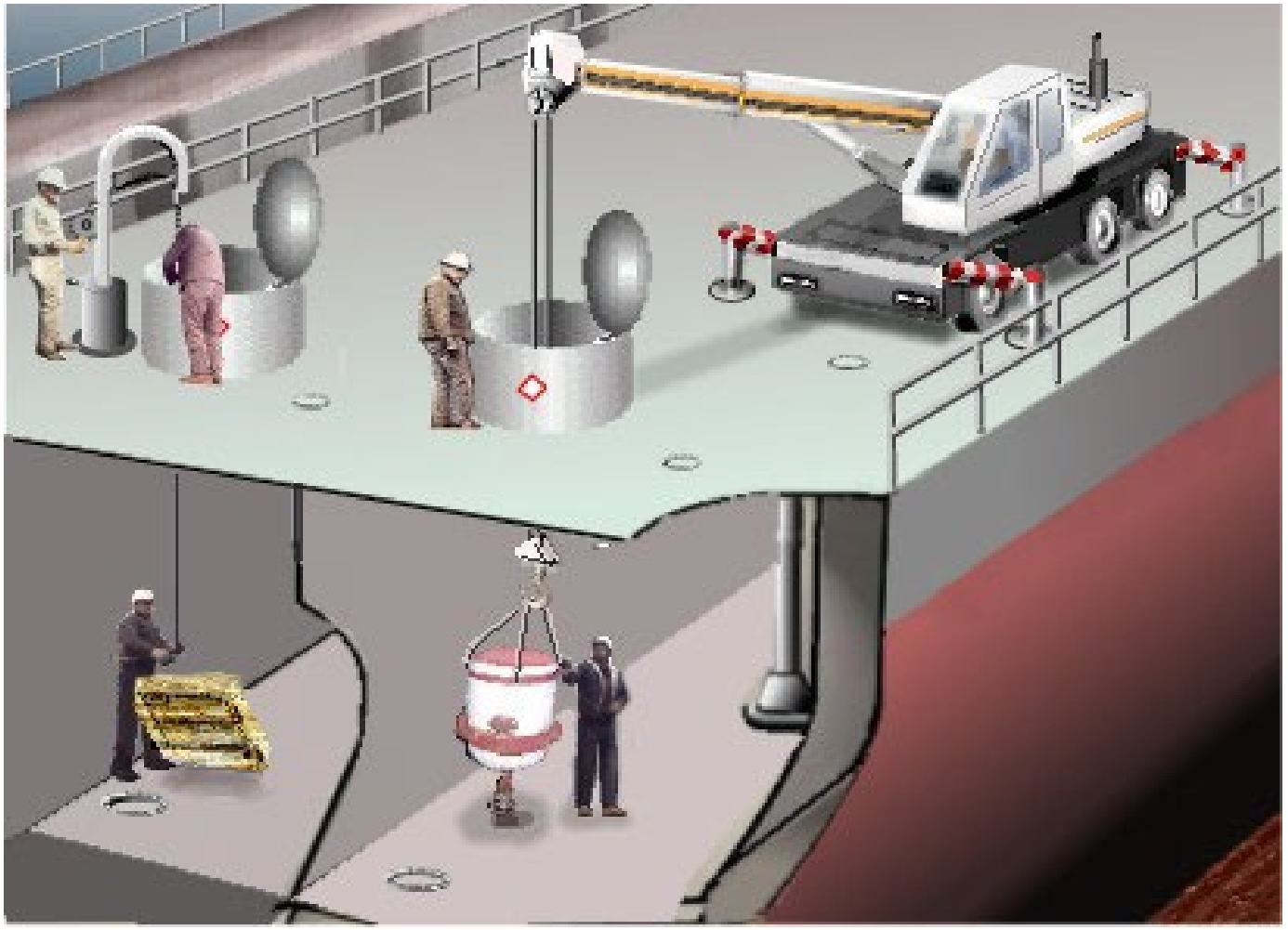
Shipyard Employment

Gear and Equipment for Rigging and Materials Handling - Subpart G



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Gear and Equipment for Rigging and Materials Handling - Subpart G

- **1915.111** – Inspection
- **1915.112** – Ropes, chains and slings
- **1915.113** – Shackles and hooks
- **1915.114** – Chain falls and pull-lifts

Gear and Equipment for Rigging and Materials Handling - Subpart G

- **1915.115** – Hoisting and hauling equipment
- **1915.116** – Use of gear
- **1915.117** – Qualifications of operators
- **1915.118** – Tables
- **1915.120** – Powered industrial truck operator training

Inspection

1915.111(a)

- Gear and equipment for rigging and materials handling
  - Inspected before each shift
  - When necessary, at intervals during use to ensure safe
- Defective gear removed and repaired or replaced before further use

Inspection

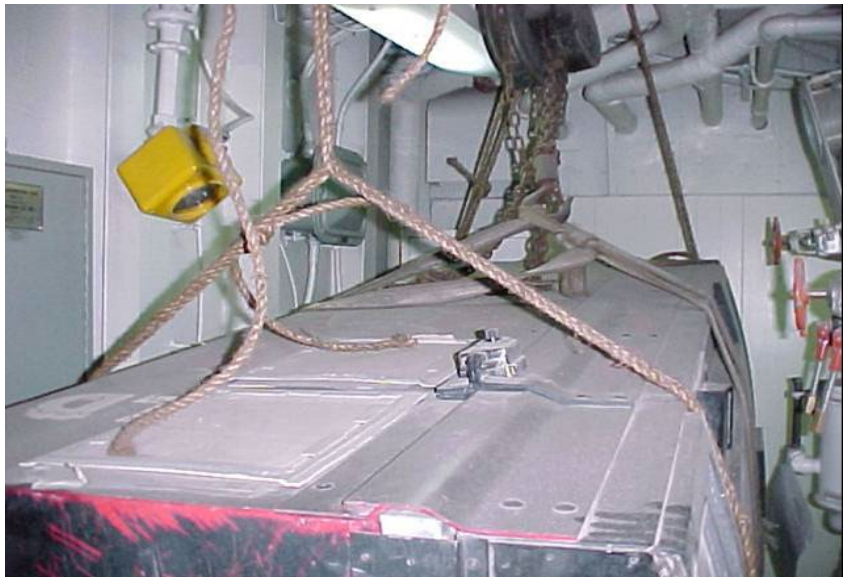
1915.111(b)

- Safe working load of gear as specified in 1915.112 and 1915.113
  - Must not be exceeded

Ropes, Chains and Slings

1915.112(a)(1)

- Table G-1 in 1915.118 used to determine safe working load of manila rope and manila rope slings at various angles
  - Except higher safe working loads permissible when recommended by manufacturer for specific, identifiable products
    - » Provided safety factor of not less than five (5) maintained



Ropes, Chains and Slings

1915.112(b)(1)

- Tables G-2 through G-5 in 1915.118 used;
  - Determine safe working loads of various sizes and classifications of improved plow steel wire rope and wire rope slings

- For sizes, classifications and grades not included in tables
  - Safe working load recommended by manufacturer for specific, identifiable products followed
    - » Provided safety factor of not less than five (5) maintained

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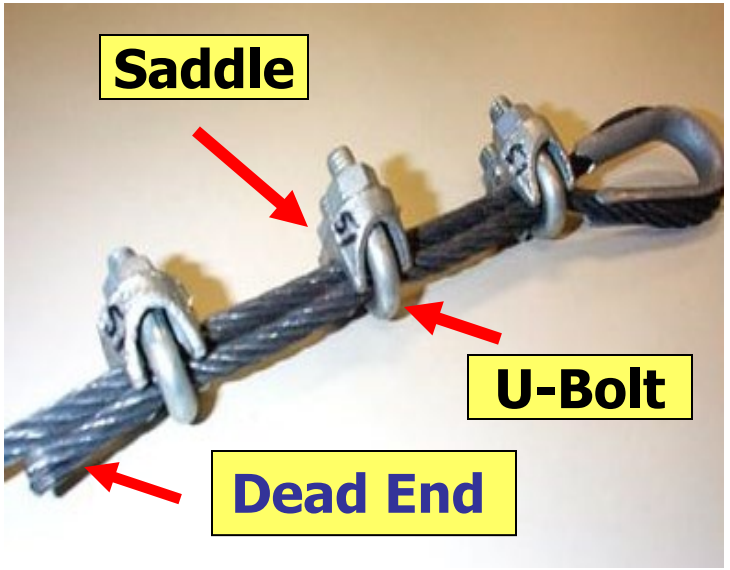
Ropes, Chains and Slings

1915.112(b)(3)

- Where U-bolt wire rope clips used to form eyes;
  - Table G-8 in 1915.118 used to determine number and spacing of clips
- U-bolt applied so “U” section in contact with dead end of rope



This is the correct method.


NEVER SADDLE
A DEAD HORSE!!!

Ropes, Chains and Slings

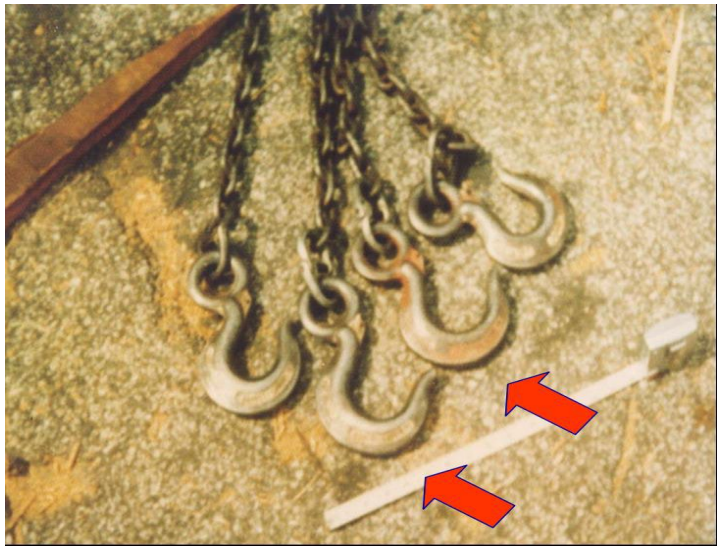
1915.112(c)(1)

- Tables G-7 and G-8 in 1915.118 used to determine working load limit of wrought iron and alloy steel chains and chain slings
  - Except higher safe working loads permissible when recommended by manufacturer for specific, identifiable products

Ropes, Chains and Slings

1915.112(c)(2)

- Sling chains, including end fastenings
  - Visual inspection before used
- Thorough inspection of chains in use every 3 months
- Chain bear indication of month inspected
- Thorough inspection include:
  - Wear
  - Defective welds
  - Deformation
  - Increase in length or stretch



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Ropes, Chains and Slings

1915.112(c)(4)-(5)

- Chain slings removed from service when:
  - Due to stretch, increase in length of a measured section exceeds five (5) percent
  - Link bent, twisted or otherwise damaged
  - Raised scarves or defective welds appear
- Repairs made under qualified supervision
- Before repaired chains returned to service
  - Proof tested to proof test load recommended by manufacturer

Shackles and Hooks

1915.113(a)(1)

- Table G-10 in 1915.118 used to determine safe working loads of shackles
  - Except higher safe working loads permissible when recommended by manufacturer
    - » Provided safety factor of not less than (5) maintained

Shackles and Hooks

1915.113(b)(3)

- Hooks inspected periodically
  - Not been bent by overloading
- Bent or sprung hooks not used

Chain Falls and Pull-Lifts

1915.114(a)

- Chain falls and pull-lifts:
  - Clearly marked to show capacity
  - Capacity not exceeded

Chain Falls and Pull-Lifts

1915.114(b)

- Chain falls regularly inspected to ensure they are safe
  - Attention given to lift chain, pinion, sheaves and hooks for distortion and wear
- Pull-lifts regularly inspected to ensure they are safe
  - Attention given to ratchet, pawl, chain and hooks for distortion and wear

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Chain Falls and Pull-Lifts

1915.114(c)

- Straps, shackles, and beam or overhead structure which chain fall or pull-lift secured:
  - Adequate strength to support weight of load plus gear
- Upper hook moused or otherwise secured against coming free of support

Chain Falls and Pull-Lifts

1915.114(d)

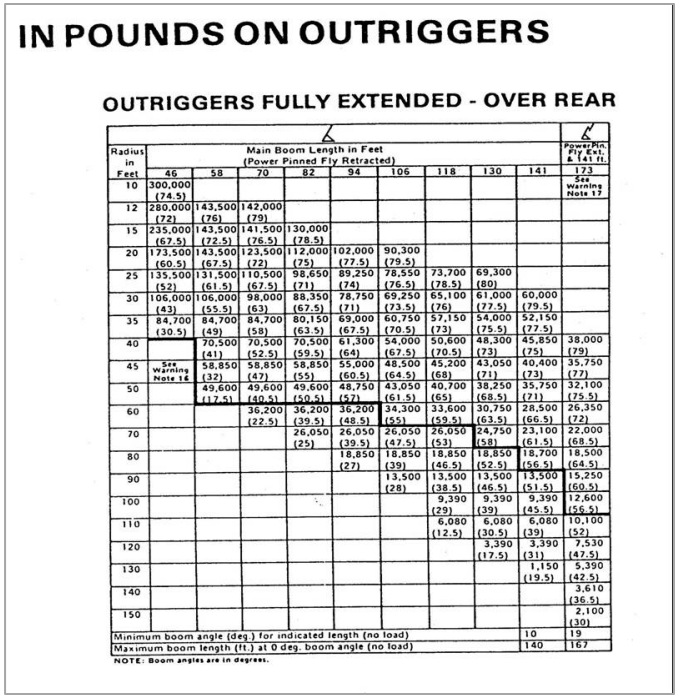
- Scaffolding not used as point of attachment for lifting devices;
  - Such as tackles, chain falls, and pull-lifts
    - » Unless scaffolding specifically designed for that purpose

Hoisting and Hauling Equipment 1915.115(a)

- Derricks and cranes part of, or regularly placed aboard barges, other vessels, or on wingwalls of floating drydocks;
  - Transfers materials or equipment from or to a vessel or drydock,
  - Tested and certificated in accordance with Part 1919
    - » By persons accredited for purpose

Hoisting and Hauling Equipment 1915.115(c)(2)

- Posted safe working loads of mobile crawler or truck cranes;
  - Under conditions of use not exceeded



IN POUNDS ON OUTRIGGERS

OUTRIGGERS FULLY EXTENDED - OVER REAR

Radius in Feet	Main Boom Length in Feet (Power Pinned Fly Retracted)									Power Pin. Fly Ext. & (41 ft.
	46	58	70	82	94	106	118	130	141	173
10	300,000 (74.5)									See Warning Note 17
12	280,000 (72)	143,500 (76)	142,000 (79)							
15	235,000 (67.5)	143,500 (72.5)	141,500 (76.5)	130,000 (78.5)						
20	173,500 (60.5)	143,500 (67.5)	123,500 (72)	112,000 (75)	102,000 (77.5)	90,300 (79.5)				
25	135,500 (52)	131,500 (61.5)	110,500 (67.5)	98,650 (71)	89,250 (74)	78,550 (76.5)	73,700 (78.5)	69,300 (80)		
30	106,000 (43)	106,000 (55.5)	98,000 (63)	88,350 (67.5)	78,750 (71)	69,250 (73.5)	65,100 (76)	61,000 (77.5)	60,000 (79.5)	
35	84,700 (30.5)	84,700 (49)	84,700 (58)	80,150 (63.5)	69,000 (67.5)	60,750 (70.5)	57,150 (73)	54,000 (75.5)	52,150 (77.5)	
40		70,500 (41)	70,500 (52.5)	70,500 (59.5)	61,300 (64)	54,000 (67.5)	50,600 (70.5)	48,300 (73)	45,850 (75)	38,000 (79)
45	See Warning Note 16	58,850 (32)	58,850 (47)	58,850 (55)	55,000 (60.5)	48,500 (64.5)	45,200 (68)	43,050 (71)	40,400 (73)	35,750 (77)
50		49,600 (17.5)	49,600 (40.5)	49,600 (50.5)	48,750 (57)	43,050 (61.5)	40,700 (65)	38,250 (68.5)	35,750 (71)	32,100 (75.5)
60			36,200 (22.5)	36,200 (39.5)	36,200 (48.5)	34,300 (55)	33,600 (59.5)	30,750 (63.5)	28,500 (66.5)	26,350 (72)
70				26,050 (25)	26,050 (39.5)	26,050 (47.5)	26,050 (53)	24,750 (58)	23,100 (61.5)	22,000 (68.5)
80					18,850 (27)	18,850 (39)	18,850 (46.5)	18,850 (52.5)	18,700 (56.5)	18,500 (64.5)
90						13,500 (28)	13,500 (38.5)	13,500 (46.5)	13,500 (51.5)	15,250 (60.5)
100							9,390 (29)	9,390 (39)	9,390 (45.5)	12,600 (56.5)
110							6,080 (12.5)	6,080 (30.5)	6,080 (39)	10,100 (52)
120								3,390 (17.5)	3,390 (31)	7,530 (47.5)
130									1,150 (19.5)	5,390 (42.5)
140										3,610 (36.5)
150										2,100 (30)
Minimum boom angle (deg.) for indicated length (no load)									10	19
Maximum boom length (ft.) at 0 deg. boom angle (no load)									140	167

NOTE: Boom angles are in degrees.

Hoisting and Hauling Equipment 1915.115(d)

- Accessible areas within swing radius of outermost part of body of a revolving derrick or crane
  - Must be guarded
- Prevent employee from being struck by crane or caught between crane and fixed parts of vessel or crane itself

Hoisting and Hauling Equipment 1915.115(e)

- Cradle or carriage on marine railway positively blocked or secured
  - When in hauled position
  - Prevent from being accidentally released

Use of Gear

1915.116(b)

- Loads safely rigged before being hoisted

Use of Gear

1915.116(d)

- Tag lines provided on loads likely to swing or need guidance

Use of Gear

1915.116(g)

- Skips rigged to be handled by not less than 3 legged bridles
  - All legs always be used

- Open end skips used
  - Means taken to prevent contents from falling

Use of Gear

1915.116(h)

- Loose ends of idle legs of slings in use
  - Must be hung on hook

Use of Gear

1915.116(i)

- Employees not permitted to ride hook or load

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Use of Gear

1915.116(j)

- Loads (tools, equipment or other materials) not swung or suspended over heads of employees

Use of Gear

1915.116(l)

- Individual familiar with signal code in use assigned as signalman
  - When hoist operator cannot see load being handled

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Qualifications of Operators

1915.117(b)

- Employees who understand signs, notices, and operating instructions, and familiar with signal code in use
  - Permitted to operate a crane, winch, or other power operated hoisting apparatus

Powered Industrial Truck Operator Training

1915.120

- Requirements applicable to shipyard employment
  - Identical to those set forth at 1910.178(l)

Thank You For Attending!

Final Questions?

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