

API Specification

7K

Fourth Edition, June 2005
Specification for Drilling and Well Servicing
Equipment

National Adoption of ISO 14693:2003—Petroleum and
natural gas industries—Drilling and well-servicing
equipment

Annex A

API Monogram[®] Required

☐ Yes ☐ No

Annex A (normative)

Supplementary Requirements

A.1 Introduction

If specified in the purchase order, one or more of the following supplementary requirements shall apply.

A.2 SR1—Proof Load Testing

The equipment shall be proof load-tested and subsequently examined in accordance with the requirements of 8.6.

The equipment shall be marked “SR1” by means of low-stress hard-die stamping near the load rating identification.

A.3 SR2—Low-temperature Testing

The maximum impact-test temperature, for materials used in primary load-carrying components of covered equipment with a required minimum operating temperature below that specified in 4.1, shall be specified by the purchaser.

Impact testing shall be performed in accordance with the requirements of 6.3.1 and ISO 148 or ASTM A 370. Except for manual tong hinge pins of wrought material, the minimum average Charpy impact energy of three full-size test pieces tested at the specified (or lower) temperature shall be 27 J (20 ft-lb), with no individual value less than 20 J (15 ft-lb). For manual tong hinge pins of wrought material, the minimum average impact energy of three full-size Charpy impact test pieces, tested at the specified (or lower) temperature, shall be 15 J (11 ft-lb) with no individual value less than 12 J (8.5 ft-lb).

Each primary load-bearing component shall be marked “SR2” to indicate that low-temperature testing has been performed. Each primary load-bearing component shall also be marked to indicate the actual design and test temperature in degrees Celsius.

A.4 SR2A—Additional Low-temperature Testing

Impact testing shall also be applicable to materials used in the primary load-carrying components of equipment normally exempted from impact testing. The components to which impact testing shall apply shall be determined by mutual agreement of the purchaser and the manufacturer.

Impact testing shall be performed in accordance with the requirements of 6.3.1 and ISO 148 or ASTM A 370. The maximum impact test temperature and the minimum average and individual values shall be as agreed upon by the purchaser and the manufacturer.

Each covered primary load-carrying component shall be marked “SR2A” to indicate that additional low temperature testing has been performed. The component shall also be marked with the temperature in degrees Celsius to indicate the actual design and test temperature.

A.5 SR3—Data Book

When requested by the purchaser, records shall be prepared, gathered, and properly collated in a data book by the manufacturer. The data book shall include for each unit at least the following information:

- a) statement of compliance;
- b) equipment designation/serial number;
- c) assembly and critical area drawings;
- d) wear limits and nominal capacities and ratings;
- e) list of components;
- f) traceability codes and systems (marking on parts/records on file);
- g) steel grades;
- h) heat-treatment records;
- i) material test reports;
- j) NDE records;
- k) performance test records, including functional hydrostatic and load test certificates (when applicable);
- l) certificates for supplementary requirements, as required;
- m) welding procedure specifications and qualification records.

A.6 SR4—Additional Volumetric Examination of Castings

The requirements for SR4 shall be identical to the requirements for 8.4.8, except that all critical areas of each primary load-carrying casting shall be examined.

A.7 SR5—Volumetric Examination of Wrought Material

The entire volume of primary load-carrying wrought components shall be examined by the ultrasonic method. When examination of the entire volume is impossible due to geometric factors, such as radii at section changes, the maximum practical volume shall suffice.

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Ultrasonic examination shall be in accordance with ASTM A 388 (the immersion method may be used) and ASTM E 428. Straight-beam calibration shall be performed using a distance vs. amplitude curve based on a flat-bottomed hole with a diameter of 3,2 mm (1/8 in) or smaller.

Wrought components examined by the ultrasonic method shall meet the following acceptance criteria.

- a) For both straight and angle beam examination, any discontinuity resulting in an indication which exceeds the calibration reference line is not allowed. Any indication interpreted as a crack or thermal rupture is also not allowed.
- b) Multiple indications (i.e. two or more indications), each exceeding 50 % of the reference distance vs. amplitude curve and located within 13 mm (1/2 in) of one another, are not allowed.