

Fukui	
Range of operating temperature T (°C)	Cold Differential Test Pressure
$T \leq 100$	$1.00 \times \text{Spring set pressure}$
$100 < T \leq 200$	$1.01 \times \text{Spring set pressure}$
$200 < T$	$\{0.99 + (T/10000)\} \times \text{Spring set pressure}$

Crosby	
Operating Temperature	Correction Factor
0-150F (0 - 65.5C)	None
151-600F (66.11 ~ 315.55 C)	+1%
601-800F (316.11 ~ 426.66 C)	+2%
801-1000F (427.22 ~ 537.77C)	+3%

MOTOYAMA	
OPERATING TEMPERATURE	%Correction
$T \leq 65^{\circ}\text{C}$	-
$65^{\circ}\text{C} < T \leq 315^{\circ}\text{C}$	1%
$315^{\circ}\text{C} < T \leq 426^{\circ}\text{C}$	2%
$426^{\circ}\text{C} < T \leq 538^{\circ}\text{C}$	3%

NAKAKITA PZVs	
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2-7 Cold Differential Set Pressure

It is customary to make some adjustment in the set pressure under atmospheric conditions to compensate for the effect of the operating temperatures. The following table shows the adjustments made in NAKAKITA Safety-Relief Valves.

Operating Temperature (°C)	Increase in Set Pressure at Atmospheric Temperature (%)
—150 and bellow	—1
over —150 to 80	0
over 80 to 150	1
over 150 to 250	2
over 250 to 450	3
over 450 to 650	4

Dresser

TABLE 15 Set Pressure Multipliers for Cold Differential Set Pressure at Ambient Temperature					
OPERATING		MULTIPLIER	OPERATING		MULTIPLIER
TEMP. F	TEMP. C		TEMP. F	TEMP. C	
250	120	1.003	900	498	1.044
300	149	1.006	950	510	1.047
350	177	1.009	1000	538	1.050
400	204	1.013	1050	565	1.053
450	248	1.016	1100	593	1.056
500	260	1.019	1150	621	1.059
550	288	1.022	1200	649	1.063
600	316	1.025	1250	676	1.066
650	343	1.028	1300	704	1.069
700	371	1.031	1350	732	1.072
750	415	1.034	1400	760	1.075
800	427	1.038	1450	788	1.078
850	454	1.041	1500	815	1.081

LESER PZV

°C	°F	Open bonnet conventional	Closed bonnet conventional	Open bonnet balanced bellows or Inconel spring with or without bellows	Closed bonnet balanced bellows or Inconel spring with or without bellows
550	1022	Limitation at 427°C (only with balanced bellows)	Limitation at 350°C (only with balanced bellows)	1,049	1,049
500	932			1,032	1,032
450	842			1,021	1,021
400	752			1,013	1,013
350	662	1,032	1,049	1,007	1,007
300	572	1,021	1,032	1,000	1,000
250	482	1,013	1,021		
200	392	1,007	1,013		
150	302	1,000	1,007		
100	212	No influence of service condition on CDTP, correction factor: 1,000			
50	122				
0	32				
-50	-58				
-100	-148				
-150	-238				
-200	-328				
-250	-418				

Table 3: correction factor k_T depending on safety valve design

Tai Milano PZV temperature Correction Factor

pendente al caso d'incendio, come da tabella.
i sono applicabili solo a valvole con coperchio

le con coperchio aperto, non è prevista alcuna

*Corrections only apply to valves with closed bonnet.
No correction is foreseen for valves with open bonnet.*

Temperatura di scarico [°C] Relieving temperature [°C]		Correzione della pressione differenziale di prova a freddo Correction of the cold differential test pressure
da (incluso) from (included)	a (escluso) to (excluded)	
-196	-140	-3%
-140	-90	-2%
-90	267	Nessuna / None
267	350	+2%
350	420	+3%
420	540	+4%

Cold Differential Test Pressure

CDTP is defined in API RP-520, Part I, 6th Ed. March 1993, page 2, paragraph 1.2.1: "The 'cold differential test pressure' is the pressure at which the pressure relief valve is open on the test stand. The cold differential test pressure includes corrections for the conditions of back pressure or temperature or both."

Back pressure is a function of relief valve installation and must be determined by the engineer. The value for Back pressure listed on the relief valve ISS was determined from engineering data when the relief valve was specified.

Temperature correction is a function of the expansion (or contraction) of parts within valve. A temperature correction factor for the relief valve must be supplied by the relief valve manufacturer, and must also be listed on the relief valve ISS by the specifying engineer.

$$CDTP = (\text{Set Pressure}) - (\text{Maximum Superimposed Back Pressure} + \text{Pressure Adjustment Temperature})$$

Maximum superimposed back pressure only applies to conventional non-bellows valves (refer to ADP-J-600, 16 MAR 88, page 4, paragraph 2.12).

Note again that CDTP is listed for every relief valve on MWO form 891-5/-1 MWO, be found in the relief valve Master File in the Shop.

The final set pressure testing relating CDTP to test stand testing is outlined in SAEP below.

IMI Bopp & Reuther					
Si C1 Si 21 Si 41 Si 61 Si 81	Open bonnet	≥ 5 bar	201-300	+ 1 %	$p_0 \cdot 1,01$
			301-400	+ 1%	$p_0 \cdot 1,01$
			401-600	+ 2 %	$p_0 \cdot 1,02$
		< 5 bar	201-300	—	—
			301-400	—	—
			401-600	+ 0,15bar	$p_0 + 0,15 \text{ bar}$
Si 03 Si C13 Si 23 Si 43 Si 63 Si 83	Closed bonnet	≥ 5 bar	201-300	+ 1 %	$p_0 \cdot 1,01$
			301-400	+ 1%	$p_0 \cdot 1,02$
			401-600	+ 2 %	$p_0 \cdot 1,03$
		< 5 bar	201-300	—	—
			301-400	+ 0,15bar	$p_0 + 0,15 \text{ bar}$
			401-600	+ 0,15bar	$p_0 + 0,15 \text{ bar}$
Si 04/05 SiC 14/15 Si 24/25 Si 44/45 Si 64/65 Si 84/85	Bellows	≥ 5 bar	201-300	—	—
			301-400	+ 1%	$p_0 \cdot 1,01$
			401-600	+ 1%	$p_0 \cdot 1,01$
		< 5 bar	201-300	—	—
			301-400	—	—
			401-600	+ 0,15bar	$p_0 + 0,15 \text{ bar}$
Si 9	Open bonnet	≥ 5 bar	201-300	—	—
			301-400	—	—
			401-600	—	—
		< 5 bar	201-300	—	—
			301-400	—	—
			401-600	—	—