

**1414 Motion and Performance Indicating or Prevention Devices**

**KEY:** F = Floating Cranes (B30.8)

M/U = Monorail, Underhung Cranes Standard (B30.11)

O/G = Overhead, Bridge, and Gantry Cranes (B30.2, B30.17)

T = Tower Cranes (B30.3, B30.4)

U = Underhung Cranes (B30.16)

COE = U.S. Army Corps of Engineers Standards

SCRA = Specialized Carriers and Rigging Association Glossary of Common Crane and Rigging Terms

ANSI = American National Standards Institute

ISO = International Organization for Standardization

**MOTION DEVICES**

- (1) Backstop (SCRA) *or* (Attachment) Backstop (ISO)
- (2) Back-Up Limit Switch (ISO) (O/G)
- (3) Bail Limiter (Mike)
- (4) Boom Angle Indicators (ANSI, SAE, COE, OSHA) *or* (Attachment) Angle Indicators (ISO)
- (5) Boom Hoist Limiting Device (SCRA) *or* [Crane] Boom Hoist Disengaging Device (SAE, COE)
- (6) Boom Hoist Shut-Offs/Disconnect/Hydraulic relief/Automatic Boom Stop (ANSI, SCRA)
- (7) Boom Length Indicator (ANSI, SAE) [issue as to how we define "boom;" includes jib, jib extensions, boom extensions???] *or* Attachment Length Indicator (ISO)
- (8) [Limiting Device to Stop] Boom or Jib Luffing at Lower and/or Upper Limits of Boom or Jib Movement (ANSI) (T)

- (9) Boom Hoist Kick-Outs (Bernie)
- (10) Boom Stops (ANSI, COE) *and/or* Telescoping Boom Stops (SCRA)
- (11) Bridge Bumpers (ANSI) (O/G)
- (12) Buffer (ANSI) -
- (13) Bumper (Buffer) (ANSI) (O/G)
- (14) Fifth Outrigger on Front Bumper (SCRA)
- (15) Counter-Weight Removal Systems Devices (Bernie)
- (16) Counter-Weight Sensors (Bernie)
- (17) Crane-Travelling Speed Limiter (ISO)
- (18) Crab-Traversing Limiter (ISO) (O/G???)
- (19) Crab-Traversing Speed Limiter (ISO)
- (20) Crane Level Indicator (ANSI, EU prEN, COE)
- (21) Crane Slope Indicator (ISO)
- (22) Slope Indicator (ISO)
- (23) Crane-Travelling Limiter (ISO) (O/G???)
- (24) [Limiting Device to Limit] Crane Travel At Both Ends of the Runway Tracks (ANSI) (T)
- (25) Cross-Track Switch (B30.11) (ANSI) (M/U)
- (26) Cut-Out Limit Switch (ISO) (O/G)
- (27) Deadman Control/Switch (SCRA)
- (28) Deceleration Limits for Trolley Travel In and Out or Boom Up and Down (Peter) (T)
- (29) Deceleration Limits for Hoist Up Prior to Two-Blocking Limit (Peter) (T)
- (30) Derrick *or* Derricking *or* Boom Luffing Limiter (ISO)

- (31) Derricking-Speed Limiter (ISO)
- (32) DOT devices, i.e. seat belts, low air pressure tires, brake lights/headlights/turn signals, etc. (Mike)
- (33) Drag Brake (SCRA)
- (34) Emergency Stop Switch (ANSI) (O/G)
- (35) End Stop (ISO) (O/G)
- (36) Engine Clutch/Power-Take Off/Torque Converter Controls??? (ANSI, SCRA)
- (37) Foot Pedal Brake Locks (SCRA)
- (38) Glide (Slider) Switch (B30.11) (ANSI) (M/U)
- (39) Grouser (SCRA)
- (40) Main/Auxiliary/Boom/Jib/Trolley Hoist –
  - (a) Holding Brake (ANSI)
  - (b) Dog/Ratchet/Pawl (Positive Holding Devices) (ANSI)
  - (c) Secondary Braking Device
- (41) Integrally Mounted Holding Device (such as a load hold check valve to prevent uncontrolled lowering of the boom in the event of a hydraulic system failure [e.g. supply hose rupture] ) (ANSI)
- (42) Jib Angle Indicator (ISO)
- (43) Jib Backstops (ANSI, COE)
- (44) Jib Hoist Kick-Outs (Bernie)
- (45) Jib Stops
- (46) Jib-Telescoping Limiter (ISO)
- (47) Limit Switch (ANSI) (O/G)
- (48) Lowering Limiter (to ensure that the minimum specified number of turns of rope always remains on the drum) (ISO, EU prEN)

- (49) Lower Over-Travel Limit Switch (ANSI) (F)
- (50) Low Pressure Warnings (Bernie)
- (51) Main Disconnect Switch (Crane Disconnect Switch???) (ANSI) (O/G)
- (52) Main Power Circuit Interrupt Device (ANSI) (T, O/G)
- (53) Master Spring-Return Switch (ANSI) (O/G)
- (54) Master Switch (ANSI) (O/G, M/U)
- (55) Mechanical Load Brake (ANSI)
- (56) Motor Disconnect (ANSI) (T, O/G)
- (57) Movable Cabin Limiter (to prevent approaches to the end of the track) (ISO)
- (58) Outrigger or Stabilizer Control/Monitor/Sensor
- (59) Pontoon or Barge List Device (ANSI) (F)
- (60) Powered-Controlled Lowering *or* Controlled Load Lowering (ANSI, OSHA 550(g)(3)(ii)(D), 751)
- (61) Primary Upper-Limit Device (ANSI) (O/G)
- (62) Push-Button Station (ANSI) (M/U)
- (63) Rail Clamps (ANSI)
- (64) Rail Sweeps (Bridge and Trolley?) (ANSI) (O/G, T)
- (65) Remote Control
  - (a) Cable or pendant control (limited by the length of the cable)
  - (b) Radio-based systems including microwave (these have a long range and can operate when there are obstacles between the crane and control unit)
  - (c) Infrared systems (these require a “line of sight” between the control unit held by the operator and the receiver on the crane)
- (66) Remote Control Emergency Stop (ANSI) (T)

- (67) Reverse Signal or Back-Up Alarm (COE)
- (68) Runway Disconnect Switch (ANSI) (O/G)
- (69) Skew Indicator (ISO)
- (70) Skew Limiter (ISO) -
- (71) Slack Rope Limiter (ISO)
- (72) Slewing Brakes (ANSI) (T)
- (73) Slow-Down Device (ISO) (O/G)
- (74) Stop (ANSI) (O/G, M/U)
- (75) Swing *or* Slew Indicator (ISO)
- (76) Swing *or* House Lock (SCRA)
- (77) Travel Swing *or* Two Position Swing Lock (SCRA)
- (78) Three Hundred Sixty Degree (360°) Swing Lock (SCRA)
- (79) Swing Warning Lights/Swing Alarms (Bernie)
- (80) Swinging *or* Slewing Limiter (ISO)
- (81) Swinging- *or* Slewing-Speed Limiter (ISO)
- (82) Tongue Switch (B30.11) (ANSI) (M/U)
- (83) Track Switch (B30.11) (ANSI) (M/U)
- (84) Trolley Bumpers (ANSI) (O/G)
- (85) Trolley Stops (ANSI) (O/G)
- (86) [Limiting Device to Limit] Trolley Travel at Both Ends of Boom *or* Jib (ANSI) (T)
- (87) Turntable (B30.11) (ANSI) (M/U)
- (88) Wind Speed Indicator (ISO)

- (89) Wind Velocity Device (ANSI) (T)
- (90) Wind Direction Indicator?

### **PERFORMANCE DEVICES**

- (1) Anti-Two Block Device/Systems (OSHA, ANSI, ISO, SAE, COE [note duty cycle operations exception] )
  - (a) Two-Block Damage *Prevention* Feature
  - (b) Two-Block *Warning* Feature
- (2) Closed-Circuit Television to Watch Load and Equipment Activities/ Functions/Movement/Placement (for example, to watch the rope drums turn) (Mike)
- (3) Device to Stop Load Block Down Prior to Last Two (2) Wraps of Cable Coming Off Hoist Drum (T) (Peter)
- (4) Device to Limit Load Lifted in Each Gear if Crane is Equipped with Multiple Speed Gearbox (T) (Peter)
- (5) (Rope) Drum Rotation Indicator (ANSI, ISO, SAE, COE)
- (6) Electric Baffles (ANSI) (M/U)
- (7) Environment Limiting and Indicating Devices (ISO)
- (8) Fairlead (SCRA)
- (9) Function Kick-Out System (SAE)
- (10) Ground Straps (SCRA) (to dissipate static electricity during refueling)
- (11) Hoisting Limiter (ISO) (Anti-Two-Block Prevention Feature???)
- (12) Hoist Limit Indicator (ISO) (Anti-Two-Block Warning Feature???)
- (13) Hoisting Speed Limiter (ISO)
- (14) Hook Safety Latch (Bernie)
- (15) [Limiting Device to Limit Pressures in] Hydraulic Pressure or Pneumatic Circuits (ANSI) (T)

- (16) Lifted Load Limiter (ANSI) (T)
- (17) Load Indicator/Load Weighing/Load Sensor (ANSI, ISO, COE, DOE)
- (18) Load Radius Indicator (ANSI, ISO, COE)
- (19) Lowering-Speed Limiter (ISO)
- (20) Magnet Circuit Disconnect Switch (ANSI) (O/G, F)
- (21) Operating Radius Limiter (ANSI) (T) (Load Radius Indicator???)
- (22) Operating Radius Indicator (T) (Peter)
- (23) Overload Protection System (SCRA)
- (24) Pressure Relief Valves in Hydraulic Systems (ISO)
- (25) Rated Capacity Indicator/Load Moment Indicator (LMIs)/Safe Load Indicator/Rated Load Indicator System (ANSI, ISO, EU prEN, SAE, COE)
- (26) Rated Capacity Limiters (ANSI, ISO, EU prEN, SAE)
- (27) Rigging Switch/System Override Switch (SCRA) (this may be an operational aid that limits operational aids)
- (28) Rope-Winding/Unwinding Limiters (to ensure that the number of rope turns on the drum is within the design limits) (ISO)
- (29) Slack Rope Indicator (ISO)
- (30) Stripper (ANSI) (U)

**ALSO, keep these motion and performance devices in mind for the Electric Power Lines discussion:**

- (1) Grounding Mat
- (2) Grounding Rod
- (3) Insulating Link
- (4) Proximity Alarm