Choker, Wire Rope Sling, Metal Mesh Sling, Synthetic Webbing Slings, Natural and Synthetic Fiber Rope & Chain Sling Inspections

APPROVED:_____ DATE APPROVED:_____ DATE EFFECTIVE:_____
Maintenance Manager

PURPOSE

This Procedure describes the inspections that apply to the integrity of rigging materials.

AUTHORITY

The Maintenance Supervisor has the responsibility to insure compliance with the terms of this procedure. He further has the authority to intercede, revise and/or initiate additional inspections and/or checkout requirements as may be required to insure all equipment is safe and operable and properly maintained.

REFERENCES

- OSHA 1910.184
- ASME B30.9-1990
- ASME B30.9a-1991

INSPECTION FREQUENCY

1. Prior to use, the equipment shall be inspected to insure there is no damaged or worn parts and the equipment meets or exceeds the appropriate industry standards. No record is required.

2. A semi-annual inspection shall be done to insure the equipment meets or exceeds the appropriate industry standard. A record of this inspection will be maintained.

3. New, modified or repaired equipment shall be certified by the qualified agency supporting or repairing the equipment. This certification record will be maintained.

SPECIAL EQUIPMENT

Leather Gloves

PREREQUISITE

This work requires qualified craftsmen

PROCEDURE

WIRE ROPE SLINGS - The prior to use inspection is a visual examination by the user or other designated personnel with records not required. These visual observations should be concerned with discovering gross damage, such as listed below, which may be an immediate hazard:

1. Distortion of rope in the sling such as kinking, crushing, unstranding, birdcaging, main strand displacement, or core protrusion. Loss of rope diameter in short rope lengths or unevenness of outer strands should provide evidence the sling or slings should be replaced.
2. General corrosion.
3. Broken or cut strands.
4. Number, distribution, and type of visible broken wires.

5. Examine internal rope for damage and corrosion.

Semi-annual inspection - This inspection shall include the requirements listed under prior to use inspection and, in addition, the inspection shall be conducted on the entire length of each sling including splices, end attachments, and fittings. Deterioration, which would result in loss of original strength, shall be observed and determination made whether further use of the sling would constitute a hazard.

REPLACEMENT OF WIRE ROPE SLINGS - No precise rules can be given for determination of the exact time for replacement of a sling since many variable factors are involved. Continued use in this respect depends upon the judgment of a designated person in evaluating a used sling. Safety of sling operation depends upon this remaining strength.

Conditions such as the following should be sufficient reason for questioning sling safety and for consideration of replacement.

- For strand laid and single part slings ten randomly distributed broken wires in one rope lay, or five broken wires in one strand in one rope lay.
- Severe localized abrasion or scraping.
- Kinking, crushing, birdcaging, or any other damage resulting in distortion of 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.
- Hooks should be inspected in accordance with ASME/ANSI B30.10.
- Any corrosion of the rope or end attachments.
- Multi-part removal criteria for cable laid and braided slings.

METAL MESH SLINGS - The prior to use inspection is a visual examination by the user or other designated personnel with records not required. It shall be inspected for safe conditions and to insure that the correct sling is being used per ASME B30.9-1990 standards.

Semi-annual inspection - This inspection shall include the requirements listed under prior to use inspection and, in addition:

- Shall have identification giving rated load capacity in basket, choker and vertical hitch.
- A broken weld or a broken brazed joint along the sling edge.
- A broken wire in any part of the mesh.
- Reduction in wire diameter of 25% due to abrasion or 15% due to corrosion.
- Lack of flexibility due to distortion of the mesh.
- Distortion of the choker fitting so the depth of the slot is increased by more than 10%.
- A 15% reduction of the original cross-sectional area of metal at any point around the hook opening of end fitting.
- Visible distortion of either end fitting out of its plane.
- Cracked end fitting.

REMOVAL CRITERIA OF METAL MESH SLINGS - If an item listed under semi-annual inspection is found, the sling is to be removed from service.

SYNTHETIC WEBBING SLINGS - The prior to use inspection is a visual examination by the user or other designated personnel. It shall be inspected for safe conditions and to insure that the sling is being used per ASME B30.9a-1991 standards.

Semi-annual inspection - A sling shall be removed from service if damage such as the following is visible and shall only be returned to service when approved by a designated person.

- "Red Guard" is showing anywhere along sling.
- 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 slices.
- Excessive abrasive wear.
- Knots in any part of the sling.
- Excessive pitting or corrosion, or cracked, distorted, or broken fittings.
- Other visible damage that causes doubt as to the strength of the sling.

REMOVAL CRITERIA OF SYNTHETIC WEBBING SLINGS - If an item listed under semi-annual inspection is found, the sling is to be removed from service.

NATURAL AND SYNTHETIC FIBER ROPE - The prior to use inspection is a visual examination by the user or other designated personnel with records not required. It shall be inspected for safe conditions and to insure that the correct fiber rope is being used per ASME B30.9-1990 standards.

Semi-annual inspection - This inspection shall include the requirements listed under prior to use inspection and, in addition:

A sling shall be removed from service if damage such as the following is visible and shall only be returned to service when approved by a designated person.

- Shall have identification giving type of material and rated load capacity.
- Cuts, gouges, badly abraded spots.
- Seriously worn surface fibers or yarns.
- Considerable filament or fiber breakage along the line where adjacent strands meet (light fuzzing is acceptable).
- Particles of broken filament or fibers inside the rope between the strands (inspect inside the rope).
- Discoloration or harshness that may mean chemical damage or excessive exposure to sunlight. Inspect filaments or fibers for weakness or brittleness.
- Kinks
- Melting or charring on any part of the sling.
- Excessive pitting or corrosion, or cracked, distorted or broken fittings.
- Other visible damage that causes doubt as to the strength of the sling.

REMOVAL CRITERIA OF FIBER SLINGS - If an item listed under semi-annual inspection is found, the sling is to be removed from service.

For additional information refer to ASME B30.9-1990.

CHAIN SLINGS - The prior to use inspection is a visual examination by the user or other designated personnel. Check: chain and attachments for wear, nicks, cracks, breaks, gouges, stretch, bends, weld splatter, discoloration from excessive temperature, and throat opening of hooks. Chain links and attachments should hinge freely with adjacent links. Latches on hook, if present, should hinge freely and seat properly without evidence of permanent distortion. Sling shall have tag giving sling length, size and rated load in vertical, basket and choker hitch.

Semi-annual inspection - this inspection shall include the requirements listed under the prior to use inspection and in addition, items such as the following:

Each link and end attachment shall be examined individually, taking care to expose inner link surfaces of the chain and chain attachments to inspect for those items defined in ASME B30.9a-1991.

- Worn links should not exceed values given in Table 2 of ASME B30.9a-1991 or that which is specifically recommended by the manufacturer.
- Sharp transverse nicks and gouges should be rounded out by grinding and the depth of the gouge or rounded out portion should not exceed values given in Table 2 of ASME B30.9a-1991.
- Hooks should be inspected in accordance with ASME/ANSI B30.10.
- If present, latches on hooks should seat properly, rotate freely, and show no permanent distortion.

REPAIR OF CHAIN SLINGS - Any hazard condition disclosed by the inspection requirements of ASME B30.9a-1991 shall be corrected before use of the chain or sling is resumed. Repairs shall be made only by the chain manufacturer or qualified personnel.

When repairs are made, the following criteria shall be followed:

- Certification papers to identify the length and load rating.
- Alloy steel chain and coupling links used for repair shall conform to the strength requirements and other requirements of this Standard. Cracked, broken, or bent links shall not be repaired; they shall be replaced.
- When repaired, a sling shall be permanently marked to identify the repairing agency.
- Attachments which are used for repair shall conform to the strength requirements and other requirements of this Standard. Cracked, broken, or bent attachments shall not be repaired; they shall be replaced.
- Mechanical coupling links or carbon steel repair links shall not be used to repair broken lengths of alloy chain.

END

Semi-Annual
Rigging Material Inspection Record

Equipment Name_____Size_____

Location_____I.D.#_____
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Manufacturer's Name_____

Has certification of proof test been received from manufacturer or repairing agency? ___yes___no

Has equipment satisfactory passed operational and rated load test as per ASME B30.2a-1991 paragraphs 2-2.2.1. and 2-2.2.2. (overhead traveling cranes)? ___yes___no ***Operational*** ___yes___no ***rated load test***

Inspector's Signature_____Date_____

CHAINS AND CHAIN SLINGS			WIRE ROPE SLINGS AND CHOKERS			METAL MESH SLINGS	
1	Nicks	__yes__no	1	Kinked	__yes__no	1	Broken welds __yes__no
2	Cracks	__yes__no	2	Crushed	__yes__no	2	Broken brazed joints __yes__no
3	Breaks	__yes__no	3	Unstranded	__yes__no	3	Is sling flexible __yes__no
4	Gauges	__yes__no	4	Birdcages	__yes__no	4	Stretched end fittings (eyes) __yes__no
5	Discoloration from excessive heat	__yes__no	5	Main strand displace-ment	__yes__no	5	Cracked end fittings __yes__no
6	Throat opening of hooks	__yes__no	6	Core protrusion	__yes__no		
7	Chain links and attach-ments hinge freely with adjacent links	__yes__no	7	Corroded	__yes__no		
8	Safety latches on hook work freely and seat properly	__yes__no	8	Broken or cut strands	__yes__no	**ANY OTHER EQUIPMENT**	
9	Excessive wear	__yes__no	9	Broken wires	__yes__no	1	Does equiment show excessive wear or damage __yes__no
10	Stretch	__yes__no					
11	Bends	__yes__no					
12	Weld splatter	__yes__no					

Semi-Annual
Rigging Material Inspection Record

NATURAL & SYNTHETIC FIBER	SHACKLES, SNATCH-BLOCKS, EYEBOLTS & TROLLEYS (or any other equip)	OVERHEAD TRAVELING CRANES
1 Surface fibers or yarns seriously worn __yes__no	1 For "American-made" shackles does the pin make up so as to protrude through with one thread showing completely __yes__no	1 Are members deformed, cracked or corroded __yes__no
2 Considerable filament or fiber breakage where adjacent strands meet __yes__no	2 Has a substitute been made for shackle-pin (such as a stud bolt, etc) __yes__no	2 Are there any loose or missing bolts, nuts, pins or rivets __yes__no
3 Discoloration due to sun-light or chemical damage __yes__no	3 Has any grinding been done on equipment __yes__no	3 Are there any cracked or worn sheaves or drums __yes__no
4 Kinks or hockles __yes__no	4 Is eyebolt of proper construction with shoulder between thread and eye __yes__no	4 Are there any cracked, worn or distorted parts such as: pins, bearings, wheels, shafts, gears rollers, locking and clamping devices, bumpers and stops __yes__no
5 Melting or charring __yes__no	5 Does snatch block show excessive wear such as sheave groove, or hook to swivel case __yes__no	5 Are function labels in place and legible __yes__no
6 Acid or caustic burns __yes__no	6 Does snatchblock sheave have excess slack (wobble) __yes__no	
7 Holes __yes__no	7 Are snatch block side shields bent or cracked __yes__no	
8 Tears __yes__no	8 Are all fasteners in place and secure, including all snap rings __yes__no	
9 Cuts __yes__no		
10 Snags __yes__no		
11 Broken or worn stitchings __yes__no		
12 Knots __yes__no		