

PURPOSE

Provides a summary of selected requirements from various standards, specifications, and codes.

SCOPE

This summary is limited to selected requirements stemming from significant documents dealing with cranes. It is not a comprehensive or all-inclusive summary of crane requirements.

Included in this summary is Harrington Series 3 and HPC cranes as follows:

CTM	CMTM
CTG	CMTG
CTP	CMUM
CUM	CMUG
CUG	HPC200A
CUP	HPC300

REFERENCES

- A. NFPA 70, "National Electrical Code", 1999 Edition.
- B. ASME B30.2, "Overhead and Gantry Cranes (Top Running Bridge, Single or Multiple Girder, Top Running Hoist)", 1990 Edition including through addenda "b".
- C. ASME B30.11, "Monorails and Underhung Cranes", 1993 Edition including through addenda "c".
- D. ASME B30.16, "Overhead Hoists (Underhung)", 1993 Edition including through addenda "d".
- E. ASME B30.17, "Overhead and Gantry Cranes (Top Running Bridge, Single Girder, Underhung Hoist)", 1992 Edition including through addenda "d".
- F. CMAA 70, "Specifications for Top Running Bridge & Gantry Type Multiple Girder Electric Overhead Traveling Cranes", 1994 Edition.
- G. CMAA 74, Specifications for Top Running & Under Running Single Girder Electric Overhead Traveling Cranes Utilizing Under Running Trolley Hoist", 1994 Edition.
- H. OSHA Section 1910.179 of Title 29, "Occupational Safety and Health Regulations – Overhead and Gantry Cranes", July 1, 1996 Edition.

GENERAL USE

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APPLICABILITY

The codes, regulations, standards, and specifications listed above apply to Harrington product according to the following table.

REFERENCE	CRANE											
	CTM	CTP	CTG	CUM	CUG	CUP	CMTM	CMTG	CMUM	CMUG	HPC200	HPC300
A. NEC	✓	1	1	✓	1	1	✓	1	✓	1	N	1
B. ASME B30.2	N	N	N	N	N	N	✓	✓	2	2	N	N
C. ASME B30.11	N	N	N	✓	✓	✓	N	N	2	2	3	3
D. ASME B30.16	4	4	4	4	4	4	4	4	4	4	4	4
E. ASME B30.17	✓	✓	✓	N	N	N	N	N	N	N	3	3
F. CMAA 70	N	N	N	N	N	N	✓	✓	5	5	N	N
G. CMAA 74	✓	✓	✓	✓	✓	✓	N	N	5	5	✓	✓
H. OSHA1910.179	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

- ✓ Applies
- N Does not apply
- 1 Applies if motorized hoist or trolley is used on the crane
- 2 Harrington’s UH Max-E-Lift is covered partially by B30.2 and partially by B30.11
- 3 B30.11 applies if configured as UH; B30.17 applies if configured as TR
- 4 Applies if a hoist and/or trolley (either manual or powered) is used on the crane
- 5 Harrington’s UH Max-E-Lift is covered partially by CMAA 70 and partially by CMAA 74

GENERAL USE

RAIL SWEEPS

A rail sweep, according to its definition in ASME B30.2, is “a device attached to the crane and located in front of the crane’s leading wheels to remove obstructions”. The table below indicates which of the referenced documents have a requirement for rail sweeps.

REFERENCE	RAIL SWEEP REQUIREMENT?		REMARKS
	TROLLEY	END TRUCK	
A. NEC	NO	NO	none
B. ASME B30.2	YES	YES	see section 2-1.9
C. ASME B30.11	NO	SEE REMARKS	section 11-1.3.3 invokes CMAA 74
D. ASME B30.16	NO	N/A	none
E. ASME B30.17	NO	YES	see section 17-1.9
F. CMAA 70	NO	SEE REMARKS	section 3.6.3 contains related requirement
G. CMAA 74	NO	SEE REMARKS	section 3.6.3 contains related requirement
H. OSHA1910.179	NO	YES	see paragraph (e)(4)

Harrington’s Underhung crane end trucks (Series 3 and HPC) have components specifically for meeting the rail sweep requirement.

Harrington’s Top Running Series 3 crane end trucks have a design that inherently satisfies the rail sweeps requirement without having components specifically designed as rail sweeps. The guide roller bracket and the guide rollers combine to satisfy the intent of the requirement.

Harrington’s Top Running HPC crane end trucks have rail sweeps specifically designed for this requirement. And they meet the intent of the requirement with the exception of the CMAA specifications, which have the added requirement that the rail sweeps to protrude below the rail.

BUMPERS

A bumper, according to its definition in ASME B30.2, is “a device for reducing impact when a moving crane or trolley reaches the end of its permitted travel, or when two moving cranes or trolleys come into contact. This device may be attached to the bridge, trolley, or runway stop”. The table below indicates which of the referenced documents have a requirement for bumpers.

REFERENCE	BUMPER REQUIREMENT?		REMARKS
	TROLLEY	END TRUCK	
A. NEC	NO	NO	none
B. ASME B30.2	YES	YES	see section 2-1.8
C. ASME B30.11	NO	SEE REMARKS	section 11-1.3.3 invokes CMAA 74
D. ASME B30.16	NO	N/A	none
E. ASME B30.17	YES	YES	see section 17-1.8
F. CMAA 70	NO	YES	see section 4.14
G. CMAA 74	NO	SEE REMARKS	section 4.8 contains related requirement
H. OSHA1910.179	YES	YES	see paragraphs (e)(2) and (e)(3)

All of Harrington’s end trucks except the HPC200A, and all of Harrington’s powered trolleys have bumpers that satisfy the intent of these requirements. The HPC200A end trucks have provisions for bumpers to be installed, and this is the responsibility of the customer.

DROP STOPS

Also known as a drop lug, lug, or safety lug. CMAA 70 defines a safety lug as “a mechanical device fixed securely to the end truck or trolley yoke which will limit the fall of the crane or carrier in case of wheel or axle failure.” The table below indicates which of the referenced documents have a requirement for drop stops.

REFERENCE	DROP STOP REQUIREMENT?		REMARKS
	TROLLEY	END TRUCK	
A. NEC	NO	NO	none
B. ASME B30.2	YES	YES	see section 2-1.11
C. ASME B30.11	NO	YES	see section 11-1.7.3
D. ASME B30.16	NO	N/A	none
E. ASME B30.17	NO	YES	see section 17-1.11
F. CMAA 70	NO	YES	see section 3.6.3
G. CMAA 74	NO	YES	see section 3.6.3
H. OSHA1910.179	NO	NO	none

All of Harrington’s end trucks, and all of Harrington’s powered trolleys have drop stops that satisfy these requirements.

END TRUCK WHEEL BASE

Of all the documents listed above under References, only CMAA 70 and CMAA 74 contain a requirement relating to end truck wheel base.

CMAA 70 states "The wheel base of the end truck shall be 1/7 of the span or greater."

CMAA 74 states "The wheel base of the end truck shall be 1/8 of the span or greater."

This requirement is based on lateral loads associated with alignment of the end truck on the runway and with crane skewing or crabbing. [Distributing the load on the runway is a factor, but is not a basis for this requirement because the runway designer designs the runway to accommodate wheel loading and wheel base.] Harrington meets the intent of this requirement by using a design that counteracts all lateral loading resulting from crane operations without relying on flanged wheels and a long wheel base.

Harrington's end trucks employ a unique guide roller design that maintains lateral alignment of the end truck on the runway. The guide rollers handle all lateral loads associated with the operation of the crane. The end truck's wheels are flange-less and play no role in lateral loads. So for Harrington's design the wheel base is not relevant to meeting the CMAA requirement. Harrington satisfies the requirement using the end truck's roller base in lieu of its wheel base.

ELECTRICAL – DISCONNECT & PENDANT ON/OFF

The documents listed in the Reference section generally agree on the requirements for a Disconnect and a Pendant On/Off. For this requirement, which is electrical in nature, the NEC is the most definitive.

Powered Crane: The crane must have a Disconnect that provides a way to interrupt the electrical power feed to the crane. It must be positioned in the wires from the runway power supply and must have a feature that allows it to be locked open. If the physical location of the Disconnect does not make it readily accessible to the operator, then a main line contactor (opens power to all motors of the crane) operated by a switch in the pendant (Pendant On/Off) is required. When the Pendant On/Off is required, it is in addition to the Disconnect.

Monorail Hoist of Hand-Propelled Crane Bridge: The Disconnect and Pendant On/Off are not necessary as long as the unit is controlled from the ground or floor level, the unit is within view of the power supply disconnecting means (such as the circuit breaker that provides the electric power for the hoist), and no fixed work platform has been provided for servicing the unit.

The table below indicates the sections or paragraphs of the referenced documents that contain this requirement.

REFERENCE	DISCONNECT & PENDANT ON/OFF REQUIREMENT SECTION/PARAGRAPH
A. NEC	section 610-32
B. ASME B30.2	section 2-1.13
C. ASME B30.11	section 11-1.9
D. ASME B30.16	section 16-1.2.2
E. ASME B30.17	section 17-1.13
F. CMAA 70	section 5.6
G. CMAA 74	section 5.6
H. OSHA1910.179	paragraph (g)(5)

Harrington’s powered cranes incorporate a Disconnect that can be locked open, and a Pendant On/Off that controls a main line contactor. These features may or may not be necessary for manual cranes, so they are an option for Harrington’s manual cranes.

ELECTRICAL - CONDUIT

The National Electrical Code (Reference A) is the only one of the references that contains a requirement that crane wires be enclosed in conduit. All of the others invoke the National Electrical Code (NEC), which means that they too have the requirement. But, the NEC is the document in which the requirement originates.

Paragraph 610-11 of the NEC sets forth the requirement that "conductors shall be enclosed in raceways". This requirement does not apply if the conductors are in special types of cable.

All of Harrington's crane designs incorporate wires that are enclosed in conduit in compliance with the NEC requirement.

END