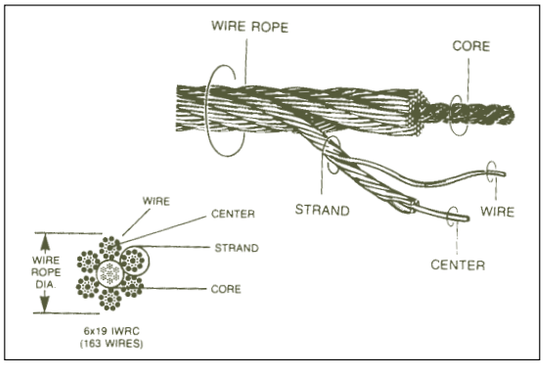
WIRE ROPE AND SLING BASICS

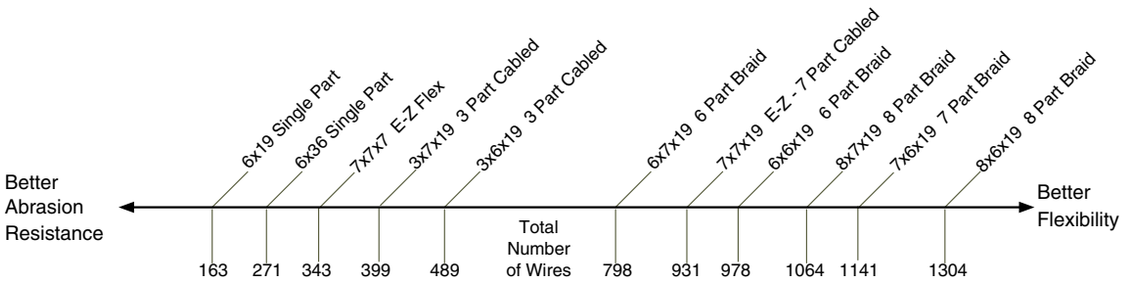
Two major and opposing characteristics of wire rope slings are flexibility and resistance to abrasion. To a great extent, these traits are a direct function of the number of wires. Fewer wires means larger diameter wires, better abrasion resistance, and reduced flexibility. More wires result in decreased wire diameter, reduced abrasion resistance, increased flexibility and kink resistance.

The scale below shows the relative position of the sling constructions shown in this catalog as they pertain to abrasion resistance and flexibility.

EIP = Extra Improved Plow (Steel)
FC = Fiber Core

Wire Rope Construction





WIRE ROPE SLINGS

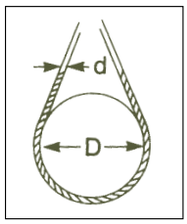
Features, Advantages and Benefits

Promotes Safety
- *Tuff-Tag* for capacity and serial numbered identification for traceability.

Saves Money
- Least expensive, per capacity, of all steel slings.
- Use of EIP, IWRC rope gives 15% greater capacity than IP, IWRC ropes.

Saves Time
- Countless combinations of sling terminations - hooks, chokers and thimbles are available to fit specific lift requirements.

D/d - Basket Hitch Effect



⚠ WARNING

Read Definition on page 3

Tests have shown that whenever a sling body is bent around a diameter, the strength of the sling is decreased. D/d ratio is the ratio of the diameter around which the sling is bent divided by the body diameter of the sling.

The capacities in this catalog are based on the minimum D/d ratios that appear below each of the capacity tables. For more severe bending conditions, contact *Lift-All* for revised capacities.

Environmental Considerations

- Wire core wire rope (IWRC) must not be used at temperatures above 400°F.
- Fiber core wire rope (FC) must not be used at temperatures above 180°F.
- Fiber core ropes should not be subjected to degreasing solvents.

Inspection Criteria for Wire Rope Slings

Remove slings from service when:
- End attachments, including hooks, are cracked, deformed or obviously worn;
- Hook throat opening is increased more than 15%;
- Hook is twisted out of plane by more than 10%.

⚠ CAUTION

Do not inspect a sling by passing bare hands over the wire rope.

INSPECTION CRITERIA FOR WIRE ROPE SLINGS (Cont'd)

All slings should be inspected for damage prior to each use to assure that their strength has not been compromised. The following photos illustrate some of the common damage that occurs to indicate that the sling must be taken out of service.

THE DAMAGE: **Broken Wires**

WHAT TO LOOK FOR: The individual wires that make up the strands in a wire rope can break for various reasons including fatigue and overload. Wire rope slings must be taken out of service when you find 10 or more broken wires in one rope lay or 5 or more broken wires in one strand of one rope lay.

TO PREVENT: Avoid pulling rope across edges or protrusions.

THE DAMAGE: **Wear**

WHAT TO LOOK FOR: Flat areas on the individual wires. When wires have lost one third or more of their original diameter, the sling must be taken out of service.

TO PREVENT: Do not drag sling on the ground and do not drag loads over slings. Pad high wear areas.

THE DAMAGE: **Corrosion / Heat Damage**

WHAT TO LOOK FOR: Absence of lubrication and discoloration of rope.

TO PREVENT: Hang slings for storage away from moisture. Do not use wire core slings above 400° F or fiber core slings above 180° F.

THE DAMAGE: **Kinking, Bird Caging**

WHAT TO LOOK FOR: Bent strands of wire or strands standing out from their regular position in the body of the sling.

TO PREVENT: Protect rope from sharp edges of load by pads or other means. Do not shock load slings.

THE DAMAGE: **Crushing**

WHAT TO LOOK FOR: A section of rope that is flattened, where the cross section is no longer round.

TO PREVENT: Never allow loads to be set on top of slings.

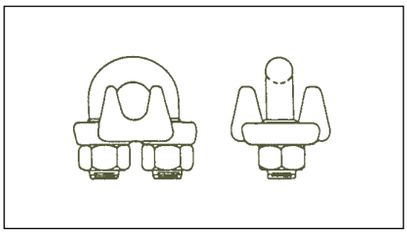
CABLE & COMPONENTS

Wire Rope Clips

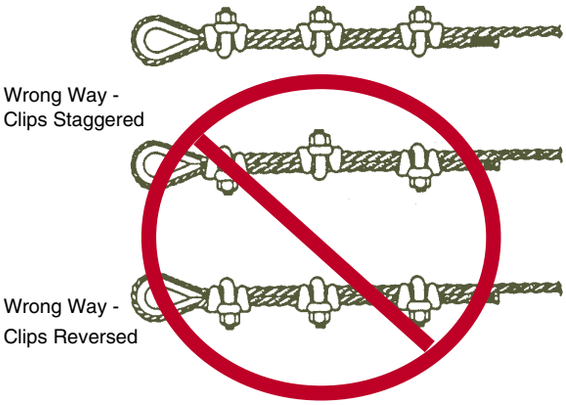
The following instructions, supplied by the Wire Rope Technical Board, will result in an approximate 80% efficiency rating when the clips are applied as instructed, on GAC, SSAC, RRL or RLL, 6 x 19 class or 6 x 37 class, fiber core or IWRC, non-Seale type construction wire rope. If applied to vinyl coated ropes, vinyl must first be stripped from clip connection area.

How to Apply Clips

1. Turn back the specified amount of rope from the thimble. Apply the first clip one clip width from the dead end of the wire rope (U-bolt over dead end - live end rests in clip saddle). Tighten nuts evenly to recommended torque.
2. Apply the next clip as near to the loop as possible. Turn on nuts firmly but do not tighten.
3. Space additional clips, if required, equally between the first two. Tighten on nuts - take up rope slack - tighten all nuts evenly on all clips to recommended torque.
4. NOTICE! Apply the initial load and retighten nuts to the recommended torque. Rope will stretch and be reduced in diameter when loads are applied. Inspect periodically and retighten to recommended torque.



Right Way - For Maximum Rope Strength



⚠ WARNING

Failure to make a termination in accordance with aforementioned instructions, or failure to periodically check and retighten to the recommended torque, may result in death or serious injury.

Drop Forged Wire Rope Clips

Rope Dia. (in.)	Minimum Number of Clips	Rope Turn-back (in.)	Torque (ft./lbs.)	Weight Per 100 Pieces (lbs.)
1/8	2	3 1/4	4 1/2	6
3/16	2	3 3/4	7 1/2	10
1/4	2	4 3/4	15	18
5/16	2	5 1/4	30	30
3/8	2	6 1/2	45	47
7/16	2	7	65	76
1/2	3	11 1/2	65	80
9/16	3	12	95	104
5/8	3	12	95	106
3/4	4	18	130	150
7/8	4	19	225	212
1	5	26	225	250
1 1/8	6	34	225	280
1 1/4	7	44	360	415
1 3/8	7	44	360	460
1 1/2	8	54	360	530

Malleable Wire Rope Clips

Rope Dia. (in.)	Minimum Number of Clips	Rope Turn-back (in.)	Torque (ft./ lbs.)	Quantity Per Bag	Weight Per Bag (lbs.)
1/8	3	5	3	200	10
3/16	3	6	5	150	12
1/4	3	7	15	100	12
5/16	3	8	15	100	15
3/8	3	10	30	50	11

Note: Malleable clips are not to be used for overhead lifting. Use in light duty, non-critical applications only.