materials according to the customer's request.

Applications

The HACO safety valves are used in different applications such as

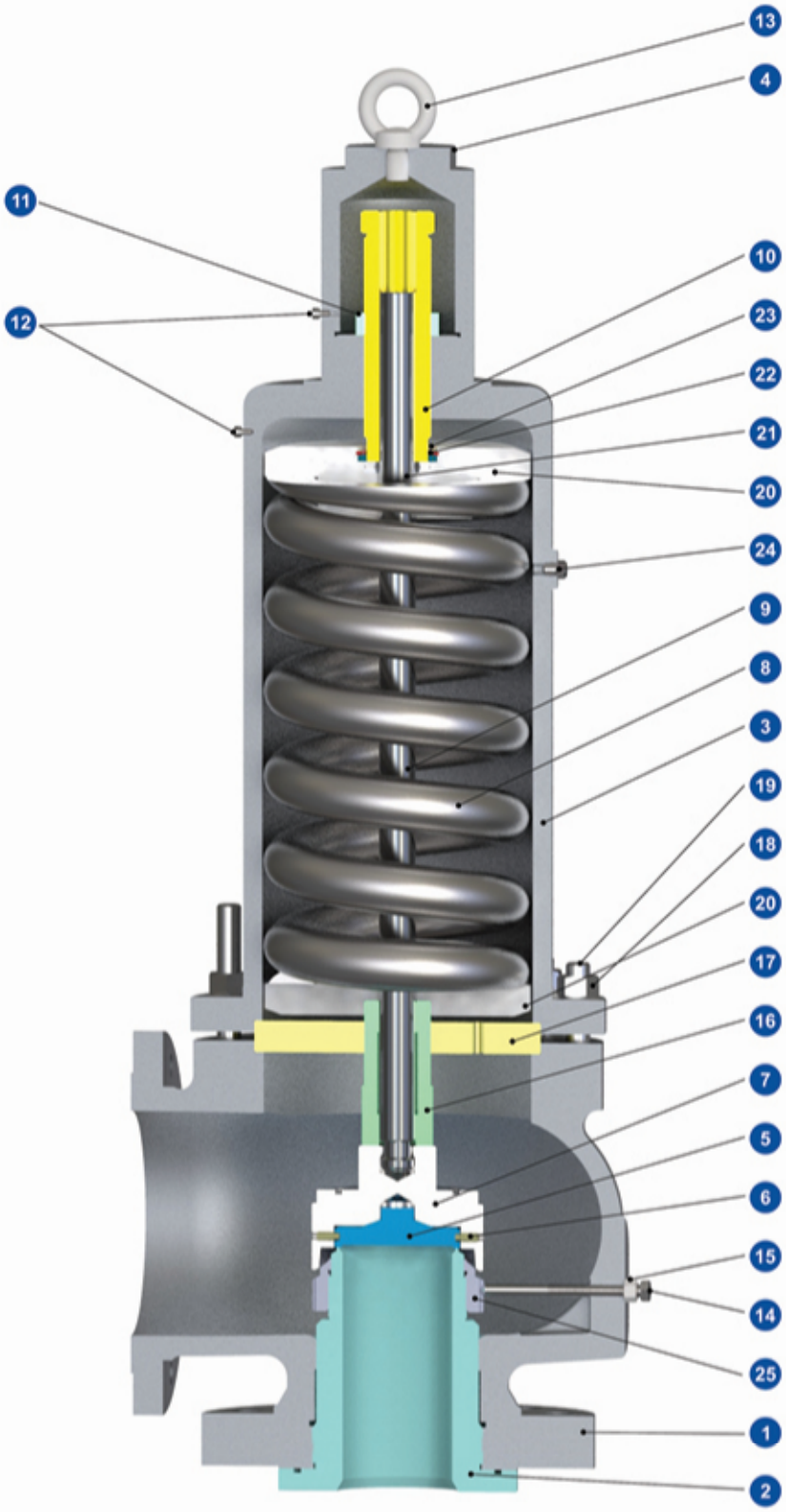
- Petrochemical industries
- Refineries
- Power plants
- Oil and Gas- Onshore and Offshore
- Pressure vessels and piping system
- Steam generation
- Storage Tanks

General features of HACO Safety Valves

- Available from 1D2 to 8T10 size according to API 526
- Available with different materials and designs to meet with any application
- Simple design and low cost maintenance and repair
- Easy installation
- Valves with orifice Larger than T is designed in accordance with customer's request and specifications
- Available with open and close bonnet, plain lever and packed lever design.
- Flanged connection according to ASME B16.5. Different connection is also available according to customer's requests.
- Threaded connection is also available.
- One-piece spindle reduces friction and enhance set pressure and seat tightness accuracy.
- Both conventional and balance bellows designs are available.
- Different option such as stellited and hardened trims are available.

Series 800

Series 810 Conventional Type



Material of The Conventional Type

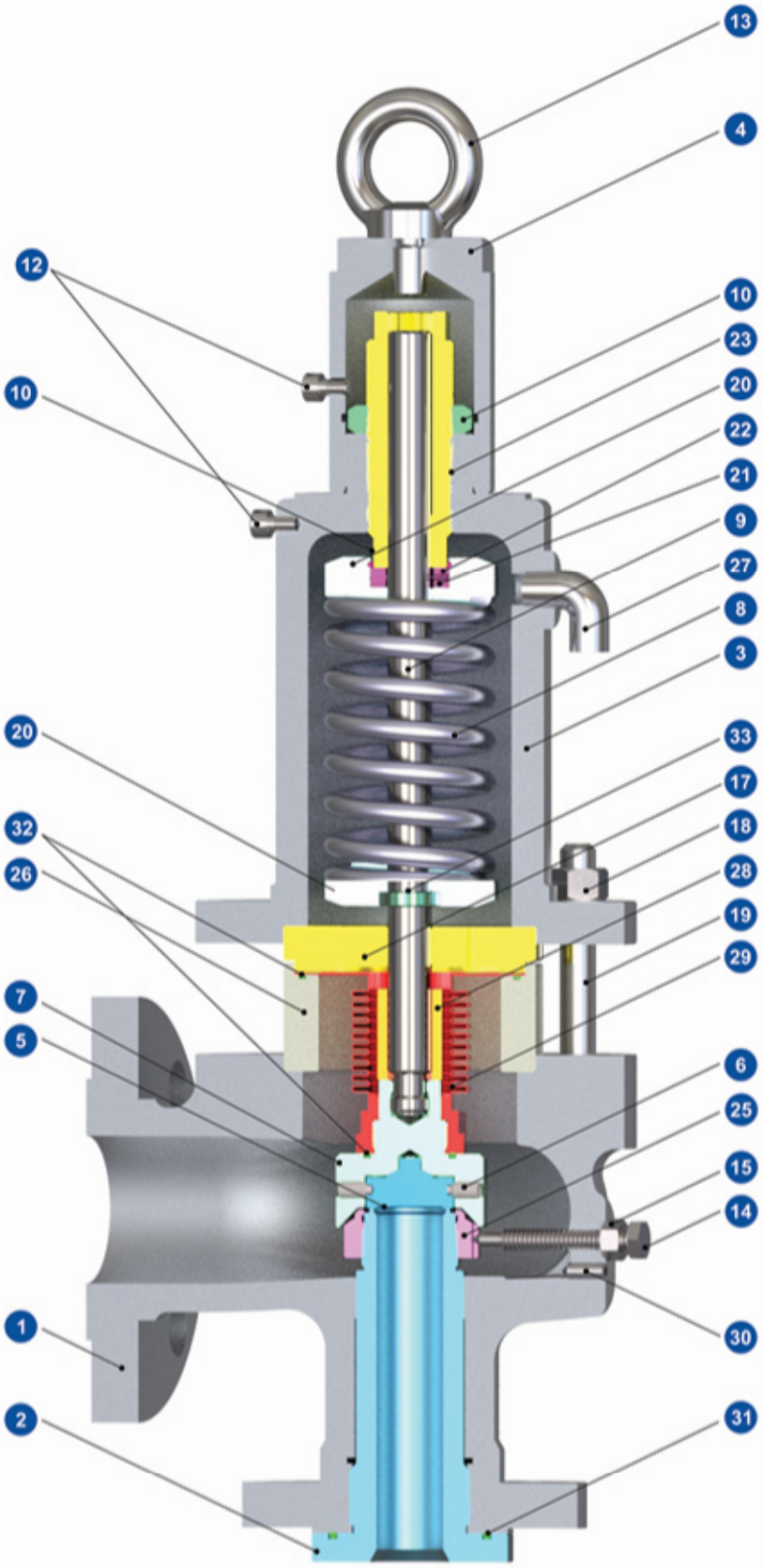
Item	Description	Standard Service: Series 810.01	Corrosive Service: Series 810.02	Low temperature Service: Series 810.03	High Temperature Service: Series 810.04
1	Body	A 216 Gr. WCB[1]	A 351 Gr. CF8M	A 352 Gr. LCC[4]	A217 Gr. WC9[4]
2	Nozzle	SS 316 L[2]	SS 316 L[2]	SS 316 L[2]	SS 316 L[2]
3	Bonnet	A 216 Gr. WCB	A 351 Gr. CF8M	A 352 Gr. LCC	A217 Gr. WC9
4	Cap	A 216 Gr. WCB	A 351 Gr. CF8M	A 352 Gr. LCC	A217 Gr. WC9
5	Disk	SS 316L[2]	SS 316 L[2]	SS 316 L[2]	SS 316 L[2]
6	Disk Retainer	SS 304	SS 304	SS 304	SS 304
7	Disk Holder	SS 304	SS 316	SS 304	SS 304
8	Spring	50CrV4 or 60SiCr7	SS 302 or SS 17-7 PH	50CrV4 or 60SiCr7	50CrV4 or 60SiCr7[5]
9	Spindle	SS 420	SS 316	SS 420	SS 420
10	Adjusting Screw	SS 304	SS 304	SS 304	SS 304
11	Lock Nut	SS 304	SS 304	SS 304	SS 304
12	Seal Screw	Alloy Steel	Alloy Steel	Alloy Steel	Alloy Steel
13	Eye Bolt	SS 304 (A2-70)	SS 304 (A2-70)	SS 304 (A2-70)	SS 304 (A2-70)
14	Blowdown Ring Screw	SS 304	SS 304	SS 304	SS 304
15	Blowdown Ring Lock Nut	SS 304	SS 304	SS 304	SS 304
16	Guide Bushing	SS 304	SS 316	SS 316	SS 304
17	Guide	A216 Gr. WCB	A 351 Gr. CF8M	A352 Gr. LCC	A217 Gr. WC9
18	Hex Nut	A194 Gr. 2H[3]	A 194 Gr. 8M	A194 Gr. 2H[3]	A194 Gr. 2H[3]
19	Stud Bolt	A193 Gr. B7[3]	A 193 Gr. B8M	A193 Gr. B7[3]	A193 Gr. B7[3]
20	Spring Plates	SS 420	SS 304	SS 420	SS 420
21	Roller thrust Bearing	Alloy Steel	Stainless Steel	Alloy Steel	Alloy Steel
22	Bearing Upper Plate	SS 304	SS 304	SS 304	SS 304
23	Retaining Ring	Carbon Steel	Stainless Steel	Carbon Steel	Carbon Steel
24	Plug	SS 304	SS 304	SS 304	SS 304
25	Blowdown Ring	SS 304	SS 316	SS 304	SS 304

1. The carbon steel body/bonnet and cap material according to the NACE MR-0175 is available according to the customer's specifications or HACO Sour service materials specifications. The HACO specification is available for review according to the customer's request.
2. The sealing surface of the disk and nozzle is stellited for valves with Class 300# and higher.
3. The Stud Bolt with A193 Gr. B7M and Nut with A194 Gr. 2HM as the material are used for sour services according to standard NACE MR-0175.
4. Similar to Item No.1, the low and high temperature carbon steel is also available in accordance with the NACE MR-0175 standard.
5. For temperature higher than 350 C, the tungsten steel is used as the spring material. Also for temperatures higher than 420 C, the INCONEL X750 is used as the spring material.

Note:

- Materials acc. to customer's data sheet can be replaced.
- The safety valves 6Q8, 6R10 and 8T10 in higher set pressure than the range of API 526 are designed acc. to client's request.
- Soft seat design for accurate tightness is also available

Series 840 Balance Bellows Type



Materials of The Balance Bellows Type

Item	Description	Standard Service: Series 840.01	Corrosive Service: Series 840.02	Low temperature Service: Series 840.03	High Temperature Service: Series 840.04
1	Body	A 216 Gr. WCB[1]	A 351 Gr. CF8M	A 352 Gr. LCC[4]	A217 Gr. WC9[4]
2	Nozzle	SS 316 L[2]	SS 316 L[2]	SS 316 L[2]	SS 316 L[2]
3	Bonnet	A 216 Gr. WCB	A 351 Gr. CF8M	A 352 Gr. LCC	A217 Gr. WC9
4	Cap	A 216 Gr. WCB	A 351 Gr. CF8M	A 352 Gr. LCC	A217 Gr. WC9
5	Disk	SS 316L[2]	SS 316 L[2]	SS 316 L[2]	SS 316 L[2]
6	Disk Retainer	SS 304	SS 304	SS 304	SS 304
7	Disk Holder	SS 304	SS 316	SS 304	SS 304
8	Spring	50CrV4 or 60SiCr7	SS 302 or SS 17-7 PH	50CrV4 or 60SiCr7	50CrV4 or 60SiCr7[5]
9	Spindle	SS 420	SS 316	SS 420	SS 420
10	Adjusting Screw	SS 304	SS 304	SS 304	SS 304
11	Lock Nut	SS 304	SS 304	SS 304	SS 304
12	Seal Screw	Alloy Steel	Alloy Steel	Alloy Steel	Alloy Steel
13	Eye Bolt	SS 304 (A2-70)	SS 304 (A2-70)	SS 304 (A2-70)	SS 304 (A2-70)
14	Blowdown Ring Screw	SS 304	SS 304	SS 304	SS 304
15	Blowdown Ring Lock Nut	SS 304	SS 304	SS 304	SS 304
17	Guide Bushing	SS 304	SS 316	SS 316	SS 304
18	Hex Nut	A194 Gr. 2H[3]	A 194 Gr. 8M	A194 Gr. 2H[3]	A194 Gr. 2H[3]
19	Stud Bolt	A193 Gr. B7[3]	A 193 Gr. B8M	A193 Gr. B7[3]	A193 Gr. B7[3]
20	Spring Plates	SS 420	SS 304	SS 420	SS 420
21	Roller thrust Bearing	Alloy Steel	Stainless Steel	Alloy Steel	Alloy Steel
22	Bearing Upper Plate	SS 304	SS 304	SS 304	SS 304
23	Retaining Ring	Carbon Steel	Stainless Steel	Carbon Steel	Carbon Steel
25	Blowdown Ring	SS 304	SS 316	SS 304	SS 304
26	Bottom Guide	A216 Gr. WCB	A351 Gr. CF8M	A352 Gr. LCC	A217 Gr. WC9
27	Elbow	SS 316	SS 316	SS 316	SS 316
28	Lift Stopper	SS 304	SS 316	SS 304	SS 304
29	Bellows Assembly	SS 316L	SS 316L	SS 316L	SS 316L
30	Drain Plug	SS 304	SS 304	SS 304	SS 304
31	Nozzle O-ring	VITON	VITON	VITON	AFLASH
32	Seal O-ring	VITON	VITON	VITON	AFLASH
33	Split Ring	SS 304	SS 316	SS 316	SS 316

All items 1,2,3,4 and 5 are similar to the conventional design type.

Note:

- Materials acc. to customer's data sheet can be replaced.
- The safety valves 6Q8, 6R10 and 8T10 in higher set pressure than the range of API 526 are designed acc. to client's request.
- Soft seat design for accurate tightness is also available.

Series 870 ASME Type Design

This type of the safety relief valve is designed according to the ASME Sec. I for steam boilers, superheaters and economizers.

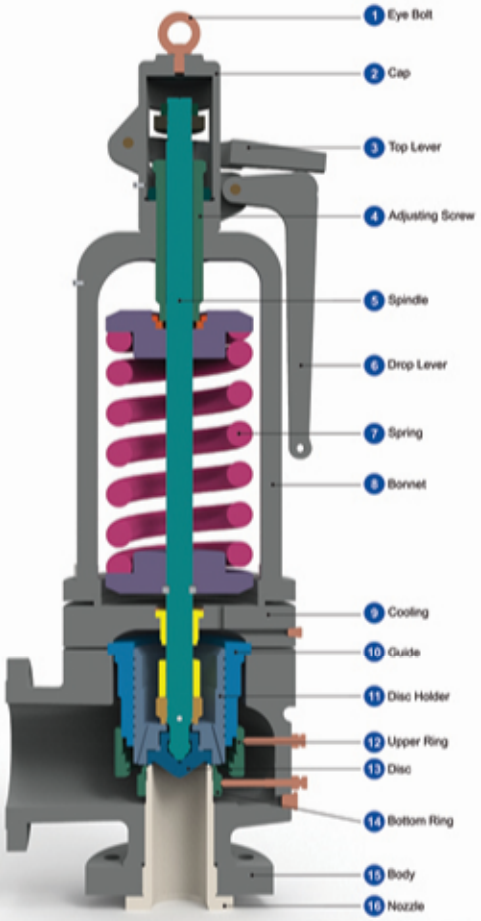
General Features

- Stainless Steel and Super Alloy steel Trims
- High Capacity
- High performance safety valve for large boilers and superheaters
- Removable Nozzle
- Special Trim for high pressure and temperature superheated steam
- Easy blowdown rings (2 Adjusting rings) adjustment
- Stellited disc and nozzle

Technical Data

- Inlet size from 1 1/2" to 6"
- Outlet size from 3" to 10"
- Set pressure up to 210 Bar g
- Relieving Temperature up to 575

Series 4500 is designed and manufactured with two groups of materials. The carbon steel (A216 WCB as the body material up to temperature 350 C and the high temperature carbon steel (A217 WC9 as the body material) up to service temperature 575 C and up to 210 bar as the set pressure.



Available options for series 800

The following options are available for the HACO safety valves series 800

- Screwed and bolted caps
- Plain lever and packed lever lifting device
- Open bonnet (Usually is used for steam, hot water and air applications)
- Test gag for hydrostatic test
- Outlet flange rating Class 300.
- Soft seat disk for better sealing
- High temperature design
- Inconel Bellows and Spring for highly corrosive services
- Steam Jacket for highly viscous fluids
- Compliant with NACE MR-0175 and MR-0103 for sour applications
- High pressure design for orifices Q, R and T
- Valves design with orifice larger than T

Open Bonnet

Packed Lever Cap

Plain Lever Cap

Heating Jacket

INCONEL X750 Spring

INCOONEL 625 Bellows Assembly

Pressure Temperature Rating For Series 800

When the orifice size is selected, refer to API 526 tables to select the correct valve rating corresponding to the orifice size, the set pressure and the temperature. Pressure ratings are based on ASME B16.34.

Safety valves Series 800 Coding System

Example:810.01L46-C221F10

810	01	L	4	6	C2	2	1	F	1	0
1	2	3	4	5	6	7	8	9	10	11

1. Design Type:

Conventional Type: 810 (Note1)
Balance Bellows Type: 840
Conventional Type Open Bonnet : 860
Conventional Type acc. To ASME SEC. I: 870
Note: For last two digit please refer to page 4 and 6

2. Material Class:

Standard Service :01
Corrosive Service : 02
Low Temperature :03
High Temperature :04

3. Orifice

Orifice	D	E	F	G	H	J	K	L	M	N	P	Q	R	T
mm^2	87	143	227	380	594	910	1288	1968	2642	3215	4774	7690	11116	18617
in^2	0.134	0.22	0.35	0.589	0.92	1.41	2	3.05	4.095	4.99	7.4	11.92	17.23	28.86

4,5. Inlet & Outlet Flange Size:

Size	1/2"	3/4"	1"	1 1/2"	1 3/4"	2"	2 1/2"	3"	4"	6"	8"	10"
code	0	5	1	7	9	2	11	3	4	6	8	10

6. Cap Type

Type	Code
Screwed	C1
Bolted Cap	C2
Screwed cap with packed lever	C3
Screwed cap with plain lever	C4
Bolted cap with packed lever	C5
Bolted cap with plain lever	C6

7,8. Pressure Class (in & out):

Class	150	300	600	900	1500	2500
Code	1	2	3	4	5	6

9. Nozzle Type

F: Full Nozzle S: Semi Nozzle

10. Seat Type

Type	Code
Soft Seat	1
Inserted Soft Material	2
Stellited Disk and Nozzle	3
Stellited Disk	4
Stellited Nozzle	5
Hard Seat	6

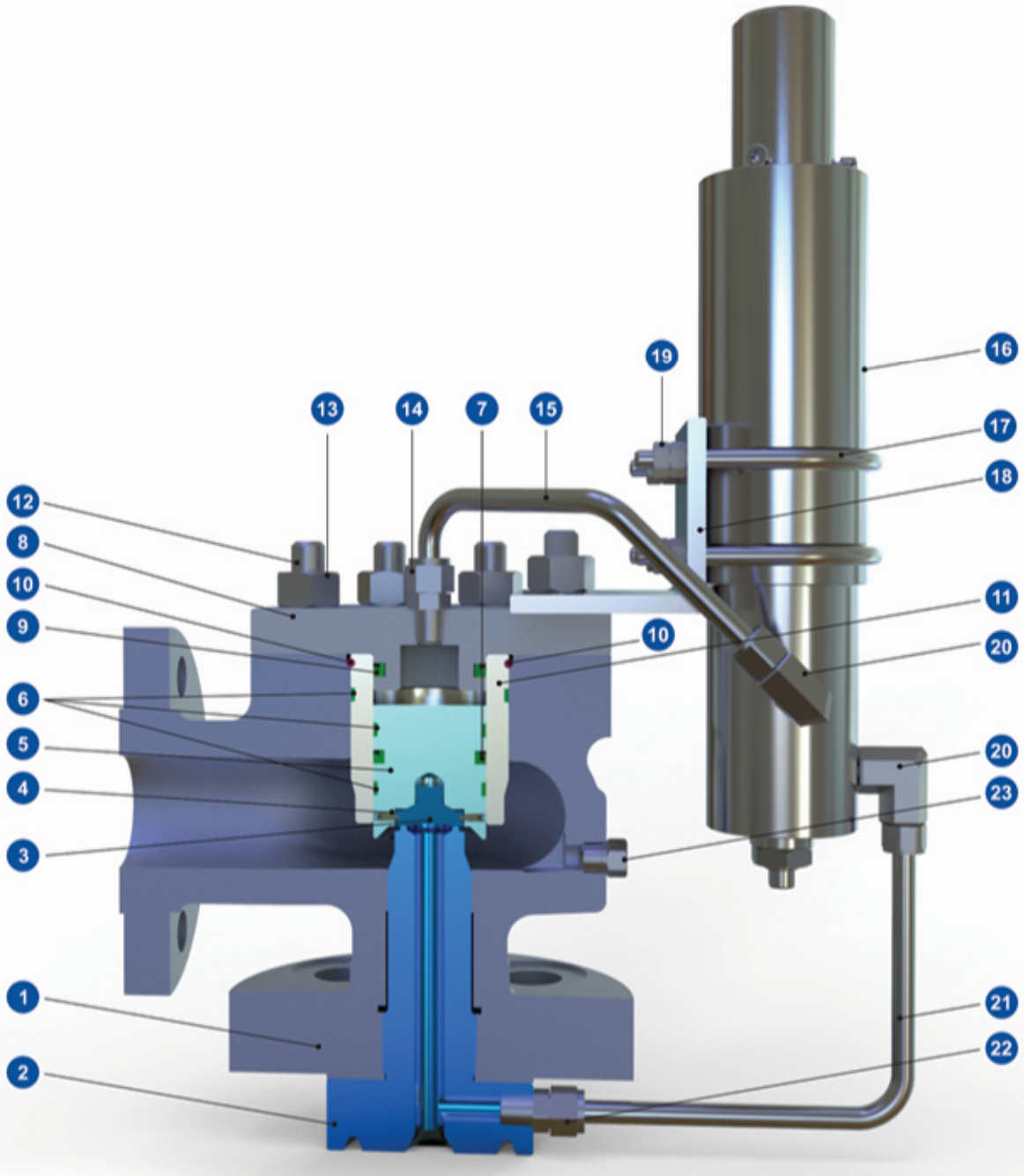
11. Accessories:

0: Equipped With Test Gag
1: No Test Gag

Note1:The third number Varies from 0 To 9 due to changes in design details

Series 400

Pilot Operated safety Relief Valve



Materials of the Pilot Operated Relief Valve Series 400

Item	Description	Standard Service: Series 410.01	Corrosive Service: Series 410.02	Low temperature Service: Series 410.03	High Temperature Service: Series 410.04
1	Body	A 216 Gr. WCB[1]	A 351 Gr. CF8M	A 352 Gr. LCC[4]	A217 Gr. WC9[4]
2	Nozzle	SS 316 L[2]	SS 316 L[2]	SS 316 L[2]	SS 316 L[2]
3	Disk	SS 316L[2]	SS 316 L[2]	SS 316 L[2]	SS 316 L[2]
4	Disk Retainer	SS 304	SS 304	SS 304	SS 304
5	Piston	SS 304	SS 316	SS 304	SS 304
6	Ribbon Guide	PTFE	PTFE	PTFE	Graphite
7	Piston U-Pack	VITON	VITON	VITON	AFLASH or FFKM
8	Cap	A 216 Gr. WCB[1]	A 351 Gr. CF8M	A 352 Gr. LCC[4]	A217 Gr. WC9[4]
9	Cap U-Pack	VITON	VITON	VITON	AFLASH or FFKM
10	Liner Retainer	Alloy Steel	Alloy Steel	Alloy Steel	Alloy Steel
11	Liner	SS 316	SS 316	SS 316	SS 316
12	Stud Bolt	A193 Gr. B7[3]	A 193 Gr. B8M	A193 Gr. B7[3]	A193 Gr. B7[3]
13	Hex Nut	A194 Gr. 2H[3]	A 194 Gr. 8M	A194 Gr. 2H[3]	A194 Gr. 2H[3]
14	Dome Connector	SS 316	SS 316	SS 316	SS 316
15	Dome Pipe	SS 316	SS 316	SS 316	SS 316
16	Pilot[5]	SS 304	SS 316	SS 304	SS 304
17	Fastener Belt	SS 304	SS 316	SS 304	SS 304
18	Fastener Plate	SS 304	SS 316	SS 304	SS 304
19	Fastener Nut	Alloy Steel	SS 304	Alloy Steel	Alloy Steel
20	Elbow Connector	SS 316	SS 316	SS 316	SS 316
21	Feeding Pipe	SS 316	SS 316	SS 316	SS 316
22	Connector	SS 316	SS 316	SS 316	SS 316
23	Plug	SS 304	SS 304	SS 304	SS 304

1. The carbon steel body/bonnet and cap material according to the NACE MR-0175 is available according to the customer's specifications or HACO Sour service materials specifications. The HACO specification is available for review according to the customer's request.
2. The sealing surface of the disk and nozzle is stellited for valves with Class 300# and higher.
3. The Stud Bolt with A193 Gr. B7M and Nut with A194 Gr. 2HM as the material are used for sour services according to standard NACE MR-0175.
4. Similar to Item No.1, the low and high temperature carbon steel is also available in accordance with the NACE MR-0175 standard.
5. The different pilot type pop action (Series 410) and modulating action (series 440) are used according to the different processes and applications. All trims for pilot are SS 316 for corrosive services and pilot spring is SS 302. The main body for both types of the pilot actions type is fix.

Note:

- Materials acc. to customer's data sheet can be replaced for both main valve and pilot valve.
- The safety valves 6Q8, 6R10 and 8T10 in higher set pressure than the range of API 526 are designed acc. to client's request.
- Soft seat design for accurate tightness is also available.
- Soft seat nozzle is also available upon client's request.
- Full compliance with NACE MR-0103 is also available acc. to client's request.
- Valves larger than 8T10 are also designed acc. to the client's data sheet.

Available Options for Series 400

The following options and accessories are available for the pilot operated safety relief valves series 400.

- Both modulation and pop action pilot type
- Backflow preventer
- Manual blowdown
- Field test connection
- Exhaust pilot vent to the body outlet
- Pilot supply filter
- Compliant with NACE MR-0175 and MR-0103 for sour applications
- High pressure design for orifices Q, R and T
- Valves design with orifice larger than T
- Outlet flange rating Class 300
- Test gag for hydrostatic test

Manual Blowdown

Field Test Connection

Supply line filter

Pressure Temperature Rating for Series 400

When the orifice size is selected, refer to API 526 tables (for pilot operated safety valves) to select the correct valve rating corresponding to the orifice size, the set pressure and the temperature. Pressure ratings are based on ASME .B16.34

Safety Valves Series 400 Coding System

Example: 410.01H34-UVW32F1

410	01	H	3	4	UVW	3	2	F	3
1	2	3	4	5	6	7	8	9	10

1. Design Type

Pop Action Type: 410 (Note 1)

Modulate Action Type: 440

Note: For last two digit please refer to page 13

2. Material Class

Standard Service :01

Corrosive Service : 02

Low Temperature :03

High Temperature :04

3. Orifice

Orifice	D	E	F	G	H	J	K	L	M	N	P	Q	R	T
mm^2	87	143	227	380	594	910	1288	1968	2642	3215	4774	7690	11116	18617
in^2	0.134	0.22	0.35	0.589	0.92	1.41	2	3.05	4.095	4.99	7.4	11.92	17.23	28.86

4,5. Inlet & Outlet Flange Size

Size	1/2"	3/4"	1"	1 1/2"	1 3/4"	2"	2 1/2"	3"	4"	6"	8"	10"
code	0	5	1	7	9	2	11	3	4	6	8	10

6. Accessories

Type	Code
Field test connection	U
Back flow preventer	V
Manual Blowdown	W
Supply line filter	X
Exhaust vent to the body outlet	Y
Remote Sensing line	Z
Test Gag	S
No Option	E

7,8. Pressure Class (in & out)

Class	150	300	600	900	1500	2500
Code	1	2	3	4	5	6

9. Nozzle Type

F: Full Nozzle S: Semi Nozzle

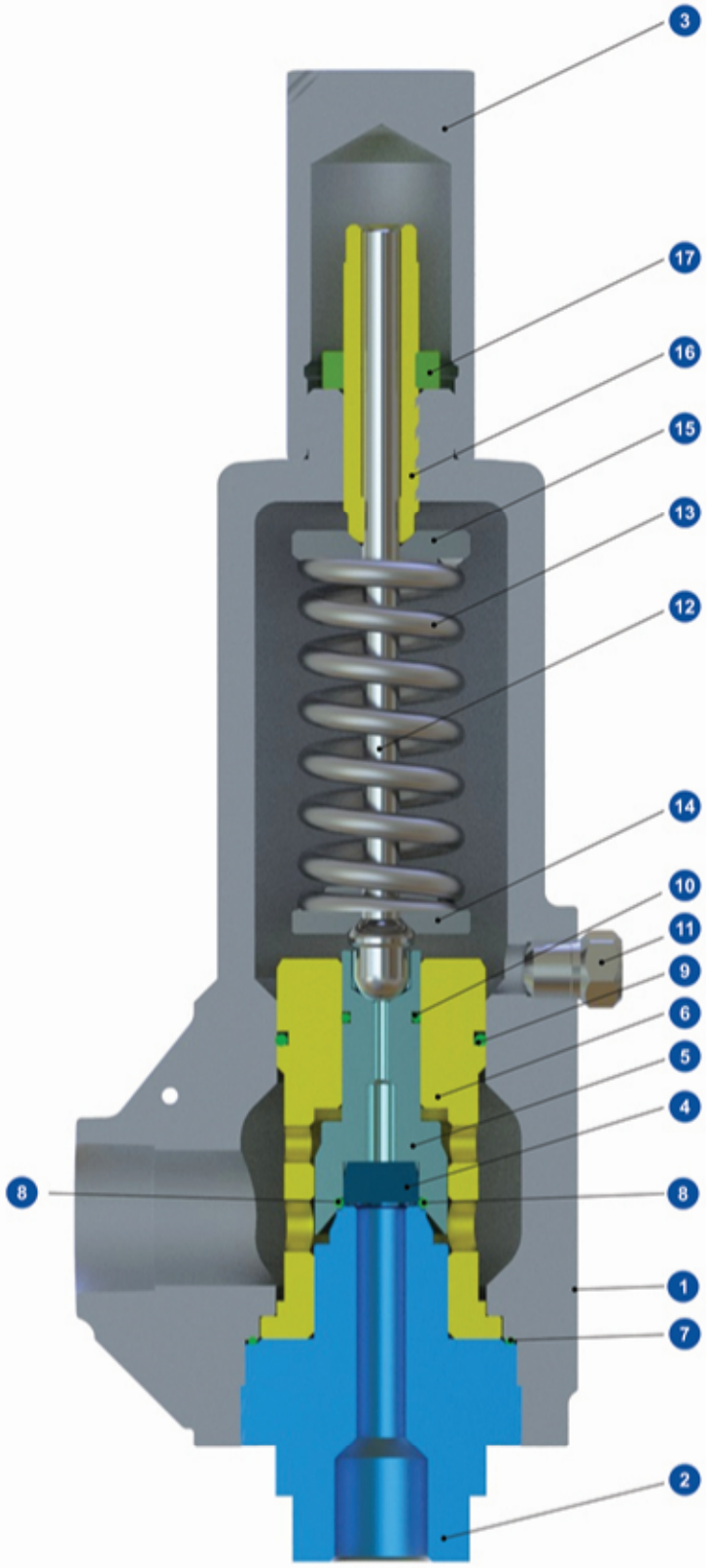
10. Accessories

Type	Code
Soft Seat	1
Inserted Soft Material	2
Stellited Disk and Nozzle	3
Stellited Disk	4
Stellited Nozzle	5
Hard Seat	6

Note1:The third number Varies from 0 To 9 due to changes in design details

Series 200

Threaded and Flanged Safety Relief Valves Series 210



Materials of the Safety Relief Valves Series 210

Item	Description	Standard Service: Series 210.01	Corrosive Service: Series 210.02	Low temperature Service: Series 210.03	High Temperature Service: Series 210.04
1	Body	A 216 Gr. WCB[1]	A 351 Gr. CF8M	A 352 Gr. LCC[4]	A217 Gr. WC9[4]
2	Nozzle	SS 316 L[2]	SS 316 L[2]	SS 316 L[2]	SS 316 L[2]
3	Cap	A 105	SS 316	A 105	A 105
4	Disk	SS 316L[2]	SS 316 L[2]	SS 316 L[2]	SS 316 L[2]
5	Disk Holder	SS 304	SS 316	SS 304	SS 304
6	Guide	SS 304	SS 316	SS 304	SS 304
7	Nozzle O-ring	VITON	VITON	VITON	AFLASH or FFKM
8	Main O-ring	VITON	VITON	VITON	AFLASH or FFKM
9	Guide O-ring	VITON	VITON	VITON	AFLASH or FFKM
10	Disk Holder O-ring	VITON	VITON	VITON	AFLASH or FFKM
11	Plug	Alloy Steel	SS 316	Alloy Steel	Alloy Steel
12	Spindle	SS 420	SS 316	SS 420	SS 420
13	Spring	CrV4 or 60SiCr7[3]	SS 302	CrV4 or 60SiCr7	SS 17-7 PH[5]
14	Bottom Spring Plate	SS 420	SS 304	SS 420	SS 420
15	Upper Spring Plate	SS 420	SS 304	SS 420	SS 420
16	Adjusting Screw	SS 304	SS 316	SS 304	SS 3104
17	Adjusting Screw Nut	SS 304	SS 316	SS 304	SS 304

1. The carbon steel body/bonnet and cap material according to the NACE MR-0175 is available according to the customer's specifications or HACO Sour service materials specifications. The HACO specification is available for review according to the customer's request.
2. The sealing surface of the disk and nozzle is stellited for valves with set pressure higher than 450 Psig.
3. The SS 302 is also used for standard service.
4. Similar to Item No.1, the low and high temperature carbon steel is also available in accordance with the NACE MR-0175 standard.
5. For service temperature up to 330 C, the SS 17-7 PH is used as the spring material and for temperature up to 380 C, the tungsten steel is used. Finally for pressure higher than 400 C, Inconel X750 is used as the spring material.

Note:

- Materials acc. to customer's data sheet can be replaced.
- This type of safety valve is designed with flanged end connection as well.
- Both Soft seat and hard seat designs are available.
- Full compliance with NACE MR-0103 is also available acc. to client's request.
- Forge grade of the specified cast carbon and stainless steel materials are available acc. to the user request.
- The max set pressure for this type of valve is 1500 Psig.
- This type of safety valves is operated similar to a piston balance safety valves. Because the tight sealing prevent from entering flowing fluid into the spring housing and accurate design of disk, disk holder and guide help valve accurately operate in presence of the back pressure. This property has function like the balance bellows safety valves.

Available Options for Series 210

The following options and accessories are available for safety relief valves series 210.

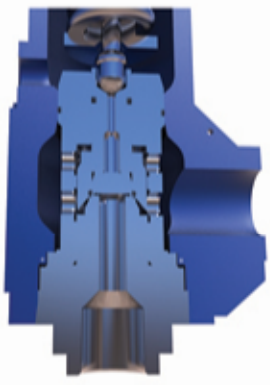
- Both threaded and flanged-end connections
- Both Male and Female connection for inlet
- Threads acc. to different standards (AMSE, BSI, etc…)
- Inconel Spring
- Lifting lever device
- Test Gag for hydrostatic test
- Both soft and Metal-to-Metal seat designs
- Design valves for set pressure higher than 1500 Psig
- Heating Jacket

Flanged-End Connection

Test Gag

Packed lever

Female Nozzle



Male Nozzle

Male Nozzle with Flanded end outlet

Safety Valves Series 210 Coding System

Example:210.01D51-MF21C3

210	01	D	5	1	MF	2	1	C	3
1	2	3	4	5	6	7	8	9	10

1. Design Type

Threaded and Flanged Safety Relief Valve : 210 (Note 1)

2. Material Class

Standard Service :01
Corrosive Service : 02
Low Temperature :03
High Temperature :04

3. Orifice

Orifice	D	E	F	G	H	J	K	L	M	N	P	Q	R	T
mm^2	87	143	227	380	594	910	1288	1968	2642	3215	4774	7690	11116	18617
in^2	0.134	0.22	0.35	0.589	0.92	1.41	2	3.05	4.095	4.99	7.4	11.92	17.23	28.86

4,5. Inlet & Outlet Flange Size

Size	1/2"	3/4"	1"	1 1/2"	1 3/4"	2"	2 1/2"	3"	4"	6"	8"	10"
code	0	5	1	7	9	2	11	3	4	6	8	10

6. Flange Connections

Type	Code
Male to Female	MF
Female to Female	AF
Flange End	FE
Male Nozzle to Flange End Out Let	ME
Female Nozzle to Flange End Out Let	EF
Flange End inlet to Female	FF

7,8. Pressure Class (in & out)

Class	150	300	600	900	1500	2500
Code	1	2	3	4	5	6

9. Accessories

Type	Code
Test Gag	A
Packed Lever cap	B
Screwed Cap without Lever	C

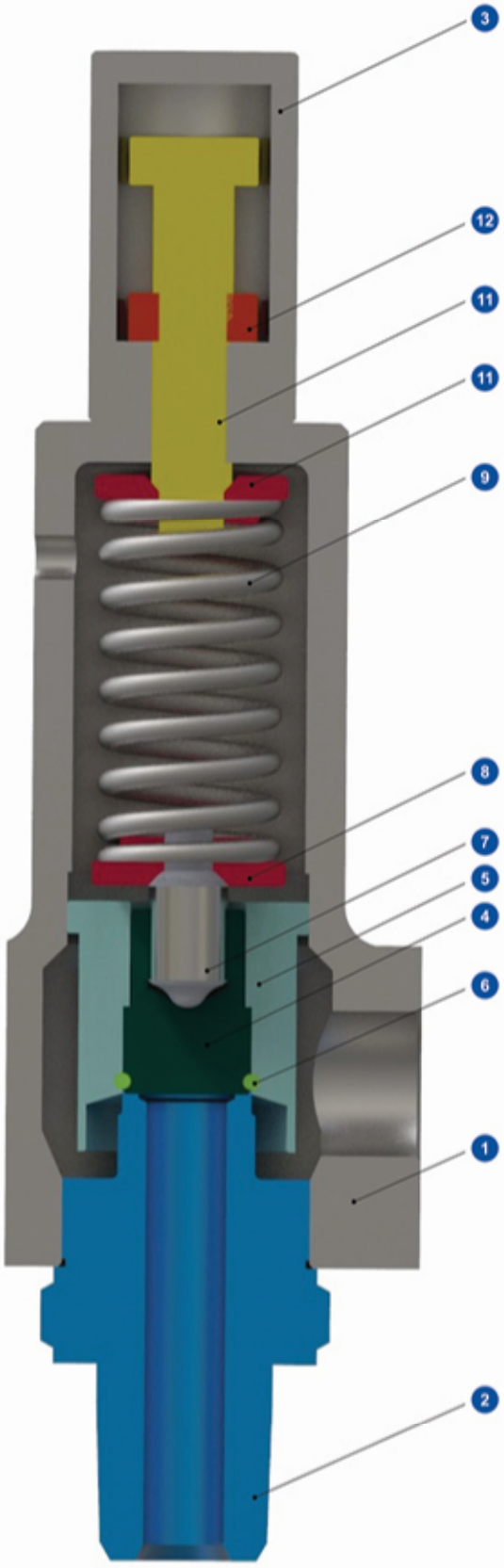
10. Seat Type

Type	Code
Soft Seat	1
Inserted Soft Material	2
Stellited Disk and Nozzle	3
Stellited Disk	4
Stellited Nozzle	5
Hard Seat	6

Note1:The third number Varies from 0 To 9 due to changes in design details

Series 200

Threaded and Flanged Safety Relief Valves Series 240



Materials For The Safety Relief Valves Series 240

Item	Description	Standard Service: Series 240.01	Corrosive Service: Series 240.02	Steam or Hot water Services Series 240.03
1	Body	SS 304	SS 316	Copper Base Alloy ASTM B62
2	Nozzle	SS 304 [1]	SS 316 L [2]	Copper Base Alloy ASTM B62
3	Cap	SS 304	SS 316	Copper Base Alloy ASTM B62
4	Disk	SS 304 [1]	SS 316 L [2]	Copper Base Alloy ASTM B62
5	Disk Holder	SS 304	SS 316	Copper Base Alloy ASTM B62
6	Main O-ring [3]	VITON	VITON	VITON
7	Spindle	SS 304	SS 316	SS 316
8	Bottom Spring Plate	SS 420	SS 316	SS 316
9	Spring	SS 302	SS 302	SS 302
10	Upper Spring Plate	SS 420	SS 316	SS 316
11	Adjusting Screw	SS 304	SS 316	SS 316
12	Adjusting Screw Nut	SS 304	SS 316	SS 316

1. For Soft seat design SS 304 is used as the disk and nozzle material for standard service. But For hard seat design SS 316L is used as the disk and nozzle material.
2. The sealing surface of the disk and nozzle is stellited for valves with set pressure higher than 450 Psig for hard seat design.
3. The main O-ring in soft seat design is considered as the commissioning and two-year spare part.

Note:

- Materials acc. to customer's data sheet can be replaced.
- This type of safety valve is designed with flanged end connection as well.
- Both Soft seat and hard seat designs are available.
- This Type of the safety relief valves usually is used for air, steam and gas applications. Of course for steam and hot water applications, usually Copper base alloy B62 is used as the body, cap, nozzle and disk material.

Safety Relief Valves Series 240 Coding System

Example: 240.01D51-MF21C3

240	03	D	5	1	MF	2	1	C	3
1	2	3	4	5	6	7	8	9	10

1. Design Type

Steam and Hot Water Service : 240 (Note I)

2. Material Class

Standard Service :01
Corrosive Service : 02
Steam or Hot Water Services :03

3. Orifice

Orifice	D	E	F	G	H	J	K	L	M	N	P	Q	R	T
mm^2	87	143	227	380	594	910	1288	1968	2642	3215	4774	7690	11116	18617
in^2	0.134	0.22	0.35	0.589	0.92	1.41	2	3.05	4.095	4.99	7.4	11.92	17.23	28.86

4,5. Inlet & Outlet Flange Size

Size	1/2"	3/4"	1"	1 1/2"	1 3/4"	2"	2 1/2"	3"	4"	6"	8"	10"
code	0	5	1	7	9	2	11	3	4	6	8	10

6. Flange Connections

Type	Code
Male to Female	MF
Female to Female	AF
Flange End	FE
Male Nozzle to Flange End Out Let	ME
Female Nozzle to Flange End Out Let	EF
Flange End inlet to Female	FF

7,8. Pressure Class (in & out)

Class	150	300	600	900	1500	2500
Code	1	2	3	4	5	6

9. Accessories

Type	Code
Test Gag	A
Packed Lever cap	B
Screwed Cap without Lever	C

10. Seat Type

Type	Code
Soft Seat	1
Inserted Soft Material	2
Stellited Disk and Nozzle	3
Stellited Disk	4
Stellited Nozzle	5
Hard Seat	6

Note1:The third number Varies from 0 To 9 due to changes in design details

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