

Specification for Marine Drilling Riser Couplings

API SPECIFICATION 16R
FIRST EDITION, JANUARY 1997

EFFECTIVE DATE: JUNE 1, 1997

REAFFIRMED, AUGUST 2010



AMERICAN PETROLEUM INSTITUTE

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Upstream Segment

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Specification for Marine Drilling Riser Couplings

1 SCOPE

1.1 Purpose

This specification pertains to the design, rating, manufacturing and testing of marine drilling riser couplings. Coupling capacity ratings are established to enable the grouping of coupling models according to their maximum stresses developed under specific levels of loading, regardless of manufacturer or method of make-up. This specification relates directly to API Recommended Practice 16Q, which pertains to the design, selection, and operation of the marine drilling riser system as a whole.

1.2 Organization

This specification is organized into distinct sections for easy reference. Section 3 contains a description of the function of marine riser couplings, along with the definition of relevant terms. Section 4 includes service classifications and design criteria. Materials and welding requirements are included in Section 5 and dimensions in Section 6. Section 7 covers quality control. Design qualification testing requirements are spelled out in Section 8, and product marking requirements are provided in Section 9. Section 10 defines requirements for operation and Maintenance manuals. Appendixes A, B, and C provide analysis, testing, and design, information.

2 REFERENCES

This specification includes by reference, either in total or in part, the API and industry standards listed in this section. The latest edition of these standards shall be used unless otherwise noted.

API

- RP 16Q *Design, Selection, Operation and Maintenance of Marine Drilling Riser Systems*
- Spec 6A *Specification for Wellhead and Christmas Tree Equipment*

ASME¹

Boiler and Pressure Vessel Code, Sections V, VIII, and IX

ASTM²

- A-370 *Mechanical Testing of Steel Products*
- E-10 *Brinell Hardness of Metallic Materials*

- E-18 *Rockwell Hardness and Rockwell Superficial Hardness of Metallic Materials*
- E-92 *Vickers Hardness of Metallic Materials*
- E-94 *Radiographic Testing*
- E-165 *Liquid Penetrant Examination*
- E-709 *Magnetic Particle Examination*
- E-747 *Design, Manufacture and Material Grouping Classification of Wire Image Quality Indicators Used for Radiography*

AWS³

- AWS D1.1 *American Welding Society Structural Welding Code*

3 DEFINITIONS

3.1 Function

A marine riser coupling provides a means of quickly connecting and disconnecting riser joints. The coupling box or pin (depending on design type) provides a support to transmit the weight of the suspended riser string to the riser handling spider while running or retrieving the riser. Additionally, the coupling may provide support for choke, kill and auxiliary lines, and load reaction for buoyancy devices.

3.2 Nomenclature

For the purposes of this specification, the following definitions apply. A comprehensive list of definitions pertaining to marine drilling riser systems is contained in API Recommended Practice 16Q.

3.2.1 auxiliary line: An external conduit (excluding choke and kill lines) arranged parallel to the riser main tube for enabling fluid flow. Examples of these lines include a control system fluid line, a buoyancy control line, and a mud boost line.

3.2.2 buoyancy: Devices added to the riser joints to reduce their submerged weight.

3.2.3 choke and kill (C&K) lines: External conduits, arranged parallel to the main tube, used for circulation of fluids to control well pressure. Choke and kill lines are primary pressure-containing members.

3.2.4 coupling: A mechanical means for connecting two joints of riser pipe end-to-end.

3.2.5 marine drilling riser: A tubular conduit serving as an extension of the wellbore from the well control equipment on the wellhead at the seafloor to a floating drilling rig.

¹American Society of Mechanical Engineers, 1950 Stemmons Freeway, Dallas, Texas 75207.

²American Society of Testing and Materials, 1916 Race Street, Philadelphia, Pennsylvania 19103-1187.

³American Welding Society, Inc., 550 Northwest LeJeune Road, Miami, Florida 33126.