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Superseding J159 APR1994

(R) Rated Capacity System

1. **Scope**—This SAE Standard applies to cranes when used in lifting service that are equipped with Rated Capacity Systems.

1.1 **Purpose**—The purpose of this document is to establish the minimum performance and tolerance criteria of systems used to warn or to indicate to the operator and/or other responsible persons when the load being lifted approaches, meets and exceeds the rated capacity on the applicable rated capacity chart of the crane.

2. **References**

2.1 **Applicable Publications**—The following publications form a part of this specification to the extent specified herein.

2.1.1 NEMA PUBLICATION—Available from the National Electrical Manufacturers Association, www.NEMA.org, 1300 North 17th Street, Suite 1847, Rosslyn, VA 22209.

NEMA-12 (U.S. Code)

2.1.2 IP (INTERNATIONAL ELECTROTECHNICAL COMMISSION) PUBLICATION—Available from American National Standards Institute (ANSI), Customers Service, 25 West 43rd Street, 4th floor, New York, NY 10036-8002. TP: +1 212 642 4900 TF: +1 212 398 0023 email: info@ansi.org URL: webstore.ansi.org.

IP-65 (International Protection Code - IEC 144/855420)

3. **Definitions**

3.1 **Rated Capacity Indicator (RCI)**—A system consisting of devices, when applied to a crane, sense crane loading, boom length (telescopic only), boom angle, and which automatically provide an audible/visual signal when the Actual Load approaches, reaches and/or exceeds the Rated Capacity value.

3.2 **Rated Capacity Limiter (RCL)**—A system consisting of devices which, when applied to a crane, sense crane loading, boom length (telescopic only), boom angle, and which automatically provide an audible/visual signal when the loading conditions approach, reach and/or exceed the rated capacity values. When the Actual Load exceeds the Rated Capacity, the system supplies a signal to a function kick-out system.

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- 3.3 Function Kick-Out System (FKO)**—A device which when activated prevents the loading on the crane to be increased beyond the point at which the FKO occurred.
- 3.4 Crane Configuration**—The physical arrangement of the crane as prepared for the particular operation in conformance with the manufacturers operating instructions and Rated Capacity Chart.
- 3.5 Actual Load**—The weight of the load being lifted including all additional equipment such as wire rope, blocks, slings, etc. as defined by the manufacturers Rated Capacity Chart.
- 3.6 Rated Capacity**—The value shown on the applicable Rated Capacity Chart of the crane for the particular configuration, boom length, angle and/or function of these variables. For radii and/or angles outside those shown on the Rated Capacity Chart, the rated capacity is considered to be zero.
- 3.7 Boom Length**—The straight line through the center line of the boom pivot pin to the centerline of the boom point hoist sheave pin, measured along the longitudinal axis of the boom.
- 3.8 Boom Angle**—The angle between the longitudinal centerline of the boom base section and the horizontal plane.
- 3.9 Radius of Load**—The horizontal distance from a vertical projection of the crane's axis of rotation to the supporting surface, before loading, to the center line of the vertical hoist line(s) or tackle with the load applied.
- 4. Performance Tolerance Criteria**
- 4.1 Warning and Limit Signals**—Visual and/or audible signals shall have the visual signal clearly visible to the operator under any normal operating conditions, and the audible signal shall be sufficiently loud to be heard over engine and machinery noise, and shall be clearly distinguishable from ambient noise.
- 4.1.1 **WARNING SIGNAL - APPROACH TO OVERLOAD**—An audible and visual signal (preferably a yellow light) is to be activated at $92\% \pm 5\%$ of Rated Capacity. The signal shall continue to function as long as the load, radius or angle parameters exceed the $92\% \pm 5\%$ values. Also, the warning signal shall be clearly distinguishable from the overload signal.
- 4.1.2 **OVERLOAD AND LIMIT SIGNAL**—An Audible and Visual signal (preferably a red light) is to be activated at no more than 105% of Rated Capacity and also when the radius or angle shall fall outside of the crane's Rated Capacity Chart. Also, when a Rated Capacity Limiter is employed to actuate an optional crane control Function Kick-Out System (FKO), the FKO is to be activated at no more than 105% of Rated Capacity. These signals shall continue to function as long as the load, radius, and angle parameters are exceeded.
- 4.2 Additional Functions**—When actual load, rated capacity, radius, boom angle or boom length are displayed as additional functions of a Rated Capacity System the displayed function is to conform to the following provided that the system accuracy always conforms to 4.1.1 and 4.1.2.
- 4.2.1 **ACTUAL LOAD**—When Actual Load is displayed as an additional function of a Rated Capacity System its accuracy shall be such that the indicated load is $100\% +10\% -0\%$ of the Actual Load.
- 4.2.2 **RADIUS**—When Radius is displayed as an additional function of a Rated Capacity System its accuracy is to be such that the indicated radius is $100\% +10\% -0\%$ of the Actual Load Radius.
- 4.2.3 **BOOM LENGTH**—When boom length is displayed as an additional function of a Rated Capacity System its accuracy is to be such that the indicated length is $100\% \pm 2\%$ of the actual length.