

SAFETY RELIEF VALVE - SERIES 41

INTRODUCTION

Safety Relief Valve is a valve that acts as a fail safe. It automatically releases a substance from a Boiler, Pressure vessel or other system when maximum allowable pressure exceeds preset set pressure limit. It has wide Application of water, air gases, steam, any other gases & liquid.

Internal set value adjuster is connected to the set pressure spring & is guided to the plug which lifts when the inlet pressure exceeds preset set value adjuster limits.

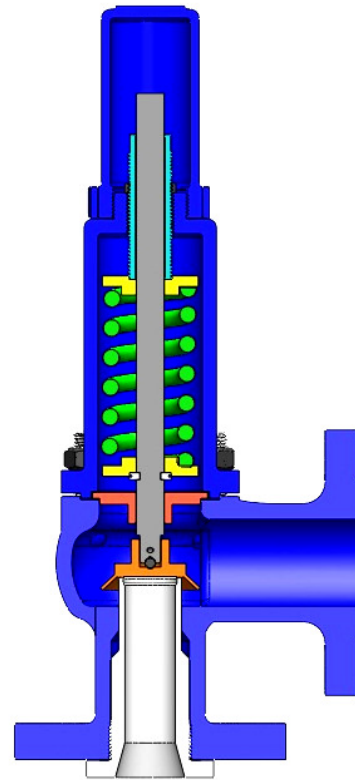
Specifications

- Design Standard** : 1. Flow Sizing - API RP 520.
 2. Flange - ASME B16.34
 3. Orifice - API 526
 4. Testing - API 527 Seat Tightness
 5. Inspection - API 576
- Inlet Valve Size** : Inlet valve Size 25 to 200 mm (1" to 8")
 Other sizes available on request.
 Outlet Size As Per Table
- Rating** : ANSI 150 To 600#
- Temperature** : -40°C to 400°C
- End Connection** : Flanged
- Body Material** : WCC, CF8, CF8M, CF3, CF3M
 Other available on request
- Bonnet** : Bolting to Body Type
- Gasket** : CAF 154 Metallic, Grafoil / PTFE
- Trim Material** : S.S.304, S.S.316, S.S.304L, S.S.316L
 Other available on request
- Seat Leakage** : As Per API 527

- % Regulation applicable from 5% to 15% overpressure depending on configuration with respect to **IBR 1950 act 292**.
- Discharge Capacity of safety relief valve as per IBR 1950 act 293 for steam and API 520 Part I.
- Seat tightness confirms to API RP 527.
- Characteristics graph of maximum allowable pressure and vs valve lift showing below .

Applications :-

1. Protection of Chemical Processes and equipment
2. Pharma and Boilers sector
3. Process industries and pumps
4. Low & Medium Pressure Steam
5. Corrosive Application



BUILT IN RELIABILITY

Overall Dimension Series 41

Size	Inlet		Outlet		STD Set Pr Barg	Area Sq. mm	Dia. "d." mm	Wgt Approx Kgs.	Height 'H' Approx	Outlet "B" mm	Inlet "A" mm
	Rating ANSI	Size	Rating ANSI	Size							
1"	150/300	1.1/2"	150	150	40	416	23	11	340	114	105
1"	150/300	2"	150	150	40	416	23	13	340	114	105
1.1/2"	150/300	2"	150	150	40	661	29	16	440	121	124
1.1/2"	150/300	2.1/2"	150	150	40	661	29	18	440	121	124
1.1/2"	150/300	3"	150	150	40	661	29	20	450	124	130
2"	150/300	3"	150	150	40	1075	37	23	500	124	137
3"	150/300	4"	150	150	40	1661	46	37	600	162	156
3"	150/300	4"	150	150	40	2827	60	45	690	162	156
4"	150/300	6"	150	150	40	4301	74	78	800	184	178
4"	150/300	6"	150	150	40	6650	92	90	800	210	197
6"	150/300	8"	150	150	40	7543	98	119	1117	241	240
6"	150/300	10"	150	150	40	12272	125	119	1117	241	240
8"	150/300	12"	150	150	40	21382	165	280	800	210	197

Discharge Capacities Series 41 As Per API 520

Flow Dia mm	Medium	Set Pressure Barg															
		1	2	4	6	8	10	12	14	16	18	20	24	28	32	36	40
23	AIR	733	1115	1878	2642	3405	4169	4933	5697	6460	7224	7987	9514	11042	12570	14097	15625
	STEAM	449	683	1151	1619	2087	2556	3024	3313	3760	4657	4657	5558	6463	7372	8285	9202
	WATER	231	337	483	593	687	769	847	914	978	1093	1093	1197	1294	1383	1442	1546
29	AIR	1165	1771	2985	4200	5414	6628	7842	9056	10270	11484	12698	15126	17555	19983	22411	24840
	STEAM	715	1087	1831	2575	3319	4064	4808	5266	5978	6690	7404	8837	10275	11720	13171	14630
	WATER	388	549	777	952	1099	1229	1346	1454	1554	1649	1738	1904	2056	2199	2332	2458
37	AIR	1895	2884	4860	6837	8813	10790	12765	14742	16718	18695	20671	24624	28576	32529	36482	40435
	STEAM	1164	1769	2981	4192	5404	6615	7827	8573	9731	10891	12053	14385	16726	19078	21440	23814
	WATER	632	894	1265	1550	1790	2001	2192	2367	2531	2684	2829	3099	3348	3579	3769	4002
46	AIR	2930	4457	7512	10567	13621	16676	19731	22786	25840	28895	31950	38060	44169	50279	56388	62498
	STEAM	1799	2735	4608	6480	8353	10225	12093	13251	15041	16834	18630	23326	25854	29488	33140	36808
	WATER	978	1383	1956	2395	2766	3092	3388	3659	3912	4149	4374	4484	5175	5532	5868	6185
60	AIR	4984	7583	12780	17977	23175	28371	33569	38766	43963	49160	54357	64752	75146	85540	95935	106329
	STEAM	3061	4654	7839	11025	14211	17396	20582	22544	25589	28640	31697	37828	43985	50169	56381	62623
	WATER	1663	2353	3327	4075	4706	5261	5764	6226	6655	7059	7441	8151	8240	9412	9983	10524
74	AIR	7582	11535	19440	27345	35251	43157	51062	58967	66873	74778	82684	98495	114306	130117	145928	161738
	STEAM	4656	7079	11925	16771	21616	26462	31308	34293	38924	43565	48214	57541	66907	76313	85762	95256
	WATER	2531	3579	5062	6200	7159	8004	8768	9470	10124	10738	11319	12399	13393	14318	15186	16008
92	AIR	11719	17829	30048	42267	54486	66705	78924	91143	103362	115582	127800	152239	176677	197959	-	-
	STEAM	7192	10942	18432	25922	33412	40902	48392	53005	60164	67336	74523	88939	103415	117954	-	-
	WATER	3912	5532	7324	9582	11065	12371	13552	14638	15648	16598	17495	19165	20701	22130	-	-
98	AIR	13089	19913	33560	47207	60854	74501	88150	101796	115445	129091	142738	170032	197327	-	-	-
	STEAM	8167	12416	20914	29413	37912	46411	54910	60144	68267	76406	84560	100918	117344	-	-	-
	WATER	4439	6277	8878	10873	12555	14037	15377	16609	17756	18833	19852	21747	23489	-	-	-
125	AIR	21295	32397	54599	76802	99006	121209	143412	165615	187818	210021	232224	276630	-	-	-	-
	STEAM	13286	20200	34026	47853	61680	75507	89334	97851	111066	124307	137573	164187	-	-	-	-
	WATER	7222	10213	14444	17690	20427	22838	25018	27022	28888	30641	32298	35381	-	-	-	-
165	AIR	37104	56447	95134	133820	172507	211194	249881	288568	327255	365942	404628	-	-	-	-	-
	STEAM	23150	35196	59288	83380	107472	131564	155656	170496	193522	216793	239708	-	-	-	-	-
	WATER	12583	17796	25167	30824	35592	39793	43591	47084	50335	53388	56276	-	-	-	-	-

- Saturated Steam Capacity in (kg/hr)
- Air Capacity at 15°C (kg/hr)
- Water Capacity in (l/min)

BUILT IN RELIABILITY

Discharge Capacities As Per IBR 1950 (Saturated Steam Capacity kg/hr)

d _o mm	Set Pressure, Bar _g														
	1	2	4	6	8	10	12	14	16	18	20	24	28	32	36
23	318	476	792	1108	1424	1739	2055	2371	2687	3002	3318	2950	4581	5214	5844
29	504	756	1258	1762	2264	2766	3268	3770	4271	4773	5276	6281	7286	8288	9290
37	823	1232	2048	2867	3683	4500	5319	6135	6955	7771	8590	10225	11860	13495	9542
46	1271	1905	3167	4430	5695	6957	8220	9485	10748	12012	13275	15802	18330	20857	23377
60	2165	3240	5388	7538	9688	11837	13957	16137	18266	20436	22586	26885	31185	35484	39772
74	3291	4926	8195	11465	14735	18006	21275	24545	27815	31085	34357	42895	47435	53975	60500
92	5087	7614	12668	17723	22776	27831	32885	37940	42992	48048	53102	63210	73319	83427	93510
98	5771	8640	14375	20110	25844	31580	37314	43050	48785	54520	60255	71724	83195	-	-
125	9391	14056	23385	32717	42047	51377	60708	70038	79368	88699	98029	116690	-	-	-
165	16336	24491	40749	57006	73263	89520	105770	122034	138291	154548	170806	-	-	-	-

SAFETY RELIEF VALVE LEAKAGE CLASS DEFINED AS PER API 527

Acceptance Criteria for Air

Set Pressure at 15.6°C Bar _g	Orifice Dia ≥ 18 mm (d _o)		Orifice Dia ≤ 18 mm (d _o)	
	Leakage Rate (Bubble/min)	Approximate leakage/24 hr (m ³)	Leakage Rate (Bubble/min)	Approximate leakage/24 hr (m ³)
0.13 TO 68.96	40	0.017	20	0.0085
103	60	0.026	30	0.013
138	80	0.034	40	0.017
172	100	0.043	50	0.021
207	100	0.043	60	0.026

Maximum Sear Leakage Rate for Metal Seated for AIR

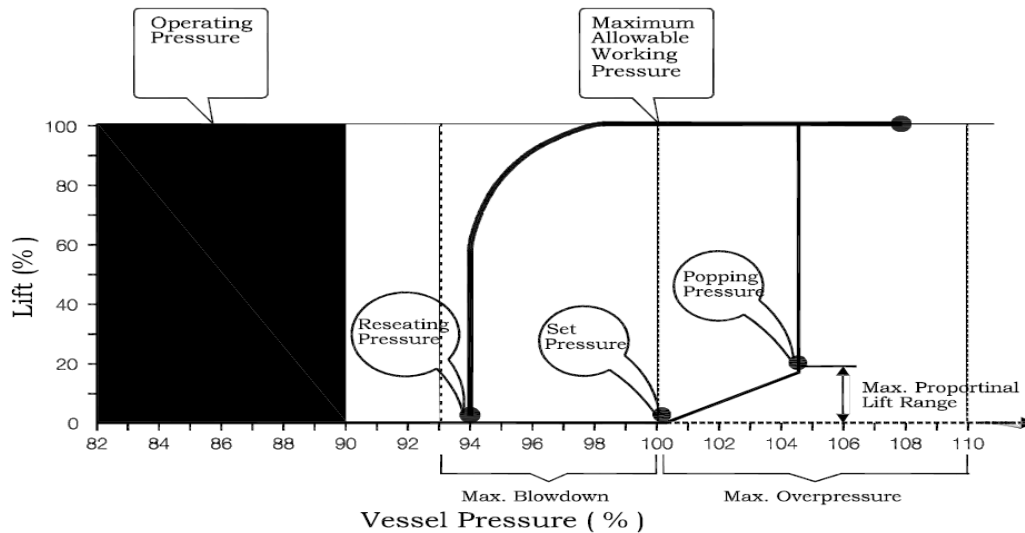
Acceptance Criteria for Steam

For Soft Seated and Metal Seated Valves, there shall be no audible or visible leakage for one min.

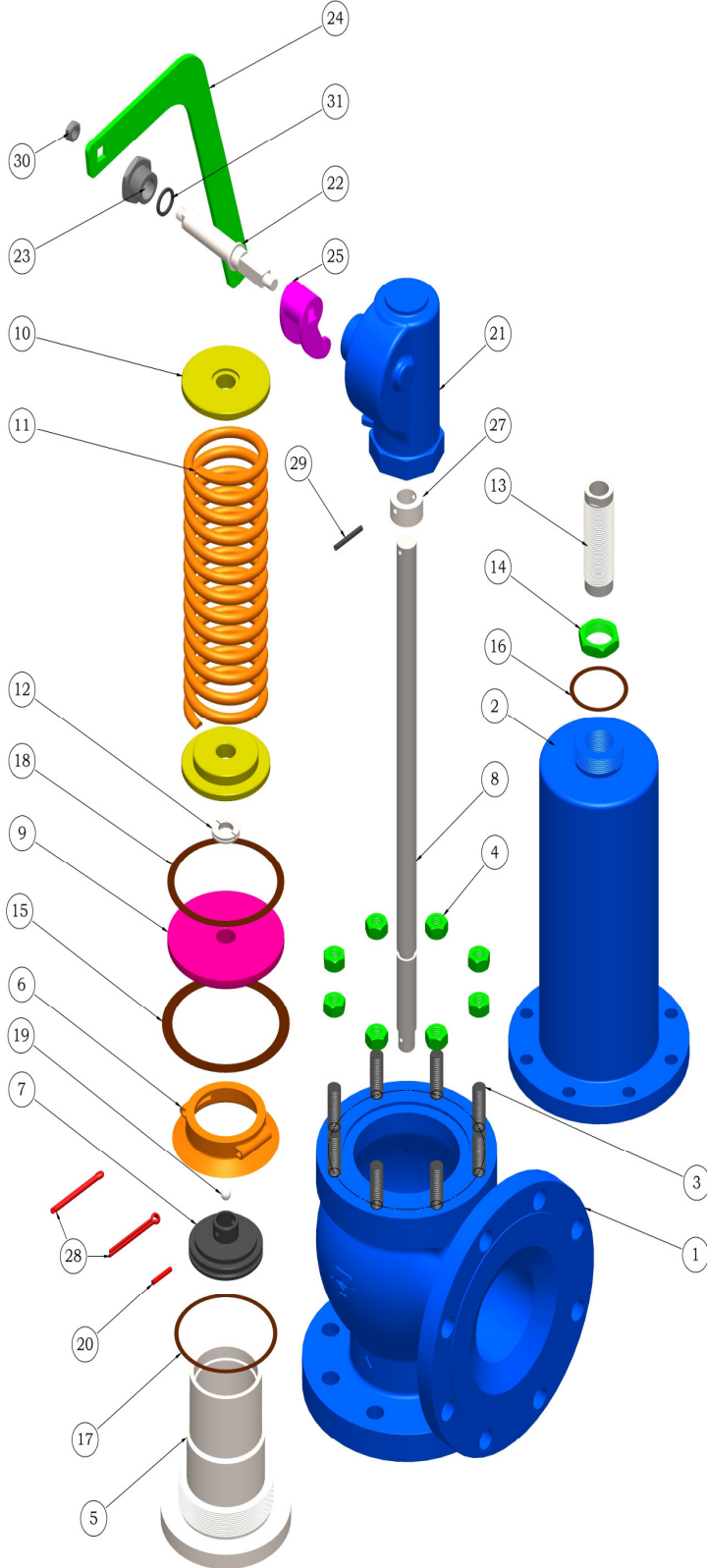
Acceptance Criteria for Liquid

For Metal Seated Valves, leakage rate shall not exceed 10 Cm³/h/in for one min. For soft Seated Valves , there shall be no leakage for one minute.

Characteristic Curve For Safety Relief Valve



Exploded view Safety Relief Valve with BOM



Part No	Parts Name	Total Qty
1	Body	1
2	Bonnet	1
3	Body Stud	4 - 12
4	Stud nut	4 - 12
5	Nozzle	1
6	Lifting Head	1
7	Disc	1
8	Spindle	1
9	Spindle Guide	1
10	Spring Plate	2
11	Spring	1
12	Spacer Ring	1
13	Adjuster Screw	1
14	Lock Nut	1
15	Gasket for Body	1
16	Gasket for Cap	1
17	Gasket for Nozzle	1
18	Gasket for Bonnet	1
19	Ball	1
20	Slotted Pin for (7 & 8)	1
21	Cap	1
22	Lever Shaft	1
23	Packing Nut	1
24	Lever	1
25	Leakage	1
26	Leakage Bush	1
27	Spindle Cap	1
28	Slotted pin	2
29	Slotted Pin for (27)	1
30	Lever Hex Nut	1
31	Gasket for (23)	1

Note:-
 Spring - As per Set Pressure
 Lever type cap - On requirment

Material Specification

Type	Se No	Name Of Part	Standard Application	Corrosive Application	High Temp Application	Low Temp/ Cryogenic Application	Corrosive Application	Highly Corrosive Application
CLOSED CAP	01	Body	A216 Gr WCC	A351 Gr CF8/8M	A217 Gr WC6	A352 Gr LCB	A351 Gr CF8/8M	A351 Gr CF8/8M
	02	Bonnet	A216 Gr WCC	A351 Gr CF8/8M	A217 Gr WC6	A352 Gr LCB	A351 Gr CF8/8M	A351 Gr CF8/8M
	03	Nozzle	A351 Gr CF8M	A351 Gr CF8M	A351 Gr CF8M	A351 Gr CF8M	Hastelloy-C	PTFE
	04	Cap	A216 Gr WCC	A351 Gr CF8/8M	A217 Gr WC6	A352 Gr LCB	A351 Gr CF8/8M	A351 Gr CF8/8M
	05	Spindle Guide/Guide Insert	A216 Gr. WCB S.S.304	A351 CF8/8M S.S.316	A 216 Gr WCB 316	A351 CF8M S.S.316	A351 CF8/8M S.S.316	A351 CF8/8M S.S.316
	06	Disc Assembly	S.S. 316	S.S. 316	S.S. 316	S.S. 316	Hastelloy-C	PTFE
	07	Spindle	S.S. 316	S.S. 316	S.S. 316	S.S. 316	S.S.S. 316	S.S. 316
	08	Spacer Ring						
	09	Ball						
	10	Adjuster Screw						
	11	Lock Nut						
	12	Spring Plate	CS ZN Plated	S.S.316	CS ZN Plated	S.S.316	S.S.316	S.S.316
	13	Spring	CS ZN Plated / Alloy Steel	Stainless Steel / Alloy Steel	Alloy Steel	Stainless Steel	Stainless Steel	Stainless Steel
	14	Gasket	CNAF 154	CNAF 154	CNAF 154	CNAF 154	CNAF 154 / PTFE	PTFE
	15	Body Stud	A193 Gr B7	A193 Gr B8M	A193 Gr B7	A193 Gr B8M	A193 Gr B8M	A193 Gr B8M
	16	Body Stud Nut	A194 Gr 2H	A194 Gr 8M	A194 Gr 2H	A194 Gr 8M	A194 Gr 8M	A194 Gr 8M
	17	Wire For Spacer Ring	S.S.304	S.S.316	S.S.316	S.S.316	S.S.316	S.S.316
	18	Wire For Retainer Ring	S.S.304	S.S.316	S.S.316	S.S.316	S.S.316	S.S.316
	19	Slotted Pin	S.S.304	S.S.316	S.S.316	S.S.316	S.S.316	S.S.316
LEVER CAP	20	Lever	CS	S.S.316	CS	CS	S.S.316	S.S.316
	21	Leakage	S.S.304	S.S.316	S.S.316	S.S.316	S.S.316	S.S.316
	22	Lever Shaft	S.S.304	S.S.316	S.S.316	S.S.316	S.S.316	S.S.316
	23	Spindle cap	S.S.304	S.S.316	S.S.316	S.S.316	S.S.316	S.S.316
	24	Gasket for Packing Nut	CNAF 154	CNAF 154	CNAF 154	CNAF 154	CNAF 154	CNAF 154
	25	Packing Nut	CS	S.S.316	CS	CS	S.S.316	S.S.316

Note: Material of construction will vary according to the service condition and customer requiremen. Other Special materials for example Monel, alloy-20, CF 3,CF 3M and accessories such as Test Gag, Drain Plug, Soft seat (O-Ring) Disc etc can be provided on request.

01	d _o	02	03	04	03	04	05	06	07	08	09				
Valve Model	Flow Dia d_o	Construction Type	Valve Inlet Size	Inlet Rating	Valve Outlet Size	Outlet Rating	Body Material	Trim Material	Bonnet	Cap	Gasket				
41	23 29 37 46 60 74 92 125 165	B C O	025 040 050 080 100 150 200	F1 F2 F3 B1 B2 B3	025 040 050 080 100 150 200 250 300	F1 F2 F3 B1 B2 B3	03 04 16 6L	04 4L 16 6L	C O	O S L	A P G				
01- Valve Series 41 - Valve Model		03 - Valve Size - Inlet & Outlet 025 - 1" 040 - 1.1/2" 050 - 2" 080 - 3" 100 - 4" 150 - 6" 200 - 8" 250 - 10" 300 - 12"		04 - End Connection F1 - Flanged - ANSI 150# F2 - Flanged - ANSI 300# F3 - Flanged - ANSI 600# B1 - Butt Weld - ANSI 150# B2 - Butt Weld - ANSI 300# B3 - Butt Weld - ANSI 600#		05 - Body Material 03 - WCB/WCC 04 - CF8/S.S.304 06 - CF8M/S.S.316 6L - CF3M/S.S.316L		06 - Trim Material 04 - S.S.304 4L - S.S.304L 06 - S.S.316 6L - S.S.316L 00 - Others		07 - BONNET C - Closed O - Open		08 - CAP S - Screwed Cap, Closed L - Lever Type Cap O - Others		09 - Gasket A - Asbestos - Metallic P - PTFE G - Graphite	
02- Construction Type B- Bellow type C- Conventional O- Others, To specify															

SRV MODEL CODE

SRV - 41 - 23 - C - 025 - F1 - 050 - F1 - 03 - 04 - C - S - A



**Government of Maharashtra
Labour Department
Directorate of Steam Boilers.**

☎ 022-26571198 / 1201 Kamagar Bhavan, 7th Floor, Plot No. C- 20, Block- E,
022-26571283 Bandra-Kurla Complex Bandra (E), Mumbai- 400 051.
E-mail: dirsb.mumbai@maharashtra.gov.in, <https://mahakamgar.maharashtra.gov.in>, <http://www.mahaboiler.in>

No.SB-5NSK /2021/ 1518

Dated **27 JAN 2021**

To,
✓ M/s. Pneucon Valves Pvt Ltd,
Plot no. A-352, Road no-26,
Wagle Estate, Thane- 400604.

Sub: Approval for manufacturing of 'Safety Relief Valves (Size ½" to 8", upto 2500#) under Indian Boiler Regulations, 1950,

Gentleman,

With reference to your letter No. PV:IBR/01/19-20, dated 13-03-2020 & subsequent visit of Competent Person of this department to your workshop on 17-12-2020, for the purpose of verification of your competency as Safety Relief Valves manufacturer. I have to inform you that, the same is found satisfactory. You are now provisionally permitted to manufacture the Safety Relief Valves (Size ½" to 8", upto 2500#) as per Indian Boiler Regulations, 1950 & Maharashtra Boiler Rules, 1962 & its latest amendment under the supervision of this Directorate for the period up to 31.12.2021, subject to following conditions:

1. Drawing for each type and size of Safety Relief Valves showing necessary details shall be prepared and submitted to this office along with prescribed fees for scrutiny and approval should be obtained before commencement of manufacture.
2. All the castings/forgings/bars should be procured from approved or well-known foundries/forging shops/ manufactures only, and the original material test certificates as prescribed should be submitted to this office for scrutiny and acceptance.
3. Safety Relief Valves should be offered for inspection at various stages of manufacture as laid down in appendix 'J' of Indian Boiler Regulations, 1950.
4. Only such welders who possess valid certificates in Form XIII as prescribed in Indian Boiler Regulations, 1950 and issued by a Competent Authority listed in Appendix I of Indian Boiler Regulation, 1950, should be engaged for the material, type and class of welding for which they are qualified.
5. Radiography should be carried out wherever applicable and report along with films should be submitted to this Directorate for scrutiny and acceptance.
6. Welding/ repair work should not be done unless prior permission of the Director of Steam Boilers, M.S. Mumbai is obtained.
7. Pre and post weld heat treatment of welds should be carried out wherever necessary as per Indian Boiler Regulations, 1950 and reports along with charts should be submitted for scrutiny and acceptance.

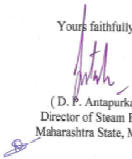


**Government of Maharashtra
Labour Department
Directorate of Steam Boilers.**

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E-mail: dirsb.mumbai@maharashtra.gov.in, <https://mahakamgar.maharashtra.gov.in>, <http://www.mahaboiler.in>

- 08 Consumption record of raw material used in manufacturing the Safety Relief valves should be mentioned on reverse of certificates of the raw materials and produced to the Inspecting Officer for verification & endorsement.
09. On satisfactory hydraulic test/ final inspection of the finished product, certificate in Form-III-C shall be prepared and submitted along with the all the relevant documents including approved copy of drawing for final certification and countersignature.
10. The undersigned reserves the right of withdrawal of approval without any prior notice, if quality and workmanship is not found satisfactory.
11. As per rule 152(3) of Maharashtra Boiler Rules 1962, any change in Production/ Quality Control related staff should be immediately informed to this office.
12. As per rule 155 of Maharashtra Boiler Rules 1962, approval will be withdrawn if-
i) It is revealed that this approval is obtained by furnishing incorrect or false information.
ii) No manufacturing activity is carried out for a continuous period of six months.
13. All instructions and directives of this Directorate shall be strictly followed.
14. Application for renewal of this approval shall be submitted at least one month before the expiry date

Yours faithfully,


(D. P. Antapurkar)
Director of Steam Boilers,
Maharashtra State, Mumbai.

Jt. Director of Steam Boilers, M.S., Pune / Nagpur / Ahmednagar / Nashik / Kolhapur/Solapur.

The Company's policy is one of continuous product improvement and the right is reserved to modify the specifications contained herein without notice.



PNEUCON VALVES PVT LTD

UNIT-II

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BUILT IN RELIABILITY