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CODE CASES

BOILERS AND PRESSURE VESSELS

1986 ASME BOILER AND
PRESSURE VESSEL CODE

AN AMERICAN NATIONAL STANDARD

THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS



ASME BOILER AND PRESSURE VESSEL CODE
AN AMERICAN NATIONAL STANDARD

1986 CODE CASES

Boilers and Pressure Vessels

1986 EDITION

JULY 1, 1986

- All cases are in numerical order.
- Annulled cases follow the Annulment announcement sheet
- Cover sheets & instructions for Supp. 1-12 are at the end of the volume (The actual information from the Suppls. have been interfiled in numeric case sequence)



THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS
United Engineering Center 345 East 47th Street New York, N. Y. 10017

82 89 225NY2 2 4 730 XL

4277

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Date of Issue — July 1, 1986
(Includes all Code Case actions published through
Supplement 13 to the 1983 Edition)

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Library of Congress Catalog Card Number: 56-3934
Printed in the United States of America

Adopted by the Council of The American Society of Mechanical Engineers, 1986

1986 ASME BOILER AND PRESSURE VESSEL CODE

SECTIONS

- I Power Boilers
- II Material Specifications
 - Part A — Ferrous Materials
 - Part B — Nonferrous Materials
 - Part C — Welding Rods, Electrodes and Filler Metals
- III Subsection NCA — General Requirements for Division 1 and Division 2
- III Division 1
 - Subsection NB — Class 1 Components
 - Subsection NC — Class 2 Components
 - Subsection ND — Class 3 Components
 - Subsection NE — Class MC Components
 - Subsection NF — Component Supports
 - Subsection NG — Core Support Structures
 - Appendices
- III Division 2 — Code for Concrete Reactor Vessels and Containments
- IV Heating Boilers
- V Nondestructive Examination
- VI Recommended Rules for Care and Operation of Heating Boilers
- VII Recommended Guidelines for the Care of Power Boilers
- VIII Pressure Vessels
 - Division 1
 - Division 2 — Alternative Rules
- IX Welding and Brazing Qualifications
- X Fiberglass-Reinforced Plastic Pressure Vessels
- XI Rules for Inservice Inspection of Nuclear Power Plant Components

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 1989 Code. The 1986 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. They will be issued semiannually (July and December) up to the publication of the 1989 Code. Interpretations of Section III, Divisions 1 and 2, will be included with the update service to Subsection NCA. Interpretations are not part of the Code or the Addenda.

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 which have been adopted will appear in the appropriate 1986 Code Cases book: (1) Boilers and Pressure Vessels and (2) Nuclear Components. Supplements will be sent automatically to the purchasers of the Code Cases books up to the publication of the 1989 Code.

INDEX TO NEW AND REVISED CASES

Sections I, II-A, II-B, II-C, IV, V,
VIII-1, VIII-2, IX, and X

Numeric Index	vii
Subject Index	xi

NOTES TO NUMERIC INDEX

- Code Cases automatically expire three years after their approval date unless reaffirmed, revised, or annulled, or an earlier expiration date is specified. When a Case is revised, a new expiration is scheduled.

NOTE: Latest Approval Date is identified with an asterisk (*) and indicates the approval of an early expiration.

- Cases may be used beginning with the date of approval shown on the Case.
- Cases which are reaffirmed without change are not reprinted in Supplements. The Numeric Index provides the reaffirmation date and new expiration date of reaffirmed Cases.
- Annulled Cases will remain in the Numeric Index until the next Edition, at which time they will be deleted.
- The digit following a Case Number is used to indicate the number of times a Case has been revised.
- The Cases are arranged in numerical order, and each page of a Case is identified at the top with the appropriate Case Number.

Legend of Abbreviations

Supp. = Supplement
R = Reinstated
S = Superseded

NUMERIC INDEX

Case	Approval Date	Errata	Reaffirmed or *Latest App. Date	Expiration Date	Annulled
1177-9	2-19-86	1986-Supp. 3	12-2-88	12-2-91	...
1192-3	R 5-20-85	...	3-8-89	3-8-92	...
1251-1	12-2-81	...	*9-1-85	...	6-30-86
1325-12	12-8-85	...	12-2-88	12-2-91	...
1332-7	5-25-83	...	*2-19-86	...	6-30-87
1360-3	7-17-80	...	7-19-87	...	7-1-88
1385	9-7-82	...	12-8-85	...	...
	...	...	*3-6-88	7-1-89	...
1409-6	R 11-28-83	...	2-8-87	2-8-90	...
1467-2	9-7-82	...	9-1-85	...	9-1-88
1473-1	12-2-81	...	12-2-87	12-2-90	...
1489-1	2-14-85	...	2-14-88	2-14-91	...
1490	12-2-81	1986-Supp. 5	12-2-84	...	12-2-87
1500	1-11-82	...	...	...	12-9-87
1518-2	8-28-81	...	7-19-87	S	...
1518-3	3-6-88	1986-Supp. 10	...	3-6-91	...
1609-3	2-19-86	...	...	S	...
1609-4	2-8-87	...	...	...	...
	...	...	*5-3-87	...	7-1-88
1626-2	2-14-85	1986-Supp. 10	2-14-88	2-14-91	...
1667-2	R 8-2-86	...	...	8-2-89	...
1670	8-28-81	1986-Supp. 6	7-19-87	7-19-90	...
1709-1	7-13-81	...	7-10-84	...	...
	...	...	*5-20-85	...	6-30-86
1750-4	12-9-84	...	12-9-87	S	...
1750-5	5-8-88	1986-Supp. 10	...	5-8-91	...
1824	5-25-82	...	5-25-85	...	6-30-86
1827	1-11-82	...	1-11-88	1-11-91	...
1831-2	7-20-83	...	7-20-86	S	...
1831-3	12-2-88	...	...	12-2-91	...
1844	1-11-82	...	12-9-84	...	12-9-87
1847	7-23-82	...	*7-19-87	...	7-1-88

Case	Approval Date	Errata	Reaffirmed or *Latest App. Date	Expiration Date	Annulled
1849	R 5-25-83	...	5-25-86	5-25-89	...
1852	7-23-82	...	3-8-89	3-8-92	...
1854	7-23-82	...	5-8-88	...	...
	...	...	*8-4-88	7-1-89	...
1855	5-15-80	...	4-28-86	4-28-89	...
1862	3-17-80	1986-Supp. 1	12-8-85	...	12-8-88
1863	3-17-80	...	3-8-89	3-8-92	...
1864	3-17-80	...	5-25-86	...	3-8-89
1867	7-17-80	...	...	...	2-8-87
1868	5-15-80	...	3-8-89	3-8-92	...
1870	7-17-80	...	5-11-86	5-11-89	...
1873	12-1-80	...	*7-24-85	...	6-30-86
1874	1-15-81	...	1-15-87	1-15-90	...
1875-1	12-2-81	...	12-2-84	...	12-31-85
1876-1	9-1-85	...	7-24-88	7-24-91	...
1882	7-13-81	...	7-10-84	...	7-10-87
1884-1	2-7-83	...	12-8-85	...	...
	...	...	*2-8-87	...	7-1-88
1885	8-28-81	...	8-28-87	8-28-90	...
1886	8-28-81	...	7-19-87	7-19-90	...
1887	7-13-81	...	7-19-87	7-19-90	...
1889	12-2-81	...	12-2-84	S	...
1889-1	2-8-87	...	...	2-8-90	...
1896	3-31-82	...	2-14-88	2-14-91	...
1897	1-11-82	...	1-11-88	1-11-91	...
1898	1-11-82	...	1-11-85	...	...
	...	...	*2-19-86	...	6-30-87
1899-2	2-19-86	1986-Supp. 3	*5-8-88	7-1-89	...
1900	3-31-82	...	12-9-87	12-9-90	...
1902	3-31-82	...	12-6-87	12-6-90	...
1903	3-31-82	...	12-9-84	...	...
	...	...	*9-1-85	...	6-30-86
1904-1	5-20-85	...	*7-24-85	...	6-30-86
1906	5-25-82	...	2-14-88	2-14-91	...
1907	7-23-82	...	7-24-85	...	...
	...	...	*2-19-86	...	6-30-87
1909-1	2-8-84	...	2-8-87	2-8-90	...
1912	1-10-83	...	12-2-88	12-2-91	...
1915	9-7-82	...	5-11-86	5-11-89	...
...

Case	Approval Date	Errata	Reaffirmed or *Latest App. Date	Expiration Date	Annulled
1918	4-28-83	...	4-28-86	4-28-89	...
1919	2-7-83	1986-Supp. 6	2-7-86	...	2-7-89
1920-1	12-8-85	...	12-8-88	12-8-91	...
1921	2-7-83	...	12-8-85	...	...
	...	...	*3-6-88	7-1-89	...
1922-1	5-20-85	...	...	S	...
1922-2	2-8-87	...	*8-4-88	7-1-89	...
1923	4-28-83	...	4-28-86	4-28-89	...
1924	4-28-83	...	4-28-86	4-28-89	...
1930	4-28-83	...	4-28-86	S	...
1930-1	5-3-87	...	...	...	7-1-88
1932-1	R 5-8-88	...	...	5-8-91	...
1934	5-25-83	...	5-25-86	5-25-89	...
1935-1	11-28-83	...	11-28-86	S	...
1935-2	7-19-87	...	...	7-19-90	...
1936	5-25-83	...	5-25-86	5-25-89	...
1938	4-28-83	...	...	...	4-28-86
1939	5-25-83	...	3-8-89	3-8-92	...
1941	4-28-83	...	3-8-89	3-8-92	...
1942	7-20-83	1986-Supp. 7	7-20-86	...	...
	...	...	*8-4-88	7-1-89	...
1943	7-20-83	...	*8-2-86	...	6-30-87
1943-1	R 6-30-87	1986-Supp. 9	...	6-30-90	...
1944-1	7-24-85	...	*2-19-86	...	6-30-87
1945	4-4-84	...	5-3-87	S	...
1945-1	12-6-87	...	...	12-6-90	...
1946	11-28-83	...	11-28-86	...	...
	...	...	*2-8-87	...	7-1-88
1947	8-26-83	...	8-26-86	...	2-8-87
1948	11-28-83	...	...	...	11-28-86
1949	11-28-83	...	11-28-86	11-28-89	...
1950	4-4-84	...	*12-11-86	...	7-1-88
1951	4-4-84	...	*12-6-87	7-1-89	...
1952-1	5-20-85	...	5-8-88	5-8-91	...
1953-1	9-1-85	...	9-1-88	9-1-91	...
1954	4-4-84	...	5-3-87	5-3-90	...
1955	4-4-84	...	...	...	4-4-87
1956-1	5-20-85	...	...	S	...
1956-2	12-6-87	...	...	12-6-90	...
1957	7-10-84	...	7-10-87	...	...
	...	...	*3-6-88	7-1-89	...

Case	Approval Date	Errata	Reaffirmed or *Latest App. Date	Expiration Date	Annulled
1958-1	5-20-85	...	*9-1-85	...	6-30-86
1959	9-17-84	...	...	...	9-17-87
1960	12-9-84	...	...	S	...
1960-1	2-8-87	...	...	2-8-90	...
1961	12-9-84	...	8-4-88	7-1-89	...
...
1963	9-17-84	...	7-19-87	7-19-90	...
1965	12-9-84	...	12-9-87	12-9-90	...
1966	5-20-85	...	5-8-88	5-8-91	...
1967	2-14-85	...	12-6-87	12-6-90	...
1968	5-20-85	...	5-8-88	5-8-91	...
1969	5-20-85	...	...	...	6-30-86
1970	2-14-85	...	2-14-88	2-14-91	...
1971	2-14-85	...	2-14-88	2-14-91	...
1972	2-14-85	...	2-14-88	2-14-91	...
1973	2-14-85	...	...	...	...
	...	...	*5-3-87	...	7-1-88
1974	2-14-85	...	...	...	12-31-85
1975	5-20-85	...	5-8-88	5-8-91	...
1976	5-20-85	...	5-20-88	5-20-91	...
1977	5-20-85	...	...	...	6-30-86
1978	7-24-85	...	*8-2-86	...	6-30-87
1979	7-24-85	...	*8-2-86	...	6-30-87
1980	7-24-85	...	...	...	7-24-88
1981	7-24-85	...	...	S	...
1981-1	5-11-86	...	3-8-89	3-8-92	...
1982	7-24-85	...	7-24-88	7-24-91	...
1983	7-24-85	...	7-24-88	7-24-91	...
1984	12-8-85	...	...	S	...
1984-1	3-6-88	1986-Supp. 10	...	3-6-91	...
1985	8-4-88	...	...	8-4-91	...
1986-1	2-19-86	...	...	S	...
1986-2	12-2-88	...	...	12-2-91	...
1987	9-1-85	...	...	S	...
1987-1	5-3-87	...	...	5-3-90	...
1988	12-8-85	...	...	...	6-30-87
1989	12-8-85	...	12-8-88	12-8-91	...
1990	12-8-85	...	12-8-88	...	3-8-89
1991	12-8-85	...	*8-2-86	...	6-30-87
1992	5-11-86	...	*12-2-88	7-1-90	...

Case	Approval Date	Errata	Reaffirmed or *Latest App. Date	Expiration Date	Annulled
1993	2-19-86	...	...	S	
1993-1	5-3-87	...	...	5-3-90	...
1994	2-19-86	...	...	...	12-2-88
1995	5-11-86	...	...	...	6-30-87
1996	12-11-86	...	...	S	
1996-1	3-6-88	1986-Supp. 10	...	3-6-91	...
1997	5-11-86	...	...	S	
1997-1	5-3-87	...	*5-8-88	S	
1997-2	3-8-89	...	...	3-8-92	...
1998	2-8-87	...	...	2-8-90	...
1999	12-11-86	1986-Supp. 8	*5-8-88	7-1-89	...
2000	8-2-86	...	...	S	
2000-1	3-6-88	...	...	S	
2000-2	5-8-88	1986-Supp. 10	...	5-8-91	...
2001	12-11-86	...	...	...	7-1-88
2002	12-11-86	...	...	...	7-1-88
...
2004	12-11-86	...	...	12-11-89	...
2005	2-8-87	...	...	2-8-90	...
2006	12-11-86	...	...	12-11-89	...
2007	12-11-86	...	...	12-11-89	...
2008	12-11-86	...	*7-19-87	...	7-1-88
2009	12-11-86	...	...	S	
2009-1	2-8-87	...	...	...	12-2-88
2010	5-3-87	...	...	S	
2010-1	8-4-88	...	...	8-4-91	...
2011	2-8-87	...	...	...	7-1-88
2011-1	R 3-8-89	...	...	7-1-90	...
2012	2-8-87	...	...	2-8-90	...
2013	5-3-87	...	...	...	7-1-88
2014	5-3-87	...	...	5-3-90	...
2015	5-3-87	...	...	5-3-90	...
2016	7-19-87	...	...	7-19-90	...
2017	7-19-87	...	...	...	7-1-88
2018	7-19-87	...	...	7-19-90	...
2019	5-3-87	...	...	5-3-90	...
2020	5-3-87	...	...	5-3-90	...
2021	7-19-87	...	...	7-19-90	...
2022	7-19-87	...	...	7-19-90	...
2023	3-6-88	...	...	3-6-91	...
2024	7-19-87	...	...	7-19-90	...

Case	Approval Date	Errata	Reaffirmed or *Latest App. Date	Expiration Date	Annulled
2025	7-19-87	...	*8-4-88	7-1-89	...
2026	3-6-88	...	...	3-6-91	...
2027	12-6-87	...	...	12-6-90	...
2028	12-6-87	...	...	7-1-89	...
2029	8-4-88	...	...	8-4-91	...
2030	12-6-87	...	...	12-6-90	...
2031	3-6-88	...	...	3-6-91	...
2032	3-6-88	...	...	3-6-91	...
2033	3-6-88	...	...	S	...
2033-1	3-8-89	...	...	3-8-92	...
2034	3-6-88	...	...	3-6-91	...
2035	3-6-88	...	...	3-6-91	...
2036	3-6-88	...	...	3-6-91	...
2037	3-6-88	...	...	3-6-91	...
2038	3-6-88	...	...	3-6-91	...
2039	3-6-88	...	...	7-1-89	...
2040	3-6-88	...	*8-4-88	7-1-89	...
2041	8-4-88	...	...	8-4-91	...
2042	5-8-88	...	...	5-8-91	...
2043	5-8-88	...	...	5-8-91	...
2044	8-4-88	...	...	8-4-91	...
2045	8-4-88	...	...	7-1-89	...
...
2047	8-4-88	...	...	8-4-91	...
2048	8-4-88	...	...	8-4-91	...
2049	8-4-88	...	...	8-4-91	...
2050	8-4-88	...	...	S	...
2050-1	12-2-88	...	...	7-1-89	...
2051	6-23-88	...	...	6-30-89	...
2052	8-4-88	...	*12-2-88	7-1-90	...
2053	12-2-88	...	...	12-2-91	...
2054	12-2-88	...	...	7-1-90	...
2055	12-2-88	...	...	12-2-91	...
2056	3-8-89	...	...	3-8-92	...
...
2058	3-8-89	...	...	3-8-92	...

SUBJECT INDEX

Subject	Case	Subject	Case
SECTION I POWER BOILERS			
Alternative Rules for Heat Treatment of Boiler External Piping.....	1934	Restricting Lift to Achieve Reduced Relieving Capacities of Full Lift, Nozzle Type, Flat Seated Safety and Safety Relief Valves.....	1923
Attachment of Nozzles or Couplings to a Boiler Vessel After Postweld Heat Treatment.....	1918	SA-210 Grade C With Higher Mn.....	2021
Austenitic Steel Castings.....	1954	SA-336 Grade F11 Forgings.....	1863
Capacity Certification of Spring Loaded Safety Valves.....	1906	Safety Valve and Stop Valve Requirements for an Isolable Superheater.....	1966
Design of Safety Valve Connections.....	1876	Seamless Modified 9Cr-1Mo.....	1943
Drilled Holes Not Penetrating Through Vessel Wall....	1998	Section VIII, Division 1, Unfired Steam Boiler in Section I System.....	1855
Duplex Tubes for Code Construction.....	1874	Sequencing Water Column Blowdown Valve.....	1912
Electric Resistance and Autogenous Welded Tubing With 100% Efficiency Factor.....	2041	21Cr-11Ni-N Alloy (UNS S30815) for Code Construction.....	2033
Electric Resistance Welded Carbon Steel Boiler Tubes.....	1942	Use of	
Electric Resistance Welded Low Alloy Steel Boiler and Superheater Tubes.....	1984, 1996	Fiber Optic Cable to Transmit Gage Glass Image....	1897
Electric Resistance Welded 2¼Cr-1Mo Steel Boiler and Superheater Tubes.....	2026	Nameplate in Lieu of Stamping.....	2031
Fe-22Cr-21Ni-18.5Co-La Alloy — UNS R30556 for Code Construction.....	2010	SA-31 for Welded Stays.....	1965
For Materials in Inventory.....	2053	SA-333, Grade 6 Seamless and Welded Steel Pipe....	2056
Forgings of Nickel-Iron-Chromium Alloys N08800 and N08810.....	1949	Welded Pipe as the Shell of a Boiler.....	2042
Gray Cast Iron Castings.....	1849	Welding of P-No. 4 Tube Materials With No Preheat and No Postweld Heat Treatment.....	1885
Laser Welding.....	2032		
Materials for Bodies, Bonnets, and Yokes of Pressure Relief Valves.....	1750	SECTION II MATERIAL SPECIFICATIONS — PART A	
Miniature Electric Boilers Fabricated of Austenitic Stainless Steel.....	1896	SA-508 Basic Oxygen-Ladle Furnace Process.....	2022
Minimum Safety Valve or Safety Relief Valve Relieving Capacity for Fluidized Bed Boilers.....	1889		
Modified 9Cr-1Mo Material.....	1992	SECTION II MATERIAL SPECIFICATIONS — PART B	
Nickel-Chromium-Iron (Alloy UNS N06600).....	1827	Welding Qualification for Aluminum Alloy Castings....	2044
Nickel-Chromium-Molybdenum-Columbium Alloy (UNS N06625).....	1935		
Nickel-Iron-Chromium Alloy UNS N08811.....	1987	SECTION II MATERIAL SPECIFICATIONS — PART C	
Nickel-Iron-Chromium Alloys 800 and 800H (UNS N08800 and N08810) and Nickel-Iron-Chromium-Molybdenum-Copper Low-Carbon Alloy (UNS N08028).....	1325	No Cases	
Nickel-Iron-Chromium-Molybdenum-Copper Alloy (UNS N08825) for Water Wetted Service.....	1936	SECTION IV HEATING BOILERS	
Nickel-Molybdenum-Chromium Alloy (UNS N10276).....	1924	Alternative Rules for Capacity Verification Tests.....	1957
Ni-Cr-Co-Mo Alloy (UNS N06617).....	1956	Attachment of Fittings by Resistance Welding to Water Heater Vessel.....	1999
1977 Addendum to ANSI/ASME PTC 25.3-1976.....	2011	For Materials in Inventory.....	2053
Normalized and Tempered 1¼Cr Low Alloy Steel Forgings.....	1626	O-Rings for Hot Water Boiler Tube Installation.....	1385
Precipitation-Hardening Nickel Alloy (UNS N07718) Used as Bolting Material.....	1993	Provision for Optional Openings in Heads.....	2028

Subject	Case
Requirements for a Molybdenum Modified 18% Chromium Steel for Water Heaters	1951
Use of	
A 311 for the Assembly of Cast-Iron Boilers	2034
SA-31 for Welded Stays	1965
SA-351 Grade CF8C Alloy in Heating Boilers	2014
SA-351 Type CF3M, SA-249 Type 304L Welded Tubes, and SA-240 Type 304L Plate	2027
SA-395 for the Manufacture of Cast Iron Heating Boilers	1967
Sand Cast Aluminum Alloy B.413.0 for the Manufacture of Heating Boilers Under Part HC	1976

**SECTION V
NONDESTRUCTIVE EXAMINATION**

Alternate Rules for Dimensioning Clad-Side Basic Calibration Block Reflectors	1870
Strip Chart Recorders With Specified Linearity Less Than 30% of Full Scale	1915
Waiver of the Notch Width Requirement in SA-577	1852

**SECTION VIII, DIVISION 1
PRESSURE VESSELS**

Allowable Stresses for Materials in ASTM Specifications A 234, A 403, and A 420 for ANSI B16.9 Fittings	1899
Alloy UNS N08810 Up to 1800°F	1983
Alternative Requirements for Electrodes Used in Production Welding	2006
Alternative Requirements for Seal Welding of Threaded Connections, UF-32(b)	2016
Alternatives to Hydrostatic Testing	2049
Aluminum Alloy 3003-H24 for Code Construction	2019
ASTM A 268-81 Grade 25-4-4 (UNS S44635) Welded Tube	1900
ASTM A 736/A 736M-86 and A 859/A 859M-86 Plates and Forgings	1932
ASTM B 265 Grade 11 (UNS R52250) Titanium Alloy Strip, Sheet and Plates	2015
Austenitic Stainless Steel, 18Cr-20Ni-5.5Si, UNS S32615 Construction	2029
Brazing Materials	1941
Calculating Allowable Internal Pressure for Enameled Lined Vessels Exceeding Out-of-Roundness Tolerances When the Condition is Uncorrectable	1854
Carbon-Manganese-Silicon Steel Plate to SA-738	1902
Centrifugally Cast Nickel-Chromium-Iron Alloy for Welded Construction	1981
Connections to Inspection Openings	2005
Corner Weld Joint Detail for Box Headers for Air Cooled Heat Exchangers	2023
Drilled Holes Not Penetrating Through Vessel Wall	1986
1815 LCSi Stainless Steel	1953
Electrogas Welding	2039
Expansion Joints	1177
External Pressure Design of Spheres for Human Occupancy	1952

Subject	Case
Fabricated Lap Joint Stub Ends in Lethal Service	1887
Fe-22Cr-2Ni-18.5Co-La Alloy — UNS R30556 for Code Construction	2010
For Materials in Inventory	2053
Forged Rolls for Corrugated Paper Machinery	2000
Laser Welding of Lap Joints	2018
Lifting Device, Pilot Operated Pressure Relief Valves	2045
Materials for Bodies, Bonnets, and Yokes of Pressure Relief Valves	1750
Modified SA-836 Forgings, Titanium-Stabilized Carbon Steel	2043
Nameplates	2051
Ni-Cr-Co-Mo Alloy (UNS N06617)	1956
Ni-Cr-Co-Mo Alloy (N06617) Pipe and Tube	1982
Ni-Cu-Al Bolting Material, SB-164 Modified	1192
Nickel Steel Vessels With Stainless Steel Nozzles	1670
Nickel-Chromium-Molybdenum Alloy Steel Plates, ASTM A 543-87, Types B and C, Classes 1 and 2	1831
Nickel-Chromium-Molybdenum Alloy Steel Plates, ASTM A 543-82, Type C, Class 1	2024
Nickel-Chromium-Molybdenum-Columbium Alloy N06625	1409
Nickel-Iron-Chromium Alloy UNS N08811	1987
19Cr-15Ni-4.5Mo (Alloy UNS S31725) Austenitic Stainless Steel	2030
Pneumatic Testing of Pressure Vessels, UG-20	2055
Precipitation-Hardening Nickel Alloy (UNS N07718) Used as Bolting Material	1993
Requirements for	
Materials for Pressure Parts Subject to Heat Treatments Associated With Glass Lining	1970
Steel Bars for Layered Vessels	1985
Welder Identification Stamping on Aluminum Materials	1972
Welder Identification Stamping on Carbon Steel Materials	1971
Restricting Lift to Achieve Reduced Relieving Capacities of Full Lift, Nozzle Type, and Flat Seated Safety and Safety Relief Valves for Compressible and Incompressible Fluid Applications	1945
SA-372 Normalized Type V, Grades 1 and 3, Class A Forgings	1667, 1989
SA-395 Class 60-40-18 Welded Ferritic Ductile (Nodular) Cast Iron	1939
SA-537 Class 2 Plates With Lower Yield Strength	2020
SA-789, UNS S32304, With Higher Tensile Requirements	2058
3 Chromium-1 Molybdenum-¼ Vanadium-Titanium-Boron Alloy Steel Plates and Forgings	1961
20Cr-18Ni-6Mo (Alloy UNS J93254) Castings	2036
24Cr-38Ni-4Mo-Cu Alloy (UNS N08024)	1975
25Cr-22Ni-2Mo-N, UNS N31050, Austenitic Stainless Steel Seamless and Welded Tube and Pipe	2038
27Cr-3Mo-2Ni Ferritic Stainless Steel Alloy (UNS S44660)	1922
27Cr-4Ni-2Mo Austenitic/Ferritic Duplex Stainless Alloy (UNS S32950)	2035
2¼ Chromium-1 Molybdenum Alloy Steel Plates and Forgings	1960
Type 29-4C Ferritic Stainless Steel Alloy (UNS S44735)	1921
UCS-66(b) and UCS-68(a) & (b)	2050

Subject	Case
Unfired Steam Boiler in Section I System	1855
UNS J93345 (24Cr-10Ni-Mo-N) Duplex Ferritic/Austenitic Stainless Steel Castings, Annealed	2048
UNS N08367 Material	1997
UNS S32750 (25Cr-7Ni-4Mo-N) Duplex Ferritic/Austenitic Stainless Steel Seamless and Welded Tube and Pipe	2047
Use of	
Acoustic Emission Examination in Lieu of Radiography	1968
Alloy UNS N09926 for Code Construction	2007
Copper Alloy UNS C72200 per ASTM Specification B 111-83	1963
Copper Nickel Alloy UNS C71640 Tubing	1868
SA-240 Type 304 (UNS S30400) Stainless Steel Under Alternative Rules of Part ULT	1909
Weld Joint Examination for Pneumatically Tested Pressure Vessels	1518
Welded Threaded Fittings Less Than NPS 3	2054
Welding of SA-517 Grade A Material Without Post-weld Heat Treatment	1886

**SECTION VIII, DIVISION 2
PRESSURE VESSELS**

Allowable Stresses for Materials in ASTM Specifications A 234, A 403, and A 420 for ANSI B16.9 Fittings	1899
ASTM A 736/A 736M-86 and A 859/A 859M-86 Plates and Forgings	1932
Carbon-Manganese-Silicon Steel Plate to SA-738	1902
Design Requirements for Torispherical and Ellipsoidal Heads	1920
Drilled Holes Not Penetrating Through Vessel Wall	1986
Elevated Temperature Design	1489
External Pressure Design of Spheres for Human Occupancy	1952
For Materials in Inventory	2053
Lifting Device, Pilot Operated Pressure Relief Valves	2045
Lightly Loaded Attachments, AD-912(a)	2004
Nickel-Chromium-Molybdenum Alloy Steel Plates, ASTM A 543-87, Types B and C, Classes 1 and 2	1831
Requirements for	
Steel Bars for Layered Vessels	1985
Welder Identification Stamping on Aluminum Materials	1972
Welder Identification Stamping on Carbon Steel Materials	1971
Restricting Lift to Achieve Reduced Relieving Capacities of Full Lift, Nozzle Type, and Flat Seated Safety and Safety Relief Valves for Compressible and Incompressible Fluid Applications	1945
SA-350, Grade LF-3	2037
SA-537 Class 2 Plates With Lower Yield Strength	2020
Short Time High Temperature Service	1473
3 Chromium-1 Molybdenum-1/4 Vanadium-Titanium-Boron Alloy Steel Plates and Forgings	1961

Subject	Case
25Cr-22Ni-2Mo-N, UNS N31050, Austenitic Stainless Steel Seamless and Welded Tube and Pipe	2038
27Cr-3Mo-2Ni Ferritic Stainless Steel Alloy (UNS S44660)	1922
2 1/4 Chromium-1 Molybdenum Alloy Steel Plates and Forgings	1960
Type 29-4C Ferritic Stainless Steel Alloy (UNS S44735)	1921

**SECTION IX
WELDING QUALIFICATIONS**

PQR of Dissimilar Base Metal Thickness	2025
Qualification of Welders to Weld Dissimilar Combinations of Materials	2052
SFA-5.30 Specification for Consumable Inserts	2040

**SECTION X
FIBERGLASS-REINFORCED PLASTIC
PRESSURE VESSELS**

Interlaminar Shear Strength for Epoxy Resins	2012
Materials for Bodies, Bonnets, and Yokes of Pressure Relief Valves	1750

**INDEX OF MATERIAL SPECIFICATIONS
REFERRED TO IN CASES**

ASME Specification	
SA-20	1831, 2023, 2024
SA-29	1985, 2034
SA-31	1965
SA-53 Group B Type E	2042
SA-53 Type S	1518
SA-105	1876
SA-106	1876, 1899
SA-178	1942
SA-178 Grade A	1518
SA-181	1876
SA-182	1467, 1850, 1953, 1961, 1992, 2033
SA-182 Grade F22	1823, 1876
SA-182 Grades F22 and F21	1473
SA-182 Grade F11	1626, 1863, 1876
SA-210	1874, 1876
SA-210 Grade C	2021
SA-213	1876, 1943, 2029, 2030, 2033, 2038
SA-213 Grade T11	1885
SA-216	1876
SA-217	1876
SA-234	1992
SA-240	1670, 1953, 2004, 2029, 2030, 2035
SA-240 Grade 18Cr-2Mo (UNS S44400)	1951
SA-240 Type 304	1909
SA-240 Type 304L	2027
SA-249	2030, 2033, 2038
SA-249 Type 304L	2027
SA-250	1984, 1996, 2026
SA-266	1876

Subject	Case
SA-268	1921, 1953
SA-268 Grade 18Cr-2Mo (UNS S44400)	1951
SA-278 Grades 20, 25, 30, and 35	1849
SA-285	1970
SA-302 Grade B	1473
SA-312	1670, 1899, 1953, 2004, 2029, 2030, 2033, 2038, 2042
SA-333	1899
SA-333 Grade 6	2056
SA-335	1899, 1992
SA-335 Grades P11 and P22	1876
SA-336	1961, 1992
SA-336 Grades F22 and F22A	1876
SA-336 Grade F11	1863
SA-336 Grades F22 and F21	1473
SA-350 Grade LF-3	2037
SA-351	1981, 2036, 2048
SA-351 Type CF3M	2027
SA-351 Grade CF8C	2014
SA-351 Grade CF8M (UNS J92900)	1954
SA-351 Grade CN7M	1750
SA-352 Grade LCC	1750
SA-353	1670, 2004
SA-358	2030, 2033
SA-369	1992
SA-370	1749
SA-372 Type IV	2016
SA-372 Type V, Grades 1 and 3, Class A	1667, 1989
SA-376	2030
SA-387	1961, 1992
SA-387 Grades 22 and 21	1473
SA-387 Grade 11 Class 2	1626
SA-388	1463
SA-395	1967
SA-395 Class 60-40-18	1939
SA-403	1670
SA-409	2030, 2033
SA-414	1518
SA-450	1874, 1942, 1943, 1984, 1992, 1996, 2026, 2041
SA-455	1518
SA-479	1670, 1953, 2004, 2029, 2030, 2033
SA-479 Grade 18Cr-2Mo (UNS S44401)	1951
SA-508	1960, 1961, 2022
SA-508 Class 2 and 3	1473
SA-515	1970
SA-516	1970
SA-517	1886
SA-537 Class 2	2020
SA-541	1960, 1961
SA-553 Type 1 and 2	1670, 2004
SA-577	1852
SA-645	1670, 2004
SA-649	2000
SA-738	1902
SA-770	2023
SA-789	2035, 2047, 2058
SA-790	2035, 2047
SA-836	2043
SB-26	1976, 2044
SB-108	2044
SB-111	1868
SB-163	1325, 1827, 1874, 1987, 2007
SB-164	1192

Subject	Case
SB-166	1827, 1880, 1956
SB-167	1827
SB-168	1827
SB-209 Alloys 3003, 5083, 5454, and 6061	1972
SB-241 Alloys 3003, 5083, 5086, 5454, 6061, and 6063	1972
SB-247 Alloys 3003, 5083, and 6061	1972
SB-249	1750
SB-265 Grade 1	2015
SB-334	1585
SB-366	1997
SB-407	1325, 1983, 1987
SB-408	1325, 1987
SB-409	1325, 1987
SB-423 (UNS N08825)	1936
SB-424 (UNS N08825)	1936
SB-435	2010
SB-443	1935, 1956
SB-444	1935, 1956, 1982
SB-446	1935
SB-462	1997
SB-463	1884, 1975
SB-464	1884, 1975
SB-468	1884, 1975
SB-515	1987
SB-543	1868
SB-564	1935, 1949, 1956, 1987, 1997
SB-572	2010
SB-574	1924
SB-575	1924
SB-581	1860
SB-582	1860
SB-619	1860, 1924, 2010
SB-622	1860, 1924, 2010
SB-626	1860, 1924, 2010
SB-637	1993
SB-668	1325
SB-675	1997
SB-676	1997
SB-688	1997
SB-690	1997
SB-691	1997
SFA-5.4	2006
SFA-5.5	1831, 1886, 2024
SFA-5.8	1941
SFA-5.9	1909, 2040
SFA-5.30	2040
ASTM Specification	
A 108-73 Grades 1016, 1018, 1020, 1117, 1118, 1137 and 1141	1750
A 126-73	1750
A 210-86a, Grade C	2021
A 234-84a	1899
A 240-86	1922
A 268-81 Grade 25-4-4 (UNS S44635)	1900
A 268 / A 268M-86b	1922
A 296-77 Grade M-35	1750
A 311	2034
A 314-80 Type 303	1750
A 403-84a	1899
A 420-84	1899
A 494-76 Grade CY-40	1750

Subject	Case
A 542-82.....	1961
A 542-86.....	1960
A 543-87.....	1831
A 543-82, Type C, Class 1.....	2024
A 576-79 Grade 1117.....	1750
A 736/A 736M-86 Grade A.....	1932
A 859/A 859M-86.....	1932
B 16-78.....	1750
B 21-78 Alloys 464, 482, and 485.....	1750
B 85-76 Alloy SC84B.....	1750
B 111-83 (UNS C72200).....	1963
B 154-73.....	1750
B 165-73.....	1750
B 176-78 Alloy C85800.....	1750
B 209.....	2019
B 211-83 Alloy 2024 Temper T351 ³	1750
B 265.....	2015
B 283-79 Alloys C377, C464, and C485.....	1750
B 366-81.....	1924
B 371-81 Alloy C69700.....	1750

Subject	Case
B 443.....	1409
B 444.....	1409
B 446.....	1409
B 584-79 Alloy C87400.....	1750
D 735-61T Grade TA-705.....	1385
D 2133-78.....	1750
E 112 Plate II.....	2029

CHARTS FOR VESSELS UNDER EXTERNAL PRESSURE

Fig. 1 Chart for Determining Shell Thickness of Cylindrical and Spherical Vessels Under External Pressure When Constructed of Ni-Cr-Mo Alloy Steel Plate, ASTM A 543-77, Types B and C, Class 2.....	1831
Fig. 1 Chart for Determining Shell Thickness of Cylindrical and Spherical Vessels Under External Pressure When Constructed of Solution Annealed Ni-Cr-Mo-Cb Alloy, Grade 2 N06625.....	1409

CASES OF ASME BOILER AND PRESSURE VESSEL CODE

Approval Date: February 19, 1986

See Numerical Index for expiration
and any reaffirmation dates.

Case 1177-9
Expansion Joints
Section VIII, Division 1

E *Inquiry:* Expansion joints are being used in pressure vessel installations. Except for Nonmandatory Appendix BB, the Code makes no specific provisions for them. Under what conditions may an expansion joint be used as an integral part of a Code pressure vessel?

Reply: It is the opinion of the Committee that the Code does not contain mandatory rules for the design of expansion joints, but such joints may be used under the conditions of U-2(g) giving due consideration to UG-22. Welding of bellows plies shall be qualified in accordance with Section IX, except when resistance welding is used it shall be in accordance with (1) through (5) below.

(1) The joining of the bellows elements by resistance welding is a manufacturing aid and shall not be a structural (load carrying) weld. The bonded edges shall be trimmed from the outer edge to the center of the weld nugget, providing a homogeneous edge for welding to the end connector.

(2) The process shall be limited to individual ply thicknesses that are greater than 0.005 in. but less than 0.25 in., or any combination thereof.

(3) A Welding Procedure Specification (WPS) in which the following are essential variables shall be prepared and qualified; any change shall require preparation and qualification of a new procedure:

(a) a change in the specification, type, or grade of material in any member;

E (b) a change in the thickness of the thinnest member of the base material of more than 10%, and a change in the overall thickness of the joint of more than 10%;

(c) a change in the number of layers to be welded;

(d) a change in the resistance welding machine setting and process control parameters;

(e) a change in equipment from that used for the qualification of the WPS.

(4) The qualification test coupons shall be prepared in accordance with the WPS to provide at least three spot welds or a 2 in. length of continuous weld, and shall be examined as follows.

(a) Weld surfaces shall be visually examined and shall be free from cracks, electrode pickup, flash, or pits.

(b) Transverse cross sections of each spot weld and a longitudinal section through the center of the continuous weld shall be etched to reveal the weld nugget and heat affected zone and shall be visually examined. Each section shall be free from cracks or other defects in the weld nugget or base metal.

(5) Each production weld shall be examined as described in (4)(a).

When the expansion joint is manufactured by other than the vessel manufacturer, the manufacturer of the joint shall execute a partial data report, as required by UG-120(c), using Form U-2 as far as applicable. If an expansion joint is designed and constructed to the rules of Nonmandatory Appendix BB, the requirements and intent of this Code Case are satisfied. E

The joint shall be stamped with the parts manufacturer's name and serial number on the transition elements and not the bellows elements. None of the elements of the expansion joint shall be stamped with the Code Symbol. The parts manufacturer shall, however, possess a valid Certificate of Authorization.

The partial data report, in addition to recording the manufacturer's serial number, shall identify the vessel manufacturer and specific vessel design for which the expansion joint is intended. The joint shall be shop inspected during fabrication by a qualified inspector who shall sign the partial data report; this inspection is limited to include materials, fabrication, and such details as are covered by the Code rules, except that minimum thickness limitations do not apply to the bellows element and that the inspection of the bellows element covers material and workmanship only. The Certificate of Shop Inspection shall be modified by adding the following phrase after "Vessel Code" at the end of the first paragraph: "except that the inspection of the bellows element covers material and workmanship only." The final