API 526 9th Edition Ballot

Restate / modify uses of Bellows / Balanced design and incorporate other technologies (Work Item 2023-2)

Instructions to Voters/Commenters

- Please limit your comments to the red-lined portions of the ballot only.
  - Red indicates new text.
- Background information is provided following the proposed text changes.
- If you are voting negative with multiple comments, please indicate which comment(s) is the reason for your negative vote, otherwise API's balloting system will categorize all of your comments as negative.

Thanks to Adam Atting and the work group for their efforts.

Sean Croxford, Chairman
Katherine Si, Co-Chairman

API 521 Task Force Chairs

Flanged Steel Pressure-relief Valves

API STANDARD 526
NINTH EDITION, XXXXXXX 202X

7.1.4 The bonnet vent for ~~bellows~~ balanced pressure-relief valves shall have a screwed vent fitting (see bug screen shown in Figure 1). The bug screen mesh holes size shall be 0.4 mm (0.015 in.) at a minimum to allow proper breathing with maximum 3.175 mm (0.125 in.) to prevent nesting insects from entering.

11.5.2 Bellows Limit

The bellows pressure limit is listed in the “Bellows Rating Limit” column and represents the design pressure of the bellows at the outlet temperature of 38 °C (100 °F). The bellows pressure values at other temperatures may be determined by multiplying the above pressure value at 38 °C (100 °F) by the factor from Annex C (SI) [Annex G (USC)].

Table 3—Spring-loaded Pressure-relief Valves "D" Orifice [f] (Effective Orifice Area = 71 mm^2) (SI)

Materials [b]	Valve Size	ASME Flange Class		Maximum Inlet Flange (Set) Pressure Limit [a] [kPa (gauge)]						Outlet Pressure Limit [a] [kPa (gauge)]		Center-to-face Dimensions (mm)	
				Conventional and Balanced ~~Bellows~~ Pressure-Relief Valves									
Body/Bonnet	Inlet by Orifice by Outlet	Inlet	Outlet	–268 °C to –60 °C	–59 °C to –30 °C	–29 °C to 38 °C	39 °C to 232 °C	233 °C to 427 °C	428 °C to 538 °C	Flange Rating Limit [a]	Bellows Rating Limit [ag]	Inlet	Outlet
										38 °C	38 °C		
Temperature Range Inclusive –29 °C to 427 °C													
Carbon steel	1D2	150	150			1,965	1,275	550		1,965	1,585	105	114
	1D2 [c]	300	150			(1,965)	(1,965)	(1,965)		1,965	1,585	105	114
	1D2	300	150			5,100	4,275	2,825		1,965	1,585	105	114
	1D2	600	150			10,205	8,515	5,690		1,965	1,585	105	114
	1 1/2D2	900	300			15,305	12,790	8,515		(4,135)	3,445	105	140
	1 1/2D2	1500	300			25,545	21,305	14,170		(4,135)	3,445	105	140
	1 1/2D3	2500	300			(41,370)	35,510	23,650		5,100	3,445	140	178
Temperature Range Inclusive 427 °C to 538 °C													
Chrome molybdenum steel	1D2	300	150					3,515	1,480	2,000	1,585	105	114
	1D2	600	150					7,000	2,965	2,000	1,585	105	114
	1 1/2D2	900	300					10,515	4,480	(4,135)	3,445	105	140
	1 1/2D2	1500	300					17,515	7,445	(4,135)	3,445	105	140
	1 1/2D3	2500	300					29,165	12,410	5,170	3,445	140	178
Temperature Range Inclusive –268 °C to 538 °C													
Austenitic stainless steel	1D2	150	150	1,895	1,895	1,895	1,240	550	140	1,895	1,585	105	114
	1D2 [c]	300	150	(1,895)	(1,895)	(1,895)	(1,895)	(1,895)	(1,895)	1,895	1,585	105	114
	1D2	300	150	4,965	4,965	4,965	3,415	2,895	2,515	1,895	1,585	105	114
	1D2	600	150	9,930	9,930	9,930	6,825	5,825	5,000	1,895	1,585	105	114
	1 1/2D2	900	300	14,895	14,895	14,895	10,240	8,720	7,515	(4,135)	3,445	105	140
	1 1/2D2	1500	300	24,820	24,820	24,820	17,100	14,550	12,550	(4,135)	3,445	105	140
	1 1/2D3	2500	300	(27,580)	41,370	41,370	28,475	24,270	20,890	4,965	3,445	140	178

Materials [b]	**Valve Size**	**ASME Flange Class**		**Maximum Inlet Flange (Set) Pressure Limit** [a] [kPa (gauge)]						**Outlet Pressure Limit** [a] [kPa (gauge)]		**Center-to-face Dimensions** (mm)	
				Conventional and Balanced ~~Bellows~~ Pressure-Relief Valves									
Body/Bonnet	**Inlet by Orifice by Outlet**	**Inlet**	**Outlet**	**–268 °C to –60 °C**	**–59 °C to –30 °C**	**–29 °C to 38 °C**	**39 °C to 232 °C**	**233 °C to 427 °C**	**428 °C to 538 °C**	**Flange Rating Limit** [a] **38 °C**	**Bellows Rating Limit** [a][g] **38 °C**	**Inlet**	**Outlet**
Temperature Range Inclusive –29 °C to 482 °C [d]													
Nickel/copper alloy [d]	1D2	150	150			1,585	1,205	550	345	1,585	1,585	105	114
	1D2 [c]	300	150			(1,585)	(1,585)	(1,585)	(1,585)	1,585	1,585	105	114
	1D2	300	150			4,135	3,275	3,170	1,895	1,585	1,585	105	114
	1D2	600	150			8,275	6,515	6,310	3,790	1,585	1,585	105	114
	1 1/2D2	900	300			12,410	9,790	9,480	5,690	4,135	3,445	105	140
Temperature Range Inclusive –29 °C to 149 °C [e]													
Alloy 20 [e]	1D2	150	150			1,585	1,240			1,585	1,585	105	114
	1D2 [c]	300	150			(1,585)	(1,240)			1,585	1,585	105	114
	1D2	300	150			4,135	3,205			1,585	1,585	105	114
	1D2	600	150			8,275	6,410			1,585	1,585	105	114
	1 1/2D2	900	300			12,410	9,620			4,135	3,445	105	140
	1 1/2D2	1500	300			20,685	16,065			4,135	3,445	105	140
	1 1/2D3	2500	300			34,475	26,750			4,135	3,445	140	178

[a] Inlet and outlet flange pressure limits correspond to the values in ASME B16.34 unless enclosed in parentheses. A value that is shown in parentheses is less than that provided in ASME B16.34. The outlet flange values at 38 °C above are the limits for this standard. Inlet and outlet flange pressure values at other temperatures may only be interpolated using graphs from Annex B or from tables in ASME B16.34 if these values do not exceed the values in parentheses or the outlet flange values at 38 °C above. Pressure changes within the temperature ranges above may not be linear. Bellows outlet pressure limits are the design pressure of the bellows at the outlet temperature of 38 °C, and pressure values at other temperatures may be determined from Annex C. User is cautioned to review the outlet temperature for possible cryogenic applications and select the appropriate materials.

[b] Materials given are minimum requirements for the pressure and temperature ratings. Other suitable materials may be used, as required for the service involved.

[c] Set pressure limited for low-pressure applications where a Class 300 inlet flange is preferred over a Class 150 flange.

[d] Materials limited to 482 °C. Pressure ratings indicated in the 538 °C column are limited to 482 °C.

[e] Materials limited to 149 °C. Pressure ratings indicated in the 232 °C column are limited to 149 °C.

[f] Restricted lift pressure-relief valves, as described in paragraph 4.2.4 of API 520, Part 1, may be specified. The valves supplied shall have a reduction in effective area and meet the restricted lift requirements per ASME *BPVC*, Section XIII.

[g] Consult the manufacturer for pressure-temperature limitations of other balancing elements, such as diaphragm, piston or other means.

Table 4—Spring-loaded Pressure-relief Valves "E" Orifice [f] (Effective Orifice Area = 126 mm^2) (SI)

Materials [b]	Valve Size	ASME Flange Class		Maximum Inlet Flange (Set) Pressure Limit [a] [kPa (gauge)]						Outlet Pressure Limit [a] [kPa (gauge)]		Center-to-face Dimensions (mm)	
				Conventional and Balanced Pressure-ReliefBellows Valves									
Body/Bonnet	Inlet by Orifice by Outlet	Inlet	Outlet	–268 °C to –60 °C	–59 °C to –30 °C	–29 °C to 38 °C	39 °C to 232 °C	233 °C to 427 °C	428 °C to 538 °C	Flange Rating Limit [a] 38 °C	Bellows Rating Limit [ag] 38 °C	Inlet	Outlet
Temperature Range Inclusive –29 °C to 427 °C													
Carbon steel	1E2	150	150			1,965	1,275	550		1,965	1,585	105	114
	1E2 [c]	300	150			(1,965)	(1,965)	(1,965)		1,965	1,585	105	114
	1E2	300	150			5,100	4,275	2,825		1,965	1,585	105	114
	1E2	600	150			10,205	8,515	5,690		1,965	1,585	105	114
	1 1/2E2	900	300			15,305	12,790	8,515		(4,135)	3,445	105	140
	1 1/2E2	1500	300			25,545	21,305	14,170		(4,135)	3,445	105	140
	1 1/2E3	2500	300			(41,370)	35,510	23,650		5,100	3,445	140	178
Temperature Range Inclusive 427 °C to 538 °C													
Chrome molybdenum steel	1E2	300	150					3,515	1,480	2,000	1,585	105	114
	1E2	600	150					7,000	2,965	2,000	1,585	105	114
	1 1/2E2	900	300					10,515	4,480	(4,135)	3,445	105	140
	1 1/2E2	1500	300					17,515	7,445	(4,135)	3,445	105	140
	1 1/2E3	2500	300					29,165	12,410	5,170	3,445	140	178
Temperature Range Inclusive –268 °C to 538 °C													
Austenitic stainless steel	1E2	150	150	1,895	1,895	1,895	1,240	550	140	1,895	1,585	105	114
	1E2 [c]	300	150	(1,895)	(1,895)	(1,895)	(1,895)	(1,895)	(1,895)	1,895	1,585	105	114
	1E2	300	150	4,965	4,965	4,965	3,415	2,895	2,515	1,895	1,585	105	114
	1E2	600	150	9,930	9,930	9,930	6,825	5,825	5,000	1,895	1,585	105	114
	1 1/2E2	900	300	14,895	14,895	14,895	10,240	8,720	7,515	(4,135)	3,445	105	140
	1 1/2E2	1500	300	24,820	24,820	24,820	17,100	14,550	12,550	(4,135)	3,445	105	140
	1 1/2E3	2500	300	(27,580)	41,370	41,370	28,475	24,270	20,890	4,965	3,445	140	178

Materials [b]	**Valve Size**	**ASME Flange Class**		**Maximum Inlet Flange (Set) Pressure Limit** [a] [kPa (gauge)]						**Outlet Pressure Limit** [a] [kPa (gauge)]		**Center-to-face Dimensions** (mm)	
				Conventional and Balanced Pressure-Relief~~Bellows~~ Valves									
Body/Bonnet	**Inlet by Orifice by Outlet**	**Inlet**	**Outlet**	**–268 °C to –60 °C**	**–59 °C to –30 °C**	**–29 °C to 38 °C**	**39 °C to 232 °C**	**233 °C to 427 °C**	**428 °C to 538 °C**	**Flange Rating Limit** [a] **38 °C**	**Bellows Rating Limit** [a][g] **38 °C**	**Inlet**	**Outlet**
Temperature Range Inclusive –29 °C to 482 °C [d]													
Nickel/copper alloy [d]	1E2	150	150			1,585	1,205	550	345	1,585	1,585	105	114
	1E2 [c]	300	150			(1,585)	(1,585)	(1,585)	(1,585)	1,585	1,585	105	114
	1E2	300	150			4,135	3,275	3,170	1,895	1,585	1,585	105	114
	1E2	600	150			8,275	6,515	6,310	3,790	1,585	1,585	105	114
	1 1/2E2	900	300			12,410	9,790	9,480	5,690	4,135	3,445	105	140
Temperature Range Inclusive –29 °C to 149 °C [e]													
Alloy 20 [e]	1E2	150	150			1,585	1,240			1,585	1,585	105	114
	1E2 [c]	300	150			(1,585)	(1,240)			1,585	1,585	105	114
	1E2	300	150			4,135	3,205			1,585	1,585	105	114
	1E2	600	150			8,275	6,410			1,585	1,585	105	114
	1 1/2E2	900	300			12,410	9,620			4,135	3,445	105	140
	1 1/2E2	1500	300			20,685	16,065			4,135	3,445	105	140
	1 1/2E3	2500	300			34,475	26,750			4,135	3,445	140	178

[a] Inlet and outlet flange pressure limits correspond to the values in ASME B16.34 unless enclosed in parentheses. A value that is shown in parentheses is less than that provided in ASME B16.34. The outlet flange values at 38 °C above are the limits for this standard. Inlet and outlet flange pressure values at other temperatures may only be interpolated using graphs from Annex B or from tables in ASME B16.34 if these values do not exceed the values in parentheses or the outlet flange values at 38 °C above. Pressure changes within the temperature ranges above may not be linear. Bellows outlet pressure limits are the design pressure of the bellows at the outlet temperature of 38 °C, and pressure values at other temperatures may be determined from Annex C. User is cautioned to review the outlet temperature for possible cryogenic applications and select the appropriate materials.

[b] Materials given are minimum requirements for the pressure and temperature ratings. Other suitable materials may be used, as required for the service involved.

[c] Set pressure limited for low-pressure applications where a Class 300 inlet flange is preferred over a Class 150 flange.

[d] Materials limited to 482 °C. Pressure ratings indicated in the 538 °C column are limited to 482 °C.

[e] Materials limited to 149 °C. Pressure ratings indicated in the 232 °C column are limited to 149 °C.

[f] Restricted lift pressure-relief valves, as described in paragraph 4.2.4 of API 520, Part 1, may be specified. The valves supplied shall have a reduction in effective area and meet the restricted lift requirements per ASME *BPVC*, Section XIII.

[g] Consult the manufacturer for pressure-temperature limitations of other balancing elements, such as diaphragm, piston or other means.

Table 5—Spring-loaded Pressure-relief Valves "F" Orifice [f] (Effective Orifice Area = 198 mm^2) (SI)

Materials [b]	Valve Size	ASME Flange Class		Maximum Inlet Flange (Set) Pressure Limit [a] [kPa (gauge)]						Outlet Pressure Limit [a] [kPa (gauge)]		Center-to-face Dimensions (mm)	
				Conventional and Balanced Pressure-ReliefBellows Valves									
Body/Bonnet	Inlet by Orifice by Outlet	Inlet	Outlet	–268 °C to –60 °C	–59 °C to –30 °C	–29 °C to 38 °C	39 °C to 232 °C	233 °C to 427 °C	428 °C to 538 °C	Flange Rating Limit [a] 38 °C	Bellows Rating Limit [ag] 38 °C	Inlet	Outlet
Temperature Range Inclusive –29 °C to 427 °C													
Carbon steel	$1^1/_2$F2	150	150			1,965	1,275	550		1,965	1,585	124	121
	$1^1/_2$F2 [c]	300	150			(1,965)	(1,965)	(1,965)		1,965	1,585	124	121
	$1^1/_2$F2	300	150			5,100	4,275	2,825		1,965	1,585	124	152
	$1^1/_2$F2	600	150			10,205	8,515	5,690		1,965	1,585	124	152
	$1^1/_2$F3	900	300			15,305	12,790	8,515		5,100	3,445	124	165
	$1^1/_2$F3	1500	300			25,545	21,305	14,170		5,100	3,445	124	165
	$1^1/_2$F3	2500	300			(34,475)	(34,475)	23,650		5,100	3,445	140	178
Temperature Range Inclusive 427 °C to 538 °C													
Chrome molybdenum steel	$1^1/_2$F2	300	150					3,515	1,480	2,000	1,585	124	152
	$1^1/_2$F2	600	150					7,000	2,965	2,000	1,585	124	152
	$1^1/_2$F3	900	300					10,515	4,480	5,170	3,445	124	165
	$1^1/_2$F3	1500	300					17,515	7,445	5,170	3,445	124	165
	$1^1/_2$F3	2500	300					29,165	12,410	5,170	3,445	140	178
Temperature Range Inclusive –268 °C to 538 °C													
Austenitic stainless steel	$1^1/_2$F2	150	150	1,895	1,895	1,895	1,240	550	140	1,895	1,585	124	121
	$1^1/_2$F2 [c]	300	150	(1,895)	(1,895)	(1,895)	(1,895)	(1,895)	(1,895)	1,895	1,585	124	121
	$1^1/_2$F2	300	150	4,965	4,965	4,965	3,415	2,895	2,515	1,895	1,585	124	152
	$1^1/_2$F2	600	150	9,930	9,930	9,930	6,825	5,825	5,000	1,895	1,585	124	152
	$1^1/_2$F3	900	300	14,895	14,895	14,895	10,240	8,720	7,515	4,965	3,445	124	165
	$1^1/_2$F3	1500	300	(15,170)	24,820	24,820	17,100	14,550	12,550	4,965	3,445	124	165
	$1^1/_2$F3	2500	300	(23,440)	(34,475)	(34,475)	28,475	24,270	20,890	4,965	3,445	140	178

Materials [b]	**Valve Size**	**ASME Flange Class**		**Maximum Inlet Flange (Set) Pressure Limit** [a] [kPa (gauge)]						**Outlet Pressure Limit** [a] [kPa (gauge)]		**Center-to-face Dimensions** (mm)	
				Conventional and Balanced Pressure-ReliefBellows Valves									
Body/Bonnet	**Inlet by Orifice by Outlet**	**Inlet**	**Outlet**	**–268 °C to –60 °C**	**–59 °C to –30 °C**	**–29 °C to 38 °C**	**39 °C to 232 °C**	**233 °C to 427 °C**	**428 °C to 538 °C**	**Flange Rating Limit** [a] **38 °C**	**Bellows Rating Limit** [a][g] **38 °C**	**Inlet**	**Outlet**
Temperature Range Inclusive –29 °C to 482 °C [d]													
Nickel/copper alloy [d]	1 1/2F2	150	150			1,585	1,205	550	345	1,585	1,585	124	121
	1 1/2F2 [c]	300	150			(1,585)	(1,585)	(1,585)	(1,585)	1,585	1,585	124	121
	1 1/2F2	300	150			4,135	3,275	3,170	1,895	1,585	1,585	124	152
	1 1/2F2	600	150			8,275	6,515	6,310	3,790	1,585	1,585	124	152
	1 1/2F3	900	300			12,410	9,790	9,480	5,690	4,135	3,445	124	165
Temperature Range Inclusive –29 °C to 149 °C [e]													
Alloy 20 [e]	1 1/2F2	150	150			1,585	1,240			1,585	1,585	124	121
	1 1/2F2 [c]	300	150			(1,585)	(1,240)			1,585	1,585	124	121
	1 1/2F2	300	150			4,135	3,205			1,585	1,585	124	152
	1 1/2F2	600	150			8,275	6,410			1,585	1,585	124	152
	1 1/2F3	900	300			12,410	9,620			4,135	3,445	124	165
	1 1/2F3	1500	300			20,685	16,065			4,135	3,445	124	165
	1 1/2F3	2500	300			34,475	26,750			4,135	3,445	140	178

[a] Inlet and outlet flange pressure limits correspond to the values in ASME B16.34 unless enclosed in parentheses. A value that is shown in parentheses is less than that provided in ASME B16.34. The outlet flange values at 38 °C above are the limits for this standard. Inlet and outlet flange pressure values at other temperatures may only be interpolated using graphs from Annex B or from tables in ASME B16.34 if these values do not exceed the values in parentheses or the outlet flange values at 38 °C above. Pressure changes within the temperature ranges above may not be linear. Bellows outlet pressure limits are the design pressure of the bellows at the outlet temperature of 38 °C, and pressure values at other temperatures may be determined from Annex C. User is cautioned to review the outlet temperature for possible cryogenic applications and select the appropriate materials.

[b] Materials given are minimum requirements for the pressure and temperature ratings. Other suitable materials may be used, as required for the service involved.

[c] Set pressure limited for low-pressure applications where a Class 300 inlet flange is preferred over a Class 150 flange.

[d] Materials limited to 482 °C. Pressure ratings indicated in the 538 °C column are limited to 482 °C.

[e] Materials limited to 149 °C. Pressure ratings indicated in the 232 °C column are limited to 149 °C.

[f] Restricted lift pressure-relief valves, as described in paragraph 4.2.4 of API 520, Part 1, may be specified. The valves supplied shall have a reduction in effective area and meet the restricted lift requirements per ASME *BPVC*, Section XIII.

[g] Consult the manufacturer for pressure-temperature limitations of other balancing elements, such as diaphragm, piston or other means.

Table 6—Spring-loaded Pressure-relief Valves "G" Orifice [f] (Effective Orifice Area = 325 mm^2) (SI)

Materials [b]	Valve Size	ASME Flange Class		Maximum Inlet Flange (Set) Pressure Limit [a] [kPa (gauge)]						Outlet Pressure Limit [a] [kPa (gauge)]		Center-to-face Dimensions (mm)	
				Conventional and Balanced Pressure-ReliefBellows Valves									
Body/Bonnet	Inlet by Orifice by Outlet	Inlet	Outlet	–268 °C to –60 °C	–59 °C to –30 °C	–29 °C to 38 °C	39 °C to 232 °C	233 °C to 427 °C	428 °C to 538 °C	Flange Rating Limit [a] 38 °C	Bellows Rating Limit [ag] 38 °C	Inlet	Outlet
Temperature Range Inclusive –29 °C to 427 °C													
Carbon steel	$1^1/_2$G3	150	150			1,965	1,275	550		1,965	1,585	124	121
	$1^1/_2$G3 [c]	300	150			(1,965)	(1,965)	(1,965)		1,965	1,585	124	121
	$1^1/_2$G3	300	150			5,100	4,275	2,825		1,965	1,585	124	152
	$1^1/_2$G3	600	150			10,205	8,515	5,690		1,965	1,585	124	152
	$1^1/_2$G3	900	300			15,305	12,790	8,515		5,100	3,240	124	165
	2G3	1500	300			25,545	21,305	14,170		5,100	3,240	156	171
	2G3	2500	300			(25,545)	(25,545)	23,650		5,100	3,240	156	171
Temperature Range Inclusive 427 °C to 538 °C													
Chrome molybdenum steel	$1^1/_2$G3	300	150					3,515	1,480	2,000	1,585	124	152
	$1^1/_2$G3	600	150					7,000	2,965	2,000	1,585	124	152
	$1^1/_2$G3	900	300					10,515	4,480	5,170	3,240	124	165
	2G3	1500	300					17,515	7,445	5,170	3,240	156	171
	2G3	2500	300					(25,545)	12,410	5,170	3,240	156	171
Temperature Range Inclusive –268 °C to 538 °C													
Austenitic stainless steel	$1^1/_2$G3	150	150	1,895	1,895	1,895	1,240	550	140	1,895	1,585	124	121
	$1^1/_2$G3 [c]	300	150	(1,895)	(1,895)	(1,895)	(1,895)	(1,895)	(1,895)	1,895	1,585	124	121
	$1^1/_2$G3	300	150	4,965	4,965	4,965	3,415	2,895	2,515	1,895	1,585	124	152
	$1^1/_2$G3	600	150	9,930	9,930	9,930	6,825	5,825	5,000	1,895	1,585	124	152
	$1^1/_2$G3	900	300	14,895	14,895	14,895	10,240	8,720	7,515	4,965	3,240	124	165
	2G3	1500	300	(16,890)	24,820	24,820	17,100	14,550	12,550	4,965	3,240	156	171
	2G3	2500	300	(17,925)	(24,820)	(24,820)	(24,820)	24,270	20,890	4,965	3,240	156	171

Materials [b]	**Valve Size**	**ASME Flange Class**		**Maximum Inlet Flange (Set) Pressure Limit** [a] [kPa (gauge)]						**Outlet Pressure Limit** [a] [kPa (gauge)]		**Center-to-face Dimensions** (mm)	
				Conventional and Balanced Pressure-ReliefBellows Valves									
Body/Bonnet	**Inlet by Orifice by Outlet**	**Inlet**	**Outlet**	**–268 °C to –60 °C**	**–59 °C to –30 °C**	**–29 °C to 38 °C**	**39 °C to 232 °C**	**233 °C to 427 °C**	**428 °C to 538 °C**	**Flange Rating Limit** [a] **38 °C**	**Bellows Rating Limit** [ag] **38 °C**	**Inlet**	**Outlet**
Temperature Range Inclusive –29 °C to 482 °C [d]													
Nickel/copper alloy [d]	1 1/2G3	150	150			1,585	1,205	550	345	1,585	1,585	124	121
	1 1/2G3 [c]	300	150			(1,585)	(1,585)	(1,585)	(1,585)	1,585	1,585	124	121
	1 1/2G3	300	150			4,135	3,275	3,170	1,895	1,585	1,585	124	152
	1 1/2G3	600	150			8,275	6,515	6,310	3,790	1,585	1,585	124	152
	1 1/2G3	900	300			12,410	9,790	9,480	5,690	4,135	3,240	124	165
Temperature Range Inclusive –29 °C to 149 °C [e]													
Alloy 20 [e]	1 1/2G3	150	150			1,585	1,240			1,585	1,585	124	121
	1 1/2G3 [c]	300	150			(1,585)	(1,240)			1,585	1,585	124	121
	1 1/2G3	300	150			4,135	3,205			1,585	1,585	124	152
	1 1/2G3	600	150			8,275	6,410			1,585	1,585	124	152
	1 1/2G3	900	300			12,410	9,620			4,135	3,240	124	165
	2G3	1500	300			20,685	16,065			4,135	3,240	156	171
	2G3	2500	300			(25,545)	(25,545)			4,135	3,240	156	171

[a] Inlet and outlet flange pressure limits correspond to the values in ASME B16.34 unless enclosed in parentheses. A value that is shown in parentheses is less than that provided in ASME B16.34. The outlet flange values at 38 °C above are the limits for this standard. Inlet and outlet flange pressure values at other temperatures may only be interpolated using graphs from Annex B or from tables in ASME B16.34 if these values do not exceed the values in parentheses or the outlet flange values at 38 °C above. Pressure changes within the temperature ranges above may not be linear. Bellows outlet pressure limits are the design pressure of the bellows at the outlet temperature of 38 °C, and pressure values at other temperatures may be determined from Annex C. User is cautioned to review the outlet temperature for possible cryogenic applications and select the appropriate materials.

[b] Materials given are minimum requirements for the pressure and temperature ratings. Other suitable materials may be used, as required for the service involved.

[c] Set pressure limited for low-pressure applications where a Class 300 inlet flange is preferred over a Class 150 flange.

[d] Materials limited to 482 °C. Pressure ratings indicated in the 538 °C column are limited to 482 °C.

[e] Materials limited to 149 °C. Pressure ratings indicated in the 232 °C column are limited to 149 °C.

[f] Restricted lift pressure-relief valves, as described in paragraph 4.2.4 of API 520, Part 1, may be specified. The valves supplied shall have a reduction in effective area and meet the restricted lift requirements per ASME *BPVC*, Section XIII.

[g] Consult the manufacturer for pressure-temperature limitations of other balancing elements, such as diaphragm, piston or other means.

Table 7—Spring-loaded Pressure-relief Valves "H" Orifice [f] (Effective Orifice Area = 506 mm^2) (SI)

Materials [b]	Valve Size	ASME Flange Class		Maximum Inlet Flange (Set) Pressure Limit [a] [kPa (gauge)]						Outlet Pressure Limit [a] [kPa (gauge)]		Center-to-face Dimensions (mm)	
				Conventional and Balanced Pressure-Relief~~Bellows~~ Valves									
Body/Bonnet	Inlet by Orifice by Outlet	Inlet	Outlet	–268 °C to –60 °C	–59 °C to –30 °C	–29 °C to 38 °C	39 °C to 232 °C	233 °C to 427 °C	428 °C to 538 °C	Flange Rating Limit [a] 38 °C	Bellows Rating Limit [ag] 38 °C	Inlet	Outlet
Temperature Range Inclusive –29 °C to 427 °C													
Carbon steel	$1^1/_2$H3	150	150			1,965	1,275	550		1,965	1,585	130	124
	$1^1/_2$H3 [c]	300	150			(1,965)	(1,965)	(1,965)		1,965	1,585	130	124
	2H3	300	150			5,100	4,275	2,825		1,965	1,585	130	124
	2H3	600	150			10,205	8,515	5,690		1,965	1,585	154	162
	2H3	900	150			15,305	12,790	8,515		1,965	1,585	154	162
	2H3	1500	300			(18,960)	(18,960)	14,170		5,100	2,860	154	162
Temperature Range Inclusive 427 °C to 538 °C													
Chrome molybdenum steel	2H3	300	150					3,515	1,480	2,000	1,585	130	124
	2H3	600	150					7,000	2,965	2,000	1,585	130	124
	2H3	900	150					10,515	4,480	2,000	1,585	154	162
	2H3	1500	300					17,515	7,445	5,170	2,860	154	162
Temperature Range Inclusive –268 °C to 538 °C													
Austenitic stainless steel	$1^1/_2$H3	150	150	1,895	1,895	1,895	1,240	550	140	1,895	1,585	130	124
	$1^1/_2$H3 [c]	300	150	(1,895)	(1,895)	(1,895)	(1,895)	(1,895)	(1,895)	1,895	1,585	130	124
	2H3	300	150	4,965	4,965	4,965	3,415	2,895	2,515	1,895	1,585	130	124
	2H3	600	150	9,930	9,930	9,930	6,825	5,825	5,000	1,895	1,585	154	162
	2H3	900	150	(10,240)	14,895	14,895	10,240	8,720	7,515	1,895	1,585	154	162
	2H3	1500	300	(11,030)	(18,960)	(18,960)	17,100	14,550	12,550	(4,135)	2,860	154	162
Temperature Range Inclusive –29 °C to 482 °C [d]													
Nickel/copper alloy [d]	$1^1/_2$H3	150	150			1,585	1,205	550	345	1,585	1,585	130	124
	$1^1/_2$H3 [c]	300	150			(1,585)	(1,585)	(1,585)	(1,585)	1,585	1,585	130	124
	2H3	300	150			4,135	3,275	3,170	1,895	1,585	1,585	130	124
	2H3	600	150			8,275	6,515	6,310	3,790	1,585	1,585	154	162
	2H3	900	150			12,410	9,790	9,480	5,690	1,585	1,585	154	162

Materials [b]	**Valve Size**	**ASME Flange Class**		**Maximum Inlet Flange (Set) Pressure Limit** [a] [kPa (gauge)]						**Outlet Pressure Limit** [a] [kPa (gauge)]		**Center-to-face Dimensions** (mm)	
				Conventional and Balanced Pressure-Relief~~Bellows~~ Valves									
Body/Bonnet	**Inlet by Orifice by Outlet**	**Inlet**	**Outlet**	**–268 °C to –60 °C**	**–59 °C to –30 °C**	**–29 °C to 38 °C**	**39 °C to 232 °C**	**233 °C to 427 °C**	**428 °C to 538 °C**	**Flange Rating Limit** [a] **38 °C**	**Bellows Rating Limit** [ag] **38 °C**	**Inlet**	**Outlet**
Temperature Range Inclusive –29 °C to 149 °C [e]													
Alloy 20 [e]	1 1/2H3	150	150			1,585	1,240			1,585	1,585	130	124
	1 1/2H3 [c]	300	150			(1,585)	(1,240)			1,585	1,585	130	124
	2H3	300	150			4,135	3,205			1,585	1,585	130	124
	2H3	600	150			8,275	6,410			1,585	1,585	154	162
	2H3	900	150			12,410	9,620			1,585	1,585	154	162
	2H3	1500	300			(18,960)	16,065			4,135	2,860	154	162

[a] Inlet and outlet flange pressure limits correspond to the values in ASME B16.34 unless enclosed in parentheses. A value that is shown in parentheses is less than that provided in ASME B16.34. The outlet flange values at 38 °C above are the limits for this standard. Inlet and outlet flange pressure values at other temperatures may only be interpolated using graphs from Annex B or from tables in ASME B16.34 if these values do not exceed the values in parentheses or the outlet flange values at 38 °C above. Pressure changes within the temperature ranges above may not be linear. Bellows outlet pressure limits are the design pressure of the bellows at the outlet temperature of 38 °C, and pressure values at other temperatures may be determined from Annex C. User is cautioned to review the outlet temperature for possible cryogenic applications and select the appropriate materials.

[b] Materials given are minimum requirements for the pressure and temperature ratings. Other suitable materials may be used, as required for the service involved.

[c] Set pressure limited for low-pressure applications where a Class 300 inlet flange is preferred over a Class 150 flange.

[d] Materials limited to 482 °C. Pressure ratings indicated in the 538 °C column are limited to 482 °C.

[e] Materials limited to 149 °C. Pressure ratings indicated in the 232 °C column are limited to 149 °C.

[f] Restricted lift pressure-relief valves, as described in paragraph 4.2.4 of API 520, Part 1, may be specified. The valves supplied shall have a reduction in effective area and meet the restricted lift requirements per ASME *BPVC*, Section XIII.

[g] Consult the manufacturer for pressure-temperature limitations of other balancing elements, such as diaphragm, piston or other means.

Table 8—Spring-loaded Pressure-relief Valves "J" Orifice [f] (Effective Orifice Area = 830 mm²) (SI)

Materials [b]	Valve Size	ASME Flange Class		Maximum Inlet Flange (Set) Pressure Limit [a] [kPa (gauge)]						Outlet Pressure Limit [a] [kPa (gauge)]		Center-to-face Dimensions (mm)	
				Conventional and Balanced Pressure-Relief~~Bellows~~ Valves									
Body/Bonnet	Inlet by Orifice by Outlet	Inlet	Outlet	–268 °C to –60 °C	–59 °C to –30 °C	–29 °C to 38 °C	39 °C to 232 °C	233 °C to 427 °C	428 °C to 538 °C	Flange Rating Limit [a] 38 °C	Bellows Rating Limit [ag] 38 °C	Inlet	Outlet
Temperature Range Inclusive –29 °C to 427 °C													
Carbon steel	2J3	150	150			1,965	1,275	550		1,965	1,585	137	124
	2J3 [c]	300	150			(1,965)	(1,965)	(1,965)		1,965	1,585	137	124
	3J4	300	150			5,100	4,275	2,825		1,965	1,585	184	181
	3J4	600	150			10,205	8,515	5,690		1,965	1,585	184	181
	3J4	900	150			15,305	12,790	8,515		1,965	1,585	184	181
	3J4	1500	300			(18,615)	(18,615)	14,170		(4,135)	1,585	184	181
Temperature Range Inclusive 427 °C to 538 °C													
Chrome molybdenum steel	3J4	300	150					3,515	1,480	2,000	1,585	184	181
	3J4	600	150					7,000	2,965	2,000	1,585	184	181
	3J4	900	150					10,515	4,480	2,000	1,585	184	181
	3J4	1500	300					17,515	7,445	(4,135)	1,585	184	181
Temperature Range Inclusive –268 °C to 538 °C													
Austenitic stainless steel	2J3	150	150	1,895	1,895	1,895	1,240	550	140	1,895	1,585	137	124
	2J3 [c]	300	150	(1,895)	(1,895)	(1,895)	(1,895)	(1,895)	(1,895)	1,895	1,585	137	124
	3J4	300	150	(3,445)	4,965	4,965	3,415	2,895	2,515	1,895	1,585	184	181
	3J4	600	150	(4,310)	9,930	9,930	6,825	5,825	5,000	1,895	1,585	184	181
	3J4	900	150	(5,515)	14,895	14,895	10,240	8,720	7,515	1,895	1,585	184	181
	3J4	1500	300	(5,515)	(18,960)	(18,960)	17,100	14,550	12,550	(4,135)	1,585	184	181
Temperature Range Inclusive –29 °C to 482 °C [d]													
Nickel/copper alloy [d]	2J3	150	150			1,585	1,205	550	345	1,585	1,585	137	124
	2J3 [c]	300	150			(1,585)	(1,585)	(1,585)	(1,585)	1,585	1,585	137	124
	3J4	300	150			4,135	3,275	3,170	1,895	1,585	1,585	184	181
	3J4	600	150			8,275	6,515	6,310	3,790	1,585	1,585	184	181
	3J4	900	150			12,410	9,790	9,480	5,690	1,585	1,585	184	181

Materials [b]	Valve Size	ASME Flange Class		Maximum Inlet Flange (Set) Pressure Limit [a] [kPa (gauge)]						Outlet Pressure Limit [a] [kPa (gauge)]		Center-to-face Dimensions (mm)	
				Conventional and Balanced Pressure-Relief~~Bellows~~ Valves									
Body/Bonnet	Inlet by Orifice by Outlet	Inlet	Outlet	–268 °C to –60 °C	–59 °C to –30 °C	–29 °C to 38 °C	39 °C to 232 °C	233 °C to 427 °C	428 °C to 538 °C	Flange Rating Limit [a] 38 °C	Bellows Rating Limit [a g] 38 °C	Inlet	Outlet
Temperature Range Inclusive –29 °C to 149 °C [e]													
Alloy 20 [e]	2J3	150	150			1,585	1,240			1,585	1,585	137	124
	2J3 [c]	300	150			(1,585)	(1,240)			1,585	1,585	137	124
	3J4	300	150			4,135	3,205			1,585	1,585	184	181
	3J4	600	150			8,275	6,410			1,585	1,585	184	181
	3J4	900	150			12,410	9,620			1,585	1,585	184	181
	3J4	1500	300			(18,615)	16,065			4,135	1,585	184	181

[a] Inlet and outlet flange pressure limits correspond to the values in ASME B16.34 unless enclosed in parentheses. A value that is shown in parentheses is less than that provided in ASME B16.34. The outlet flange values at 38 °C above are the limits for this standard. Inlet and outlet flange pressure values at other temperatures may only be interpolated using graphs from Annex B or from tables in ASME B16.34 if these values do not exceed the values in parentheses or the outlet flange values at 38 °C above. Pressure changes within the temperature ranges above may not be linear. Bellows outlet pressure limits are the design pressure of the bellows at the outlet temperature of 38 °C, and pressure values at other temperatures may be determined from Annex C. User is cautioned to review the outlet temperature for possible cryogenic applications and select the appropriate materials.

[b] Materials given are minimum requirements for the pressure and temperature ratings. Other suitable materials may be used, as required for the service involved.

[c] Set pressure limited for low-pressure applications where a Class 300 inlet flange is preferred over a Class 150 flange.

[d] Materials limited to 482 °C. Pressure ratings indicated in the 538 °C column are limited to 482 °C.

[e] Materials limited to 149 °C. Pressure ratings indicated in the 232 °C column are limited to 149 °C.

[f] Restricted lift pressure-relief valves, as described in paragraph 4.2.4 of API 520, Part 1, may be specified. The valves supplied shall have a reduction in effective area and meet the restricted lift requirements per ASME *BPVC*, Section XIII.

[g] Consult the manufacturer for pressure-temperature limitations of other balancing elements, such as diaphragm, piston or other means.

Table 9—Spring-loaded Pressure-relief Valves "K" Orifice [f] (Effective Orifice Area = 1,186 mm^2) (SI)

Materials [b]	Valve Size	ASME Flange Class		Maximum Inlet Flange (Set) Pressure Limit [a] [kPa (gauge)]						Outlet Pressure Limit [a] [kPa (gauge)]		Center-to-face Dimensions (mm)	
				Conventional and Balanced Pressure-ReliefBellows Valves									
Body/Bonnet	Inlet by Orifice by Outlet	Inlet	Outlet	–268 °C to –60 °C	–59 °C to –30 °C	–29 °C to 38 °C	39 °C to 232 °C	233 °C to 427 °C	428 °C to 538 °C	Flange Rating Limit [a] 38 °C	Bellows Rating Limit [ag] 38 °C	Inlet	Outlet
Temperature Range Inclusive –29 °C to 427 °C													
Carbon steel	3K4	150	150			1,965	1,275	550		1,965	1,035	156	162
	3K4 [c]	300	150			(1,965)	(1,965)	(1,965)		1,965	1,035	156	162
	3K4	300	150			5,100	4,275	2,825		1,965	1,035	156	162
	3K4	600	150			10,205	8,515	5,690		1,965	1,380	184	181
	3K6	900	150			15,305	12,790	8,515		1,965	1,380	198	216
	3K6	1500	300			(15,305)	(15,305)	14,170		(4,135)	1,380	197	216
Temperature Range Inclusive 427 °C to 538 °C													
Chrome molybdenum steel	3K4	300	150					3,515	1,480	2,000	1,035	156	162
	3K4	600	150					7,000	2,965	2,000	1,380	184	181
	3K6	900	150					10,515	4,480	2,000	1,380	198	216
	3K6	1500	300					(15,305)	7,445	(4,135)	1,380	197	216
Temperature Range Inclusive –268 °C to 538 °C													
Austenitic stainless steel	3K4	150	150	1,895	1,895	1,895	1,240	550	140	1,895	1,035	156	162
	3K4 [c]	300	150	(1,895)	(1,895)	(1,895)	(1,895)	(1,895)	(1,895)	1,895	1,035	156	162
	3K4	300	150	(3,620)	4,965	4,965	3,415	2,895	2,515	1,895	1,035	156	162
	3K4	600	150	(4,135)	9,930	9,930	6,825	5,825	5,000	1,895	1,380	184	181
	3K6	900	150	(4,135)	14,895	14,895	10,240	8,720	7,515	1,895	1,380	198	216
	3K6	1500	300	(5,170)	(15,305)	(15,305)	(15,305)	14,550	12,550	(4,135)	1,380	197	216
Temperature Range Inclusive –29 °C to 482 °C [d]													
Nickel/copper alloy [d]	3K4	150	150			1,585	1,205	550	345	1,585	1,035	156	162
	3K4 [c]	300	150			(1,585)	(1,585)	(1,585)	(1,585)	1,585	1,035	156	162
	3K4	300	150			4,135	3,275	3,170	1,895	1,585	1,035	156	162
	3K4	600	150			8,275	6,515	6,310	3,790	1,585	1,380	184	181
	3K6	900	150			12,410	9,790	9,480	5,690	1,585	1,380	198	216

Materials [b]	**Valve Size**	**ASME Flange Class**		**Maximum Inlet Flange (Set) Pressure Limit** [a] [kPa (gauge)]						**Outlet Pressure Limit** [a] [kPa (gauge)]		**Center-to-face Dimensions** (mm)	
				Conventional and Balanced Pressure-Relief~~Bellows~~ Valves									
Body/Bonnet	**Inlet by Orifice by Outlet**	**Inlet**	**Outlet**	**–268 °C to –60 °C**	**–59 °C to –30 °C**	**–29 °C to 38 °C**	**39 °C to 232 °C**	**233 °C to 427 °C**	**428 °C to 538 °C**	**Flange Rating Limit** [a] **38 °C**	**Bellows Rating Limit** [a][g] **38 °C**	**Inlet**	**Outlet**
Temperature Range Inclusive –29 °C to 149 °C [e]													
Alloy 20 [e]	3K4	150	150			1,585	1,240			1,585	1,035	156	162
	3K4 [c]	300	150			(1,585)	(1,240)			1,585	1,035	156	162
	3K4	300	150			4,135	3,205			1,585	1,035	156	162
	3K4	600	150			8,275	6,410			1,585	1,380	184	181
	3K6	900	150			12,410	9,620			1,585	1,380	198	216
	3K6	1500	300			(15,305)	(15,305)			4,135	1,380	197	216

[a] Inlet and outlet flange pressure limits correspond to the values in ASME B16.34 unless enclosed in parentheses. A value that is shown in parentheses is less than that provided in ASME B16.34. The outlet flange values at 38 °C above are the limits for this standard. Inlet and outlet flange pressure values at other temperatures may only be interpolated using graphs from Annex B or from tables in ASME B16.34 if these values do not exceed the values in parentheses or the outlet flange values at 38 °C above. Pressure changes within the temperature ranges above may not be linear. Bellows outlet pressure limits are the design pressure of the bellows at the outlet temperature of 38 °C, and pressure values at other temperatures may be determined from Annex C. User is cautioned to review the outlet temperature for possible cryogenic applications and select the appropriate materials.

[b] Materials given are minimum requirements for the pressure and temperature ratings. Other suitable materials may be used, as required for the service involved.

[c] Set pressure limited for low-pressure applications where a Class 300 inlet flange is preferred over a Class 150 flange.

[d] Materials limited to 482 °C. Pressure ratings indicated in the 538 °C column are limited to 482 °C.

[e] Materials limited to 149 °C. Pressure ratings indicated in the 232 °C column are limited to 149 °C.

[f] Restricted lift pressure-relief valves, as described in paragraph 4.2.4 of API 520, Part 1, may be specified. The valves supplied shall have a reduction in effective area and meet the restricted lift requirements per ASME *BPVC*, Section XIII.

[g] Consult the manufacturer for pressure-temperature limitations of other balancing elements, such as diaphragm, piston or other means.

Table 10—Spring-loaded Pressure-relief Valves "L" Orifice [f] (Effective Orifice Area = 1,841 mm^2) (SI)

Materials [b]	Valve Size	ASME Flange Class		Maximum Inlet Flange (Set) Pressure Limit [a] [kPa (gauge)]						Outlet Pressure Limit [a] [kPa (gauge)]		Center-to-face Dimensions (mm)	
				Conventional and Balanced Pressure-ReliefBellows Valves									
Body/Bonnet	Inlet by Orifice by Outlet	Inlet	Outlet	–268 °C to –60 °C	–59 °C to –30 °C	–29 °C to 38 °C	39 °C to 232 °C	233 °C to 427 °C	428 °C to 538 °C	Flange Rating Limit [a] 38 °C	Bellows Rating Limit [ag] 38 °C	Inlet	Outlet
Temperature Range Inclusive –29 °C to 427 °C													
Carbon steel	3L4	150	150			1,965	1,275	550		1,965	690	156	165
	3L4 [c]	300	150			(1,965)	(1,965)	(1,965)		1,965	690	156	165
	4L6	300	150			5,100	4,275	2,825		1,965	1,170	179	181
	4L6	600	150			(6,895)	(6,895)	5,690		1,965	1,170	179	203
	4L6	900	150			(10,340)	(10,340)	8,515		1,965	1,170	197	222
	4L6	1500	150			(10,340)	(10,340)	(10,340)		1,965	1,170	197	222
Temperature Range Inclusive 427 °C to 538 °C													
Chrome molybdenum steel	4L6	300	150					3,515	1,480	2,000	1,170	179	181
	4L6	600	150					(6,895)	2,965	2,000	1,170	179	203
	4L6	900	150					(10,340)	4,480	2,000	1,170	197	222
	4L6	1500	150					(10,340)	7,445	2,000	1,170	197	222
Temperature Range Inclusive –268 °C to 538 °C													
Austenitic stainless steel	3L4	150	150	1,895	1,895	1,895	1,240	550	140	1,895	690	156	165
	3L4 [c]	300	150	(1,895)	(1,895)	(1,895)	(1,895)	(1,895)	(1,895)	1,895	690	156	165
	4L6	300	150	(3,690)	4,965	4,965	3,415	2,895	2,515	1,895	1,170	179	181
	4L6	600	150	(3,690)	(6,895)	(6,895)	6,825	5,825	5,000	1,895	1,170	179	203
	4L6	900	150	(4,825)	(10,340)	(10,340)	10,240	8,720	7,515	1,895	1,170	197	222
Temperature Range Inclusive –29 °C to 482 °C [d]													
Nickel/copper alloy [d]	3L4	150	150			1,585	1,205	550	345	1,585	690	156	165
	3L4 [c]	300	150			(1,585)	(1,585)	(1,585)	(1,585)	1,585	690	156	165
	4L6	300	150			4,135	3,275	3,170	1,895	1,585	1,170	179	181
	4L6	600	150			8,275	6,515	6,310	3,790	1,585	1,170	179	203
	4L6	900	150			12,410	9,790	9,480	5,690	1,585	1,170	197	222

Materials [b]	**Valve Size**	**ASME Flange Class**		**Maximum Inlet Flange (Set) Pressure Limit** [a] [kPa (gauge)]						**Outlet Pressure Limit** [a] [kPa (gauge)]		**Center-to-face Dimensions** (mm)	
				Conventional and Balanced Pressure-Relief~~Bellows~~ Valves									
Body/Bonnet	**Inlet by Orifice by Outlet**	**Inlet**	**Outlet**	**–268 °C to –60 °C**	**–59 °C to –30 °C**	**–29 °C to 38 °C**	**39 °C to 232 °C**	**233 °C to 427 °C**	**428 °C to 538 °C**	**Flange Rating Limit** [a] **38 °C**	**Bellows Rating Limit** [a][g] **38 °C**	**Inlet**	**Outlet**
Temperature Range Inclusive –29 °C to 149 °C [e]													
Alloy 20 [e]	3L4	150	150			1,585	1,240			1,585	690	156	165
	3L4 [c]	300	150			(1,585)	(1,240)			1,585	690	156	165
	4L6	300	150			4,135	3,205			1,585	1,170	179	181
	4L6	600	150			8,275	6,410			1,585	1,170	179	203
	4L6	900	150			(10,340)	9,620			1,585	1,170	197	222
	4L6	1500	150			(10,340)	(10,340)			1,585	1,170	197	222

[a] Inlet and outlet flange pressure limits correspond to the values in ASME B16.34 unless enclosed in parentheses. A value that is shown in parentheses is less than that provided in ASME B16.34. The outlet flange values at 38 °C above are the limits for this standard. Inlet and outlet flange pressure values at other temperatures may only be interpolated using graphs from Annex B or from tables in ASME B16.34 if these values do not exceed the values in parentheses or the outlet flange values at 38 °C above. Pressure changes within the temperature ranges above may not be linear. Bellows outlet pressure limits are the design pressure of the bellows at the outlet temperature of 38 °C, and pressure values at other temperatures may be determined from Annex C. User is cautioned to review the outlet temperature for possible cryogenic applications and select the appropriate materials.

[b] Materials given are minimum requirements for the pressure and temperature ratings. Other suitable materials may be used, as required for the service involved.

[c] Set pressure limited for low-pressure applications where a Class 300 inlet flange is preferred over a Class 150 flange.

[d] Materials limited to 482 °C. Pressure ratings indicated in the 538 °C column are limited to 482 °C.

[e] Materials limited to 149 °C. Pressure ratings indicated in the 232 °C column are limited to 149 °C.

[f] Restricted lift pressure-relief valves, as described in paragraph 4.2.4 of API 520, Part 1, may be specified. The valves supplied shall have a reduction in effective area and meet the restricted lift requirements per ASME *BPVC*, Section XIII.

[g] Consult the manufacturer for pressure-temperature limitations of other balancing elements, such as diaphragm, piston or other means.

Table 11—Spring-loaded Pressure-relief Valves "M" Orifice [f] (Effective Orifice Area = 2,323 mm^2) (SI)

Materials [b]	Valve Size	ASME Flange Class		Maximum Inlet Flange (Set) Pressure Limit [a] [kPa (gauge)]						Outlet Pressure Limit [a] [kPa (gauge)]		Center-to-face Dimensions (mm)	
				Conventional and Balanced Pressure-Relief~~Bellows~~ Valves									
Body/Bonnet	Inlet by Orifice by Outlet	Inlet	Outlet	–268 °C to –60 °C	–59 °C to –30 °C	–29 °C to 38 °C	39 °C to 232 °C	233 °C to 427 °C	428 °C to 538 °C	Flange Rating Limit [a] 38 °C	Bellows Rating Limit [ag] 38 °C	Inlet	Outlet
Temperature Range Inclusive –29 °C to 427 °C													
Carbon steel	4M6	150	150			1,965	1,275	550		1,965	550	178	184
	4M6 [c]	300	150			(1,965)	(1,965)	(1,965)		1,965	550	178	184
	4M6	300	150			5,100	4,275	2,825		1,965	1,105	178	184
	4M6	600	150			(7,585)	(7,585)	5,690		1,965	1,105	178	203
	4M6	900	150			(7,585)	(7,585)	(7,585)		1,965	1,105	197	222
Temperature Range Inclusive 427 °C to 538 °C													
Chrome molybdenum steel	4M6	300	150					3,515	1,480	2,000	1,105	178	184
	4M6	600	150					(6,895)	2,965	2,000	1,105	178	203
	4M6	900	150					(7,585)	4,480	2,000	1,105	197	222
Temperature Range Inclusive –268 °C to 538 °C													
Austenitic stainless steel	4M6	150	150	1,895	1,895	1,895	1,240	550	140	1,895	550	178	184
	4M6 [c]	300	150	(1,895)	(1,895)	(1,895)	(1,895)	(1,895)	(1,895)	1,895	550	178	184
	4M6	300	150	(3,620)	4,965	4,965	3,415	2,895	2,515	1,895	1,105	178	184
	4M6	600	150	(4,135)	(7,585)	(7,585)	6,825	5,825	5,000	1,895	1,105	178	203
Temperature Range Inclusive –29 °C to 482 °C [d]													
Nickel/copper alloy [d]	4M6	150	150			1,585	1,205	550	345	1,585	550	178	184
	4M6 [c]	300	150			(1,585)	(1,585)	(1,585)	(1,585)	1,585	550	178	184
	4M6	300	150			4,135	3,275	3,170	1,895	1,585	1,105	178	184
	4M6	600	150			(7,585)	6,515	6,310	3,790	1,585	1,105	178	203
	4M6	900	150			(7,585)	(7,585)	(7,585)	5,690	1,585	1,105	197	222

Materials [b]	**Valve Size**	**ASME Flange Class**		**Maximum Inlet Flange (Set) Pressure Limit** [a] [kPa (gauge)]						**Outlet Pressure Limit** [a] [kPa (gauge)]		**Center-to-face Dimensions** (mm)	
				Conventional and Balanced Pressure-Relief~~Bellows~~ Valves									
Body/Bonnet	**Inlet by Orifice by Outlet**	**Inlet**	**Outlet**	**–268 °C to –60 °C**	**–59 °C to –30 °C**	**–29 °C to 38 °C**	**39 °C to 232 °C**	**233 °C to 427 °C**	**428 °C to 538 °C**	**Flange Rating Limit** [a] **38 °C**	**Bellows Rating Limit** [a][g] **38 °C**	**Inlet**	**Outlet**
Temperature Range Inclusive –29 °C to 149 °C [e]													
Alloy 20 [e]	4M6	150	150			1,585	1,240			1,585	550	178	184
	4M6 [c]	300	150			(1,585)	(1,240)			1,585	550	178	184
	4M6	300	150			4,135	3,205			1,585	1,105	178	184
	4M6	600	150			(7,585)	6,410			1,585	1,105	178	203
	4M6	900	150			(7,585)	(7,585)			1,585	1,105	197	222

[a] Inlet and outlet flange pressure limits correspond to the values in ASME B16.34 unless enclosed in parentheses. A value that is shown in parentheses is less than that provided in ASME B16.34. The outlet flange values at 38 °C above are the limits for this standard. Inlet and outlet flange pressure values at other temperatures may only be interpolated using graphs from Annex B or from tables in ASME B16.34 if these values do not exceed the values in parentheses or the outlet flange values at 38 °C above. Pressure changes within the temperature ranges above may not be linear. Bellows outlet pressure limits are the design pressure of the bellows at the outlet temperature of 38 °C, and pressure values at other temperatures may be determined from Annex C. User is cautioned to review the outlet temperature for possible cryogenic applications and select the appropriate materials.

[b] Materials given are minimum requirements for the pressure and temperature ratings. Other suitable materials may be used, as required for the service involved.

[c] Set pressure limited for low-pressure applications where a Class 300 inlet flange is preferred over a Class 150 flange.

[d] Materials limited to 482 °C. Pressure ratings indicated in the 538 °C column are limited to 482 °C.

[e] Materials limited to 149 °C. Pressure ratings indicated in the 232 °C column are limited to 149 °C.

[f] Restricted lift pressure-relief valves, as described in paragraph 4.2.4 of API 520, Part 1, may be specified. The valves supplied shall have a reduction in effective area and meet the restricted lift requirements per ASME *BPVC*, Section XIII.

[g] Consult the manufacturer for pressure-temperature limitations of other balancing elements, such as diaphragm, piston or other means.

Table 12—Spring-loaded Pressure-relief Valves "N" Orifice [f] (Effective Orifice Area = 2,800 mm^2) (SI)

Materials [b]	Valve Size	ASME Flange Class		Maximum Inlet Flange (Set) Pressure Limit [a] [kPa (gauge)]						Outlet Pressure Limit [a] [kPa (gauge)]		Center-to-face Dimensions (mm)	
				Conventional and Balanced Pressure-Relief~~Bellows~~ Valves									
Body/Bonnet	Inlet by Orifice by Outlet	Inlet	Outlet	–268 °C to –60 °C	–59 °C to –30 °C	–29 °C to 38 °C	39 °C to 232 °C	233 °C to 427 °C	428 °C to 538 °C	Flange Rating Limit [a] 38 °C	Bellows Rating Limit [ag] 38 °C	Inlet	Outlet
Temperature Range Inclusive –29 °C to 427 °C													
Carbon steel	4N6	150	150			1,965	1,275	550		1,965	550	197	210
	4N6 [c]	300	150			(1,965)	(1,965)	(1,965)		1,965	550	197	210
	4N6	300	150			5,100	4,275	2,825		1,965	1,105	197	210
	4N6	600	150			(6,895)	(6,895)	5,690		1,965	1,105	197	222
	4N6	900	150			(6,895)	(6,895)	(6,895)		1,965	1,105	197	222
Temperature Range Inclusive 427 °C to 538 °C													
Chrome molybdenum steel	4N6	300	150					3,515	1,480	2,000	1,105	197	210
	4N6	600	150					(6,895)	2,965	2,000	1,105	197	222
	4N6	900	150					(6,895)	4,480	2,000	1,105	197	222
Temperature Range Inclusive –268 °C to 538 °C													
Austenitic stainless steel	4N6	150	150	1,895	1,895	1,895	1,240	550	140	1,895	550	197	210
	4N6 [c]	300	150	(1,895)	(1,895)	(1,895)	(1,895)	(1,895)	(1,895)	1,895	550	197	210
	4N6	300	150	(3,105)	4,965	4,965	3,415	2,895	2,515	1,895	1,105	197	210
	4N6	600	150	(3,445)	(6,895)	(6,895)	6,825	5,825	5,000	1,895	1,105	197	222
Temperature Range Inclusive –29 °C to 482 °C [d]													
Nickel/copper alloy [d]	4N6	150	150			1,585	1,205	550	345	1,585	550	197	210
	4N6 [c]	300	150			(1,585)	(1,585)	(1,585)	(1,585)	1,585	550	197	210
	4N6	300	150			4,135	3,275	3,170	1,895	1,585	1,105	197	210
	4N6	600	150			(6,895)	6,515	6,310	3,790	1,585	1,105	197	222
	4N6	900	150			(6,895)	(6,895)	(6,895)	5,690	1,585	1,105	197	222

Materials [b]	**Valve Size**	**ASME Flange Class**		**Maximum Inlet Flange (Set) Pressure Limit** [a] [kPa (gauge)]						**Outlet Pressure Limit** [a] [kPa (gauge)]		**Center-to-face Dimensions** (mm)	
				Conventional and Balanced Pressure-Relief~~Bellows~~ Valves									
Body/Bonnet	**Inlet by Orifice by Outlet**	**Inlet**	**Outlet**	**–268 °C to –60 °C**	**–59 °C to –30 °C**	**–29 °C to 38 °C**	**39 °C to 232 °C**	**233 °C to 427 °C**	**428 °C to 538 °C**	**Flange Rating Limit** [a] **38 °C**	**Bellows Rating Limit** [ag] **38 °C**	**Inlet**	**Outlet**
Temperature Range Inclusive –29 °C to 149 °C [e]													
Alloy 20 [e]	4N6	150	150			1,585	1,240			1,585	550	197	210
	4N6 [c]	300	150			(1,585)	(1,240)			1,585	550	197	210
	4N6	300	150			4,135	3,205			1,585	1,105	197	210
	4N6	600	150			(6,895)	6,410			1,585	1,105	197	222
	4N6	900	150			(6,895)	(6,895)			1,585	1,105	197	222

[a] Inlet and outlet flange pressure limits correspond to the values in ASME B16.34 unless enclosed in parentheses. A value that is shown in parentheses is less than that provided in ASME B16.34. The outlet flange values at 38 °C above are the limits for this standard. Inlet and outlet flange pressure values at other temperatures may only be interpolated using graphs from Annex B or from tables in ASME B16.34 if these values do not exceed the values in parentheses or the outlet flange values at 38 °C above. Pressure changes within the temperature ranges above may not be linear. Bellows outlet pressure limits are the design pressure of the bellows at the outlet temperature of 38 °C, and pressure values at other temperatures may be determined from Annex C. User is cautioned to review the outlet temperature for possible cryogenic applications and select the appropriate materials.

[b] Materials given are minimum requirements for the pressure and temperature ratings. Other suitable materials may be used, as required for the service involved.

[c] Set pressure limited for low-pressure applications where a Class 300 inlet flange is preferred over a Class 150 flange.

[d] Materials limited to 482 °C. Pressure ratings indicated in the 538 °C column are limited to 482 °C.

[e] Materials limited to 149 °C. Pressure ratings indicated in the 232 °C column are limited to 149 °C.

[f] Restricted lift pressure-relief valves, as described in paragraph 4.2.4 of API 520, Part 1, may be specified. The valves supplied shall have a reduction in effective area and meet the restricted lift requirements per ASME *BPVC*, Section XIII.

[g] Consult the manufacturer for pressure-temperature limitations of other balancing elements, such as diaphragm, piston or other means.

Table 13—Spring-loaded Pressure-relief Valves "P" Orifice [f] (Effective Orifice Area = 4,116 mm^2) (SI)

Materials [b]	Valve Size	ASME Flange Class		Maximum Inlet Flange (Set) Pressure Limit [a] [kPa (gauge)]						Outlet Pressure Limit [a] [kPa (gauge)]		Center-to-face Dimensions (mm)	
				Conventional and Balanced Pressure-ReliefBellows Valves									
Body/Bonnet	Inlet by Orifice by Outlet	Inlet	Outlet	–268 °C to –60 °C	–59 °C to –30 °C	–29 °C to 38 °C	39 °C to 232 °C	233 °C to 427 °C	428 °C to 538 °C	Flange Rating Limit [a] 38 °C	Bellows Rating Limit [ag] 38 °C	Inlet	Outlet
Temperature Range Inclusive –29 °C to 427 °C													
Carbon steel	4P6	150	150			1,965	1,275	550		1,965	550	181	229
	4P6 [c]	300	150			(1,965)	(1,965)	(1,965)		1,965	550	181	229
	4P6	300	150			(3,620)	(3,620)	2,825		1,965	1,035	225	254
	4P6	600	150			(6,895)	(6,895)	5,690		1,965	1,035	225	254
	4P6	900	150			(6,895)	(6,895)	(6,895)		1,965	1,035	225	254
Temperature Range Inclusive 427 °C to 538 °C													
Chrome molybdenum steel	4P6	300	150					3,515	1,480	2,000	1,035	225	254
	4P6	600	150					(6,895)	2,965	2,000	1,035	225	254
	4P6	900	150					(6,895)	4,480	2,000	1,035	225	254
Temperature Range Inclusive –268 °C to 538 °C													
Austenitic stainless steel	4P6	150	150	(1,205)	1,895	1,895	1,240	550	140	1,895	550	181	229
	4P6 [c]	300	150	(1,205)	(1,895)	(1,895)	(1,895)	(1,895)	(1,895)	1,895	550	181	229
	4P6	300	150	(2,070)	(3,620)	(3,620)	3,415	2,895	2,515	1,895	1,035	225	254
	4P6	600	150	(3,310)	(6,895)	(6,895)	6,825	5,825	5,000	1,895	1,035	225	254
Temperature Range Inclusive –29 °C to 482 °C [d]													
Nickel/copper alloy [d]	4P6	150	150			1,585	1,205	550	345	1,585	550	181	229
	4P6 [c]	300	150			(1,585)	(1,585)	(1,585)	(1,585)	1,585	550	181	229
	4P6	300	150			(3,620)	3,275	3,170	1,895	1,585	1,035	225	254
	4P6	600	150			(6,895)	6,515	6,310	3,790	1,585	1,035	225	254
	4P6	900	150			(6,895)	(6,895)	(6,895)	5,690	1,585	1,035	225	254

Materials [b]	**Valve Size**	**ASME Flange Class**		**Maximum Inlet Flange (Set) Pressure Limit** [a] [kPa (gauge)]						**Outlet Pressure Limit** [a] [kPa (gauge)]		**Center-to-face Dimensions** (mm)	
				Conventional and Balanced Pressure-Relief~~Bellows~~ Valves									
Body/Bonnet	**Inlet by Orifice by Outlet**	**Inlet**	**Outlet**	**–268 °C to –60 °C**	**–59 °C to –30 °C**	**–29 °C to 38 °C**	**39 °C to 232 °C**	**233 °C to 427 °C**	**428 °C to 538 °C**	**Flange Rating Limit** [a] **38 °C**	**Bellows Rating Limit** [a][g] **38 °C**	**Inlet**	**Outlet**
Temperature Range Inclusive –29 °C to 149 °C [e]													
Alloy 20 [e]	4P6	150	150			1,585	1,240			1,585	550	181	229
	4P6 [c]	300	150			(1,585)	(1,240)			1,585	550	181	229
	4P6	300	150			(3,620)	3,205			1,585	1,035	225	254
	4P6	600	150			(6,895)	6,410			1,585	1,035	225	254
	4P6	900	150			(6,895)	(6,895)			1,585	1,035	225	254

[a] Inlet and outlet flange pressure limits correspond to the values in ASME B16.34 unless enclosed in parentheses. A value that is shown in parentheses is less than that provided in ASME B16.34. The outlet flange values at 38 °C above are the limits for this standard. Inlet and outlet flange pressure values at other temperatures may only be interpolated using graphs from Annex B or from tables in ASME B16.34 if these values do not exceed the values in parentheses or the outlet flange values at 38 °C above. Pressure changes within the temperature ranges above may not be linear. Bellows outlet pressure limits are the design pressure of the bellows at the outlet temperature of 38 °C, and pressure values at other temperatures may be determined from Annex C. User is cautioned to review the outlet temperature for possible cryogenic applications and select the appropriate materials.

[b] Materials given are minimum requirements for the pressure and temperature ratings. Other suitable materials may be used, as required for the service involved.

[c] Set pressure limited for low-pressure applications where a Class 300 inlet flange is preferred over a Class 150 flange.

[d] Materials limited to 482 °C. Pressure ratings indicated in the 538 °C column are limited to 482 °C.

[e] Materials limited to 149 °C. Pressure ratings indicated in the 232 °C column are limited to 149 °C.

[f] Restricted lift pressure-relief valves, as described in paragraph 4.2.4 of API 520, Part 1, may be specified. The valves supplied shall have a reduction in effective area and meet the restricted lift requirements per ASME *BPVC*, Section XIII.

[g] Consult the manufacturer for pressure-temperature limitations of other balancing elements, such as diaphragm, piston or other means.

Table 14—Spring-loaded Pressure-relief Valves "Q" Orifice [f] (Effective Orifice Area = 7,129 mm^2) (SI)

Materials [b]	Valve Size	ASME Flange Class		Maximum Inlet Flange (Set) Pressure Limit [a] [kPa (gauge)]						Outlet Pressure Limit [a] [kPa (gauge)]		Center-to-face Dimensions (mm)	
				Conventional and Balanced Pressure-Relief~~Bellows~~ Valves									
Body/Bonnet	Inlet by Orifice by Outlet	Inlet	Outlet	–268 °C to –60 °C	–59 °C to –30 °C	–29 °C to 38 °C	39 °C to 232 °C	233 °C to 427 °C	428 °C to 538 °C	Flange Rating Limit [a] 38 °C	Bellows Rating Limit [a][g] 38 °C	Inlet	Outlet
Temperature Range Inclusive –29 °C to 427 °C													
Carbon steel	6Q8	150	150			(1,140)	(1,140)	550		(795)	485	240	241
	6Q8 [c]	300	150			(1,140)	(1,140)	(1,140)		(795)	485	240	241
	6Q8	300	150			(2,070)	(2,070)	(2,070)		(795)	795	240	241
	6Q8	600	150			(4,135)	(4,135)	(4,135)		(795)	795	240	241
Temperature Range Inclusive 427 °C to 538 °C													
Chrome molybdenum steel	6Q8	300	150					(1,140)	(1,140)	(795)	795	240	241
	6Q8	600	150					(4,135)	2,965	(795)	795	240	241
Temperature Range Inclusive –268 °C to 538 °C													
Austenitic stainless steel	6Q8	150	150	(1,140)	(1,140)	(1,140)	(1,140)	550	140	(795)	485	240	241
	6Q8 [c]	300	150	(1,140)	(1,140)	(1,140)	(1,140)	(1,140)	(1,140)	(795)	485	240	241
	6Q8	300	150	(1,725)	(2,070)	(2,070)	(2,070)	(2,070)	(2,070)	(795)	795	240	241
	6Q8	600	150	(2,070)	(4,135)	(4,135)	(4,135)	(4,135)	(4,135)	(795)	795	240	241
Temperature Range Inclusive –29 °C to 482 °C [d]													
Nickel/copper alloy [d]	6Q8	150	150			(1,140)	(1,140)	550	345	(795)	485	240	241
	6Q8 [c]	300	150			(1,140)	(1,140)	(1,140)	(965)	(795)	485	240	241
	6Q8	300	150			(2,070)	(2,070)	(2,070)	1,895	(795)	795	240	241
	6Q8	600	150			(4,135)	(4,135)	(4,135)	3,790	(795)	795	240	241

Materials [b]	**Valve Size**	**ASME Flange Class**		**Maximum Inlet Flange (Set) Pressure Limit** [a] [kPa (gauge)]						**Outlet Pressure Limit** [a] [kPa (gauge)]		**Center-to-face Dimensions** (mm)	
				Conventional and Balanced Pressure-Relief~~Bellows~~ Valves									
Body/Bonnet	**Inlet by Orifice by Outlet**	**Inlet**	**Outlet**	**–268 °C to –60 °C**	**–59 °C to –30 °C**	**–29 °C to 38 °C**	**39 °C to 232 °C**	**233 °C to 427 °C**	**428 °C to 538 °C**	**Flange Rating Limit** [a] **38 °C**	**Bellows Rating Limit** [a][g] **38 °C**	**Inlet**	**Outlet**
Temperature Range Inclusive –29 °C to 149 °C [e]													
Alloy 20 [e]	6Q8	150	150			(1,140)	(1,140)			(795)	485	240	241
	6Q8 [c]	300	150			(1,140)	(1,140)			(795)	485	240	241
	6Q8	300	150			(2,070)	(2,070)			(795)	795	240	241
	6Q8	600	150			(4,135)	(4,135)			(795)	795	240	241

[a] Inlet and outlet flange pressure limits correspond to the values in ASME B16.34 unless enclosed in parentheses. A value that is shown in parentheses is less than that provided in ASME B16.34. The outlet flange values at 38 °C above are the limits for this standard. Inlet and outlet flange pressure values at other temperatures may only be interpolated using graphs from Annex B or from tables in ASME B16.34 if these values do not exceed the values in parentheses or the outlet flange values at 38 °C above. Pressure changes within the temperature ranges above may not be linear. Bellows outlet pressure limits are the design pressure of the bellows at the outlet temperature of 38 °C, and pressure values at other temperatures may be determined from Annex C. User is cautioned to review the outlet temperature for possible cryogenic applications and select the appropriate materials.

[b] Materials given are minimum requirements for the pressure and temperature ratings. Other suitable materials may be used, as required for the service involved.

[c] Set pressure limited for low-pressure applications where a Class 300 inlet flange is preferred over a Class 150 flange.

[d] Materials limited to 482 °C. Pressure ratings indicated in the 538 °C column are limited to 482 °C.

[e] Materials limited to 149 °C. Pressure ratings indicated in the 232 °C column are limited to 149 °C.

[f] Restricted lift pressure-relief valves, as described in paragraph 4.2.4 of API 520, Part 1, may be specified. The valves supplied shall have a reduction in effective area and meet the restricted lift requirements per ASME *BPVC*, Section XIII.

[g] Consult the manufacturer for pressure-temperature limitations of other balancing elements, such as diaphragm, piston or other means.

Table 15—Spring-loaded Pressure-relief Valves "R" Orifice [f] (Effective Orifice Area = 10,323 mm^2) (SI)

Materials [b]	Valve Size	ASME Flange Class		Maximum Inlet Flange (Set) Pressure Limit [a] [kPa (gauge)]						Outlet Pressure Limit [a] [kPa (gauge)]		Center-to-face Dimensions (mm)	
				Conventional and Balanced Pressure-ReliefBellows Valves									
Body/Bonnet	Inlet by Orifice by Outlet	Inlet	Outlet	–268 °C to –60 °C	–59 °C to –30 °C	–29 °C to 38 °C	39 °C to 232 °C	233 °C to 427 °C	428 °C to 538 °C	Flange Rating Limit [a] 38 °C	Bellows Rating Limit [ag] 38 °C	Inlet	Outlet
Temperature Range Inclusive –29 °C to 427 °C													
Carbon steel	6R8	150	150			(690)	(690)	550		(415)	415	240	241
	6R8 [c]	300	150			(690)	(690)	(690)		(415)	415	240	241
	6R10	300	150			(1,585)	(1,585)	(1,585)		(690)	690	240	267
	6R10	600	150			(2,070)	(2,070)	(2,070)		(690)	690	240	267
Temperature Range Inclusive 427 °C to 538 °C													
Chrome molybdenum steel	6R8 [c]	300	150					(690)	(690)	(690)	690	240	241
	6R10	600	150					(2,070)	(2,070)	(690)	690	240	267
Temperature Range Inclusive –268 °C to 538 °C													
Austenitic stainless steel	6R8	150	150	(380)	(690)	(690)	(690)	550	140	(415)	415	240	241
	6R8 [c]	300	150	(380)	(690)	(690)	(690)	(690)	(690)	(415)	415	240	241
	6R10	300	150	(1,035)	(1,585)	(1,585)	(1,585)	(1,585)	(1,585)	(690)	690	240	267
	6R10	600	150	(1,380)	(2,070)	(2,070)	(2,070)	(2,070)	(2,070)	(690)	690	240	267
Temperature Range Inclusive –29 °C to 482 °C [d]													
Nickel/copper alloy [d]	6R8	150	150			(690)	(690)	550	345	(415)	415	240	241
	6R8 [c]	300	150			(690)	(690)	(690)	(690)	(415)	415	240	241
	6R10	300	150			(1,585)	(1,585)	(1,585)	(1,585)	(690)	690	240	267
	6R10	600	150			(2,070)	(2,070)	(2,070)	(2,070)	(690)	690	240	267

Materials [b]	**Valve Size**	**ASME Flange Class**		**Maximum Inlet Flange (Set) Pressure Limit** [a] [kPa (gauge)]						**Outlet Pressure Limit** [a] [kPa (gauge)]		**Center-to-face Dimensions** (mm)	
				Conventional and Balanced Pressure-Relief~~Bellows~~ Valves									
Body/Bonnet	**Inlet by Orifice by Outlet**	**Inlet**	**Outlet**	**–268 °C to –60 °C**	**–59 °C to –30 °C**	**–29 °C to 38 °C**	**39 °C to 232 °C**	**233 °C to 427 °C**	**428 °C to 538 °C**	**Flange Rating Limit** [a] **38 °C**	**Bellows Rating Limit** [a][g] **38 °C**	**Inlet**	**Outlet**
Temperature Range Inclusive –29 °C to 149 °C [e]													
Alloy 20 [e]	6R8	150	150			(690)	(690)			(415)	415	240	241
	6R8 [c]	300	150			(690)	(690)			(415)	415	240	241
	6R10	300	150			(1,585)	(1,585)			(690)	690	240	267
	6R10	600	150			(2,070)	(2,070)			(690)	690	240	267

[a] Inlet and outlet flange pressure limits correspond to the values in ASME B16.34 unless enclosed in parentheses. A value that is shown in parentheses is less than that provided in ASME B16.34. The outlet flange values at 38 °C above are the limits for this standard. Inlet and outlet flange pressure values at other temperatures may only be interpolated using graphs from Annex B or from tables in ASME B16.34 if these values do not exceed the values in parentheses or the outlet flange values at 38 °C above. Pressure changes within the temperature ranges above may not be linear. Bellows outlet pressure limits are the design pressure of the bellows at the outlet temperature of 38 °C, and pressure values at other temperatures may be determined from Annex C. User is cautioned to review the outlet temperature for possible cryogenic applications and select the appropriate materials.

[b] Materials given are minimum requirements for the pressure and temperature ratings. Other suitable materials may be used, as required for the service involved.

[c] Set pressure limited for low-pressure applications where a Class 300 inlet flange is preferred over a Class 150 flange.

[d] Materials limited to 482 °C. Pressure ratings indicated in the 538 °C column are limited to 482 °C.

[e] Materials limited to 149 °C. Pressure ratings indicated in the 232 °C column are limited to 149 °C.

[f] Restricted lift pressure-relief valves, as described in paragraph 4.2.4 of API 520, Part 1, may be specified. The valves supplied shall have a reduction in effective area and meet the restricted lift requirements per ASME *BPVC*, Section XIII.

[g] Consult the manufacturer for pressure-temperature limitations of other balancing elements, such as diaphragm, piston or other means.

Table 16—Spring-loaded Pressure-relief Valves "T" Orifice [f] (Effective Orifice Area = 16,774 mm^2) (SI)

Materials [b]	Valve Size	ASME Flange Class		Maximum Inlet Flange (Set) Pressure Limit [a] [kPa (gauge)]						Outlet Pressure Limit [a] [kPa (gauge)]		Center-to-face Dimensions (mm)	
				Conventional and Balanced Pressure-Relief~~Bellows~~ Valves									
Body/Bonnet	Inlet by Orifice by Outlet	Inlet	Outlet	–268 °C to –60 °C	–59 °C to –30 °C	–29 °C to 38 °C	39 °C to 232 °C	233 °C to 427 °C	428 °C to 538 °C	Flange Rating Limit [a] 38 °C	Bellows Rating Limit [ag] 38 °C	Inlet	Outlet
Temperature Range Inclusive –29 °C to 427 °C													
Carbon steel	8T10	150	150			(450)	(450)	(450)		(205)	205	276	279
	8T10 [c]	300	150			(450)	(450)	(450)		(205)	205	276	279
	8T10	300	150			(825)	(825)	(825)		(415)	415	276	279
	8T10	300	150			(2,070)	(2,070)	(2,070)		(690)	690	276	279
Temperature Range Inclusive 427 °C to 538 °C													
Chrome molybdenum steel	8T10	300	150					(825)	690	(415)	415	276	279
	8T10	300	150					(2,070)	(1,480)	(690)	690	276	279
Temperature Range Inclusive –268 °C to 538 °C													
Austenitic stainless steel	8T10	150	150	(345)	(450)	(450)	(450)	(450)	(140)	(205)	205	276	279
	8T10 [c]	300	150	(345)	(450)	(450)	(450)	(450)	(450)	(205)	205	276	279
	8T10	300	150	(450)	(825)	(825)	(825)	(825)	(825)	(415)	415	276	279
Temperature Range Inclusive –29 °C to 482 °C [d]													
Nickel/copper alloy [d]	8T10	150	150			(450)	(450)	(450)	345	(205)	205	276	279
	8T10 [c]	300	150			(450)	(450)	(450)	(450)	(205)	205	276	279
	8T10	300	150			(825)	(825)	(825)	(825)	(415)	415	276	279

Materials [b]	**Valve Size**	**ASME Flange Class**		**Maximum Inlet Flange (Set) Pressure Limit** [a] [kPa (gauge)]						**Outlet Pressure Limit** [a] [kPa (gauge)]		**Center-to-face Dimensions** (mm)	
				Conventional and Balanced Pressure-Relief~~Bellows~~ Valves									
Body/Bonnet	**Inlet by Orifice by Outlet**	**Inlet**	**Outlet**	**–268 °C to –60 °C**	**–59 °C to –30 °C**	**–29 °C to 38 °C**	**39 °C to 232 °C**	**233 °C to 427 °C**	**428 °C to 538 °C**	**Flange Rating Limit** [a] **38 °C**	**Bellows Rating Limit** [ag] **38 °C**	**Inlet**	**Outlet**
Temperature Range Inclusive –29 °C to 149 °C [e]													
Alloy 20 [e]	8T10	150	150			(450)	(450)			(205)	205	276	279
	8T10 [c]	300	150			(450)	(450)			(205)	205	276	279
	8T10	300	150			(825)	(825)			(415)	415	276	279

[a] Inlet and outlet flange pressure limits correspond to the values in ASME B16.34 unless enclosed in parentheses. A value that is shown in parentheses is less than that provided in ASME B16.34. The outlet flange values at 38 °C above are the limits for this standard. Inlet and outlet flange pressure values at other temperatures may only be interpolated using graphs from Annex B or from tables in ASME B16.34 if these values do not exceed the values in parentheses or the outlet flange values at 38 °C above. Pressure changes within the temperature ranges above may not be linear. Bellows outlet pressure limits are the design pressure of the bellows at the outlet temperature of 38 °C, and pressure values at other temperatures may be determined from Annex C. User is cautioned to review the outlet temperature for possible cryogenic applications and select the appropriate materials.

[b] Materials given are minimum requirements for the pressure and temperature ratings. Other suitable materials may be used, as required for the service involved.

[c] Set pressure limited for low-pressure applications where a Class 300 inlet flange is preferred over a Class 150 flange.

[d] Materials limited to 482 °C. Pressure ratings indicated in the 538 °C column are limited to 482 °C.

[e] Materials limited to 149 °C. Pressure ratings indicated in the 232 °C column are limited to 149 °C.

[f] Restricted lift pressure-relief valves, as described in paragraph 4.2.4 of API 520, Part 1, may be specified. The valves supplied shall have a reduction in effective area and meet the restricted lift requirements per ASME *BPVC*, Section XIII.

[g] Consult the manufacturer for pressure-temperature limitations of other balancing elements, such as diaphragm, piston or other means.

Table 31—Spring-loaded Pressure-relief Valves "D" Orifice [f] (Effective Orifice Area = 0.110 in.^{2}) (USC)

Materials [b]	Valve Size	ASME Flange Class		Maximum Inlet Flange (Set) Pressure Limit [a] (psig)						Outlet Pressure Limit [a] (psig)		Center-to-face Dimensions (in.)	
				Conventional and Balanced Pressure-ReliefBellows Valves									
Body/Bonnet	Inlet by Orifice by Outlet	Inlet	Outlet	–450 °F to –76 °F	–75 °F to –21 °F	–20 °F to 100 °F	450 °F	800 °F	1,000 °F	Flange Rating Limit [a] 100 °F	Bellows Rating Limit [ag] 100 °F	Inlet	Outlet
Temperature Range Inclusive –20 °F to 800 °F													
Carbon steel	1D2	150	150			285	185	80		285	230	4 1/8	4 1/2
	1D2 [c]	300	150			(285)	(285)	(285)		285	230	4 1/8	4 1/2
	1D2	300	150			740	620	410		285	230	4 1/8	4 1/2
	1D2	600	150			1,480	1,235	825		285	230	4 1/8	4 1/2
	1 1/2D2	900	300			2,220	1,855	1,235		(600)	500	4 1/8	5 1/2
	1 1/2D2	1500	300			3,705	3,090	2,055		(600)	500	4 1/8	5 1/2
	1 1/2D3	2500	300			(6,000)	5,150	3,430		740	500	5 1/2	7
Temperature Range Inclusive 801 °F to 1,000 °F													
Chrome molybdenum steel	1D2	300	150					510	215	290	230	4 1/8	4 1/2
	1D2	600	150					1,015	430	290	230	4 1/8	4 1/2
	1 1/2D2	900	300					1,525	650	(600)	500	4 1/8	5 1/2
	1 1/2D2	1500	300					2,540	1,080	(600)	500	4 1/8	5 1/2
	1 1/2D3	2500	300					4,230	1,800	750	500	5 1/2	7
Temperature Range Inclusive –450 °F to 1,000 °F													
Austenitic stainless steel	1D2	150	150	275	275	275	180	80	20	275	230	4 1/8	4 1/2
	1D2 [c]	300	150	(275)	(275)	(275)	(275)	(275)	(275)	275	230	4 1/8	4 1/2
	1D2	300	150	720	720	720	495	420	365	275	230	4 1/8	4 1/2
	1D2	600	150	1,440	1,440	1,440	990	845	725	275	230	4 1/8	4 1/2
	1 1/2D2	900	300	2,160	2,160	2,160	1,485	1,265	1,090	(600)	500	4 1/8	5 1/2
	1 1/2D2	1500	300	3,600	3,600	3,600	2,480	2,110	1,820	(600)	500	4 1/8	5 1/2
	1 1/2D3	2500	300	(4,000)	6,000	6,000	4,130	3,520	3,030	720	500	5 1/2	7

Materials [b] Body/Bonnet	Valve Size Inlet by Orifice by Outlet	ASME Flange Class Inlet	ASME Flange Class Outlet	Maximum Inlet Flange (Set) Pressure Limit [a] (psig) Conventional and Balanced Pressure-ReliefBellows Valves –450 °F to –76 °F	–75 °F to –21 °F	–20 °F to 100 °F	450 °F	800 °F	1,000 °F	Outlet Pressure Limit [a] (psig) Flange Rating Limit [a] 100 °F	Bellows Rating Limit [ag] 100 °F	Center-to-face Dimensions (in.) Inlet	Outlet
Temperature Range Inclusive –20 °F to 900 °F [d]													
Nickel/copper alloy [d]	1D2	150	150			230	175	80	50	230	230	$4^1/_8$	$4^1/_2$
	1D2 [c]	300	150			(230)	(230)	(230)	(230)	230	230	$4^1/_8$	$4^1/_2$
	1D2	300	150			600	475	460	275	230	230	$4^1/_8$	$4^1/_2$
	1D2	600	150			1,200	945	915	550	230	230	$4^1/_8$	$4^1/_2$
	$1^1/_2$D2	900	300			1,800	1,420	1,375	825	600	500	$4^1/_8$	$5^1/_2$
Temperature Range Inclusive –20 °F to 300 °F [e]													
Alloy 20 [e]	1D2	150	150			230	180			230	230	$4^1/_8$	$4^1/_2$
	1D2 [c]	300	150			(230)	(180)			230	230	$4^1/_8$	$4^1/_2$
	1D2	300	150			600	465			230	230	$4^1/_8$	$4^1/_2$
	1D2	600	150			1,200	930			230	230	$4^1/_8$	$4^1/_2$
	$1^1/_2$D2	900	300			1,800	1,395			600	500	$4^1/_8$	$5^1/_2$
	$1^1/_2$D2	1500	300			3,000	2,330			600	500	$4^1/_8$	$5^1/_2$
	$1^1/_2$D3	2500	300			5,000	3,880			600	500	$5^1/_2$	7

[a] Inlet and outlet flange pressure limits correspond to the values in ASME B16.34 unless enclosed in parentheses. A value that is shown in parentheses is less than that provided in ASME B16.34. The outlet flange values at 100 °F above are the limits for this standard. Inlet and outlet flange pressure values at other temperatures may only be interpolated using graphs from Annex F or from tables in ASME B16.34 if these values do not exceed the values in parentheses or the outlet flange values at 100 °F above. Pressure changes within the temperature ranges above may not be linear. Bellows outlet pressure limits are the design pressure of the bellows at the outlet temperature of 100 °F, and pressure values at other temperatures may be determined from Annex G. User is cautioned to review the outlet temperature for possible cryogenic applications and select the appropriate materials.

[b] Materials given are minimum requirements for the pressure and temperature ratings. Other suitable materials may be used, as required for the service involved.

[c] Set pressure limited for low-pressure applications where a Class 300 inlet flange is preferred over a Class 150 flange.

[d] Materials limited to 900 °F. Pressure ratings indicated in the 1,000 °F column are limited to 900 °F.

[e] Materials limited to 300 °F. Pressure ratings indicated in the 450 °F column are limited to 300 °F.

[f] Restricted lift pressure-relief valves, as described in paragraph 4.2.4 of API 520, Part 1, may be specified. The valves supplied shall have a reduction in effective area and meet the restricted lift requirements per ASME *BPVC* Section XIII.

[g] Consult the manufacturer for pressure-temperature limitations of other balancing elements, such as diaphragm, piston or other means.

Table 32—Spring-loaded Pressure-relief Valves "E" Orifice [f] (Effective Orifice Area = 0.196 in.^{2}) (USC)

Materials [b]	Valve Size	ASME Flange Class		Maximum Inlet Flange (Set) Pressure Limit [a] (psig)						Outlet Pressure Limit [a] (psig)		Center-to-face Dimensions (in.)	
				Conventional and Balanced Pressure-Relief~~Bellows~~ Valves									
Body/Bonnet	Inlet by Orifice by Outlet	Inlet	Outlet	–450 °F to –76 °F	–75 °F to –21 °F	–20 °F to 100 °F	450 °F	800 °F	1,000 °F	Flange Rating Limit [a] 100 °F	Bellows Rating Limit [ag] 100 °F	Inlet	Outlet
Temperature Range Inclusive –20 °F to 800 °F													
Carbon steel	1E2	150	150			285	185	80		285	230	4 1/8	4 1/2
	1E2 [c]	300	150			(285)	(285)	(285)		285	230	4 1/8	4 1/2
	1E2	300	150			740	620	410		285	230	4 1/8	4 1/2
	1E2	600	150			1,480	1,235	825		285	230	4 1/8	4 1/2
	1 1/2E2	900	300			2,220	1,855	1,235		(600)	500	4 1/8	5 1/2
	1 1/2E2	1500	300			3,705	3,090	2,055		(600)	500	4 1/8	5 1/2
	1 1/2E3	2500	300			(6,000)	5,150	3,430		740	500	5 1/2	7
Temperature Range Inclusive 801 °F to 1,000 °F													
Chrome molybdenum steel	1E2	300	150					510	215	290	230	4 1/8	4 1/2
	1E2	600	150					1,015	430	290	230	4 1/8	4 1/2
	1 1/2E2	900	300					1,525	650	(600)	500	4 1/8	5 1/2
	1 1/2E2	1500	300					2,540	1,080	(600)	500	4 1/8	5 1/2
	1 1/2E3	2500	300					4,230	1,800	750	500	5 1/2	7
Temperature Range Inclusive –450 °F to 1,000 °F													
Austenitic stainless steel	1E2	150	150	275	275	275	180	80	20	275	230	4 1/8	4 1/2
	1E2 [c]	300	150	(275)	(275)	(275)	(275)	(275)	(275)	275	230	4 1/8	4 1/2
	1E2	300	150	720	720	720	495	420	365	275	230	4 1/8	4 1/2
	1E2	600	150	1,440	1,440	1,440	990	845	725	275	230	4 1/8	4 1/2
	1 1/2E2	900	300	2,160	2,160	2,160	1,485	1,265	1,090	(600)	500	4 1/8	5 1/2
	1 1/2E2	1500	300	3,600	3,600	3,600	2,480	2,110	1,820	(600)	500	4 1/8	5 1/2
	1 1/2E3	2500	300	(4,000)	6,000	6,000	4,130	3,520	3,030	720	500	5 1/2	7

Materials [b]	Valve Size	ASME Flange Class		Maximum Inlet Flange (Set) Pressure Limit [a] (psig)						Outlet Pressure Limit [a] (psig)		Center-to-face Dimensions (in.)	
				Conventional and Balanced Pressure-Relief~~Bellows~~ Valves									
Body/Bonnet	Inlet by Orifice by Outlet	Inlet	Outlet	–450 °F to –76 °F	–75 °F to –21 °F	–20 °F to 100 °F	450 °F	800 °F	1,000 °F	Flange Rating Limit [a] 100 °F	Bellows Rating Limit [ag] 100 °F	Inlet	Outlet
Temperature Range Inclusive –20 °F to 900 °F [d]													
Nickel/copper alloy [d]	1E2	150	150			230	175	80	50	230	230	$4^1/_8$	$4^1/_2$
	1E2 [c]	300	150			(230)	(230)	(230)	(230)	230	230	$4^1/_8$	$4^1/_2$
	1E2	300	150			600	475	460	275	230	230	$4^1/_8$	$4^1/_2$
	1E2	600	150			1,200	945	915	550	230	230	$4^1/_8$	$4^1/_2$
	$1^1/_2$E2	900	300			1,800	1,420	1,375	825	600	500	$4^1/_8$	$5^1/_2$
Temperature Range Inclusive –20 °F to 300 °F [e]													
Alloy 20 [e]	1E2	150	150			230	180			230	230	$4^1/_8$	$4^1/_2$
	1E2 [c]	300	150			(230)	(180)			230	230	$4^1/_8$	$4^1/_2$
	1E2	300	150			600	465			230	230	$4^1/_8$	$4^1/_2$
	1E2	600	150			1,200	930			230	230	$4^1/_8$	$4^1/_2$
	$1^1/_2$E2	900	300			1,800	1,395			600	500	$4^1/_8$	$5^1/_2$
	$1^1/_2$E2	1500	300			3,000	2,330			600	500	$4^1/_8$	$5^1/_2$
	$1^1/_2$E3	2500	300			5,000	3,880			600	500	$5^1/_2$	7

[a] Inlet and outlet flange pressure limits correspond to the values in ASME B16.34 unless enclosed in parentheses. A value that is shown in parentheses is less than that provided in ASME B16.34. The outlet flange values at 100 °F above are the limits for this standard. Inlet and outlet flange pressure values at other temperatures may only be interpolated using graphs from Annex F or from tables in ASME B16.34 if these values do not exceed the values in parentheses or the outlet flange values at 100 °F above. Pressure changes within the temperature ranges above may not be linear. Bellows outlet pressure limits are the design pressure of the bellows at the outlet temperature of 100 °F, and pressure values at other temperatures may be determined from Annex G. User is cautioned to review the outlet temperature for possible cryogenic applications and select the appropriate materials.

[b] Materials given are minimum requirements for the pressure and temperature ratings. Other suitable materials may be used, as required for the service involved.

[c] Set pressure limited for low-pressure applications where a Class 300 inlet flange is preferred over a Class 150 flange.

[d] Materials limited to 900 °F. Pressure ratings indicated in the 1,000 °F column are limited to 900 °F.

[e] Materials limited to 300 °F. Pressure ratings indicated in the 450 °F column are limited to 300 °F.

[f] Restricted lift pressure-relief valves, as described in paragraph 4.2.4 of API 520, Part 1, may be specified. The valves supplied shall have a reduction in effective area and meet the restricted lift requirements per ASME *BPVC* Section XIII.

[g] Consult the manufacturer for pressure-temperature limitations of other balancing elements, such as diaphragm, piston or other means.

Table 33—Spring-loaded Pressure-relief Valves "F" Orifice [f] (Effective Orifice Area = 0.307 in.^{2}) (USC)

Materials [b]	Valve Size	ASME Flange Class		Maximum Inlet Flange (Set) Pressure Limit [a] (psig)						Outlet Pressure Limit [a] (psig)		Center-to-face Dimensions (in.)	
				Conventional and Balanced Pressure-Relief~~Bellows~~ Valves									
Body/Bonnet	Inlet by Orifice by Outlet	Inlet	Outlet	–450 °F to –76 °F	–75 °F to –21 °F	–20 °F to 100 °F	450 °F	800 °F	1,000 °F	Flange Rating Limit [a] 100 °F	Bellows Rating Limit [ag] 100 °F	Inlet	Outlet
Temperature Range Inclusive –20 °F to 800 °F													
Carbon steel	1 1/2F2	150	150			285	185	80		285	230	4 7/8	4 3/4
	1 1/2F2 [c]	300	150			(285)	(285)	(285)		285	230	4 7/8	4 3/4
	1 1/2F2	300	150			740	620	410		285	230	4 7/8	6
	1 1/2F2	600	150			1,480	1,235	825		285	230	4 7/8	6
	1 1/2F3	900	300			2,220	1,855	1,235		740	500	4 7/8	6 1/2
	1 1/2F3	1500	300			3,705	3,090	2,055		740	500	4 7/8	6 1/2
	1 1/2F3	2500	300			(5,000)	(5,000)	3,430		740	500	5 1/2	7
Temperature Range Inclusive 801 °F to 1,000 °F													
Chrome molybdenum steel	1 1/2F2	300	150					510	215	290	230	4 7/8	6
	1 1/2F2	600	150					1,015	430	290	230	4 7/8	6
	1 1/2F3	900	300					1,525	650	750	500	4 7/8	6 1/2
	1 1/2F3	1500	300					2,540	1,080	750	500	4 7/8	6 1/2
	1 1/2F3	2500	300					4,230	1,800	750	500	5 1/2	7
Temperature Range Inclusive –450 °F to 1,000 °F													
Austenitic stainless steel	1 1/2F2	150	150	275	275	275	180	80	20	275	230	4 7/8	4 3/4
	1 1/2F2 [c]	300	150	(275)	(275)	(275)	(275)	(275)	(275)	275	230	4 7/8	4 3/4
	1 1/2F2	300	150	720	720	720	495	420	365	275	230	4 7/8	6
	1 1/2F2	600	150	1,440	1,440	1,440	990	845	725	275	230	4 7/8	6
	1 1/2F3	900	300	2,160	2,160	2,160	1,485	1,265	1,090	720	500	4 7/8	6 1/2
	1 1/2F3	1500	300	(2,200)	3,600	3,600	2,480	2,110	1,820	720	500	4 7/8	6 1/2
	1 1/2F3	2500	300	(3,400)	(5,000)	(5,000)	4,130	3,520	3,030	720	500	5 1/2	7

Materials [b]	Valve Size	ASME Flange Class		Maximum Inlet Flange (Set) Pressure Limit [a] (psig)						Outlet Pressure Limit [a] (psig)		Center-to-face Dimensions (in.)	
				Conventional and Balanced Pressure-Relief~~Bellows~~ Valves									
Body/Bonnet	Inlet by Orifice by Outlet	Inlet	Outlet	–450 °F to –76 °F	–75 °F to –21 °F	–20 °F to 100 °F	450 °F	800 °F	1,000 °F	Flange Rating Limit [a] 100 °F	Bellows Rating Limit [a][g] 100 °F	Inlet	Outlet
Temperature Range Inclusive –20 °F to 900 °F [d]													
Nickel/copper alloy [d]	1 1/2F2	150	150			230	175	80	50	230	230	4 7/8	4 3/4
	1 1/2F2 c	300	150			(230)	(230)	(230)	(230)	230	230	4 7/8	4 3/4
	1 1/2F2	300	150			600	475	460	275	230	230	4 7/8	6
	1 1/2F2	600	150			1,200	945	915	550	230	230	4 7/8	6
	1 1/2F3	900	300			1,800	1,420	1,375	825	600	500	4 7/8	6 1/2
Temperature Range Inclusive –20 °F to 300 °F [e]													
Alloy 20 [e]	1 1/2F2	150	150			230	180			230	230	4 7/8	4 3/4
	1 1/2F2 [c]	300	150			(230)	(180)			230	230	4 7/8	4 3/4
	1 1/2F2	300	150			600	465			230	230	4 7/8	6
	1 1/2F2	600	150			1,200	930			230	230	4 7/8	6
	1 1/2F3	900	300			1,800	1,395			600	500	4 7/8	6 1/2
	1 1/2F3	1500	300			3,000	2,330			600	500	4 7/8	6 1/2
	1 1/2F3	2500	300			5,000	3,880			600	500	5 1/2	7

[a] Inlet and outlet flange pressure limits correspond to the values in ASME B16.34 unless enclosed in parentheses. A value that is shown in parentheses is less than that provided in ASME B16.34. The outlet flange values at 100 °F above are the limits for this standard. Inlet and outlet flange pressure values at other temperatures may only be interpolated using graphs from Annex F or from tables in ASME B16.34 if these values do not exceed the values in parentheses or the outlet flange values at 100 °F above. Pressure changes within the temperature ranges above may not be linear. Bellows outlet pressure limits are the design pressure of the bellows at the outlet temperature of 100 °F, and pressure values at other temperatures may be determined from Annex G. User is cautioned to review the outlet temperature for possible cryogenic applications and select the appropriate materials.

[b] Materials given are minimum requirements for the pressure and temperature ratings. Other suitable materials may be used, as required for the service involved.

[c] Set pressure limited for low-pressure applications where a Class 300 inlet flange is preferred over a Class 150 flange.

[d] Materials limited to 900 °F. Pressure ratings indicated in the 1,000 °F column are limited to 900 °F.

[e] Materials limited to 300 °F. Pressure ratings indicated in the 450 °F column are limited to 300 °F.

[f] Restricted lift pressure-relief valves, as described in paragraph 4.2.4 of API 520, Part 1, may be specified. The valves supplied shall have a reduction in effective area and meet the restricted lift requirements per ASME *BPVC* Section XIII.

[g] Consult the manufacturer for pressure-temperature limitations of other balancing elements, such as diaphragm, piston or other means.

Table 34—Spring-loaded Pressure-relief Valves "G" Orifice [f] (Effective Orifice Area = 0.503 in.^{2}) (USC)

Materials [b]	Valve Size	ASME Flange Class		Maximum Inlet Flange (Set) Pressure Limit [a] (psig)						Outlet Pressure Limit [a] (psig)		Center-to-face Dimensions (in.)	
				Conventional and Balanced Pressure-Relief~~Bellows~~ Valves									
Body/Bonnet	Inlet by Orifice by Outlet	Inlet	Outlet	–450 °F to –76 °F	–75 °F to –21 °F	–20 °F to 100 °F	450 °F	800 °F	1,000 °F	Flange Rating Limit [a] 100 °F	Bellows Rating Limit [ag] 100 °F	Inlet	Outlet
Temperature Range Inclusive –20 °F to 800 °F													
Carbon steel	1 1/2G3	150	150			285	185	80		285	230	4 7/8	4 3/4
	1 1/2G3 [c]	300	150			(285)	(285)	(285)		285	230	4 7/8	4 3/4
	1 1/2G3	300	150			740	620	410		285	230	4 7/8	6
	1 1/2G3	600	150			1,480	1,235	825		285	230	4 7/8	6
	1 1/2G3	900	300			2,220	1,855	1,235		740	470	4 7/8	6 1/2
	2G3	1500	300			3,705	3,090	2,055		740	470	6 1/8	6 3/4
	2G3	2500	300			(3,705)	(3,705)	3,430		740	470	6 1/8	6 3/4
Temperature Range Inclusive 801 °F to 1,000 °F													
Chrome molybdenum steel	1 1/2G3	300	150					510	215	290	230	4 7/8	6
	1 1/2G3	600	150					1,015	430	290	230	4 7/8	6
	1 1/2G3	900	300					1,525	650	750	470	4 7/8	6 1/2
	2G3	1500	300					2,540	1,080	750	470	6 1/8	6 3/4
	2G3	2500	300					(3,705)	1,800	750	470	6 1/8	6 3/4
Temperature Range Inclusive –450 °F to 1,000 °F													
Austenitic stainless steel	1 1/2G3	150	150	275	275	275	180	80	20	275	230	4 7/8	4 3/4
	1 1/2G3 [c]	300	150	(275)	(275)	(275)	(275)	(275)	(275)	275	230	4 7/8	4 3/4
	1 1/2G3	300	150	720	720	720	495	420	365	275	230	4 7/8	6
	1 1/2G3	600	150	1,440	1,440	1,440	990	845	725	275	230	4 7/8	6
	1 1/2G3	900	300	2,160	2,160	2,160	1,485	1,265	1,090	720	470	4 7/8	6 1/2
	2G3	1500	300	(2,450)	3,600	3,600	2,480	2,110	1,820	720	470	6 1/8	6 3/4
	2G3	2500	300	(2,600)	(3,600)	(3,600)	(3,600)	3,520	3,030	720	470	6 1/8	6 3/4

Materials [b]	Valve Size	ASME Flange Class		Maximum Inlet Flange (Set) Pressure Limit [a] (psig)						Outlet Pressure Limit [a] (psig)		Center-to-face Dimensions (in.)	
				Conventional and Balanced Pressure-Relief~~Bellows~~ Valves									
Body/Bonnet	Inlet by Orifice by Outlet	Inlet	Outlet	–450 °F to –76 °F	–75 °F to –21 °F	–20 °F to 100 °F	450 °F	800 °F	1,000 °F	Flange Rating Limit [a]	Bellows Rating Limit [a][g]	Inlet	Outlet
										100 °F	100 °F		
Temperature Range Inclusive –20 °F to 900 °F [d]													
Nickel/copper alloy [d]	1 1/2G3	150	150			230	175	80	50	230	230	4 7/8	4 3/4
	1 1/2G3 [c]	300	150			(230)	(230)	(230)	(230)	230	230	4 7/8	4 3/4
	1 1/2G3	300	150			600	475	460	275	230	230	4 7/8	6
	1 1/2G3	600	150			1,200	945	915	550	230	230	4 7/8	6
	1 1/2G3	900	300			1,800	1,420	1,375	825	600	470	4 7/8	6 1/2
Temperature Range Inclusive –20 °F to 300 °F [e]													
Alloy 20 [e]	1 1/2G3	150	150			230	180			230	230	4 7/8	4 3/4
	1 1/2G3 [c]	300	150			(230)	(180)			230	230	4 7/8	4 3/4
	1 1/2G3	300	150			600	465			230	230	4 7/8	6
	1 1/2G3	600	150			1,200	930			230	230	4 7/8	6
	1 1/2G3	900	300			1,800	1,395			600	470	4 7/8	6 1/2
	2G3	1500	300			3,000	2,330			600	470	6 1/8	6 3/4
	2G3	2500	300			(3,705)	(3,705)			600	470	6 1/8	6 3/4

[a] Inlet and outlet flange pressure limits correspond to the values in ASME B16.34 unless enclosed in parentheses. A value that is shown in parentheses is less than that provided in ASME B16.34. The outlet flange values at 100 °F above are the limits for this standard. Inlet and outlet flange pressure values at other temperatures may only be interpolated using graphs from Annex F or from tables in ASME B16.34 if these values do not exceed the values in parentheses or the outlet flange values at 100 °F above. Pressure changes within the temperature ranges above may not be linear. Bellows outlet pressure limits are the design pressure of the bellows at the outlet temperature of 100 °F, and pressure values at other temperatures may be determined from Annex G. User is cautioned to review the outlet temperature for possible cryogenic applications and select the appropriate materials.

[b] Materials given are minimum requirements for the pressure and temperature ratings. Other suitable materials may be used, as required for the service involved.

[c] Set pressure limited for low-pressure applications where a Class 300 inlet flange is preferred over a Class 150 flange.

[d] Materials limited to 900 °F. Pressure ratings indicated in the 1,000 °F column are limited to 900 °F.

[e] Materials limited to 300 °F. Pressure ratings indicated in the 450 °F column are limited to 300 °F.

[f] Restricted lift pressure-relief valves, as described in paragraph 4.2.4 of API 520, Part 1, may be specified. The valves supplied shall have a reduction in effective area and meet the restricted lift requirements per ASME *BPVC* Section XIII.

[g] Consult the manufacturer for pressure-temperature limitations of other balancing elements, such as diaphragm, piston or other means.

Table 35—Spring-loaded Pressure-relief Valves "H" Orifice [f] (Effective Orifice Area = 0.785 in.^{2}) (USC)

Materials [b]	Valve Size	ASME Flange Class		Maximum Inlet Flange (Set) Pressure Limit [a] (psig)						Outlet Pressure Limit [a] (psig)		Center-to-face Dimensions (in.)	
				Conventional and Balanced Pressure-Relief~~Bellows~~ Valves									
Body/Bonnet	Inlet by Orifice by Outlet	Inlet	Outlet	–450 °F to –76 °F	–75 °F to –21 °F	–20 °F to 100 °F	450 °F	800 °F	1,000 °F	Flange Rating Limit [a] 100 °F	Bellows Rating Limit [ag] 100 °F	Inlet	Outlet
Temperature Range Inclusive –20 °F to 800 °F													
Carbon steel	1 1/2H3	150	150			285	185	80		285	230	5 1/8	4 7/8
	1 1/2H3 [c]	300	150			(285)	(285)	(285)		285	230	5 1/8	4 7/8
	2H3	300	150			740	620	410		285	230	5 1/8	4 7/8
	2H3	600	150			1,480	1,235	825		285	230	6 1/16	6 3/8
	2H3	900	150			2,220	1,855	1,235		285	230	6 1/16	6 3/8
	2H3	1500	300			(2,750)	(2,750)	2,055		740	415	6 1/16	6 3/8
Temperature Range Inclusive 801 °F to 1,000 °F													
Chrome molybdenum steel	2H3	300	150					510	215	290	230	5 1/8	4 7/8
	2H3	600	150					1,015	430	290	230	5 1/8	4 7/8
	2H3	900	150					1,525	650	290	230	6 1/16	6 3/8
	2H3	1500	300					2,540	1,080	750	415	6 1/16	6 3/8
Temperature Range Inclusive –450 °F to 1,000 °F													
Austenitic stainless steel	1 1/2H3	150	150	275	275	275	180	80	20	275	230	5 1/8	4 7/8
	1 1/2H3 [c]	300	150	(275)	(275)	(275)	(275)	(275)	(275)	275	230	5 1/8	4 7/8
	2H3	300	150	720	720	720	495	420	365	275	230	5 1/8	4 7/8
	2H3	600	150	1,440	1,440	1,440	990	845	725	275	230	6 1/16	6 3/8
	2H3	900	150	(1,485)	2,160	2,160	1,485	1,265	1,090	275	230	6 1/16	6 3/8
	2H3	1500	300	(1,600)	(2,750)	(2,750)	2,480	2,110	1,820	(600)	415	6 1/16	6 3/8
Temperature Range Inclusive –20 °F to 900 °F [d]													
Nickel/copper alloy [d]	1 1/2H3	150	150			230	175	80	50	230	230	5 1/8	4 7/8
	1 1/2H3 [c]	300	150			(230)	(230)	(230)	(230)	230	230	5 1/8	4 7/8
	2H3	300	150			600	475	460	275	230	230	5 1/8	4 7/8
	2H3	600	150			1,200	945	915	550	230	230	6 1/16	6 3/8
	2H3	900	150			1,800	1,420	1,375	825	230	230	6 1/16	6 3/8

Materials [b]	Valve Size	ASME Flange Class		Maximum Inlet Flange (Set) Pressure Limit [a] (psig)						Outlet Pressure Limit [a] (psig)		Center-to-face Dimensions (in.)	
				Conventional and Balanced Pressure-Relief~~Bellows~~ Valves									
Body/Bonnet	Inlet by Orifice by Outlet	Inlet	Outlet	–450 °F to –76 °F	–75 °F to –21 °F	–20 °F to 100 °F	450 °F	800 °F	1,000 °F	Flange Rating Limit [a] 100 °F	Bellows Rating Limit [a][g] 100 °F	Inlet	Outlet
Temperature Range Inclusive –20 °F to 300 °F [e]													
Alloy 20 [e]	$1^1/_2$H3	150	150			230	180			230	230	$5^1/_8$	$4^7/_8$
	$1^1/_2$H3 [c]	300	150			(230)	(180)			230	230	$5^1/_8$	$4^7/_8$
	2H3	300	150			600	465			230	230	$5^1/_8$	$4^7/_8$
	2H3	600	150			1,200	930			230	230	$6^1/_{16}$	$6^3/_8$
	2H3	900	150			1,800	1,395			230	230	$6^1/_{16}$	$6^3/_8$
	2H3	1500	300			(2,750)	2,330			600	415	$6^1/_{16}$	$6^3/_8$

[a] Inlet and outlet flange pressure limits correspond to the values in ASME B16.34 unless enclosed in parentheses. A value that is shown in parentheses is less than that provided in ASME B16.34. The outlet flange values at 100 °F above are the limits for this standard. Inlet and outlet flange pressure values at other temperatures may only be interpolated using graphs from Annex F or from tables in ASME B16.34 if these values do not exceed the values in parentheses or the outlet flange values at 100 °F above. Pressure changes within the temperature ranges above may not be linear. Bellows outlet pressure limits are the design pressure of the bellows at the outlet temperature of 100 °F, and pressure values at other temperatures may be determined from Annex G. User is cautioned to review the outlet temperature for possible cryogenic applications and select the appropriate materials.

[b] Materials given are minimum requirements for the pressure and temperature ratings. Other suitable materials may be used, as required for the service involved.

[c] Set pressure limited for low-pressure applications where a Class 300 inlet flange is preferred over a Class 150 flange.

[d] Materials limited to 900 °F. Pressure ratings indicated in the 1,000 °F column are limited to 900 °F.

[e] Materials limited to 300 °F. Pressure ratings indicated in the 450 °F column are limited to 300 °F.

[f] Restricted lift pressure-relief valves, as described in paragraph 4.2.4 of API 520, Part 1, may be specified. The valves supplied shall have a reduction in effective area and meet the restricted lift requirements per ASME *BPVC* Section XIII.

[g] Consult the manufacturer for pressure-temperature limitations of other balancing elements, such as diaphragm, piston or other means.

Table 36—Spring-loaded Pressure-relief Valves "J" Orifice [f] (Effective Orifice Area = 1.287 in.^{2}) (USC)

Materials [b]	Valve Size	ASME Flange Class		Maximum Inlet Flange (Set) Pressure Limit [a] (psig)						Outlet Pressure Limit [a] (psig)		Center-to-face Dimensions (in.)	
				Conventional and Balanced Pressure-ReliefBellows Valves									
Body/Bonnet	Inlet by Orifice by Outlet	Inlet	Outlet	–450 °F to –76 °F	–75 °F to –21 °F	–20 °F to 100 °F	450 °F	800 °F	1,000 °F	Flange Rating Limit [a] 100 °F	Bellows Rating Limit [ag] 100 °F	Inlet	Outlet
Temperature Range Inclusive –20 °F to 800 °F													
Carbon steel	2J3	150	150			285	185	80		285	230	$5^3/_8$	$4^7/_8$
	2J3 [c]	300	150			(285)	(285)	(285)		285	230	$5^3/_8$	$4^7/_8$
	3J4	300	150			740	620	410		285	230	$7^1/_4$	$7^1/_8$
	3J4	600	150			1,480	1,235	825		285	230	$7^1/_4$	$7^1/_8$
	3J4	900	150			2,220	1,855	1,235		285	230	$7^1/_4$	$7^1/_8$
	3J4	1500	300			(2,700)	(2,700)	2,055		(600)	230	$7^1/_4$	$7^1/_8$
Temperature Range Inclusive 801 °F to 1,000 °F													
Chrome molybdenum steel	3J4	300	150					510	215	290	230	$7^1/_4$	$7^1/_8$
	3J4	600	150					1,015	430	290	230	$7^1/_4$	$7^1/_8$
	3J4	900	150					1,525	650	290	230	$7^1/_4$	$7^1/_8$
	3J4	1500	300					2,540	1,080	(600)	230	$7^1/_4$	$7^1/_8$
Temperature Range Inclusive –450 °F to 1,000 °F													
Austenitic stainless steel	2J3	150	150	275	275	275	180	80	20	275	230	$5^3/_8$	$4^7/_8$
	2J3 [c]	300	150	(275)	(275)	(275)	(275)	(275)	(275)	275	230	$5^3/_8$	$4^7/_8$
	3J4	300	150	(500)	720	720	495	420	365	275	230	$7^1/_4$	$7^1/_8$
	3J4	600	150	(625)	1,440	1,440	990	845	725	275	230	$7^1/_4$	$7^1/_8$
	3J4	900	150	(800)	2,160	2,160	1,485	1,265	1,090	275	230	$7^1/_4$	$7^1/_8$
	3J4	1500	300	(800)	(2,750)	(2,750)	2,480	2,110	1,820	(600)	230	$7^1/_4$	$7^1/_8$
Temperature Range Inclusive –20 °F to 900 °F [d]													
Nickel/copper alloy [d]	2J3	150	150			230	175	80	50	230	230	$5^3/_8$	$4^7/_8$
	2J3 [c]	300	150			(230)	(230)	(230)	(230)	230	230	$5^3/_8$	$4^7/_8$
	3J4	300	150			600	475	460	275	230	230	$7^1/_4$	$7^1/_8$
	3J4	600	150			1,200	945	915	550	230	230	$7^1/_4$	$7^1/_8$
	3J4	900	150			1,800	1,420	1,375	825	230	230	$7^1/_4$	$7^1/_8$

Materials [b]	**Valve Size**	**ASME Flange Class**		**Maximum Inlet Flange (Set) Pressure Limit** [a] (psig)						**Outlet Pressure Limit** [a] (psig)		**Center-to-face Dimensions** (in.)	
				Conventional and Balanced Pressure-Relief~~Bellows~~ Valves									
Body/Bonnet	**Inlet by Orifice by Outlet**	**Inlet**	**Outlet**	**–450 °F to –76 °F**	**–75 °F to –21 °F**	**–20 °F to 100 °F**	**450 °F**	**800 °F**	**1,000 °F**	**Flange Rating Limit** [a] **100 °F**	**Bellows Rating Limit** [ag] **100 °F**	**Inlet**	**Outlet**
Temperature Range Inclusive –20 °F to 300 °F [e]													
Alloy 20 [e]	2J3	150	150			230	180			230	230	$5^3/_8$	$4^7/_8$
	2J3 [c]	300	150			(230)	(180)			230	230	$5^3/_8$	$4^7/_8$
	3J4	300	150			600	465			230	230	$7^1/_4$	$7^1/_8$
	3J4	600	150			1,200	930			230	230	$7^1/_4$	$7^1/_8$
	3J4	900	150			1,800	1,395			230	230	$7^1/_4$	$7^1/_8$
	3J4	1500	300			(2,700)	2,330			600	230	$7^1/_4$	$7^1/_8$

[a] Inlet and outlet flange pressure limits correspond to the values in ASME B16.34 unless enclosed in parentheses. A value that is shown in parentheses is less than that provided in ASME B16.34. The outlet flange values at 100 °F above are the limits for this standard. Inlet and outlet flange pressure values at other temperatures may only be interpolated using graphs from Annex F or from tables in ASME B16.34 if these values do not exceed the values in parentheses or the outlet flange values at 100 °F above. Pressure changes within the temperature ranges above may not be linear. Bellows outlet pressure limits are the design pressure of the bellows at the outlet temperature of 100 °F, and pressure values at other temperatures may be determined from Annex G. User is cautioned to review the outlet temperature for possible cryogenic applications and select the appropriate materials.

[b] Materials given are minimum requirements for the pressure and temperature ratings. Other suitable materials may be used, as required for the service involved.

[c] Set pressure limited for low-pressure applications where a Class 300 inlet flange is preferred over a Class 150 flange.

[d] Materials limited to 900 °F. Pressure ratings indicated in the 1,000 °F column are limited to 900 °F.

[e] Materials limited to 300 °F. Pressure ratings indicated in the 450 °F column are limited to 300 °F.

[f] Restricted lift pressure-relief valves, as described in paragraph 4.2.4 of API 520, Part 1, may be specified. The valves supplied shall have a reduction in effective area and meet the restricted lift requirements per ASME *BPVC* Section XIII.

[g] Consult the manufacturer for pressure-temperature limitations of other balancing elements, such as diaphragm, piston or other means.

Table 37—Spring-loaded Pressure-relief Valves "K" Orifice [f] (Effective Orifice Area = 1.838 in.^{2}) (USC)

Materials [b]	Valve Size	ASME Flange Class		Maximum Inlet Flange (Set) Pressure Limit [a] (psig)						Outlet Pressure Limit [a] (psig)		Center-to-face Dimensions (in.)	
				Conventional and Balanced Pressure-Relief~~Bellows~~ Valves									
Body/Bonnet	Inlet by Orifice by Outlet	Inlet	Outlet	–450 °F to –76 °F	–75 °F to –21 °F	–20 °F to 100 °F	450 °F	800 °F	1,000 °F	Flange Rating Limit [a] 100 °F	Bellows Rating Limit [ag] 100 °F	Inlet	Outlet
Temperature Range Inclusive –20 °F to 800 °F													
Carbon steel	3K4	150	150			285	185	80		285	150	$6^1/_8$	$6^3/_8$
	3K4 [c]	300	150			(285)	(285)	(285)		285	150	$6^1/_8$	$6^3/_8$
	3K4	300	150			740	620	410		285	150	$6^1/_8$	$6^3/_8$
	3K4	600	150			1,480	1,235	825		285	200	$7^1/_4$	$7^1/_8$
	3K6	900	150			2,220	1,855	1,235		285	200	$7^{13}/_{16}$	$8^1/_2$
	3K6	1500	300			(2,220)	(2,220)	2,055		(600)	200	$7^3/_4$	$8^1/_2$
Temperature Range Inclusive 801 °F to 1,000 °F													
Chrome molybdenum steel	3K4	300	150					510	215	290	150	$6^1/_8$	$6^3/_8$
	3K4	600	150					1,015	430	290	200	$7^1/_4$	$7^1/_8$
	3K6	900	150					1,525	650	290	200	$7^{13}/_{16}$	$8^1/_2$
	3K6	1500	300					(2,220)	1,080	(600)	200	$7^3/_4$	$8^1/_2$
Temperature Range Inclusive –450 °F to 1,000 °F													
Austenitic stainless steel	3K4	150	150	275	275	275	180	80	20	275	150	$6^1/_8$	$6^3/_8$
	3K4 [c]	300	150	(275)	(275)	(275)	(275)	(275)	(275)	275	150	$6^1/_8$	$6^3/_8$
	3K4	300	150	(525)	720	720	495	420	365	275	150	$6^1/_8$	$6^3/_8$
	3K4	600	150	(600)	1,440	1,440	990	845	725	275	200	$7^1/_4$	$7^1/_8$
	3K6	900	150	(600)	2,160	2,160	1,485	1,265	1,090	275	200	$7^{13}/_{16}$	$8^1/_2$
	3K6	1500	300	(750)	(2,220)	(2,220)	(2,220)	2,110	1,820	(600)	200	$7^3/_4$	$8^1/_2$
Temperature Range Inclusive –20 °F to 900 °F [d]													
Nickel/copper alloy [d]	3K4	150	150			230	175	80	50	230	150	$6^1/_8$	$6^3/_8$
	3K4 [c]	300	150			(230)	(230)	(230)	(230)	230	150	$6^1/_8$	$6^3/_8$
	3K4	300	150			600	475	460	275	230	150	$6^1/_8$	$6^3/_8$
	3K4	600	150			1,200	945	915	550	230	200	$7^1/_4$	$7^1/_8$
	3K6	900	150			1,800	1,420	1,375	825	230	200	$7^{13}/_{16}$	$8^1/_2$

Materials [b]	Valve Size	ASME Flange Class		Maximum Inlet Flange (Set) Pressure Limit [a] (psig)						Outlet Pressure Limit [a] (psig)		Center-to-face Dimensions (in.)	
				Conventional and Balanced Pressure-Relief~~Bellows~~ Valves									
Body/Bonnet	Inlet by Orifice by Outlet	Inlet	Outlet	–450 °F to –76 °F	–75 °F to –21 °F	–20 °F to 100 °F	450 °F	800 °F	1,000 °F	Flange Rating Limit [a] 100 °F	Bellows Rating Limit [a][g] 100 °F	Inlet	Outlet
Temperature Range Inclusive –20 °F to 300 °F [e]													
Alloy 20 [e]	3K4	150	150			230	180			230	150	$6^{1}/_{8}$	$6^{3}/_{8}$
	3K4 [c]	300	150			(230)	(180)			230	150	$6^{1}/_{8}$	$6^{3}/_{8}$
	3K4	300	150			600	465			230	150	$6^{1}/_{8}$	$6^{3}/_{8}$
	3K4	600	150			1,200	930			230	200	$7^{1}/_{4}$	$7^{1}/_{8}$
	3K6	900	150			1,800	1,395			230	200	$7^{13}/_{16}$	$8^{1}/_{2}$
	3K6	1500	300			(2,220)	(2,220)			600	200	$7^{3}/_{4}$	$8^{1}/_{2}$

[a] Inlet and outlet flange pressure limits correspond to the values in ASME B16.34 unless enclosed in parentheses. A value that is shown in parentheses is less than that provided in ASME B16.34. The outlet flange values at 100 °F above are the limits for this standard. Inlet and outlet flange pressure values at other temperatures may only be interpolated using graphs from Annex F or from tables in ASME B16.34 if these values do not exceed the values in parentheses or the outlet flange values at 100 °F above. Pressure changes within the temperature ranges above may not be linear. Bellows outlet pressure limits are the design pressure of the bellows at the outlet temperature of 100 °F, and pressure values at other temperatures may be determined from Annex G. User is cautioned to review the outlet temperature for possible cryogenic applications and select the appropriate materials.

[b] Materials given are minimum requirements for the pressure and temperature ratings. Other suitable materials may be used, as required for the service involved.

[c] Set pressure limited for low-pressure applications where a Class 300 inlet flange is preferred over a Class 150 flange.

[d] Materials limited to 900 °F. Pressure ratings indicated in the 1,000 °F column are limited to 900 °F.

[e] Materials limited to 300 °F. Pressure ratings indicated in the 450 °F column are limited to 300 °F.

[f] Restricted lift pressure-relief valves, as described in paragraph 4.2.4 of API 520, Part 1, may be specified. The valves supplied shall have a reduction in effective area and meet the restricted lift requirements per ASME *BPVC* Section XIII.

[g] Consult the manufacturer for pressure-temperature limitations of other balancing elements, such as diaphragm, piston or other means.

Table 38—Spring-loaded Pressure-relief Valves "L" Orifice [f] (Effective Orifice Area = 2.853 in.^{2}) (USC)

Materials [b]	Valve Size	ASME Flange Class		Maximum Inlet Flange (Set) Pressure Limit [a] (psig)						Outlet Pressure Limit [a] (psig)		Center-to-face Dimensions (in.)	
				Conventional and Balanced Pressure-ReliefBellows Valves									
Body/Bonnet	Inlet by Orifice by Outlet	Inlet	Outlet	–450 °F to –76 °F	–75 °F to –21 °F	–20 °F to 100 °F	450 °F	800 °F	1,000 °F	Flange Rating Limit [a] 100 °F	Bellows Rating Limit [ag] 100 °F	Inlet	Outlet
Temperature Range Inclusive –20 °F to 800 °F													
Carbon steel	3L4	150	150			285	185	80		285	100	6 1/8	6 1/2
	3L4 [c]	300	150			(285)	(285)	(285)		285	100	6 1/8	6 1/2
	4L6	300	150			740	620	410		285	170	7 1/16	7 1/8
	4L6	600	150			(1,000)	(1,000)	825		285	170	7 1/16	8
	4L6	900	150			(1,500)	(1,500)	1,235		285	170	7 3/4	8 3/4
	4L6	1500	150			(1,500)	(1,500)	(1,500)		285	170	7 3/4	8 3/4
Temperature Range Inclusive 801 °F to 1,000 °F													
Chrome molybdenum steel	4L6	300	150					510	215	290	170	7 1/16	7 1/8
	4L6	600	150					(1,000)	430	290	170	7 1/16	8
	4L6	900	150					(1,500)	650	290	170	7 3/4	8 3/4
	4L6	1500	150					(1,500)	1,080	290	170	7 3/4	8 3/4
Temperature Range Inclusive –450 °F to 1,000 °F													
Austenitic stainless steel	3L4	150	150	275	275	275	180	80	20	275	100	6 1/8	6 1/2
	3L4 [c]	300	150	(275)	(275)	(275)	(275)	(275)	(275)	275	100	6 1/8	6 1/2
	4L6	300	150	(535)	720	720	495	420	365	275	170	7 1/16	7 1/8
	4L6	600	150	(535)	(1,000)	(1,000)	990	845	725	275	170	7 1/16	8
	4L6	900	150	(700)	(1,500)	(1,500)	1,485	1,265	1,090	275	170	7 3/4	8 3/4
Temperature Range Inclusive –20 °F to 900 °F [d]													
Nickel/copper alloy [d]	3L4	150	150			230	175	80	50	230	100	6 1/8	6 1/2
	3L4 [c]	300	150			(230)	(230)	(230)	(230)	230	100	6 1/8	6 1/2
	4L6	300	150			600	475	460	275	230	170	7 1/16	7 1/8
	4L6	600	150			1,200	945	915	550	230	170	7 1/16	8
	4L6	900	150			1,800	1,420	1,375	825	230	170	7 3/4	8 3/4

Materials [b]	**Valve Size**	**ASME Flange Class**		**Maximum Inlet Flange (Set) Pressure Limit** [a] (psig)						**Outlet Pressure Limit** [a] (psig)		**Center-to-face Dimensions** (in.)	
				Conventional and Balanced Pressure-Relief~~Bellows~~ Valves									
Body/Bonnet	**Inlet by Orifice by Outlet**	**Inlet**	**Outlet**	**–450 °F to –76 °F**	**–75 °F to –21 °F**	**–20 °F to 100 °F**	**450 °F**	**800 °F**	**1,000 °F**	**Flange Rating Limit** [a] **100 °F**	**Bellows Rating Limit** [a][g] **100 °F**	**Inlet**	**Outlet**
Temperature Range Inclusive –20 °F to 300 °F [e]													
Alloy 20 [e]	3L4	150	150			230	180			230	100	$6^1/_8$	$6^1/_2$
	3L4 [c]	300	150			(230)	(180)			230	100	$6^1/_8$	$6^1/_2$
	4L6	300	150			600	465			230	170	$7^1/_{16}$	$7^1/_8$
	4L6	600	150			1,200	930			230	170	$7^1/_{16}$	8
	4L6	900	150			(1,500)	1,395			230	170	$7^3/_4$	$8^3/_4$
	4L6	1500	150			(1,500)	(1,500)			230	170	$7^3/_4$	$8^3/_4$

[a] Inlet and outlet flange pressure limits correspond to the values in ASME B16.34 unless enclosed in parentheses. A value that is shown in parentheses is less than that provided in ASME B16.34. The outlet flange values at 100 °F above are the limits for this standard. Inlet and outlet flange pressure values at other temperatures may only be interpolated using graphs from Annex F or from tables in ASME B16.34 if these values do not exceed the values in parentheses or the outlet flange values at 100 °F above. Pressure changes within the temperature ranges above may not be linear. Bellows outlet pressure limits are the design pressure of the bellows at the outlet temperature of 100 °F, and pressure values at other temperatures may be determined from Annex G. User is cautioned to review the outlet temperature for possible cryogenic applications and select the appropriate materials.

[b] Materials given are minimum requirements for the pressure and temperature ratings. Other suitable materials may be used, as required for the service involved.

[c] Set pressure limited for low-pressure applications where a Class 300 inlet flange is preferred over a Class 150 flange.

[d] Materials limited to 900 °F. Pressure ratings indicated in the 1,000 °F column are limited to 900 °F.

[e] Materials limited to 300 °F. Pressure ratings indicated in the 450 °F column are limited to 300 °F.

[f] Restricted lift pressure-relief valves, as described in paragraph 4.2.4 of API 520, Part 1, may be specified. The valves supplied shall have a reduction in effective area and meet the restricted lift requirements per ASME *BPVC* Section XIII.

[g] Consult the manufacturer for pressure-temperature limitations of other balancing elements, such as diaphragm, piston or other means.

Table 39—Spring-loaded Pressure-relief Valves "M" Orifice [f] (Effective Orifice Area = 3.60 in.^{2}) (USC)

Materials [b]	Valve Size	ASME Flange Class		Maximum Inlet Flange (Set) Pressure Limit [a] (psig)						Outlet Pressure Limit [a] (psig)		Center-to-face Dimensions (in.)	
				Conventional and Balanced Pressure-ReliefBellows Valves									
Body/Bonnet	Inlet by Orifice by Outlet	Inlet	Outlet	–450 °F to –76 °F	–75 °F to –21 °F	–20 °F to 100 °F	450 °F	800 °F	1,000 °F	Flange Rating Limit [a] 100 °F	Bellows Rating Limit [ag] 100 °F	Inlet	Outlet
Temperature Range Inclusive –20 °F to 800 °F													
Carbon steel	4M6	150	150			285	185	80		285	80	7	7 1/4
	4M6 [c]	300	150			(285)	(285)	(285)		285	80	7	7 1/4
	4M6	300	150			740	620	410		285	160	7	7 1/4
	4M6	600	150			(1,100)	(1,100)	825		285	160	7	8
	4M6	900	150			(1,100)	(1,100)	(1,100)		285	160	7 3/4	8 3/4
Temperature Range Inclusive 801 °F to 1,000 °F													
Chrome molybdenum steel	4M6	300	150					510	215	290	160	7	7 1/4
	4M6	600	150					(1,000)	430	290	160	7	8
	4M6	900	150					(1,100)	650	290	160	7 3/4	8 3/4
Temperature Range Inclusive –450 °F to 1,000 °F													
Austenitic stainless steel	4M6	150	150	275	275	275	180	80	20	275	80	7	7 1/4
	4M6 [c]	300	150	(275)	(275)	(275)	(275)	(275)	(275)	275	80	7	7 1/4
	4M6	300	150	(525)	720	720	495	420	365	275	160	7	7 1/4
	4M6	600	150	(600)	(1,100)	(1,100)	990	845	725	275	160	7	8
Temperature Range Inclusive –20 °F to 900 °F [d]													
Nickel/copper alloy [d]	4M6	150	150			230	175	80	50	230	80	7	7 1/4
	4M6 [c]	300	150			(230)	(230)	(230)	(230)	230	80	7	7 1/4
	4M6	300	150			600	475	460	275	230	160	7	7 1/4
	4M6	600	150			(1,100)	945	915	550	230	160	7	8
	4M6	900	150			(1,100)	(1,100)	(1,100)	825	230	160	7 3/4	8 3/4

Materials [b]	**Valve Size**	**ASME Flange Class**		**Maximum Inlet Flange (Set) Pressure Limit** [a] (psig)						**Outlet Pressure Limit** [a] (psig)		**Center-to-face Dimensions** (in.)	
				Conventional and Balanced Pressure-Relief~~Bellows~~ Valves									
Body/Bonnet	**Inlet by Orifice by Outlet**	**Inlet**	**Outlet**	**–450 °F to –76 °F**	**–75 °F to –21 °F**	**–20 °F to 100 °F**	**450 °F**	**800 °F**	**1,000 °F**	**Flange Rating Limit** [a] **100 °F**	**Bellows Rating Limit** [a][g] **100 °F**	**Inlet**	**Outlet**
Temperature Range Inclusive –20 °F to 300 °F [e]													
Alloy 20 [e]	4M6	150	150			230	180			230	80	7	$7\frac{1}{4}$
	4M6 [c]	300	150			(230)	(180)			230	80	7	$7\frac{1}{4}$
	4M6	300	150			600	465			230	160	7	$7\frac{1}{4}$
	4M6	600	150			(1,100)	930			230	160	7	8
	4M6	900	150			(1,100)	(1,100)			230	160	$7\frac{3}{4}$	$8\frac{3}{4}$

[a] Inlet and outlet flange pressure limits correspond to the values in ASME B16.34 unless enclosed in parentheses. A value that is shown in parentheses is less than that provided in ASME B16.34. The outlet flange values at 100 °F above are the limits for this standard. Inlet and outlet flange pressure values at other temperatures may only be interpolated using graphs from Annex F or from tables in ASME B16.34 if these values do not exceed the values in parentheses or the outlet flange values at 100 °F above. Pressure changes within the temperature ranges above may not be linear. Bellows outlet pressure limits are the design pressure of the bellows at the outlet temperature of 100 °F, and pressure values at other temperatures may be determined from Annex G. User is cautioned to review the outlet temperature for possible cryogenic applications and select the appropriate materials.

[b] Materials given are minimum requirements for the pressure and temperature ratings. Other suitable materials may be used, as required for the service involved.

[c] Set pressure limited for low-pressure applications where a Class 300 inlet flange is preferred over a Class 150 flange.

[d] Materials limited to 900 °F. Pressure ratings indicated in the 1,000 °F column are limited to 900 °F.

[e] Materials limited to 300 °F. Pressure ratings indicated in the 450 °F column are limited to 300 °F.

[f] Restricted lift pressure-relief valves, as described in paragraph 4.2.4 of API 520, Part 1, may be specified. The valves supplied shall have a reduction in effective area and meet the restricted lift requirements per ASME *BPVC* Section XIII.

[g] Consult the manufacturer for pressure-temperature limitations of other balancing elements, such as diaphragm, piston or other means.

Table 40—Spring-loaded Pressure-relief Valves "N" Orifice [f] (Effective Orifice Area = 4.34 in.^{2}) (USC)

Materials [b]	Valve Size	ASME Flange Class		Maximum Inlet Flange (Set) Pressure Limit [a] (psig)						Outlet Pressure Limit [a] (psig)		Center-to-face Dimensions (in.)	
				Conventional and Balanced Pressure-Relief~~Bellows~~ Valves									
Body/Bonnet	Inlet by Orifice by Outlet	Inlet	Outlet	–450 °F to –76 °F	–75 °F to –21 °F	–20 °F to 100 °F	450 °F	800 °F	1,000 °F	Flange Rating Limit [a] 100 °F	Bellows Rating Limit [ag] 100 °F	Inlet	Outlet
Temperature Range Inclusive –20 °F to 800 °F													
Carbon steel	4N6	150	150			285	185	80		285	80	$7^3/_4$	$8^1/_4$
	4N6 [c]	300	150			(285)	(285)	(285)		285	80	$7^3/_4$	$8^1/_4$
	4N6	300	150			740	620	410		285	160	$7^3/_4$	$8^1/_4$
	4N6	600	150			(1,000)	(1,000)	825		285	160	$7^3/_4$	$8^3/_4$
	4N6	900	150			(1,000)	(1,000)	(1,000)		285	160	$7^3/_4$	$8^3/_4$
Temperature Range Inclusive 801 °F to 1,000 °F													
Chrome molybdenum steel	4N6	300	150					510	215	290	160	$7^3/_4$	$8^1/_4$
	4N6	600	150					(1,000)	430	290	160	$7^3/_4$	$8^3/_4$
	4N6	900	150					(1,000)	650	290	160	$7^3/_4$	$8^3/_4$
Temperature Range Inclusive –450 °F to 1,000 °F													
Austenitic stainless steel	4N6	150	150	275	275	275	180	80	20	275	80	$7^3/_4$	$8^1/_4$
	4N6 [c]	300	150	(275)	(275)	(275)	(275)	(275)	(275)	275	80	$7^3/_4$	$8^1/_4$
	4N6	300	150	(450)	720	720	495	420	365	275	160	$7^3/_4$	$8^1/_4$
	4N6	600	150	(500)	(1,000)	(1,000)	990	845	725	275	160	$7^3/_4$	$8^3/_4$
Temperature Range Inclusive –20 °F to 900 °F [d]													
Nickel/copper alloy [d]	4N6	150	150			230	175	80	50	230	80	$7^3/_4$	$8^1/_4$
	4N6 [c]	300	150			(230)	(230)	(230)	(230)	230	80	$7^3/_4$	$8^1/_4$
	4N6	300	150			600	475	460	275	230	160	$7^3/_4$	$8^1/_4$
	4N6	600	150			(1,000)	945	915	550	230	160	$7^3/_4$	$8^3/_4$
	4N6	900	150			(1,000)	(1,000)	(1,000)	825	230	160	$7^3/_4$	$8^3/_4$

Materials [b]	Valve Size	ASME Flange Class		Maximum Inlet Flange (Set) Pressure Limit [a] (psig)						Outlet Pressure Limit [a] (psig)		Center-to-face Dimensions (in.)	
				Conventional and Balanced Pressure-Relief~~Bellows~~ Valves									
Body/Bonnet	Inlet by Orifice by Outlet	Inlet	Outlet	–450 °F to –76 °F	–75 °F to –21 °F	–20 °F to 100 °F	450 °F	800 °F	1,000 °F	Flange Rating Limit [a] 100 °F	Bellows Rating Limit [ag] 100 °F	Inlet	Outlet
Temperature Range Inclusive –20 °F to 300 °F [e]													
Alloy 20 [e]	4N6	150	150			230	180			230	80	$7^{3}/_{4}$	$8^{1}/_{4}$
	4N6 [c]	300	150			(230)	(180)			230	80	$7^{3}/_{4}$	$8^{1}/_{4}$
	4N6	300	150			600	465			230	160	$7^{3}/_{4}$	$8^{1}/_{4}$
	4N6	600	150			(1,000)	930			230	160	$7^{3}/_{4}$	$8^{3}/_{4}$
	4N6	900	150			(1,000)	(1,000)			230	160	$7^{3}/_{4}$	$8^{3}/_{4}$

[a] Inlet and outlet flange pressure limits correspond to the values in ASME B16.34 unless enclosed in parentheses. A value that is shown in parentheses is less than that provided in ASME B16.34. The outlet flange values at 100 °F above are the limits for this standard. Inlet and outlet flange pressure values at other temperatures may only be interpolated using graphs from Annex F or from tables in ASME B16.34 if these values do not exceed the values in parentheses or the outlet flange values at 100 °F above. Pressure changes within the temperature ranges above may not be linear. Bellows outlet pressure limits are the design pressure of the bellows at the outlet temperature of 100 °F, and pressure values at other temperatures may be determined from Annex G. User is cautioned to review the outlet temperature for possible cryogenic applications and select the appropriate materials.

[b] Materials given are minimum requirements for the pressure and temperature ratings. Other suitable materials may be used, as required for the service involved.

[c] Set pressure limited for low-pressure applications where a Class 300 inlet flange is preferred over a Class 150 flange.

[d] Materials limited to 900 °F. Pressure ratings indicated in the 1,000 °F column are limited to 900 °F.

[e] Materials limited to 300 °F. Pressure ratings indicated in the 450 °F column are limited to 300 °F.

[f] Restricted lift pressure-relief valves, as described in paragraph 4.2.4 of API 520, Part 1, may be specified. The valves supplied shall have a reduction in effective area and meet the restricted lift requirements per ASME *BPVC* Section XIII.

[g] Consult the manufacturer for pressure-temperature limitations of other balancing elements, such as diaphragm, piston or other means.

Table 41—Spring-loaded Pressure-relief Valves "P" Orifice [f] (Effective Orifice Area = 6.38 in.^{2}) (USC)

Materials [b]	Valve Size	ASME Flange Class		Maximum Inlet Flange (Set) Pressure Limit [a] (psig)						Outlet Pressure Limit [a] (psig)		Center-to-face Dimensions (in.)	
				Conventional and Balanced Pressure-Relief~~Bellows~~ Valves									
Body/Bonnet	Inlet by Orifice by Outlet	Inlet	Outlet	–450 °F to –76 °F	–75 °F to –21 °F	–20 °F to 100 °F	450 °F	800 °F	1,000 °F	Flange Rating Limit [a] 100 °F	Bellows Rating Limit [ag] 100 °F	Inlet	Outlet
Temperature Range Inclusive –20 °F to 800 °F													
Carbon steel	4P6	150	150			285	185	80		285	80	$7^1/_8$	9
	4P6 [c]	300	150			(285)	(285)	(285)		285	80	$7^1/_8$	9
	4P6	300	150			(525)	(525)	410		285	150	$8^7/_8$	10
	4P6	600	150			(1,000)	(1,000)	825		285	150	$8^7/_8$	10
	4P6	900	150			(1,000)	(1,000)	(1,000)		285	150	$8^7/_8$	10
Temperature Range Inclusive 801 °F to 1,000 °F													
Chrome molybdenum steel	4P6	300	150					510	215	290	150	$8^7/_8$	10
	4P6	600	150					(1,000)	430	290	150	$8^7/_8$	10
	4P6	900	150					(1,000)	650	290	150	$8^7/_8$	10
Temperature Range Inclusive –450 °F to 1,000 °F													
Austenitic stainless steel	4P6	150	150	(175)	275	275	180	80	20	275	80	$7^1/_8$	9
	4P6 [c]	300	150	(175)	(275)	(275)	(275)	(275)	(275)	275	80	$7^1/_8$	9
	4P6	300	150	(300)	(525)	(525)	495	420	365	275	150	$8^7/_8$	10
	4P6	600	150	(480)	(1,000)	(1,000)	990	845	725	275	150	$8^7/_8$	10
Temperature Range Inclusive –20 °F to 900 °F [d]													
Nickel/copper alloy [d]	4P6	150	150			230	175	80	50	230	80	$7^1/_8$	9
	4P6 [c]	300	150			(230)	(230)	(230)	(230)	230	80	$7^1/_8$	9
	4P6	300	150			(525)	475	460	275	230	150	$8^7/_8$	10
	4P6	600	150			(1,000)	945	915	550	230	150	$8^7/_8$	10
	4P6	900	150			(1,000)	(1,000)	(1,000)	825	230	150	$8^7/_8$	10

Materials [b]	Valve Size	ASME Flange Class		Maximum Inlet Flange (Set) Pressure Limit [a] (psig)						Outlet Pressure Limit [a] (psig)		Center-to-face Dimensions (in.)	
				Conventional and Balanced Pressure-Relief~~Bellows~~ Valves									
Body/Bonnet	Inlet by Orifice by Outlet	Inlet	Outlet	–450 °F to –76 °F	–75 °F to –21 °F	–20 °F to 100 °F	450 °F	800 °F	1,000 °F	Flange Rating Limit [a] 100 °F	Bellows Rating Limit [ag] 100 °F	Inlet	Outlet
Temperature Range Inclusive –20 °F to 300 °F [e]													
Alloy 20 [e]	4P6	150	150			230	180			230	80	$7\frac{1}{8}$	9
	4P6 [c]	300	150			(230)	(180)			230	80	$7\frac{1}{8}$	9
	4P6	300	150			(525)	465			230	150	$8\frac{7}{8}$	10
	4P6	600	150			(1,000)	930			230	150	$8\frac{7}{8}$	10
	4P6	900	150			(1,000)	(1,000)			230	150	$8\frac{7}{8}$	10

[a] Inlet and outlet flange pressure limits correspond to the values in ASME B16.34 unless enclosed in parentheses. A value that is shown in parentheses is less than that provided in ASME B16.34. The outlet flange values at 100 °F above are the limits for this standard. Inlet and outlet flange pressure values at other temperatures may only be interpolated using graphs from Annex F or from tables in ASME B16.34 if these values do not exceed the values in parentheses or the outlet flange values at 100 °F above. Pressure changes within the temperature ranges above may not be linear. Bellows outlet pressure limits are the design pressure of the bellows at the outlet temperature of 100 °F, and pressure values at other temperatures may be determined from Annex G. User is cautioned to review the outlet temperature for possible cryogenic applications and select the appropriate materials.

[b] Materials given are minimum requirements for the pressure and temperature ratings. Other suitable materials may be used, as required for the service involved.

[c] Set pressure limited for low-pressure applications where a Class 300 inlet flange is preferred over a Class 150 flange.

[d] Materials limited to 900 °F. Pressure ratings indicated in the 1,000 °F column are limited to 900 °F.

[e] Materials limited to 300 °F. Pressure ratings indicated in the 450 °F column are limited to 300 °F.

[f] Restricted lift pressure-relief valves, as described in paragraph 4.2.4 of API 520, Part 1, may be specified. The valves supplied shall have a reduction in effective area and meet the restricted lift requirements per ASME *BPVC* Section XIII.

[g] Consult the manufacturer for pressure-temperature limitations of other balancing elements, such as diaphragm, piston or other means.

Table 42—Spring-loaded Pressure-relief Valves "Q" Orifice [f] (Effective Orifice Area = 11.05 in.^{2}) (USC)

Materials [b]	Valve Size	ASME Flange Class		Maximum Inlet Flange (Set) Pressure Limit [a] (psig)						Outlet Pressure Limit [a] (psig)		Center-to-face Dimensions (in.)	
				Conventional and Balanced ~~Bellows~~ Pressure-Relief Valves									
Body/Bonnet	Inlet by Orifice by Outlet	Inlet	Outlet	–450 °F to –76 °F	–75 °F to –21 °F	–20 °F to 100 °F	450 °F	800 °F	1,000 °F	Flange Rating Limit [a]	Bellows Rating Limit [a,g]	Inlet	Outlet
										100 °F	100 °F		
Temperature Range Inclusive –20 °F to 800 °F													
Carbon steel	6Q8	150	150			(165)	(165)	80		(115)	70	$9^{7}/_{16}$	$9^{1}/_{2}$
	6Q8 [c]	300	150			(165)	(165)	(165)		(115)	70	$9^{7}/_{16}$	$9^{1}/_{2}$
	6Q8	300	150			(300)	(300)	(300)		(115)	115	$9^{7}/_{16}$	$9^{1}/_{2}$
	6Q8	600	150			(600)	(600)	(600)		(115)	115	$9^{7}/_{16}$	$9^{1}/_{2}$
Temperature Range Inclusive 801 °F to 1,000 °F													
Chrome molybdenum steel	6Q8	300	150					(165)	(165)	(115)	115	$9^{7}/_{16}$	$9^{1}/_{2}$
	6Q8	600	150					(600)	430	(115)	115	$9^{7}/_{16}$	$9^{1}/_{2}$
Temperature Range Inclusive –450 °F to 1,000 °F													
Austenitic stainless steel	6Q8	150	150	(165)	(165)	(165)	(165)	80	20	(115)	70	$9^{7}/_{16}$	$9^{1}/_{2}$
	6Q8 [c]	300	150	(165)	(165)	(165)	(165)	(165)	(165)	(115)	70	$9^{7}/_{16}$	$9^{1}/_{2}$
	6Q8	300	150	(250)	(300)	(300)	(300)	(300)	(300)	(115)	115	$9^{7}/_{16}$	$9^{1}/_{2}$
	6Q8	600	150	(300)	(600)	(600)	(600)	(600)	(600)	(115)	115	$9^{7}/_{16}$	$9^{1}/_{2}$
Temperature Range Inclusive –20 °F to 900 °F [d]													
Nickel/copper alloy [d]	6Q8	150	150			(165)	(165)	80	50	(115)	70	$9^{7}/_{16}$	$9^{1}/_{2}$
	6Q8 [c]	300	150			(165)	(165)	(165)	(140)	(115)	70	$9^{7}/_{16}$	$9^{1}/_{2}$
	6Q8	300	150			(300)	(300)	(300)	275	(115)	115	$9^{7}/_{16}$	$9^{1}/_{2}$
	6Q8	600	150			(600)	(600)	(600)	550	(115)	115	$9^{7}/_{16}$	$9^{1}/_{2}$

Materials [b]	**Valve Size**	**ASME Flange Class**		**Maximum Inlet Flange (Set) Pressure Limit** [a] (psig)						**Outlet Pressure Limit** [a] (psig)		**Center-to-face Dimensions** (in.)	
				Conventional and Balanced ~~Bellows~~ Pressure-Relief Valves									
Body/Bonnet	**Inlet by Orifice by Outlet**	**Inlet**	**Outlet**	**–450 °F to –76 °F**	**–75 °F to –21 °F**	**–20 °F to 100 °F**	**450 °F**	**800 °F**	**1,000 °F**	**Flange Rating Limit** [a] **100 °F**	**Bellows Rating Limit** [a][g] **100 °F**	**Inlet**	**Outlet**
Temperature Range Inclusive –20 °F to 300 °F [e]													
Alloy 20 [e]	6Q8	150	150			(165)	(165)			(115)	70	$9^{7}/_{16}$	$9^{1}/_{2}$
	6Q8 [c]	300	150			(165)	(165)			(115)	70	$9^{7}/_{16}$	$9^{1}/_{2}$
	6Q8	300	150			(300)	(300)			(115)	115	$9^{7}/_{16}$	$9^{1}/_{2}$
	6Q8	600	150			(600)	(600)			(115)	115	$9^{7}/_{16}$	$9^{1}/_{2}$

[a] Inlet and outlet flange pressure limits correspond to the values in ASME B16.34 unless enclosed in parentheses. A value that is shown in parentheses is less than that provided in ASME B16.34. The outlet flange values at 100 °F above are the limits for this standard. Inlet and outlet flange pressure values at other temperatures may only be interpolated using graphs from Annex F or from tables in ASME B16.34 if these values do not exceed the values in parentheses or the outlet flange values at 100 °F above. Pressure changes within the temperature ranges above may not be linear. Bellows outlet pressure limits are the design pressure of the bellows at the outlet temperature of 100 °F, and pressure values at other temperatures may be determined from Annex G. User is cautioned to review the outlet temperature for possible cryogenic applications and select the appropriate materials.

[b] Materials given are minimum requirements for the pressure and temperature ratings. Other suitable materials may be used, as required for the service involved.

[c] Set pressure limited for low-pressure applications where a Class 300 inlet flange is preferred over a Class 150 flange.

[d] Materials limited to 900 °F. Pressure ratings indicated in the 1,000 °F column are limited to 900 °F.

[e] Materials limited to 300 °F. Pressure ratings indicated in the 450 °F column are limited to 300 °F.

[f] Restricted lift pressure-relief valves, as described in paragraph 4.2.4 of API 520, Part 1, may be specified. The valves supplied shall have a reduction in effective area and meet the restricted lift requirements per ASME *BPVC* Section XIII.

[g] Consult the manufacturer for pressure-temperature limitations of other balancing elements, such as diaphragm, piston or other means.

Table 43—Spring-loaded Pressure-relief Valves "R" Orifice [f] (Effective Orifice Area = 16.00 in.^{2}) (USC)

Materials [b]	Valve Size	ASME Flange Class		Maximum Inlet Flange (Set) Pressure Limit [a] (psig)						Outlet Pressure Limit [a] (psig)		Center-to-face Dimensions (in.)	
				Conventional and Balanced ~~Bellows~~ Pressure-Relief Valves									
Body/Bonnet	Inlet by Orifice by Outlet	Inlet	Outlet	–450 °F to –76 °F	–75 °F to –21 °F	–20 °F to 100 °F	450 °F	800 °F	1,000 °F	Flange Rating Limit [a]	Bellows Rating Limit [a,g]	Inlet	Outlet
										100 °F	100 °F		
Temperature Range Inclusive –20 °F to 800 °F													
Carbon steel	6R8	150	150			(100)	(100)	80		(60)	60	$9\frac{7}{16}$	$9\frac{1}{2}$
	6R8 [c]	300	150			(100)	(100)	(100)		(60)	60	$9\frac{7}{16}$	$9\frac{1}{2}$
	6R10	300	150			(230)	(230)	(230)		(100)	100	$9\frac{7}{16}$	$10\frac{1}{2}$
	6R10	600	150			(300)	(300)	(300)		(100)	100	$9\frac{7}{16}$	$10\frac{1}{2}$
Temperature Range Inclusive 801 °F to 1,000 °F													
Chrome molybdenum steel	6R8	300	150					(100)	(100)	(100)	100	$9\frac{7}{16}$	$9\frac{1}{2}$
	6R10	600	150					(300)	(300)	(100)	100	$9\frac{7}{16}$	$10\frac{1}{2}$
Temperature Range Inclusive –450 °F to 1,000 °F													
Austenitic stainless steel	6R8	150	150	(55)	(100)	(100)	(100)	80	20	(60)	60	$9\frac{7}{16}$	$9\frac{1}{2}$
	6R8 [c]	300	150	(55)	(100)	(100)	(100)	(100)	(100)	(60)	60	$9\frac{7}{16}$	$9\frac{1}{2}$
	6R10	300	150	(150)	(230)	(230)	(230)	(230)	(230)	(100)	100	$9\frac{7}{16}$	$10\frac{1}{2}$
	6R10	600	150	(200)	(300)	(300)	(300)	(300)	(300)	(100)	100	$9\frac{7}{16}$	$10\frac{1}{2}$
Temperature Range Inclusive –20 °F to 900 °F [d]													
Nickel/copper alloy [d]	6R8	150	150			(100)	(100)	80	50	(60)	60	$9\frac{7}{16}$	$9\frac{1}{2}$
	6R8 [c]	300	150			(100)	(100)	(100)	(100)	(60)	60	$9\frac{7}{16}$	$9\frac{1}{2}$
	6R10	300	150			(230)	(230)	(230)	(230)	(100)	100	$9\frac{7}{16}$	$10\frac{1}{2}$
	6R10	600	150			(300)	(300)	(300)	(300)	(100)	100	$9\frac{7}{16}$	$10\frac{1}{2}$

Materials [b]	**Valve Size**	**ASME Flange Class**		**Maximum Inlet Flange (Set) Pressure Limit** [a] (psig)						**Outlet Pressure Limit** [a] (psig)		**Center-to-face Dimensions** (in.)	
				Conventional and Balanced ~~Bellows~~ Pressure-Relief Valves									
Body/Bonnet	**Inlet by Orifice by Outlet**	**Inlet**	**Outlet**	**–450 °F to –76 °F**	**–75 °F to –21 °F**	**–20 °F to 100 °F**	**450 °F**	**800 °F**	**1,000 °F**	**Flange Rating Limit** [a] **100 °F**	**Bellows Rating Limit** [ag] **100 °F**	**Inlet**	**Outlet**
Temperature Range Inclusive –20 °F to 300 °F [e]													
Alloy 20 [e]	6R8	150	150			(100)	(100)			(60)	60	$9^{7}/_{16}$	$9^{1}/_{2}$
	6R8 [c]	300	150			(100)	(100)			(60)	60	$9^{7}/_{16}$	$9^{1}/_{2}$
	6R10	300	150			(230)	(230)			(100)	100	$9^{7}/_{16}$	$10^{1}/_{2}$
	6R10	600	150			(300)	(300)			(100)	100	$9^{7}/_{16}$	$10^{1}/_{2}$

[a] Inlet and outlet flange pressure limits correspond to the values in ASME B16.34 unless enclosed in parentheses. A value that is shown in parentheses is less than that provided in ASME B16.34. The outlet flange values at 100 °F above are the limits for this standard. Inlet and outlet flange pressure values at other temperatures may only be interpolated using graphs from Annex F or from tables in ASME B16.34 if these values do not exceed the values in parentheses or the outlet flange values at 100 °F above. Pressure changes within the temperature ranges above may not be linear. Bellows outlet pressure limits are the design pressure of the bellows at the outlet temperature of 100 °F, and pressure values at other temperatures may be determined from Annex G. User is cautioned to review the outlet temperature for possible cryogenic applications and select the appropriate materials.

[b] Materials given are minimum requirements for the pressure and temperature ratings. Other suitable materials may be used, as required for the service involved.

[c] Set pressure limited for low-pressure applications where a Class 300 inlet flange is preferred over a Class 150 flange.

[d] Materials limited to 900 °F. Pressure ratings indicated in the 1,000 °F column are limited to 900 °F.

[e] Materials limited to 300 °F. Pressure ratings indicated in the 450 °F column are limited to 300 °F.

[f] Restricted lift pressure-relief valves, as described in paragraph 4.2.4 of API 520, Part 1, may be specified. The valves supplied shall have a reduction in effective area and meet the restricted lift requirements per ASME *BPVC* Section XIII.

[g] Consult the manufacturer for pressure-temperature limitations of other balancing elements, such as diaphragm, piston or other means.

Table 44—Spring-loaded Pressure-relief Valves "T" Orifice [f] (Effective Orifice Area = 26.00 in.^{2}) (USC)

Materials [b]	Valve Size	ASME Flange Class		Maximum Inlet Flange (Set) Pressure Limit [a] (psig)						Outlet Pressure Limit [a] (psig)		Center-to-face Dimensions (in.)	
				Conventional and Balanced ~~Bellows~~ Pressure-Relief Valves									
Body/Bonnet	Inlet by Orifice by Outlet	Inlet	Outlet	–450 °F to –76 °F	–75 °F to –21 °F	–20 °F to 100 °F	450 °F	800 °F	1,000 °F	Flange Rating Limit [a]	Bellows Rating Limit [ag]	Inlet	Outlet
										100 °F	100 °F		
Temperature Range Inclusive –20 °F to 800 °F													
Carbon steel	8T10	150	150			(65)	(65)	(65)		(30)	30	$10^7/_8$	11
	8T10 [c]	300	150			(65)	(65)	(65)		(30)	30	$10^7/_8$	11
	8T10	300	150			(120)	(120)	(120)		(60)	60	$10^7/_8$	11
	8T10	300	150			(300)	(300)	(300)		(100)	100	$10^7/_8$	11
Temperature Range Inclusive 801 °F to 1,000 °F													
Chrome molybdenum steel	8T10	300	150					(120)	100	(60)	60	$10^7/_8$	11
	8T10	300	150					(300)	(215)	(100)	100	$10^7/_8$	11
Temperature Range Inclusive –450 °F to 1,000 °F													
Austenitic stainless steel	8T10	150	150	(50)	(65)	(65)	(65)	(65)	(20)	(30)	30	$10^7/_8$	11
	8T10 [c]	300	150	(50)	(65)	(65)	(65)	(65)	(65)	(30)	30	$10^7/_8$	11
	8T10	300	150	(65)	(120)	(120)	(120)	(120)	(120)	(60)	60	$10^7/_8$	11
Temperature Range Inclusive –20 °F to 900 °F [d]													
Nickel/copper alloy [d]	8T10	150	150			(65)	(65)	(65)	50	(30)	30	$10^7/_8$	11
	8T10 [c]	300	150			(65)	(65)	(65)	(65)	(30)	30	$10^7/_8$	11
	8T10	300	150			(120)	(120)	(120)	(120)	(60)	60	$10^7/_8$	11

Materials [b]	**Valve Size**	**ASME Flange Class**		**Maximum Inlet Flange (Set) Pressure Limit** [a] (psig)						**Outlet Pressure Limit** [a] (psig)		**Center-to-face Dimensions** (in.)	
				Conventional and Balanced ~~Bellows~~ Pressure-Relief Valves									
Body/Bonnet	**Inlet by Orifice by Outlet**	**Inlet**	**Outlet**	**–450 °F to –76 °F**	**–75 °F to –21 °F**	**–20 °F to 100 °F**	**450 °F**	**800 °F**	**1,000 °F**	**Flange Rating Limit** [a] **100 °F**	**Bellows Rating Limit** [ag] **100 °F**	**Inlet**	**Outlet**
Temperature Range Inclusive –20 °F to 300 °F [e]													
Alloy 20 [e]	8T10	150	150		(65)	(65)				(30)	30	$10^{7}/_{8}$	11
	8T10 [c]	300	150		(65)	(65)				(30)	30	$10^{7}/_{8}$	11
	8T10	300	150		(120)	(120)				(60)	60	$10^{7}/_{8}$	11

[a] Inlet and outlet flange pressure limits correspond to the values in ASME B16.34 unless enclosed in parentheses. A value that is less than that provided in ASME B16.34. The outlet flange values at 100 °F above are the limits for this standard. Inlet and outlet flange pressure values at other temperatures may only be interpolated using graphs from Annex F or from tables in ASME B16.34 if these values do not exceed the values in parentheses or the outlet flange values at 100 °F above. Pressure changes within the temperature ranges above may not be linear. Bellows outlet pressure limits are the design pressure of the bellows at the outlet temperature of 100 °F, and pressure values at other temperatures may be determined from Annex G. User is cautioned to review the outlet temperature for possible cryogenic applications and select the appropriate materials.

[b] Materials given are minimum requirements for the pressure and temperature ratings. Other suitable materials may be used, as required for the service involved.

[c] Set pressure limited for low-pressure applications where a Class 300 inlet flange is preferred over a Class 150 flange.

[d] Materials limited to 900 °F. Pressure ratings indicated in the 1,000 °F column are limited to 900 °F.

[e] Materials limited to 300 °F. Pressure ratings indicated in the 450 °F column are limited to 300 °F.

[f] Restricted lift pressure-relief valves, as described in paragraph 4.2.4 of API 520, Part 1, may be specified. The valves supplied shall have a reduction in effective area and meet the restricted lift requirements per ASME *BPVC* Section XIII.

[g] Consult the manufacturer for pressure-temperature limitations of other balancing elements, such as diaphragm, piston or other means.

Annex A
(normative)

Pressure-relief Valve Nameplate Nomenclature (SI)

Markings for the pressure-relief valves shall be detailed on a nameplate with the information as per Table A.1.

Table A.1—PRV Nameplate Nomenclature Table (SI)

Nomenclature	Description
Tag number	Project specific tag
Manufacturer's name or identifying trademark	Identification of manufacturer
Size	Nominal pipe size, inlet by outlet
Type, style, model, or figure number	Manufacturer's designation
Orifice	Valve orifice size, standardized letter designations [for restricted lift orifice add "-RL" suffix (i.e. "P-RL") or use the manufacturer's designation]
Capacity at 10 % overpressure	Kilograms per hour of saturated steam, standard cubic meter per minute of air, at 15.6 °C and 101 kPag or liters per minute of water at 20 °C
Serial number or shop number	Manufacturer's identification
Set pressure, kPag	Valve inlet pressure at which the pressure-relief valve is adjusted to open under service conditions
Back pressure, kPag	Constant (e.g. 345 kPag), variable (e.g. 0 kPag to 345 kPag)
Cold differential test pressure, kPag	The pressure at which the pressure-relief valve is adjusted gauge (if applicable) to open on the test stand. The cold differential test pressure includes corrections to the set pressure for the service conditions of back pressure or temperature or both (see examples below)
Lift, mm, for restricted lift valves	See API 520, Part 1, paragraph 4.2.4
Year built	Year built, e.g. 2020, or another coding method, e.g. part of serial number
Certification mark	(optional) e.g. ASME Certification Mark with UV Designator
Example 1—Conventional Valve	
Set pressure, kPag	1380
Back pressure, kPag	Atmospheric (or 0)
Temperature, °C	204.4
Cold differential test pressure, kPag	1380 + manufacturer's recommended temperature correction
Example 2—Balanced ~~Bellows~~ Pressure-Relief Valve	
Set pressure, kPag	1380
Back pressure, kPag	345, or 0 to 345
Temperature, °C	204.4
Cold differential test pressure, kPag	1380 + manufacturer's recommended temperature correction
Example 3—Conventional Valve	
Set pressure, kPag	1380
Back pressure, kPag	345, constant superimposed
Temperature, °C	204.4

Cold differential test pressure, kPag	1380 – 345 + manufacturer's recommended temperature correction

In addition to the nameplate detailed in Table A.1, for pilot-operated pressure-relief valves, the pilot itself shall bear an additional nameplate with the information as per Table A.2.

Table A.2—Pilot Nameplate Nomenclature Table (SI)

Nomenclature	Description
Type, style, model, or figure number	Manufacturer's designation
Set pressure, kPag	Valve inlet pressure at which the pressure-relief valve is adjusted to open under service conditions
Serial number or shop number	Manufacturer's identification

Annex E
(normative)

Pressure-relief Valve Nameplate Nomenclature (USC)

Markings for the pressure-relief valves shall be detailed on a nameplate with the information as per Table E.1.

Table E.1—PRV Nameplate Nomenclature Table (USC)

Nomenclature	Description
Tag number	Project specific tag
Manufacturer's name or identifying trademark	Identification of manufacturer
Size	Nominal pipe size, inlet by outlet
Type, style, model, or figure number	Manufacturer's designation
Orifice	Valve orifice size, standardized letter designations [for restricted lift orifice add "-RL" suffix (i.e. "P-RL") or use the manufacturer's designation]
Capacity at 10 % overpressure	Pounds per hour of saturated steam, standard cubic feet per minute of air, at 60 °F and 14.7 psia or U.S. gallons per minute of water at 70 °F
Serial number or shop number	Manufacturer's identification
Set pressure, psig	Valve inlet pressure at which the pressure-relief valve is adjusted to open under service conditions
Back pressure, psig	Constant (e.g. 50 psig), variable (e.g. 0 psig to 50 psig)
Cold differential test pressure, psig	The pressure at which the pressure-relief valve is adjusted gauge (if applicable) to open on the test stand. The cold differential test pressure includes corrections to the set pressure for the service conditions of back pressure or temperature or both (see examples below)
Lift, inch, for restricted lift valves	See API 520, Part 1, paragraph 4.2.4
Year built	Year built, e.g. 2020, or another coding method, e.g. part of serial number
Certification mark	(optional) e.g. ASME Certification Mark with UV Designator
Example 1—Conventional Valve	
Set pressure, psig	200
Back pressure, psig	Atmospheric (or 0)
Temperature, °F	400
Cold differential test pressure, psig	200 + manufacturer's recommended temperature correction
Example 2—Balanced ~~Bellows~~ Pressure-Relief Valve	
Set pressure, psig	200
Back pressure, psig	50, or 0 to 50
Temperature, °F	400
Cold differential test pressure, psig	200 + manufacturer's recommended temperature correction
Example 3—Conventional Valve	
Set pressure, psig	200
Back pressure, psig	50, constant superimposed
Temperature, °F	400
Cold differential test pressure, psig	200 – 50 + manufacturer's recommended temperature correction

In addition to the nameplate detailed in Table E.1, for pilot-operated pressure-relief valves, the pilot itself shall bear an additional nameplate with the information as per Table E.2.

Table E.2—Pilot Nameplate Nomenclature Table (USC)

Nomenclature	Description
Type, style, model, or figure number	Manufacturer’s designation
Set pressure, psig	Valve inlet pressure at which the pressure-relief valve is adjusted to open under service conditions
Serial number or shop number	Manufacturer's identification