AN INTERNATIONAL CODE

2007 ASME Boiler & Pressure Vessel Code

2008a Addenda **July 1, 2008**

II

Part D

Properties (Metric)

MATERIALS

ASME Boiler and Pressure Vessel Committee
Subcommittee on Materials

The American Society of Mechanical Engineers

ASME SETTING THE STANDARD

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2007 ASME
BOILER AND PRESSURE VESSEL CODE

SECTIONS

ADDENDA

Colored-sheet Addenda, which include additions and revisions to individual Sections of the Code, are published annually and will be sent automatically to purchasers of the applicable Sections up to the publication of the 2010 Code. The 2007 Code is available only in the loose-leaf format; accordingly, the Addenda will be issued in the loose-leaf, replacement-page format.

INTERPRETATIONS

ASME issues written replies to inquiries concerning interpretation of technical aspects of the Code. The Interpretations for each individual Section will be published separately and will be included as part of the update service to that Section. Interpretations of Section III, Divisions 1 and 2, will be included with the update service to Subsection NCA.

Interpretations of the Code are distributed annually in July with the issuance of the edition and subsequent addenda. Interpretations posted in January at www.cstools.asme.org/interpretations are included in the July distribution.

CODE CASES

The Boiler and Pressure Vessel Committee meets regularly to consider proposed additions and revisions to the Code and to formulate Cases to clarify the intent of existing requirements or provide, when the need is urgent, rules for materials or constructions not covered by existing Code rules. Those Cases that have been adopted will appear in the appropriate 2007 Code Cases book: "Boilers and Pressure Vessels" and "Nuclear Components." Supplements will be sent automatically to the purchasers of the Code Cases books up to the publication of the 2010 Code.

SUMMARY OF CHANGES

Addenda to the 2007 Edition of the Code are issued in the form of replacement pages. Revisions, additions, or deletions are incorporated directly into the affected pages. It is advisable, however, that all replaced pages be retained for reference.

Replace or insert the pages listed. Changes given below are identified on the pages by a margin note, **A08**, placed next to the affected area. Revisions to the 2007 Edition are indicated by **07**. For the listing below, the *Page* references the affected area. A margin note, **A08**, placed next to the heading indicates *Location*. Revisions are listed under *Change*.

The Record Numbers listed below are explained in more detail in "List of Changes in Record Number Order" following the Summary of Changes.

Page	*Location*	*Change (Record Number)*
xv–xxv	Roster	Updated to reflect 2008 Addenda
2–5	Guideline on Locating Materials	(1) Paragraph 1 revised *(05-1160)* (2) Paragraph 2 revised (3) Paragraphs 4 and 4.3 revised *(05-1160)* (4) Paragraph 4.5 deleted *(05-1160)*
14–17	Table 1A, Line 29	For Sections I and VIII, Division 1, for Carbon steel SA/AS 1548 7-430, Size/Thickness revised *(07-1034)*
	Table 1A, Line 30	For I and VIII-1, SA/EN 10028-2 P295GH added *(01-610)*
	Table 1A, Line 31	(1) For I and VIII-1, for SA/EN 10028-2 P295GH, Size/Thickness, and stress values for 375°C and higher, revised *(01-610)* (2) For Section XII, SA/EN 10028-2 P295GH deleted *(01-610)*
	Table 1A, Line 32	For VIII-1, SA/GB 6654 16MnR added *(05-533)*
18–21	Table 1A, Line 3	For I and VIII-1, for SA/AS 1548 7-460R, Size/Thickness revised
	Table 1A, Line 4	(1) For I and VIII-1, for SA/EN 10028-2 P295GH, stress values for 325°C and higher revised *(01-610)* (2) For XII, SA/EN 10028-2 P295GH deleted *(01-610)*
	Table 1A, Line 5	For I, VIII-1, and XII, for SA/EN 10028-2 P295GH, Size/Thickness, and stress values for 350°C and higher, revised *(01-610)*
	Table 1A, Lines 6 & 7	For VIII-1, SA/GB 6654 16MnR added *(05-533)*
22–25	Table 1A, Line 11	For I and VIII-1, for SA/AS 1548 7-490R, Size/Thickness revised *(07-1034)*
	Table 1A, Lines 12 & 14	For VIII-1, SA/GB 6654 16MnR added *(05-533)*
26–29.4	Table 1A, Lines 5–12	For XII, C–Mn–Si–V–Cb SA-656 T3 and T7 added *(02-3339)*
30–33	Table 1A, Line 17	For Section III, $^{3}/_{4}$Cr–$^{3}/_{4}$Ni–Cu–Al SA-333 4 added *(07-1927)*
42–45	Table 1A, Line 37	For III, 12Cr–Al SA/JIS G4303 SUS405 added *(03-386)*

Page	Location	Change (Record Number)
62–65	Table 1A, Lines 14 & 16	For VIII-1 and XII, for 3Ni–1$^{3}/_{4}$Cr–$^{1}/_{2}$Mo SA-372 M, Class revised *(04-1636)*
70–73	Table 1A, Line 1	(1) For VIII-1, for 16Cr–4Ni–6Mn SA-240 201LN, Max. Temperature Limit, External Pressure Chart No., and Notes revised, and stress values added *(07-800)* (2) For XII, SA-240 201LN added *(07-800)*
	Table 1A, Line 2	For VIII-1 and XII, SA-240 201LN added *(07-800)*
	Table 1A, Line 9	For III, 16Cr–12Ni–2Mo SA/JIS G4303 SUS316L added *(03-386)*
74–77	Table 1A, Line 27	For III, SA/JIS G4303 SUS316 added *(03-386)*
	Table 1A, Lines 28 & 29	For VIII-1, SA/EN 10028-7 X5CrNiMo17-12-2 added *(06-1330)*
82–85	Table 1A, Lines 28 & 30	For VIII-1, for 18Cr–8Ni SA-182 F304L and SA-965 F304L, Notes revised *(06-1042)*
	Table 1A, Line 32	For III, SA/JIS G4303 SUS304L added *(03-386)*
	Table 1A, Lines 33, 35, 37, 40 & 41	For VIII-1, for SA-182 F304, SA-213 TP304L, SA-240 304L, and SA-249 TP304L, Notes revised
86–89	Table 1A, Lines 1, 3, 4, 6, 8, 11 & 12	For VIII-1, for SA-312 TP304L, SA-403 304L, SA-479 304L, and SA-688 TP304L, Notes revised *(06-1042)*
94–97	Table 1A, Lines 8 & 9	For III, SA/JIS G4303 SUS302 and SUS304 added *(03-386)*
	Table 1A, Lines 10 & 11	For VIII-1, SA/EN 10028-7 X5CrNi18-10 added *(06-1330)*
110–113	Table 1A, Line 1	For III, 18Cr–10Ni–Cb SA/JIS G4303 SUS347 added *(03-386)*
114–117	Table 1A, Line 33	For III, 18Cr–10Ni–Ti SA/JIS G4303 SUS321 added *(03-386)*
142–145	Table 1A, Line 1	For III, 25Cr–20Ni SA/JIS G4303 SUS310S added *(03-386)*
150, 150.1	Table 1A	Notes G10 and G11 revised *(00-547)*
186–189	Table 1B, Line 30	For III, C12500 O25 SB-152 deleted *(07-120)*
190–193	Table 1B, Line 1	For I, III, VIII-1, and XII, C23000 H58 SB-43 added *(07-1321)*
	Table 1B, Line 7	For III, VIII-1, and XII, line sorting sequence corrected for WO61 SB-543
210–213	Table 1B, Lines 7–21	For I, N06022 Solution ann. SB-366, SB-462, SB-564, SB-574, SB-575, SB-619, SB-622, and SB-626 added *(03-425)*
210, 211.4	Table 1B, Lines 7–19	For VIII-1, N06210 Solution ann. SB-366, SB-564, SB-574, SB-575, SB-619, SB-622, and SB-626 added *(03-752)*
	Table 1B, Lines 40 & 41	For VIII-1 and XII, for N06455 Solution ann. SB-622, Product Form revised *(07-1933)*
	Table 1B, Lines 1 & 2	For III, VIII-1, and XII, for N06600 Hot fin./ann. SB-167, Size/Thickness added *(00-040)*
	Table 1B, Lines 4 & 5	For III, VIII-1 and XII, for Cold drawn/ann. SB-167, Size/Thickness added *(00-040)*

Page	Location	Change (Record Number)
	Table 1B, Line 7	For III, VIII-1, and XII, for Hot fin./ann. SB-167, Size/Thickness added *(00-040)*
	Table 1B, Line 8	For VIII-1 and XII, for Hot fin./ann. SB-167, Size/Thickness added *(00-040)*
222–225	Table 1B, Lines 11 & 12	For I, III, VIII-1, and XII, for Cold drawn/ann. SB-167, Size/Thickness added *(00-040)*
	Table 1B, Lines 35–40	For I, N06625 Solution ann. SB-443, SB-444, and SB-446 added *(01-416)*
226–229	Table 1B, Lines 1–3	For I, Annealed SB-366, SB-446, and SB-564 added *(01-416)*
	Table 1B, Lines 5–8	For I, Annealed SB-443, SB-444, and SB-446 added *(01-416)*
	Table 1B, Lines 10–12	For I, Annealed SB-564, SB-704, and SB-705 added *(01-416)*
258–261	Table 1B, Lines 7 & 8	For VIII-1, N10665 Solution ann. SB-564 added *(06-1641)*
262–265	Table 1B, Lines 25–27	For I, III, and VIII-1, for R50250 Annealed SB-338 and SB-348, Min. Yield Strength and stress values for 225°C through 300°C revised *(06-470)*
	Table 1B, Lines 28 & 29	For III and VIII-1, for Annealed SB-363 and SB-381, Min. Yield Strength and stress values for 225°C through 300°C revised *(06-470)*
	Table 1B, Lines 30 & 31	For I, III, and VIII-1, for Annealed SB-861 and SB-862, Min. Yield Strength and stress values for 225°C through 300°C revised *(06-470)*
266–269.4	Table 1B, Lines 1–9	For VIII-1, R50400 Annealed SB-265, SB-338, SB-348, SB-363, SB-381, SB-861, and SB-862 added *(06-844)*
	Table 1B, Lines 32–40	For VIII-1, R52400 Annealed SB-265, SB-338, SB-348, SB-363, SB-381, SB-861, and SB-862 added *(06-844)*
	Table 1B, Lines 6–14	For VIII-1, R52402 Annealed SB-265, SB-338, SB-348, SB-363, SB-381, SB-861, and SB-862 added *(06-844)*
	Table 1B, Lines 24–32	For VIII-1, R52404 Annealed SB-265, SB-338, SB-348, SB-363, SB-381, SB-861, and SB-862 added *(06-844)*
296–298	Table 2A, Line 23	12Cr–Al SA/JIS G4303 SUS405 added *(03-386)*
304–306	Table 2A, Line 38	16Cr–12Ni–2Mo SA/JIS G4303 SUS316L added *(03-386)*
312–314	Table 2A, Line 4	SA/JIS G4303 SUS316 added *(03-386)*
	Table 2A, Lines 23 & 24	16Cr–12Ni–2Mo–N SA-312 TP316N lines merged
	Table 2A, Line 35	18Cr–8Ni SA/JIS G4303 SUS304L added *(03-386)*
	Table 2A, Lines 40 & 41	SA-312 TP304L lines merged
320–322	Table 2A, Lines 1 & 2	SA/JIS G4303 SUS302 and SUS304 added *(03-386)*
	Table 2A, Lines 25 & 26	18Cr–8Ni–N SA-312 TP304N lines merged
328–330	Table 2A, Lines 5 & 6	18Cr–10Ni–Cb SA-312 TP348H lines merged

Page	Location	Change (Record Number)
	Table 2A, Line 12	SA/JIS G4303 SUS347 added *(03-386)*
	Table 2A, Lines 23 & 24	18Cr–10Ni–Ti SA-312 TP321 lines merged
	Table 2A, Lines 36 & 37	SA-312 TP321H lines merged
	Table 2A, Line 44	SA/JIS G4303 SUS321 added *(03-386)*
332–334	Table 2A, Lines 5–8	21Cr–6Ni–9Mn SA-182 FXM-11, SA-312 TPXM-11, SA-666 XM-11, and SA-965 FXM-11 added *(07-1638)*
	Table 2A, Lines 12 & 13	22Cr–13Ni–5Mn SA-312 TPXM-19 lines merged
	Table 2A, Line 25	23Cr–12Ni SA/JIS G4303 SUS309S added *(03-536)*
364–367	Table 3, Line 7	For Sections III; VIII, Division 1; VIII, Division 2; and XII; for A96061 T6 SB-211, Size/Thickness revised *(99-141)*
	Table 3, Line 8	For VIII-1, VIII-2, and XII, for T651 SB-211, Size/Thickness revised *(99-141)*
	Table 3, Line 9	For III, VIII-1, VIII-2, and XII, T651 wld. SB-211 deleted *(99-141)*
	Table 3, Line 10	For VIII-1, VIII-2, and XII, T651 wld. SB-211 deleted *(99-141)*
368–371	Table 3, Lines 26 & 27	For VIII-1, 905.00 Ann./aged SF-468 added *(05-530)*
376	Table 3	(1) General Note (i) added (2) Note G10 revised *(99-141)* (3) Note W5 deleted *(99-141)*
398–401	Table 5A, Line 13	C–$\frac{1}{2}$Mo SA-336 F12 deleted by errata
406–409	Table 5A, Line 15	5Cr–$\frac{1}{2}$Mo SA-234 WP5 deleted by errata
414–417	Table 5A, Line 13	For 2Ni–$1\frac{1}{2}$Cr–$\frac{1}{4}$Mo–V SA-723 1, Note G1 deleted *(06-198)*
	Table 5A, Line 21	For $2\frac{3}{4}$Ni–$1\frac{1}{2}$Cr–$\frac{1}{2}$Mo–V SA-723 2, Note G1 deleted *(06-198)*
	Table 5A, Line 39	For 4Ni–$1\frac{1}{2}$Cr–$\frac{1}{2}$Mo–V SA-723 3, Note G1 deleted *(06-198)*
418–421	Table 5A, Line 13	For 16Cr–4Ni–6Mn SA-240 201LN, Max. Use Temperature and External Pressure Chart No. revised, and stress values for 65°C through 450°C added *(07-800)*
	Table 5A, Line 14	SA-240 201LN added *(07-800)*
	Table 5A, Line 37	For 16Cr–12Ni–2Mo SA-312 TP316, Note G4 added by errata
422–425	Table 5A, Line 16	For 16Cr–12Ni–2Mo–N SA-965 F316N, Size/Thickness deleted by errata
	Table 5A, Lines 18 & 19	For 18Cr–3Ni–12Mn SA-240 XM-29, Size/Thickness added by errata
	Table 5A, Lines 30 & 31	For 18Cr–8Ni SA-312 TP304L, stress lines corrected by errata

Page	Location	Change (Record Number)
426–429	Table 5A, Line 7	For SA-312 TP304, Note G4 reference added by errata
	Table 5A, Line 38	For 18Cr–10Ni–Cb SA-182 F347H, Size/Thickness added by errata
434–437	Table 5A, Line 17	For 18Cr–10Ni–Ti SA-312 TP321, Size/Thickness corrected by errata
	Table 5A, Line 18	For SA-312 TP321, Size/Thickness deleted by errata
	Table 5A, Line 19	For SA-376 TP321, Size/Thickness corrected by errata
450	Table 5A	(1) Note G1 deleted *(06-198)* (2) Notes G13 and G14 revised *(00-547)*
460–463	Table 5B, Line 23	For C11000 O60 SB-187, Temper H04 deleted *(07-120)*
	Table 5B, Line 34	For C70600 M20 or O25 SB-171, Max. Use Temperature revised and stress values added *(07-120)*
490, 491	Table U, Line 7	Carbon steel SA/EN 10028-2 P295GH added *(01-610)*
	Table U, Line 8	For SA/EN 10028-2 P295GH, Size/Thickness revised *(01-610)*
	Table U, Line 19	SA/GB 6654 16MnR added *(05-533)*
	Table U, Lines 24 & 25	SA/GB 6654 16MnR added *(05-533)*
492, 493	Table U, Lines 23 & 25	SA/GB 6654 16MnR added *(05-533)*
494–495.2	Table U, Lines 28–35	C–Mn–Si–V–Cb SA-656 T3 and T7 added *(02-3339)*
504, 505	Table U, Line 22	12Cr–Al SA/JIS G4303 SUS405 added *(03-386)*
506, 507	Table U, Lines 13–15	15Cr–4Ni–4Cu SA-705 630 added *(03-725)*
514, 515	Table U, Line 20	16Cr–4Ni–6Mn SA-240 201LN added *(07-800)*
	Table U, Line 24	16Cr–12Ni–2Mo SA/JIS G4303 SUS316L added *(03-386)*
516, 517	Table U, Line 17	SA/JIS G4303 SUS316 added *(03-386)*
	Table U, Line 18	SA/EN 10028-7 X5CrNiMo17-12-2 added *(06-1330)*
518, 519	Table U, Line 36	18Cr–8Ni SA/JIS G4303 SUS304L added *(03-386)*
522, 523	Table U, Lines 10 & 11	SA/JIS G4303 SUS302 and SUS304 added *(03-386)*
	Table U, Line 12	SA/EN 10028-7 X5CrNi18-10 added *(06-1330)*
526, 527	Table U, Line 22	18Cr–10Ni–Cb SA/JIS G4303 SUS347 added *(03-386)*
528, 529	Table U, Line 14	18Cr–10Ni–Ti SA/JIS G4303 SUS321 added *(03-386)*
532, 533	Table U, Line 29	23Cr–12Ni SA/JIS G4303 SUS309S added *(03-386)*
534, 535	Table U, Line 39	25Cr–20Ni SA/JIS G4303 SUS310S added *(03-386)*
540, 541	Table U, Line 31	C12500 O25 SB-152 deleted *(07-120)*
544, 545	Table U, Line 24	N05500 Ann./aged SF-468 added *(05-530)*
546, 547	Table U, Lines 41–44	N06210 Solution ann. SB-366, SB-564, SB-574, and SB-575 added *(03-752)*
548, 549	Table U, Lines 1–3	Solution ann. SB-619, SB-622, and SB-626 added *(03-752)*

Page	Location	Change (Record Number)
	Table U, Line 14	For N06455 Solution ann. SB-622, Product Form revised *(07-1933)*
	Table U, Lines 16 & 17	For N06600 Hot fin./ann. SB-167, Size/Thickness added *(00-040)*
	Table U, Lines 19 & 20	For Cold drawn/ann. and Hot fin./ann. SB-167, Size/Thickness added *(00-040)*
	Table U, Line 26	For Cold drawn/ann. SB-167, Size/Thickness added *(00-040)*
558, 559	Table U, Line 11	N10665 Solution ann. SB-564 added *(06-1641)*
560–561.2	Table U, Lines 12–19	R50400 Annealed SB-265, SB-338, SB-348, SB-363, SB-381, SB-861, and SB-862 added *(06-844)*
	Table U, Lines 32–39	R52400 Annealed SB-265, SB-338, SB-348, SB-363, SB-381, SB-861, and SB-862 added *(06-844)*
	Table U, Lines 4–11	R52402 Annealed SB-265, SB-338, SB-348, SB-363, SB-381, SB-861, and SB-862 added *(06-844)*
	Table U, Lines 20–27	R52404 Annealed SB-265, SB-338, SB-348, SB-363, SB-381, SB-861, and SB-862 added *(06-844)*
574–577	Table Y-1, Line 6	Carbon steel SA/EN 10028-2 P295GH added *(01-610)*
	Table Y-1, Lines 7–9	For SA/AS 1548 7-430 Size/Thickness revised *(07-1034)*
	Table Y-1, Line 11	For SA/EN 10028-2 P295GH, Size/Thickness revised *(07-1034)*
	Table Y-1, Line 22	SA/GB 6654 16MnR added *(05-533)*
	Table Y-1, Line 25	SA/EN 10028-2 P295GH, Size/Thickness revised *(07-1034)*
	Table Y-1, Lines 26 & 27	For SA/AS 1548 7-460, Size/Thickness revised *(07-1034)*
	Table Y-1, Line 28	For SA/EN 10028-2 P295GH, Size/Thickness revised *(07-1034)*
	Table Y-1, Line 29	SA/GB 6654 16MnR added *(05-533)*
	Table Y-1, Line 30	For SA/EN 10028-2 P295GH, Size/Thickness revised *(07-1034)*
	Table Y-1, Line 31	For SA/AS 1548 7-460, Size/Thickness revised *(07-1034)*
	Table Y-1, Line 34	SA/GB 6654 16MnR added
578–581	Table Y-1, Lines 34–36	For SA/AS 1548 7-490, Size/Thickness revised *(07-1034)*
	Table Y-1, Lines 38 & 40	SA/GB 6654 16MnR added *(05-533)*
586–589.4	Table Y-1, Lines 12–14	For C–Mn–Si–Cb SA/AS 1548 5-490, Size/Thickness revised *(07-1034)*
	Table Y-1, Lines 17–24	C–Mn–Si–V–Cb SA-656 T3 and T7 added *(02-3339)*
606–609	Table Y-1, Line 7	12Cr–Al SA/JIS G4303 SUS405 added *(03-386)*

Page	*Location*	*Change (Record Number)*
614–617	Table Y-1, Line 8	For 17Cr–4Ni–4Cu SA-705 630 H1025, yield strength values for 65°C, 100°C, 125°C, 200°C, and 300°C revised, and values for 325°C through 375°C added *(03-725)*
	Table Y-1, Lines 9 & 10	For SA-705 630 H925 and H900, first yield strength value revised and values through 375°C added *(03-725)*
630–633	Table Y-1, Line 33	16Cr–4Ni–6Mn SA-240 201LN added *(07-800)*
	Table Y-1, Line 37	16Cr–12Ni–2Mo SA/JIS G4303 SUS316L added *(03-386)*
634–637	Table Y-1, Line 31	SA/JIS G4303 SUS316 added *(03-386)*
	Table Y-1, Line 32	SA/EN 10028-7 X5CrNiMo17-12-2 added *(06-1330)*
642–645	Table Y-1, Line 20	18Cr–8Ni SA/JIS G4303 SUS304L added *(03-386)*
646–649	Table Y-1, Lines 31 & 32	SA/JIS G4303 SUS302 and SUS304 added *(03-386)*
	Table Y-1, Line 33	SA/EN 10028-7 X5CrNi18-10 added *(06-1330)*
658–661	Table Y-1, Line 10	18Cr–10Ni–Cb SA/JIS G4303 SUS347 added *(03-386)*
662–665	Table Y-1, Line 11	18Cr–10Ni–Ti SA/JIS G4303 SUS321 added *(03-386)*
670–673	Table Y-1, Line 36	23Cr–12Ni SA/JIS G4303 SUS309S added *(03-386)*
678–681	Table Y-1, Line 6	25Cr–20Ni SA/JIS G4303 SUS310S added *(03-386)*
694–697	Table Y-1, Line 10	C12500 O25 SB-152 deleted *(07-120)*
702–705	Table Y-1, Lines 7 & 8	N05500 Ann./aged SF-468 added *(05-530)*
706–709.4	Table Y-1, Lines 26–32	N06210 Solution ann. SB-366, SB-564, SB-574, SB-575, SB-619, SB-622, and SB-626 added *(03-752)*
	Table Y-1, Line 5	For N06455 Solution ann. SB-622, Product Form revised *(07-1933)*
	Table Y-1, Lines 7 & 8	For N06600 Hot fin./ann. SB-167, Size/Thickness added *(00-040)*
	Table Y-1, Lines 10 & 11	For Cold drawn/ann. and Hot fin./ann. SB-167, Size/Thickness added *(00-040)*
710–713	Table Y-1, Line 6	For Cold drawn/ann. SB-167, Size/Thickness added *(00-040)*
726–729	Table Y-1, Line 39	N10665 Solution ann. SB-564 added *(06-1641)*
730–733	Table Y-1, Lines 30–34	For R50250 Annealed SB-338, SB-348, SB-381, SB-861, and SB-862, Min. Yield Strength and all yield strength values revised *(06-470)*
734–737.4	Table Y-1, Lines 5–12	R50400 Annealed SB-265, SB-338, SB-348, SB-363, SB-381, SB-861, and SB-862 added *(06-844)*
	Table Y-1, Lines 29–36	R52400 Annealed SB-265, SB-338, SB-348, SB-363, SB-381, SB-861, and SB-862 added *(06-844)*
	Table Y-1, Lines 37–41	R52402 Annealed SB-265, SB-338, SB-348, and SB-363 added *(06-844)*
	Table Y-1, Lines 1–3	Annealed SB-381, SB-861, and SB-862 added *(06-844)*
	Table Y-1, Lines 12–19	R52404 Annealed SB-265, SB-338, SB-348, SB-363, SB-381, SB-861, and SB-862 added *(06-844)*

Page	*Location*	*Change (Record Number)*
745	Subpart 2 Introduction	Revised *(05-1160)*
763	Table TE-5	Second column head revised *(06-844)*
772	Table TCD	Under Titanium Alloys, first column head revised *(06-844)*
781	Table TM-5	In first column, under Titanium Alloys, Grades 2H, 7H, 16H, and 26H added *(06-844)*
782	Table NF-1	Deleted *(05-1160)*
783, 784	Table NF-2	Deleted *(05-1160)*
	Table PRD	Added *(05-1160)*
786	Fig. G	Caption revised *(06-738)*
788–826	Figs. CS-1 through NFZ-2	All captions revised *(06-1600)*
	Fig. NFT-4	On axis for Factor B, position of callout 200 corrected by errata *(07-1768)*
827	Notes to Figures	(1) General Note (a) revised *(06-1600)* (2) General Note (b) added *(06-1600)* (3) Notes (1), (5), (6), (7), and (11) deleted *(06-1600)* (4) Notes (2) and (3) revised *(06-1600)* (5) Note (14) added *(06-738)*
829	Table G	General Note added *(06-738)*
897–898.1	A-200	(1) A-200 redesignated as A-220 and new A-200 title added *(00-547)* (2) A-240 added *(00-547)*

LIST OF CHANGES IN RECORD NUMBER ORDER

Record Number	Change
99-141	(1) Table 3: Revised the size/thickness column for SB-211 A96061 T6 and T651. (2) Notes to Table 3: Revised Note G10. (3) Table 3: Deleted SB-211 A96061 T6 wld. and T651 wld. stress lines.
00-040	Table 1B: Added size designations for SB-167 (UNS N06600).
00-547	(1) Nonmandatory Appendix A: Revised A-200 and A-240. (2) Table 1A: Revised Notes G10 and G11 to add a reference to Nonmandatory Appendix A, A-240. (3) Table 5A: Revised Notes G13 and G14 to add a reference to Nonmandatory Appendix A, A-240.
01-416	Table 1B: Revised the Applicability column to permit use of UNS N06625 material for Section I applications up to 593°C.
01-610	Tables 1A, U, and Y-1: Added stress lines for SA/EN 10028-2 P295GH with thickness 150 mm to 250 mm.
02-3339	Tables 1A, U, and Y-1: Added stress lines for SA-656/SA-656M for Section XII applications.
03-386	Tables 1A, 2A, U, and Y-1: Incorporated SA/JIS G4303 (Grades SUS302, SUS304, SUS304L, SUS310S, SUS309S, SUS316, SUS316L, SUS321, SUS347, and SUS405) stress lines for Section III applications.
03-425	Table 1B: Added UNS N06022 for Section I applications.
03-725	Tables U and Y-1: Added tensile and yield strength values for three conditions of SA-705 Type 630 at 65°C to 375°C for Section VIII, Division 3 applications.
03-752	(1) Tables 1B, U, and Y-1: Incorporated stress values for UNS N06210 from Code Case 2302 for Section VIII, Division 1 applications up to 427°C. (2) Subpart 3: Approved external pressure chart and Table NFN-13. Table 1B: Added external pressure chart reference NFN-13 to UNS N06210 stress lines.
04-1636	Table 1A: Revised the Class designation for SA-372.
05-530	Tables 3, U, and Y-1: Added SF-468 UNS N05500 stress lines.
05-533	Tables 1A, U, and Y-1: Added stress lines for SA/GB 6654 material.
05-1160	(1) Replaced Tables NF-1 and NF-2 with a new Table PRD covering only Poisson's ratio and density, expanded to provide the same properties for ferrous as well as nonferrous materials. (2) Editorially corrected Subpart 2 Introduction.
06-198	Table 5A: Deleted Note G1.
06-470	Tables 1B and Y-1: Changed minimum yield strength from 170 MPa to 138 MPa to match revised Section II, Part B titanium specifications.
06-738	Figure G: Revised to prohibit extrapolation.
06-844	Tables 1B, U, and Y-1: Added Ti Grade H material (UNS R50400, R52400, R52402, and R52404) and assigned external pressure chart NFT-2. Revised physical property Tables TE-4, TE-5, and TM-5.
06-1042	Table 1A: Stress values added for Type 304L to 650°C. Changed designation for SA-336 to SA-965. Added allowable stress line for SA-965 UNS S30403.
06-1330	Tables 1A, U, and Y-1: Added stress lines for SA/EN 10028-7 Grades X5CrNi18-10 and X5CrNiMo17-12-2.
06-1600	Clarified external pressure chart captions to show the specific material for which each chart was developed, and to clarify and remove redundant Notes and add a new General Note directing designers to the stress tables for selecting the appropriate chart to get "B."
06-1641	Table 1B: Incorporated allowable stress lines for SB-564 UNS N10665.
07-120	Deleted SB-152 UNS C12500 from Tables 1B, U, and Y-1.
07-800	(1) Table 1A: Added allowable stresses for UNS S20153 to 427°C, added high stress line, changed external pressure chart assignment to HA-6, and corrected GXX notes. (2) Tables U and Y-1: Added UNS S20153. (3) Table 5A: Added allowable stresses for UNS S20153, changed external pressure chart assignment to HA-6, and added high stress line with appropriate GXX note.
07-1034	Table Y-1: Changed 75 mm into 80 mm, 57 mm into 60 mm, and 38 mm into 40 mm for SA/AS 1548 and SA/EN 10028-2 grades.
07-1272	Table 5B: Deleted H04 temper from SB-187 UNS C11000 stress line. Added stress values from 225°C to 325°C to SB-171 UNS C70600 stress line.
07-1321	Table 1B: Added H58 temper for SB-43 UNS C23000.
07-1638	Incorporated UNS S21904 (XM-11, FXM-11, and TPXM-11) in Table 2A.
07-1768	Revised Fig. NFT-4 by errata.
07-1927	Table 1A: Revised to permit use of SA-333 Grade 4 pipe for Section III, Class 2 and 3 construction up to 371°C.
07-1933	Table 1B: Editorial revision changed "Wld." to "Smls." in the Product Form column for SB-622 UNS N06455.

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FOREWORD

The American Society of Mechanical Engineers set up a committee in 1911 for the purpose of formulating standard rules for the construction of steam boilers and other pressure vessels. This committee is now called the Boiler and Pressure Vessel Committee.

The Committee's function is to establish rules of safety, relating only to pressure integrity, governing the construction[1] of boilers, pressure vessels, transport tanks and nuclear components, and inservice inspection for pressure integrity of nuclear components and transport tanks, and to interpret these rules when questions arise regarding their intent. This code does not address other safety issues relating to the construction of boilers, pressure vessels, transport tanks and nuclear components, and the inservice inspection of nuclear components and transport tanks. The user of the Code should refer to other pertinent codes, standards, laws, regulations, or other relevant documents. With few exceptions, the rules do not, of practical necessity, reflect the likelihood and consequences of deterioration in service related to specific service fluids or external operating environments. Recognizing this, the Committee has approved a wide variety of construction rules in this Section to allow the user or his designee to select those which will provide a pressure vessel having a margin for deterioration in service so as to give a reasonably long, safe period of usefulness. Accordingly, it is not intended that this Section be used as a design handbook; rather, engineering judgment must be employed in the selection of those sets of Code rules suitable to any specific service or need.

This Code contains mandatory requirements, specific prohibitions, and nonmandatory guidance for construction activities. The Code does not address all aspects of these activities and those aspects which are not specifically addressed should not be considered prohibited. The Code is not a handbook and cannot replace education, experience, and the use of engineering judgment. The phrase *engineering judgment* refers to technical judgments made by knowledgeable designers experienced in the application of the Code. Engineering judgments must be consistent with Code philosophy and such judgments must never be used to overrule mandatory requirements or specific prohibitions of the Code.

The Committee recognizes that tools and techniques used for design and analysis change as technology progresses and expects engineers to use good judgment in the application of these tools. The designer is responsible for complying with Code rules and demonstrating compliance with Code equations when such equations are mandatory. The Code neither requires nor prohibits the use of computers for the design or analysis of components constructed to the requirements of the Code. However, designers and engineers using computer programs for design or analysis are cautioned that they are responsible for all technical assumptions inherent in the programs they use and they are responsible for the application of these programs to their design.

The Code does not fully address tolerances. When dimensions, sizes, or other parameters are not specified with tolerances, the values of these parameters are considered nominal and allowable tolerances or local variances may be considered acceptable when based on engineering judgment and standard practices as determined by the designer.

The Boiler and Pressure Vessel Committee deals with the care and inspection of boilers and pressure vessels in service only to the extent of providing suggested rules of good practice as an aid to owners and their inspectors.

The rules established by the Committee are not to be interpreted as approving, recommending, or endorsing any proprietary or specific design or as limiting in any way the manufacturer's freedom to choose any method of design or any form of construction that conforms to the Code rules.

The Boiler and Pressure Vessel Committee meets regularly to consider revisions of the rules, new rules as dictated by technological development, Code Cases, and requests for interpretations. Only the Boiler and Pressure Vessel Committee has the authority to provide official interpretations of this Code. Requests for revisions, new rules, Code Cases, or interpretations shall be addressed to the Secretary in writing and shall give full particulars in order to receive consideration and action (see Mandatory Appendix covering preparation of technical inquiries). Proposed revisions to the Code resulting from inquiries will be presented to the Main Committee for appropriate action. The action of the Main Committee becomes effective only after confirmation by letter ballot of the Committee and approval by ASME.

[1] *Construction*, as used in this Foreword, is an all-inclusive term comprising materials, design, fabrication, examination, inspection, testing, certification, and pressure relief.

Proposed revisions to the Code approved by the Committee are submitted to the American National Standards Institute and published at *http://cstools.asme.org/csconnect/public/index.cfm?PublicReview=Revisions* to invite comments from all interested persons. After the allotted time for public review and final approval by ASME, revisions are published annually in Addenda to the Code.

Code Cases may be used in the construction of components to be stamped with the ASME Code symbol beginning with the date of their approval by ASME.

After Code revisions are approved by ASME, they may be used beginning with the date of issuance shown on the Addenda. Revisions, except for revisions to material specifications in Section II, Parts A and B, become mandatory six months after such date of issuance, except for boilers or pressure vessels contracted for prior to the end of the six-month period. Revisions to material specifications are originated by the American Society for Testing and Materials (ASTM) and other recognized national or international organizations, and are usually adopted by ASME. However, those revisions may or may not have any effect on the suitability of material, produced to earlier editions of specifications, for use in ASME construction. ASME material specifications approved for use in each construction Code are listed in the Guidelines for Acceptable ASTM Editions in Section II, Parts A and B. These Guidelines list, for each specification, the latest edition adopted by ASME, and earlier and later editions considered by ASME to be identical for ASME construction.

The Boiler and Pressure Vessel Committee in the formulation of its rules and in the establishment of maximum design and operating pressures considers materials, construction, methods of fabrication, inspection, and safety devices.

The Code Committee does not rule on whether a component shall or shall not be constructed to the provisions of the Code. The Scope of each Section has been established to identify the components and parameters considered by the Committee in formulating the Code rules.

Questions or issues regarding compliance of a specific component with the Code rules are to be directed to the ASME Certificate Holder (Manufacturer). Inquiries concerning the interpretation of the Code are to be directed to the ASME Boiler and Pressure Vessel Committee. ASME is to be notified should questions arise concerning improper use of an ASME Code symbol.

The specifications for materials given in Section II are identical with or similar to those of specifications published by ASTM, AWS, and other recognized national or international organizations. When reference is made in an ASME material specification to a non-ASME specification for which a companion ASME specification exists, the reference shall be interpreted as applying to the ASME material specification. Not all materials included in the material specifications in Section II have been adopted for Code use. Usage is limited to those materials and grades adopted by at least one of the other Sections of the Code for application under rules of that Section. All materials allowed by these various Sections and used for construction within the scope of their rules shall be furnished in accordance with material specifications contained in Section II or referenced in the Guidelines for Acceptable ASTM Editions in Section II, Parts A and B, except where otherwise provided in Code Cases or in the applicable Section of the Code. Materials covered by these specifications are acceptable for use in items covered by the Code Sections only to the degree indicated in the applicable Section. Materials for Code use should preferably be ordered, produced, and documented on this basis: Guideline for Acceptable ASTM Editions in Section II, Part A and Guideline for Acceptable ASTM Editions in Section II, Part B list editions of ASME and year dates of specifications that meet ASME requirements and which may be used in Code construction. Material produced to an acceptable specification with requirements different from the requirements of the corresponding specifications listed in the Guideline for Acceptable ASTM Editions in Part A or Part B may also be used in accordance with the above, provided the material manufacturer or vessel manufacturer certifies with evidence acceptable to the Authorized Inspector that the corresponding requirements of specifications listed in the Guideline for Acceptable ASTM Editions in Part A or Part B have been met. Material produced to an acceptable material specification is not limited as to country of origin.

When required by context in this Section, the singular shall be interpreted as the plural, and vice-versa; and the feminine, masculine, or neuter gender shall be treated as such other gender as appropriate.

STATEMENT OF POLICY ON THE USE OF CODE SYMBOLS AND CODE AUTHORIZATION IN ADVERTISING

ASME has established procedures to authorize qualified organizations to perform various activities in accordance with the requirements of the ASME Boiler and Pressure Vessel Code. It is the aim of the Society to provide recognition of organizations so authorized. An organization holding authorization to perform various activities in accordance with the requirements of the Code may state this capability in its advertising literature.

Organizations that are authorized to use Code Symbols for marking items or constructions that have been constructed and inspected in compliance with the ASME Boiler and Pressure Vessel Code are issued Certificates of Authorization. It is the aim of the Society to maintain the standing of the Code Symbols for the benefit of the users, the enforcement jurisdictions, and the holders of the symbols who comply with all requirements.

Based on these objectives, the following policy has been established on the usage in advertising of facsimiles of the symbols, Certificates of Authorization, and reference to Code construction. The American Society of Mechanical Engineers does not "approve," "certify," "rate," or "endorse" any item, construction, or activity and there shall be no statements or implications that might so indicate. An organization holding a Code Symbol and/or a Certificate of Authorization may state in advertising literature that items, constructions, or activities "are built (produced or performed) or activities conducted in accordance with the requirements of the ASME Boiler and Pressure Vessel Code," or "meet the requirements of the ASME Boiler and Pressure Vessel Code."

The ASME Symbol shall be used only for stamping and nameplates as specifically provided in the Code. However, facsimiles may be used for the purpose of fostering the use of such construction. Such usage may be by an association or a society, or by a holder of a Code Symbol who may also use the facsimile in advertising to show that clearly specified items will carry the symbol. General usage is permitted only when all of a manufacturer's items are constructed under the rules.

The ASME logo, which is the cloverleaf with the letters ASME within, shall not be used by any organization other than ASME.

STATEMENT OF POLICY ON THE USE OF ASME MARKING TO IDENTIFY MANUFACTURED ITEMS

The ASME Boiler and Pressure Vessel Code provides rules for the construction of boilers, pressure vessels, and nuclear components. This includes requirements for materials, design, fabrication, examination, inspection, and stamping. Items constructed in accordance with all of the applicable rules of the Code are identified with the official Code Symbol Stamp described in the governing Section of the Code.

Markings such as "ASME," "ASME Standard," or any other marking including "ASME" or the various Code Symbols shall not be used on any item that is not constructed in accordance with all of the applicable requirements of the Code.

Items shall not be described on ASME Data Report Forms nor on similar forms referring to ASME that tend to imply that all Code requirements have been met when, in fact, they have not been. Data Report Forms covering items not fully complying with ASME requirements should not refer to ASME or they should clearly identify all exceptions to the ASME requirements.

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K. R. Wichman
K. K. Yoon
Y.-S. Chang, *Delegate*

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J. M. Bloom
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S. Ranganath
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D. A. Scarth
T. S. Schurman
W. L. Server
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G. M. Wilkowski
K. K. Yoon
V. A. Zilberstein

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W. H. Bamford, Jr.
H. Behnke
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S. Ranganath
W. L. Server
E. A. Siegel
G. L. Stevens
D. P. Weakland
K. K. Yoon

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W. H. Bamford, Jr.
H.-D. Chung
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N. G. Cofie
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A. L. Hiser, Jr.
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K. Kashima
R. O. McGill
H. S. Mehta
K. Miyazaki
P. J. Rush
T.-L. Sham
K. K. Yoon
V. A. Zilberstein

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D. Kurek
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P. Hsu
D. P. Jones
G. Kharshafdjian
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R. B. Luney
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A. Chaudouet
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D. J. Scallan
Z. Wang

Subgroup on Design (SC-SVR)

J. A. West, *Chair*
C. E. Beair
R. D. Danzy
R. J. Doelling
H. I. Gregg
D. Miller
T. Patel
T. R. Tarbay

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D. B. Demichael, *Chair*
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G. Brazier
J. P. Glaspie
D. K. Parrish
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J. W. Richardson
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S. Cammeresi
G. D. Goodson
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Z. Wang

U.S. Technical Advisory Group ISO/TC 185 Safety Relief Valves

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D. B. Demichael
Y.-S. Lai
D. Miller
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