

User Responsibilities for Inspection, Testing and Manufacturing of Structural & Mechanical Lifters Manufactured by TANDEMLOC, Inc.

Reference: ASME B30.20a-2001

Section 20-.02: Definitions-General

Appointed: Assigned specific responsibilities by the employer or the employer's representative.

Designated Person: A person selected or assigned by the employer or the employer's representative as being competent to perform specific duties.

Qualified Person: A person who, by possession of a recognized degree in an applicable field or certificate of professional standing, or who, by extensive knowledge, training, and experience, has successfully demonstrated the ability to solve or resolve problems relating to the subject matter and work.

Latch: A device for holding a lifter in the open or closed position.

Latch, Automatic: A sequencing latch mechanism operated by lifter motion.

Lifting Beam (Spreader Beam): A load supporting lifter

Lock Bar Sheet Lifter: A supporting lifter

Manipulating Lifter: A lifter that rotates the load about one or more axes during the lifting process.

Mechanical Lifting Device: A mechanism composed of two or more rigid parts which move with respect to each other for attaching a load to a hoisting device.

Service, Heavy: That service which involves operation within the rated load limit that exceeds normal service.

Service, Normal: That distributed service which involves operation with various weights within the rated load limit, or uniform loads less than 65% of rated load.

Service, Severe: That service which involves normal or heavy service with abnormal operating conditions.

Structural Lifting Device: A lifter consisting of an assembly of rigid parts designed to hold and attach a load to a hoisting device.

Supporting Lifter: A lifter that carries the load on rigid projection(s) or bearing surface(s).

Section 20-1.3: Inspection, Testing, and Maintenance

20-1.3.1 Inspection Classification

A. Initial Inspection

1. New and reinstalled lifters shall be inspected by a designated person prior to initial use to verify compliance with applicable provisions of this volume. Lifters manufactured by TANDEMLOC, Inc. are proof tested prior to delivery of the lifter, the user must confirm this by reviewing the test date plate on the lifter and the proof test certificate.
2. Altered, repaired, or modified lifters shall be inspected by a designated person. The inspection may be limited to the provisions affected by the alteration, repair, or modification, as determined by a qualified person.

B. Inspection Intervals

Inspection procedure for lifters 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 lifters 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.

1. Every Lift Inspection: Visual examination by the operator before and during each lift made by the lifter.
2. Frequent Inspection: Visual examinations by the operator or other designated persons with records are not required.
 - a. Normal service - monthly.
 - b. Heavy Service - weekly to monthly.
 - c. Sever service - daily to weekly.
 - d. Special or infrequent service - as recommended by a qualified person before and after each occurrence.
3. Periodic Inspection. Visual inspection by a qualified person making records of apparent external conditions to provide the basis for a continuing evaluation. An external code mark on the lifter is an acceptable identification in lieu of records.
 - a. Normal service for equipment in place - yearly.
 - b. Heavy service [as in (a) above, unless external conditions indicate that disassembly should be done to permit detailed inspection] - semiannually.
 - c. Severe service [as in (b) above] - quarterly.
 - d. 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.

20-1.3.2 Every Lift Inspection

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 that might occur during the lift:

- A. Surface of the load for debris.
- B. Condition and operation of the controls.
- C. Condition and operation of the indicators and meters when installed.

20-1.3.3 Frequent Inspection (See Also Table 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 that might appear between inspections. A qualified person shall determine whether any indications of damage constitute a hazard or will require more frequent inspection. For all lifters, inspect:

- A. Structural members for deformation, cracks, or excessive wear on any part of the lifter.
- B. Loose or missing guards, fasteners, covers, stops, or nameplates.
- C. All functional operating mechanisms and automatic hold-and-release mechanisms for maladjustments interfering with operation.

20-1.3.4 Periodic Inspection (See Also Table 1)

Complete inspection of the lifter 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 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 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; and
- D. Excessive wear at hoist hooking points and load support clevises or pins.

20-1.3.5 Lifting Devices Not In Regular Use

A lifter that 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.

20-1.3.6 Inspection Records

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.

20-1.3.7 Repairs

Any indications of damage disclosed by the inspection requirements of Section 20-1.3 shall be corrected according to the procedures outlined in paragraph 20-1.3.9 before operation of the lifter is resumed.

20-1.3.8 Testing

20-1.3.8.1 Operational Tests

A. New and reinstalled lifting devices shall be tested by a qualified person, or a 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:

1. Moving Parts. Lifters with moving parts shall be tested to determine that the lifter operates in accordance with manufacture's instructions.
 2. Latches. Lifters with manually operated latches shall be tested to determine that the latch operates in accordance with manufacture's instructions.
- B. Altered, repaired, or modified lifters 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.
- C. All indicator lights, gages, horns, bells, alarms, pointers, and other warning devices shall be tested.
- D. Dated reports of all operational tests shall be filed.

20-1.3.8.2 Load Test

- A. Prior to initial use, all new, altered, modified, or repaired lifting devices should be tested and inspected by, or under the direction of, a qualified person and a written report be furnished by such a person, confirming the load rating of the lifter. 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.
1. Hoist the test load a sufficient distance to ensure the load is supported by the lifter, or apply the required if the test is made using a testing machine.
 2. After the test load is released, visually inspect the lifter for deformation, cracks, or other defects.
- C. Altered, repaired, or modified lifters 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.

20-1.3.9 Maintenance

- A. Maintenance Program. A maintenance program should be established and be based on recommendations made by the lifter manufacturer or a qualified person with guidance from the manufacturer.
- B. Maintenance Procedure

1. Before adjustments and repairs are started on a lifter, the following precautions shall be taken.
 - a. A lifter removed from service for repair shall be tagged "Out of Service".
2. Only qualified persons shall perform adjustments and tests when required.
3. Replacement parts shall be obtained from TANDEMLOC, Inc.
4. After adjustments and repairs have been made, the lifter shall not be returned to service until it has been inspected according to paragraph 20-1.3.4.
5. Dated records of repairs and replacements should be made.
6. Adjustments and Repairs. Any hazardous conditions disclosed by the inspection requirements of paragraph 20-1.3.1 shall be corrected before normal operation of the lifter is resumed. Adjustments and repairs shall be done under the direction of, or by, a qualified person.

Section 20-1.4: Operation

20-1.4.1 Operators

Below-the-hook lifting devices shall be operated only by trained, designated persons.

20-1.4.2 Qualifications

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 be limited to, the following:
 1. Application of the lifter to the load and adjustments, if any, that adapt the lifter to various sized or kinds of loads.
 2. Instructions in any special operations or precautions.
 3. The manufacturer's suggested operating procedures.
 4. 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.
 5. Storage of the lifter to protect it from damage.
 6. Not exceeding the rated load of the lifting device or the capacity of the hoisting equipment by the combined weight of the load, the lifting device, and rigging.
 7. The proper attachment of adapters to lifting device for special load handling.
- B. The operator shall demonstrate the ability to operate the lifter as instructed before assuming responsibility for using the lifter.

20-1.4.3 Conduct of Lifting Device Operators

- A. The operator shall give attention to the operation of the lifts 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 instructions from designated persons. However, the operator shall obey a stop order at all times, no matter who gives it.
- E. The operation of the lifter 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 lifter 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 and 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, or allow others to ride, loads or the lifting device.
- J. The operator and other personnel shall stay clear of the load.

20-1.4.4 Lifting Device Operating Practices

A. Lifting devices shall be operated only by the following qualified personnel:

1. Designated persons.
 2. Trainees under the direct supervision of a designated person.
 3. Maintenance and test personnel, when it is necessary in the performance of their duties; and
 4. Inspectors (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.
 - D. Before lifting, the operator shall make sure that lifter ropes or chains are not kinked, and that multiple part lines are not twisted around each other.
 - E. Care should be taken to make certain the load is correctly distributed for the lifter being used.
 - F. The temperature of the load should not exceed the maximum allowable limits of the lifter.
 - G. The lifter shall be brought over the load in such a manner as to minimize swinging.
 - H. Care shall be taken that there is not sudden acceleration or deceleration of the load.
 - I. Do not allow load or lifter to come into contact with any obstruction.
 - J. The operator shall avoid carrying the load over people.
 - K. The lifter 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 loads unattended.

20-1.4.5 Miscellaneous Operating Practices

- A. An operator shall not use a lifting device that is tagged "Out of Service" or otherwise designated as nonfunctioning.
- 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 lifter, when not in use, should be stored at an assigned location.
- D. Caution should be taken that operating markings or tags shall not be removed or defaced. Missing or illegible markings or tags shall be replaced.

Table 1 : MINIMUM INSPECTION FOR BELOW-THE-HOOK LIFTING DEVICES

Item	Normal Service		Heavy Service		Severe Service	
	Visual, Monthly [Note (1)]	Record Yearly [Note (2)]	Visual, Weekly to Monthly [Note (1)]	Record Semi Annually [Note (3)]	Visual, Daily to Weekly [Note (3)]	Record Quarterly [Note (3)]
Frequent Inspection (refer to paragraph 20-1.3.3) - structural deformation, cracks or excessive wear of any part of the lifter	xx		xx		xx	
Loose or missing guards, fasteners, covers, stops or nameplates	xx		xx		xx	
All functional operating mechanisms and automatic hold and release mechanisms for maladjustments interfering with operation	xx		xx		xx	
Periodic Inspection (refer to paragraph 20-1.3.4)- loose bolts or fasteners		xx		xx		xx
Cracked or worn gears, pulleys, sheaves, sprockets, bearings, chains, and belts		xx		xx		xx
Excessive wear of linkages and other mechanical parts		xx		xx		xx
Excessive wear at hoist hooking points and load support clevises, or pins		xx		xx		xx