

MIL-F-52553A(ME)  
17 June 1976  
SUPERSEDING  
MIL-F-52553(ME)  
15 February 1967

## MILITARY SPECIFICATION.

### FITTINGS, WIRE ROPE

This specification is approved for the use by the Mobility Equipment Research and Development Command, Department of the Army, and is available for use by all Departments and Agencies of the Department of Defense.

#### 1. SCOPE

1.1 Scope. This specification covers swaging-type sleeves and ferrules and a ferrule connector. The sleeves and ferrules are for wire rope conforming to RR-W-410, Type I, Class 2, 6 x 19 or Type I, Class 3, 6 x 37 improved plow steel, wire strand, or independent wire rope core.

1.2 Classification. The fittings shall be of the following types and sizes, as specified (see 6.2):

Type I - Sleeve.

Sizes

- 1/4 inch.
- 5/16 inch.
- 3/8 inch.
- 1/2 inch.
- 5/8 inch.
- 3/4 inch.
- 7/8 inch.
- 1 inch.
- 1-1/8 inch.
- 1-1/4 inch.
- 1-3/8 inch.
- 1-1/2 inch.

FSC 4030

MIL-F-52553A(ME,

Type II - Ferrules.

- Sizes - 1 inch.
- 1-1/8 inch.
- 1-1/4 inch.
- 1-3/8 inch.
- 1-1/2 inch.

Type III - Ferrule connector.

## 2. APPLICABLE DOCUMENTS

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

### SPECIFICATIONS

#### FEDERAL

- QQ-S-781 - Strapping, Steel, and Seals.
- RR-W-410 - Wire Rope and Strand.
- PPP-B-601 - Boxes, Wood, Cleated-Plywood.

#### MILITARY

- MIL-P-116 - Preservation-Packaging, Methods of.
- MIL-P-52554 - Press, Hydraulic, Portable, with Dies for Swaging, 500-Ton, Gasoline-Engine-Driven.

### STANDARDS

#### FEDERAL

- FED. STD. No. 356 - Commercial Packaging of Supplies and Equipment.

#### MILITARY

- MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes.
- MIL-STD-129 - Marking for Shipment and Storage.

MIL-F-52553A(ME)

(Copies of specifications and standards required by contractors in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

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

AMERICAN IRON AND STEEL INSTITUTE (AISI)

Steel Products Manual.

(Application for copies should be addressed to the American Iron and Steel Institute, 1000 16th Street, NW, Washington, DC 20036.)

(Technical society and technical association specifications and standards are generally available for reference from libraries. They are also distributed among technical groups and using Federal agencies.)

### 3. REQUIREMENTS

3.1 Description. The fittings shall be as shown on the applicable figures and as specified herein.

3.2 First article (first-produced fittings). The contractor shall furnish one or more of each type fitting as specified (see 6.2) for examination and testing within the time frame specified (see 6.2) to prove that his production methods will produce fittings that comply with the requirements of this specification. Examination and tests shall be as specified in Section 4 and shall be subject to surveillance and approval by the Government (see 6.3).

3.3 Material. Unless otherwise specified (see 6.2), the fittings shall be carbon steel conforming to AISI Steel Products Manual Designations 1010 through 1020.

3.4 Sleeves and ferrules. The sleeves and ferrules shall be designed to be swaged to the applicable size wire rope when using a swaging machine conforming to MIL-P-52554 and using dies that are compatible with both the machine and fittings. After swaging with a force of not more than 500 tons, the sleeves and ferrules shall withstand the pulls specified in Table I without separation, slipping, cracking, or other failure when tested as specified in 4.5.2.

MIL-F-52553A(ME)

TABLE I. Strength of sleeves, ferrules and ferrule connectors.

Wire rope size diameter (inches)	Minimum breaking strength of test item (pounds)
1/4	5880
5/16	9160
3/8	13,120
1/2	23,000
5/8	35,800
3/4	51,200
7/8	69,200
1	89,800
1-1/8	113,000
1-1/4	138,800
1-3/8	167,000
1-1/2	197,800

3.5 Type I - sleeves. The sleeves shall be as shown on Figure 1 and as specified herein.

3.6 Type II - ferrules. The ferrules shall be as shown on Figure 2 and as specified herein. The bore shall be smooth or have spiral flukes or grooves to fill the space between the wire rope strands before swaging. The ferrules, before swaging, shall provide a close fit with the wire rope but shall not require more than light blows with a hammer to drive them onto the end of the wire rope.

3.7 Type III - ferrule connectors. The ferrule connectors shall be for 1-3/8- and 1-1/2-inch wire rope sizes and shall be as shown on Figure 3 and as specified herein. The connector shall accept the wire rope ferrules in 1-3/8- and 1-1/2-inch sizes. The connector shall not require the use of bolts, pins, or similar devices for attaching the connector to the wire rope ferrules and shall not require more than 15 seconds for installation or removal of the connector when sufficient slack is provided in the wire rope. When connected to the wire rope ferrules, the connector shall withstand the pulls specified in Table I without separation, cracking, or permanent deformation.

3.8 Workmanship. All sleeves, ferrules, and ferrule connectors shall be finished free of harmful extraneous materials such as sand, dirt, and scale. All surfaces shall be free of burrs, sharp edges, cracks, dents, and other irregularities which would impair the safe use or function of the item.

#### 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 as specified herein. Except as otherwise specified in the contract, 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 assure supplies and services conform to prescribed requirements.

4.1.1 Material inspection. The contractor is responsible for insuring that materials used are manufactured, examined, and tested in accordance with referenced specifications and standards, as applicable.

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

- (a) First-produced fittings inspection (see 4.3).
- (b) Quality conformance inspection (see 4.4).
- (c) Inspection of packaging (see 4.6).

#### 4.3 First-produced fittings inspection.

4.3.1 Examination. The first-produced fittings shall be examined as specified in 4.5.1. Presence of one or more defects shall be cause for rejection.

4.3.2 Tests. The first-produced fittings shall be tested as specified in 4.5.2. Failure of any test shall be cause for rejection.

#### 4.4 Quality conformance inspection.

4.4.1 Sampling. Sampling for examination and tests shall be in accordance with MIL-STD-105.

#### 4.4.2 Examination.

4.4.2.1 Samples. Samples selected in accordance with 4.4.1 shall be examined for the defects specified in 4.5.1. AQL shall be 2.5 percent defective.

MIL-F-52556A(ME)

4.4.3 Tests.

4.4.3.1 Samples. Samples selected in accordance with 4.4.1 shall be tested as specified in 4.5.2. AQL shall be 2.5 percent defective.

4.5 Inspection procedure.

4.5.1 Examination. The fittings shall be examined as specified herein for the following major defects:

101. Dimensions not as specified.
102. Materials not as specified.
103. Marking missing, incomplete, or not legible.
104. Workmanship not as specified.

4.5.2 Tests.

4.5.2.1 Test methods. Pull tests shall be made with a tension testing machine, using pull test samples made up in accordance with the appropriate sketches shown on Figure 4. Failure of a sleeve, ferrule, or ferrule connector, when all three items are being tested at the same time, does not constitute failure of the other items of the test assembly. However, any item which does not fail in a composite test in which a failure of another item has occurred shall pass a separate test before acceptance.

4.5.2.2 Strength. Each test sample of a sleeve, ferrule, or ferrule connector shall be tested at the pull forces indicated in Table I. The contractor shall use extra-improved plow steel wire rope conforming to RR-W-410, Table XI, to assure against wire rope failure. Nonconformance to 3.4 or 3.7, as applicable, shall constitute failure of this test.

4.6 Inspection of packaging.

4.6.1 Quality conformance inspection of pack.

4.6.1.1 Unit of product. For the purpose of inspection, a completed pack prepared for shipment shall be considered a unit of product.

4.6.1.2 Sampling. Sampling for examination shall be in accordance with MIL-STD-105.

4.6.1.3 Examination. Samples selected in accordance with 4.6.1.2 shall be examined for the following defects. AQL shall be 2.5 percent defective.

MIL-F-52553A(ME)

105. Preservation not as specified.
106. Strapping not as specified for Level A.
107. Container not as specified.
108. Identification marking missing, incomplete, or not legible.

## 5. PACKAGING

5.1 Preservation. The fittings shall be coated with Type P-1 preservative. The preservative shall conform to the applicable specification listed in and shall be applied in accordance with the requirements of MIL-P-116.

5.2 Packing. Packing shall be Level A or Commercial, as specified (see 6.2).

5.2.1 Level A. The fittings, coated with preservative as specified in 5.1, shall be packed in close-fitting boxes conforming to PPP-B-601, Overseas Type, Grade B, style optional. Strapping shall conform to QQ-S-781, Class 1, Type I or IV, size as applicable. Unless otherwise specified (see 6.2), strapping shall be Finish B. When specified (see 6.2), strapping shall be Finish A.

5.2.2 Commercial. Commercial packing shall be in accordance with FED. STD. No. 356.

## 5.3 Marking.

5.3.1 Military. Level A marking shall be in accordance with MIL-STD-129.

5.3.2 Commercial. Commercial marking shall be in accordance with FED. STD. No. 356.

## 6. NOTES

6.1 Intended use. The fittings are intended for use in rigging of wire rope for the installation of the submarine pipelines and tanker mooring systems and for other applications where eyes or ferrules are required on the ends of wire rope. The sleeves and ferrules are intended to be cold-swaged onto wire rope with a swaging machine of 500-ton force and equipped with the proper dies.

MIL-F-52553A(ME)

6.2 Ordering data. Procurement documents should specify the following:

- (a) Title, number, and date of this specification.
- (b) Type and size of fittings required (see 1.2).
- (c) Time frame required for submission of first-produced fittings and number of each type and size required (see 3.2).
- (d) When material shall be other than as specified (see 3.3).
- (e) Degree of packing required (see 5.2).
- (f) When strapping shall be other than as specified (see 5.2.1).

6.3 First-produced fittings. Any changes or deviations of production fittings from the approved first-produced fittings during production will be subject to the approval of the contracting officer. Approval of the first-produced fittings will not relieve the contractor of his obligation to furnish fittings conforming to this specification.

6.4 Fitting compatibility. The sleeves and ferrules furnished by the contractor may not be compatible with the existing dies furnished with the hydraulic press conforming to MIL-P-52554. Consequently, new dies may be required to properly swage these new fittings.

6.5 Classification changes. Classification changes of fittings between this revision and the previous edition are as follows:

Type I - Sleeve. Add Sizes 1/4 inch,  
5/16 inch, and  
1-1/8 inch.

Type II - Ferrules. Add Size 1-1/8 inch.

Type III - Ferrule connector. Delete Sizes 1-1/8 inch  
and 1-1/2 inch.

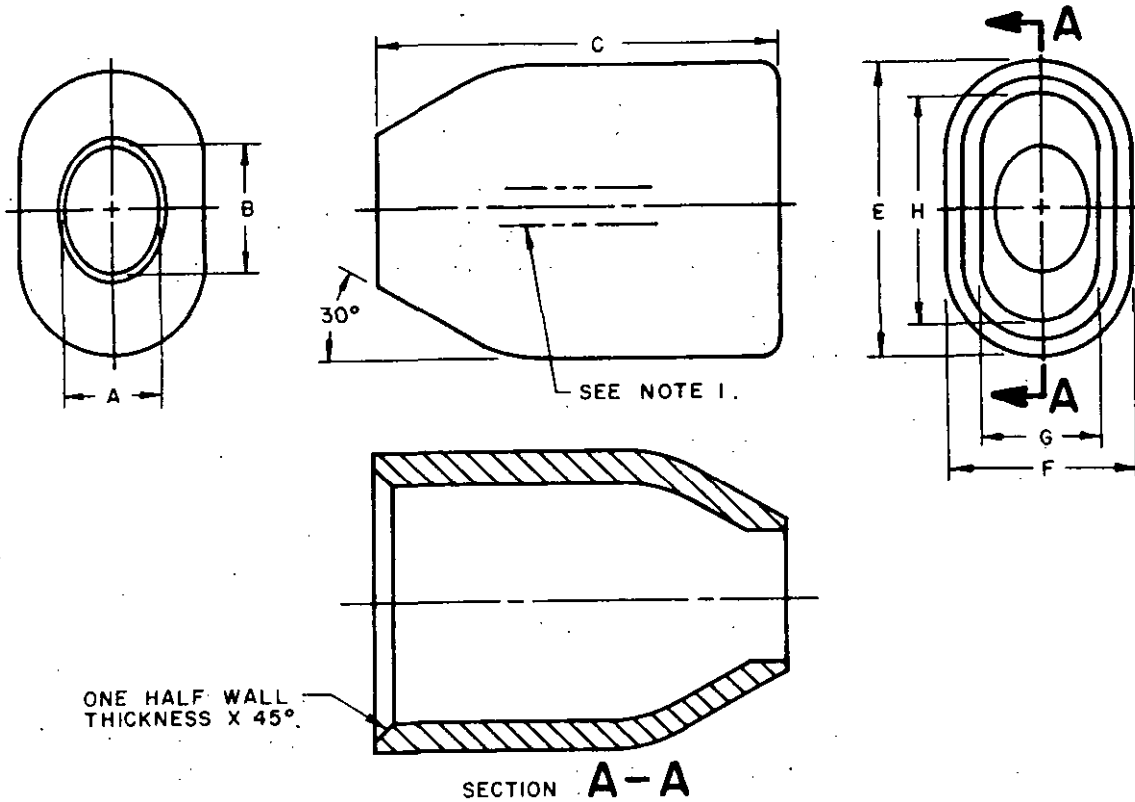
6.6 Information figures. Figures 1, 2, and 3 show types of fittings which have been found acceptable; however, the figures are included for illustration only and are not intended to preclude the furnishing of other fittings which conform to this specification.

Custodian:  
Army - ME

Preparing activity:  
Army - ME

Project 4030-A023





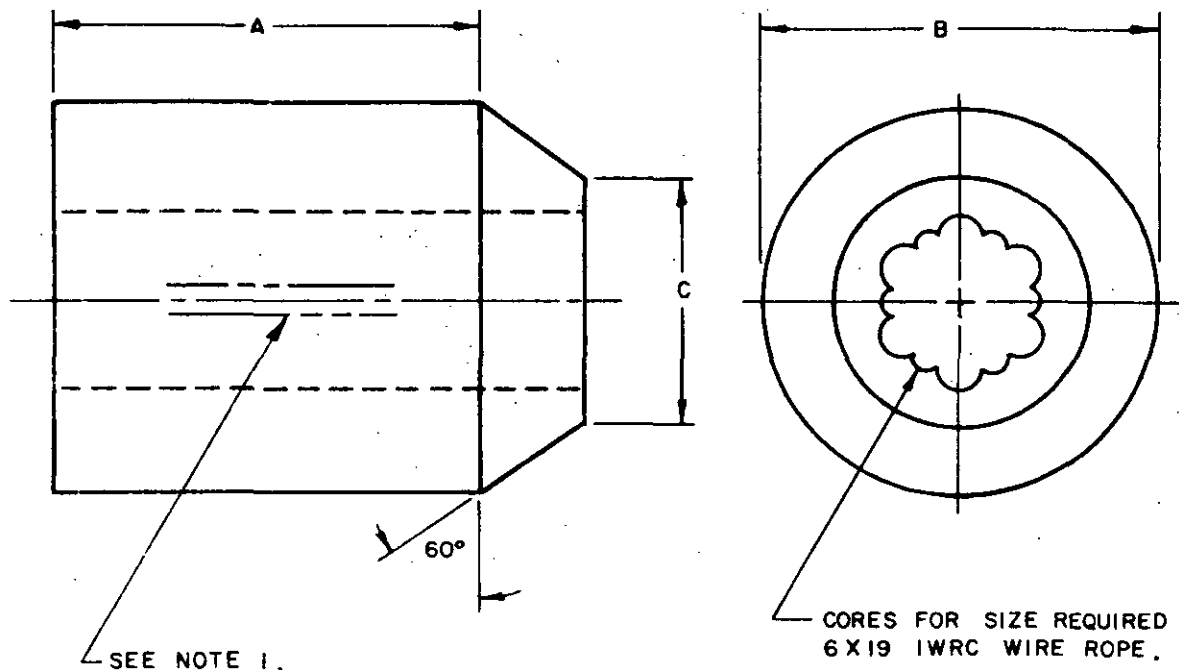
WIRE ROPE SIZE	A ±.03	B ±.03	C ±.06	E ±.03	F ±.03	G ±.03	H ±.03
.250	.31	.44	1.03	.78	.53	.34	.59
.312	.38	.50	1.28	.91	.59	.41	.72
.375	.44	.56	1.56	1.12	.69	.50	.88
.500	.59	.75	2.03	1.56	.97	.66	1.25
.625	.72	.88	2.53	1.81	1.19	.75	1.38
.750	.88	1.03	3.06	2.25	1.44	.88	1.69
.875	1.00	1.17	3.59	2.58	1.62	1.03	1.98
1.000	1.12	1.30	4.09	2.91	1.84	1.19	2.28
1.125	1.25	1.50	4.59	3.34	2.06	1.31	2.59
1.250	1.38	1.62	5.09	3.69	2.28	1.44	2.94
1.375	1.53	1.75	5.62	4.00	2.53	1.62	3.12
1.500	1.69	1.88	6.12	4.53	2.81	1.72	3.44

NOTES:

1. WIRE ROPE SIZE SHALL BE METAL STAMPED IN 1/4 HIGH CHARACTERS ON SURFACE INDICATED, LOCATION OPTIONAL.
2. BREAK SHARP EDGES .02 TO .06 RADIUS.
3. ALL DIMENSIONS ARE IN INCHES.
4. UNSPECIFIED TOLERANCE : ANGLES ± 5°.

FIGURE I. SLEEVE, WIRE ROPE

X-3141



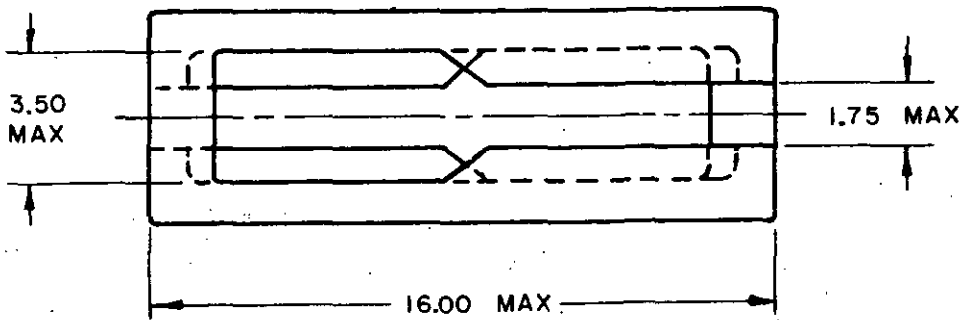
WIRE ROPE DIA	A ±.06	B ±.06	C ±.06
1.000	3.75	2.75	1.75
1.125			
1.250			
1.375	4.62	3.19	2.12
1.500			

**NOTES:**

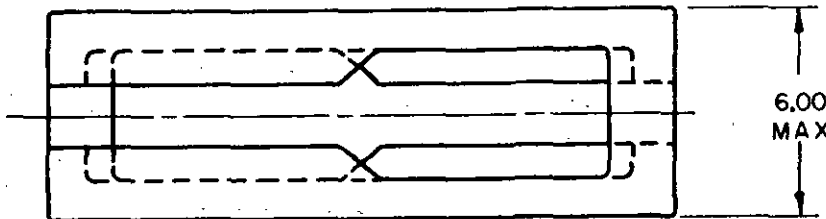
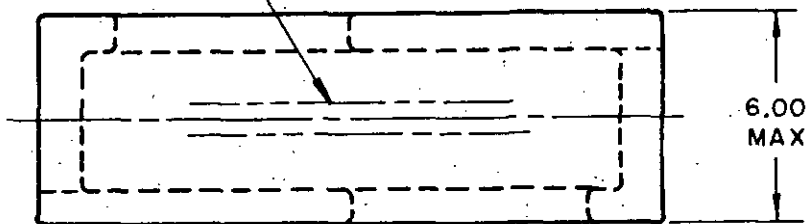
1. WIRE ROPE SIZE SHALL BE METAL STAMPED IN 1/4 HIGH CHARACTERS ON SURFACE INDICATED, LOCATION OPTIONAL.
2. BREAK SHARP EDGES .02 TO .06 RADIUS.
3. ALL DIMENSIONS ARE IN INCHES.
4. UNSPECIFIED TOLERANCE: ANGLES ± 5°.

**FIGURE 2. FERRULE, WIRE ROPE**

**X-3142**



SEE NOTE 1.

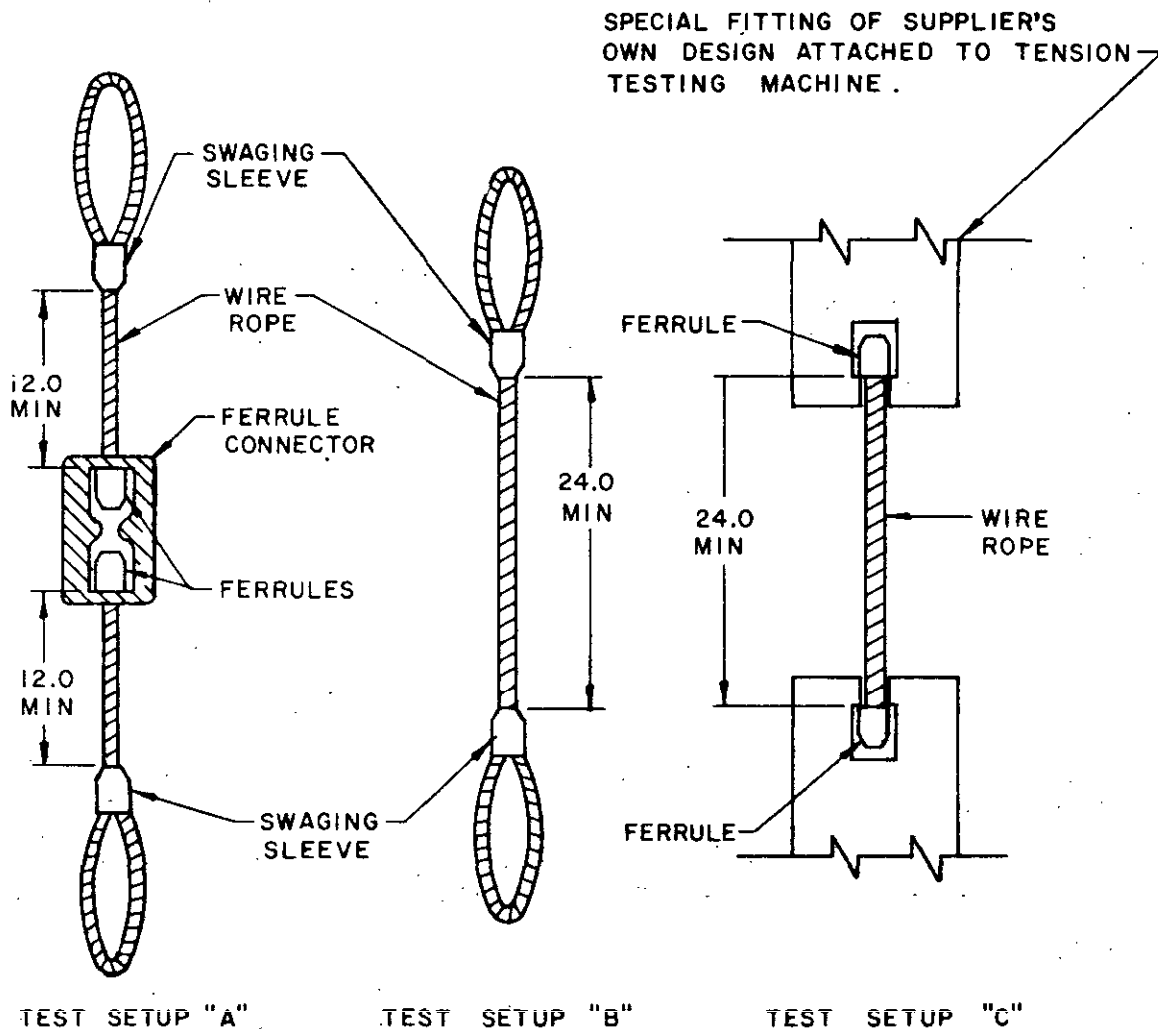


NOTES:

1. WIRE ROPE SIZE SHALL BE METAL STAMPED IN 1/4 HIGH CHARACTERS ON SURFACE INDICATED, LOCATION OPTIONAL.
2. BREAK SHARP EDGES .02 TO .06 RADIUS.
3. ALL DIMENSIONS ARE IN INCHES.

FIGURE 3. CONNECTOR, FERRULE, WIRE ROPE

X-3143



NOTES:

1. TEST SETUP "A" FOR SIMULTANEOUS TESTING OF SWAGING SLEEVE, FERRULES, FERRULE CONNECTORS, OR FOR THE SEPARATE TESTING OF ANY OF THE COMPONENTS.
2. TEST SETUP "B" FOR THE TESTING OF SWAGING SLEEVE ONLY.
3. TEST SETUP "C" FOR THE TESTING OF FERRULES ONLY.
4. ALL DIMENSIONS ARE IN INCHES.

FIGURE 4. FABRICATION OF TEST SAMPLES

X-533A

## STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

OMB Approval  
No. 22-R255

**INSTRUCTIONS:** The purpose of this form is to solicit beneficial comments which will help achieve procurement of suitable products at reasonable cost and minimum delay, or will otherwise enhance use of the document. DoD contractors, government activities, or manufacturers/vendors who are prospective suppliers of the product are invited to submit comments to the government. Fold on lines on reverse side, staple in corner, and send to preparing activity. 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. Attach any pertinent data which may be of use in improving this document. If there are additional papers, attach to form and place both in an envelope addressed to preparing activity.

## DOCUMENT IDENTIFIER AND TITLE

MIL-F-52553A(ME) Fittings, Wire Rope

## NAME OF ORGANIZATION AND ADDRESS

## CONTRACT NUMBER

## MATERIAL PROCURED UNDER A

 DIRECT GOVERNMENT CONTRACT     SUBCONTRACT

## 1. HAS ANY PART OF THE DOCUMENT CREATED PROBLEMS OR REQUIRED INTERPRETATION IN PROCUREMENT USE?

A. GIVE PARAGRAPH NUMBER AND WORDING.

B. RECOMMENDATIONS FOR CORRECTING THE DEFICIENCIES

## 2. COMMENTS ON ANY DOCUMENT REQUIREMENT CONSIDERED TOO RIGID

## 3. IS THE DOCUMENT RESTRICTIVE?

 YES     NO (If "Yes", in what way?)

## 4. REMARKS

SUBMITTED BY (Printed or typed name and address - Optional)

TELEPHONE NO.

DATE

DD FORM 1426  
1 JAN 72

REPLACES EDITION OF 1 JAN 68 WHICH MAY BE USED

FOLD

OFFICIAL BUSINESS  
PENALTY FOR PRIVATE USE \$300

POSTAGE AND FEES PAID  
DEPARTMENT OF THE ARMY  
DOD - 314



Commander  
US Army Mobility Equipment Research  
and Development Command  
ATTN: DRXFB-DS  
Ft: Belvoir, VA 22060

FOLD