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Meetings and discussions regarding safety on cranes, derricks, and hoists were held from 1920 to 1925 involving the ASME Safety Code Correlating Committee, the Association of Iron and Steel Electrical Engineers, the American Museum of Safety, the American Engineering Standards Committee (AESC) [later changed to American Standards Association (ASA), then to the United States of America Standards Institute (USASI), and finally to ANSI], Department of Labor — State of New Jersey, Department of Labor and Industry — State of Pennsylvania, and the Locomotive Crane Manufacturers Association. On June 11, 1925, the AESC approved the ASME Safety Code Correlating Committee’s recommendation and authorized the project with the U.S. Department of the Navy, Bureau of Yards and Docks, and ASME as sponsors.

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Table 9-1.8.1-1 Effect of Elevated Temperature on Rated Load of Alloy Steel Chain

Temperature		Grade of Chain			
		Grade 80		Grade 100	
		Temporary Reduction of Rated Load While at Temperature	Permanent Reduction of Rated Load After Exposure to Temperature	Temporary Reduction of Rated Load While at Temperature	Permanent Reduction of Rated Load After Exposure to Temperature
°F	°C				
Below 400	Below 204	None	None	None	None
400	204	10%	None	15%	None
500	260	15%	None	25%	5%
600	316	20%	5%	30%	15%
700	371	30%	10%	40%	20%
800	427	40%	15%	50%	25%
900	482	50%	20%	60%	30%
1,000	538	60%	25%	70%	35%
Over 1,000	Over 538	[Note (1)]	[Note (1)]	[Note (1)]	[Note (1)]

NOTE: (1) Remove from service.

9-1.9.2 Initial Inspection

Prior to use, each new, altered, modified, or repaired sling shall be inspected to verify compliance with the applicable provisions of this Chapter. A written record of the inspection referencing the individual sling identification is required.

9-1.9.3 Frequent Inspection

(a) Each shift, before the sling is used, a visual inspection for damage shall be performed. Slings used in severe or special service should be inspected before each use.

(b) Slings found with conditions such as those listed in para. 9-1.9.5 shall be removed from service. Slings shall not be returned to service until approved by a qualified person.

(c) Written records are not required for frequent inspections.

9-1.9.4 Periodic Inspection

(a) A complete inspection of the sling shall be performed. Each link and fitting shall be examined individually, taking care to expose and examine all surfaces, including the inner link surfaces. Slings found with conditions such as those listed in para. 9-1.9.5 shall be removed from service. Slings shall not be returned to service until approved by a qualified person.

(b) *Periodic Inspection Frequency.* Periodic inspection intervals shall not exceed 1 yr [see (d)]. The frequency of periodic inspections should be based on

- (1) frequency of sling use
- (2) severity of service conditions
- (3) nature of load-handling activities
- (4) experience gained on the service life of slings used in similar circumstances

(c) Guidelines for the time intervals are

(1) normal service — yearly

(2) severe service — monthly to quarterly

(3) special service — as recommended by a qualified person

(d) Periodic inspection is not required for a sling that is in storage or idle. However, if more than 1 yr has passed since the last periodic inspection, the sling shall be inspected in accordance with the requirements listed in (a) and (e) before being placed back into service.

(e) A written record of the most recent periodic inspection shall be maintained and shall include the condition of the sling.

9-1.9.5 Removal Criteria

An alloy steel chain sling shall be removed from service if any of the following conditions are present:

(a) missing or illegible sling identification (see Section 9-1.7).

(b) cracks or breaks.

(c) excessive wear, nicks, or gouges. Minimum thickness on chain links shall not be below the values listed in Table 9-1.9.5-1.

(d) stretched chain links or fittings.

(e) bent, twisted, or deformed chain links or fittings.

(f) evidence of heat damage.

(g) excessive pitting or corrosion.

(h) lack of ability of chain or fittings to hinge (articulate) freely.

(i) weld splatter.

(j) for hooks, removal criteria as stated in ASME B30.10.

(k) for rigging hardware, removal criteria as stated in ASME B30.26.

(l) other conditions, including visible damage, that cause doubt as to the continued use of the sling.

Table 9-1.9.5-1 Minimum Allowable Thickness at Any Point on a Link

Nominal Chain or Coupling Link Size		Minimum Allowable Thickness at Any Point on the Link	
in.	mm	in.	mm
$\frac{7}{32}$	5.5	0.189	4.80
$\frac{9}{32}$	7	0.239	6.07
$\frac{5}{16}$	8	0.273	6.93
$\frac{3}{8}$	10	0.342	8.69
$\frac{1}{2}$	13	0.443	11.26
$\frac{5}{8}$	16	0.546	13.87
$\frac{3}{4}$	20	0.687	17.45
$\frac{7}{8}$	22	0.750	19.05
1	26	0.887	22.53
$1\frac{1}{4}$	32	1.091	27.71

(21) 9-1.9.6 Repair

(a) Slings shall be repaired only by the sling manufacturer or a qualified person.

(b) A repaired sling shall be marked to identify the repairing entity per [Section 9-1.7](#).

(c) Components used for sling repair shall comply with the provisions of this Chapter.

(d) Repair of hooks shall be as specified in ASME B30.10. Repair of below-the-hook lifting devices shall be as specified in ASME B30.20. Repair of all other components shall be as specified by the sling manufacturer, component manufacturer, or a qualified person.

(e) Cracked, broken, stretched, bent, or twisted chain links shall not be repaired; they shall be replaced.

(f) A mechanical coupling link shall not be used for repair purposes within the body of an alloy chain sling unless it is replacing a mechanical link as originally approved by the link manufacturer or qualified person [see [para. 9-1.3.1\(b\)](#)].

(g) Modifications or alterations to a sling shall conform to all repair provisions of this Chapter.

(h) All repairs shall comply with the proof test requirements of [Section 9-1.6](#).

SECTION 9-1.10: OPERATING PRACTICES**9-1.10.1 Sling Selection**

(a) Slings that appear to be damaged shall not be used unless inspected and accepted as usable under [Section 9-1.9](#).

(b) Slings having suitable characteristics for the type of load, hitch, and environment shall be selected in accordance with the requirements of [Sections 9-1.5](#) and [9-1.8](#).

(c) The rated load of the sling shall not be exceeded. When using a multiple-leg sling, no leg shall be loaded beyond its single-leg rating.

(d) When the choker hitch rating is not identified on the sling, the choker hitch rating shall be 80% of the sling's straight-line hitch rating, unless other ratings are provided by the sling manufacturer or a qualified person.

(e) Rated loads for angles of choke less than 120 deg shall be determined by the sling manufacturer or a qualified person [see [Figure 9-1.0-1](#), illustration (e)].

(f) The rated load of a basket hitch shall be decreased when D/d ratios smaller than 6 are used. See [Table 9-1.10.1-1](#), or consult the sling manufacturer or a qualified person.

(g) For multiple-leg slings used with nonsymmetrical loads, an analysis by a qualified person should be performed to prevent overloading of any leg.

(h) Multiple-leg slings shall be selected according to the sling's rated load based on the specific angles as stated on the sling's identification. The rated load for use at other angles shall be provided by the sling manufacturer or a qualified person.

(i) Slings shall not be used at an angle of loading less than 30 deg except as recommended by the sling manufacturer or a qualified person.

(j) When a sling leg is used as a basket hitch with the lower connector (hook) attaching to the master link (upper connector), the basket hitch rating shall be limited to its single-leg rating, unless the master link is rated to accommodate that configuration.

(k) Fittings shall be of a shape and size to ensure that they are properly seated in the hook, shackle, or load-handling device.

9-1.10.2 Cautions to Personnel

(a) All portions of the human body shall be kept from between the sling and the load, and from between the sling and the hook, shackle, or other load-handling device.

(b) Personnel should not stand in line with or next to the leg(s) of a sling that is under tension.

(c) Personnel shall not stand or pass under a suspended load.

(d) Personnel shall not ride the sling.

9-1.10.3 Effects of Environment

Slings should be stored in an area where they will not be subjected to mechanical damage, corrosive action, moisture, extreme temperatures, or kinking (see [Section 9-1.8](#)).

9-1.10.4 Rigging Practices

(a) Slings shall be shortened or adjusted only by methods approved by the sling manufacturer or a qualified person.

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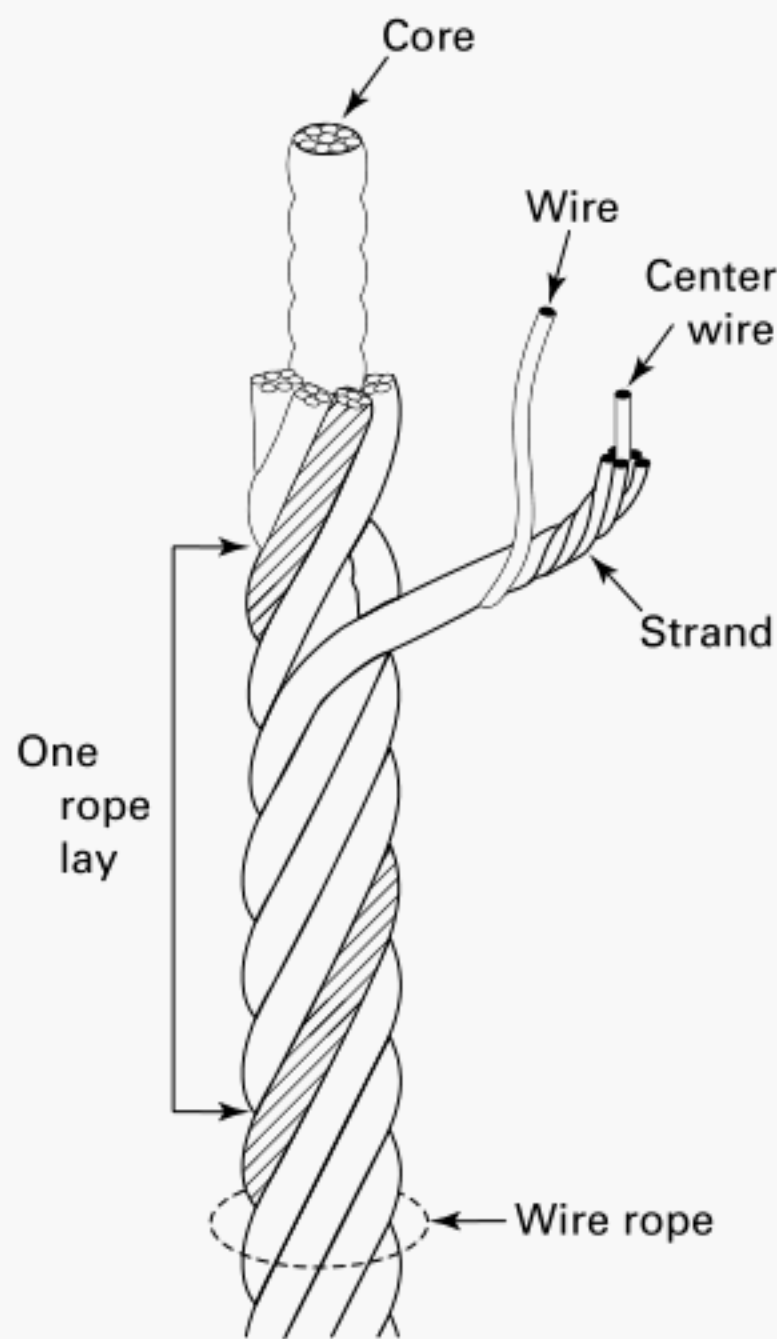
9-1.10.3 Effects of Environment

Slings should be stored in an area where they will not be subjected to mechanical damage, corrosive action, moisture, extreme temperatures, or kinking (see [Section 9-1.8](#)).

9-1.10.4 Rigging Practices

(a) Slings shall be shortened or adjusted only by methods approved by the sling manufacturer or a qualified person.

(21)

Figure 9-2.0-2 Wire Rope

9-2.3.2 Configurations

(a) Single-leg slings and two-leg, three-leg, and four-leg bridle slings used in straight-line, choker, and basket hitches are covered by this Chapter.

NOTE: A straight-line hitch is commonly referred to as a vertical hitch.

(b) Slings made of rope with 6×19 and 6×36 classification and cable-laid slings shall have a minimum clear length of rope 10 times the rope diameter between splices, sleeves, or end fittings (see Figure 9-2.3.2-1), unless approved by the manufacturer or a qualified person.

(c) Braided slings shall have a minimum clear length of rope 40 times the component rope diameter between the loops or end fittings (see Figure 9-2.3.2-2), unless approved by the manufacturer or a qualified person.

(d) Grommets and endless slings shall have a minimum circumferential length of 96 times the body diameter of the grommet or endless sling unless approved by the manufacturer or a qualified person.

(e) Other configurations may be used. When used, the sling manufacturer or a qualified person shall provide specific data. These slings shall comply with all other requirements of this Chapter.

SECTION 9-2.4: DESIGN FACTOR

The design factor for wire rope slings shall be a minimum of 5.

SECTION 9-2.5: RATED LOAD

(21)

(a) The sling manufacturer shall establish the sling's rated load.

(b) At a minimum, the rated load shall be based on the following factors:

- (1) component strength
- (2) number of legs
- (3) design factor
- (4) type of hitch
- (5) angle of loading (see Figure 9-2.5-1)
- (6) fabrication efficiency
- (7) connection hardware shape and size

SECTION 9-2.6: PROOF TEST REQUIREMENTS

9-2.6.1 General

(21)

(a) Prior to initial use, all new swaged socket, poured socket, or turnback swaged eye type slings, and mechanical joint endless wire rope slings shall be proof tested by the sling manufacturer or a qualified person.

(b) Prior to initial use, all repaired slings shall be proof tested by the sling manufacturer or a qualified person.

(c) New wire rope slings incorporating previously used or welded fittings shall have the fittings proof tested before or after fabrication of the completed sling.

(d) All other new wire rope slings are not required to be proof tested unless specified by the purchaser.

9-2.6.2 Proof Load Requirements

(a) For single- or multiple-leg slings and endless slings, each leg shall be proof loaded to the following load requirements based on the fabrication method:

(1) *Mechanical Splice Slings.* The proof load shall be a minimum of 2 times and a maximum of 2.5 times the single-leg straight-line hitch rated load.

(2) *Swaged Socket and Poured Socket Slings.* The proof load shall be a minimum of 2 times and a maximum of 2.5 times the single-leg straight-line hitch rated load.

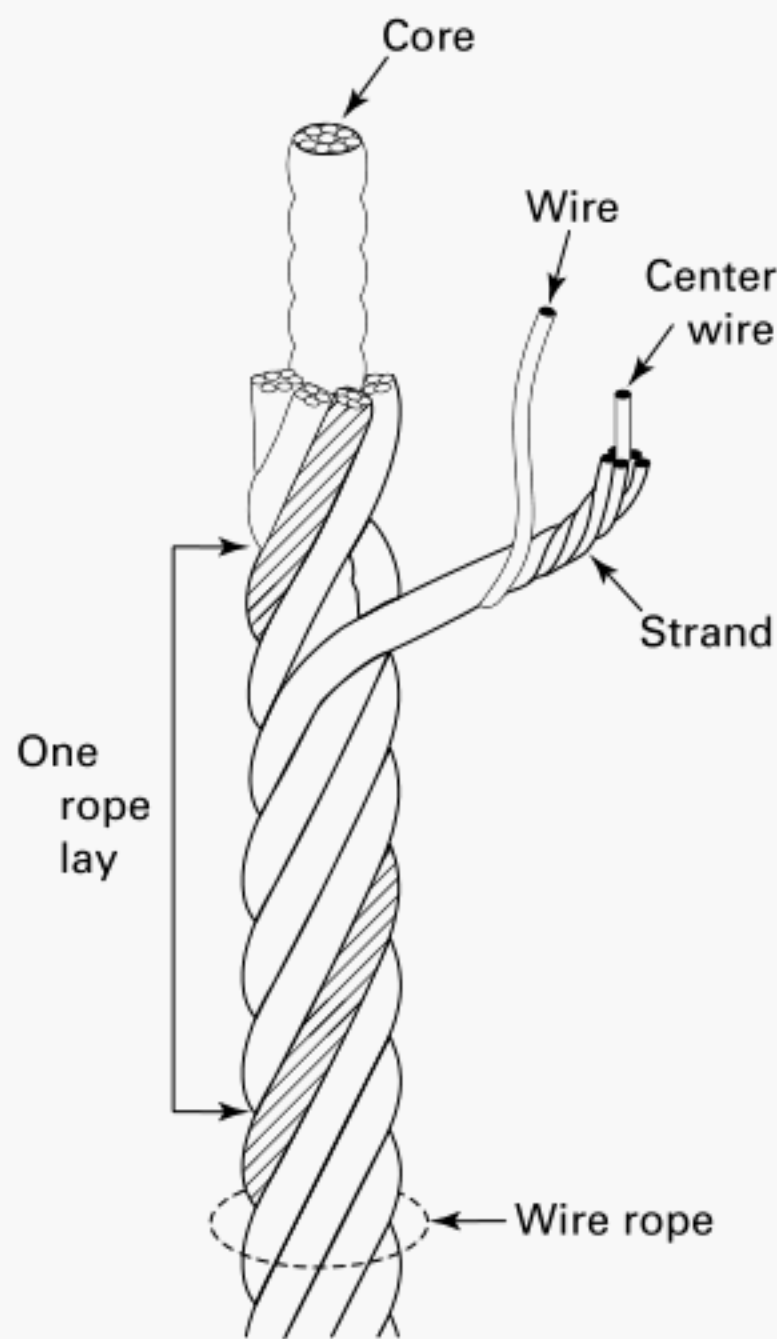
(3) *Hand-Tucked Slings.* If proof tested, the proof load shall be a minimum of 1 times and a maximum of 1.25 times the single-leg straight-line hitch rated load.

(b) The proof load for components (fittings) attached to single legs shall be the same as the requirement for single-leg slings in (a).

(c) Master links for two-leg bridle slings shall be proof loaded to a minimum of 4 times the single-leg straight-line hitch rated load.

(d) Master links for three-leg bridle slings shall be proof loaded to a minimum of 6 times the single-leg straight-line hitch rated load.

(e) Master links for four-leg bridle slings shall be proof loaded to a minimum of 8 times the single-leg straight-line hitch rated load.

Figure 9-2.0-2 Wire Rope

9-2.3.2 Configurations

(a) Single-leg slings and two-leg, three-leg, and four-leg bridle slings used in straight-line, choker, and basket hitches are covered by this Chapter.

NOTE: A straight-line hitch is commonly referred to as a vertical hitch.

(b) Slings made of rope with 6×19 and 6×36 classification and cable-laid slings shall have a minimum clear length of rope 10 times the rope diameter between splices, sleeves, or end fittings (see Figure 9-2.3.2-1), unless approved by the manufacturer or a qualified person.

(c) Braided slings shall have a minimum clear length of rope 40 times the component rope diameter between the loops or end fittings (see Figure 9-2.3.2-2), unless approved by the manufacturer or a qualified person.

(d) Grommets and endless slings shall have a minimum circumferential length of 96 times the body diameter of the grommet or endless sling unless approved by the manufacturer or a qualified person.

(e) Other configurations may be used. When used, the sling manufacturer or a qualified person shall provide specific data. These slings shall comply with all other requirements of this Chapter.

SECTION 9-2.4: DESIGN FACTOR

The design factor for wire rope slings shall be a minimum of 5.

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(21)

(a) The sling manufacturer shall establish the sling's rated load.

(b) At a minimum, the rated load shall be based on the following factors:

- (1) component strength
- (2) number of legs
- (3) design factor
- (4) type of hitch
- (5) angle of loading (see Figure 9-2.5-1)
- (6) fabrication efficiency
- (7) connection hardware shape and size

SECTION 9-2.6: PROOF TEST REQUIREMENTS

9-2.6.1 General

(21)

(a) Prior to initial use, all new swaged socket, poured socket, or turnback swaged eye type slings, and mechanical joint endless wire rope slings shall be proof tested by the sling manufacturer or a qualified person.

(b) Prior to initial use, all repaired slings shall be proof tested by the sling manufacturer or a qualified person.

(c) New wire rope slings incorporating previously used or welded fittings shall have the fittings proof tested before or after fabrication of the completed sling.

(d) All other new wire rope slings are not required to be proof tested unless specified by the purchaser.

9-2.6.2 Proof Load Requirements

(a) For single- or multiple-leg slings and endless slings, each leg shall be proof loaded to the following load requirements based on the fabrication method:

(1) *Mechanical Splice Slings.* The proof load shall be a minimum of 2 times and a maximum of 2.5 times the single-leg straight-line hitch rated load.

(2) *Swaged Socket and Poured Socket Slings.* The proof load shall be a minimum of 2 times and a maximum of 2.5 times the single-leg straight-line hitch rated load.

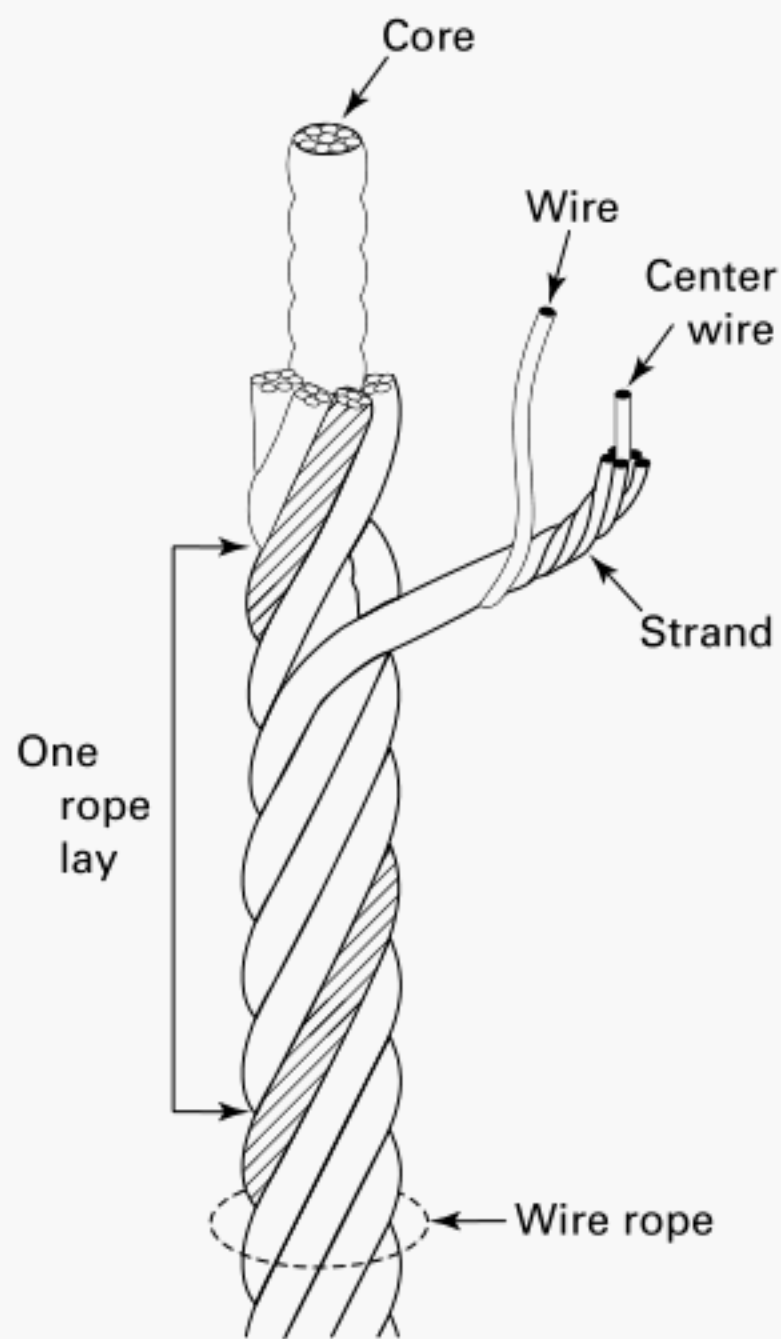
(3) *Hand-Tucked Slings.* If proof tested, the proof load shall be a minimum of 1 times and a maximum of 1.25 times the single-leg straight-line hitch rated load.

(b) The proof load for components (fittings) attached to single legs shall be the same as the requirement for single-leg slings in (a).

(c) Master links for two-leg bridle slings shall be proof loaded to a minimum of 4 times the single-leg straight-line hitch rated load.

(d) Master links for three-leg bridle slings shall be proof loaded to a minimum of 6 times the single-leg straight-line hitch rated load.

(e) Master links for four-leg bridle slings shall be proof loaded to a minimum of 8 times the single-leg straight-line hitch rated load.

Figure 9-2.0-2 Wire Rope

9-2.3.2 Configurations

(a) Single-leg slings and two-leg, three-leg, and four-leg bridle slings used in straight-line, choker, and basket hitches are covered by this Chapter.

NOTE: A straight-line hitch is commonly referred to as a vertical hitch.

(b) Slings made of rope with 6×19 and 6×36 classification and cable-laid slings shall have a minimum clear length of rope 10 times the rope diameter between splices, sleeves, or end fittings (see Figure 9-2.3.2-1), unless approved by the manufacturer or a qualified person.

(c) Braided slings shall have a minimum clear length of rope 40 times the component rope diameter between the loops or end fittings (see Figure 9-2.3.2-2), unless approved by the manufacturer or a qualified person.

(d) Grommets and endless slings shall have a minimum circumferential length of 96 times the body diameter of the grommet or endless sling unless approved by the manufacturer or a qualified person.

(e) Other configurations may be used. When used, the sling manufacturer or a qualified person shall provide specific data. These slings shall comply with all other requirements of this Chapter.

SECTION 9-2.4: DESIGN FACTOR

The design factor for wire rope slings shall be a minimum of 5.

SECTION 9-2.5: RATED LOAD

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(a) The sling manufacturer shall establish the sling's rated load.

(b) At a minimum, the rated load shall be based on the following factors:

- (1) component strength
- (2) number of legs
- (3) design factor
- (4) type of hitch
- (5) angle of loading (see Figure 9-2.5-1)
- (6) fabrication efficiency
- (7) connection hardware shape and size

SECTION 9-2.6: PROOF TEST REQUIREMENTS

9-2.6.1 General

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(a) Prior to initial use, all new swaged socket, poured socket, or turnback swaged eye type slings, and mechanical joint endless wire rope slings shall be proof tested by the sling manufacturer or a qualified person.

(b) Prior to initial use, all repaired slings shall be proof tested by the sling manufacturer or a qualified person.

(c) New wire rope slings incorporating previously used or welded fittings shall have the fittings proof tested before or after fabrication of the completed sling.

(d) All other new wire rope slings are not required to be proof tested unless specified by the purchaser.

9-2.6.2 Proof Load Requirements

(a) For single- or multiple-leg slings and endless slings, each leg shall be proof loaded to the following load requirements based on the fabrication method:

(1) *Mechanical Splice Slings.* The proof load shall be a minimum of 2 times and a maximum of 2.5 times the single-leg straight-line hitch rated load.

(2) *Swaged Socket and Poured Socket Slings.* The proof load shall be a minimum of 2 times and a maximum of 2.5 times the single-leg straight-line hitch rated load.

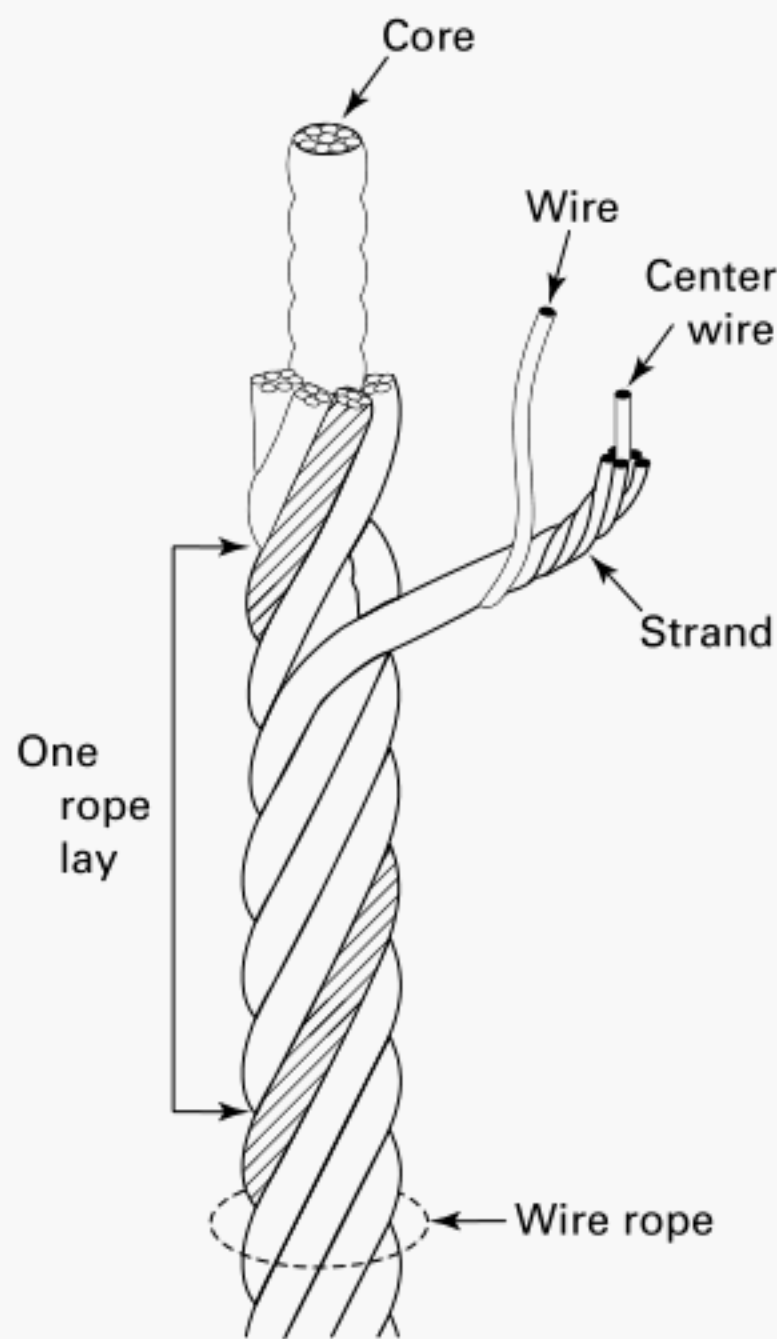
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(b) The proof load for components (fittings) attached to single legs shall be the same as the requirement for single-leg slings in (a).

(c) Master links for two-leg bridle slings shall be proof loaded to a minimum of 4 times the single-leg straight-line hitch rated load.

(d) Master links for three-leg bridle slings shall be proof loaded to a minimum of 6 times the single-leg straight-line hitch rated load.

(e) Master links for four-leg bridle slings shall be proof loaded to a minimum of 8 times the single-leg straight-line hitch rated load.

Figure 9-2.0-2 Wire Rope

9-2.3.2 Configurations

(a) Single-leg slings and two-leg, three-leg, and four-leg bridle slings used in straight-line, choker, and basket hitches are covered by this Chapter.

NOTE: A straight-line hitch is commonly referred to as a vertical hitch.

(b) Slings made of rope with 6×19 and 6×36 classification and cable-laid slings shall have a minimum clear length of rope 10 times the rope diameter between splices, sleeves, or end fittings (see Figure 9-2.3.2-1), unless approved by the manufacturer or a qualified person.

(c) Braided slings shall have a minimum clear length of rope 40 times the component rope diameter between the loops or end fittings (see Figure 9-2.3.2-2), unless approved by the manufacturer or a qualified person.

(d) Grommets and endless slings shall have a minimum circumferential length of 96 times the body diameter of the grommet or endless sling unless approved by the manufacturer or a qualified person.

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- (3) design factor
- (4) type of hitch
- (5) angle of loading (see Figure 9-2.5-1)
- (6) fabrication efficiency
- (7) connection hardware shape and size

SECTION 9-2.6: PROOF TEST REQUIREMENTS

9-2.6.1 General

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(a) Prior to initial use, all new swaged socket, poured socket, or turnback swaged eye type slings, and mechanical joint endless wire rope slings shall be proof tested by the sling manufacturer or a qualified person.

(b) Prior to initial use, all repaired slings shall be proof tested by the sling manufacturer or a qualified person.

(c) New wire rope slings incorporating previously used or welded fittings shall have the fittings proof tested before or after fabrication of the completed sling.

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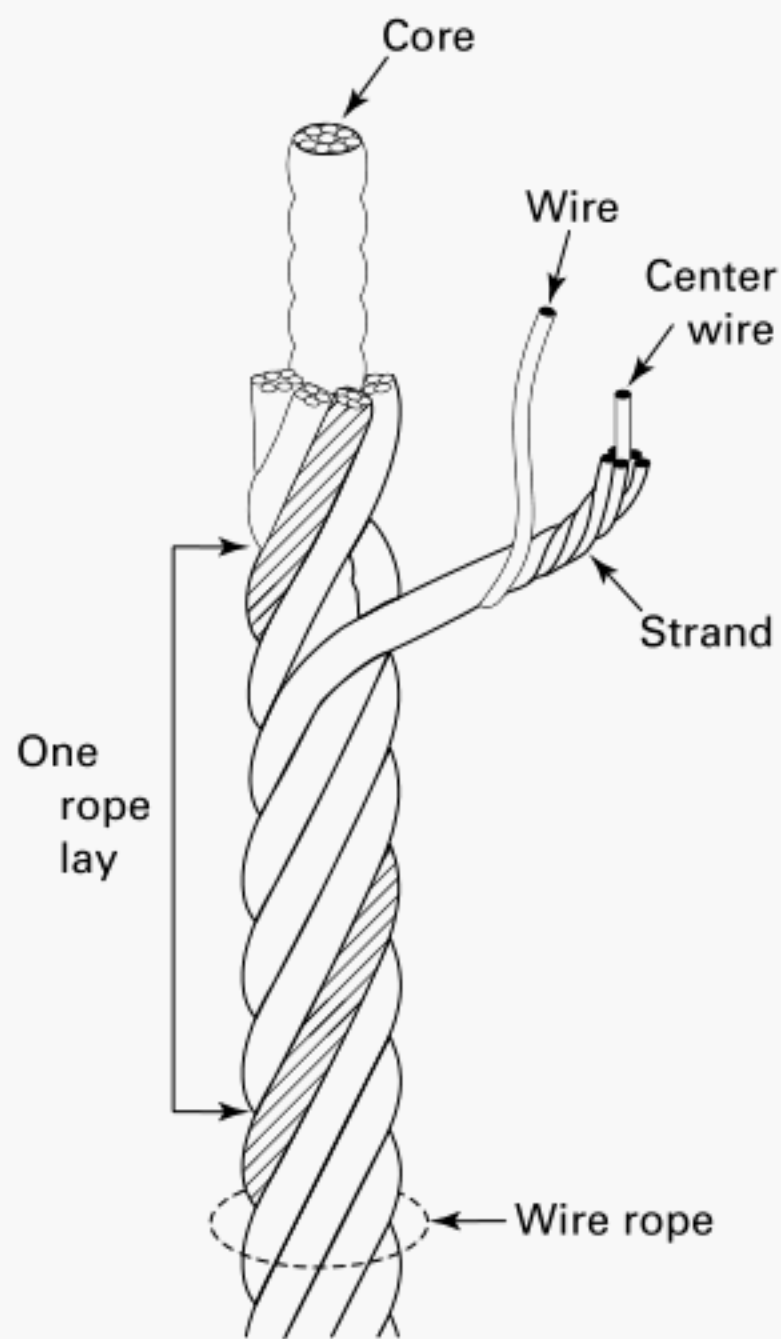
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(c) Master links for two-leg bridle slings shall be proof loaded to a minimum of 4 times the single-leg straight-line hitch rated load.

(d) Master links for three-leg bridle slings shall be proof loaded to a minimum of 6 times the single-leg straight-line hitch rated load.

(e) Master links for four-leg bridle slings shall be proof loaded to a minimum of 8 times the single-leg straight-line hitch rated load.

Figure 9-2.0-2 Wire Rope

9-2.3.2 Configurations

(a) Single-leg slings and two-leg, three-leg, and four-leg bridle slings used in straight-line, choker, and basket hitches are covered by this Chapter.

NOTE: A straight-line hitch is commonly referred to as a vertical hitch.

(b) Slings made of rope with 6×19 and 6×36 classification and cable-laid slings shall have a minimum clear length of rope 10 times the rope diameter between splices, sleeves, or end fittings (see Figure 9-2.3.2-1), unless approved by the manufacturer or a qualified person.

(c) Braided slings shall have a minimum clear length of rope 40 times the component rope diameter between the loops or end fittings (see Figure 9-2.3.2-2), unless approved by the manufacturer or a qualified person.

(d) Grommets and endless slings shall have a minimum circumferential length of 96 times the body diameter of the grommet or endless sling unless approved by the manufacturer or a qualified person.

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- (4) type of hitch
- (5) angle of loading (see Figure 9-2.5-1)
- (6) fabrication efficiency
- (7) connection hardware shape and size

SECTION 9-2.6: PROOF TEST REQUIREMENTS

9-2.6.1 General

(21)

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(b) Prior to initial use, all repaired slings shall be proof tested by the sling manufacturer or a qualified person.

(c) New wire rope slings incorporating previously used or welded fittings shall have the fittings proof tested before or after fabrication of the completed sling.

(d) All other new wire rope slings are not required to be proof tested unless specified by the purchaser.

9-2.6.2 Proof Load Requirements

(a) For single- or multiple-leg slings and endless slings, each leg shall be proof loaded to the following load requirements based on the fabrication method:

(1) *Mechanical Splice Slings.* The proof load shall be a minimum of 2 times and a maximum of 2.5 times the single-leg straight-line hitch rated load.

(2) *Swaged Socket and Poured Socket Slings.* The proof load shall be a minimum of 2 times and a maximum of 2.5 times the single-leg straight-line hitch rated load.

(3) *Hand-Tucked Slings.* If proof tested, the proof load shall be a minimum of 1 times and a maximum of 1.25 times the single-leg straight-line hitch rated load.

(b) The proof load for components (fittings) attached to single legs shall be the same as the requirement for single-leg slings in (a).

(c) Master links for two-leg bridle slings shall be proof loaded to a minimum of 4 times the single-leg straight-line hitch rated load.

(d) Master links for three-leg bridle slings shall be proof loaded to a minimum of 6 times the single-leg straight-line hitch rated load.

(e) Master links for four-leg bridle slings shall be proof loaded to a minimum of 8 times the single-leg straight-line hitch rated load.

(l) Slings should not be dragged on the floor or over an abrasive surface.

(m) In a choker hitch, the choke point should only be on the sling body, not on a splice or fitting.

(n) Slings should not be constricted, bunched, or pinched by the load, hook, or any fitting.

(o) The load applied to the hook should be centered in the base (bowl) of the hook to prevent point loading on the hook, unless the hook is designed for point loading.

(p) An object in the eye of a sling should not be wider than one half the length of the eye nor less than the nominal sling diameter.

(q) When a hand-tucked sling is used, the sling, load, or load-handling device shall be prevented from rotating.

(l) Slings should not be dragged on the floor or over an abrasive surface.

(m) In a choker hitch, the choke point should only be on the sling body, not on a splice or fitting.

(n) Slings should not be constricted, bunched, or pinched by the load, hook, or any fitting.

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(o) The load applied to the hook should be centered in the base (bowl) of the hook to prevent point loading on the hook, unless the hook is designed for point loading.

(p) An object in the eye of a sling should not be wider than one half the length of the eye nor less than the nominal sling diameter.

(q) When a hand-tucked sling is used, the sling, load, or load-handling device shall be prevented from rotating.

(b) rated load for at least one hitch type and the angle upon which it is based

(c) individual sling identification (e.g., serial number)

9-3.7.2 Initial Sling Identification

Sling identification shall be done by the sling manufacturer.

9-3.7.3 Maintenance of Sling Identification

Sling identification should be maintained by the user so as to be legible during the life of the sling.

9-3.7.4 Replacement of Sling Identification

Replacement of the sling identification shall be considered a repair as specified in [paras. 9-3.9.6\(a\)](#) and [9-3.9.6\(b\)](#). Additional proof testing is not required.

SECTION 9-3.8: EFFECTS OF ENVIRONMENT

9-3.8.1 Temperature

(a) When slings are used at temperatures above 550°F (228°C) or below -20°F (-29°C), the sling manufacturer should be consulted.

(b) If the sling contains any coatings that change the temperature range of the sling, the sling manufacturer shall provide the revised temperature range.

9-3.8.2 Chemically Active Environments

The strength of metal mesh slings may be degraded by chemically active environments. This includes exposure to chemicals in the form of solids, liquids, gases, vapors, or fumes. The sling manufacturer or a qualified person should be consulted before slings are used in chemically active environments.

SECTION 9-3.9: INSPECTION, REMOVAL, AND REPAIR

9-3.9.1 General

All inspections shall be performed by a designated person. Any deficiency identified shall be examined and a determination made by a qualified person as to whether it constitutes a hazard, and if so, what additional steps need to be taken to address the hazard.

9-3.9.2 Initial Inspection

Prior to use, each new, altered, modified, or repaired sling shall be inspected to verify compliance with the applicable provisions of this Chapter. A written record of the inspection referencing the individual sling identification is required.

9-3.9.3 Frequent Inspection

(a) Each shift, before the sling is used, a visual inspection for damage shall be performed. Slings used in severe or special service should be inspected before each use.

(b) Slings found with conditions such as those listed in [para. 9-3.9.5](#) shall be removed from service. Slings shall not be returned to service until approved by a qualified person.

(c) Written records are not required for frequent inspections.

9-3.9.4 Periodic Inspection

(a) A complete inspection for damage to the sling shall be performed. Inspection shall be conducted on the entire length, including welded or brazed joints and fittings. Slings found with conditions such as those listed in [para. 9-3.9.5](#) shall be removed from service. Slings shall not be returned to service until approved by a qualified person.

(b) *Periodic Inspection Frequency.* Periodic inspection intervals shall not exceed 1 yr [see [\(d\)](#)]. The frequency of periodic inspections should be based on

- (1) frequency of sling use
- (2) severity of service conditions
- (3) nature of load-handling activities
- (4) experience gained on the service life of slings used in similar circumstances

(c) Guidelines for the time intervals are

- (1) normal service — yearly
- (2) severe service — monthly to quarterly
- (3) special service — as recommended by a qualified person

(d) Periodic inspection is not required for a sling that is in storage or idle. However, if more than 1 yr has passed since the last periodic inspection, the sling shall be inspected in accordance with the requirements listed in [\(a\)](#) and [\(e\)](#) before being placed back into service.

(e) A written record of the most recent periodic inspection shall be maintained and shall include the condition of the sling.

9-3.9.5 Removal Criteria

A metal mesh sling shall be removed from service if any of the following conditions are present:

(a) missing or illegible sling identification (see [Section 9-3.7](#))

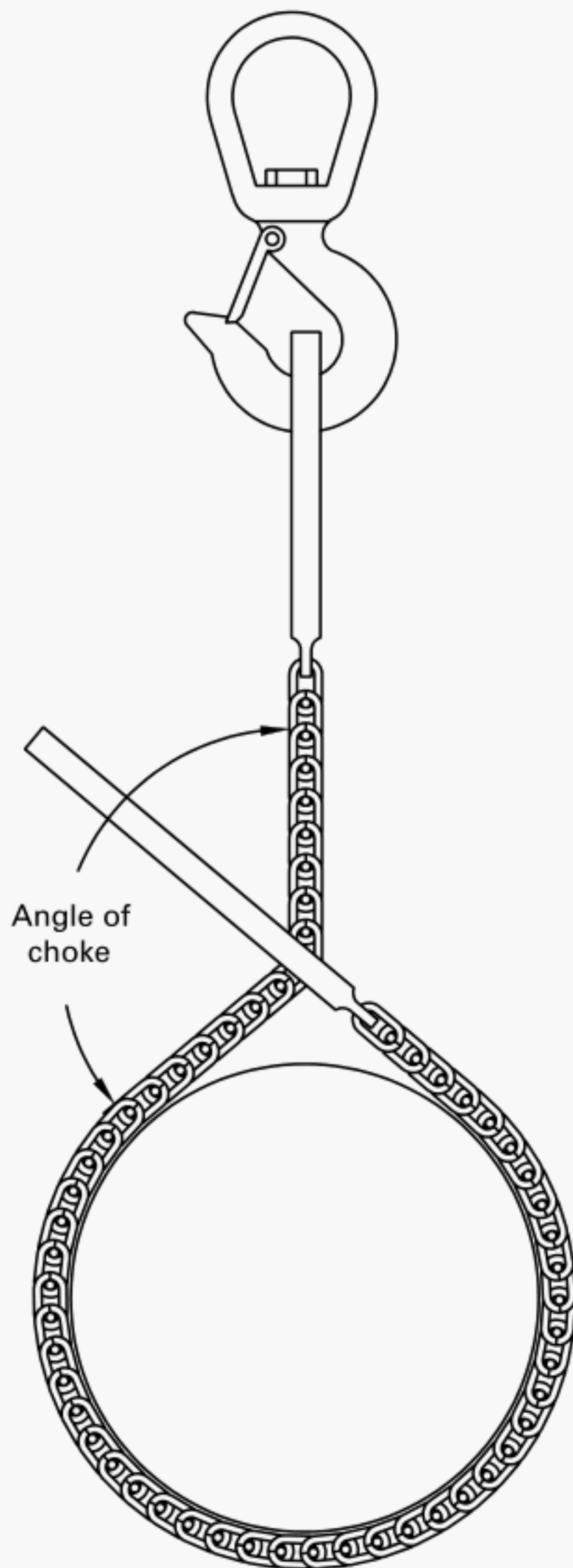
(b) broken weld or a broken brazed joint along the sling edge

(c) broken wire in any part of the mesh

(d) reduction in wire diameter of 25% due to abrasion or 15% due to corrosion

(e) lack of flexibility due to distortion of the mesh

(f) distortion of the choker fitting so the depth of the slot is increased by more than 10%

Figure 9-3.10.1-1 Angle of Choke: Metal Mesh Slings

- (g) distortion of either end fitting so the width of the eye opening is decreased by more than 10%
- (h) a 15% reduction of the original cross-sectional area of any point around the hook opening of the end fitting
- (i) visible distortion of either end fitting out of its plane
- (j) cracked end fitting
- (k) slings in which the spirals are locked or without free articulation shall not be used
- (l) fittings that are pitted, corroded, cracked, bent, twisted, gouged, or broken
- (m) other conditions, including visible damage, that cause doubt as to the continued use of the sling

9-3.9.6 Repair

- (a) Slings shall be repaired only by the sling manufacturer or a qualified person.
- (b) A repaired sling shall be marked to identify the repairing entity per [Section 9-3.7](#).
- (c) Components used for sling repair shall comply with the provisions of this Chapter.
- (d) Cracked, broken, bent, or damaged components shall not be repaired; they shall be replaced.
- (e) All repairs shall comply with the proof test requirements of [Section 9-3.6](#).
- (f) Modifications or alterations to a sling shall conform to all repair provisions of this Chapter.

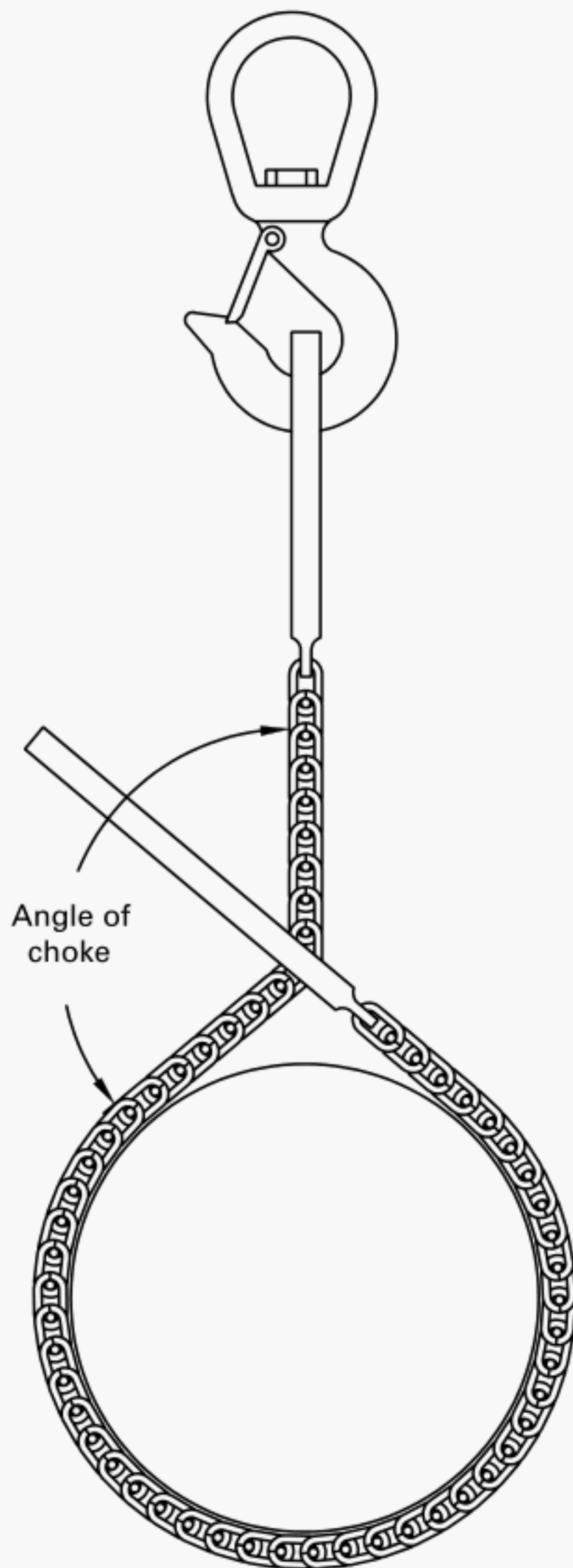
SECTION 9-3.10: OPERATING PRACTICES

9-3.10.1 Sling Selection

- (a) Slings that appear to be damaged shall not be used unless inspected and accepted as usable under [Section 9-3.9](#).
- (b) Slings having suitable characteristics for the type of load, hitch, and environment shall be selected in accordance with the requirements of [Sections 9-3.5](#) and [9-3.8](#).
- (c) The rated load of the sling shall not be exceeded.
- (d) When the choker hitch rating is not identified on the sling, the choker hitch rating shall be 100% of the sling's straight-line hitch rating, unless other ratings are provided by the sling manufacturer or a qualified person.
- (e) Rated loads for angles of choke less than 120 deg shall be determined by the sling manufacturer or a qualified person (see [Figure 9-3.10.1-1](#)).
- (f) Slings shall not be used at an angle of loading less than 30 deg except as recommended by the sling manufacturer or a qualified person (see [Figure 9-3.5-1](#)).
- (g) Fittings shall be of a shape and size to ensure that they are properly seated in the hook, shackle, or other load-handling device.
- (h) Metal mesh slings shall not be used as bridles on suspended personnel platforms.

9-3.10.2 Cautions to Personnel

- (a) All portions of the human body shall be kept from between the sling and the load, and from between the sling and the hook, shackle, or other load-handling device.
- (b) Personnel should not stand in line with or next to the leg(s) of a sling that is under tension.
- (c) Personnel shall not stand or pass under a suspended load.
- (d) Personnel shall not ride the sling.

Figure 9-3.10.1-1 Angle of Choke: Metal Mesh Slings

- (g) distortion of either end fitting so the width of the eye opening is decreased by more than 10%
- (h) a 15% reduction of the original cross-sectional area of any point around the hook opening of the end fitting
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- (l) fittings that are pitted, corroded, cracked, bent, twisted, gouged, or broken
- (m) other conditions, including visible damage, that cause doubt as to the continued use of the sling

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- (a) Slings shall be repaired only by the sling manufacturer or a qualified person.
- (b) A repaired sling shall be marked to identify the repairing entity per [Section 9-3.7](#).
- (c) Components used for sling repair shall comply with the provisions of this Chapter.
- (d) Cracked, broken, bent, or damaged components shall not be repaired; they shall be replaced.
- (e) All repairs shall comply with the proof test requirements of [Section 9-3.6](#).
- (f) Modifications or alterations to a sling shall conform to all repair provisions of this Chapter.

SECTION 9-3.10: OPERATING PRACTICES

9-3.10.1 Sling Selection

- (a) Slings that appear to be damaged shall not be used unless inspected and accepted as usable under [Section 9-3.9](#).
- (b) Slings having suitable characteristics for the type of load, hitch, and environment shall be selected in accordance with the requirements of [Sections 9-3.5](#) and [9-3.8](#).
- (c) The rated load of the sling shall not be exceeded.
- (d) When the choker hitch rating is not identified on the sling, the choker hitch rating shall be 100% of the sling's straight-line hitch rating, unless other ratings are provided by the sling manufacturer or a qualified person.
- (e) Rated loads for angles of choke less than 120 deg shall be determined by the sling manufacturer or a qualified person (see [Figure 9-3.10.1-1](#)).
- (f) Slings shall not be used at an angle of loading less than 30 deg except as recommended by the sling manufacturer or a qualified person (see [Figure 9-3.5-1](#)).
- (g) Fittings shall be of a shape and size to ensure that they are properly seated in the hook, shackle, or other load-handling device.
- (h) Metal mesh slings shall not be used as bridles on suspended personnel platforms.

9-3.10.2 Cautions to Personnel

- (a) All portions of the human body shall be kept from between the sling and the load, and from between the sling and the hook, shackle, or other load-handling device.
- (b) Personnel should not stand in line with or next to the leg(s) of a sling that is under tension.
- (c) Personnel shall not stand or pass under a suspended load.
- (d) Personnel shall not ride the sling.

Chapter 9-4

Synthetic Rope Slings: Selection, Use, and Maintenance

SECTION 9-4.0: SCOPE

This Chapter includes provisions that apply to synthetic rope slings (see [Figure 9-4.0-1](#)).

SECTION 9-4.1: TRAINING

Synthetic rope sling users shall be trained in the selection, inspection, cautions to personnel, effects of environment, and rigging practices as covered by this Chapter.

SECTION 9-4.2: COMPONENTS

9-4.2.1 Synthetic Ropes

(a) Synthetic fiber materials covered for use in synthetic ropes are nylon and polyester. Rope constructions covered are three-strand laid, eight-strand plaited, single braided, and double braided. The rope constructions shall be manufactured and tested in accordance with one of the following applicable Cordage Institute specifications:

Rope Type	Designation
Nylon three-strand laid	CI 1303
Nylon eight-strand plaited	CI 1303
Nylon double braid	CI 1306
Polyester three-strand laid	CI 1304
Polyester eight-strand plaited	CI 1304
Polyester double braid	CI 1307
Polyester single braid	CI 1305

(b) Synthetic ropes shall be made of fibers that have been produced with an appropriate ultraviolet inhibitor.

9-4.2.2 Fittings

Fittings should be selected to meet the following requirements:

(a) Suitability of mechanical or socketed fittings shall be verified by a qualified person.

(b) The material shall be compatible with the mechanical and environmental requirements imposed on the sling.

(c) Fittings shall have sufficient strength to sustain twice the rated load of the sling without visible permanent deformation.

(d) Fitting surfaces in contact with the sling shall be finished to remove edges that could damage the sling.

(e) Thimbles shall have a minimum diameter at the bearing surface of at least 2 times the rope diameter.

(f) When employed, hooks shall meet the requirements of ASME B30.10.

(g) When employed, rigging hardware shall meet the requirements of ASME B30.26.

9-4.2.3 Other Components

Slings that employ synthetic ropes and fittings other than those listed in [paras. 9-4.2.1](#) and [9-4.2.2](#) may be used. When such components are employed, the sling manufacturer or a qualified person shall provide specific data regarding deviations from the applicable sections of this Chapter. These slings shall comply with all other requirements of this Chapter.

SECTION 9-4.3: FABRICATION AND CONFIGURATIONS

9-4.3.1 Fabrication

Hand splicing is the preferred method of fabricating slings. All splices shall be made in accordance with splicing instructions provided by the rope manufacturer or a qualified person. In addition, the following shall be observed:

(a) When forming an eye in three-strand and eight-strand synthetic ropes, a hand-tucked splice with no less than four full tucks shall be used. When forming an endless sling, a short splice containing at least six full tucks, three on each side of the center of the splice shall be used.

(b) Strand end tails in all tuck splices shall not be trimmed short (cut flush with the body of the rope). In cases where the projecting tails may be objectionable, the tails shall be tapered and buried into the body of the rope using two additional tucks.

(c) Synthetic rope slings shall have a minimum undisturbed length of rope of 10 times the rope diameter between the last tucks of tuck splices or between the ends of the buried tails or strands of other types of splices.

(d) Knots, clips, or clamps shall not be used to fabricate slings.

Chapter 9-4

Synthetic Rope Slings: Selection, Use, and Maintenance

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Polyester double braid	CI 1307
Polyester single braid	CI 1305

(b) Synthetic ropes shall be made of fibers that have been produced with an appropriate ultraviolet inhibitor.

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Fittings should be selected to meet the following requirements:

(a) Suitability of mechanical or socketed fittings shall be verified by a qualified person.

(b) The material shall be compatible with the mechanical and environmental requirements imposed on the sling.

(c) Fittings shall have sufficient strength to sustain twice the rated load of the sling without visible permanent deformation.

(d) Fitting surfaces in contact with the sling shall be finished to remove edges that could damage the sling.

(e) Thimbles shall have a minimum diameter at the bearing surface of at least 2 times the rope diameter.

(f) When employed, hooks shall meet the requirements of ASME B30.10.

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(b) Strand end tails in all tuck splices shall not be trimmed short (cut flush with the body of the rope). In cases where the projecting tails may be objectionable, the tails shall be tapered and buried into the body of the rope using two additional tucks.

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(b) Synthetic ropes shall be made of fibers that have been produced with an appropriate ultraviolet inhibitor.

9-4.2.2 Fittings

Fittings should be selected to meet the following requirements:

(a) Suitability of mechanical or socketed fittings shall be verified by a qualified person.

(b) The material shall be compatible with the mechanical and environmental requirements imposed on the sling.

(c) Fittings shall have sufficient strength to sustain twice the rated load of the sling without visible permanent deformation.

(d) Fitting surfaces in contact with the sling shall be finished to remove edges that could damage the sling.

(e) Thimbles shall have a minimum diameter at the bearing surface of at least 2 times the rope diameter.

(f) When employed, hooks shall meet the requirements of ASME B30.10.

(g) When employed, rigging hardware shall meet the requirements of ASME B30.26.

9-4.2.3 Other Components

Slings that employ synthetic ropes and fittings other than those listed in [paras. 9-4.2.1](#) and [9-4.2.2](#) may be used. When such components are employed, the sling manufacturer or a qualified person shall provide specific data regarding deviations from the applicable sections of this Chapter. These slings shall comply with all other requirements of this Chapter.

SECTION 9-4.3: FABRICATION AND CONFIGURATIONS

9-4.3.1 Fabrication

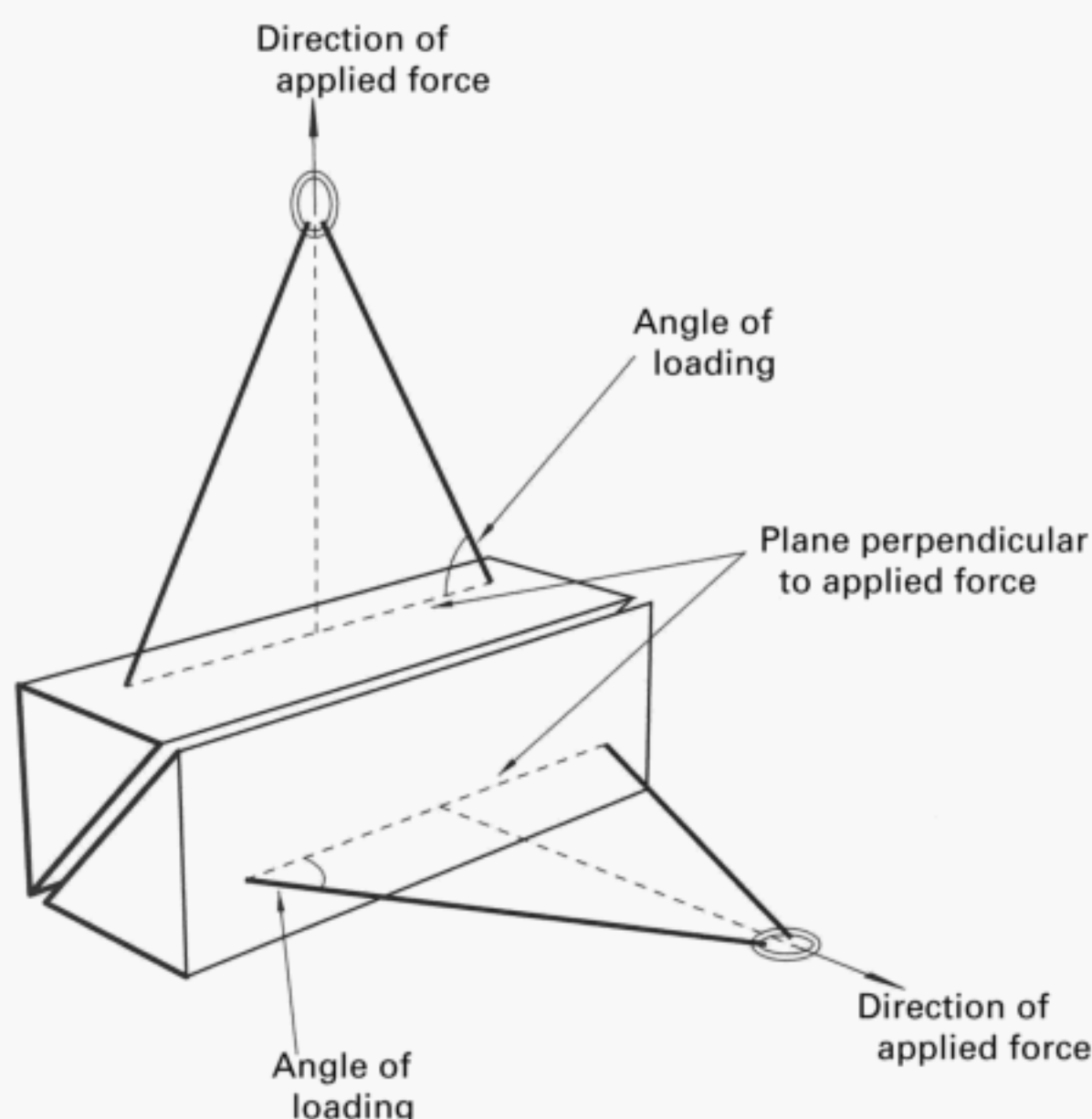
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(b) Strand end tails in all tuck splices shall not be trimmed short (cut flush with the body of the rope). In cases where the projecting tails may be objectionable, the tails shall be tapered and buried into the body of the rope using two additional tucks.

(c) Synthetic rope slings shall have a minimum undisturbed length of rope of 10 times the rope diameter between the last tucks of tuck splices or between the ends of the buried tails or strands of other types of splices.

(d) Knots, clips, or clamps shall not be used to fabricate slings.

Figure 9-4.5-2 Angle of Loading

(c) Master links for two-leg bridle slings shall be proof loaded to a minimum of 4 times the single-leg straight-line hitch rated load.

(d) Master links for three-leg bridle slings shall be proof loaded to a minimum of 6 times the single-leg straight-line hitch rated load.

(e) Master links for four-leg bridle slings shall be proof loaded to a minimum of 8 times the single-leg straight-line hitch rated load.

SECTION 9-4.7: SLING IDENTIFICATION

9-4.7.1 Identification Requirements

Each sling shall be marked to show

- (a) name or trademark of manufacturer, or if repaired, the entity performing repairs
- (b) manufacturer's code or stock number
- (c) rated load for at least one hitch type and the angle upon which it is based
- (d) type of fiber material
- (e) number of legs, if more than one

9-4.7.2 Initial Sling Identification

Sling identification shall be done by the sling manufacturer.

9-4.7.3 Maintenance of Sling Identification

Sling identification should be maintained by the user so as to be legible during the life of the sling.

9-4.7.4 Replacement of Sling Identification

Replacement of the sling identification shall be considered a repair as specified in [paras. 9-4.9.6\(a\)](#) and [9-4.9.6\(b\)](#). Additional proof testing is not required.

SECTION 9-4.8: EFFECTS OF ENVIRONMENT

9-4.8.1 Temperature

Polyester and nylon rope slings shall not be used in contact with objects or at temperatures above 194°F (90°C) or below -40°F (-40°C).

9-4.8.2 Chemically Active Environments

The strength of synthetic rope slings may be degraded by chemically active environments. This includes exposure to chemicals in the form of solids, liquids, gases, vapors, or fumes. The sling manufacturer or a qualified person should be consulted before slings are used in chemically active environments.

9-4.8.3 Sunlight and Ultraviolet Light

The strength of synthetic rope slings is degraded by exposure to sunlight or ultraviolet light. The sling manufacturer or a qualified person should be consulted for additional retirement or inspection requirements. For additional degradation information, see CI 2001-04.

SECTION 9-4.9: INSPECTION, REMOVAL, AND REPAIR

9-4.9.1 General

All inspections shall be performed by a designated person. Any deficiency identified shall be examined and a determination made by a qualified person as to whether it constitutes a hazard, and if so, what additional steps need to be taken to address the hazard.

9-4.9.2 Initial Inspection

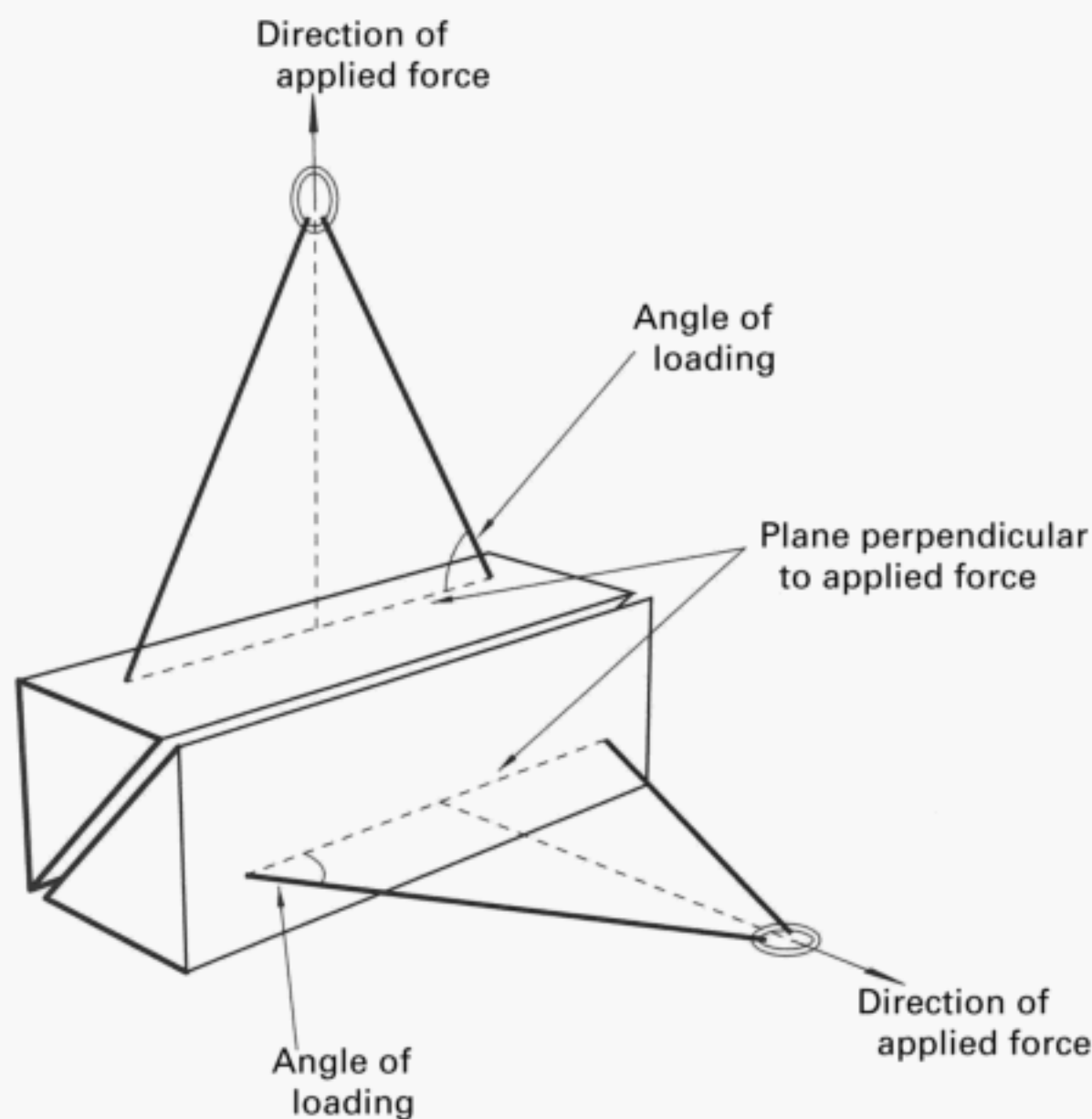
Prior to use, all new, altered, modified, or repaired slings shall be inspected to verify compliance with the applicable provisions of this Chapter. Written records are not required for the initial inspection.

9-4.9.3 Frequent Inspection

(a) Each shift, before the sling is used, a visual inspection for damage shall be performed. Slings used in severe or special service should be inspected before each use.

(b) Slings found with conditions such as those listed in [para. 9-4.9.5](#) shall be removed from service. Slings shall not be returned to service until approved by a qualified person.

(c) Written records are not required for frequent inspections.

Figure 9-4.5-2 Angle of Loading

(c) Master links for two-leg bridle slings shall be proof loaded to a minimum of 4 times the single-leg straight-line hitch rated load.

(d) Master links for three-leg bridle slings shall be proof loaded to a minimum of 6 times the single-leg straight-line hitch rated load.

(e) Master links for four-leg bridle slings shall be proof loaded to a minimum of 8 times the single-leg straight-line hitch rated load.

SECTION 9-4.7: SLING IDENTIFICATION

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Each sling shall be marked to show

- (a) name or trademark of manufacturer, or if repaired, the entity performing repairs
- (b) manufacturer's code or stock number
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- (e) number of legs, if more than one

9-4.7.2 Initial Sling Identification

Sling identification shall be done by the sling manufacturer.

9-4.7.3 Maintenance of Sling Identification

Sling identification should be maintained by the user so as to be legible during the life of the sling.

9-4.7.4 Replacement of Sling Identification

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The strength of synthetic rope slings is degraded by exposure to sunlight or ultraviolet light. The sling manufacturer or a qualified person should be consulted for additional retirement or inspection requirements. For additional degradation information, see CI 2001-04.

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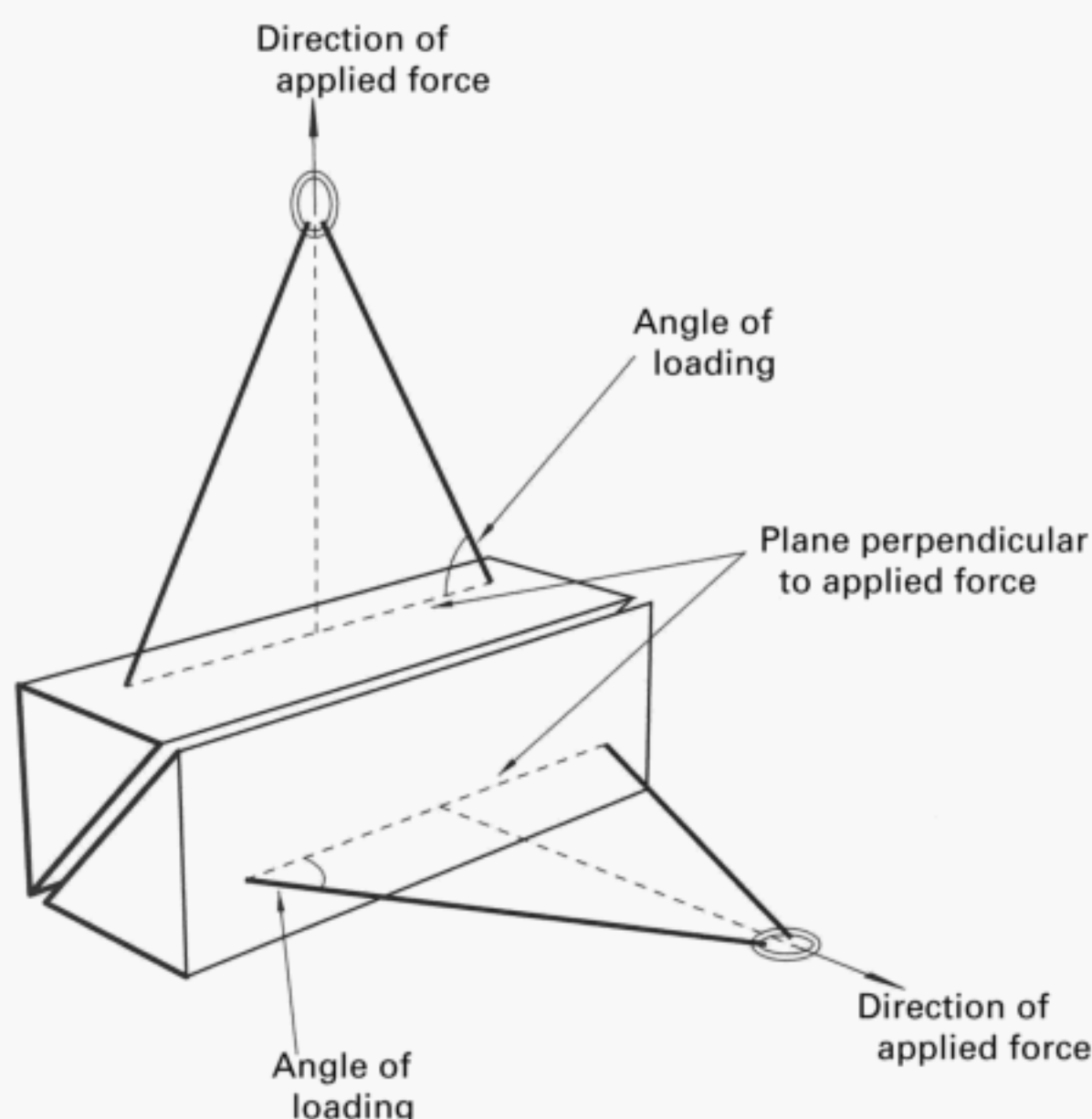
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(c) Written records are not required for frequent inspections.

Figure 9-4.5-2 Angle of Loading

(c) Master links for two-leg bridle slings shall be proof loaded to a minimum of 4 times the single-leg straight-line hitch rated load.

(d) Master links for three-leg bridle slings shall be proof loaded to a minimum of 6 times the single-leg straight-line hitch rated load.

(e) Master links for four-leg bridle slings shall be proof loaded to a minimum of 8 times the single-leg straight-line hitch rated load.

SECTION 9-4.7: SLING IDENTIFICATION

9-4.7.1 Identification Requirements

Each sling shall be marked to show

- (a) name or trademark of manufacturer, or if repaired, the entity performing repairs
- (b) manufacturer's code or stock number
- (c) rated load for at least one hitch type and the angle upon which it is based
- (d) type of fiber material
- (e) number of legs, if more than one

9-4.7.2 Initial Sling Identification

Sling identification shall be done by the sling manufacturer.

9-4.7.3 Maintenance of Sling Identification

Sling identification should be maintained by the user so as to be legible during the life of the sling.

9-4.7.4 Replacement of Sling Identification

Replacement of the sling identification shall be considered a repair as specified in [paras. 9-4.9.6\(a\)](#) and [9-4.9.6\(b\)](#). Additional proof testing is not required.

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(c) Written records are not required for frequent inspections.

(e) Synthetic rope slings shall not be used as bridles on suspended personnel platforms.

9-4.10.3 Effects of Environment

(a) Slings should be stored in an area where they will not be subjected to mechanical, chemical, or ultraviolet damage or extreme temperatures (see [Section 9-4.8](#)).

(b) Do not store nylon ropes in areas where they may become impregnated with rust.

(c) Slings exposed to salt water should be thoroughly rinsed with fresh water to prevent mechanical damage from salt crystals when the rope dries.

(d) When slings or their fittings are to be exposed to acidic or alkaline fumes, vapors, sprays, mists, or liquids, the sling manufacturer or a qualified person should be consulted (see [para. 9-4.8.2](#)).

(21) 9-4.10.4 Rigging Practices

(a) Slings shall be shortened or adjusted only by methods approved by the sling manufacturer or a qualified person.

(b) Slings shall not be shortened or lengthened by knotting or twisting.

(c) The sling shall be hitched in a manner providing control of the load.

(d) Slings in contact with edges, corners, protrusions, or abrasive surfaces shall be protected with a material of sufficient strength, thickness, and construction to prevent damage to the sling (see [Nonmandatory Appendix A](#)).

(e) Shock loading should be avoided.

(f) Loads should not be rested on the sling.

(g) Slings should not be pulled from under a load when the load is resting on the sling.

(h) Twisting and kinking shall be avoided.

(i) During load-handling activities, with or without load, personnel shall be alert for possible snagging.

(j) When using multiple basket or choker hitches, the load should be rigged to prevent the sling from slipping or sliding along the load.

(k) When lifting with a basket hitch, the legs of the sling should contain or support the load from the sides, above the center of gravity, so that the load remains under control.

(l) Slings should not be dragged on the floor or over an abrasive surface.

(m) In a choker hitch, the choke point should only be on the sling body, not on a splice or fitting.

(n) Slings should not be constricted, bunched, or pinched by the load, hook, or any fitting.

(o) The load applied to the hook should be centered in the base (bowl) of the hook to prevent point loading on the hook, unless the hook is designed for point loading.

(p) An object in the eye of a sling should not be wider than one-third the length of the eye.

(q) When a hand-tucked sling is used, the sling, load, or load-handling device shall be prevented from rotating.

(e) Synthetic rope slings shall not be used as bridles on suspended personnel platforms.

9-4.10.3 Effects of Environment

(a) Slings should be stored in an area where they will not be subjected to mechanical, chemical, or ultraviolet damage or extreme temperatures (see [Section 9-4.8](#)).

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(c) The sling shall be hitched in a manner providing control of the load.

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(l) Slings should not be dragged on the floor or over an abrasive surface.

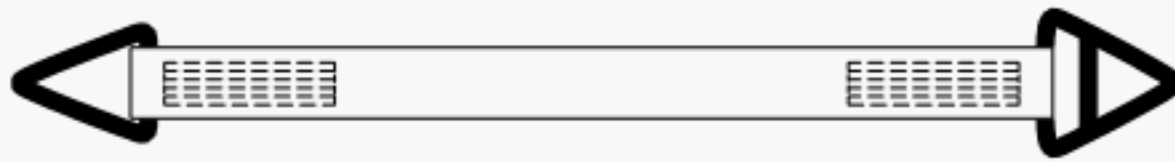
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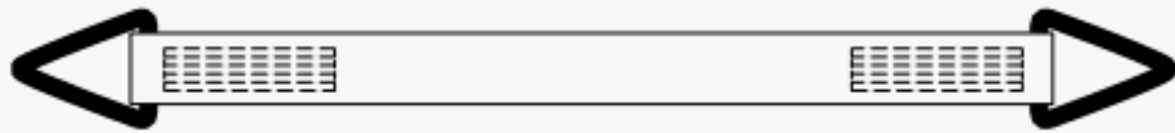
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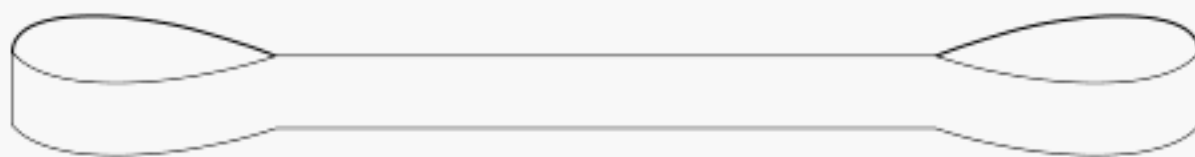
(q) When a hand-tucked sling is used, the sling, load, or load-handling device shall be prevented from rotating.

Figure 9-5.0-1 Synthetic Webbing Slings


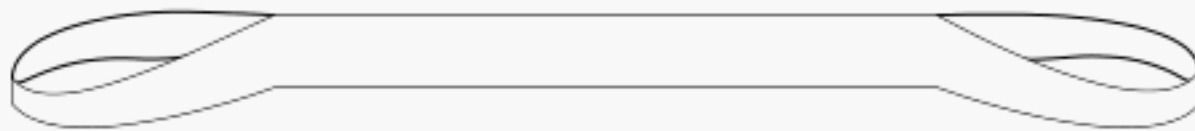
Sling made with a triangle fitting on one end and a slotted triangle choker fitting on the other end. It can be used in a straight-line, basket, or choker hitch.

Type I


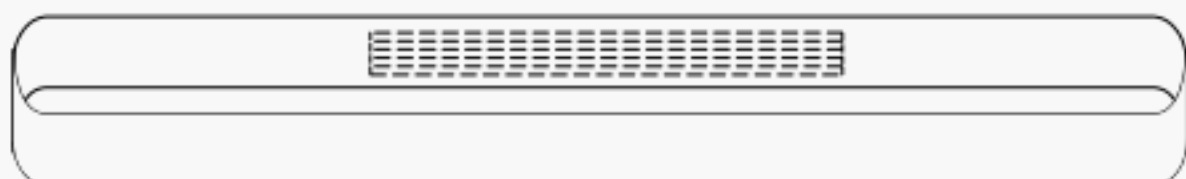
Sling made with a triangle fitting on both ends. It can be used in a straight-line or basket hitch only.

Type II


Sling made with a flat loop eye on each end with loop eye opening on same plane as sling body. This type of sling is sometimes called a flat eye-and-eye, eye-and-eye, or double-eye sling.

Type III


Sling made with both loop eyes formed as in Type III, except that the loop eyes are turned to form a loop eye that is at a right angle to the plane of the sling body. This type of sling is commonly referred to as a twisted-eye sling.

Type IV


Endless sling, sometimes referred to as a grommet. It is a continuous loop formed by joining the ends of the webbing together.

Type V


Return-eye (reversed-eye) sling is formed by using multiple widths of webbing held edge-to-edge. A wear pad is attached on one or both sides of the sling body and on one or both sides of the loop eyes to form a loop eye at each end which is at a right angle to the plane of the sling body.

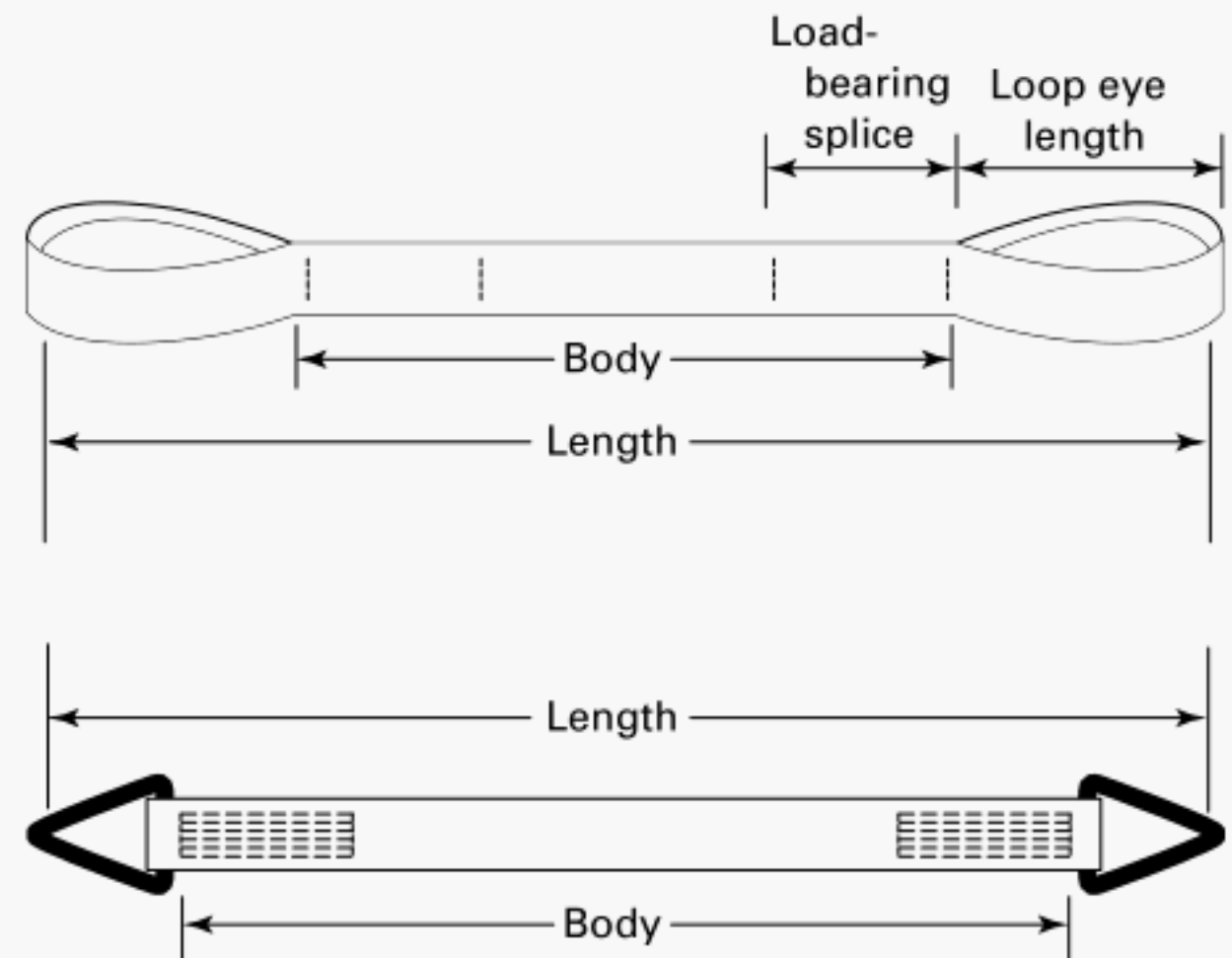
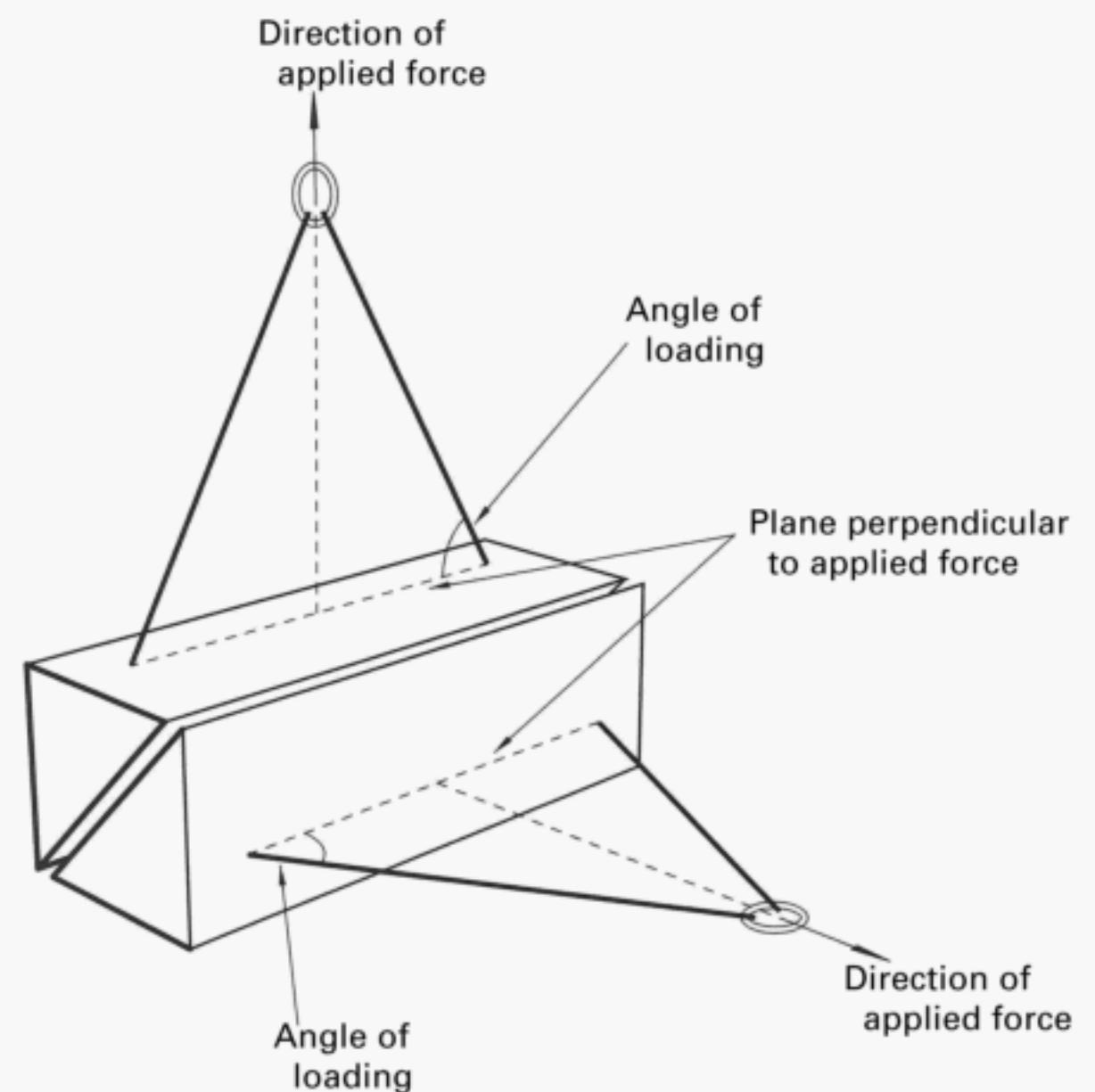
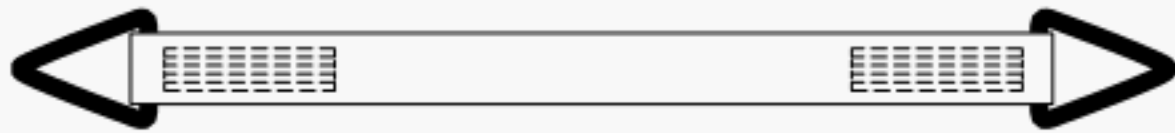
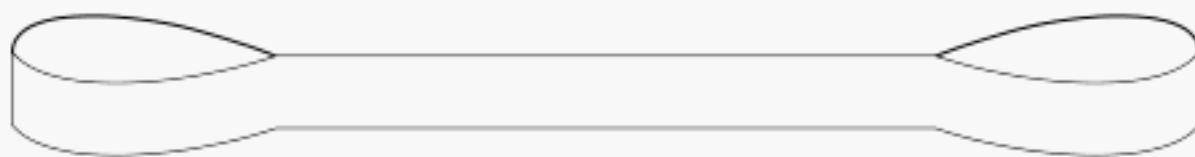
Type VI
Figure 9-5.0-2 Synthetic Webbing Sling Nomenclature

Figure 9-5.5-1 Angle of Loading


Figure 9-5.0-1 Synthetic Webbing Slings

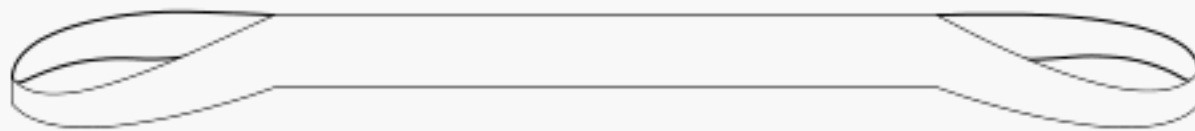

Sling made with a triangle fitting on one end and a slotted triangle choker fitting on the other end. It can be used in a straight-line, basket, or choker hitch.

Type I


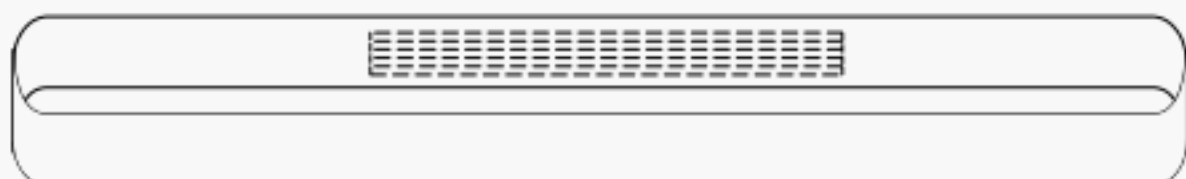
Sling made with a triangle fitting on both ends. It can be used in a straight-line or basket hitch only.

Type II


Sling made with a flat loop eye on each end with loop eye opening on same plane as sling body. This type of sling is sometimes called a flat eye-and-eye, eye-and-eye, or double-eye sling.

Type III


Sling made with both loop eyes formed as in Type III, except that the loop eyes are turned to form a loop eye that is at a right angle to the plane of the sling body. This type of sling is commonly referred to as a twisted-eye sling.

Type IV


Endless sling, sometimes referred to as a grommet. It is a continuous loop formed by joining the ends of the webbing together.

Type V


Return-eye (reversed-eye) sling is formed by using multiple widths of webbing held edge-to-edge. A wear pad is attached on one or both sides of the sling body and on one or both sides of the loop eyes to form a loop eye at each end which is at a right angle to the plane of the sling body.

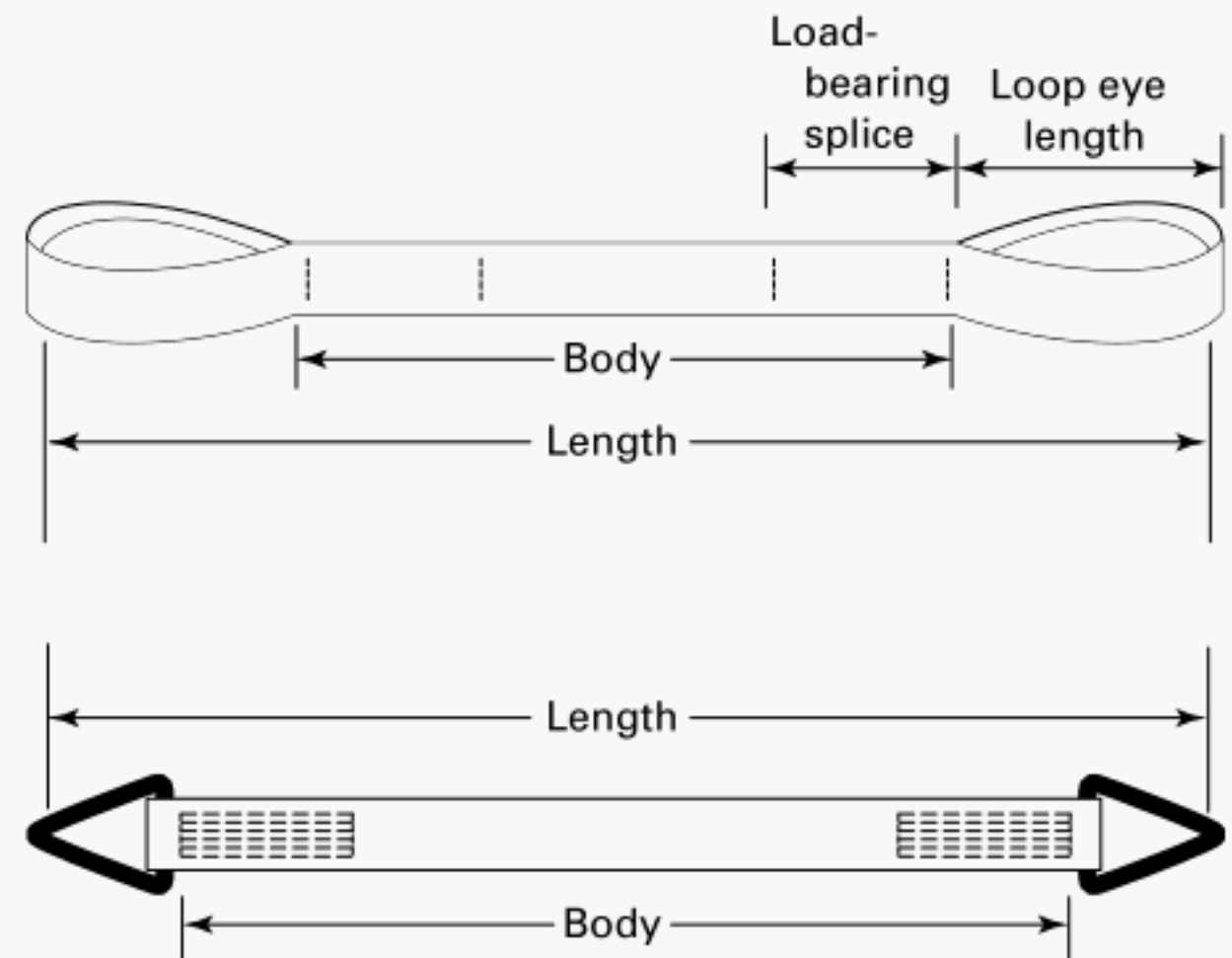
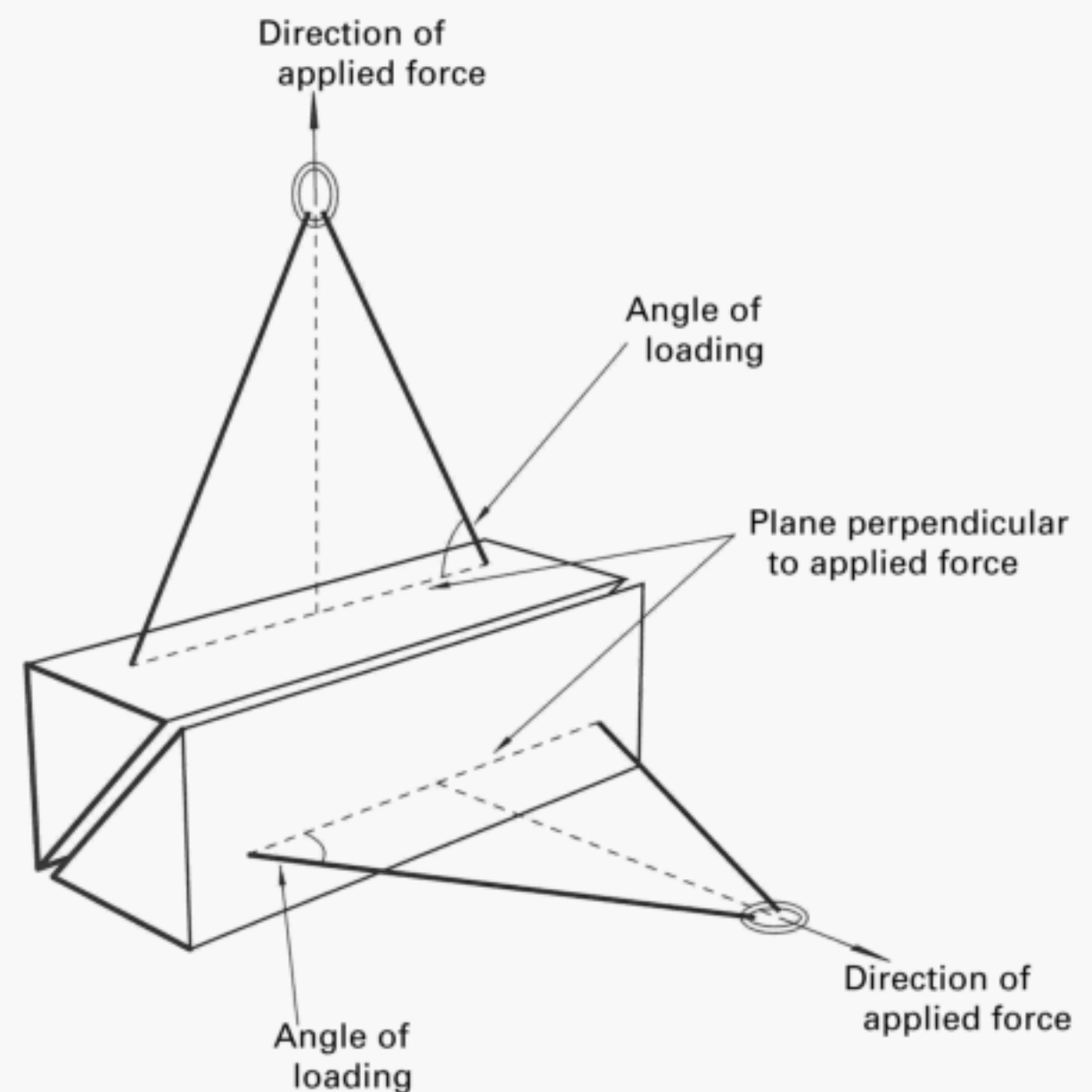
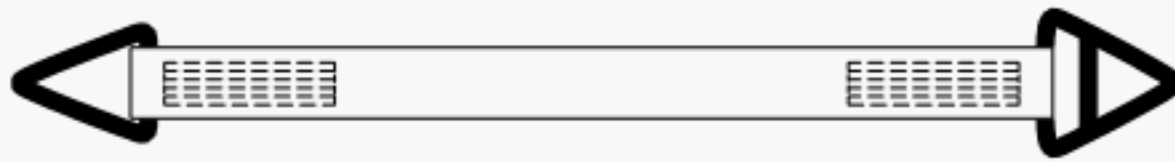
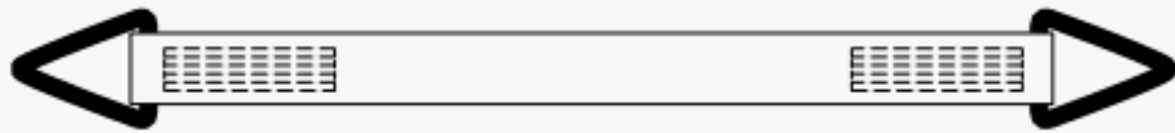
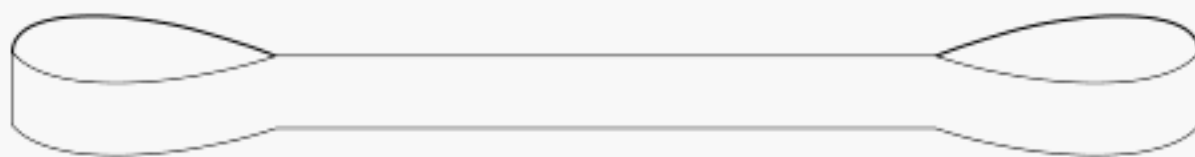
Type VI
Figure 9-5.0-2 Synthetic Webbing Sling Nomenclature

Figure 9-5.5-1 Angle of Loading


Figure 9-5.0-1 Synthetic Webbing Slings


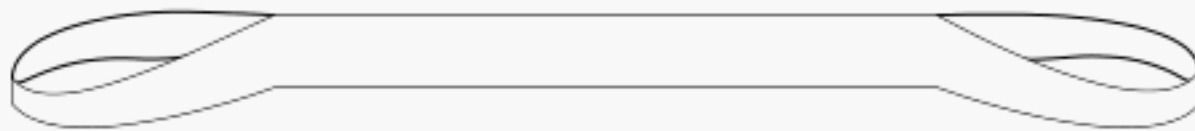
Sling made with a triangle fitting on one end and a slotted triangle choker fitting on the other end. It can be used in a straight-line, basket, or choker hitch.

Type I


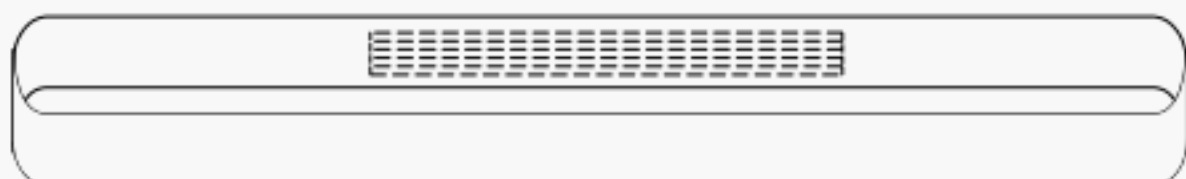
Sling made with a triangle fitting on both ends. It can be used in a straight-line or basket hitch only.

Type II


Sling made with a flat loop eye on each end with loop eye opening on same plane as sling body. This type of sling is sometimes called a flat eye-and-eye, eye-and-eye, or double-eye sling.

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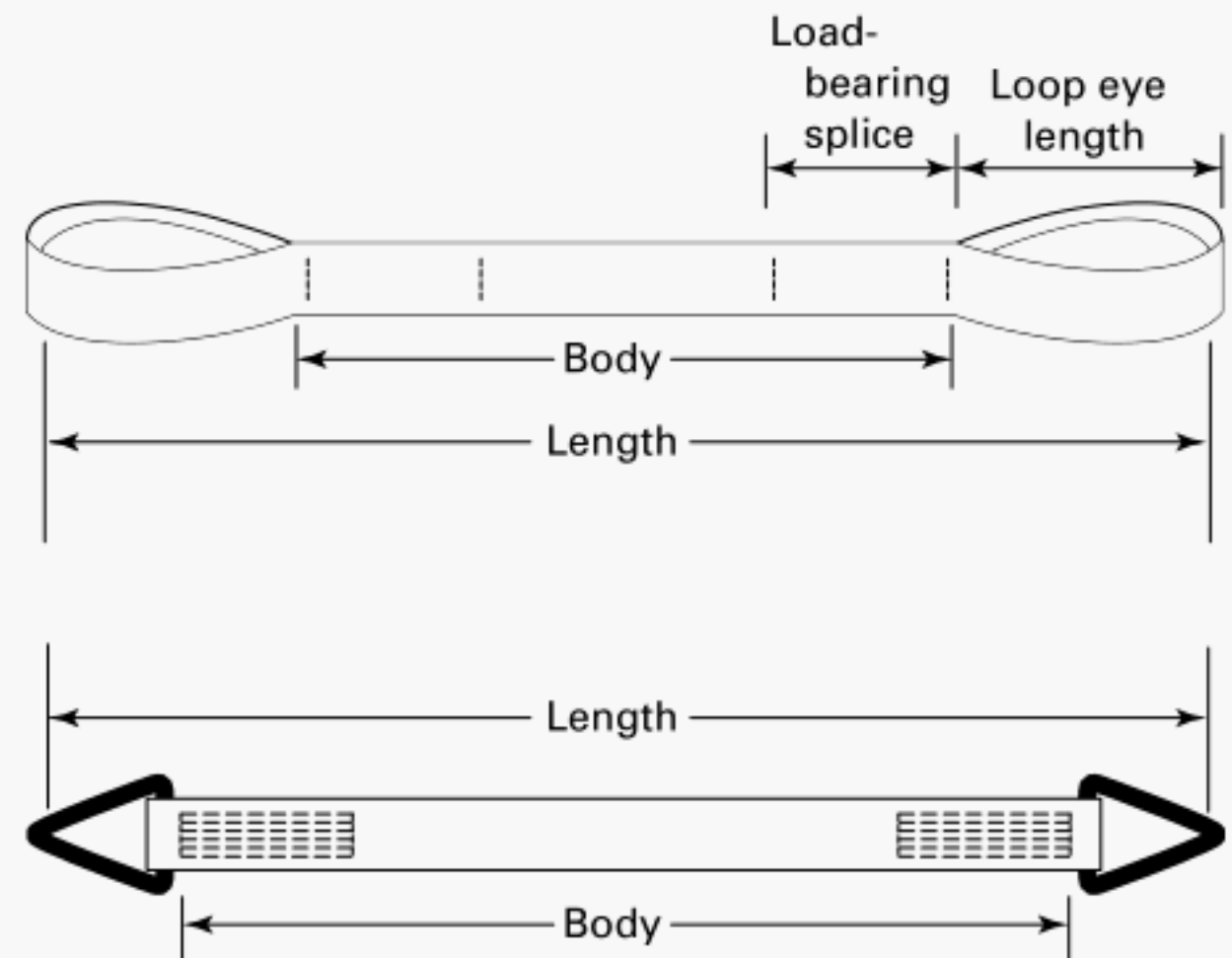
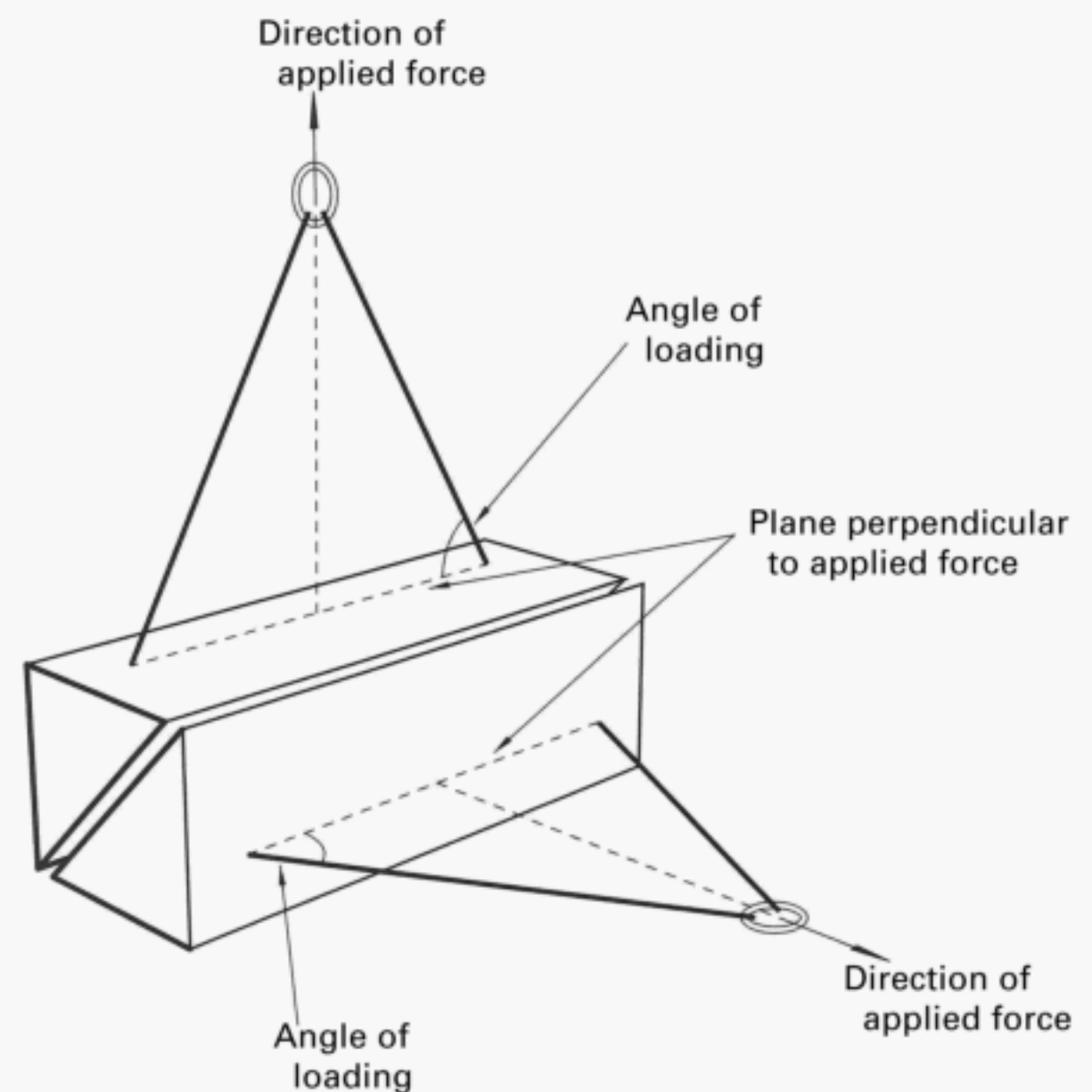
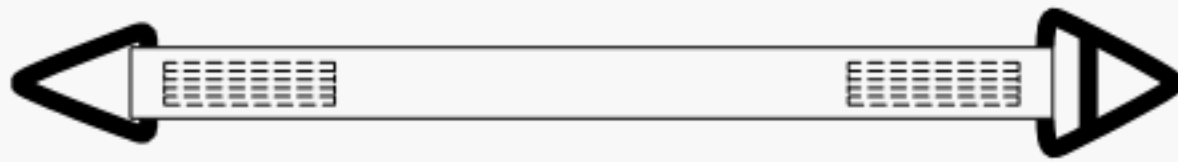
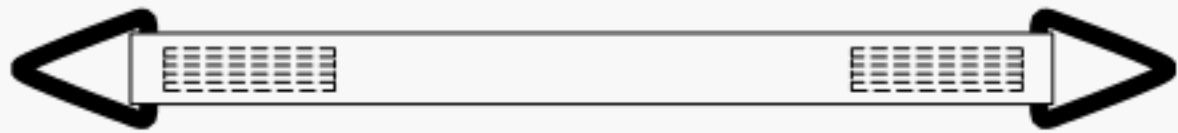
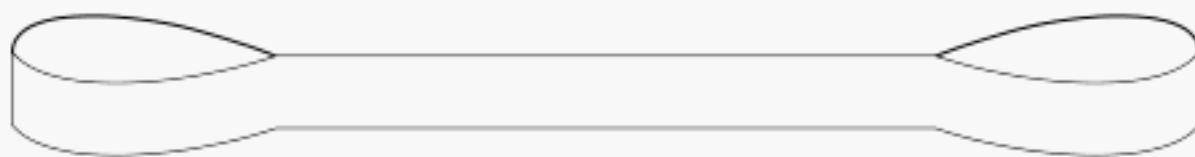
Type VI
Figure 9-5.0-2 Synthetic Webbing Sling Nomenclature

Figure 9-5.5-1 Angle of Loading


Figure 9-5.0-1 Synthetic Webbing Slings


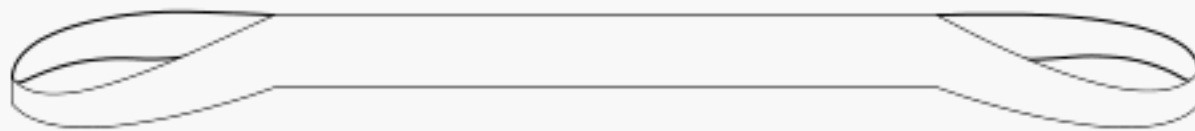
Sling made with a triangle fitting on one end and a slotted triangle choker fitting on the other end. It can be used in a straight-line, basket, or choker hitch.

Type I


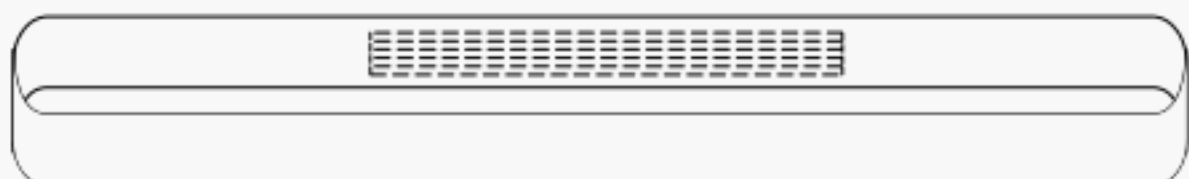
Sling made with a triangle fitting on both ends. It can be used in a straight-line or basket hitch only.

Type II


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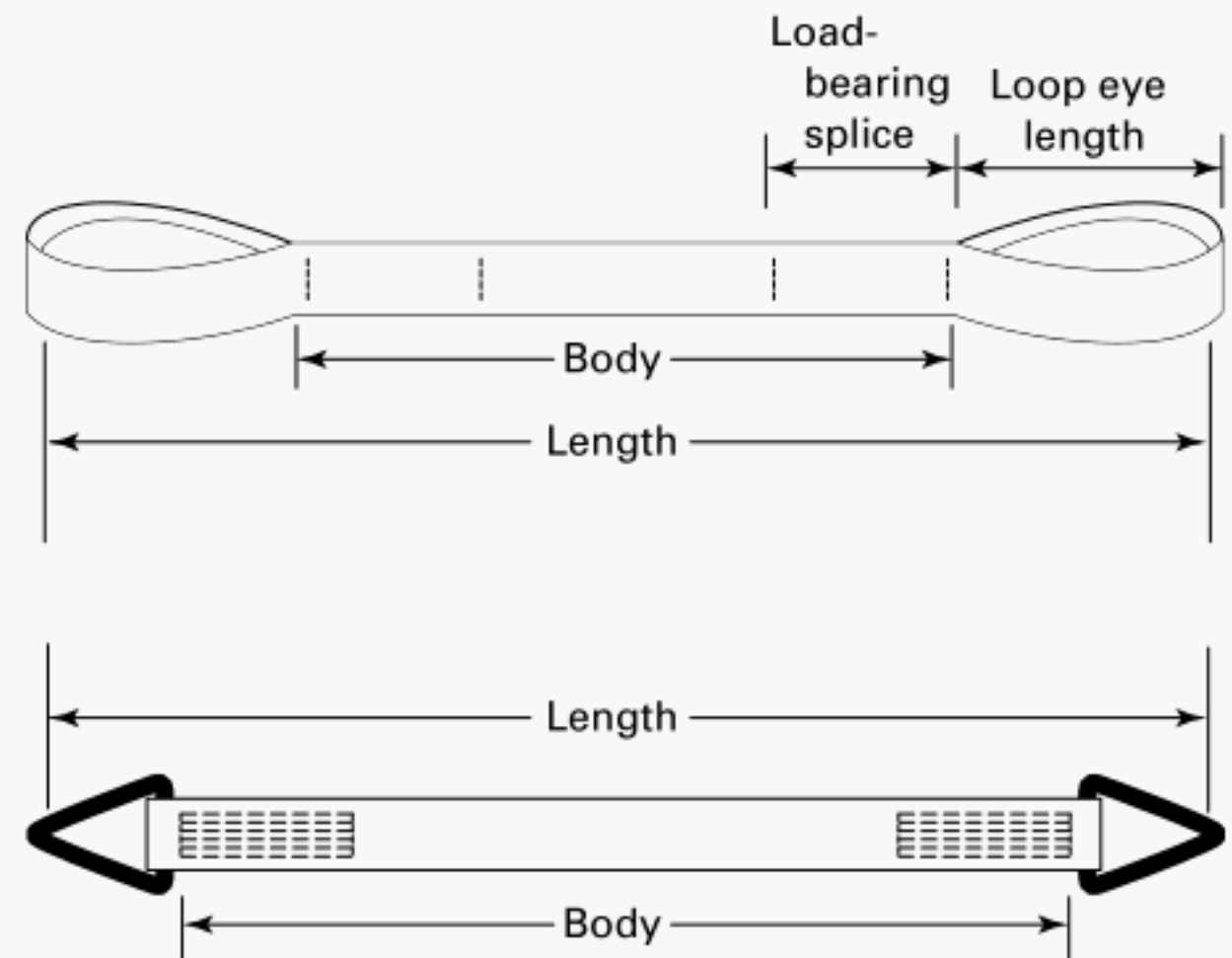
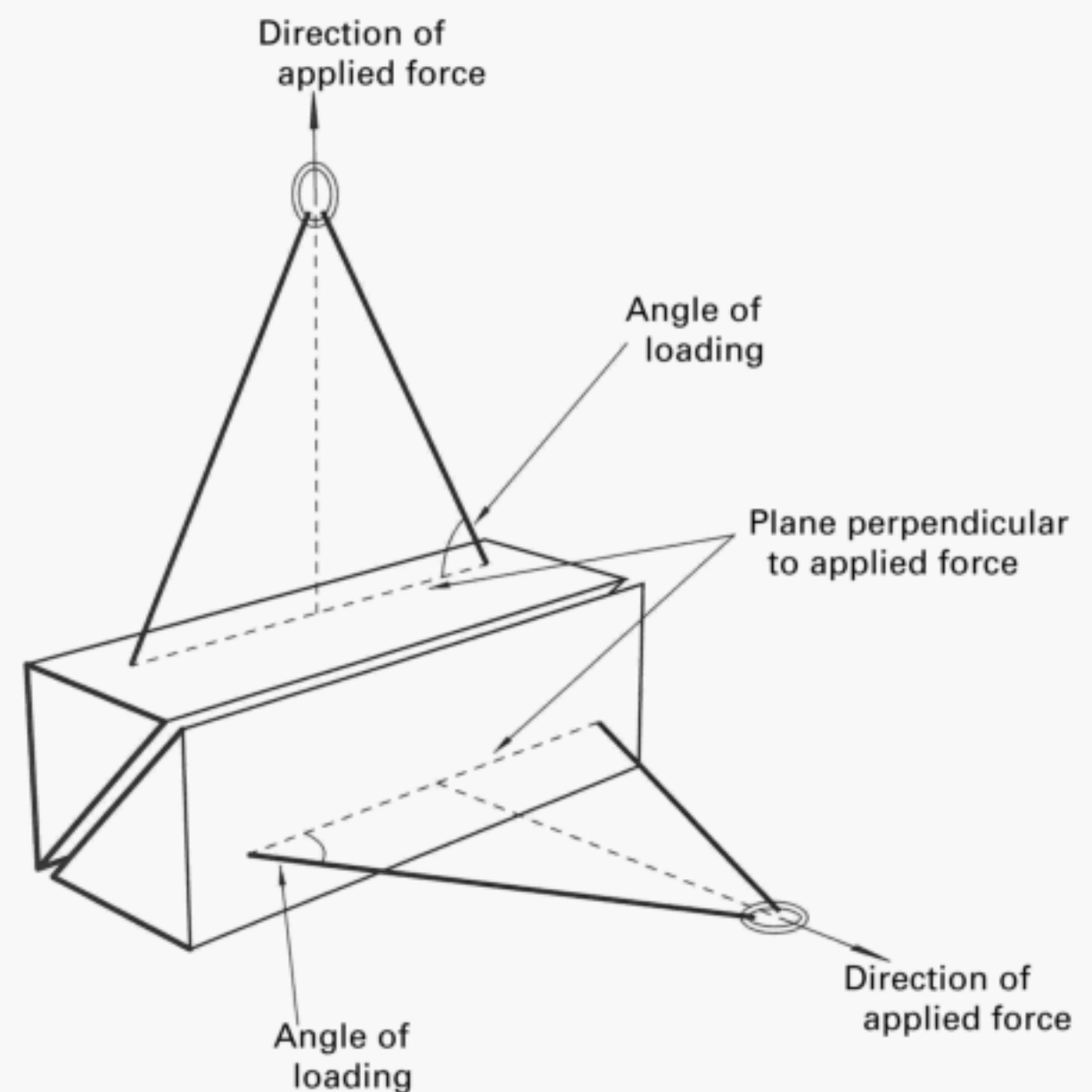
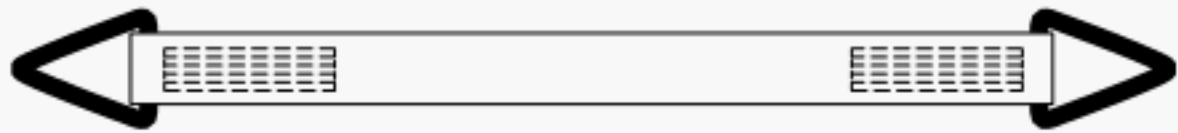
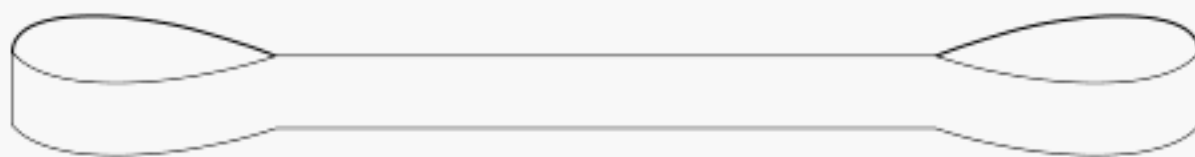
Type VI
Figure 9-5.0-2 Synthetic Webbing Sling Nomenclature

Figure 9-5.5-1 Angle of Loading


Figure 9-5.0-1 Synthetic Webbing Slings

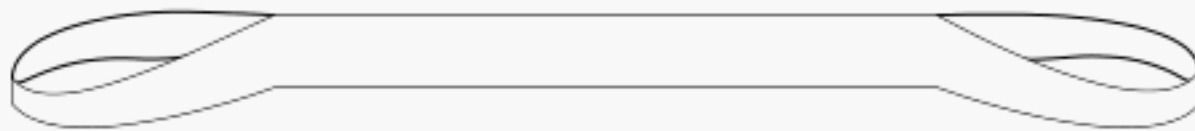

Sling made with a triangle fitting on one end and a slotted triangle choker fitting on the other end. It can be used in a straight-line, basket, or choker hitch.

Type I


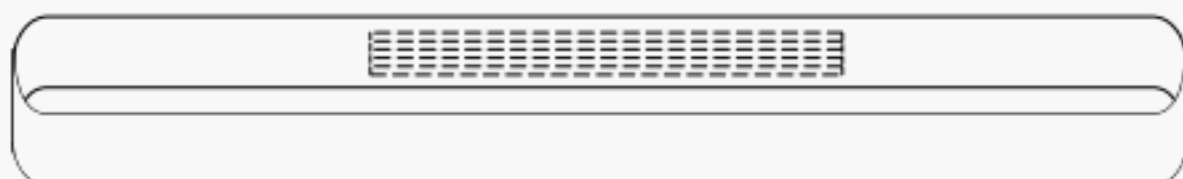
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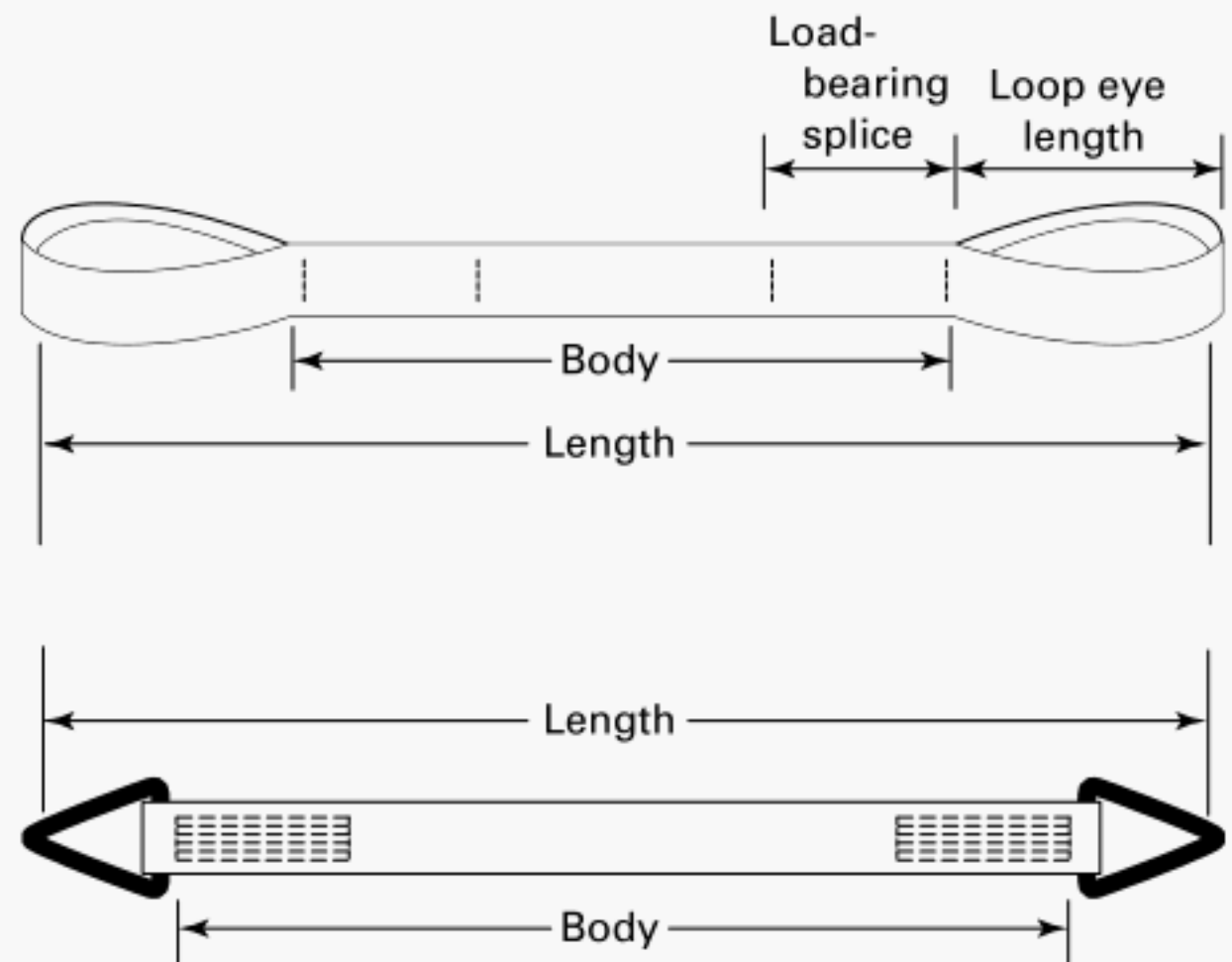
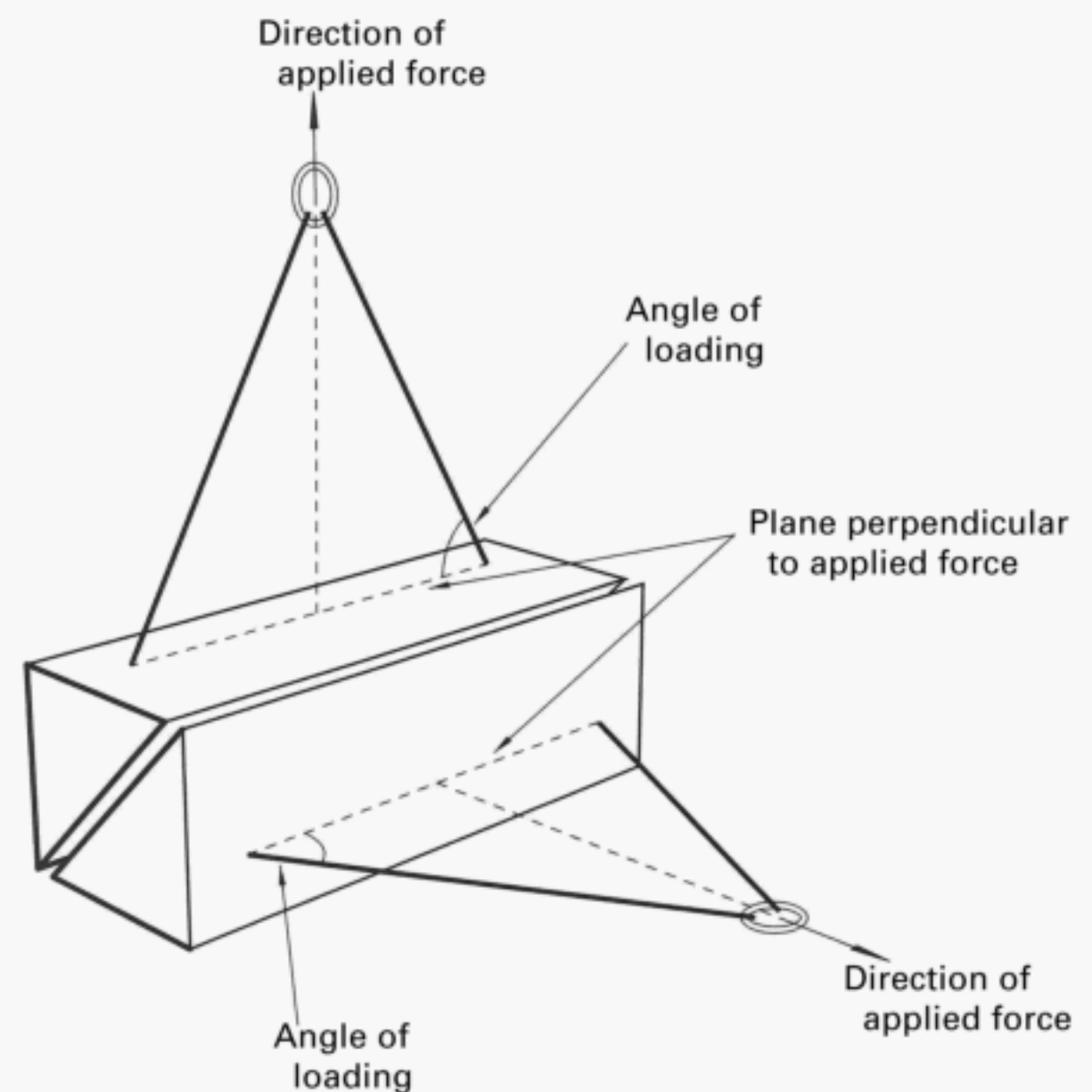
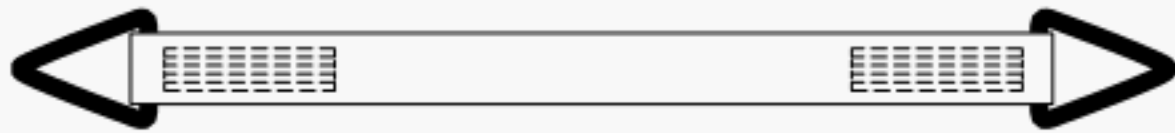
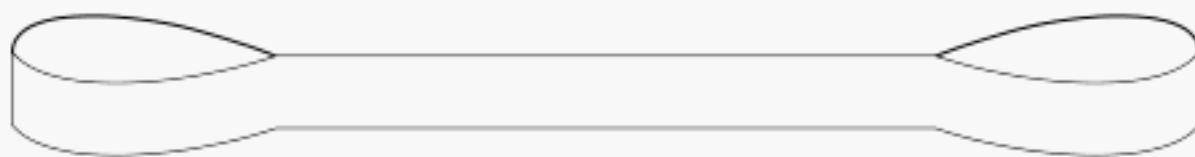
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Figure 9-5.0-2 Synthetic Webbing Sling Nomenclature

Figure 9-5.5-1 Angle of Loading


Figure 9-5.0-1 Synthetic Webbing Slings

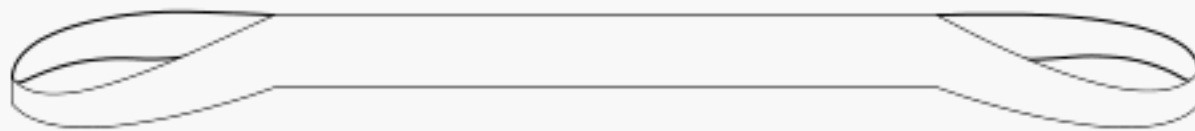

Sling made with a triangle fitting on one end and a slotted triangle choker fitting on the other end. It can be used in a straight-line, basket, or choker hitch.

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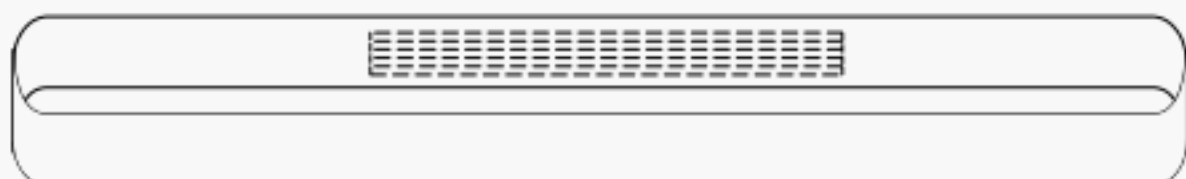
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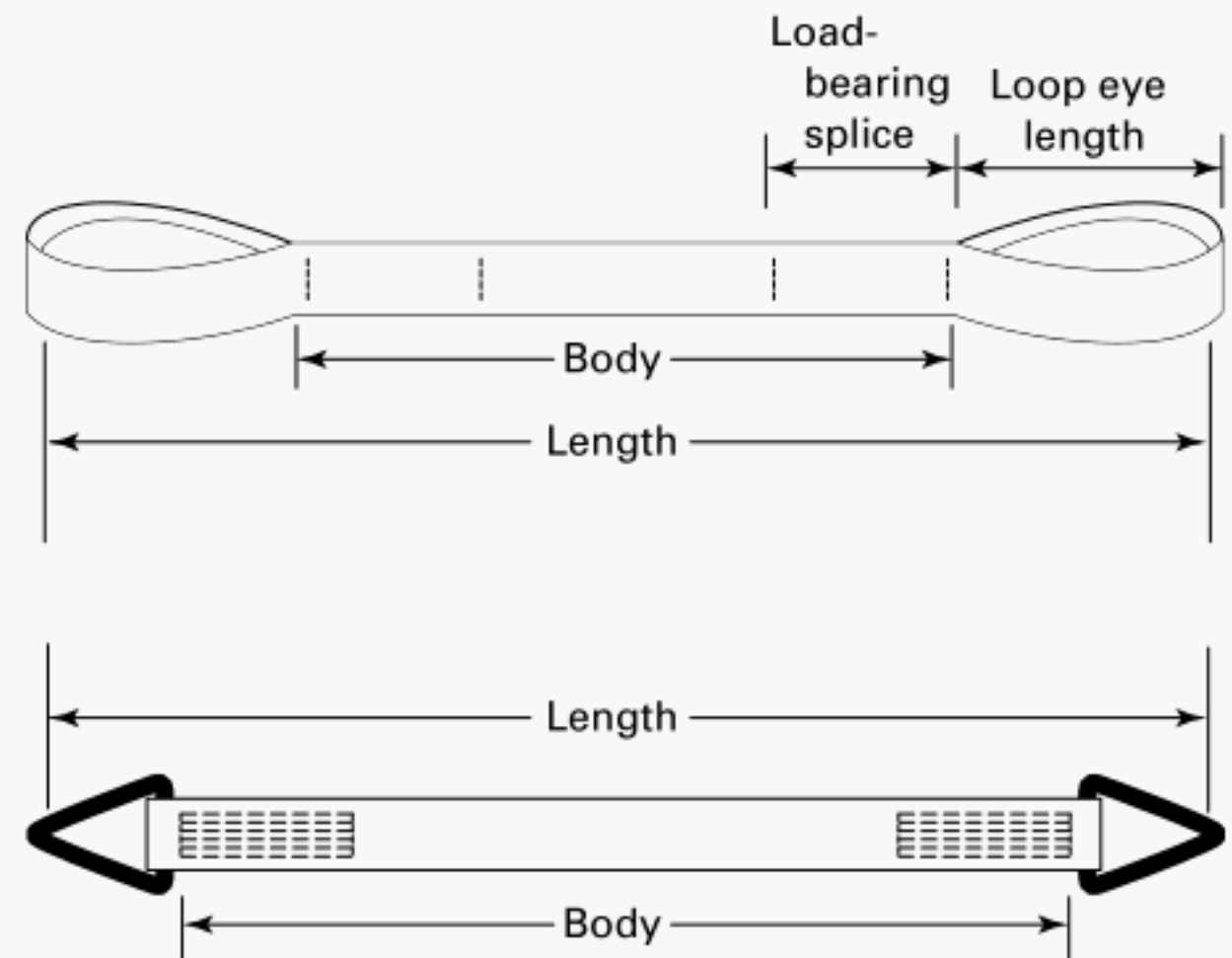
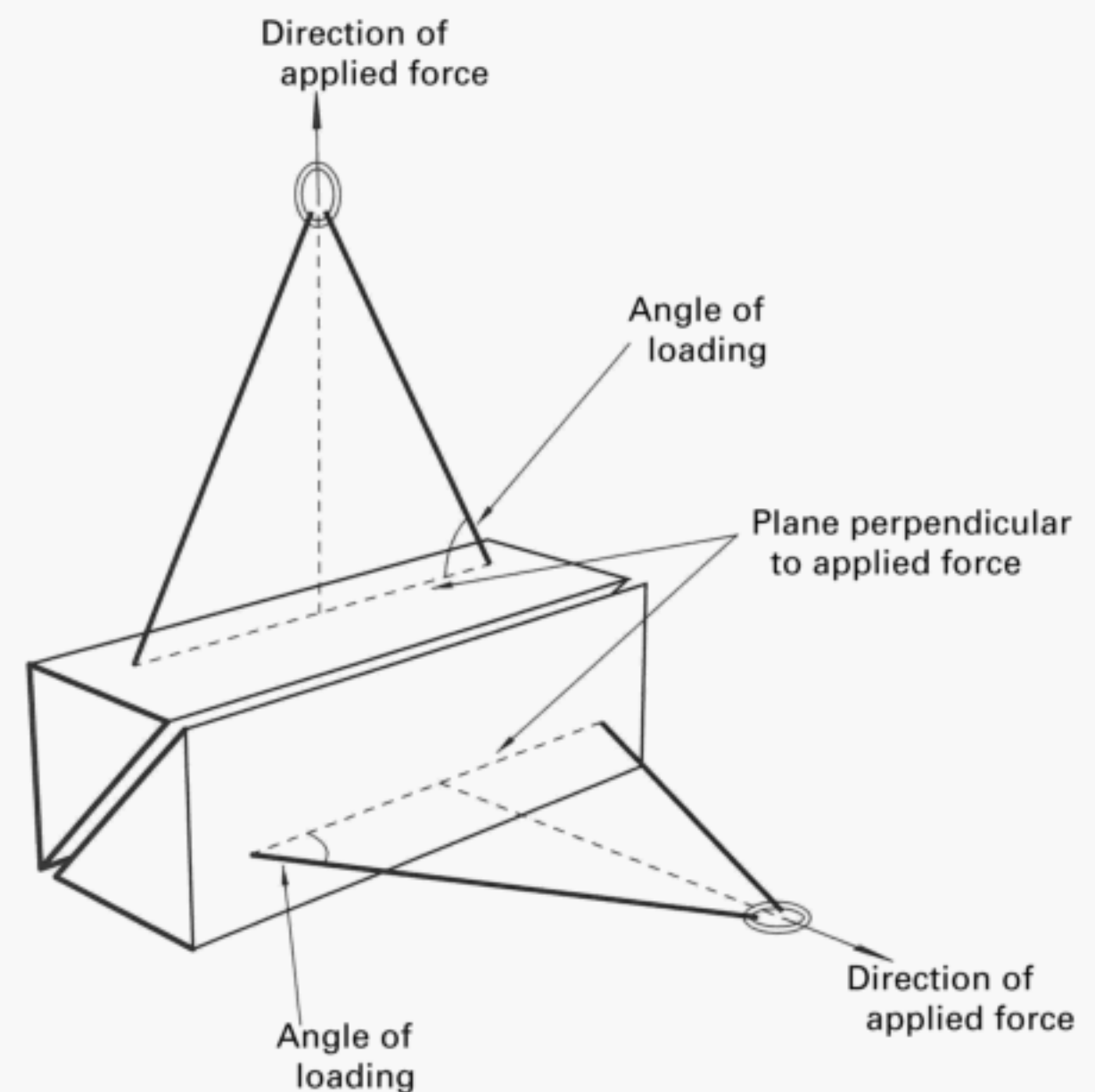
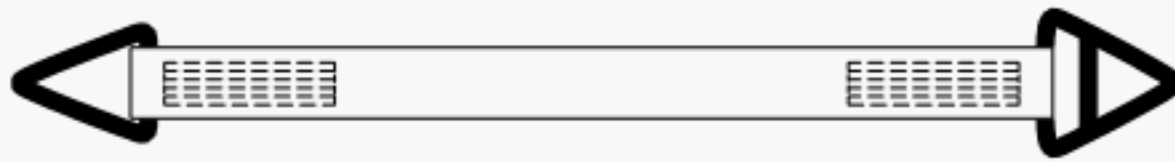
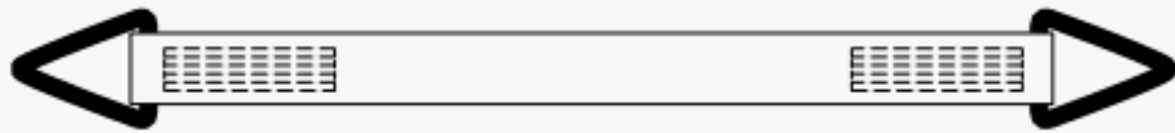
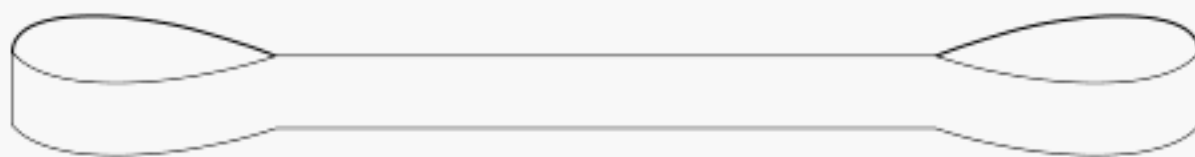
Type VI
Figure 9-5.0-2 Synthetic Webbing Sling Nomenclature

Figure 9-5.5-1 Angle of Loading


Figure 9-5.0-1 Synthetic Webbing Slings


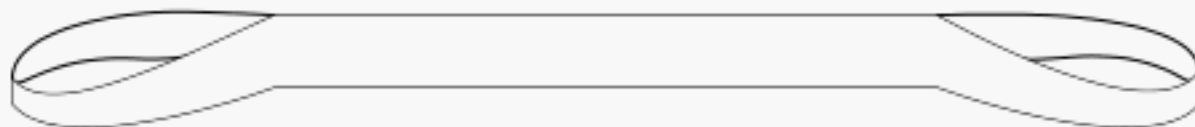
Sling made with a triangle fitting on one end and a slotted triangle choker fitting on the other end. It can be used in a straight-line, basket, or choker hitch.

Type I


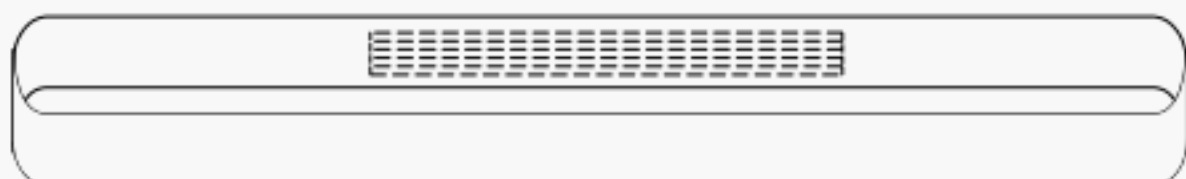
Sling made with a triangle fitting on both ends. It can be used in a straight-line or basket hitch only.

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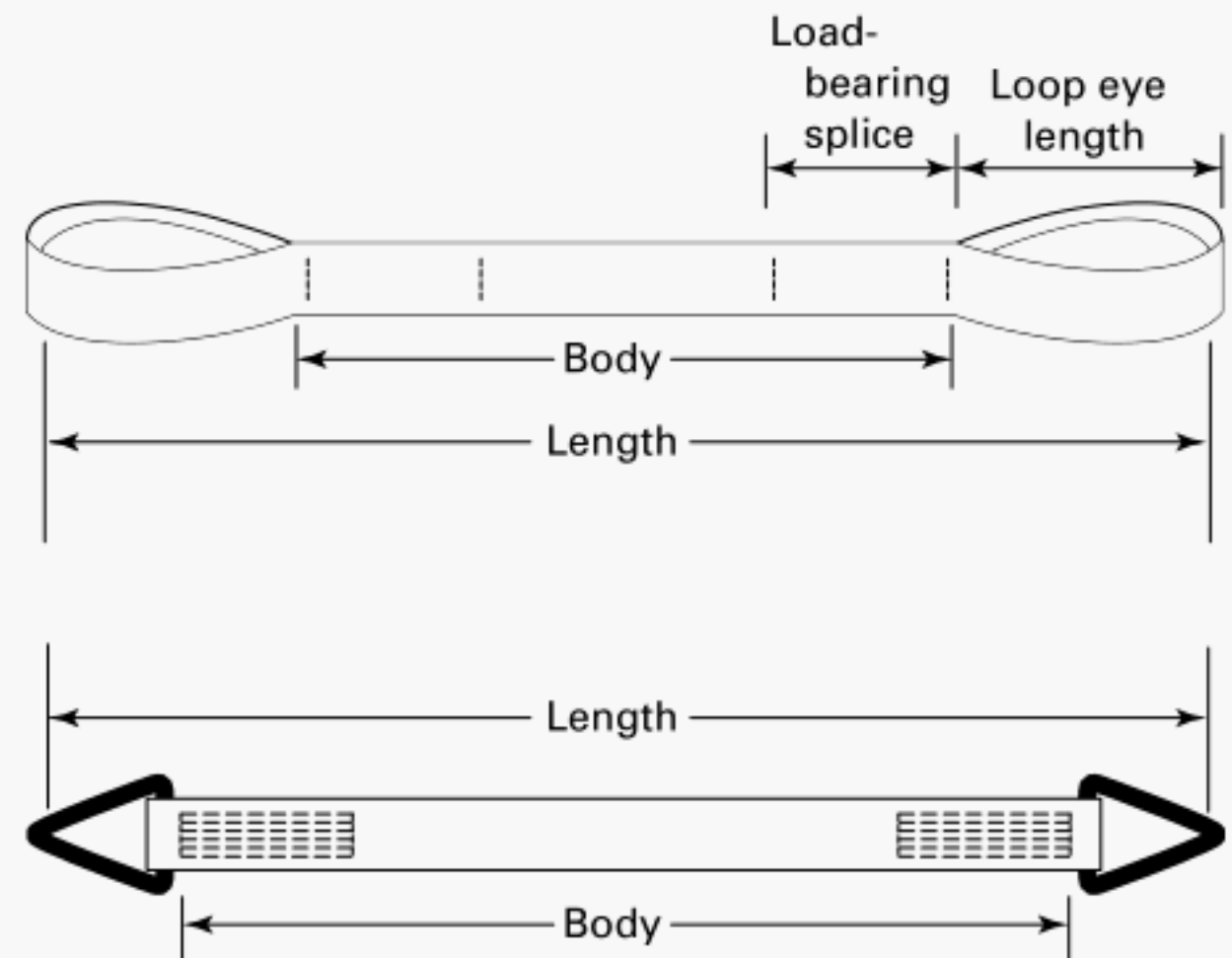
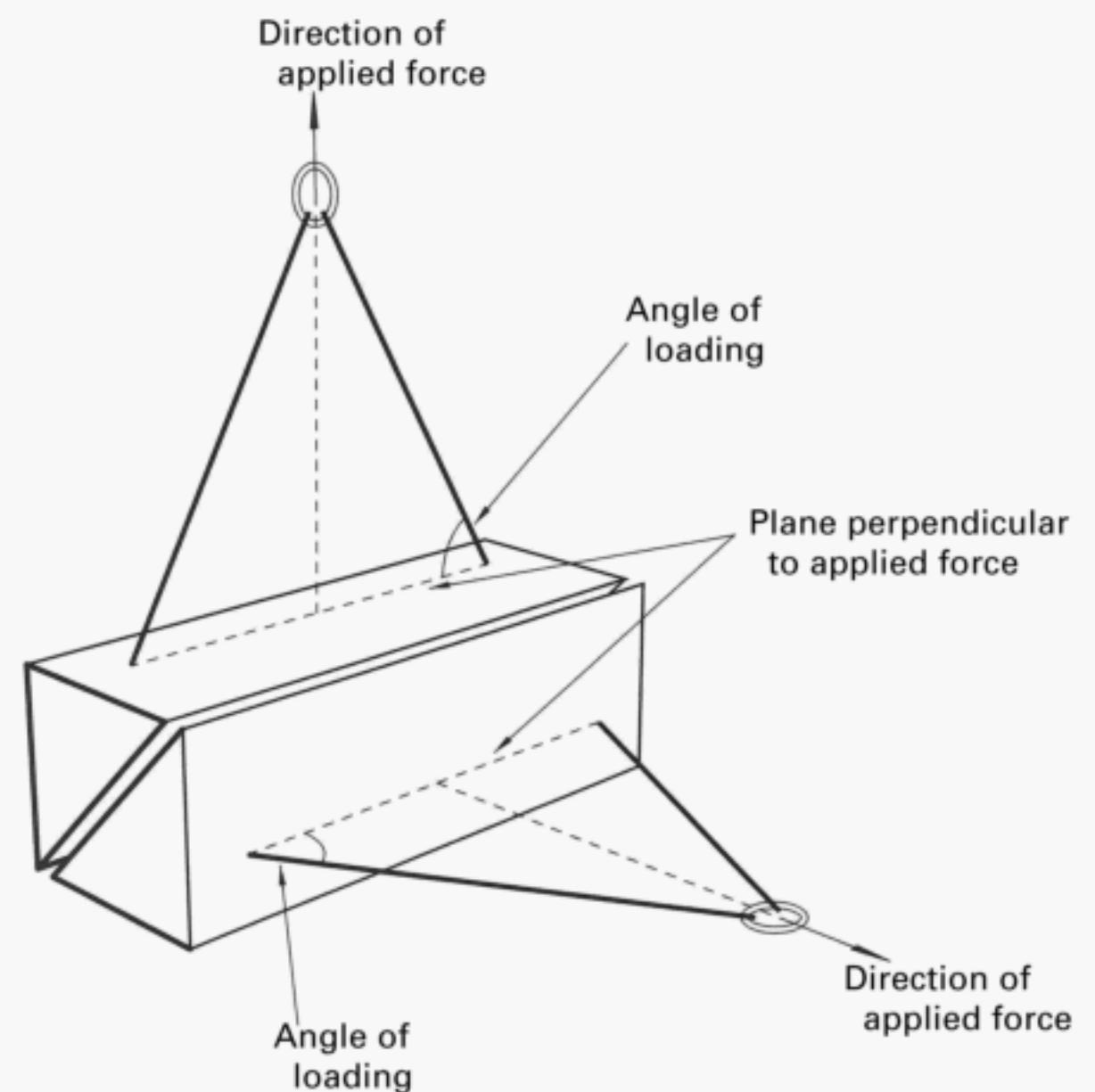
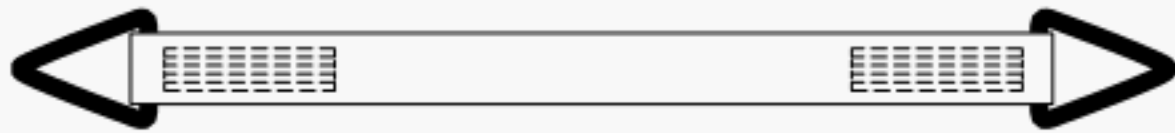
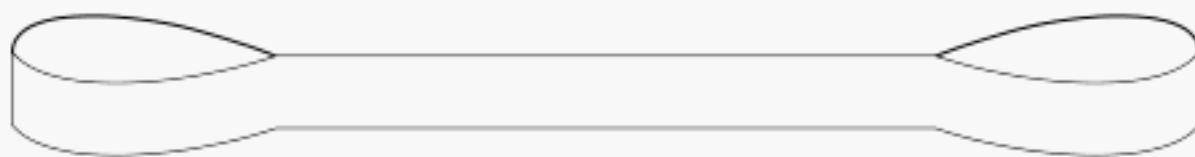
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Figure 9-5.5-1 Angle of Loading


Figure 9-5.0-1 Synthetic Webbing Slings

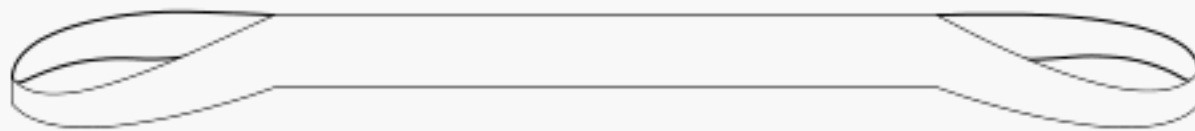

Sling made with a triangle fitting on one end and a slotted triangle choker fitting on the other end. It can be used in a straight-line, basket, or choker hitch.

Type I


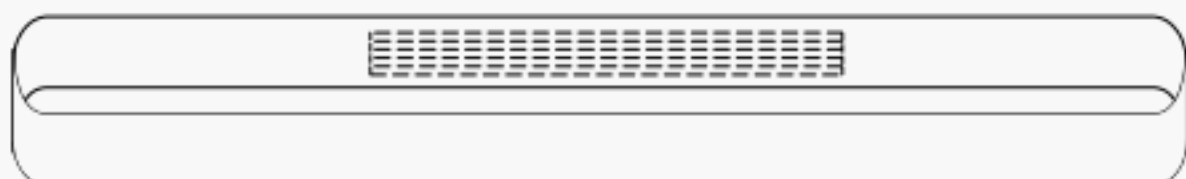
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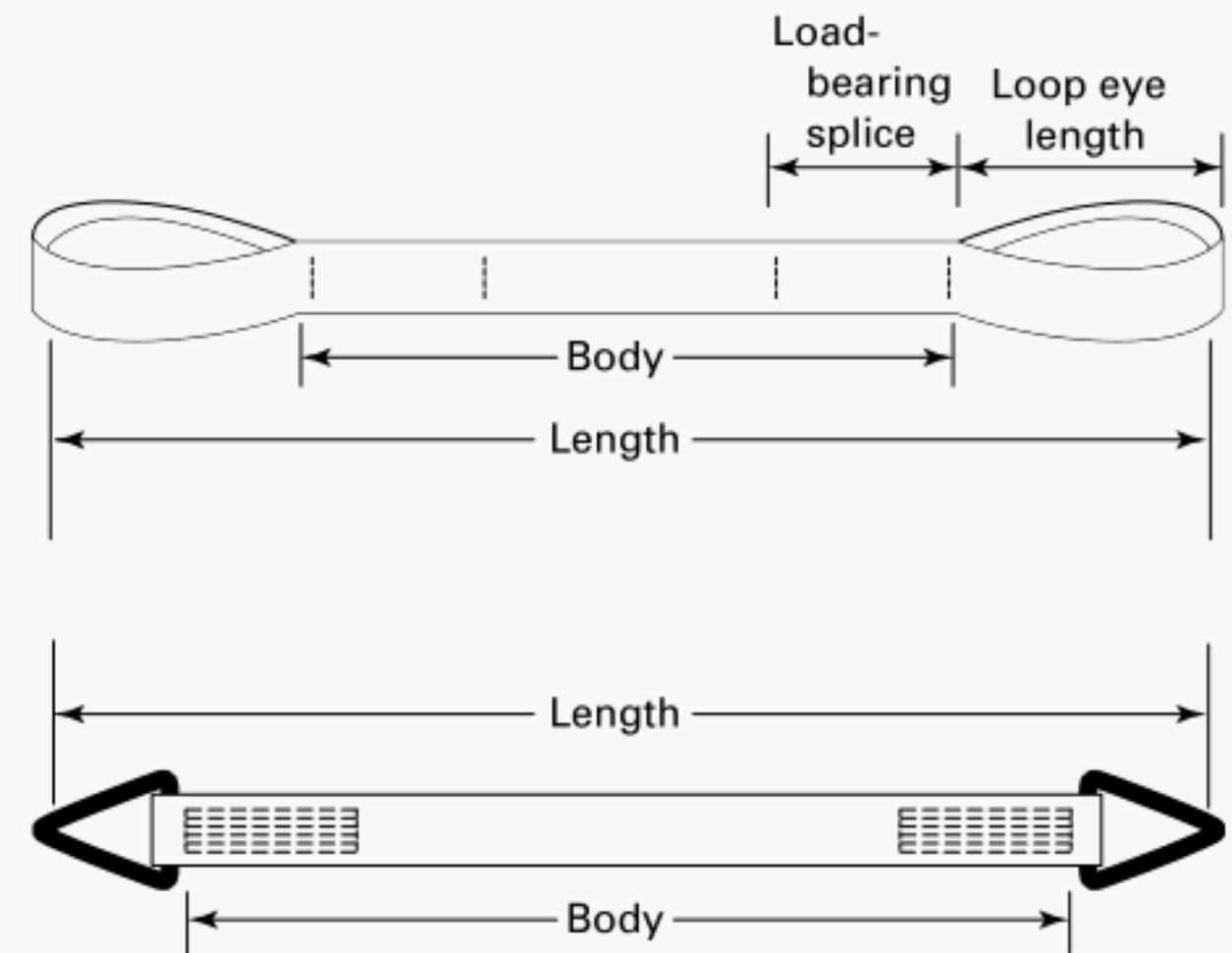
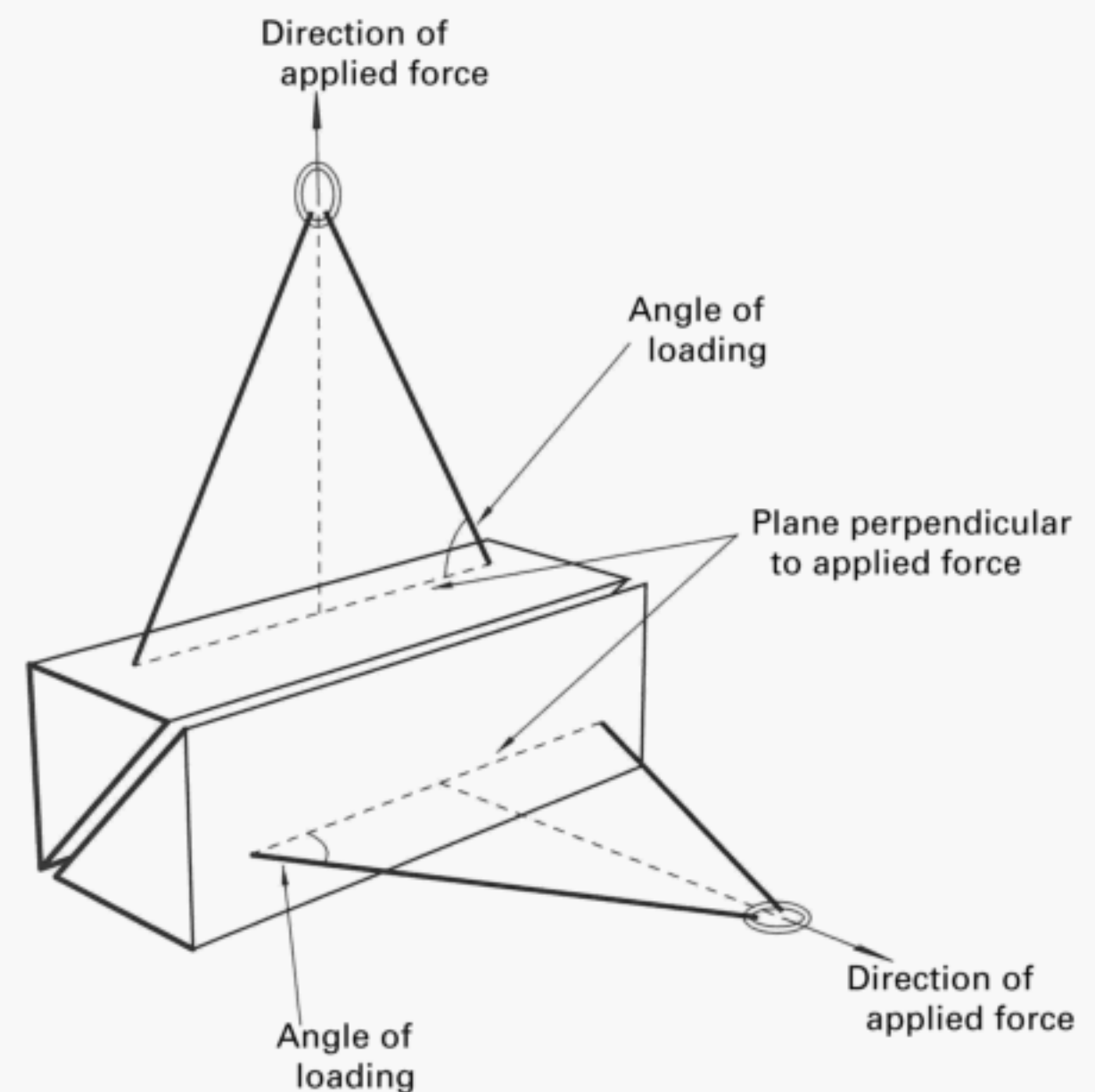
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Endless sling, sometimes referred to as a grommet. It is a continuous loop formed by joining the ends of the webbing together.

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Type VI
Figure 9-5.0-2 Synthetic Webbing Sling Nomenclature

Figure 9-5.5-1 Angle of Loading


(d) Personnel shall not ride the sling.

9-6.10.3 Effects of Environment

(a) Slings should be stored in an area where they will not be subjected to mechanical, chemical, or ultraviolet damage or extreme temperatures (see [Section 9-6.8](#)).

(b) When slings or their fittings are to be exposed to acidic or alkaline fumes, vapors, sprays, mists, or liquids, the sling manufacturer or a qualified person should be consulted (see [para. 9-6.8.2](#)).

(21) 9-6.10.4 Rigging Practices

(a) Slings shall be shortened or adjusted only by methods approved by the sling manufacturer or a qualified person.

(b) Slings shall not be shortened or lengthened by knotting or twisting.

(c) Slings shall be hitched in a manner providing control of the load.

(d) Slings in contact with edges, corners, protrusions, abrasive surfaces, or connecting hardware shall be protected with a material of sufficient strength, thickness, and construction to prevent damage to the sling unless the edges are rounded to a radius as recommended by the sling manufacturer, a qualified person, or in compliance

with WSTDA-RS-1, Section 4.6.2 (see [Nonmandatory Appendix A](#)).

(e) Shock loading should be avoided.

(f) Loads should not be rested on the sling.

(g) Slings should not be pulled from under a load when the load is resting on the sling.

(h) Twisting shall be avoided.

(i) During load-handling activities, with or without load, personnel shall be alert for possible snagging.

(j) When using multiple-basket or choker hitches, the load should be rigged to prevent the sling from slipping or sliding along the load.

(k) When lifting with a basket hitch, the legs of the sling should contain or support the load from the sides, above the center of gravity, so that the load remains under control.

(l) Slings should not be dragged on the floor or over an abrasive surface.

(m) In a choker hitch, the choke point should only be on the sling body, not on a cover splice or fitting.

(n) Slings should not be constricted, bunched, or pinched by the load, hook, or any fitting.

(o) The load applied to the hook should be centered in the base (bowl) of the hook to prevent point loading on the hook, unless the hook is designed for point loading.

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(j) When using multiple-basket or choker hitches, the load should be rigged to prevent the sling from slipping or sliding along the load.

(k) When lifting with a basket hitch, the legs of the sling should contain or support the load from the sides, above the center of gravity, so that the load remains under control.

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(d) Personnel shall not ride the sling.

9-6.10.3 Effects of Environment

(a) Slings should be stored in an area where they will not be subjected to mechanical, chemical, or ultraviolet damage or extreme temperatures (see [Section 9-6.8](#)).

(b) When slings or their fittings are to be exposed to acidic or alkaline fumes, vapors, sprays, mists, or liquids, the sling manufacturer or a qualified person should be consulted (see [para. 9-6.8.2](#)).

(21) 9-6.10.4 Rigging Practices

(a) Slings shall be shortened or adjusted only by methods approved by the sling manufacturer or a qualified person.

(b) Slings shall not be shortened or lengthened by knotting or twisting.

(c) Slings shall be hitched in a manner providing control of the load.

(d) Slings in contact with edges, corners, protrusions, abrasive surfaces, or connecting hardware shall be protected with a material of sufficient strength, thickness, and construction to prevent damage to the sling unless the edges are rounded to a radius as recommended by the sling manufacturer, a qualified person, or in compliance

with WSTDA-RS-1, Section 4.6.2 (see [Nonmandatory Appendix A](#)).

(e) Shock loading should be avoided.

(f) Loads should not be rested on the sling.

(g) Slings should not be pulled from under a load when the load is resting on the sling.

(h) Twisting shall be avoided.

(i) During load-handling activities, with or without load, personnel shall be alert for possible snagging.

(j) When using multiple-basket or choker hitches, the load should be rigged to prevent the sling from slipping or sliding along the load.

(k) When lifting with a basket hitch, the legs of the sling should contain or support the load from the sides, above the center of gravity, so that the load remains under control.

(l) Slings should not be dragged on the floor or over an abrasive surface.

(m) In a choker hitch, the choke point should only be on the sling body, not on a cover splice or fitting.

(n) Slings should not be constricted, bunched, or pinched by the load, hook, or any fitting.

(o) The load applied to the hook should be centered in the base (bowl) of the hook to prevent point loading on the hook, unless the hook is designed for point loading.

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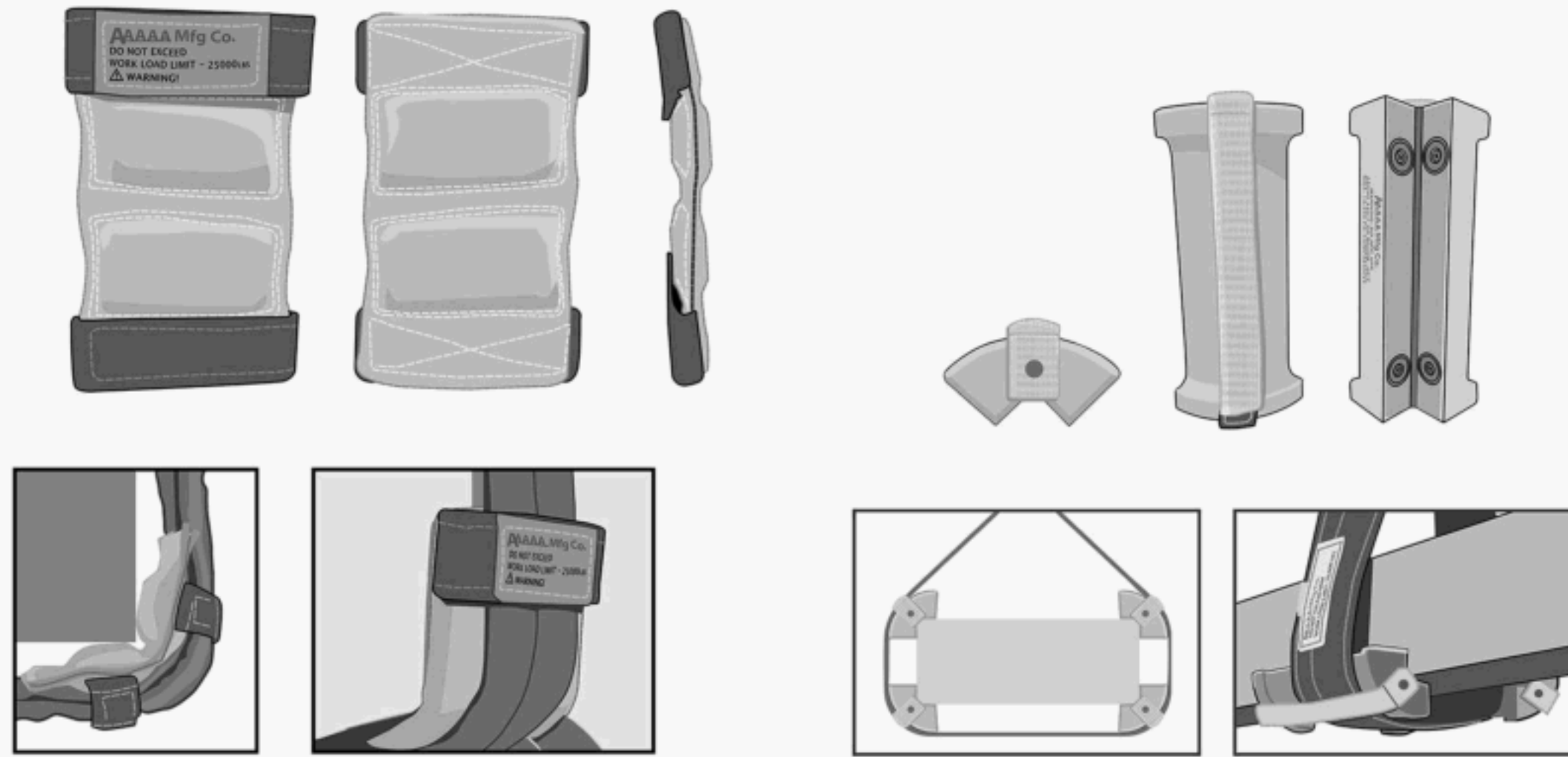
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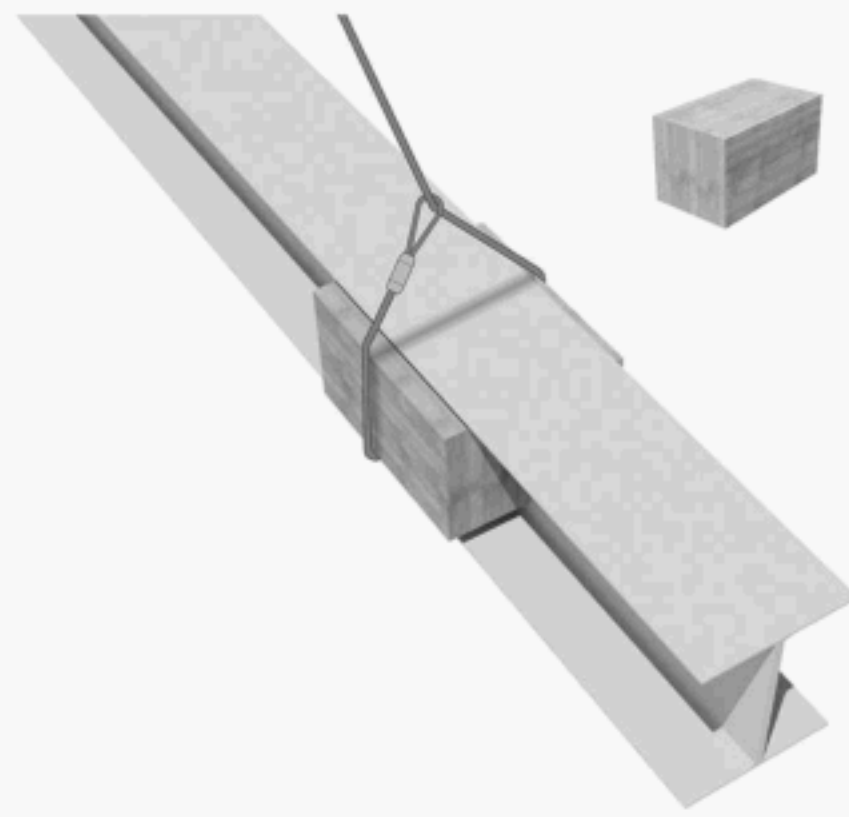
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Figure A-3-2 Sling Protection Types to Help Resist Local Bearing Pressure or Cutting Damage

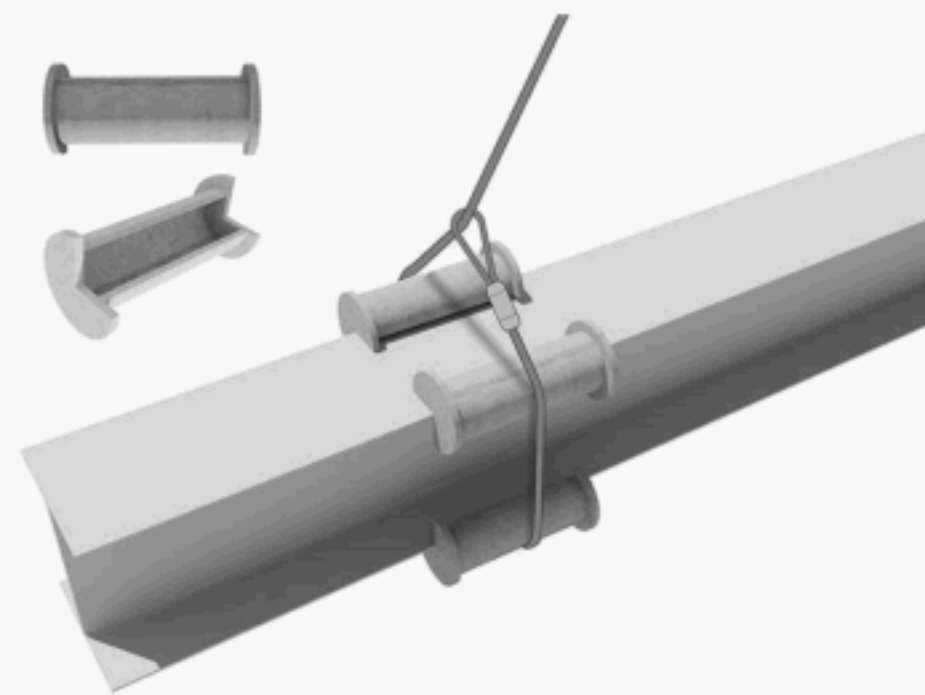


(a) Blocks Encased in Synthetic Webbing Material

(b) Corner-round, Milled High Strength Plastic

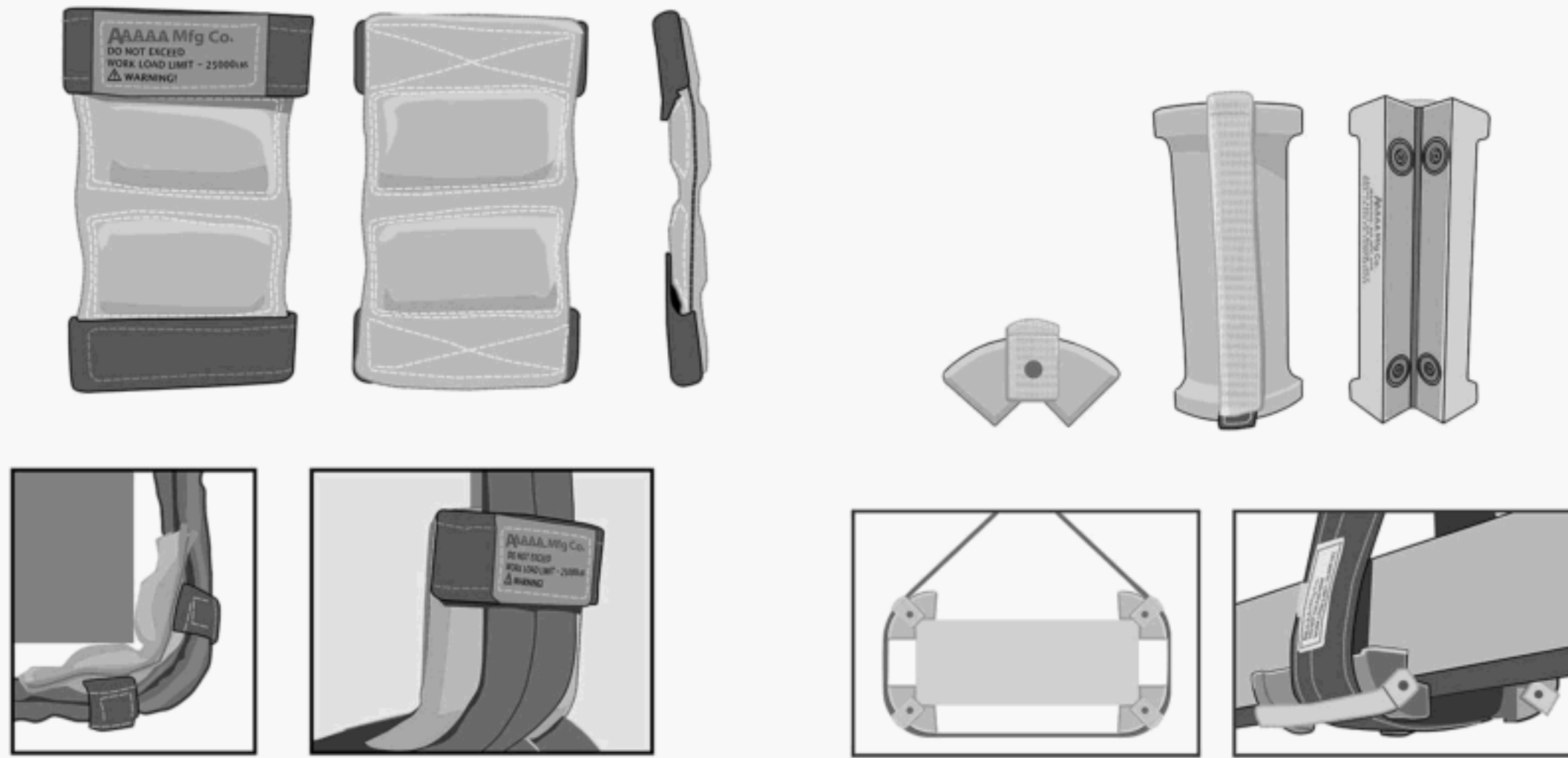


(c) Wooden Blocks



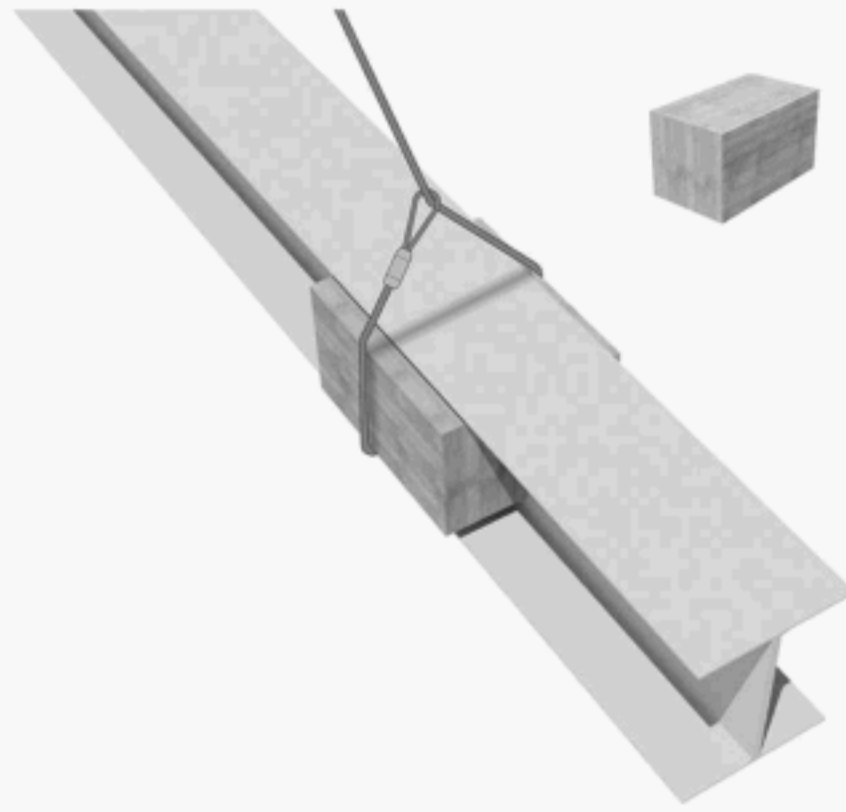
(d) Cut Pipe Corner-round

Figure A-3-2 Sling Protection Types to Help Resist Local Bearing Pressure or Cutting Damage

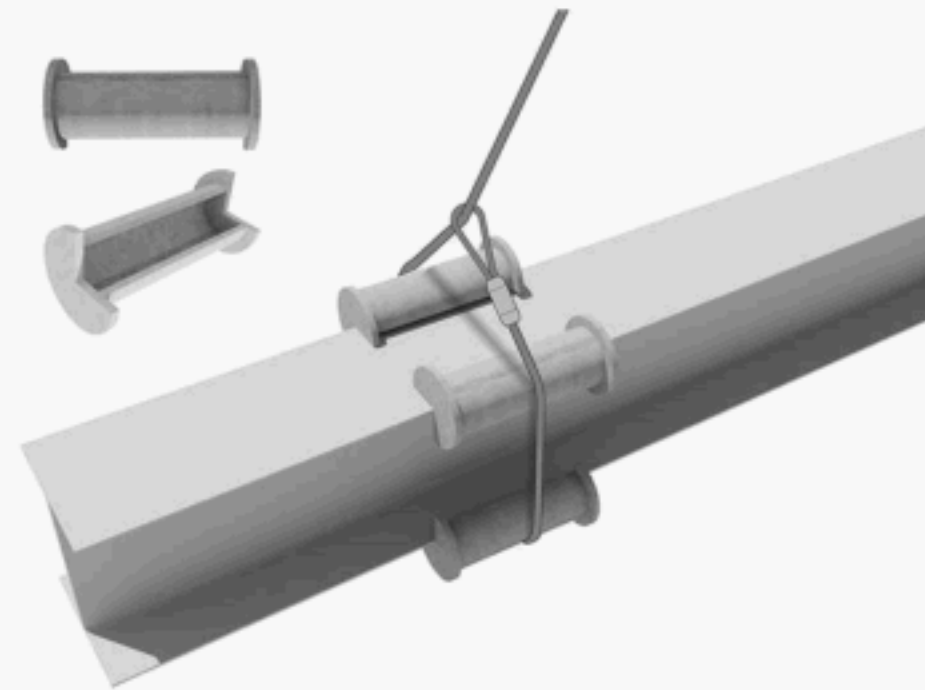


(a) Blocks Encased in Synthetic Webbing Material

(b) Corner-round, Milled High Strength Plastic



(c) Wooden Blocks



(d) Cut Pipe Corner-round