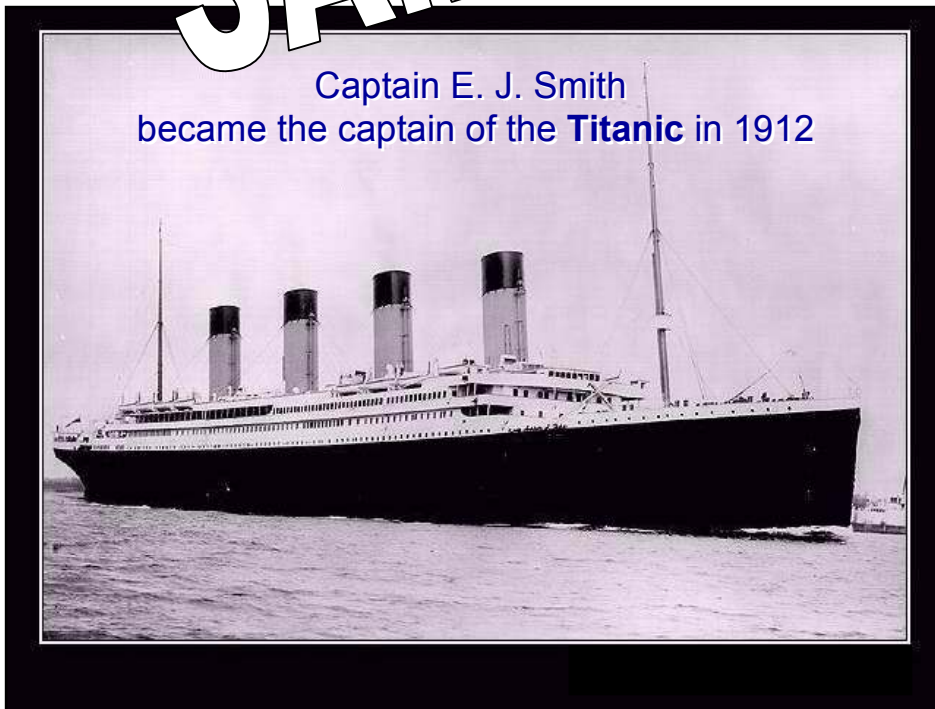


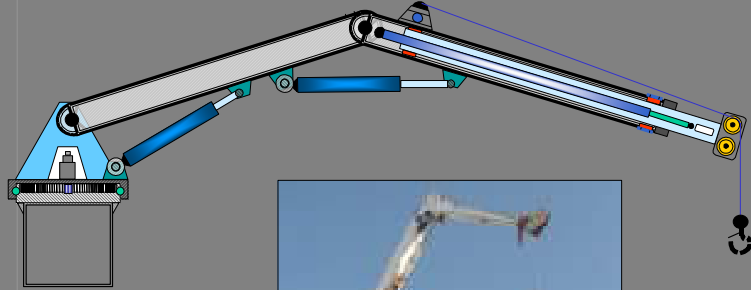
PowerPoint Slides



SAMPLE



KNUCKLE BOOM CRANE



HARD HAT

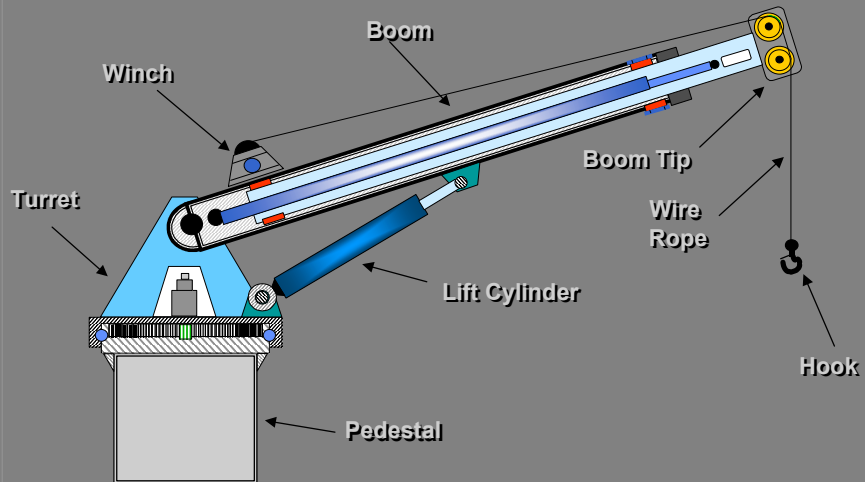
TRAINING SERIES

DOCK

VESSEL MOUNTED CRANE

SAMPLE

CRANE COMPONENTS

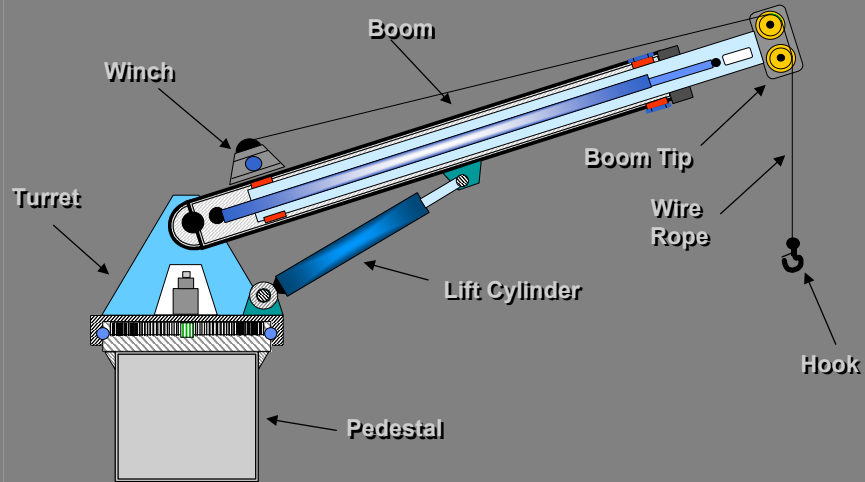


HARD HAT

TRAINING SERIES

DOCK AND VESSEL MOUNTED CRANE

CRANE COMPONENTS



HARD HAT

TRAINING SERIES

DOCK AND VESSEL MOUNTED CRANE

SAMPLE

TYPICAL DOCK MOUNTING METHODS



Check mounting methods to ensure that bolts are not loose and that no damage to the mounting or the dock is apparent.



HARD HAT

TRAINING SERIES

DOCK AND VESSEL MOUNTED CRANE



SAMPLE

ROTATION BEARING



Rotation gear

Rotation ring

Mounting holes

Seal

Holes spaced for uniform load

Grease fitting

Bearing spacer

Ball bearing

Bearing raceway





BOOM

SAMPLE

HOOK INSPECTION

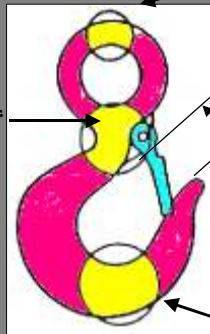
CHECK FOR:

- ✓ Wear
- ✓ Deformation
- ✓ Cracks & Sharp Nicks
- ✓ Modifications
- ✓ Safety Latches
- ✓ Swivel Wear & Lubrication
- ✓ Hook Shackles Mousing

Wear & Deformation



Self-closing hook



Cracks & Twisting

"Opening Up"

Wear & Cracks

Standard safety latch hook



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TRAINING SERIES

DOCK AND VESSEL MOUNTED CRANE

WIRE ROPE INSPECTION

FATIGUE FAILURE



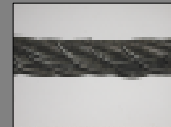
Heavy loads over small sheaves



FATIGUE BREAKS



Repeated bending, normal loads



STRAND KNICKING



Accentuated with heavy loads



HARD HAT

TRAINING SERIES

DOCK AND VESSEL MOUNTED CRANE

SAMPLE

CRANE CONTROLS

Crane controls need to function smoothly and without excessive play in the control linkage. All controls need to be properly labeled including function and direction of motion.



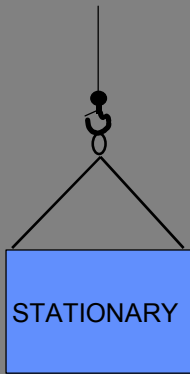
HARD HAT

TRAINING SERIES

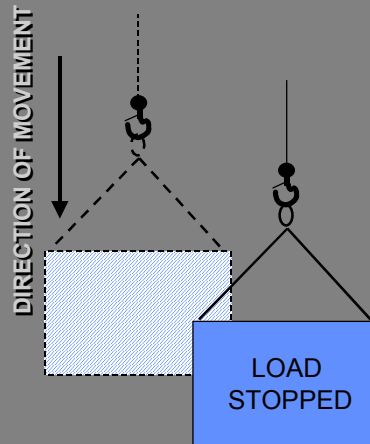
DOCK AND VESSEL MOUNTED CRANE

DYNAMIC LOAD

STATIC LOAD



DYNAMIC LOAD



$$\text{Total Load} = \text{Static Load} + \text{Dynamic Load}$$



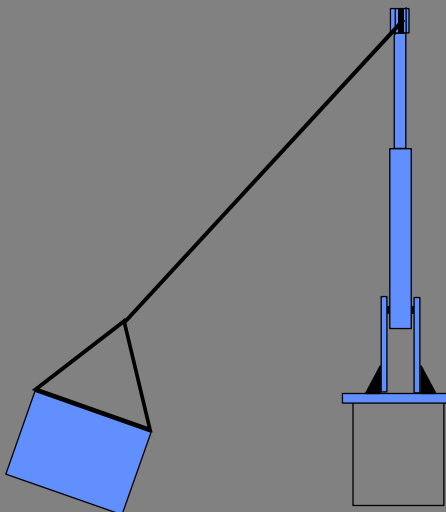
HARD HAT

TRAINING SERIES

DOCK AND VESSEL MOUNTED CRANE

SAMPLE

SIDE LOADING



AVOID SIDE LOADING



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TRAINING SERIES

DOCK AND VESSEL MOUNTED CRANE

DETERMINING LIFTING CAPABILITY

- Calculate the gross load
- Determine the maximum radius
- Determine the maximum height
- Refer to load chart to determine if lift will be within the crane's capacity.



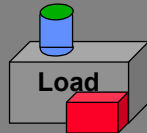
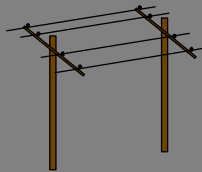
HARD HAT

TRAINING SERIES

DOCK AND VESSEL MOUNTED CRANE

SAMPLE

ASSESSING THE LIFTING REQUIREMENTS



The Big Picture

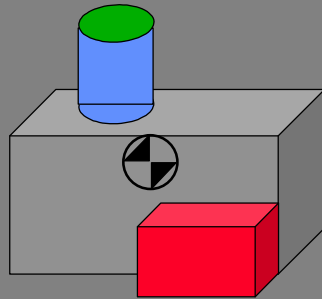


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DOCK AND VESSEL MOUNTED CRANE

RIGGING REQUIREMENTS



- Slings
- Chains
- Eyes
- Special Hardware



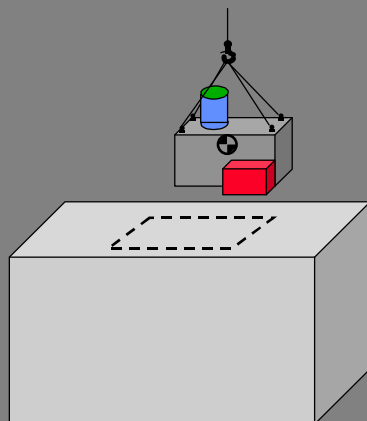
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TRAINING SERIES

DOCK AND VESSEL MOUNTED CRANE

SAMPLE

ASSASSINATING THE 'PLACEMENT' AREA



- Obstruction
- Visibility
- Personnel Safety
- Pedestrians
- Load Support
- Height of Lift
- Reach
- Accuracy of Placement

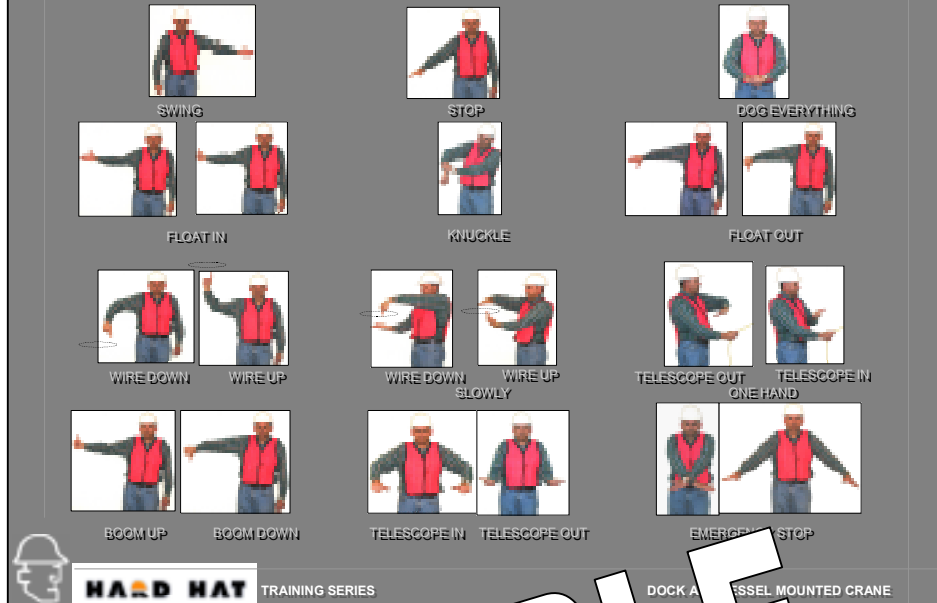


HARD HAT

TRAINING SERIES

DOCK AND VESSEL MOUNTED CRANE

HAND SIGNALS



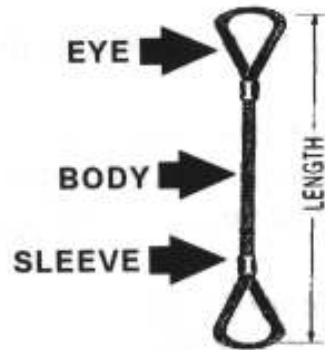
SAMPLE

MAKING THE LIFT

- Review the lift scenario with the operator, riggers and signal person
- Attach taglines when necessary
- Position signal person within visibility of the load and operator
- Begin by lifting the load ***slowly***
- Re-check the boom angle indicator to assess radius increase
- Keep load as low as possible when moving it
- Swing ***slowly*** to avoid swing out.
- Avoid erratic booming
- Follow signal and stop operation when uncertain
- Lower load ***slowly***

WIRE ROPE SLING INSPECTION

- KINKING
- CRUSHING
- UNSTRANDING
- BIRDCAGING
- STRAND DISPLACEMENT
- CORE PROTRUSION
- CORROSION
- BROKEN OR CUT STRANDS
- BROKEN WIRES



HARD HAT

TRAINING SERIES

DOCK AND VESSEL MOUNTED CRANE

SAMPLE



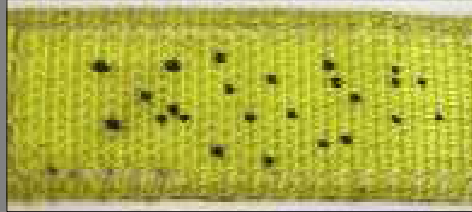
HARD HAT

TRAINING SERIES

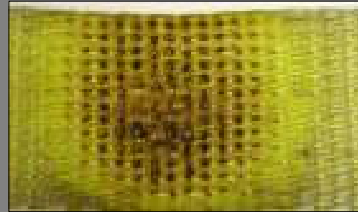
DOCK AND VESSEL MOUNTED CRANE

SLING INSPECTION

KNOTS
IN
SLING



WELD SPLATTER DAMAGE



HEAT DAMAGE



HARD HAT

TRAINING SERIES

DOCK AND VESSEL MOUNTED CRANE

SAMPLE

SHACKLES



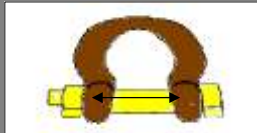
SCREW PIN



ANCHOR BOLT



PIN WITH COTTER
(NOT LEGAL FOR LIFTING)



DEFORMATION



BOLT SUBSTITUTION



WEAR



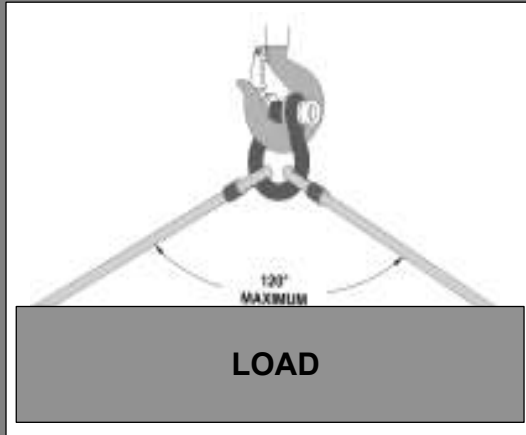
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DOCK AND VESSEL MOUNTED CRANE

SHACKLES

Shackles symmetrically loaded with two leg slings having a maximum included angle of 120 deg. can be utilized to full Working Load Limit.



HARD HAT

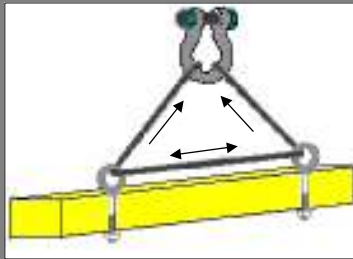
TRAINING SERIES

DOCK AND VESSEL MOUNTED CRANE

SAMPLE

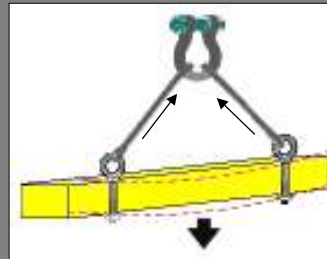
EYE BOLTS

WRONG!



DO NOT REEVE SLINGS ONE EYE BOLT TO ANOTHER. LOAD ON BOLT IS ALTERED.

CAUTION!



STRUCTURE MAY BUCKLE FROM COMPRESSION FORCES.

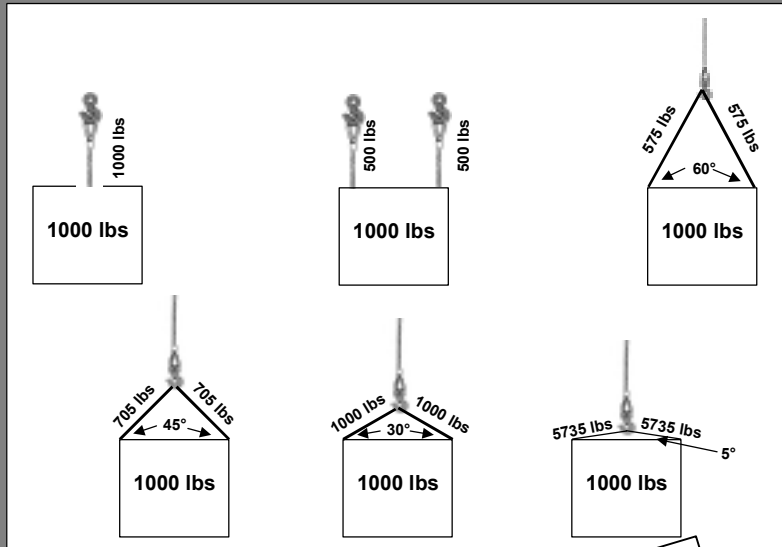


HARD HAT

TRAINING SERIES

DOCK AND VESSEL MOUNTED CRANE

SLING ANGLES



HARD HAT

TRAINING SERIES

DOCK AND VESSEL MOUNTED CRANE

SAMPLE

LOADING PALLETS



UNSAFE TO MOVE



SAFE TO MOVE

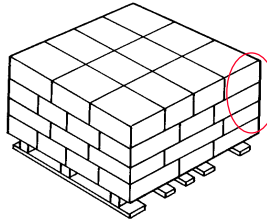


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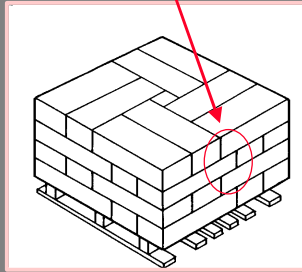
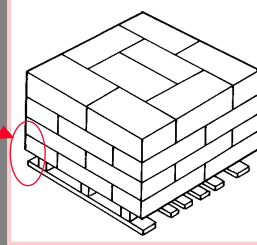
TRAINING SERIES

DOCK AND VESSEL MOUNTED CRANE

PROPER STACKING METHODS



For proper stacking of boxes, edges of an upper layer should not be over the lower edges.



HARD HAT

TRAINING SERIES

DOCK AND VESSEL MOUNTED CRANE

SAMPLE

CARGO NETS

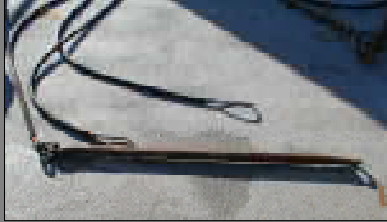


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TRAINING SERIES

DOCK AND VESSEL MOUNTED CRANE

PALLET BARS



Inspect pallet bars for damaged bars, wire rope, synthetic rope, and hardware.



HARD HAT

TRAINING SERIES

DOCK AND VESSEL MOUNTED CRANE

SAMPLE

CRAMPED SPACE ON DECK

Cramped space on vessel decks can make cargo handling dangerous.



HARD HAT

TRAINING SERIES

DOCK AND VESSEL MOUNTED CRANE