ASME BOILER AND PRESSURE VESSEL CODE
AN AMERICAN NATIONAL STANDARD

1989 CODE CASES

Boilers and Pressure Vessels

1989 EDITION

JULY 1, 1989

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1989 ASME
BOILER AND PRESSURE VESSEL CODE

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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 1992 Code. The 1989 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 1992 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 1989 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 1992 Code.

INDEX TO NEW AND REVISED CASES

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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

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1887	7-13-81	. . .	5-2-90	5-2-93	. . .
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1906	5-25-82	. . .	2-14-88	2-14-91	. . .
1909-1	2-8-84	. . .	12-10-89	12-10-92	. . .
1912	1-10-83	. . .	12-2-88	12-2-91	. . .
1915	9-7-82	. . .	5-11-89	5-11-92	. . .
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1953-1	9-1-85	. . .	9-1-88	9-1-91	. . .
1954	4-4-84	. . .	2-28-90	2-28-93	. . .
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1965	12-9-84	. . .	12-9-87	. . .	8-10-90
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	. . .
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	. . .
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1976	5-20-85	. . .	5-20-88	. . .	7-22-89
1981-1	5-11-86	. . .	3-8-89	3-8-92	. . .
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1984-2	5-6-89	. . .	. . .	5-6-92	. . .
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1986-2	12-2-88	. . .	. . .	12-2-91	. . .
1987-1	5-3-87	. . .	2-28-90	2-28-93	. . .
1989	12-8-85	. . .	12-8-88	12-8-91	. . .
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1992	5-11-86	. . .	*12-2-88	. . .	7-1-90
1993-1	5-3-87	. . .	2-28-93	S	

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1996-2	12-10-89	. . .	. . .	12-10-92	. . .
1997-2	3-8-89	. . .	. . .	S	
1997-3	2-28-90	. . .	. . .	2-28-93	. . .
1998	2-8-87	. . .	2-28-90	2-28-93	. . .
1999	12-11-86	. . .	*5-8-88	. . .	7-1-89
2000-2	5-8-88	. . .	. . .	5-8-91	. . .
. . .	. . .	. . .	. . .	. . .	. . .
2004	12-11-86	. . .	12-10-89	12-10-92	. . .
2005	2-8-87	. . .	12-10-89	12-10-92	. . .
2006	12-11-86	. . .	12-10-89	12-10-92	. . .
2007	12-11-86	. . .	12-10-89	12-10-92	. . .
2010-1	8-4-88	. . .	*2-28-90	7-1-91	. . .
2011-1	R 3-8-89	. . .	5-2-90	7-1-91	. . .
2012	2-8-87	. . .	. . .	. . .	2-8-90
2014	5-3-87	. . .	. . .	. . .	8-10-90
2015	5-3-87	. . .	5-2-90	5-2-93	. . .
2016	7-19-87	. . .	5-2-90	5-2-93	. . .
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2018	7-19-87	. . .	5-2-90	5-2-93	. . .
2019	5-3-87	. . .	5-2-90	5-2-93	. . .
2020	5-3-87	1989-Supp. 5	5-2-90	5-2-93	. . .
2021	7-19-87	. . .	. . .	. . .	5-2-90
2022	7-19-87	. . .	. . .	. . .	5-2-90
2023	3-6-88	. . .	. . .	3-6-91	. . .
2024	7-19-87	. . .	5-2-90	5-2-93	. . .
2025	7-19-87	. . .	*8-4-88	. . .	7-1-89
2026	3-6-88	. . .	. . .	S	
2026-1	5-6-89	. . .	. . .	5-6-92	. . .
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	. . .	5-2-90	5-2-93	. . .
2031	3-6-88	. . .	. . .	3-6-91	. . .
2032	3-6-88	. . .	. . .	3-6-91	. . .
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2036	3-6-88	. . .	. . .	3-6-91	. . .
2037	3-6-88	. . .	. . .	3-6-91	. . .
2038	3-6-88	. . .	. . .	S	
2038-1	12-10-89	. . .	. . .	12-10-92	. . .
2039	3-6-88	. . .	. . .	S	
2039-1	5-6-89	. . .	. . .	5-6-92	. . .
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
2046	3-3-89	. . .	. . .	3-3-92	. . .
2047	8-4-88	. . .	. . .	8-4-91	. . .
2048	8-4-88	. . .	. . .	8-4-91	. . .
2049	8-4-88	. . .	. . .	8-4-91	. . .
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2051	6-23-88	. . .	. . .	. . .	6-30-89
2052	8-4-88	. . .	*12-2-88	. . .	7-1-90
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2054	12-2-88	. . .	. . .	. . .	7-1-90
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2056	3-8-89	. . .	. . .	3-8-92	. . .
2057	5-6-89	. . .	. . .	5-6-92	. . .
2058	3-8-89	. . .	. . .	3-8-92	. . .
2059	5-6-89	. . .	. . .	5-6-92	. . .
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2063	7-22-89	. . .	. . .	S	
2063-1	8-10-90	. . .	. . .	8-10-93	. . .
2064	12-10-89	. . .	. . .	12-10-92	. . .
2065	12-10-89	. . .	. . .	7-1-91	. . .
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2070	7-22-89	1989-Supp.6	. . .	7-22-92	. . .
2071	12-10-89	. . .	. . .	12-10-92	. . .
2072	12-10-89	. . .	. . .	12-10-92	. . .
2073	12-10-89	. . .	. . .	12-10-92	. . .
2074	5-2-90	. . .	. . .	5-2-93	. . .
2075	12-10-89	. . .	. . .	12-10-92	. . .
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2077	12-10-89	. . .	. . .	12-10-92	. . .
2078	12-10-89	. . .	. . .	7-1-91	. . .
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2081	2-28-90	. . .	. . .	2-28-93	. . .
2082	2-28-90	. . .	. . .	2-28-93	. . .
2083	5-2-90	. . .	. . .	5-2-93	. . .
. . .	. . .	. . .	. . .	. . .	. . .
2085	5-2-90	. . .	. . .	7-1-91	. . .
2086	8-10-90	. . .	. . .	8-10-93	. . .
2087	5-2-90	. . .	. . .	5-2-93	. . .
2088	8-10-90	. . .	. . .	8-10-93	. . .
2089	8-10-90	. . .	. . .	8-10-93	. . .
2090	5-2-90	. . .	. . .	5-2-93	. . .
2091	5-2-90	. . .	. . .	5-2-93	. . .
2092	5-2-90	. . .	. . .	5-2-93	. . .
2093	6-19-90	. . .	. . .	6-19-93	. . .
2094	5-2-90	1989-Supp.6	. . .	5-2-93	. . .
2095	5-2-90	1989-Supp.6	. . .	5-2-93	. . .
2096	8-10-90	. . .	. . .	8-10-93	. . .
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SUBJECT INDEX

SECTION X
FIBERGLASS-REINFORCED PLASTIC PRESSURE VESSELS

2012

INDEX OF MATERIAL SPECIFICATIONS REFERRED TO IN CASES

ASME Specification

Approval Date: February 19, 1986

See Numerical Index for expiration and any reaffirmation dates.

Case 1177-9
Expansion Joints
Section VIII, Division 1

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;

(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.

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 vessel manufacturer shall have the responsibility for satisfying the final inspector under the provisions of U-2(g); he shall obtain such supporting data as he may need from the joint manufacturer. This, plus the partial data report, will enable the final inspector to authorize application of the Code Symbol to the completed vessel.