4.2.4 BOOM ANGLE—When Boom Angle is displayed as an additional function of a Rated Capacity System its accuracy shall be as follows: For boom angles 65 degrees or higher the indicated angle is to be neither greater than the actual boom angle nor more than 2 degrees less than the actual boom angle. For boom angles less than 65 degrees the indicated angle is to be neither greater than the actual boom angle nor more than 3 degrees less than the actual boom angle.

4.2.5 RATED CAPACITY—Where rated capacity is displayed as an additional function of a Rated Capacity System the capacity displayed shall be the capacity determined from the applicable capacity chart of the crane ±200 lb.

Where the system cannot meet the preceding accuracy criteria, conspicuous labeling or signaling is to be provided indicating that this accuracy cannot be met.

5. System Mechanical Requirements

5.1 Shock and Vibration—The RCI/RCL system shall be able to withstand the shock and vibration of the machine under normal operating conditions while maintaining specified accuracy.

5.2 Protection—RCI/RCL components directly exposed to the elements (installed externally on the machine) shall be protected to a minimum level of NEMA-12 (U.S. code) or IP-65 (International Protection Code - IEC 144/ 855420). Components that are installed within manufacturers machine enclosure shall be protected to manufacturer's specifications.

5.3 Temperature Effect—Specified accuracy is to be maintained over ambient temperature variations of –30 °C to +50 °C (–22 °F to +122 °F) without external adjustment.

5.4 RFI/EMI—The RCI/RCL system shall be sufficiently protected against Radio Frequency Interference and Electro-Magnetic Interference under normal (design) operating conditions of the machine.

5.5 Strength Margin—When any part of the RCI/RCL system is employed in the load supporting system so that it's failure could cause the load to be dropped, its strength margin is to be not less than the minimum strength margin of the other load supporting members.

5.6 Operation Check—The system is to include a means for the operator or other responsible persons to determine that it is operative prior to crane use.

5.7 Testing—The system is to be performance tested by the installer initially and by the user at intervals recommended by the manufacturer(s), or at any time there is an indication of inaccuracy.

6. General Requirements

6.1 Installation and Maintenance—Installation and maintenance of the rated capacity device and maintenance of the crane are to be in accordance with the appropriate manufacturer's recommendations to attain system accuracy.

6.2 Identification—Labels are to be conspicuously placed on a system component(s), in the operator's cab, and/ or displayed on the RCI/RCL giving the following information:

a. Identification of applicable load rating chart and rating conditions.
b. Units of measure as applicable.
c. Basic operating instructions and precautions, including recommended intervals for performance testing.
d. Device manufacturer's name, address, device model number and serial number of the RCI/RCL.

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6.3 Manual—Manual(s) containing installation, operation, test, and service information is (are) to be provided by the manufacturer and shall be available to the operator or to other responsible persons at all times unless the manuals are supplied by the crane manufacturer.

7. Performance Evaluation Tests

7.1 General Testing Requirements—Test Personnel are to be familiar with the system operation and the manufacturer's recommended test procedures, and to test the system for all functions.

7.1.1 System tests are to be conducted using appropriately configured crane and specified load rating chart.

7.1.2 For system calibration, or calibration verification, two or more test loads are to be employed for each of the following configurations to establish compliance with 4.1 and 4.2 (unless otherwise specified by the Crane Manufacturer or the Rated Capacity System manufacturer):

a. Maximum Boom Length and Maximum Radius (Min. Angle).
b. Maximum Boom Length and Minimum Radius (Max. Angle).
c. Minimum Boom Length and Maximum Radius (Min. Angle).
d. Minimum Boom Length and Minimum Radius (Max. Angle) unless the test weight restricts safe operation in this area, then the test shall be made at the minimum safe operating radius.

7.1.3 For periodic calibration checks, two or more test loads are to be employed to activate the alarms.

7.1.4 TEST DATA—Test forms are to include, but not be limited to, the following information:

a. Owner(s)
b. Crane manufacturer, model, and serial number.
c. Device manufacturer, model, and serial number.
d. Crane configuration at time of test, method of test load application, location of load sensor, radius/ angle sensor, and test readings.
e. A statement that the system met (did not meet) the performance criteria of 4.1 and 4.2 or that recalibration was necessary in order to achieve the required accuracy. The system accuracy calibration is to be part of such report.

7.1.5 All test records are to be signed and dated. A copy of the current test record is to be available to the operator upon request.

7.2 Test Procedures—The following test procedure or equivalent is to be used:

7.2.1 KNOWN WEIGHT

a. Test load to be applied by suspending known weights accurate to ±1%. If the weights of additional equipment such as blocks, slings, sensors, etc., are included in the test load, the total load is to be known to an accuracy of ±1%. Starting with the load at short radius (load within rating) lift load and increase radius slowly until the limit signal is activated. Measure and record radius. Two or more readings are to be taken with each test load. Similarly, check the warning signal.
b. Determine the system accuracy in accordance with 7.3.

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