24 RIGGING

Those who are not professional riggers may have to rig loads at times on the job. Carpenters, for instance, are often involved in not only handling but also hoisting and landing material. When in doubt about rigging, consult your supervisor. Information in this chapter covers only the basics of rigging.

Rigging Inspection Checklist

Use this checklist to inspect rigging components regularly and before each lift.

Manila Rope*	
Dusty residue when twisted open	Indicates wear from inside out and overloading. Replace rope if damage is extensive.
Broken strands, fraying, spongy texture	Replace rope.
Wet	Use caution. Strength of rope could be reduced.
Frozen	Thaw and dry at room temperature.
Mildew or dry rot	Replace rope.
Dry and brittle	Do not oil. Wash with cold water and hang in coils to dry.

*__NOTE__: Manila rope is **not recommended** for construction use and is illegal for lifelines and lanyards.

Polypropylene and Nylon Rope	
Chalky exterior appearance	Indicates overexposure to sunlight (UV) rays. Possibly left unprotected outside. Do not use. Discard.
Dusty residue when twisted open	Indicates wear from inside out. Replace rope if damage is extensive.
Frayed exterior	Abraded by sharp edges. Use caution. Strength of rope could be reduced.
Broken strands	Destroy and discard.
Cold or frozen	Thaw, dry at room temperature before use.
Reduction in size	Usually indicates overloading and excessive wear. Use caution. Reduce capacity accordingly.
Wire Rope (Figure 24-1)	
Rusty, lack of lubrication	Apply light, clean oil. Do not use engine oil.
Excessive outside wear	Used over rough surfaces with misaligned or wrong sheave sizes. Reduce load capacity according to wear. If outside diameter of wire is more than 1/3 worn away, replace rope.
Broken wires	Up to six allowed in one rope lay, OR three in one strand in one rope lay, with no more than one at an attached fitting. Otherwise, destroy and replace rope.
Crushed, jammed, or flattened strands	Replace rope.
Bulges in rope	Replace, especially non-rotating types.
Gaps between strands	Replace rope.
Core protrusion	Replace rope.
Heat damage, torch burns, or electric arc strikes	Replace rope.
Frozen rope	Do not use. Avoid sudden loading of cold rope.
Kinks, bird-caging	Replace rope. Destroy defective rope.

Polypropylene and Nylon Web Slings	
Chalky exterior appearance	Overexposed to sunlight (UV) rays. Should be checked by manufacturer.
Frayed exterior	Could have been shock-loaded or abraded. Inspect very carefully for signs of damage.
Breaks, tears, or patches	Destroy. Do not use.
Frozen	Thaw and dry at room temperature before use.
Contaminated with oil	Destroy.
Wire Rope Slings	
Broken wires	Up to six allowed in one rope lay or three in one strand in one rope lay with no more than one at an attached fitting. Otherwise, destroy and replace rope.
Kinks, bird-caging	Replace and destroy.
Crushed and jammed strands	Replace and destroy.
Core protrusion	Replace and destroy.
Bulges in rope	Replace and destroy.
Gaps between strands	Replace and destroy.
Wire rope clips	Check proper installation and tightness before each lift. Remember, wire rope stretches when loaded, which may cause clips to loosen.
Attached fittings	Check for broken wires. Replace and destroy if one or more are broken.
Frozen	Do not use. Avoid sudden loading of cold ropes to prevent failure.
Sharp bends	Avoid sharp corners. Use pads such as old carpet, rubber hose, or soft wood to prevent damage.
Chain Slings†	
Elongated or stretched links	Return to manufacturer for repair.
Failure to hang straight	Return to manufacturer for repair.
Bent, twisted, or cracked links	Return to manufacturer for repair.
Gouges, chips, or scores	Ground out and reduce capacity according to amount of material removed.

†Use only alloy steel for overhead lifting. Chain repairs are best left to the manufacturer. Chains beyond repair should be cut with a torch into short pieces.

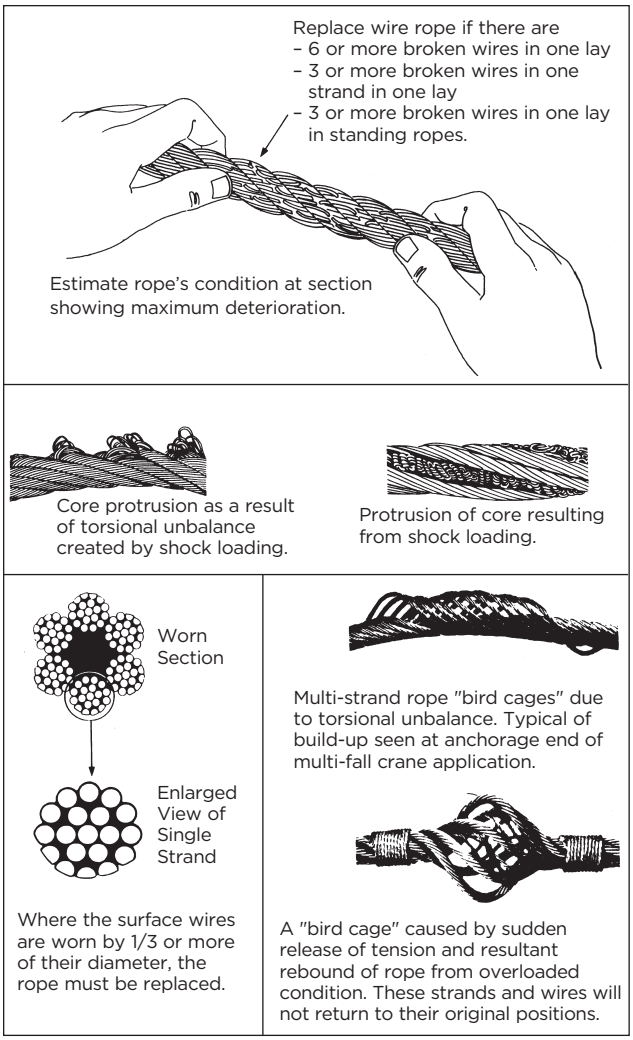


Figure 24-1: Wire Rope Inspection

Hardware

Know what hardware to use, how to use it, and how its working load limits (WLLs) compare with the rope or chain used with it.

All fittings must be of adequate strength for the application. Only forged alloy steel load-rated hardware should be used for overhead lifting. Load-rated hardware is stamped with its WLL (Figure 24-2).

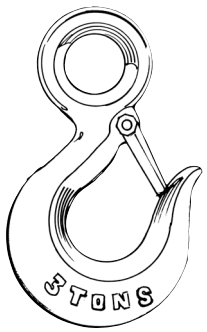


Figure 24-2: Forged Alloy Hook with Stamped Capacity

Inspect hardware regularly and before each lift. Telltale signs include

- Wear
- Cracks
- Severe corrosion
- Deformation/bends
- Mismatched parts
- Obvious damage.

Any of these signs indicates a weakened component that should be replaced for safety. Figure 24-3 shows what to check for on a hook.

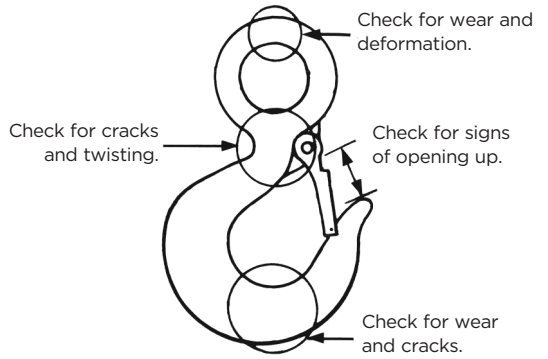


Figure 24-3: Hook Inspection Areas

Sling Configurations

The term "sling" includes a wide variety of configurations for all fibre ropes, wire ropes, chains, and webs. The most commonly used types in construction are explained here.

Single Vertical Hitch

This is a method of supporting a load by a single vertical part or leg of the sling (Figure 24-4). The total weight of the load is carried by a single leg. This configuration must not be used for lifting loose material, long material, or anything difficult to balance. This hitch does not provide control over the load because it allows rotation.

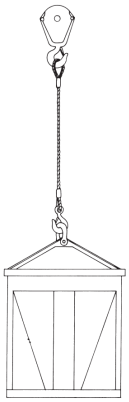


Figure 24-4: Single Vertical Hitch

Bridle Hitch

Two, three, or four single hitches can be used together to form a bridle hitch (Figure 24-5). They provide excellent stability when the load is distributed equally among the legs, when the hook is directly over the centre of gravity of the load, and the load is raised level. The leg length may need adjustment with turnbuckles to distribute the load. The sling angles must be carefully determined to ensure that the individual legs are not overloaded.

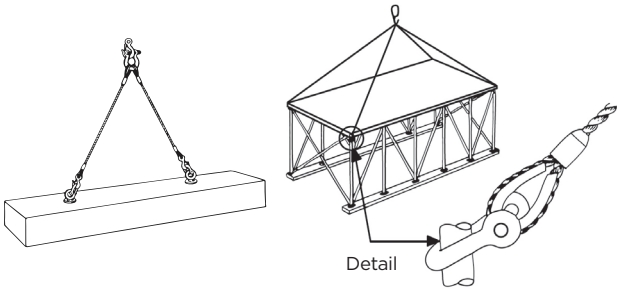


Figure 24-5: Two-Leg and Four-Leg Bridle Hitch

NOTE: The load may be carried by only 2 legs while the 3rd and 4th merely balance it.

Single Basket Hitch

This is a method of supporting a load by hooking one end of a sling to a hook, wrapping it around the load, and securing the other end to the hook (Figure 24-6). It cannot be used on loads that are difficult to balance because the load can tilt and slip out of the sling. For stable loads, however, the load is automatically equalized, with each leg supporting half the load.

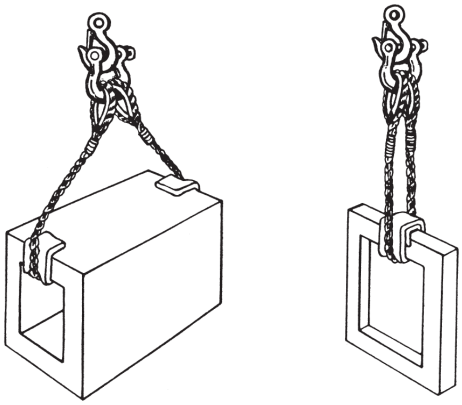


Figure 24-6: Single Basket Hitch

NOTE: Make sure that the load does not turn or slide along the rope during a lift because both the load and rope will become damaged

Double Basket Hitch

This consists of two single basket hitches passed under the load so that it is properly balanced (Figure 24-7). The legs of the hitches must be kept far enough apart to provide balance but no so far apart that it would create excessive sling angles. The angle between the load and the sling should be approximately 60° or more to prevent slippage.

On smooth surfaces, the basket hitch should be snubbed against a step or change of contour to prevent the rope from slipping as the load is applied. Otherwise, a double wrap basket hitch may be a better choice.

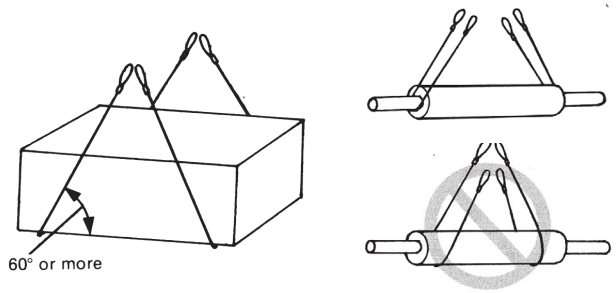


Figure 24-7: Double Basket Hitch

Double Wrap Basket Hitch

This is a basket hitch that is wrapped completely around the load and compresses it rather than just supports it (Figure 24-8). It can be used in pairs. This method is excellent for handling loose materials, pipes, rods, or smooth cylindrical loads because the rope or chain is in full contact with the load and tends to draw it together.

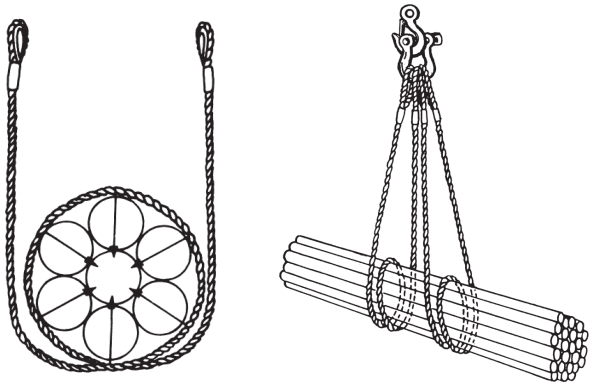


Figure 24-8: Double Wrap Basket Hitch

Single Choker Hitch

This forms a noose in the rope and tightens as the load is lifted (Figure 24-9). However, it does not provide full contact with the load and should not be used to lift loose bundles or loads that are difficult to balance. Choker hitches are useful for turning loads and for resisting a load that wants to turn. They can also be doubled up, which provides twice the capacity to lift or to turn a load.

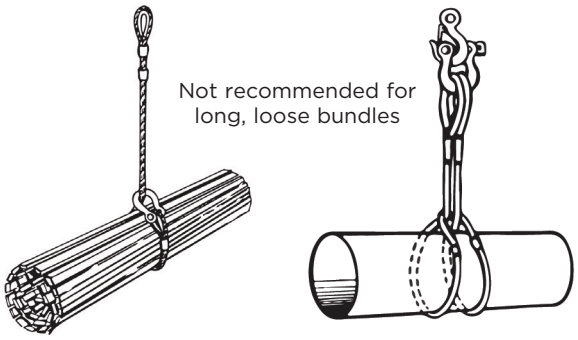


Figure 24-9: Single Choker Hitch

Double Choker Hitch

This consists of two single chokers attached to the load and spread out to provide stability for longer loads (Figure 24-10). It does not grip the load completely but can balance the load, making it less likely to tip. The load must be lifted horizontally with slings of even length to prevent the load from sliding out. For lossely bundled loads, use a double wrap choker hitch.

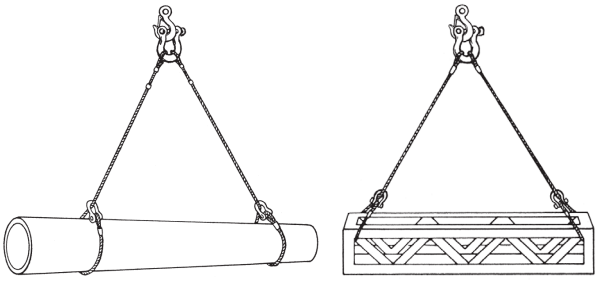


Figure 24-10: Double Choker Hitch

Double Wrap Choker Hitch

The rope or chain is wrapped completely around the load before being hooked into the vertical part of the sling (Figure 24-11). The hitch makes full contact with the load and tends to draw it tightly together. It can be used either singly on short, easily balanced loads or in pairs on longer loads.

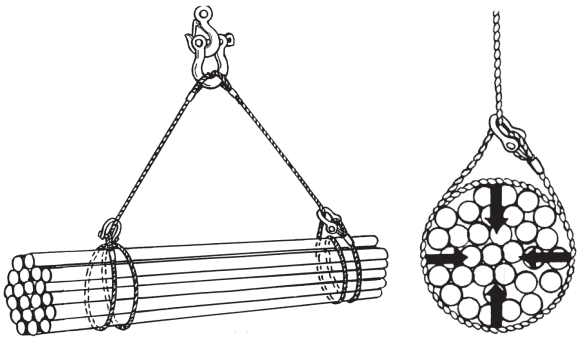


Figure 24-11: Double Wrap Choker Hitch

Sling Types

Fibre Rope Slings

These are preferred for some applications because they are pliant, grip the load well, and do not mar the surface of the load (Figure 24-12). They should be used only on light loads, however, and must not be used on objects that have sharp edges capable of cutting the rope or in applications where the sling will be exposed to high temperatures, severe abrasion, or acids.

The fibres in these ropes are either natural or synthetic. Natural fibre ropes (e.g., manila) should not be used for rigging since they are more subject to deterioration from rot, mildew, and chemicals.

- **Polypropylene** is the most common fibre rope used in rigging. It floats but does not absorb water. It stretches less than other synthetic fibres such as nylon. However, it is affected by UV rays in sunlight and should not be left outside for long periods. It also softens with heat and is not recommended for work involving exposure to high heat.
- **Nylon** rope is considerably stronger than the same size and construction of polypropylene rope. Because it stretches, however, it is not used much for rigging. It is also more expensive, loses strength when wet, and has low resistance to acids.
- **Polyester** ropes are stronger than polypropylene but not as strong as nylon. They have good resistance to acids, alkalis, and abrasion. Also, they do not stretch as much as nylon, they resist degradation from UV rays and don't soften in heat.

The choice of the rope size and type will depend upon the application, the weight to be lifted, and the sling angle. Before lifting, inspect fibre rope slings carefully because they can deteriorate.

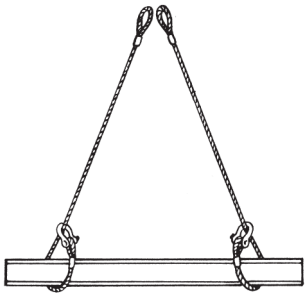


Figure 24-12: Fibre Rope Sling

Metal Mesh Slings

Also known as wire or chain mesh slings, these are well adapted for use where loads are abrasive, hot, or tend to cut fabric or wire rope slings (Figure 24-13). They resist abrasion and cutting, grip the load firmly without stretching, and can withstand temperatures up to 550°F (288°C). They have smooth, flat bearing surfaces, conform to irregular shapes, do not kink or tangle, and resist corrosion.

For handling loads that would damage the mesh, or for handling loads that the mesh would damage, the slings can be coated with rubber or plastic.

They are available in three mesh sizes:

1. 10-Gauge mesh (heavy duty) is recommended for general purpose lifting because it combines strength and abrasion resistance with flexibility
2. 12-Gauge mesh is for medium duty applications
3. 14-Gauge mesh is for very light duty.

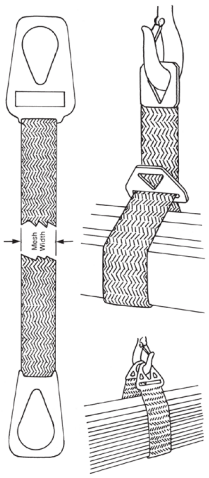


Figure 24-13: Metal Mesh Slings

Chain Slings

These are used when resistance to abrasion and high temperatures is required (Figure 24-14). Chain slings must be padded on sharp corners to prevent bending stresses on the links and damage to the material being lifted.

Only Grade 80 or 100 alloy steel chain is suitable for lifting. Grade 80 is marked with an 8, 80, or 800. Grade 100 is marked with a 10, 100, or 1000. The chain must be embossed with this grade marking every 3 feet or 20 links, whichever is shorter (although some manufacturers mark every link).

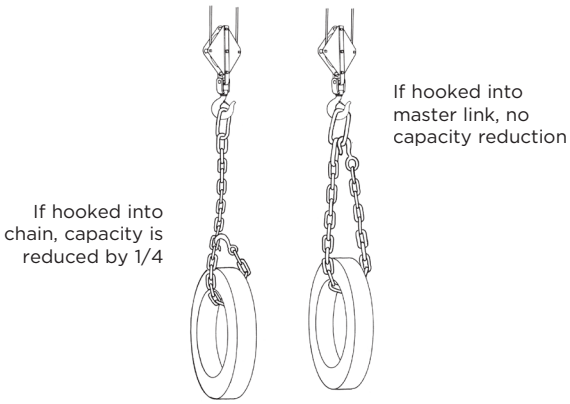


Figure 24-14: Chain Slings

Wire Rope Slings

Properly fabricated wire rope slings are the safest type available for general construction use. They do not wear as rapidly as fibre rope slings and they are not susceptible to the weak link problem of chain slings. While not as strong as chain slings, they have good flexibility and minimum weight.

During inspection, wire rope slings show their true condition. The appearance of broken wires clearly indicates the extent of fatigue, wear, abrasion, etc. Before failure occurs, the outer wires will break, providing advance warning and allowing time to react.

On smooth surfaces, the angle between the load and the sling should be approximately 60 degrees or greater to avoid slippage. On wooden boxes or crates, the rope will dig into the wood sufficiently to prevent slippage. On other rectangular loads, the rope should be protected by guards or load protectors at the edges to prevent kinking (Figure 24-15).

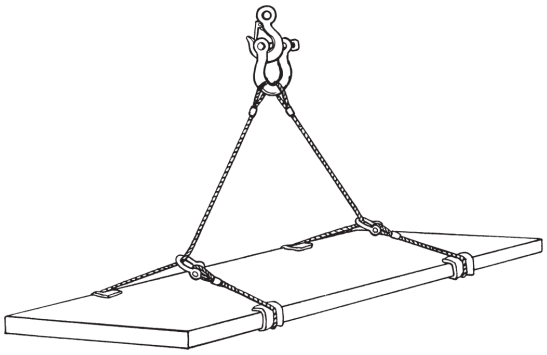


Figure 24-15: Wire Rope Sling

Loads should not be allowed to turn or slide along the rope during a lift. The sling or the load may become scuffed or damaged. Use a double choker if the load must turn.

Braided Slings are fabricated from six or eight small-diameter ropes braided together to form a single rope that provides a large bearing surface, tremendous strength, and flexibility in all directions (Figure 24-16). They are very easy to handle and almost impossible to kink. It can be used for all standard configurations and combinations but is especially useful for basket hitches where low bearing pressure is desirable or where the bend is extremely sharp.

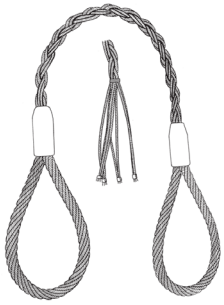


Figure 24-16: Braided Slings

Hooking Up

- Avoid sharp bends, pinching, and kinks in rigging equipment. Thimbles should be used at all times in sling eyes.
- Never wrap a wire rope sling completely around a hook. The tight radius will damage the sling.
- Make sure the load is balanced in the hook. Eccentric loading can reduce capacity dangerously.
- Never wrap the crane hoist rope around the load. Attach the load to the hook by slings or other rigging devices adequate for the load.
- Avoid bending the eye section of wire rope slings around corners. The bend will weaken the splice or swaging.
- Never point-load a hook unless it is designed and rated for such use (Figure 24-17).
- Avoid bending wire rope slings near any attached fitting.
- Understand the effect of sling angle on sling load (Figure 24-18) and pull angle on beam load (Figure 24-19).

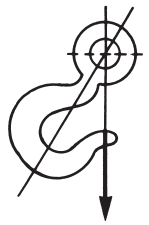


Figure 24-17: Point-Loading Reduces Hook Capacity

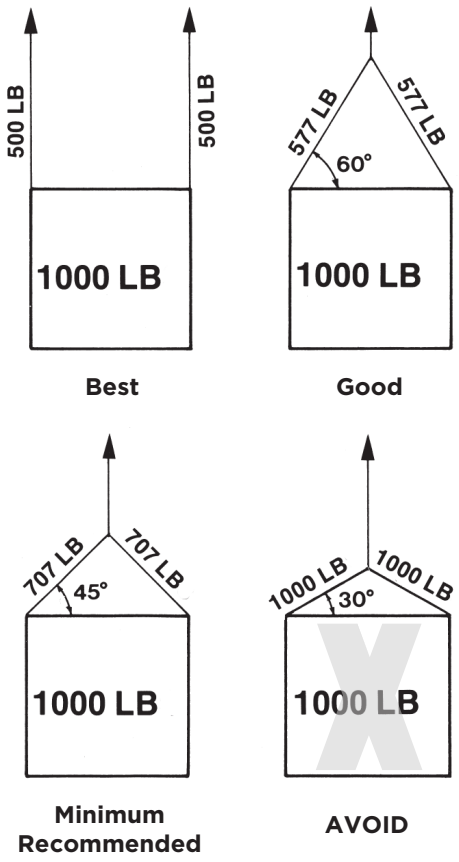


Figure 24-18: Effect of Sling Angle on Sling Load

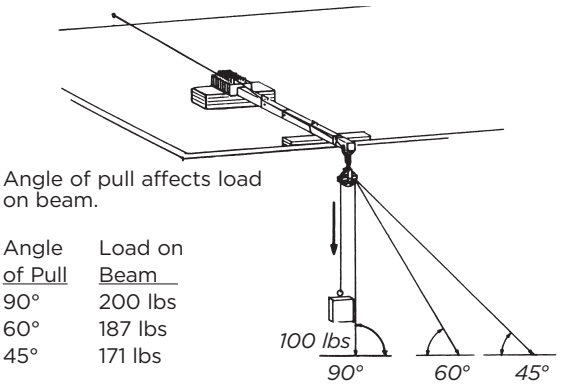


Figure 24-19: Effect of Pull Angle on Beam Load

Basic Knots and Hitches

Every worker should be able to tie the basic knots and hitches that are useful in everyday work.

Two Half Hitches

Two half hitches, which can be quickly tied, are reliable and can be put to almost any general use (Figure 24-20).

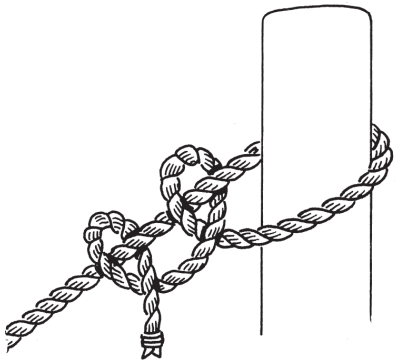


Figure 24-20: Two Half Hitches

Round Turn and Two Half Hitches

Used to secure loads to be hoisted horizontally. Two are usually required because the load can slide out if lifted vertically (Figure 24-21).

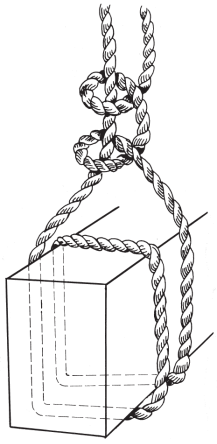


Figure 24-21: Round Turn and Two Half Hitches

Timber Hitch and Two Half Hitches

A good way to secure a scaffold plank for hoisting vertically. The timber hitch grips the load (Figure 24-22).

Figure 24-22: Timber Hitch and Two Half Hitches

Reef or Square Knot

Can be used for tying two ropes of the same diameter together. It is unsuitable for wet or slippery ropes and should be used with caution since it unties easily when either free end is jerked. Both live and dead ends of the rope must come out of the loops at the same side (Figure 24-23).

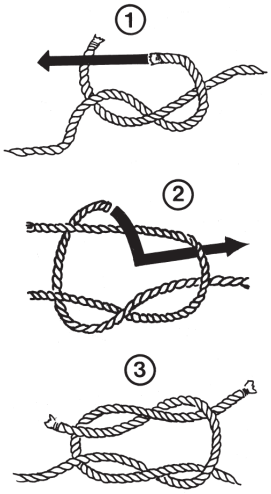


Figure 24-23: Reef or Square Knot

Bowline

If properly tied, this is a universal knot that never jams or slips (Figure 24-24). Two interlocking bowlines can be used to join two ropes together. Single bowlines can be used for hoisting or hitching directly around a ring or post.

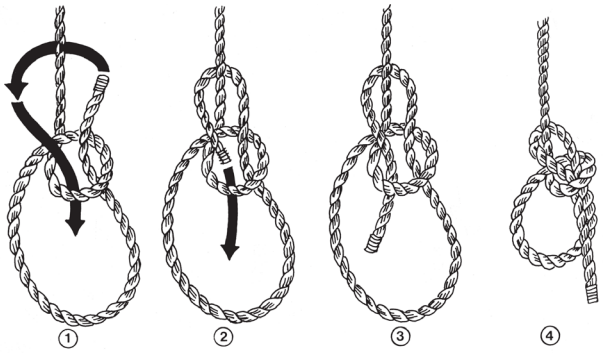
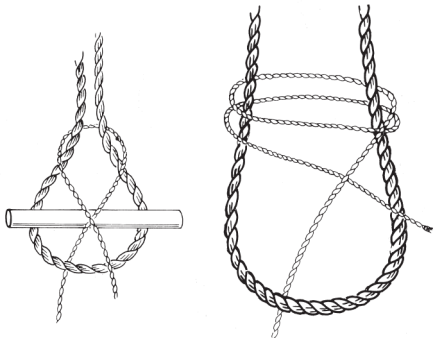


Figure 24-24: Bowline

Sheet Bend

This type of knot can be used for tying ropes of light to medium size (Figure 24-25).



Single Sheet Bend Double Sheet Bend

Figure 24-25: Sheet Bends

Running Bowline

The running bowline is mainly used for hanging objects with ropes of different diameters. The weight of the object determines the tension necessary for the knot to grip. Follow the directions below as shown in Figure 24-26.

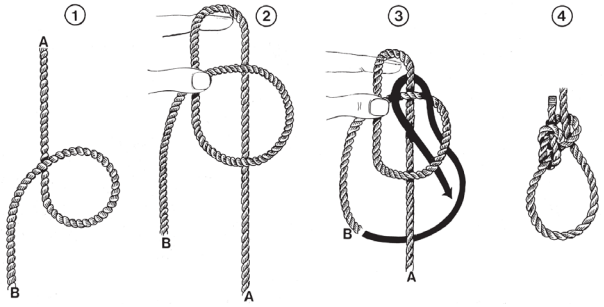


Figure 24-26: Running Bowline

1. Make an overhand loop with the end of the rope held toward you.
2. Hold the loop with your thumb and fingers and bring the standing part of the rope back so that it lies behind the loop.
3. Take the end of the rope in behind the standing part, bring it up, and feed it through the loop.
4. Pass it behind the standing part at the top of the loop and bring it back down through the loop.

Table 24-1: WLL of Wire Rope Slings

Working Load Limit (WLL): Tons of 2000 lbs

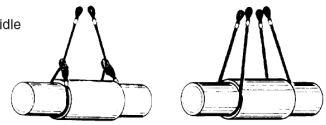
UNI-LOC® 6-strand Wire Rope Slings

- 6 x 19, 6 x 26, 6 x 25 and 6 x 36 IWRC -

Design Factor = 5

Nom. Rope Dia. Inch	Vertical	Choker	2 Sling Bridle, or single Basket Hitch 60°	45°	30°	Weight of one 10 ft long Std Loop Sling w/o any hardware approx. lbs
1/4	0.65	0.48	1.1	0.91	0.65	1.6
3/8	1.4	1.1	2.5	2.0	1.4	3.5
1/2	2.5	1.9	4.4	3.6	2.5	6.8
5/8	3.9	2.9	6.8	5.5	3.9	10.9
3/4	5.6	4.1	9.7	7.9	5.6	16.5
7/8	7.6	5.6	13	11	7.6	23.5
1	9.8	7.2	17	14	9.8	32.5
1-1/8	12	9.1	21	17	12	41.0
1-1/4	15	11	26	21	15	53.5
1-3/8	18	13	31	25	18	68.5
1-1/2	21	16	37	30	21	85.0
1-3/4	28	21	49	40	28	130.0
2	37	28	63	52	37	178.0
2-1/4	44	35	77	63	44	243.0
2-1/2	54	42	94	77	54	315.0

For Choker Bridle Sling, multiply values by 3/4.



For Double Basket Sling, multiply values by 2.

NOTES: 1) Working Load Limit (WLL) based on **UNI-LOC®** splice only.
2) Values for Chokers valid only if A is greater than 30°.
3) Values based on ropes with a tensile strength of EIPS.
4) Shackles and fittings must be sized to the full WLL of sling.
5) WLL Basket Hitch is based on D/d ratio of 25.

Table 24-2: Weights of Materials
(Based on Volume)‡

Material	Approximate Weight (lb per cu ft)	Material	Approximate Weight (lb per cu ft)
METALS		**TIMBER, AIR-DRY**	
Aluminum	165	Cedar	22
Brass	535	Fir, Douglas, seasoned	34
Bronze	500	Fir, Douglas, seasoned	40
Copper	560	Fir, Douglas, wet	50
Iron	480	Fir, Douglas, glue laminated	34
Lead	710	Hemlock	30
Steel	480	Pine	30
Tin	460	Poplar	30
MASONRY		Spruce	28
Ashlar masonry	140-160	**LIQUIDS**	
Brick masonry, soft	110	Alcohol, pure	49
Brick masonry, common (about 3 tons per thousand)	125	Gasoline	42
		Oils	58
Brick masonry, pressed	140	Water	62
Clay tile masonry, average	60	**EARTH**	
Rubble masonry	130-155	Earth, wet	100
Concrete, cinder, taydite	100-110	Earth, dry (about 2050 lb per cu yd)	75
Concrete, slag	130		
Concrete, stone	144	Sand and gravel, wet	120
Concrete, stone, reinforced (4050 lb per cu yd)	150	Sand and gravel, dry	105
		River sand (about 3240 lb per cu yd)	120
ICE AND SNOW		**VARIOUS BUILDING MATERIALS**	
Ice	56		
Snow, dry, fresh fallen	8		
Snow, dry, packed	12-25	Cement, portland, loose	94
Snow, wet	27-40	Cement, portland, set	183
MISCELLANEOUS		Lime, gypsum, loose	53-64
Asphalt	80	Mortar, cement-time, set	103
Tar	75	Crushed rock (about 2565 lb per cu yd)	90-110
Glass	160		

Table 24-3: Drywall Weights‡

Non-Fire Rated	8′	10′	12′
1/2″	58 lb	72 lb	86 lb
5/8″	74 lb	92 lb	110 lb
Fire-Rated			
1/2″	64 lb	80 lb	96 lb
5/8″	77 lb	96 lb	115 lb

‡**NOTE:** These tables contain sample values for the purposes of illustration only. Refer to the manufacturer of the material or equipment you're using for precise values.

Table 24-4: Weights of Steel Studs and Trims‡

		Pcs./Bdl.	lb (per 1,000 Lin. Ft.)
STUD SIZE (.018 thickness)			
1 5/8	All Lengths	10	290
2 1/2	All Lengths	10	340
3 5/8	All Lengths	10	415
6 (.020)	All Lengths	10	625
TRACK SIZES (.018 THICKNESS)			
1 5/8	Regular Leg	10	240
2 1/2	Regular Leg	10	295
3 5/8	Regular Leg	10	365
6 (.020)	Regular Leg	10	570
1 5/8	2 Leg	12	365
2 1/2	2 Leg	6	415
3 5/8	2 Leg	6	470
DRYWALL FURRING CHANNEL			
Electro-Galvanized		10	300
DRYWALL CORNER BEAD			
1 1/4 x 1 1/4		Various	120
RESILIENT CHANNEL			
Electro-Galvanized		20	210
DRYWALL TRIMS			
1/2 Door & Windows L.		20	100
5/8 Door & Window L.		20	100
3/8 Casing Bead J.		20	110
1/2 Casing Bead J.		20	120
5/8 Casing Bead J.		20	130
DRYWALL ANGLE			
1 x 2 Drywall Angle		10	200

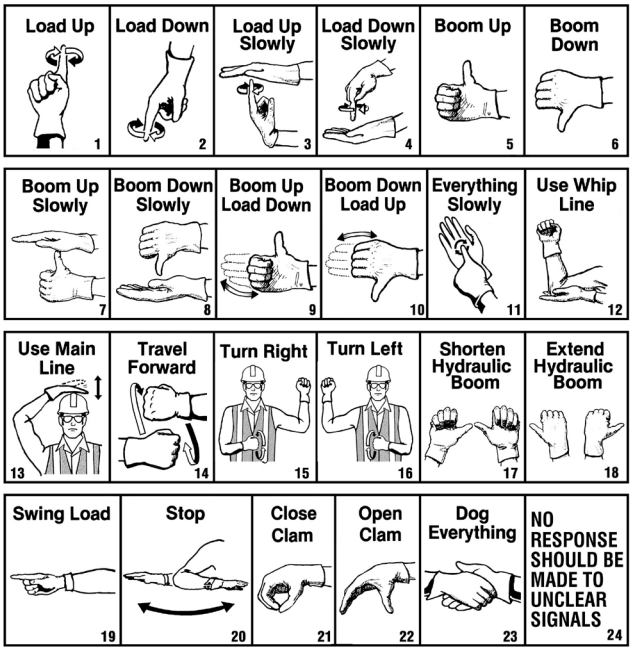
Table 24-5: Weights of Materials (Based on Surface Area)‡

Material	Approximate Weight Lbs. Per Square Foot	Material	Approximate Weight Lbs. Per Square Foot
CEILINGS		**FLOORING**	
(Per Inch of Thickness)		(Per Inch of Thickness)	
Plaster board	5	Hardwood	5
Acoustic and fire resistive tile	2	Sheathing	2.5
Plaster, gypsum-sand	8	Plywood, fir	3
Plaster, light aggregate	4	Wood block, treated	4
Plaster, cement sand	12	Concrete, finish or fill	12
ROOFING		Mastic base	12
Three-ply felt and gravel	5.5	Mortar base	10
Five-ply felt and gravel	6.5	Terrazzo	12.5
Three-ply felt, no gravel	3	Tile, vinyl 1/8 inch	1.5
Five-ply felt, no gravel	4	Tile, linoleum 3/16 inch	1
Shingles, wood	2	Tile, cork, per 1/16 inch	0.5
Shingles, asbestos	3	Tile, rubber or asphalt 3/16 inch	2
Shingles, asphalt	2.5	Tile, ceramic or quarry 3/4 inch	11
Shingles, 1/4 inch slate	10	Carpeting	2
Shingles, tile	14	**DECKS AND SLABS**	
PARTITIONS		Steel roof deck 1 1/2" - 14 ga.	5
Steel partitions	4	- 16 ga.	4
Solid 2" gypsum-sand plaster	20	- 18 ga.	3
Solid 2" gypsum-light agg. plaster	12	- 20 ga.	2.5
Metal studs, metal lath, 3/4"		- 22 ga.	2
plaster both sides	18	Steel cellular deck 1 1/2" - 12/12 ga.	11
Metal or wood studs, plaster		- 14/14 ga.	8
board and 1/2" plaster both sides	18	- 16/16 ga.	6.5
Plaster 1/2"	4	- 18/18 ga.	5
Hollow clay tile 2 inch	13	- 20/20 ga.	3.5
3 inch	16	Steel cellular deck 3" - 12/12 ga.	12.5
4 inch	18	- 14/14 ga.	9.5
5 inch	20	- 16/16 ga.	7.5
6 inch	25	- 18/18 ga.	6
Hollow slag concrete block 4 in	24	- 20/20 ga.	4.5
6 in	35	Concrete, reinforced, per inch	12.5
Hollow gypsum block 3 inch	10	Concrete, gypsum, per inch	5
4 inch	13	Concrete, lightweight, per inch	5-10
5 inch	15.5	**MISCELLANEOUS**	
6 inch	16.5	Windows, glass, frame	8
Solid gypsum block 2 inch	9.5	Skylight, glass, frame	12
3 inch	13	Corrugated asbestos 1/4 inch	3.5
MASONRY WALLS		Glass, plate 1/4 inch	3.5
(Per 4 Inch of Thickness)		Glass, common	1.5
Brick	40	Plastic sheet 1/4 inch	1.5
Glass brick	20	Corrugated steel sheet, galv.	
Hollow concrete block	30	- 12 ga.	5.5
Hollow slag concrete block	24	- 14 ga.	4
Hollow cinder concrete block	20	- 16 ga.	3
Hollow haydite block	22	- 18 ga.	2.5
Stone, average	55	- 20 ga.	2
Bearing hollow clay tile	23	- 22 ga.	1.5
		Wood Joists - 16" ctrs. 2 x 12	3.5
		2 x 10	3
		2 x 8	2.5
		Steel plate (per inch of thickness)	40

Table 24-6: Weights of Suspended Ceiling Grid Systems‡

Systems	Qty./Ctn. (Lin. Ft.)	Lbs./Ctn. (Lbs.)
NON-FIRE RATED GRID SYSTEM		
1 1/2 x 144" Main Runner	240	58
1 x 48" Cross Tee	300	55
1 x 24" Cross Tee	150	28
1 x 30" Cross Tee	187.5	35
1 x 20" Cross Tee	125	23
1 x 12" Cross Tee	75	14
FIRE-RATED GRID SYSTEM		
1 1/2 x 144" Main Runner	240	70
1 1/2 x 48" Cross Tee	240	70
1 1/2" x 24" Cross Tee	120	35
WALL MOULDINGS		
Wall Mould 3/4 x 15/16 x 120"	400	49
Reveal Mould 3/4 x 3/4 x 1/2 x 3/4 x 120"	200	36
ACCESSORIES		
Hold-Down Clips (for 5/8" tile)	500 pcs.	3
BASKETWEAVE & CONVENTIONAL 5' x 5' MODULE – NON RATED		
1 1/2 x 120" Main Member	200	49
1 1/2 x 60" Cross Tee	250	61
Wall Mould 3/4 x 15/16 x 120"	400	57
THIN LINE GRID SYSTEM – NON-RATED		
Main Runner 1 1/2 x 144"	300	65
Cross Tee 1 1/2 x 48"	300	65
Cross Tee 1 1/2 x 24"	150	33
Wall Mould 15/16 x 9/16 x 120"	500	62
Reveal Mould 1 x 3/8 x 3/8 x 9/16 x 120"	300	48
Main Runner 1 1/12 x 144"	300	65
Cross Tee 1 1/2 x 48"	300	65
Cross Tee 1 1/2 x 24"	150	33
Wall Mount 15/16 x 9/16 x 120"	500	62

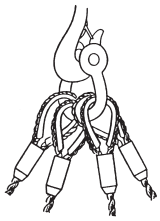
Hand Signals for Hoisting Operations



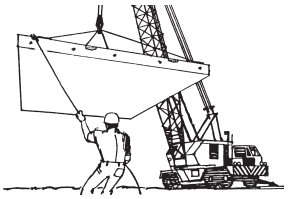
These hand signals are available to order as pocket-sized cards. Go to the **ihsa.ca** website and search for *Hand Signals for Hoisting Operations Card* (V002).

‡**NOTE:** These tables contain sample values for the purposes of illustration only. Refer to the manufacturer of the material or equipment you're using for precise values.

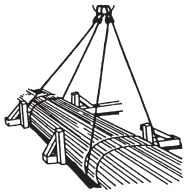
Rigging Safety Tips



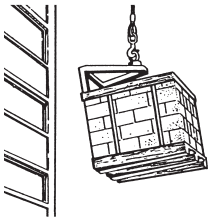
With two or more slings on a hook, use a shackle.



Use tag lines for control.



Block loose loads before unhooking.

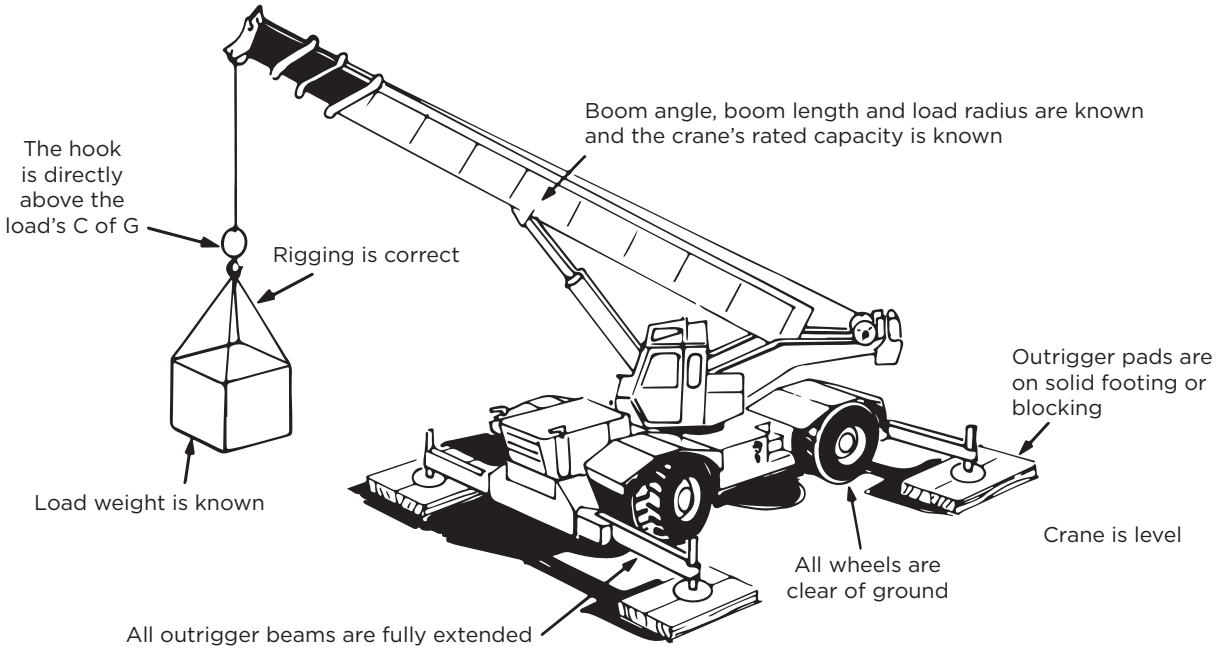


Make sure loads are secure.

Stay back when slings are pulled out from under loads.

A crane is properly set up for lifting when the following conditions are met.

For Cranes Operating "On Outriggers"



For Crawler-Mounted Cranes or When Lifting "On Rubber"