

(1) Tests shall be conducted at maximum, minimum, and intermediate radius points, as well as such points in the arc of rotation as meet with the approval of the accredited person.

(2) An additional test shall be conducted with partial load and shall include all functions and movements contemplated in the use of the crane.

(e) In cases where shore-type cranes are mounted permanently aboard barges, the requirements of this Subpart E with respect to unit proof tests and examinations shall not apply and the applicable requirements of Subpart H of this part shall be adhered to with respect to unit proof tests and examinations.

**§ 1919.29 Limitations on safe working loads and proof loads.**

The proof loads specified by §§ 1919.27 and 1919.28 shall be adjusted as necessary to meet any pertinent limitations based on stability and/or on structural competence at particular radii. Safe working loads shall be reduced accordingly.

**§ 1919.30 Examinations subsequent to unit tests.**

(a) After satisfactory completion of the unit proof load tests required by §§ 1919.27 and 1919.28, the cargo gear and all component parts thereof shall be given a thorough visual examination, supplemented as necessary by other means, such as a hammer test or with electronic, ultrasonic, or other non-

destructive methods, to determine if any of the parts were damaged, deformed, or otherwise rendered unsafe for further use.

(b) When the test of gear referred to in paragraph (a) of this section is being conducted for the first time on a vessel, accessory gear shall be dismantled or disassembled for examination after the test. The sheaves and pins of the blocks included in this test need not be removed unless there is evidence of deformation or failure.

(c) For subsequent tests such parts of the gear shall be dismantled or disassembled after the test as necessary to determine their suitability for continued service.

(d) When blocks are disassembled all shell bolt nuts shall be securely locked upon reassembly.

(e) In carrying out the requirements of this section, replacement shall be required of:

(1) Any swivel found to have excessive tolerance as a result of wear on any bearing surface.

(2) Pins of blocks found to be shouldered, notched, or grooved from wear, in which case, in addition to replacing the pin, sheave bushings shall be examined for suitability for continued use.

**§ 1919.31 Proof tests—loose gear.**

(a) Chains, rings, shackles and other loose gear (whether accessory to a machine or not) shall be tested with a proof load against the article equal to that shown in the following table:

Article of gear	Proof load
Chain, ring, hook, shackle or swivel .....	100 percent in excess of the safe working load.
Blocks:	
Single sheave block .....	300 percent in excess of the safe working load. <sup>1</sup>
Multiple sheave block with safe working load up to and including 20 tons ..	100 percent in excess of the safe working load.
Multiple sheave block with safe working load over 20 tons up to and including 40 tons.	20 tons in excess of the safe working load.
Multiple sheave block with safe working load over 40 tons .....	50 percent in excess of the safe working load.
Pitched chains used with hand-operated blocks and rings, hooks, shackles or swivels permanently attached thereto.	50 percent in excess of the safe working load.
Hand-operated blocks used with pitched chains and rings, hooks, shackles or swivels permanently attached thereto.	50 percent in excess of the safe working load.

<sup>1</sup> The proof load applied to the block is equivalent to twice the maximum resultant load on the eye of pin of the block when lifting the nominal safe working load defined in (i) below. The proof load is, therefore, equal to four times the safe working load as defined in (i) below or twice the safe working load as defined in (ii) below.

(i) The nominal safe working load of a single-sheave block should be the maximum load which can be safely lifted by the block when the load is attached to a rope which passes around the sheave of the block.

(ii) In the case of a single-sheave block where the load is attached directly to the block instead of to a rope passing around the sheave, it is permissible to lift a load equal to twice the nominal safe working load of the block as defined in (i) above.

(iii) In the case of a lead block so situated that an acute angle cannot be formed by the two parts of the rope passing over it (i.e., the angle is always 90° or more), the block need not have a greater nominal safe working load than one-half the maximum resultant load which can be placed upon it.

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(b) In cases where persons accredited to carry out loose gear tests may be retained to conduct tests of special stevedoring gear as described in §1918.61(b) of this chapter, which does not form part of a vessel's equipment, such tests shall adhere to the requirements set forth in §1918.61(b) (1), (2), and (3) of this chapter.

(c) After being tested as required by paragraph (a) of this section, and before being taken into use, all chains, rings, hooks, shackles, blocks or other loose gear, except as noted in §1919.32, shall be thoroughly examined, the sheaves and pins of the blocks being removed for this purpose, to determine whether any part has been injured or permanently deformed by the test. Shell bolt nuts shall be securely locked upon reassembly. Defective loose gear components shall be replaced before the certificate is issued.

(d) Any certificate relating to shackles, swivels or strength members of single-sheave blocks which have been restored to original dimensions by welding shall state this fact.

**§ 1919.32 Specially designed blocks and components.**

(a) Blocks and connecting components of an unusual nature which are specially designed and constructed as an integral part of a particular lifting unit and are either permanently affixed or of such design that two or more components must be tested together need not be considered as loose gear for purposes of §1919.31.

(b) In lieu of the loose gear proof test required by §1919.31(a), design data shall be submitted to an accredited certification agency indicating design and material specifications and analysis whereby the designed strength of such gear may be determined.

(c) Subsequent to the test of the lifting unit as a whole, a thorough visual examination shall be made of disassembled parts and an electronic, ultrasonic, or other equally efficient non-destructive examination shall be made of those parts not dismantled to ensure the safe condition of such parts.

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**§ 1919.33 Proof tests—wire rope.**

Wire rope, except as provided in §1919.14(b), shall be tested by sample, a piece being tested to destruction, and the safe working load of running ropes, unless otherwise acceptable to the Administration on the basis of design, shall not exceed one-fifth of the breaking load of the sample tested. In the case of running ropes used in gear with a safe working load exceeding 10 tons, the safe working load shall not exceed one-fourth of the breaking load of the sample tested.

**§ 1919.34 Proof tests after repairs or alterations.**

When proof loads are applied after repairs or alterations, all parts of the assembled gear shall be examined as required in §§1919.30, 1919.31(c), or 1919.32(c), whichever is applicable.

**§ 1919.35 Order of tests.**

When both unit and loose gear proof load tests are required, the loose gear test may be carried out after completion of the unit test.

**§ 1919.36 Heat treatment.**

(a) The annealing of wrought iron gear required by this part shall be accomplished at a temperature between 1100° and 1200 °F. and the exposure shall be of between 30 and 60 minutes duration. After being annealed, the gear shall be allowed to cool slowly and shall then be carefully inspected. All annealing shall be carried out in a closed furnace.

(b) When heat treatment of loose gear made of other than wrought iron or steel is recommended by the manufacturer, it shall be carried out in accordance with the specifications of the manufacturer.

**§ 1919.37 Competent persons.**

All gear certification functions shall be performed by competent persons as set forth in the following table:

Functions	Competent person
Any testing, examination, inspection, or heat treatment required in United States ports.	Responsible individual, surveyor or other authorized agent of a person accredited by the Administration under the regulations contained in this part.