



2015 NBIC

NATIONAL BOARD INSPECTION CODE



PART 1 INSTALLATION

AN AMERICAN NATIONAL STANDARD

THE NATIONAL BOARD OF BOILER AND PRESSURE VESSEL INSPECTORS

NATIONAL BOARD INSPECTION CODE
2015 EDITION
DATE OF ISSUE — JULY 1, 2015

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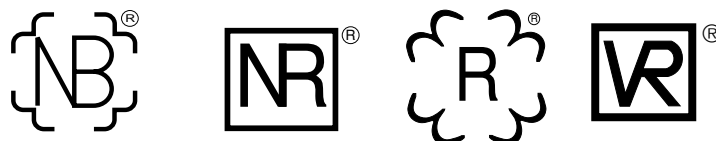
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INTRODUCTION

It is the purpose of the National Board Inspection Code (NBIC) to maintain the integrity of pressure-retaining items by providing rules for installation, and after the items have been placed into service, by providing rules for inspection and repair and alteration, thereby ensuring that these items may continue to be safely used.

The NBIC is intended to provide rules, information, and guidance to manufacturers, Jurisdictions, inspectors, owner-users, installers, contractors, and other individuals and organizations performing or involved in post-construction activities, thereby encouraging the uniform administration of rules pertaining to pressure-retaining items.

SCOPE

The NBIC recognizes three important areas of post-construction activities where information, understanding, and following specific requirements will promote public and personal safety. These areas include:

- Installation
- Inspection
- Repairs and Alterations

The NBIC provides rules, information, and guidance for post-construction activities, but does not provide details for all conditions involving pressure-retaining items. Where complete details are not provided in this code, the code user is advised to seek guidance from the Jurisdiction and from other technical sources.

The words shall, should, and may are used throughout the NBIC and have the following intent:

- Shall – action that is mandatory and required.
- Should – indicates a preferred but not mandatory means to accomplish the requirement unless specified by others such as the Jurisdiction.
- May – permissive, not required or a means to accomplish the specified task.

ORGANIZATION

The NBIC is organized into three parts to coincide with specific post-construction activities involving pressure-retaining items. Each part provides general and specific rules, information, and guidance within each applicable post-construction activity. Other NBIC parts or other published standards may contain additional information or requirements needed to meet the rules of the NBIC. Specific references are provided in each part to direct the user where to find this additional information. NBIC parts are identified as:

- Part 1, Installation – This part provides requirements and guidance to ensure all types of pressure-retaining items are installed and function properly. Installation includes meeting specific safety criteria for construction, materials, design, supports, safety devices, operation, testing, and maintenance.
- Part 2, Inspection – This part provides information and guidance needed to perform and document inspections for all types of pressure-retaining items. This part includes information on personnel safety, non-destructive examination, tests, failure mechanisms, types of pressure equipment, fitness for service, risk-based assessments, and performance-based standards.
- Part 3, Repairs and Alterations – This part provides information and guidance to perform, verify, and document acceptable repairs or alterations to pressure-retaining items regardless of code of construction. Alternative methods for examination, testing, heat treatment, etc., are provided when the original code of construction requirements cannot be met. Specific acceptable and proven repair methods are also provided.

Each NBIC part is divided into major sections as outlined in the Table of Contents.

Tables, charts, and figures provide relevant illustrations or supporting information for text passages, and are designated with numbers corresponding to the paragraph they illustrate or support within each section. Multiple tables, charts, or figures referenced by the same paragraph will have additional letters reflecting the order of reference. Tables, charts, and figures are located in or after each major section within each NBIC part.



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PART 2 INSPECTION

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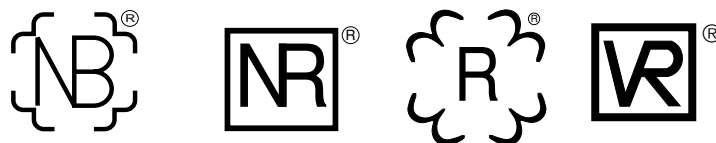
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INTRODUCTION

It is the purpose of the National Board Inspection Code (NBIC) to maintain the integrity of pressure-retaining items by providing rules for installation, and after the items have been placed into service, by providing rules for inspection and repair and alteration, thereby ensuring that these items may continue to be safely used.

The NBIC is intended to provide rules, information, and guidance to manufacturers, Jurisdictions, inspectors, owner-users, installers, contractors, and other individuals and organizations performing or involved in post-construction activities, thereby encouraging the uniform administration of rules pertaining to pressure-retaining items.

SCOPE

The NBIC recognizes three important areas of post-construction activities where information, understanding, and following specific requirements will promote public and personal safety. These areas include:

- Installation
- Inspection
- Repairs and Alterations

The NBIC provides rules, information, and guidance for post-construction activities, but does not provide details for all conditions involving pressure-retaining items. Where complete details are not provided in this code, the code user is advised to seek guidance from the Jurisdiction and from other technical sources.

The words shall, should, and may are used throughout the NBIC and have the following intent:

- Shall – action that is mandatory and required.
- Should – indicates a preferred but not mandatory means to accomplish the requirement unless specified by others such as the Jurisdiction.
- May – permissive, not required or a means to accomplish the specified task.

ORGANIZATION

The NBIC is organized into three parts to coincide with specific post-construction activities involving pressure-retaining items. Each part provides general and specific rules, information, and guidance within each applicable post-construction activity. Other NBIC parts or other published standards may contain additional information or requirements needed to meet the rules of the NBIC. Specific references are provided in each part to direct the user where to find this additional information. NBIC parts are identified as:

- Part 1, Installation – This part provides requirements and guidance to ensure all types of pressure-retaining items are installed and function properly. Installation includes meeting specific safety criteria for construction, materials, design, supports, safety devices, operation, testing, and maintenance.
- Part 2, Inspection – This part provides information and guidance needed to perform and document inspections for all types of pressure-retaining items. This part includes information on personnel safety, non-destructive examination, tests, failure mechanisms, types of pressure equipment, fitness for service, risk-based assessments, and performance-based standards.
- Part 3, Repairs and Alterations – This part provides information and guidance to perform, verify, and document acceptable repairs or alterations to pressure-retaining items regardless of code of construction. Alternative methods for examination, testing, heat treatment, etc., are provided when the original code of construction requirements cannot be met. Specific acceptable and proven repair methods are also provided.

Each NBIC part is divided into major sections as outlined in the Table of Contents.

Tables, charts, and figures provide relevant illustrations or supporting information for text passages, and are designated with numbers corresponding to the paragraph they illustrate or support within each section. Multiple tables, charts, or figures referenced by the same paragraph will have additional letters reflecting the order of reference. Tables, charts, and figures are located in or after each major section within each NBIC part.



2015 NBIC

NATIONAL BOARD INSPECTION CODE



PART 3 REPAIRS AND ALTERATIONS

AN AMERICAN NATIONAL STANDARD

NATIONAL BOARD INSPECTION CODE
2015 EDITION
DATE OF ISSUE — JULY 1, 2015

This code was developed under procedures accredited as meeting the criteria for American National Standards. The Consensus Committee that approved the code was balanced to ensure that individuals from competent and concerned interests had an opportunity to participate. The proposed code was made available for public review and comment, which provided an opportunity for additional public input from industry, academia, regulatory and jurisdictional agencies, and the public-at-large.

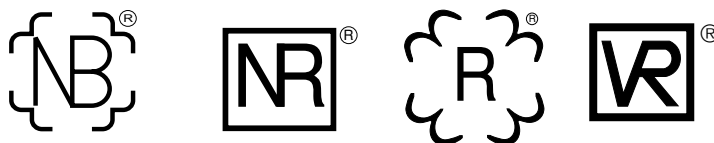
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Library of Congress Catalog Card No. 52-44738
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INTRODUCTION

It is the purpose of the National Board Inspection Code (NBIC) to maintain the integrity of pressure-retaining items by providing rules for installation, and after the items have been placed into service, by providing rules for inspection and repair and alteration, thereby ensuring that these items may continue to be safely used.

The NBIC is intended to provide rules, information, and guidance to manufacturers, Jurisdictions, inspectors, owner-users, installers, contractors, and other individuals and organizations performing or involved in post-construction activities, thereby encouraging the uniform administration of rules pertaining to pressure-retaining items.

SCOPE

The NBIC recognizes three important areas of post-construction activities where information, understanding, and following specific requirements will promote public and personal safety. These areas include:

- Installation
- Inspection
- Repairs and Alterations

The NBIC provides rules, information, and guidance for post-construction activities, but does not provide details for all conditions involving pressure-retaining items. Where complete details are not provided in this code, the code user is advised to seek guidance from the Jurisdiction and from other technical sources.

The words shall, should, and may are used throughout the NBIC and have the following intent:

- Shall – action that is mandatory and required.
- Should – indicates a preferred but not mandatory means to accomplish the requirement unless specified by others such as the Jurisdiction.
- May – permissive, not required or a means to accomplish the specified task.

ORGANIZATION

The NBIC is organized into three parts to coincide with specific post-construction activities involving pressure-retaining items. Each part provides general and specific rules, information, and guidance within each applicable post-construction activity. Other NBIC parts or other published standards may contain additional information or requirements needed to meet the rules of the NBIC. Specific references are provided in each part to direct the user where to find this additional information. NBIC parts are identified as:

- Part 1, Installation – This part provides requirements and guidance to ensure all types of pressure-retaining items are installed and function properly. Installation includes meeting specific safety criteria for construction, materials, design, supports, safety devices, operation, testing, and maintenance.
- Part 2, Inspection – This part provides information and guidance needed to perform and document inspections for all types of pressure-retaining items. This part includes information on personnel safety, non-destructive examination, tests, failure mechanisms, types of pressure equipment, fitness for service, risk-based assessments, and performance-based standards.
- Part 3, Repairs and Alterations – This part provides information and guidance to perform, verify, and document acceptable repairs or alterations to pressure-retaining items regardless of code of construction. Alternative methods for examination, testing, heat treatment, etc., are provided when the original code of construction requirements cannot be met. Specific acceptable and proven repair methods are also provided.

Each NBIC part is divided into major sections as outlined in the Table of Contents.

Tables, charts, and figures provide relevant illustrations or supporting information for text passages, and are designated with numbers corresponding to the paragraph they illustrate or support within each section. Multiple tables, charts, or figures referenced by the same paragraph will have additional letters reflecting the order of reference. Tables, charts, and figures are located in or after each major section within each NBIC part.