

[INCH-POUND]  
FF-S-2874  
December 16, 1997  
SUPERSEDING  
MIL-S-22824E  
14 September 1993

## FEDERAL SPECIFICATION

### SLINGS, MULTIPLE LEG, VEHICLE (SHIPBOARD LOADING)

The General Services Administration has authorized the use of this specification by all Federal agencies.

#### 1. SCOPE AND CLASSIFICATION

1.1 Scope. This specification covers multiple leg slings for shipboard loading of vehicles.

1.2 Classification. The slings shall be of the following sizes as specified (see 6.2).

Size	5	-	5 ton (4 536 kilogram (kg)) rated capacity.
Size	17	-	17 ton (15 422 kg) rated capacity.
Size	30	-	30 ton (27 216 kg) rated capacity.
Size	60	-	60 ton (54 431 kg) rated capacity.
Size	60A	-	60 ton (54 431 kg) rated capacity.

#### 2. APPLICABLE DOCUMENTS

2.1 Government publications. The following documents, of the issue in effect on the date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein.

Beneficial comments, recommendations, additions, deletions, clarifications, etc. and any data which may improve this document should be sent to: Commanding Officer (Code 15E2), Naval Construction Battalion Center, 1000 23rd Avenue, Port Hueneme, CA 93043-4301, by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

FF-S-2874

Federal Specifications

- FF-T-276 - Thimbles, Rope.
- RR-C-271 - Chain and Attachments, Welded and Weldless.
- RR-W-410 - Wire Rope and Strand.

2.2 Other publications. The following documents form a part of this specification to the extent specified herein. Unless a specific issue is identified, the issue in effect on date of invitation for bids or request for proposal shall apply.

## AMERICAN NATIONAL STANDARDS INSTITUTE, INC. (ANSI)

- ANSI B 30.10 - Hooks; Special Notice and Interpretations.

(Private sector and civil agencies may purchase copies of this voluntary standard from the American National Standards Institute Inc., 11 West 42nd Street, New York, NY 10036.)

## ASTM

- ASTM A 36 - Carbon Structural Steel, Specification for.
- ASTM A 53 - Pipe, Steel, Black and Hot-Dipped Zinc-Coated, Welded and Seamless, Specification for.
- ASTM A 123 - Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products, Specification for.
- ASTM A 668 - Steel Forgings, Carbon and Alloy, for General Industrial Use, Specification for.
- ASTM E 165 - Liquid Penetrant Examination.

(Private sector and civil agencies may purchase copies of these voluntary standards from the American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.)

## AMERICAN WELDING SOCIETY (AWS)

- AWS D 1.1 - Structural Welding Code, Steel.

(Private sector and civil agencies may purchase copies of this voluntary standard from the American Welding Society, 550 N.W. LeJeune Road, Miami, FL 33126.)

(DoD activities may obtain copies of those adopted voluntary standards listed in the DoD Index of Specifications and Standards free of charge from the Defense Automated Printing Services, Attn: DoDSSP, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

2.3 Order of precedence. In the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document,

## FF-S-2874

however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

### 3. REQUIREMENTS

3.1 Description. The sling assembly, as referred to in this specification, and as applicable, consists of upper, lower, and extension wire rope legs, spreader bars, attachments (shackles, master links) and safety hooks.

3.2 First article. When specified (see 6.2), a sample sling assembly shall be subjected to first article inspection in accordance with 4.2.1.

3.3 Materials. Materials used shall be free from defects which would adversely affect the performance or maintainability of individual components or of the overall assembly. Materials not specified herein shall be of the same quality used for the intended purpose in commercial practice. Unless otherwise specified herein, all equipment, material, and articles incorporated in the work covered by this specification are to be new and fabricated using materials produced from recovered materials to the maximum extent possible without jeopardizing the intended use. The term “recovered materials” means materials which have been collected or recovered from solid waste and reprocessed to become a source of raw materials, as opposed to virgin raw materials. Unless otherwise specified, none of the above shall be interpreted to mean that the use of used or rebuilt products is allowed under this specification.

3.4 Figures. Figures 1 through 9, forming a part of this specification, are engineering design sketches. The supplier is responsible for preparing his own shop drawings. Where tolerances prescribed could cumulatively result in incorrect fits, the supplier shall provide tolerances within those prescribed on the sketches to insure correct fit, assembly, and operation of the items. No deviation from the prescribed dimensions or tolerances is permissible without prior approval of the contracting officer.

3.5 Standard commercial product. The sling assembly shall, as a minimum, be in accordance with the requirements of this specification and shall be the manufacturer’s standard commercial product. Additional or better features which are not specifically prohibited by this specification but which are a part of the manufacturer’s standard commercial product, shall be included in the sling assembly being furnished. A standard commercial product is a product which has been sold or is being currently offered for sale on the commercial market through advertisements or manufacturer’s catalogs, or brochures, and represents the latest production model.

3.6 Design and construction. The sling assembly shall be fabricated and assembled as shown in figures 1 through 9. The sling assembly shall be able to withstand a capacity test of twice the rated capacity without permanent deformation or failure. Except for the spreader bar and flounder plate, each individual component of the sling assembly shall withstand the proof load test (see 4.4.1).

## FF-S-2874

3.7 Interchangeability. All units of the same classification furnished with similar options under a specific contract shall be identical to the extent necessary to ensure interchangeability of component parts, assemblies, accessories, and spare parts.

3.8 Master link. The oblong shape master link shall be hot-dip zinc-coated, forged or welded structural quality steel. The proof loads shall be not less than as follows:

<u>Rod diameter</u>	<u>Proof load</u>
1.75-inch (44 millimetre (mm)) (size 5 sling)	95,000 pounds (43 091 kg)
2.75-inch (70 mm) (size 17 sling)	160,000 pounds (72 575 kg)

3.9 Shackles. All shackles shall be safety type (bolt and nut), anchor type, and high strength. The shackles shall be hot-dip zinc-coated, conforming to type IV A, grade B, class 3 of RR-C-271. The proof loads shall be the loads corresponding to the shackle sizes as shown in RR-C-271.

3.10 Flounder plate. The flounder plate (see figure 3), for size 30 sling shall be hot-dip zinc-coated steel plate conforming to ASTM A 36. All flame cut edges shall be ground smooth.

3.11 Wire rope leg assemblies. All wire rope leg assemblies shall have the rope ends mechanically spliced or swaged by pressing a metallic sleeve over a flemish eye splice. The proof load for each leg assembly shall be not less than as follows:

	<u>Wire rope diameter</u>		<u>Proof load</u>
Type I Class 3	0.563-inch (14.29 mm)	-	12,800 pounds (5 806 kg)
	0.625-inch (15.88 mm)	-	15,600 pounds (7 076 kg)
	1.000-inch (25.40 mm)	-	39,300 pounds (17 826 kg)
Type I Class 4	1.125-inch (28.58 mm)	-	48,100 pounds (21 818 kg)
	1.500-inch (38.10 mm)	-	84,400 pounds (38 283 kg)
Type I Class 5	2.000-inch (50.80 mm)	-	158,300 pounds (71 789 kg)
	2.250-inch (57.15 mm)	-	177,800 pounds (80 649 kg)

3.11.1 Wire rope. Wire rope shall be stranded, uncoated, extra improved plow steel, with regular lay. The wire rope shall be preformed with independent wire rope center and conform to type I, class 3, class 4 or class 5, as applicable, of RR-W-410.

3.11.2 Thimbles. Thimbles for wire rope shall conform to FF-T-276, type III. The thimbles shall be heavy-duty, and hot-dip zinc-coated.

3.11.3 Swaged sleeve fittings. Swaged sleeve fittings shall be seamless carbon steel. The sleeves shall be finished with cold applied zinc coating after swaging.

## FF-S-2874

3.12 Spreader bar. Spreader bar assemblies shall be constructed as shown in figure 9. The spreader bar shall be hot-dip zinc-coated after fabrication. The pipe ends of the spreader bar shall not be capped.

3.12.1 Steel pipe. The steel pipe shall be standard weight, seamless, conforming to ASTM A 53.

3.12.2 Steel plate. The steel plate shall conform to ASTM A 36.

3.12.3 Rated capacity and length marking. The rated capacity (in tons (kg)) of the sling assembly shall be marked on each end of the spreader bar before galvanizing. Marking shall be legible after galvanizing. The spreader bar length (see figure 9) shall be marked on the pipe section.

3.13 Safety hooks. The safety hooks shall be either a bail or swivel type, heat treated steel forgings, zinc-coated, with positive locking closure safety device. The safety hooks shall conform to ANSI B 30.10. The hooks shall be able to be disassembled to allow routine and periodic inspection of the shank for evidence of failure or cracks. The rated load of the hook shall be as specified in figure 6. The proof loads shall be twice the rated load.

3.13.1 Safety hook finish. When specified for field identification purposes (see 6.2), a pair of safety hooks connecting to the spreader bar on one side of the sling assembly shall be zinc coated. The other pair located on the opposite side shall have a yellow chromate coating.

3.14 Chain assemblies. When specified (see 6.2), each sling assembly shall be provided with two (2) zinc-coated chain assemblies. Each chain assembly shall be comprised of the components listed in Table I.

TABLE I. Chain assemblies.

Item	Description	Quantity per chain assembly
1	Chain, welded, steel, 0.25-inch (6.35 mm) size; type I, class 4 of RR-C-271, 10 feet (3 048 mm).	1 each
2	Hook, grab; for 0.25-inch (6.35 mm) chain size, type V, class 2 of RR-C-271.	1 each
3	Link, chain, connecting, steel, for 0.25-inch (6.35 mm) chain, type II of RR-C-271.	1 each

3.15 Zinc-coating. All zinc-coating shall conform to ASTM A 123.

3.16 Workmanship.

3.16.1 Sling fabrication. The material used in fabrication shall be free from kinks, sharp bends, and other conditions which would be deleterious to the finished product. Manufacturing processes shall not reduce the strength of the material to a value less than intended by the design.

## FF-S-2874

Manufacturing processes shall be done neatly and accurately. All bends shall be made by controlled means to ensure uniformity of size and shape.

3.16.2 Bolted connections. Bolt holes shall be accurately punched or drilled and shall have the burrs removed. Washers or lockwashers shall be provided in accordance with good commercial practice, and all bolts, nuts, and screws shall be tight.

3.16.3 Forgings. Forgings shall be properly shaped and free from fins, cracks, nicks, flaws, seams, and any other injurious defects which might affect the serviceability of the hook or the master link. Tolerances and gages for metal fits shall conform to standards of commercial practice. Finished contact and bearing surfaces shall be true and exact. Carbon steel forgings shall conform to ASTM A 668.

3.16.4 Welding. Welding procedures shall be in accordance with AWS D1.1. Finish welds shall be dye penetrant tested in accordance with ASTM E 165. The surface of parts to be welded shall be free from rust, scale, paint, grease, or other foreign matter. Welds shall be of sufficient size and shape to develop the full strength of the parts connected by the welds. Welds shall transmit stress without permanent deformation or failure when the parts connected by the weld are subjected to proof and service loadings.

3.16.5 Castings. All castings shall be sound and free from patching, misplaced coring, warping, or any other defect which reduces the casting's ability to perform its intended function.

3.16.6 Splice efficiency. All wire rope splicing and application of swaged sleeves shall be done to assure efficiencies of the wire rope nominal breaking strength (refer to RR-W-410) at the joint. No severed strands or kinks shall be permitted. Breaking strength efficiencies are as follows:

<u>Diameter of wire rope</u>	<u>Percent efficiency</u>
Up to 1-inch (25.4 mm)	95.0
1.125-inch to 2 inches (28.58 mm to 50.8 mm)	92.5
2.125 inches (53.98 mm) and above	90.0

3.17 Identification marking. Identification shall be permanently and legibly marked directly on the spreader bar or on a corrosion-resisting metal plate securely attached to the spreader bar at the source of manufacture. Identification shall include the manufacturer's model and serial number, name and trademark to be readily identifiable to the manufacturer. The sling assembly shall have a permanently affixed, stamped metal tag, specifying the overall maximum capacity or safe operating load range for the sling assembly.

#### 4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract, the contractor is responsible for the performance of all inspection requirements (examinations and tests) as specified herein. Except as otherwise specified in the contract, the contractor may use his own or

## FF-S-2874

any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in the specification, where such inspections are deemed necessary to ensure that supplies and services conform to prescribed requirements.

4.1.1 Responsibility for compliance. All items shall meet all requirements of sections 3 and 5. The inspection set forth in this document shall become a part of the contractor's overall inspection system or quality program. The absence of any inspection requirements in this document shall not relieve the contractor of the responsibility of ensuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling inspection, as part of manufacturing operations, is an acceptable practice to ascertain conformance to requirements, however, this does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to accept defective material.

4.1.2 Component and material inspection. Components and materials shall be inspected in accordance with all the requirements specified herein and in applicable referenced documents.

4.2 Classification of inspections. The inspection requirements specified herein are classified as follows:

- a. First article inspection (see 4.2.1).
- b. Quality conformance inspection (see 4.2.2).

4.2.1 First article inspection. The first article inspection shall be performed on a sling assembly when a first article is required (see 3.2 and 6.2). This inspection shall include the examination of 4.3 and the tests of 4.4. The first article may be either a first production item or a standard production item from the supplier's current inventory provided the item meets the requirements of the specification and is representative of the design, construction, and manufacturing technique applicable to the remaining items to be furnished under the contract.

4.2.2 Quality conformance inspection. The quality conformance inspection shall include the examination of 4.3, the proof load test of 4.4.1.

4.3 Examination. Each sling assembly shall be examined for compliance with the requirements specified in section 3 of this document. Any redesign or modification of the contractor's standard product to comply with specified requirements, or any necessary redesign or modification following failure to meet specified requirements shall receive particular attention for adequacy and suitability. This element of inspection shall encompass all visual examinations and dimensional measurements. Noncompliance with any specified requirements or presence of one or more defects preventing or lessening maximum efficiency shall constitute cause for rejection.

## FF-S-2874

#### 4.4 Tests.

4.4.1 Proof load test. Except for the spreader bar and flounder plate, each individual component of the sling assembly shall be proof load tested for compliance with the requirements specified in section 3 of this specification. Proof load test procedures for master links, shackles, and wire rope leg assemblies shall be conducted in accordance with manufacturer's standard practice. Proof load test for safety hooks shall be in accordance with ANSI B 30.10. Evidence of cracks, loosening of wire strands, or permanent deformations (except normal thimble deformation) shall constitute cause for rejection.

4.4.2 Capacity test. During this test, each of the lower legs shall simultaneously be subjected to a load of not less than one-half of the rated capacity. The load shall be held for not less than 5 minutes. Any evidence of permanent deformation other than normal thimble deformation shall constitute cause for rejection of the sling assembly.

#### 5. PACKAGING

5.1 Packaging requirements. The preservation, packing, and marking shall be as specified in the contract or order.

#### 6. NOTES

(This section contains information of a general or explanatory nature which is helpful, but is not mandatory.)

6.1 Intended use. The sling assemblies covered by this specification are intended for use in cargo handling operations for shipboard loading of vehicles.

6.2 Acquisition requirements. Acquisition documents should specify the following:

- a. Title, number, and date of this specification.
- b. Size of sling assembly required (see 1.2).
- c. When first article is required for inspection and approval (see 3.2 and 4.2.1).
- d. When safety hooks shall have a special finish (see 3.13.1).
- e. When chain assemblies should be furnished (see 3.14).

6.3 First article. When a first article inspection is required, the item will be tested and should be a first article sample, or it may be a standard production item from the contractor's current inventory as specified in 4.2.1. The first article should consist of one unit. The contracting officer shall include specific instructions in acquisition documents regarding arrangements for examination, test, and approval of the first article.

6.4 Supersession data. This specification replaces Military Specification MIL-S-22824E dated 14 September 1993.



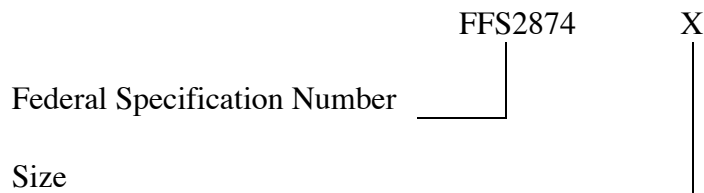
## FF-S-2874

6.5 Definition.

6.5.1 Proof load. The proof load is calculated by multiplying twice the nominal strength (refer to RR-W-410) by the splice efficiency, divided by a safety factor of 5.

6.6 Classification cross reference. Classifications used in this specification (see 1.2) are identical to those found in the superseded Military Specification MIL-S-22824E.

6.7 Part or Identifying Numbers (PINs). The specification number and size are combined to form PINs for sling assemblies covered by this document (see 1.2). PINs for the sling assemblies are established as follows:

6.8 Subject term (key word) listing.

Hook, safety  
 Leg assembly  
 Master link  
 Shackle  
 Spreader bar  
 Wire rope

6.9 Changes from previous issue. Marginal notations are not used to identify changes with respect to the superseded document.

## MILITARY INTERESTS:

Custodian:

Navy - YD1

Army - MT

Review Activities:

Navy - MC, SH, CG

DLA - GS

## CIVIL AGENCY COORDINATING ACTIVITY:

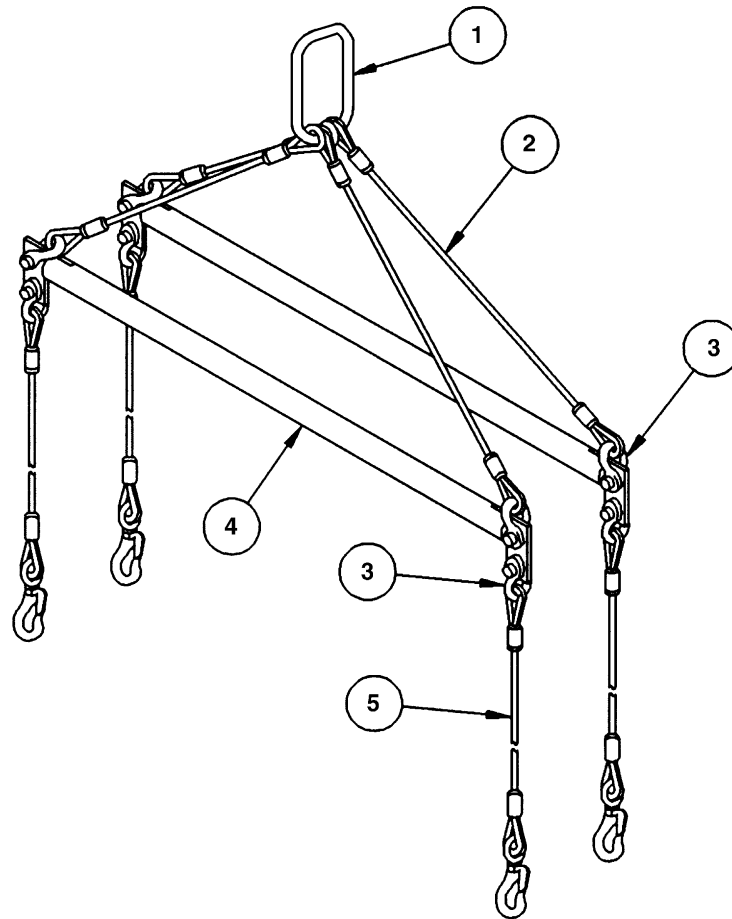
GSA-FSS

Preparing Activity:

Navy - YD1

(Project 3920-0014)

FF-S-2874



- ① MASTER LINK, 1-3/4" X 8" X 12" - 1 REQUIRED.
- ② UPPER LEG ASSEMBLY (SEE FIGURE 6) - 4 REQUIRED.
- ③ SHACKLE, 3/4" DIA. - 8 REQUIRED.
- ④ SPREADER BAR (SEE FIGURE 9) - 2 REQUIRED.
- ⑤ LOWER LEG ASSEMBLY (SEE FIGURE 6) - 4 REQUIRED.

**NOTE:**

**1. METRIC EQUIVALENT:**

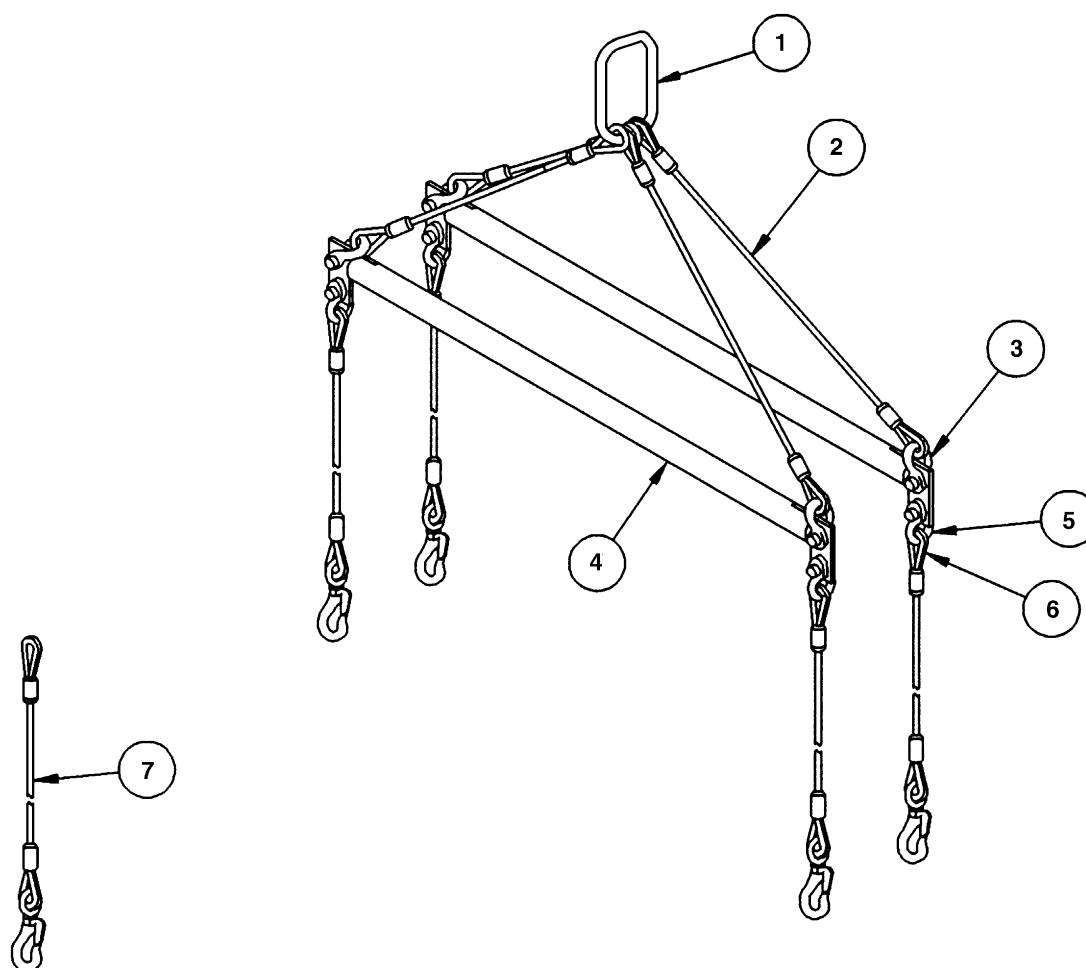
1-INCH = 25.40 mm

1-FOOT = 304.80 mm

1-TON = 907.18 kg

FIGURE 1. Size 5 - (5 ton) sling assembly.

FF-S-2874



- ① MASTER LINK, 2-3/4" X 9-1/2" X 14-1/4" - 1 REQUIRED.
- ② UPPER LEG ASSEMBLY (SEE FIGURE 6) - 4 REQUIRED.
- ③ SHACKLE, 1-3/8" DIA - 4 REQUIRED.
- ④ SPREADER BAR (SEE FIGURE 9) - 2 REQUIRED.
- ⑤ SHACKLE, 1-1/4" DIA - 4 REQUIRED.
- ⑥ LOWER LEG ASSEMBLY (SEE FIGURE 6) - 4 REQUIRED.
- ⑦ EXTENSION LEG ASSEMBLY (SEE FIGURE 6)  
- 4 SHORT AND 4 LONG REQUIRED.

**NOTE:**

**1. METRIC EQUIVALENT:**

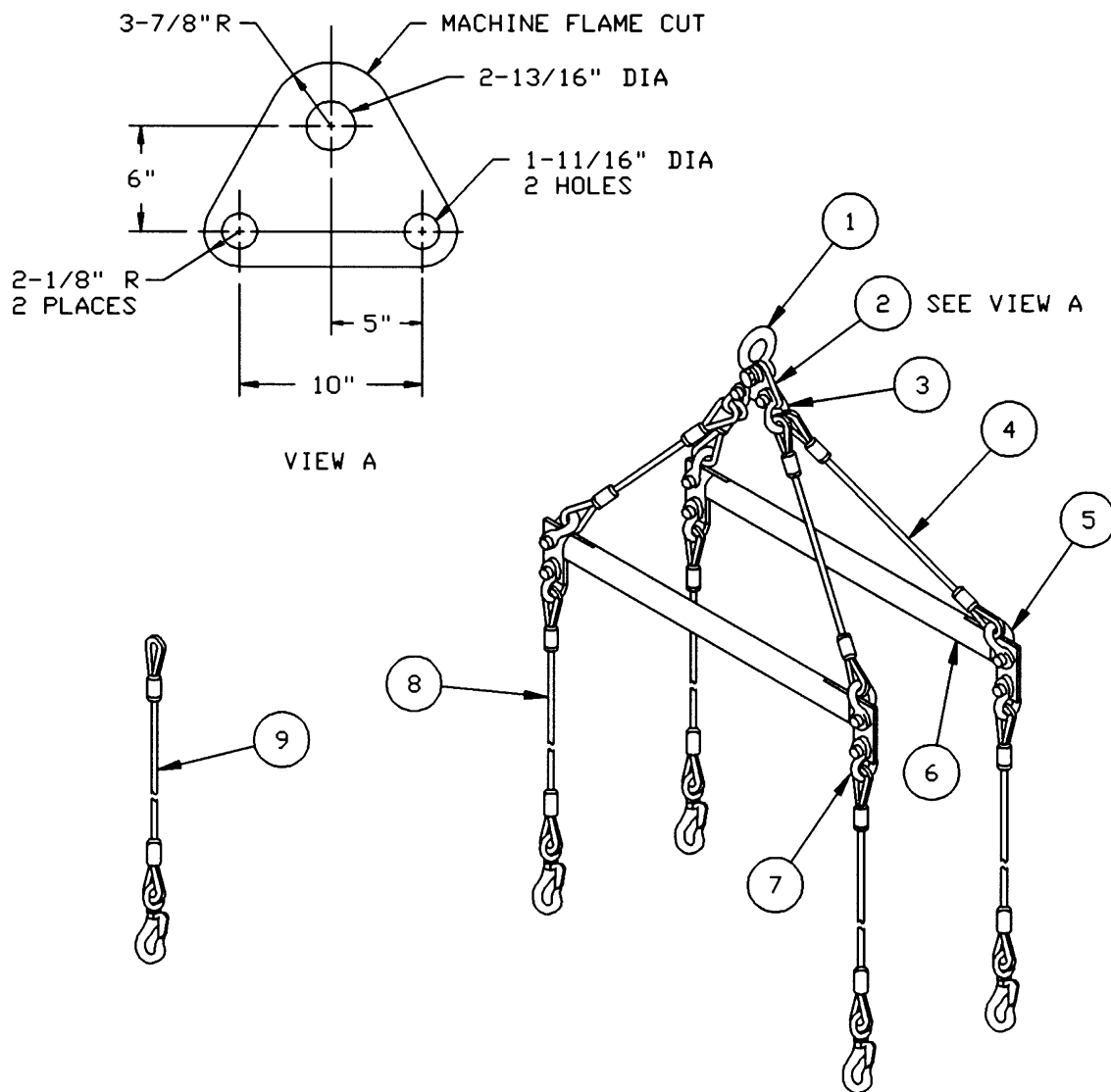
1-INCH = 25.40 mm

1-FOOT = 304.80 mm

1-TON = 907.18 kg

FIGURE 2. Size 17 - (17 ton) sling assembly.

FF-S-2874



- ① SHACKLE, 2-1/2" DIA. - 1 REQUIRED.
- ② FLOUNDER PLATE, 2" THICK - 1 REQUIRED.
- ③ SHACKLE, 1-1/2" DIA. - 2 REQUIRED.
- ④ UPPER LEG ASSEMBLY (SEE FIGURE 6) - 4 REQUIRED.
- ⑤ SHACKLE, 1-3/8" DIA. - 4 REQUIRED.
- ⑥ SPREADER BAR (SEE FIGURE 9) - 2 REQUIRED.
- ⑦ SHACKLE, 1-1/4" DIA. - 4 REQUIRED.
- ⑧ LOWER LEG ASSEMBLY (SEE FIGURE 6) - 4 REQUIRED.
- ⑨ EXTENSION LEG ASSEMBLY (SEE FIGURE 6)  
- 4 SHORT AND 4 LONG REQUIRED.

**NOTE:****1. METRIC EQUIVALENT:**

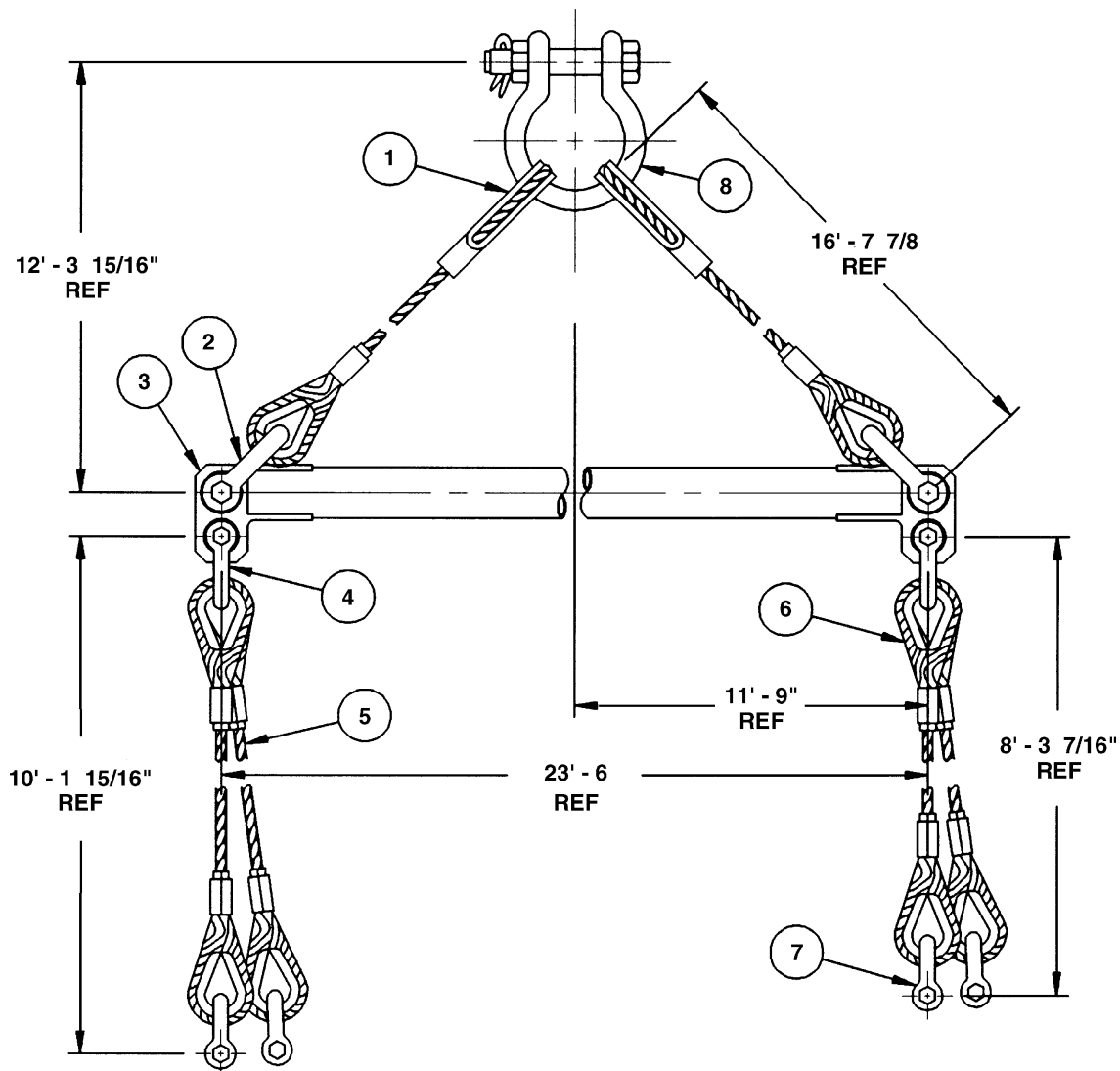
1-INCH = 25.40 mm

1-FOOT = 304.80 mm

1-TON = 907.18 kg

FIGURE 3. Size 30 - (30 ton) sling assembly.

FF-S-2874



- ① UPPER LEG ASSEMBLY (SEE FIGURE 7) - 2 REQUIRED.
- ② SHACKLE, 2-1/2" DIA. - 2 REQUIRED.
- ③ SPREADER BAR (SEE FIGURE 9) - 1 REQUIRED.
- ④ SHACKLE, 2" DIA. - 2 REQUIRED.
- ⑤ LOWER LEG ASSEMBLY (SEE FIGURE 6), 8' - 11" - 2 REQUIRED.
- ⑥ LOWER LEG ASSEMBLY (SEE FIGURE 6), 7' - 1" - 2 REQUIRED.
- ⑦ SHACKLE, 1-1/2" DIA. - 4 REQUIRED.
- ⑧ SHACKLE, 3" DIA. - 1 REQUIRED.

## NOTE:

## 1. METRIC EQUIVALENT:

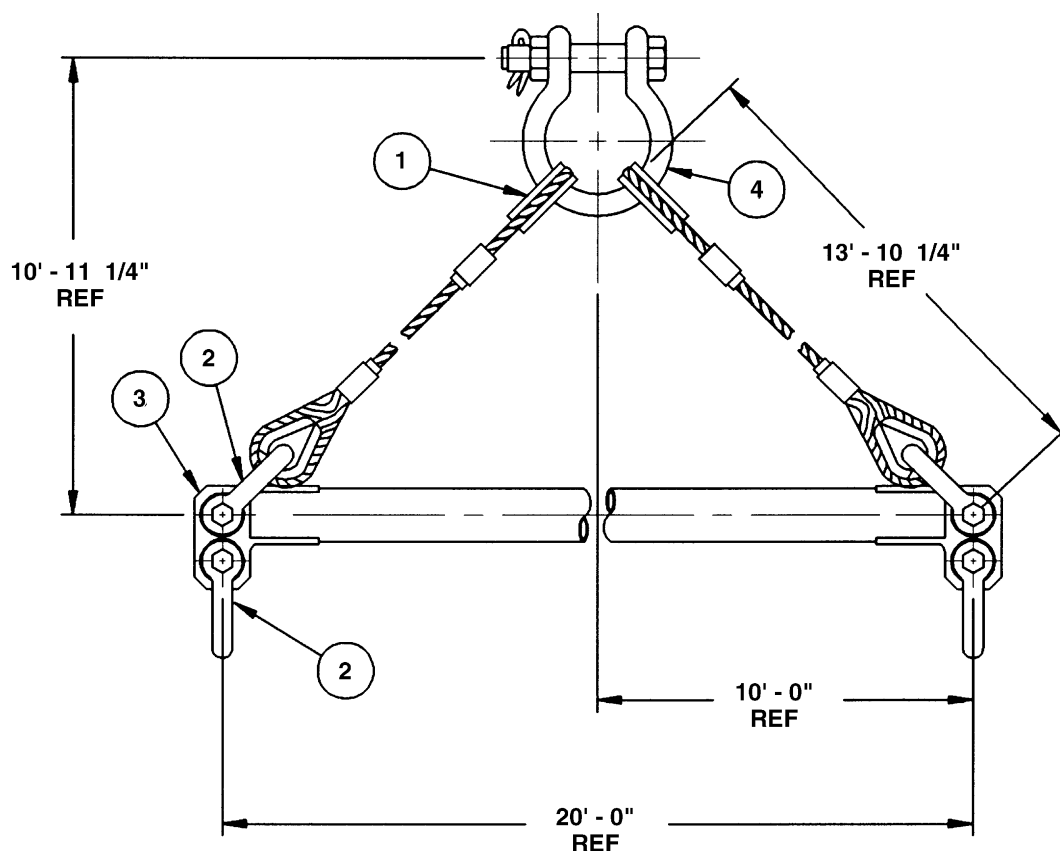
1-INCH = 25.40 mm

1-FOOT = 304.80 mm

1-TON = 907.18 kg

FIGURE 4. Size 60 - (60 ton) sling assembly.

FF-S-2874



- ① UPPER LEG ASSEMBLY (SEE FIGURE 8) - 2 REQUIRED.
- ② SHACKLE, 2-1/2" DIA. - 4 REQUIRED.
- ③ SPREADER BAR (SEE FIGURE 9) - 1 REQUIRED.
- ④ SHACKLE, 3" DIA. - 1 REQUIRED.

**NOTE:**

**1. METRIC EQUIVALENT:**

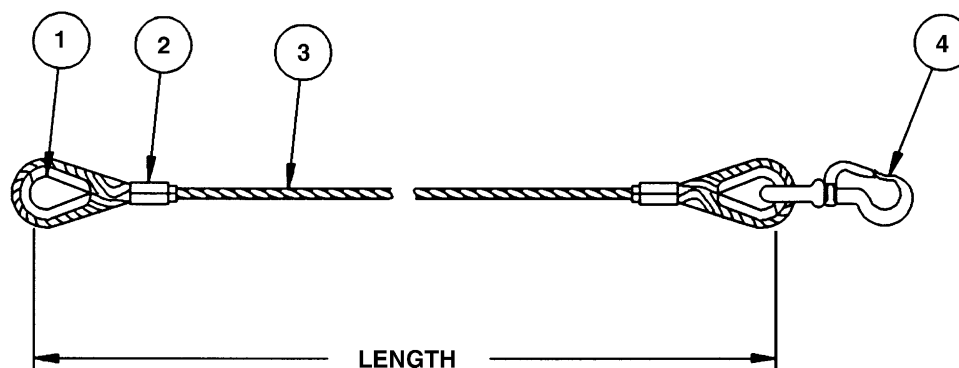
1-INCH = 25.40 mm

1-FOOT = 304.80 mm

1-TON = 907.18 kg

FIGURE 5. Size 60A - (60 ton) sling assembly.

FF-S-2874



- ① THIMBLE, - 2 REQUIRED.
- ② SWAGED SLEEVE - 2 REQUIRED.
- ③ WIRE ROPE.
- ④ SAFETY HOOK.

**NOTES:**

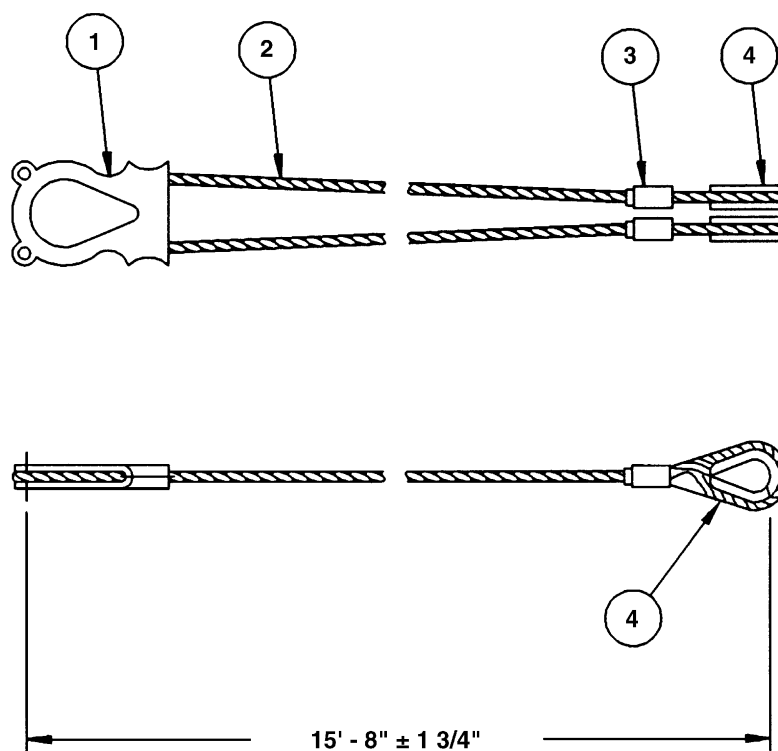
- 1. THIMBLES SHALL BE IN SAME PLANE  $\pm 15^\circ$ .
- 2. TOLERANCE ON SLING LENGTHS SHALL BE  $\pm 2$  ROPE DIAMETERS OR  $\pm .5\%$  OF LENGTH, WHICHEVER IS GREATER.
- 3. METRIC EQUIVALENT:
  - 1-INCH = 25.40 mm
  - 1-FOOT = 304.80 mm
  - 1-TON = 907.18 kg

**SIZES:**

LOCATION	SLING SIZE	WIRE ROPE DIAMETER	LENGTH	SAFETY HOOK	QUANTITY
UPPER LEG	5	5/8"	3' 11-9/16"	NONE	4
	17 & 30	1-1/8"	5' 6"	NONE	4
LOWER LEG	5	9/16"	8' 8-9/16"	2 TON	4
	17 & 30	1"	9' 7-5/16"	10 TON	4
	60	1-3/4"	7' 1"	NONE	2
	60	1-3/4"	8' 11"	NONE	2
EXTENSION	17 & 30	1"	5' 6-1/2"	10 TON	4
	17 & 30	1"	3' 9-1/2"	10 TON	4

FIGURE 6. Leg assemblies.

FF-S-2874



- ① EQUALIZING THIMBLE, 9" X 15" INSIDE DIM. - 1 REQUIRED.
- ② WIRE ROPE, 1-3/4" DIA.
- ③ SWAGED SLEEVE - 2 REQUIRED.
- ④ THIMBLE, 1-3/4" SINGLE GROOVE - 2 REQUIRED.

**NOTES:**

1. EQUALIZING THIMBLE AND SINGLE GROOVE THIMBLES ARE 90° ±15° TO EACH OTHER.

**2. METRIC EQUIVALENT:**

1-INCH = 25.40 mm

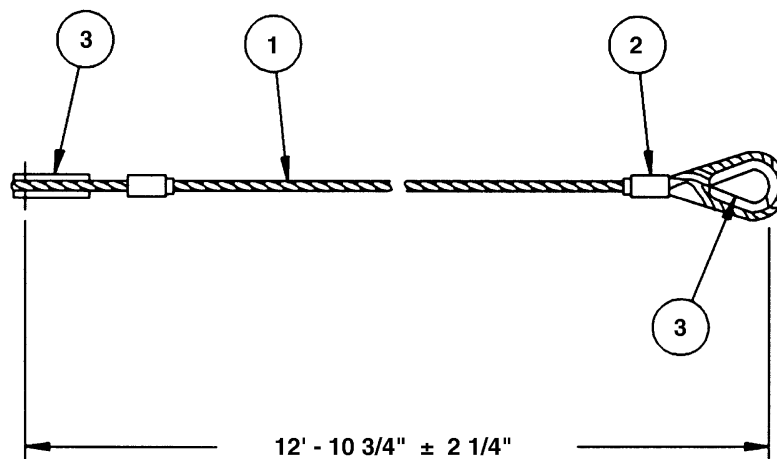
1-FOOT = 304.80 mm

1-TON = 907.18 kg

FIGURE 7. Upper leg assembly for size 60 (60 ton).



FF-S-2874



- ① WIRE ROPE, 2-1/4\" DIA.
- ② SWAGED SLEEVE - 2 REQUIRED.
- ③ THIMBLE, 2-1/4\" SINGLE GROOVE - 2 REQUIRED.

**NOTE:**

1. THIMBLES ARE 90° ±15° TO EACH OTHER.

2. METRIC EQUIVALENT:

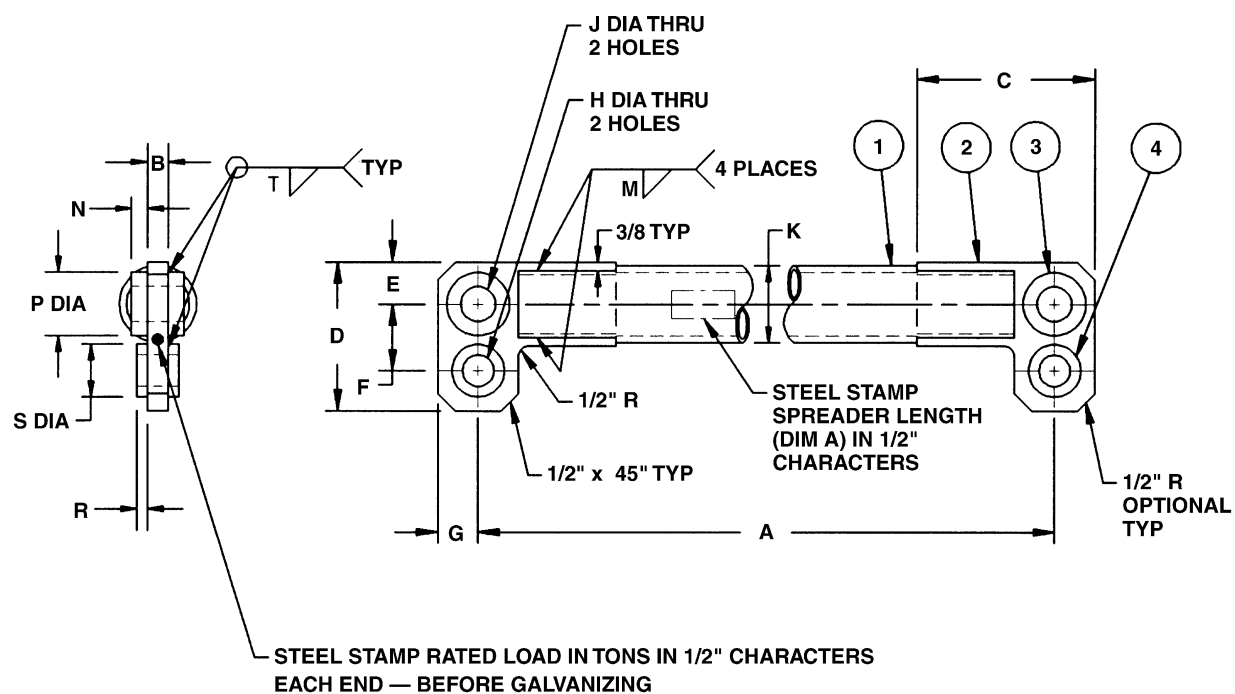
1-INCH = 25.40 mm

1-FOOT = 304.80 mm

1-TON = 907.18 kg

FIGURE 8. Upper leg assembly for size 60A (60 ton).

FF-S-2874



- ① SEAMLESS STEEL PIPE.
- ② STEEL PLATE.
- ③ STEEL BOSS } USED ON BOTH.
- ④ STEEL BOSS } SIZE 60 AND 60A.

## NOTE:

## 1. METRIC EQUIVALENT:

1-INCH = 25.40 mm

1-FOOT = 304.80 mm

1-TON = 907.18 kg

FIGURE 9. Spreader bar.

FF-S-2874

SPREADER BAR DIMENSIONS

	<u>DIMENSION</u>	<u>SIZE 5</u>	<u>SIZES 17 &amp; 30</u>	<u>SIZE 60</u>	<u>SIZE 60A</u>
Spreader length	A	6'6" ± 1/4"	9'0" ± 1/4"	23'6" ± 1/4"	20'0" ± 1/4"
Plate thickness	B	3/4"	1-1/8"	2"	2"
Plate length	C	5-1/2"	8-1/2"	1'8"	1'8"
Plate height	D	4-7/8"	7-3/8"	1' 2-3/4"	1'3"
Hole center line	E	1-1/2"	2"	4-3/4"	4-3/4"
Hole center line	F	2-1/8"	3-1/2"	6-1/2"	7"
Hole center line	G	1-1/4"	1-15/16"	5"	5"
Hole diameter	H	1" ± 1/32"	1-1/2" ± 1/32"	2-3/8"	2-7/8"
Hole diameter	J	1" ± 1/32"	1-5/8" ± 1/32"	2-7/8"	2-7/8"
Pipe diameter (Nom)	K	2"	3"	8"	8"
Weld size	M	3/16"	3/16"	5/16"	5/16"
Plate thickness	N	_____	_____	1"	1"
Plate diameter	P	_____	_____	6"	6"
Plate thickness	R	_____	_____	5/8"	1"
Plate diameter	S	_____	_____	5"	6"
Weld size	T	_____	_____	3/8"	3/8"

## NOTES:

1. Except as specified herein, other tolerances = ± 1/16-inch.
2. Remove burrs and sharp edges.
3. Metric equivalent: 1-inch = 25.40 mm  
1-foot = 304.80 mm  
1-ton = 907.18 kg

FIGURE 9. Spreader bar - Continued.

# STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

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2. DOCUMENT DATE (YYMMDD)  
971216

### 3. DOCUMENT TITLE

SLINGS, MULTIPLE LEG, VEHICLE (SHIPBOARD LOADING)

### 4. NATURE OF CHANGE *(Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.)*

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