

PEDESTAL/BARGE MOUNTED CRANES

Definitions & Operating Precautions

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! WARNING

Crane owner/user must verify that method used to fasten or restrain crane to foundation, barge, ship or floating platform is strong enough, under all operating conditions, to prevent crane from breaking off foundation or moving on barge.

Manitowoc does not permit use of a truck crane on a barge, ship or floating platform.

PEDESTAL MOUNTED CRANE

Also see ASME publication B30.8-2004, Floating Cranes and Derricks.

! WARNING
Overload Hazard!

A pedestal mounted crane will not tip to indicate to operator that crane's capacity has been exceeded. When capacity of a pedestal mounted crane is exceeded, turntable bearing, hook rollers (if equipped), or other structural components may break, before load lines fail, causing crane to separate from pedestal.

For this reason, great care must be taken to operate a pedestal mounted crane within its rated capacity.

Careful planning is required before a crane can be operated on a barge. Crane user shall verify that barge is capable of limiting crane list and/or dynamics to maximum allowable specified on capacity charts. If specified crane list and/or dynamic conditions are exceeded, crane's capacity may be exceeded; therefore, turntable bearing, hook rollers (if equipped), or other structural components may break, causing crane to separate from pedestal.

Definition

A pedestal mounted crane is a crane which is securely fastened to a foundation, barge, ship or floating platform so the crane is restrained from tipping.

Examples

1. Crane upperworks mounted on a turret (or tub) which is securely fastened to foundation (Figure 1).

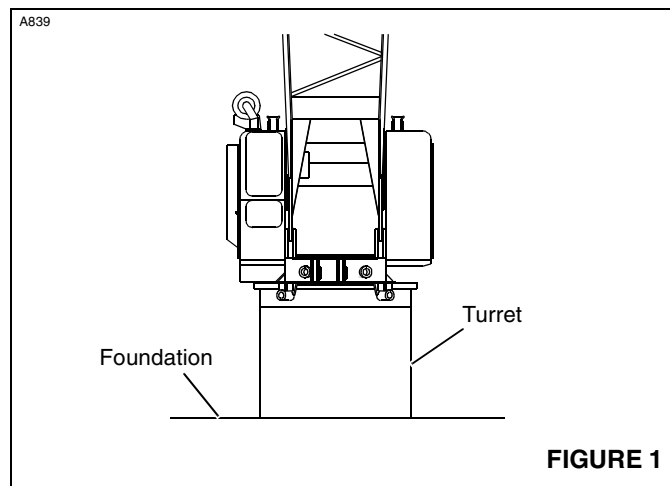


FIGURE 1

2. Crane upperworks mounted on a carbody (crawlers removed) which is securely fastened to foundation (Figure 2).

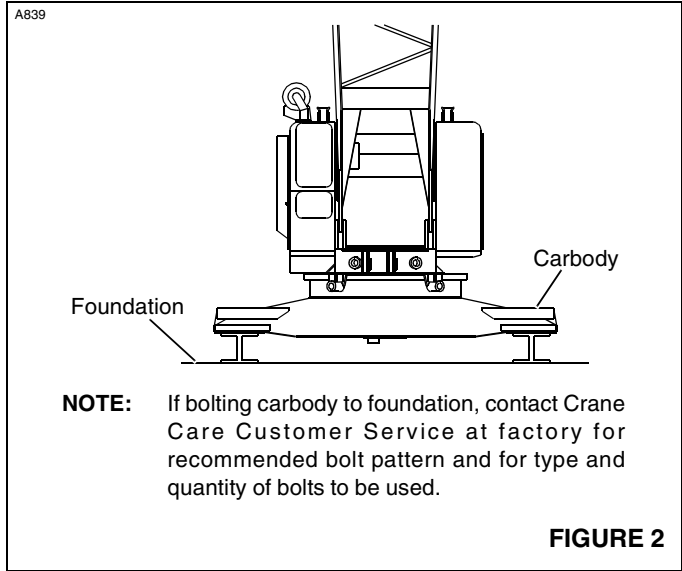


FIGURE 2

BARGE MOUNTED CRANE

Definition

A barge mounted crane is a crane that is anchored or restrained in a work area of the barge, ship, or floating platform and is subjected to tipping forces.

Examples

NOTE: The foundation is the deck of the barge, ship or floating platform.

1. Crawler-mounted crane with carbody anchored with tie-downs to foundation (Figure 3).

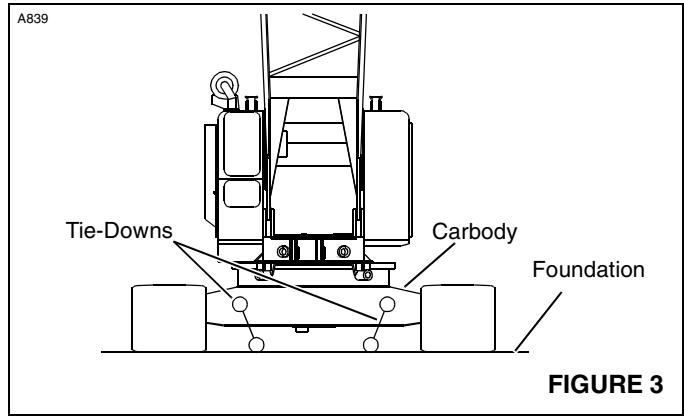


FIGURE 3

2. Crawler-mounted crane working on timbered area of barge, ship or floating platform with crawlers restrained by curbing and end stops (Figure 4). When not working, crane carbody is anchored with tie-downs to foundation. **Traveling with load is not permitted.**

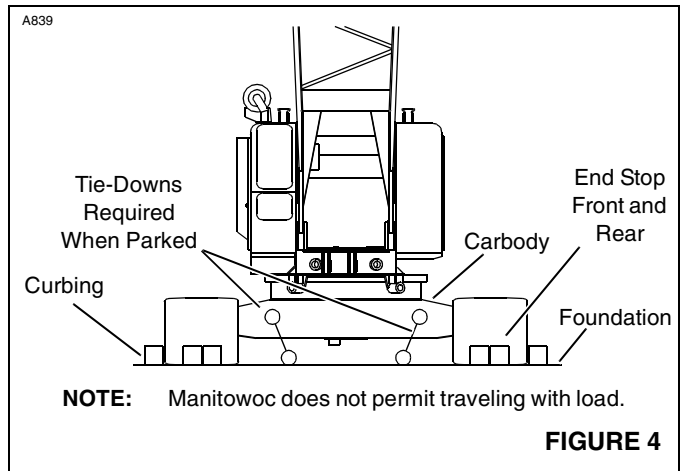


FIGURE 4

3. RINGER® (crawler mounted, carbody mounted) supported on blocking, screw jacks or steel pedestals which are braced and fastened to foundation in such a manner as to prevent movement (Figure 5).
4. RINGER (platform mounted) which has ring braced and fastened directly to foundation in such a manner as to prevent movement.

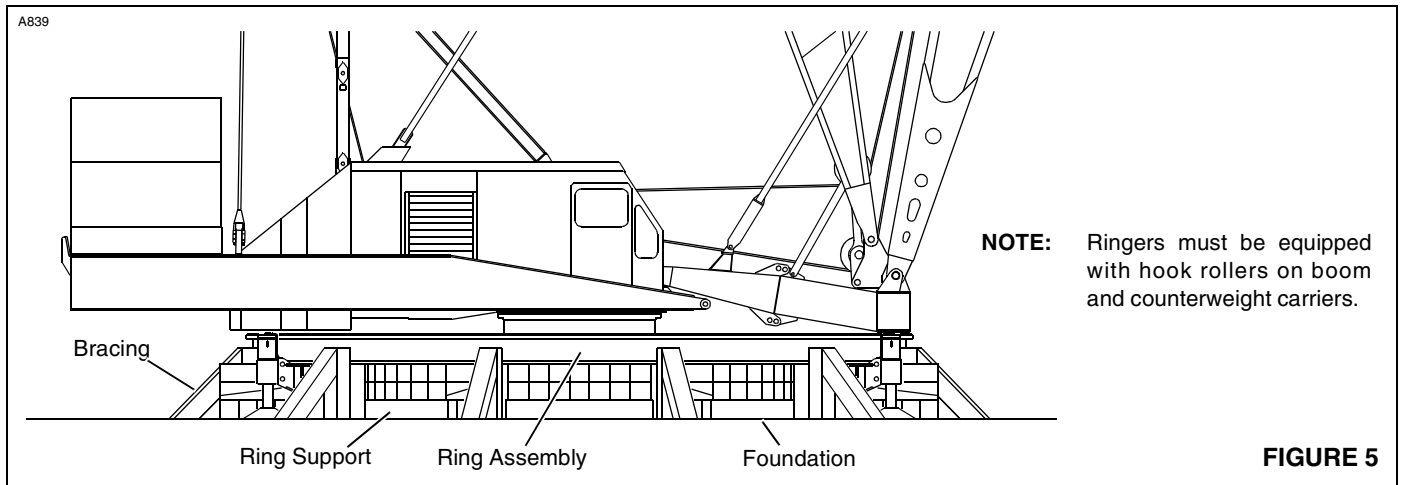


FIGURE 5

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AXIS		TRANSITIONAL		ROTATIONAL	
SYMBOL	NAME	STATIC	DYNAMIC	STATIC	DYNAMIC
X	Longitudinal		Surge	Heel List	Roll
Y	Vertical		Heave		Yaw
Z	Lateral		Sway	Trim	Pitch

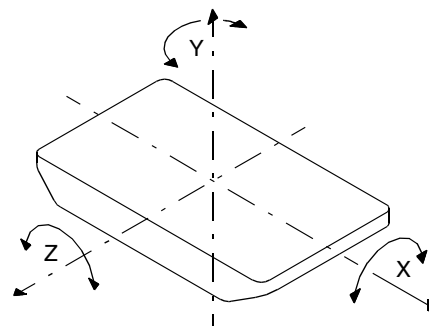


FIGURE 6

CAPACITY CHARTS

Manitowoc Cranes provides two types of capacity charts for a crane mounted on a barge or other supporting structure under static conditions.

1. A capacity chart based on tipping when crane is anchored only to prevent shifting.
2. A capacity chart based on structural competence when crane is securely fastened for use as a pedestal mounted crane.

NOTE: Unless otherwise specified on a machine list capacity chart, a "0" degree machine list capacity chart rating applies to machine list **not to exceed 1/2 degree**. All other machine list ratings – 1°, 2°, and 3° – must NOT be exceeded.

SHOCK LOADING

Definition

Shock loads to the crane can be experienced when the barge is subjected to up and down movement of wave action (referred to as DYNAMICS). Figure 6 illustrates the dynamic conditions of the barge which influence crane capacity.

CAUTION

Structural Damage Hazard!

If crane boom or structure is shock loaded during operation, or there is any indication of shock loading, all structural components of crane shall be inspected to detect cracks and other damage. Nondestructive test equipment, such as magnetic particle or ultrasonic procedures, is recommended for this inspection.

NOTE: Manitowoc does not allow operation under dynamic conditions.

Operation On Barge

General

Machine list and/or dynamics will be experienced when a crane is operated on a barge, ship or floating platform. Both

of these conditions reduce the crane's capacity, and each must be taken into account for safe operation on a barge, ship or floating platform.



WARNING

Tipping Crane Hazard!

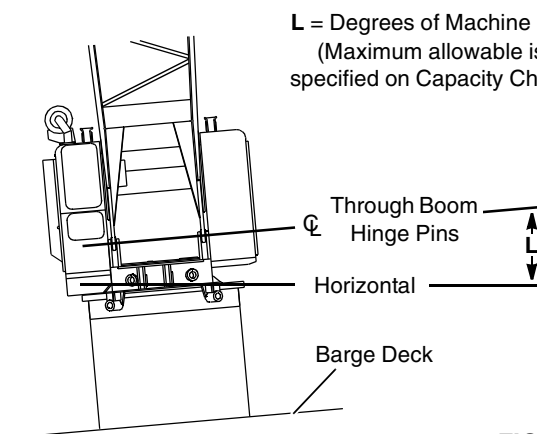
Tie-downs which only prevent crane from shifting as in barge, ship or floating platform mounting, may not provide adequate support when using a capacity chart for pedestal mounting. Before operating a crane on a barge, ship or floating platform, crane user shall verify that correct capacity chart is being used — pedestal mounted, barge mounted, 0°, 1°, 2° or 3° list or dynamic capacity chart.

Failing to use correct capacity chart can result in an accident.

Definitions

1. **Machine List**, as defined by Manitowoc, is crane's out-of-level condition — from side-to-side — as measured by angle between horizontal and a line drawn through centerline of crane's boom hinge pins (Figure 7). This out-of-level condition creates side load and effects crane's lifting capacity.

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L = Degrees of Machine List
(Maximum allowable is specified on Capacity Chart)

FIGURE 7

2. *Barge List* (also referred to as heel or trim) causes swing out of the load and may produce side load. When Manitowoc provides a capacity chart showing capacities for a 2 degree machine list for example, we are referring to maximum allowable lifting capacity for crane when experiencing an out-of-level condition (side-to-side) of 2 degrees as measured by angle between horizontal and a line drawn through centerline of crane's boom hinge pins.

Unless otherwise specified on capacity chart, barge list (heel or trim) must not exceed machine list degrees given on the capacity chart.

3. *Barge List and Machine List are not same.* As machine rotates on barge, barge list (as defined above) will change. Worst machine list condition generally occurs when machine swings over corner of barge, producing maximum side load.

Crane Inspection

To aid in preventing harmful and damaging failure as previously indicated, regular inspection for signs of overloading in the following load bearing components is required. Correct each defect found before placing the crane into service.

- Boom
- Gantry

- Backhitch
- Rotating Frame
- Wire Rope
- Pendants and Straps
- Turntable Bearing

When equipped with hook rollers, it is recommended that each hook roller assembly be inspected daily for any sign of overloading, to include:

- Deformation of roller path.
- Proper hook roller adjustment.
- Deformation or cracks in hook roller hanger.
- Bent hook roller shaft.
- Damaged bearings.

Transporting Crane on Barge

If it is necessary to transport the crane on a barge, ship or floating platform when dynamic conditions will be experienced, the boom shall be lowered onto a cradle (or other support) and the boom, crane upperworks and lowerworks shall be secured against movement. If the crane is equipped with a mast, the mast shall be securely tied down with guy lines. Failing to take these steps can result in shock load or side load damage to the boom and mast.