(b) The proof load shall be lifted and swung as far as possible in both directions. If the jib or boom of the crane has a variable radius, it shall be tested with proof loads, as specified in paragraph (a) of this section, at the maximum and minimum radii. In the case of hydraulic cranes, when due to the limitation of pressure it is impossible to lift a load 25 percent in excess of the safe working load, it will be sufficient to lift the greatest possible load.

(c) Initial proof tests of new cranes shall be made only with a dead load as specified in paragraph (b) of this section.

(d) Initial tests of cranes which have been in service, quadrennial tests, or tests associated with replacements or renewals, may be made with spring or hydraulic balances where dead loads are not reasonably available under the following conditions:

(1) Tests shall be conducted at maximum, minimum, and intermediate radii 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:

<table>
<thead>
<tr>
<th>Article of gear</th>
<th>Proof load</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chain, ring, hook, shackle or swivel</td>
<td>100 percent in excess of the safe working load.</td>
</tr>
<tr>
<td>Blocks:</td>
<td></td>
</tr>
<tr>
<td>Single sheave block</td>
<td>300 percent in excess of the safe working load.</td>
</tr>
<tr>
<td>Multiple sheave block with safe working load up to and including 20 tons</td>
<td>100 percent in excess of the safe working load.</td>
</tr>
</tbody>
</table>
§ 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 nondestructive examination shall be made of those parts not dismantled to ensure the safe condition of such parts.

§ 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.