| INCH-POUND |

MIL-S-22824E
14 September 1993
SUPERSEDING
MIL-S-22824D
24 July 1989

MILITARY SPECIFICATION

SLINGS, MULTIPLE LEG, VEHICLE (SHIPBOARD LOADING)

This specification is approved for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

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

1.2 Classification. Slings will be of the following sizes as specified (see 6.2).

Size 5 - 5 ton rated capacity.
Size 17 - 17 ton rated capacity.
size 30 - 30 ton rated capacity.
Size 60 - 60 ton rated capacity.
Size 6QA - 60 ton rated capacity.

2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications and standards. The following specifications and standards form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation (see 6.2).

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commanding Officer (Code 156), Naval Construction Battalion Center, 621 Pleasant Valley Road, Port Hueneme, CA 93043-4300, by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

AMSC N/A FSC 3940

SPECIFICATIONS

FEDERAL

FF-T-276 - Thimbles, Rope.
RR-C-271 - Chains and Attachments, Welded and Weldless.
RR-W-410 - Wire Rope and Strand.
PPP-B-601 - Boxes, Wood, Cleated Plywood.
PPP-B-621 - Boxes, Wood, Nailed and Lock-Corner.

MILITARY

MIL-P-116 - Preservation, Methods of.

STANDARDS

FEDERAL

* FED-STD-595 - Colors Used in Government Procurement.

* MILITARY

* MIL-STD-129 - Marking for Shipment and Storage.

* (Unless otherwise indicated, copies of federal and military specifications and standards are available from the Standardization Documents Order Desk, Bldg. 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

2.2 Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents which are DOD adopted are those listed in the issue of the DODISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DODISS are the issues of the documents which are current on the date of the solicitation (see 6.2).

AMERICAN NATIONAL STANDARDS INSTITUTE, INC. (ANSI)

ANSI B30.10 - HOOKS.

(Application for copies should be addressed to the American Natioal Standards Institute, Inc., 11 West 42nd Street, New York, NY 10036.)

ASTM

ASTM A 36 - 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.
ASTM D 3951 - Commercial Packaging.

(Application for copies should be addressed to ASTM, 1916 Race Street, Philadelphia, PA 19103-1187.)

AMERICAN WELDING SOCIETY (AWS)

AWS D1.1 - Structural Welding Code, Steel.

(Application for copies should be addressed to the American Welding Society, 550 N.W. LeJeune Road, P.O. Box 351040, Miami, FL 33135.)

(Non-Government standards and other publications are normally available from the organizations that prepare or distribute the documents. These documents also may be available in or through libraries or other informational services.)

2.3 Order of precedence. In the event of a conflict between the text of this document and the references cited herein (except for associated detail specifications, specification sheets or MS standards), the text of this document takes precedence. Nothing in this document, 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, pear links) and safety hooks.

3.2 First article. When specified (see 6.2), the contractor shall furnish one sling assembly for first article inspection and approval (see 4.2.1 and 6.3).

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 materialism” 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 include 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.

3.7 Pear link. The pear-shaped links shall be hot-dip zinc coated, forged or welded structural quality steel. The proof loads shall be not less than as follows:

1-3/4 inch rod diameter (size 5 sling) = 95,000 pounds.
2-3/4 inch rod diameter (size 17 sling) = 160,000 pounds.

* 3.8 Shackles. All shackles shall be anchor type, high strength, safety (bolt and nut), 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.

3.9 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.

* 3.10 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:

9/16 inch diameter = 12,800 pounds.
5/8 inch diameter = 15,600 pounds.
1 inch diameter = 39,300 pounds.
1-1/8 inch diameter = 48,100 pounds.
1-1/2 inch diameter = 84,400 pounds.
1-3/4 inch diameter = 113,200 pounds.
2-1/4 inch diameter = 177,800 pounds.

3.10.1 Fire rope. Wire rope shall be 6 by 37 strand, uncoated, extra improved plow steel, regular lay, preformed with independent wire rope center, conforming to type I, class 3 of RR-W-410.

3.10.2 Thimbles. Thimbles for wire rope shall conform to FF-T-276, type 111, heavy-duty, hot-dip zinc coated.

* 3.10.3 Swaged sleeve fittings. Swaged sleeve fittings shall be seamless stainless steel or seamless carbon steel. Carbon steel sleeves shall be zinc coated after swaging.

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

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

3.11.2 Steel Plate. The steel plate shall conform to ASTM A 36.

3.11.3 Rated capacity and length marking. The rated capacity (in tons) 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.

* 3.12 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, conforming to ANSI B30.10. Hook 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 Chain assemblies. When specified (see 6.2), two zinc-coated chain assemblies, each consisting of the items in table I, shall be furnished with each sling assembly.

TABLE I. Chain assemblies.

Item	Description	Quantity per chain assembly
1	Chain, welded, steel, 1/4-inch size; type 1, class 4 of RR-C-271, 10 feet long	1 each
2	Hook, grab; for 1/4-inch chain size, type V, class 2 of RR-C-271	1 each
3	Link, chain, connecting, steel, for 1/4-inch chain, type II of RR-C-271	1 each

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

3.15 Cleaning, treatment, and painting. Surfaces normally painted in good commercial practice shall be cleaned, treated, and painted as specified herein. Unless otherwise specified (see 6.2), one pair of safety hooks connecting to a spreader bar on one side of sling shall be sprayed with red lacquer, color No. 21158 of FED-STD-595; the other pair, on the opposite side, shall be yellow lacquer, color No. 23538. Surfaces to be painted shall be cleaned and dried to insure that they are free from contaminants such as soil, grease, welding slag and spatter, loose mill scale, water, dirt, corrosion product, or any other

contaminating substances. As soon as practicable after cleaning, and before any corrosion product or other contamination can result, the surfaces shall be prepared or treated to insure the adhesion of the coating system. The painting shall consist of at least one coat of primer and one finish coat. The primer shall be applied to a clean, dry surface as soon as practicable after cleaning and treating. Painting shall be with manufacturer's current materials according to manufacturer's current processes and the total dry film thickness shall be not less than 2.5 roils over the entire surface. The paint shall be free from runs, sags, orange peel, or other defects.

3.15.1 Treatment. 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. Manufacturing processes shall be done neatly and accurately. All bends shall be made by controlled means to insure 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 pear 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 in a manner to assure efficiencies of 95 percent of the wire rope nominal breaking strength (refer to RR-W-410) at the joint for wire rope diameters up through 1-inch, 92.5 percent for wire rope diameters 1-1/8 through 2 inches, and 90 percent for wire rope diameters of 2-1/8 inches and above. No severed strands or kinks shall be permitted.

* 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. These markings are in addition to other markings as specified herein.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the contraction is responsible for the performance of all inspection requirements (examinations and tests) as specified herein. Except as otherwise specified in the contract or purchase order, the contractor may use his own or 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 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 specification shall become a part of the contractor's overall inspection system or quality program. The absence of any inspection requirements in the specification 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 one sling assembly when a first article is required (see 3.2 and 6.3). This inspection shall include the examination of 4.4 and the tests of 4.5. 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 4.4, the proof load test of 4.5.1, and the packaging inspection of 4.6. This inspection shall be performed on the samples

selected at random from an inspection lot. Failure of any one sample to pass any prescribed inspection shall constitute cause for rejection of the lot. The number of sample(s) for inspection shall be as specified (see 6.2).

4.3 Inspection lot. Sling assemblies offered for delivery at one time shall be considered a lot for purposes of inspection. When a lot is rejected, the contractor may rework it to correct the defects or screen out the defective assemblies and resubmit for reinspection. If the rejected lot is reworked, reinspection shall be performed to determine compliance to all specified requirements. If the rejected lot is screened, reinspection shall be limited to the defect causing rejection.

4.4 Examination. This element of inspection shall encompass all visual examination and dimensional measurements. Non-compliance with any specified requirements or presence of one or more defects shall constitute cause for rejection.

4.5 Tests.

4.5.1 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 pear 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 B30.10. Evidence of cracks, loosening of wire strands, or permanent deformations (except normal thimble deformation) shall constitute cause for rejection.

4.5.2 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. Hold the load for at least 5 minutes. Any evidence of permanent deformation other than normal thimble deformation shall constitute cause for rejection of the sling assembly.

4.6 Packaging inspection. The preservation, packing, and marking of the sling assembly shall be inspected to verify conformance to the requirements of section 5.

5. PACKAGING

5.1 Preservation. Preservation shall be level A or commercial as specified (see 6.2).

5.1.1 Level A.

5.1.1.1 Methods of preservation. Cleaning processes, drying procedures, preservatives, and methods of preservation specified in the following paragraphs are listed in MIL-P-116 and shall conform to the requirements of MIL-P-116 and any applicable specifications.

5.1.1.2 Disassemble. The screw pin shall be removed from one end of the spreader bars and the upper leg assemblies. The upper legs shall be positioned along the length of the spreader bars on one side, and the four lower legs positioned along the opposite side. The screw pins shall be replaced in the shackles.

5.1.1.3 Cleaning and drying. Prior to the application of preservative compounds or paint, surfaces shall be cleaned by process C-1 and dried by any applicable procedure of MIL-P-116.

5.1.1.4 Unprotected surfaces. Unprotected exterior metal surfaces requiring the application of a contact preservative in accordance with MIL-P-116 and not specifically provided for herein shall be preserved as follows:

5.1.1.5 Wire rope. Wire rope shall be preserved method I by coating with type P-1 or P-19 preservative. The preservative shall be applied to all surfaces of the wire rope. Excess preservative shall be removed by swabbing or draining. The preservative shall be allowed to dry (at least 4 hours). The wire rope shall be bundled or coiled and wrapped with a barrier material and secured.

5.1.2 Commercial. The equipment shall be preserved in accordance with ASTM D 3951.

5.2 Packing. Packing shall be level A, B, or commercial, as specified (see 6.2).

5.2.1 Level A. Each complete sling assembly shall be packed in a box conforming to PPP-B-601, overseas type; or PPP-B-621, class 2. Contents shall be cushioned, blocked, and braced to prevent movement within the container.

5.2.2 Level B. Each complete sling assembly shall be packed as specified for level A except that the box shall be domestic type or class I.

5.2.3 Commercial. The equipment shall be prepared for shipment in accordance with ASTM D 3951.

5.3 Marking. Marking shall be in accordance with MIL-STD-129.

6. NOTES

(This section contains information of a general or explanatory nature that may be 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.

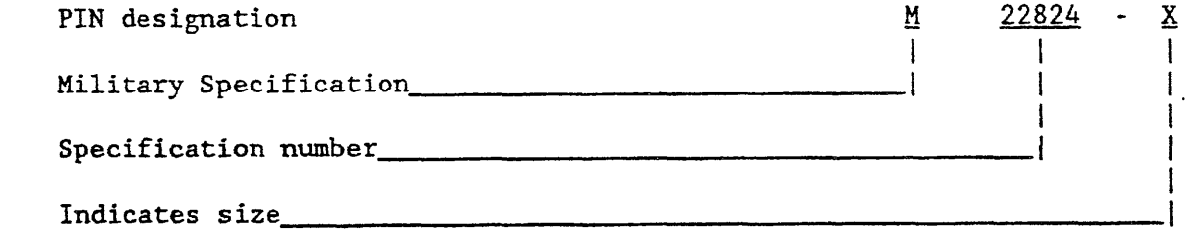
6.2 Acquisition requirements. Acquisition documents should specify the following:

a. Title, number, and date of this specification.
b. Size of sling assembly required (see 1.2).
c. Issue of DODISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.1.1 and 2.2).

d. When first article is required for inspection and approval (see 3.2).
e. When chain assemblies should be furnished (see 3.13).
f. When painting of safety hooks is required (see 3.15).
g. Number of samples required for quality conformance inspection (see 4.2.2).
h. Level of preservation and level of packing required (see 5.1 and 5.2).

6.3 First article. When a first article inspection is required, the item will be tested and should be a first article sample selected from the first sling assembly production item 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 sling assembly. The contracting officer should include specific instructions in acquisition documents regarding arrangements for examination, test, and approval of the first article.

6.4 Part or indentifying number (PIN). The PIN to be used for sling assembly acquired to this specification is created as follows:



6.4.1 Examples of PIN.

Example 1 - Required: size 5
PIN designation: M 22824-5

Example 2 - Required: size 60A
PIN designation: M 22824-60A

6.5 Supersession data. This specification supersedes MIL-S-82174(MC), sling, Multiple Leg: Vehicle, Tactical, 60-Ton (Shipboard Loading). Figures 1 through 9 in this revision replaced the following drawings referenced in MIL-S-22824(NAVY): Bureau of Ships Drawing S2003-1445483, 60 ton Tank Lifting Sling; Bureau of Yards and Docks Drawing 816404, Lifting Sling (30 Ton Cap.) Multiple Leg, with Extensions; Marine Corps Drawings 5060, Sling, Multiple leg Assembly, 5 Ton; and 5070, Sling, Multiple Leg Assembly, 17 Ton.

* 6.6 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 factor of safety of 5.

6.7 Subject term (key word) listing.

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

6.8 Changes from previous issue. The margins of this specification are marked with an asterisk to indicate where changes (additions, modifications, corrections, deletions) from the previous issue were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the last previous issue.

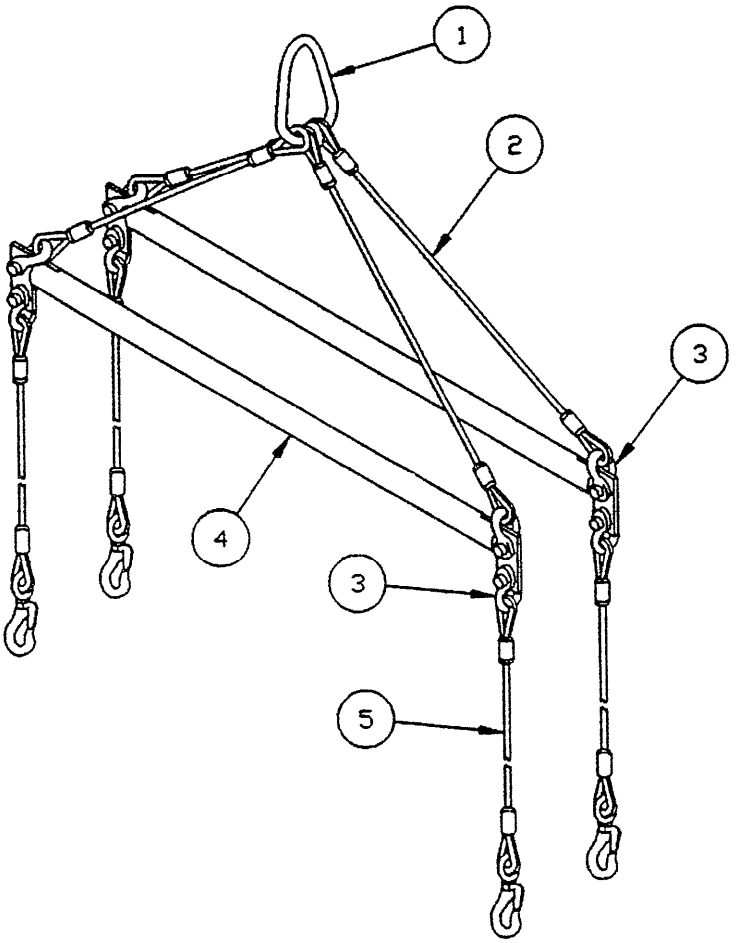
Custodian:
Navy - YD

Review activities:
Navy - MC, SH
DLA - GS

User activities:
Army - MT
Navy - CG

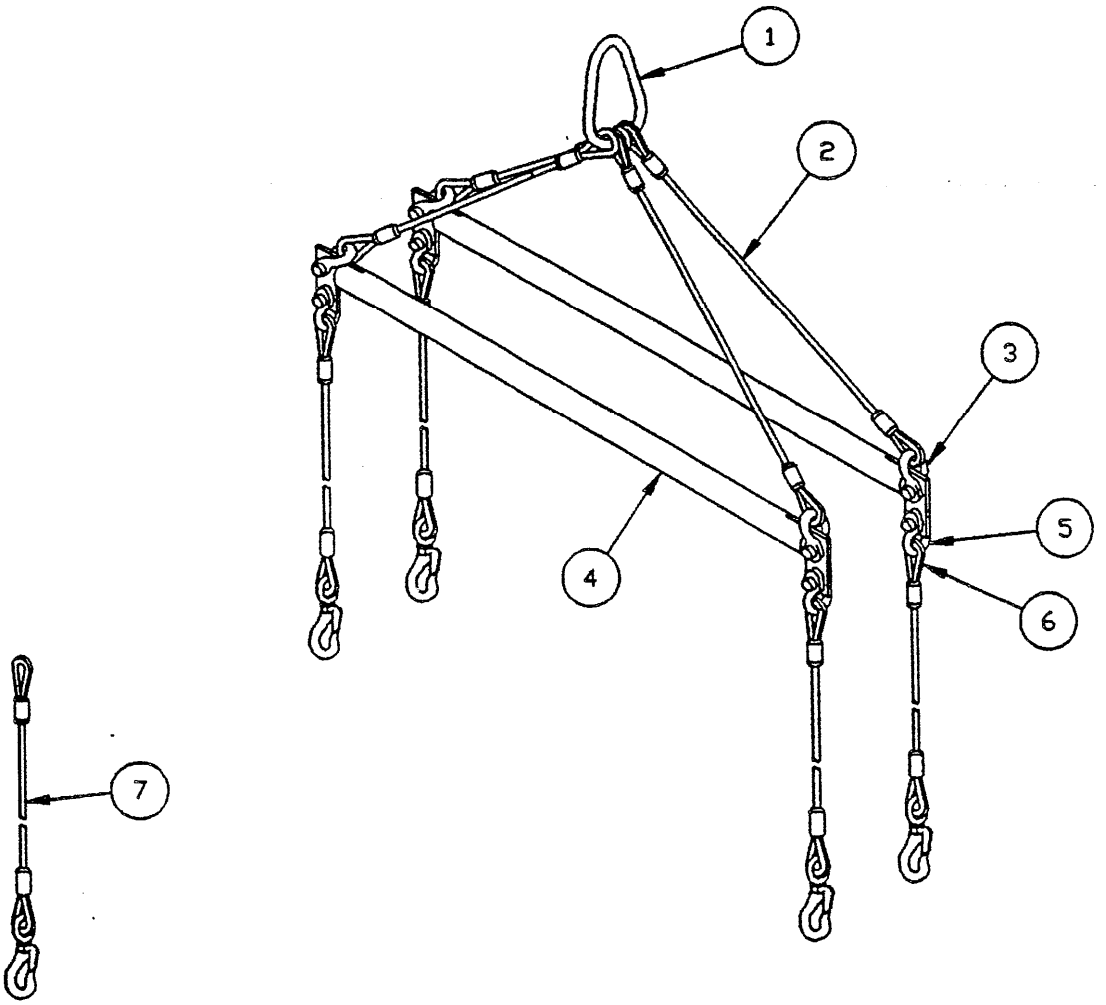
Preparing activity:
Navy - YD

(Project 3940-0197)



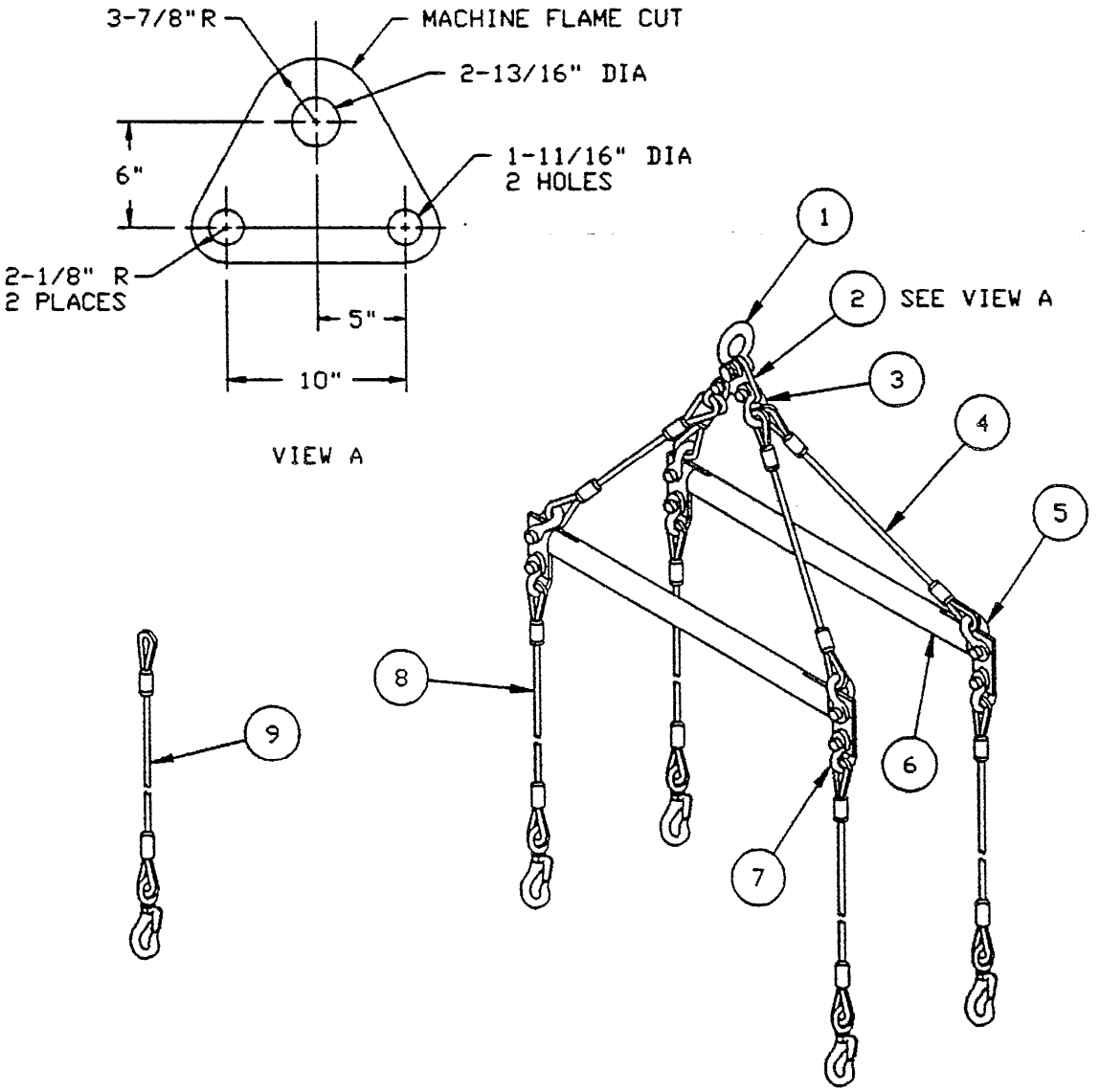
(1) PEAR LINK, 1-3/4" X 4" X 8" X 12" - 1 REQUIRED.
(2) UPPER LEG ASSEMBLY (SEE FIGURE 6) - 4 REQUIRED.
(3) SHACKLE, 3/4" DIA - 8 REQUIRED.
(4) SPREADER BAR (SEE FIGURE 9) - 2 REQUIRED.
(5) LOWER LEG ASSEMBLY (SEE FIGURE 6) - 4 REQUIRED.

FIGURE 1. Size 5 - 5 ton sling assembly.



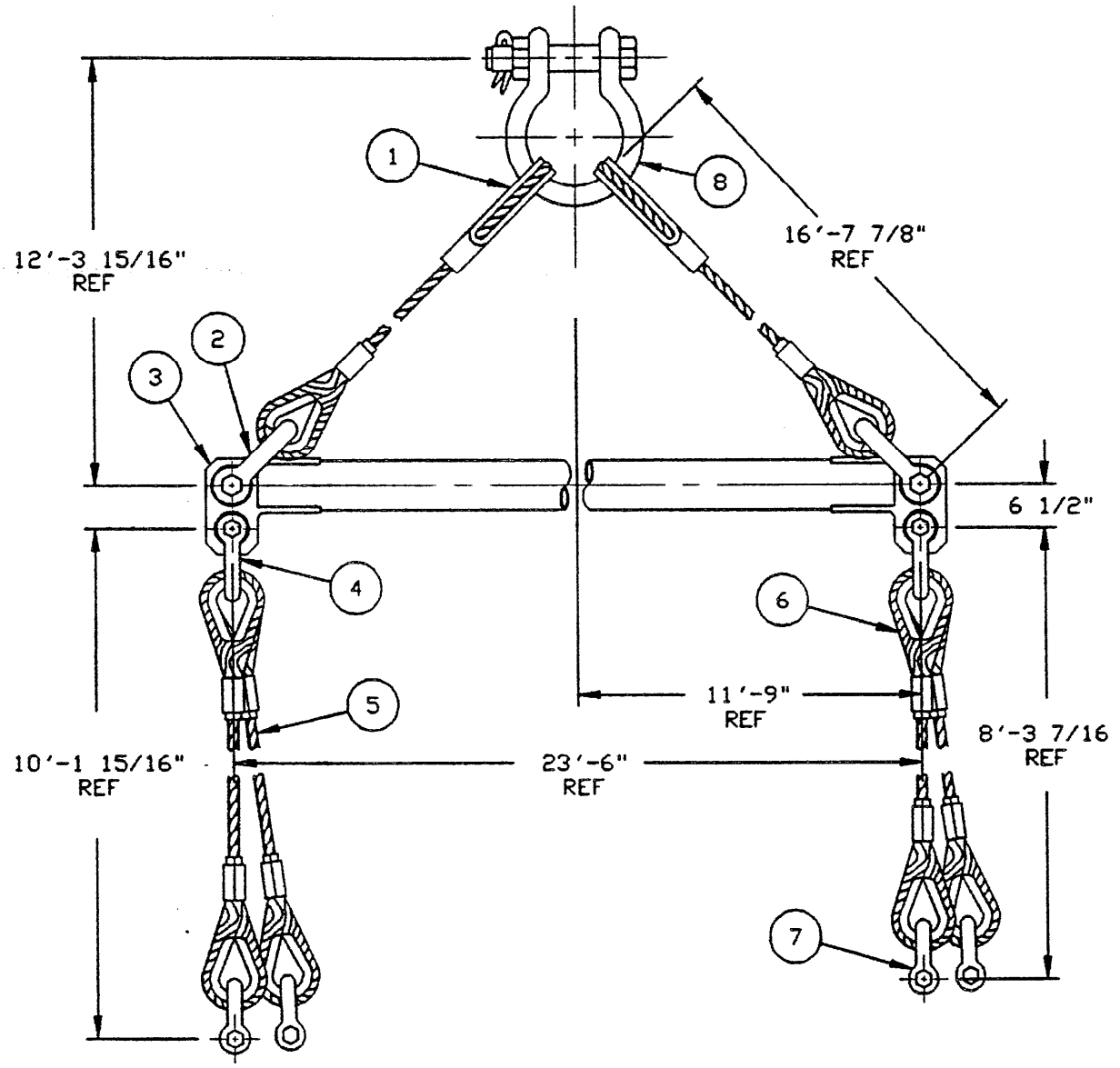
① PEAR LINK, 2-3/4" X 4-3/4" X 9-1/2" X 14-1/4" - 1 REQUIRED.
② UPPER LEG ASSEMBLY (SEE FIGURE 6) - 4 REQUIRED.
③ SHACKLE, 1-3/8" DIA - 4 REQUIRED.
④ SPREADER BAR (SEE FIGURE 9) - 2 REQUIRED.
⑤ SHACKLE, 1-1/4" DIA - 4 REQUIRED.
⑥ LOWER LEG ASSEMBLY (SEE FIGURE 6) - 4 REQUIRED.
⑦ EXTENSION LEG ASSEMBLY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

FIGURE 2. Size 17 - 17 ton sling assembly.



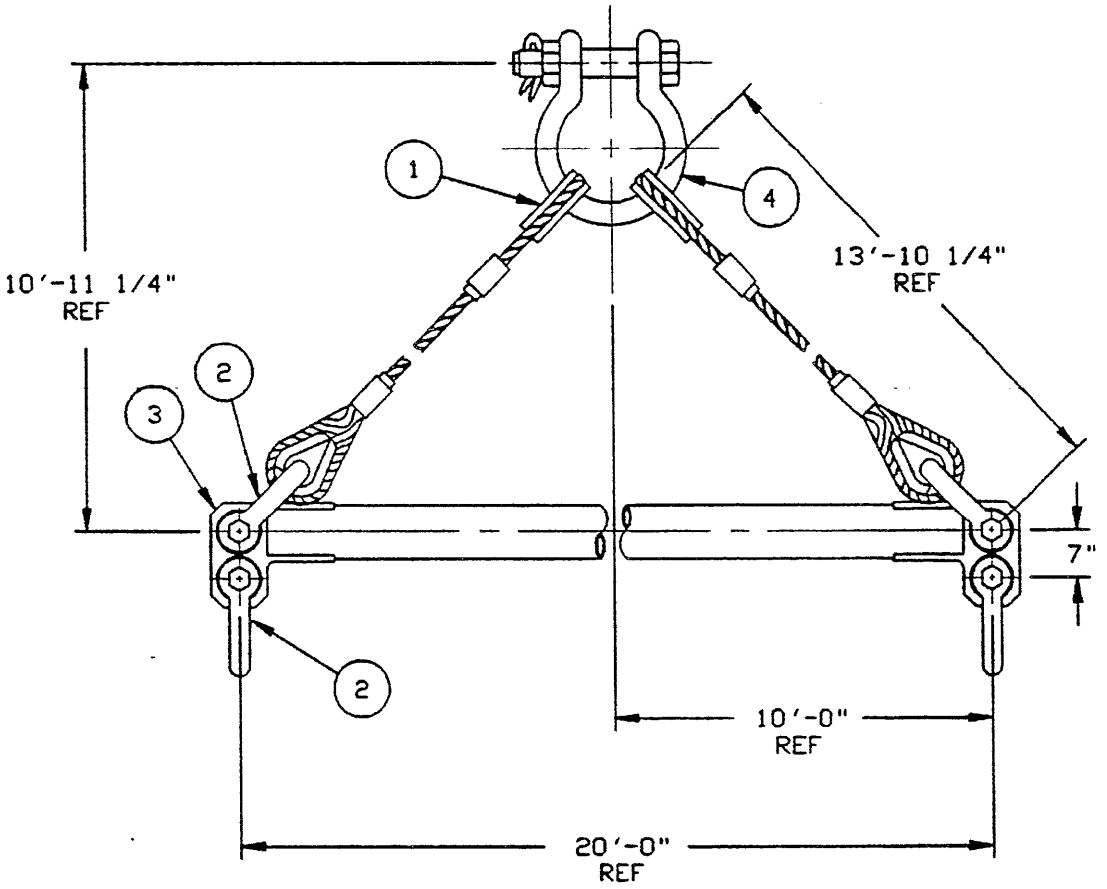
(1) SHACKLE, 2-1/2" DIA - 1 REQUIRED.
(2) FLOUNDER PLATE, 2" THICK - 1 REQUIRED.
(3) SHACKLE, 1-1/2" DIA - 2 REQUIRED.
(4) UPPER LEG ASSEMBLY (SEE FIGURE 6) - 4 REQUIRED.
(5) SHACKLE, 1-3/8" DIA - 4 REQUIRED.
(6) SPREADER BAR (SEE FIGURE 9) - 2 REQUIRED.
(7) SHACKLE, 1-1/4" DIA - 4 REQUIRED.
(8) LOWER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

FIGURE 3. Size 30 - 30 ton sling assembly.



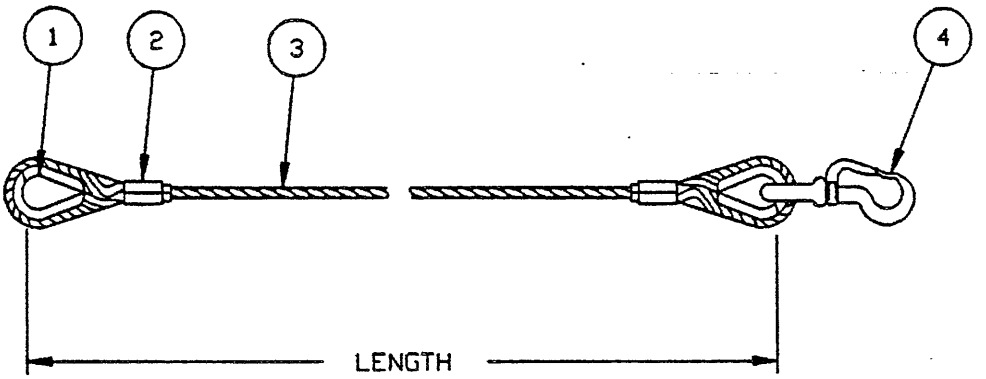
(1) UPPER LEG ASSEMBLY (SEE FIGURE 7) - 2 REQUIRED
(2) SHACKLE, 2 1/2" DIA - 2 REQUIRED.
(3) SPREADER BAR (SEE FIGURE 9) - 1 REQUIRED.
(4) SHACKLE, 2" DIA - 2 REQUIRED.
(5) LOWER LEG ASSEMBLY (SEE FIGURE 6), 8'-11" - 2 REQUIRED.
(6) LOWER LEG ASSEMBLY (SEE FIGURE 6), 7'-1" - 2 REQUIRED.
(7) SHACKLE,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

FIGURE 4. Size 60 - 60 ton sling assembly.



(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.

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



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

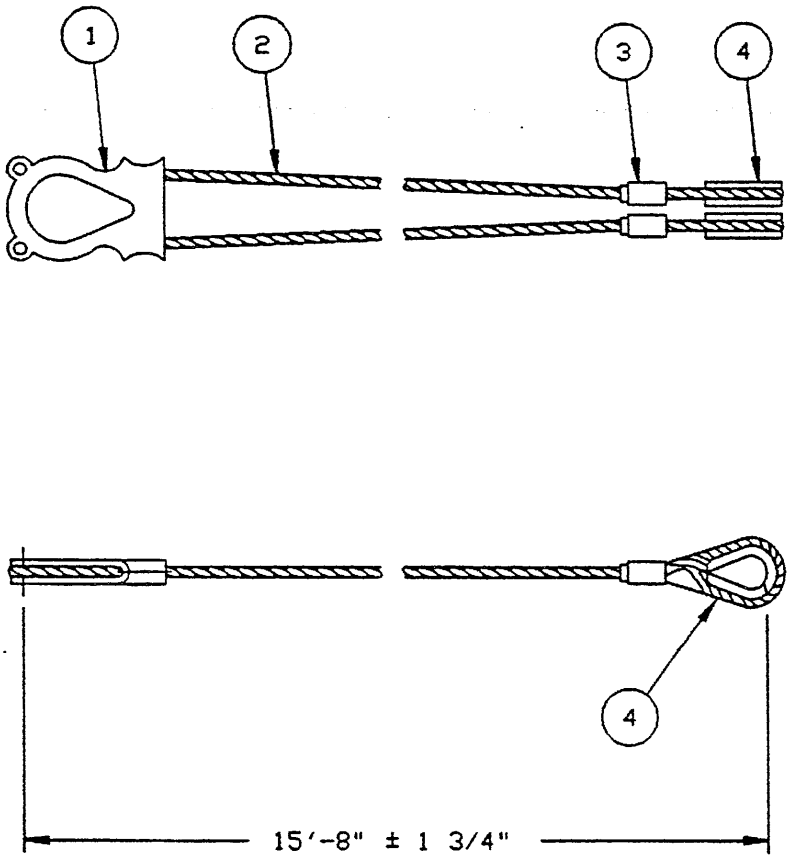
NOTES:

1. Thimbles shall be in same plane ± 15°.
2. Tolerance on sling lengths shall be ± 2 rope diameters or ± .5% of length, whichever is greater.

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.

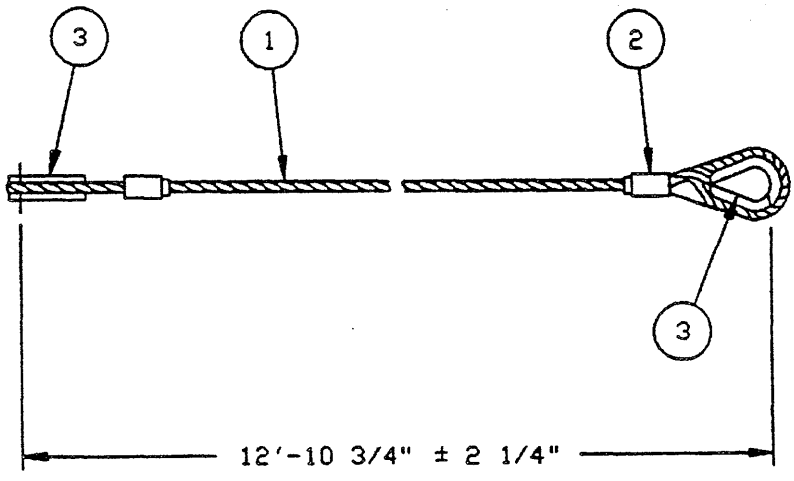


(1) EQUALIZING THIMBLE, 9" X 15" INSIDE DIM. - 1 REQUIRED.
(2) WIRE ROPE, 1-3/4" DIA.
(3) SWAGED SLEEVE - 2 REQUIRED.
(4) THIMBLE, 1-3/4" SINGLE GROOVE - 2 REQUIRED.

NOTE:

1. Equalizing thimble and single groove thimbles are 90° ± 15° to each other.

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



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.

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

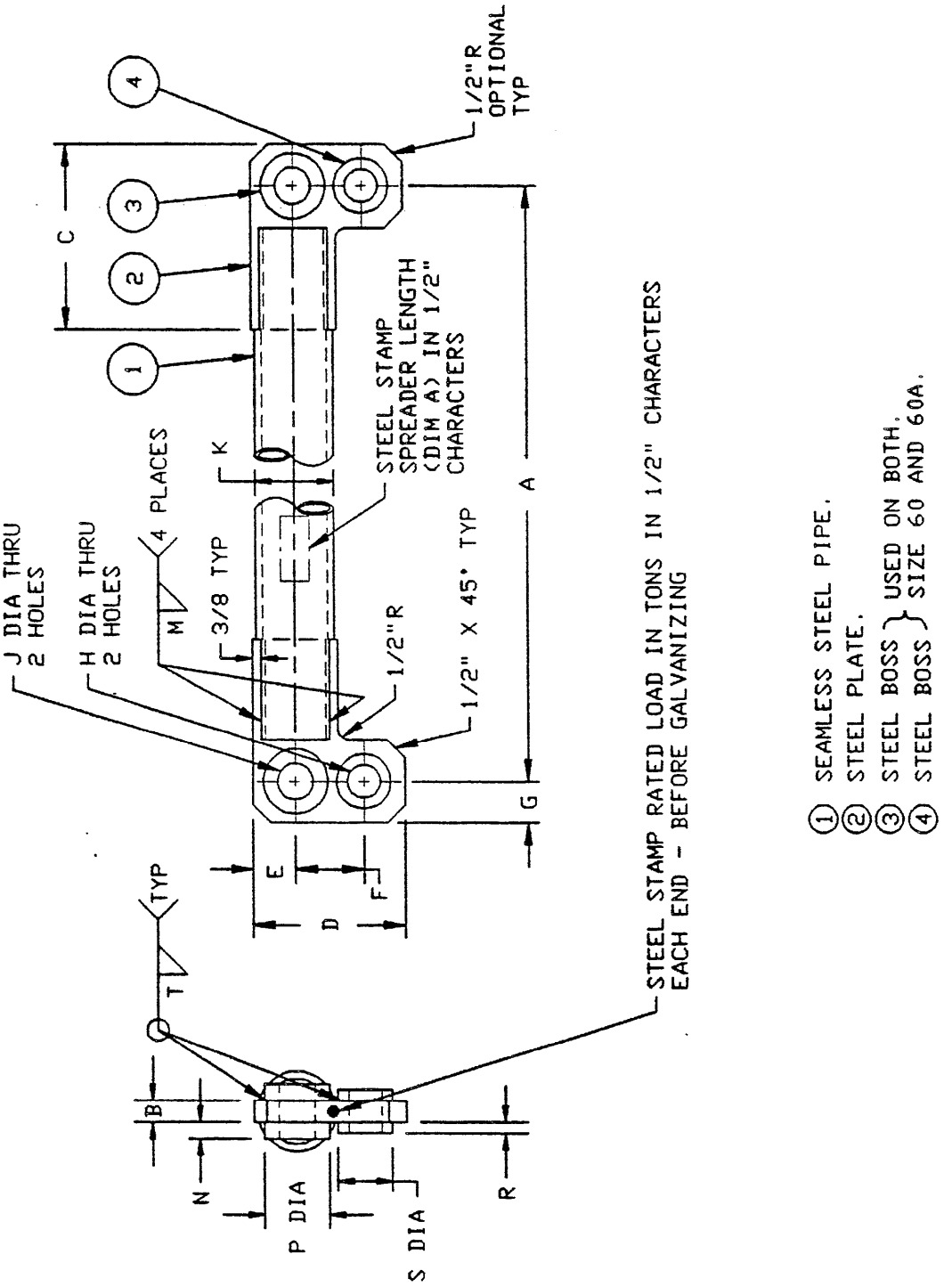


FIGURE 9. Spreader bar.

SPREADER BAR DIMENSIONS

DIMENSION		5 TON	17 & 30 TON	Size 60 60 TON	Size 60A 60 TON
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 DIA	P	———	———	6"	6"
PLATE THICKNESS	R	———	———	5/8"	1"
PLATE DIA	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.

FIGURE 9. Spreader bar - Continued.

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

INSTRUCTIONS

1. The preparing activity must complete blocks 1, 2, 3, and 8. In block 1, both the document number and revision letter should be given.
2. The submitter of this form must complete blocks 4, 5, 6, and 7.
3. The preparing activity must provide a reply within 30 days from receipt of the form.

NOTE: This form may not be used to request copies of documents, nor to request waivers, or clarification of requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements.

I RECOMMEND A CHANGE:	1. DOCUMENT NUMBER	2. DOCUMENT DATE (YYMMDD)
	MIL-S-22824E	930914

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.)*

5. REASON FOR RECOMMENDATION

6. SUBMITTER

a. NAME (Last, First, Middle Initial)	b. ORGANIZATION	
c. ADDRESS (Include Zip Code)	d. TELEPHONE (Include Area Code) (1) Commercial (2) AUTOVON (If applicable)	7. DATE SUBMITTED (YYMMDD)

8. PREPARING ACTIVITY

a. NAME	b. TELEPHONE (Include Area Code)	
E. PAMPLONA	(1) Commercial (805) 982-5843	(2) AUTOVON 551-5843
c. ADDRESS (Include Zip Code) NCBC, CESO Code 1564D 621 Pleasant Valley Road Port Hueneme, CA 93043-4300	IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT: Defense Quality and Standardization Office 5203 Leesburg Pike, Suite 1403, Falls Church, VA 22041-3466 Telephone (703) 756-2340 AUTOVON 289-2340	