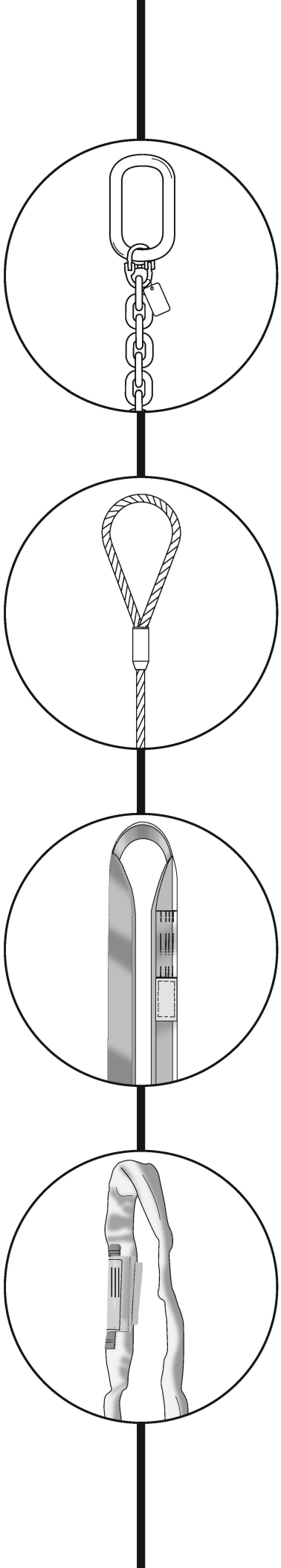

INSPECTION AND REMOVAL CRITERIA

ASME B30.9-1 ALLOY STEEL CHAIN SLINGS

9-1.9.5 Removal Criteria

- Missing or illegible sling identification.
- Cracks or breaks.
- Excessive wear, nicks, or gouges.
- Stretched chain links or components.
- Bent, twisted, or deformed chain links or components.
- Evidence of heat damage.
- Excessive pitting or corrosion.
- Lack of ability of chain or components to hinge freely.
- Other conditions, including visible damage, that cause doubt as to the continued use of the sling.

OSHA 1910.184 (e) ALLOY STEEL CHAIN SLINGS

[§1910.184(e)]

- (1) Sling identification.
  Alloy steel chain slings shall have permanently affixed durable identification stating size, grade, rated capacity, and reach.
- (2) Attachments.
  Makeshift links or fasteners formed from rods or bolts, or other such attachments, shall not be used.
- (3) Inspections.
  A through inspection for wear, defective welds, deformation and increase in length shall be performed. Where such defects or deterioration are present, the sling shall be immediately removed from service.
- (9) Deformed attachments.
  Alloy steel chain slings with cracked or deformed master links, coupling links or other components shall be removed from service.

OSHA 1926.251 (b) ALLOY CHAIN SLINGS

[§1926.251(b)]

- (1) Welded chain slings shall have permanently affixed durable identification stating size, grade, rated capacity and sling manufacturer.
- (3) Job or shop hooks and links, or makeshift fasteners, formed from bolts, rods, etc., or other such attachments shall not be used.
- (5) Whenever wear at any point of any chain link exceeds that shown in table H-2, the assembly shall be removed from service.

TABLE H-2
Maximum Allowable Wear at any Point of Link

Chain size, inches	Maximum allowable wear, inches
1/4″	3/64″
3/8″	5/64″
1/2″	7/64″
7/8″	9/64″
1″	5/32″
1 1/8″	1 1/4″
1 1/4″	3/16″
1 3/8″	7/32″
1 1/2″	1/4″
1 3/8″	9/32″
1 1/2″	5/16″

ASME B30.9-2 WIRE ROPE SLINGS

9-2.9.5 Removal Criteria

- Missing or illegible identification.
- Ten randomly distributed broken wires in one rope lay, or five broken wires in one strand in one rope lay.
- For cable laid slings, 20 broken wires per lay.
- For six part braided slings, 20 broken wires per braid.
- For eight part braided slings, 40 broken wires per braid.
- Severe localized abrasion or scraping.
- Kinking, crushing, bird caging or any other damage resulting in damage to the rope structure.
- Evidence of heat damage.
- End attachments that are cracked, deformed, or worn to the extent that the strength of the sling is substantially affected.
- Severe corrosion of the rope, end attachments, or fittings.
- Other conditions, including visible damage, that cause doubt as to the continued use of the sling.

OSHA 1910.184 (f) WIRE ROPE

[§1910.184(f)(5)]

- (i) Ten randomly distributed broken wires in one rope lay, or five broken wires in one strand in one rope lay.
- (ii) Wear or scraping of one-third the original diameter of outside individual wires.
- (iii) Kinking, crushing, bird caging or any other damage resulting in distortion of the wire rope structure.
- (iv) Evidence of heat damage.
- (v) End attachments that are cracked, deformed, or worn.
- (vii) Corrosion of the rope or end attachments.

OSHA 1926.251 (c) WIRE ROPE

[§1926.251(c)]

- (4)(iv) Wire rope shall not be used if, in any length of eight diameters, the total number of visible broken wires exceeds 10 percent of the total number of wires, or the rope shows signs of excessive wear, corrosion, or defect.
- (7) Sling legs shall not be kinked.

ASME B30.9-5 SYNTHETIC WEBBING SLINGS

9-5.9.5 Removal Criteria

- Missing or illegible sling identification.
- Acid or caustic burns.
- Melting or charring of any part of the sling.
- Holes, tears, cuts, or snags.
- Broken or worn stitching in load bearing splices.
- Excessive abrasive wear.
- Knots in any part of the sling.
- Discoloration and brittle or stiff areas on any part of the sling, which may mean chemical or ultraviolet damage.
- Fittings that are pitted, corroded, bent, twisted, gouged, or broken.
- Other conditions, including visible damage, that cause doubt as to the continued use of the sling.

OSHA 1910.184 (i) SYNTHETIC WEB SLINGS

[§1910.184(i)(9)]

- (i) Acid or caustic burns.
- (ii) Melting or charring of any part of the sling surface.
- (iii) Snags, punctures, tears, or cuts.
- (iv Broken or worn stitches.
- (v) Distortion of fittings.

OSHA 1926.251 (e) SYNTHETIC WEBBING

[§1926.251(e)(8)]

- (i) Acid or caustic burns.
- (ii) Melting or charring of any part of the sling surface.
- (iii) Snags, punctures, tears or cuts.
- (iv) Broken or worn stitches.
- (v) Distortion of fittings.

CAUTION

If red core yarn is visible, remove sling from service. If damage is present, and the red yarn is not exposed, the sling must still be removed from service.

ASME B30.9-6 SYNTHETIC ROUNDSLINGS

9-6.9.5 Removal Criteria

- Missing or illegible identification.
- Acid or caustic burns.
- Evidence of heat damage.
- Holes, tears, cuts, abrasive wear, or snags that expose the core yarns.
- Broken or damaged core yarns.
- Weld splatter that exposes core yarns.
- Roundslings that are knotted.
- Discoloration and brittle or stiff areas on any part of the sling, which may mean chemical or ultraviolet damage.
- Fittings that are pitted, corroded, cracked, bent, twisted, gouged, or broken.
- Other conditions, including visible damage that may cause doubt as to the continued use of the sling.

ASME B30.10-1 HOOKS

10-1.10.5 Removal Criteria

- Missing or illegible hook manufacturer's identification or secondary manufacturer's identification.
- Missing or illegible rated load identification.
- Excessive pitting or corrosion.
- Cracks, nicks, or gouges.
- Wear.
  Any wear exceeding 10% (or as recommended by the manufacturer) of the original section dimension of the hook or its load pin.
- Deformation.
  Any visibly apparent bend or twist from the plane of the unbent hook.
- Throat Opening.
  Any distortion causing an increase in throat opening of 5% not to exceed 1/4''. (6mm) (Or as recommended by the manufacturer).
- Inability to lock.
  any self - locking hook that does not lock.
- Inoperative latch (if required).
  Any damaged latch or malfunctioning latch that does not close the hook's throat.*
- Damaged, missing, or malfunctioning hook attachment and securing means.
- Thread wear, damage, or corrosion.
- Evidence of excessive heat exposure or unauthorized welding.
- Evidence of unauthorized alterations such as drilling, machining, grinding, or other modifications.

* Neither ASME B30.9 (Slings) nor B30.10 (Hooks) address when hook latches are required on hooks. Other codes and standards may require hook latches. The need for a latch on any hook is a function of the application of the hook, which is beyond the scope of ASME B30.10 (Interpretation: 10-14)

OSHA 1910.184 (f) WIRE ROPE SLINGS

[§1910.184(f)(5)(vi)]

- (vi) Hooks that have been opened more than 15 percent of the normal throat opening measured at the narrowest point or twisted more than 10 degrees from the plane of the unbent hook.

OSHA 1926.251 (f) SHACKLES AND HOOKS

[§1926.251(f)(2)]

- (2) The manufacturer's recommendations shall be followed in determining the safe working loads of the various sizes and types of specific and identifiable hooks. All hooks for which no applicable manufacturer's recommendations are available shall be tested to twice the intended safe working load before they are initially put into use. The employer shall maintain a record of the dates and results of such tests.

OSHA 1926.753 (c) HOISTING AND RIGGING

[§1926.753(c)(1)(i)(E)] General

- (E) Hooks and latches for deformation, chemical damage, cracks or wear.

ASME B30.26-1 SHACKLES

26-1.8.4 Removal Criteria

- Missing or illegible manufacturer's name or trade-mark and/or rated load identification.
- Indications of heat damage including weld spatter or arc strikes.
- Excessive pitting or corrosion.
- Bent, twisted, distorted stretched, elongated, cracked, or broken load-bearing components.
- Excessive nicks or gouges.
- A 10% reduction of the original or catalog dimension at any point around the body or pin.
- Incomplete pin engagement.
- Excessive thread damage.
- Evidence of unauthorized welding.
- Other conditions, including visible damage, that cause doubt as to the continued use of the shackle.

OSHA 1926.251 (f) SHACKLES AND HOOKS

[§1926.251(f)(1)]

- (1) Employers must not use shackles with loads in excess of the rated capacities (i.e., working load limits) indicated on the shackle by permanently affixed and legible identification markings prescribed by the manufacturer.

ASME B30.26-2 ADJUSTABLE HARDWARE

26-2.8.4 Removal Criteria

- Missing or illegible identification.
- Indications of heat damage, including weld spatter or arc strikes.
- Excessive pitting or corrosion.
- Bent, twisted, distorted stretched, elongated, cracked, or broken load-bearing components.
- Excessive nicks or gouges.
- A 10% reduction of the original or catalog dimension at any point.
- Excessive thread damage or wear.
- Evidence of unauthorized welding or modification.
- For swivel hoist rings, lack of the ability to freely rotate or pivot.
- Other conditions, including visible damage, that cause doubt as to continued use.

ASME B30.26-3 COMPRESSION HARDWARE

26-3.8.4 Removal Criteria

- Missing or illegible identification.
- Indications of heat damage including weld spatter or arc strikes.
- Excessive pitting or corrosion.
- Bent, twisted, distorted, stretched, elongated, cracked, or broken components.
- Excessive nicks or gouges.
- A 10% reduction of the original or catalog dimension at any point.
- Evidence of unauthorized welding.
- Unauthorized replacement components.
- Insufficient number of wire rope clips.
- Improperly tightened wire rope clips.
- Indications of damaged wire rope.
- Indications of wire rope slippage.
- Improper assembly or other conditions, including visible damage, that cause doubt as to continued use.

ASME B30.26-4 LINKS, RINGS, AND SWIVELS

26-4.8.4 Removal Criteria

- Missing or illegible identification.
- Indications of heat damage, including weld spatter or arc strikes.
- Excessive pitting or corrosion.
- Bent, twisted, distorted, stretched, elongated, cracked, or broken load bearing components.
- Excessive nicks or gouges.
- A 10% reduction of the original or catalog dimension at any point.
- Evidence of unauthorized welding or modification.
- For swivels, lack of the ability to freely rotate when not loaded.
- For swivels, loose or missing nuts, bolts, cotter pins, snap rings, or other fasteners and retaining devices.
- Other conditions, including visible damage that cause doubt as to continued use.

NOTES