

## **The Standards:**

B30.20 Below the Hook Lifting Devices (ASME B30.20-2013) ASME is the registered trademark of The American Society of Mechanical Engineers. Please refer to the entire document for the official standards & regulation information, scope, exclusions, purpose, use and the effective dates as updates occur at intervals.

## **Markings, Construction, & Installation B30.20-1.2**

**A. Markings** – The rated load of the lifting device shall be legibly marked on its main structure or on a tag attached to its main structure where it is visible. If the lifting device is made up of several lifters, each detachable from the group, these lifters shall also be marked with their individual rated loads.

- a. Identification – All new structural & mechanical lifting devices shall be marked with, but not limited to, the following information;
  - i. Manufacturer's name & Address
  - ii. Serial number
  - iii. Lifter weight, if over 100 lbs. (45kg)
  - iv. Cold current (amps) (where applicable)
  - v. Rated voltage (when applicable)
  - vi. Rated load (as described in para.20-1.2.1(a))
  - vii. ASME BTH-1 Design Category
  - viii. ASME BZTH-1 Service Class
- b. Product Safety Labels
  - i. Where size & shape of the lifter allow, all lifter shall have labels, affixed to them in a readable position, that include the appropriate signal word according to ANSI Z535.4 (4.14) to bring the label to the attention of the operator. The label should include cautionary language to provide danger, warning, or caution notice to operators and others against (a)-(j) in the standards.

## **B. Construction B30.20-1.2.2**

- a. The Manufacturer shall verify that structural and mechanical lifting devices are designed by or under the direct supervision of a qualified person. The design shall be in accordance with ASME BTH-1 and shall consider the stresses resulting from the application of rated load plus the weight of the lifting device. Designed to ASME BTH-1 Design Category B (static strength criteria) and the proper Service Class (fatigue life criteria) selected for its number of load cycles. Design Category A should only be designated when the magnitude & variation of loads applied to the lifter are predicable & do NOT exceed the rated capacity and the anticipated number of load cycles does not exceed Service Class).

## **C. Installation B30.20-1.2.3**

- a. The lifter shall be installed in accordance with the manufacturer's instructions.
- b. The installed shall check for correct rotation of all articulating parts and motors where applicable.

## **Inspection, Testing & Maintenance B30.20-1.3.1**

### **A. Initial Inspection**

- a. New and Re-installed lifters shall be inspected by a designated person prior to initial use to verify compliance with applicable provision of B30.20.
- b. Altered, repaired, or modified lifting devices shall be inspected by a designated person. The inspection may be limited to the provision affected by the alteration, repair, or modification as determined by a qualified person

**B. Inspection Intervals** – Inspection procedures in regular service is divided into two general classifications based upon the intervals at which inspection should be performed. The intervals, in turn, are dependent upon the critical components of the lifter and the degree of their exposure to wear, deterioration, or malfunction. The two general classifications are herein designated as frequent and periodic, with respective intervals between inspections as defined below.

- a. **Every Lift Inspection (B30.20-1.3.2):** Visual examination by the operator before and during each lift made
- i. **Items such as the following shall be inspected by the operator before and/or during every lift for any indication of damage as specifically indicated, including observations during operation for any damage which may have occurred during the lift.**
    1. Check surface of the load for debris
    2. Check condition & operation of the controls
    3. Check condition & operation of the indicators & meters when installed
- b. **Frequent Inspection (B30.20-1.3.3):** Visual examination by the operator or other designated persons with records are NOT required.
- i. Normal Service - Monthly
  - ii. Heavy Service - Weekly
  - iii. Severe Service - Daily
  - iv. Special or infrequent service – as recommended by a qualified person before and after each occurrence.
    1. **Items such as the following shall be inspected for damage at intervals as defined in paragraph (20-1.3.1(B)(2) including observations during operation for any indications of damage which may appear between inspections. A qualified person shall determine whether any indications of damage constitute a hazard or will require more frequent inspection. For all lifting devices, inspect for the following:**
      - a. Check structural members for deformation, cracks, or excessive wear on any part of the lifting device
      - b. Check for loose or missing guards, fasteners, covers, stops, or nameplates
      - c. Check all functional operating mechanisms and automatic hold & release mechanisms for mal-adjustments interfering with operations.
- c. **Periodic Inspection (B30.20-1.3.4):** Visual inspection by a qualified person making records of apparent external conditions to provide the basis for a continuing evaluation. An external legible tag on the lifting device is an acceptable identification in lieu of records.
- i. Normal service for equipment in place - Yearly
  - ii. Heavy service (as in (a) above, unless external conditions indicate the disassembly should be done to permit detailed inspection) – Semi-annually
  - iii. Severe service (as in (b) above - Quarterly
  - iv. Special or infrequent service – as recommended by a qualified person before the first such occurrence and as directed by the qualified person for any subsequent occurrences.
    1. **B30.20-1.3.4 – Complete inspection of the lifting device shall be performed at intervals as defined in paragraph 20-1.3.1(B)(3). Any deficiencies, such as listed below, shall be examined and a determination made as to whether they constitute a hazard. These inspections shall include the requirement of paragraph 20-1.3.3 and, in addition, items such as the following;**
      - a. Loose bolts and / or fasteners
      - b. Cracked or worn gears, pulleys, sheaves, sprockets, bearings, chains and belts.
      - c. Excessive wear of friction pads, linkages, and other mechanical parts.
      - d. Excessive wear at hoist hooking points & load support clevises or pins.

- C. Lifting Devices Not in regular use (B30.20-1.3.5)** – A lifter which has been idle for a period of 1 month or more is to be given an inspection in accordance with paragraph 20-1.3.3 before being placed in service.
- D. Inspection Records (B30.20-1.3.6)** – Dated inspection reports shall be made on critical items such as those listed in paragraph 20-1.3.4. Records should be available to appointed personnel for each periodic inspection and when the lifter is either modified or repaired.
- E. Repairs (B30.20-1.3.6)** – Any indications of damage disclosed by the inspection requirements of Section 2-1.3 shall be corrected according to the procedures outlined in paragraph 20-1.3.9 before operation of the lifting device is resumed.
- F. Testing – Operational Tests (B30.20-1.3.8)**
- a. A new and re-installed lifting device shall be tested by a qualified person, or designated person under the direction of a qualified person, prior to initial use to verify compliance with applicable provisions of this volume, including, but not limited to, the following;
    - i. Moving Parts. Lifting devices with moving parts shall be tested to determine the lifting device operates in accordance with manufacturer’s instructions
    - ii. Latches. Lifting devices with manually operated latches shall be tested to determine the latch operates in accordance with manufacturer’s instructions.
  - b. Altered, repaired, or modified lifting devices shall be tested by a qualified person, or designated person under the direction of a qualified person. This test may be limited to the provisions affected by the alteration, repair, or modification, as determined by a qualified person with guidance from the manufacturer.
  - c. All indicator lights, gauges, horns, bells, alarms, pointers, and other warning devices shall be tested.
  - d. Dated reports of all operation tests shall be filed.
- G. Load Test (B30.20-1.3.8.2)**
- a. Prior to initial use, all new, altered, modified, or repaired lifting devices should be tested & inspected by, or under the direction of, a qualified person and a written report be furnished by such person, confirming the load rating of the lifting device. The load rating should NOT be more than 80% of the maximum load sustained during the test. Test loads shall NOT be more than 125% of the rated load unless otherwise recommended by the manufacturer. Test reports should be available.
  - b. The load test, if made, shall consist of the following operations as a minimum requirement:
    - i. Hoist the test load a sufficient distance to ensure the load is supported by the lifting device, or apply the required load if the test is made using a testing machine.
    - ii. After the test load is released, visually inspect the lifter for deformation, cracks or other defects.
  - c. Altered, repaired, or modified lifting devices shall be tested by a qualified person, or a designated person under the direction of a qualified person. This test may be limited to the provisions affected by the alteration, repair, or modification, as determined by a qualified person with guidance from the manufacturer.
- H. Maintenance (B30.20-1.3.9)**
- a. Maintenance Program - should be established and be based on recommendations made by the manufacturer or a qualified person.
  - b. Maintenance Procedure
    - i. Before adjustments & repairs are started on a lifting device, the following precautions shall be taken into consideration;
      1. A lifting device removed from service shall be tagged “Out of Service”
      2. Lifting device should be returned to the manufacturer for repair or replacement
    - ii. Only qualified person shall perform adjustments & tests when required
    - iii. Replacement parts shall be obtained from the manufacturer
    - iv. After adjustments & repairs have been made, the lifting device shall not be returned to service until it has been inspected according to paragraph 20-1.3.4

- v. Dated records of repairs & replacements should be made.
- vi. Adjustments & Repairs – Any hazardous conditions disclosed by the inspection requirements of paragraph 20-1.3.1 shall be corrected before normal operation of the lifting device is resumed. Adjustments & repairs shall be done under the direction of, or by, a qualified person.

**I. Operation – Operators (B30.20-1.4.1)** – Qualifications for operators of below-the-hook lifting devices are as follows:

- a. The operator shall be instructed in the use of the device by a designated person. Instructions should include, but not limited to, the following:
  - i. Application of the lifting device to the load & adjustments, if any, that adapt the lifter to various sized or kinds of loads.
  - ii. Instructions in any special operation or precautions.
  - iii. Manufacturer’s suggested operating procedures
  - iv. Condition of the load itself required for operation of the lifter, such as, but not limited to, balance, surface cleanliness, flatness, bending and load thickness.
  - v. Storage of the lifting device to protect it from damage.
  - vi. Not exceeding the rated capacity of the lifting device or the capacity of the hoisting equipment by the combined weight of the load, the lifting device and rigging weight.
  - vii. The proper attachment of adapters to lifting devices for special load handling.

**J. Conduct of Lifting Device Operators (B30.20-1.4.3)**

- a. The operator shall give attention to the operation of the lift during a lifting sequence.
- b. When physically or otherwise unfit, an operator shall not engage in the operation of the equipment.
- c. Operators shall be responsible for those operations under their direct control. Whenever there is any doubt as to safety, the operator shall consult a designated person before handling the load.
- d. The operator shall respond only to instruction from designated persons. However, the operator shall obey a stop order at all times, no matter who gives the command.
- e. The operation of the lifting device shall be observed before use and during a shift. Any deficiency observed shall be carefully examined by a designated person. If the deficiency constitutes a hazard, the lifting device shall be removed from service and tagged “Out of Service”. Any indication of a hazardous condition shall be reported to a qualified person for evaluation.
- f. The operator shall be familiar with standard hand signals when applicable.
- g. The operator shall land any attached load & store the lifter before leaving the lifting device.
- h. All controls shall be tested by the operator before use during a shift. If any controls do not operate properly, they should be adjusted or repaired before operations are begun.
- i. The operator shall not ride, nor allow other to ride, loads or the lifting device.
- j. The operator and other personnel shall stay clear of the load.

**K. Lifting Device Operator Practices (B30.20-1.4.4)**

- a. Lifting devices shall be operated only by the following qualified personnel:
  - i. Designated persons
  - ii. Trainees under the direct supervision of a designated person
  - iii. Maintenance & test personnel, when it is necessary in the performance of their duties.
  - iv. Inspectors (of lifting devices)
- b. The lifting device shall not be loaded in excess of its rated load or handle any load for which it is not designed.
- c. The lifter shall be applied to the load in accordance with the instruction manual from the manufacturer.
- d. Before lifting, the operator shall make sure the lifting slings are inspecting and operational in accordance to B30.9 Slings.

- e. Care should be taken to make certain the load is correctly distributed for the lifting device being utilized.
- f. The temperature of the load should not exceed the maximum allowable limits of the lifting device.
- g. The lifting device shall be positioned over the load in such a manner as to minimize swinging and control the center of gravity.
- h. Care shall be taken there is no sudden acceleration or deceleration of the load as to minimize shock loading to the lifting device.
- i. Do not allow the load or lifting device to come in contact with any obstructions.
- j. The operator shall avoid carrying the load over personnel
- k. The lifting device shall not be used for side pulls or sliding the load unless specifically authorized by a qualified person.
- l. The operator shall not leave suspended load unattended.

**L. Miscellaneous Operating Practices (B30.20-1.4.5)**

- a. An operator shall not use a lifting device which is tagged “Out of Service” or otherwise designated as non-functioning.
- b. “Out of Service” tags on lifting devices shall not be removed without the approval of the person placing them or an authorized person.
- c. The lifting device, when not in use, should be stored in an assigned location.
- d. Caution should be taken of operating marking or tags shall not be removed or defaced. Missing or illegible markings or tags shall be replaced.