

[INCH-POUND]

MIL-R-24414D(SH)

19 November 1991

SUPERSEDING

MIL-R-24414C(SH)

30 March 1988

(See 6.10)

MILITARY SPECIFICATION

REELS AND GUIDES, HOSE, FIREFIGHTING MANUALLY OPERATED

This specification is approved for use by the Naval Sea Systems Command, Department of the Navy, and is available for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope This specification covers manually operated firefighting hose reels and hose guides for deck or bulkhead mounting on shipboard.

1.2 Classification. Equipment covered by this specification shall be one of the following groups and types as specified (see 6.2):

1.2.1 Equipment Group. Group is identified by a letter symbol as shown in Table I.

Table I. Equipment Group

Symbol	Group
A	Hose Reel
B	Hose Guide

1.2.2 Equipment Type. Type is identified by a Roman Number as shown in Table II.

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, Naval Sea Systems Command, SEA 5523, Department of the Navy, Washington, DC 20362-5101 by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

AMSC N/A

FSC 4210

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Table II. Equipment Type

symbol	Type (Reel)
II	Reel for use with 100 to 150 feet of 1-1/2-inch size hose (see figure 1).
III	Reel for use with 50 feet of 3/4-inch size hose (see figure 2).
IV	Reel for use with 200 feet of 1-1/2-inch size hose (see figure 3).
v	Reel car use with 50 or 75 feet of 1-1/2 inch size hose (see Figure 4)
	Type (Hose Guide)
I	Roller guide, group A, type III hose reel (see figure 5).
II.	Roller guide, group A, type II, IV or V hose reel (see figure 6).

2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications . standards . and handbooks. The following specifications, standards , and handbooks 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).

SPECIFICATIONS

FEDERAL

FF-S-85	Screw, Cap, Slotted and Hexagon Head.
TT-E-489	Enamel, Alkyd, Gloss, Low VOC Content.
PPP-B-585	Boxes, Wood, Wirebound.
PPP-B-591	Boxes, Shipping, Fiberboard, Wood-Cleated.
PPP-B-601	Boxes , Wood, Cleated-Plywood.
PPP-B-621	Boxes, Wood, Nailed and Lock-Corner.
PPP-B-1055	Barrier Material, Waterproofed, Flexible.
PPP-T-60	Tape: Packaging, Waterproof.

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1fIL-P-116	Preservation, Methods of.
MIL-T-704	Treatment and Painting of Materiel.
MIL-S-901	Shock Tests, H.I. (High-Impact); Shipboard Machinery, Equipment and Systems, Requirements for.
MIL-L-19140	Lumber and Plywood, Fire Retardant Treated.
MIL-P-23236	Paint Coating Systems, Fuel and Salt Water Ballast Tanks. (Metric)
MIL-I-24391	Insulation Tape, Electrical, Plastic, pressure-Sensitive.
MIL-P-24441	Paint, Epoxy-Polyamide, General Specification for.

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- MIL-P-24441/1 - Paint, Epoxy-Polyamide, Green Primer, Formula 150, Type I.
- MIL-B-24480 - Bronze, Nickel-Aluminum (UNS No. C95800) Castings for Seawater Service.
- MIL-H-24580 - Hose Assemblies, Synthetic Rubber, Noncollapsible, Fire Fighting.
- MIL-N-25027 - Nut, Self-locking, 250 F, 450 F, and 800°F.

STANDARDS

FEDERAL

- FED-STD-H28 - Screw-Thread Standards for Federal Serices.
- FED-STD-595 - Colors Used in Government Procurement.

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- MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes.
- MIL-STD-108 - Definitions of and Basic Requirements for Enclosures for Electric and Electronic Equipment.
- MIL-STD-129 - Marking for Shipment and Storage.
- MIL-STD-130 - Identification Marking of U.S. Military Property

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

2.2 Non-Government publications. The following document(s) 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 cited in the solicitation (see 6.2).

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

- A 108 - Standard Specification for Steel Bars, Carbon, Cold Finished, Standard Quality. (DoD adopted)
- A 167 - Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip. (DoD adopted)
- A 229 - Standard Specification for Steel Wire, Oil-Tempered for Mechanical Springs. (DoD adopted)
- A 269 - Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service. (DoD adopted)
- A 276 - Standard Specification for Stainless and Heat-Resisting Steel Bars and Shapes.
- A 312 - Standard Specification for Seamless and Welded Austenitic Stainless Steel Pipes. (DoD adopted)
- A 336 - Standard Specification for Steel Forgings, Alloy, for Pressure and High-Temperature Parts.
- A 366 - Standard Specification for Steel, Sheet, Carbon, Cold-Rolled, Commercial Quality. (DoD adopted)

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- A 569 - Standard Specification for Steel, Carbon (0.15 Maximum, Percent), Hot-Rolled Sheet and Strip Commercial Quality. (DoD adopted)
- B 1 6 - Standard Specification for Free-Cutting Brass Rod, Bar, and Shapes for Use in Screw Machines. (DoD adopted)
- 'B 26 - Standard Specification for Aluminum-Alloy Sand Castings. (DoD adopted)
- B 6 2 - Standard Specification for Composition Bronze or Ounce Metal Castings. (DoD adopted)
- B 209 - Standard Specification for Aluminum Alloy Sheet and Plate
- B 211 - Standard Specification for Aluminum and Aluminum-Alloy Bar, Rod, and Wire. (DoD adopted)
- B 221 - Standard Specification for Aluminum Alloy Extruded Bars, Rods, Shapes and Tubes (DoD adopted)
- D 3951 - Standard Practice for Commercial Packaging. (DoD adopted)

(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.)

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

B16 .5 - Pipe Flanges and Flanged Fittings. (DoD adopted)

(Application for copies should be addressed to the American National Standards Institute, 1430 Broadway, New York, NY 10018.)

(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, 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 First article When specified (see 6.2), a sample shall be subjected to first article inspection (see 6.4) in accordance with 4.3.

3.2 Materials Unless otherwise specified (see 6.2), hose reels and guides shall be constructed of materials shown in Table I.

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TABLE 111. Material

Group	Subassembly	Material specification	Material
A	Frame	ASTM A 366 ASTM B 211 ASTM B 209 ASTM B 221	Aluminum bars Aluminum forgings Aluminum Sheet & plate Aluminum Extruded Bars Rods, Shapes
	Swing joint and axle	ASTM B 62 ASTM A 276 ASTM A 269	Bronze castings Cres bars Cres tubing
	Fluid path	MIL-B-24480 ASTM A 269	Aluminum bronze Cres tubing
	Reel drum	ASTM A 336 ASTM A 108 ASTM A 229 ASTM B 16 ASTM B 26 ASTM B 209	Carbon steel bars Spring wire Brass rod, bar, and shapes Sand castings Aluminum Sheet & Plate
A and B	Fasteners	FF-S-85 ASTM A 167	Carbon steel, zinc plate Chrome nickel steel plate
B	All	ASTM A 569 ASTM A 312 ASTM A 108	Steel sheet Cres Carbon steel bars

3.2.1 Dissimilar metals. In order to prevent galvanic corrosion, aluminum parts shall not be in direct contact with dissimilar metals such as copper alloys or steel. Where it is necessary that dissimilar metals are adjacent to one another they shall be treated as follows for the protection of faying surfaces:

Aluminum Thoroughly cleaned with Oakite NC or equal, rinsed in dip tank at 140 degrees Fahrenheit (*F) for 5 minutes and coated with epoxy polyamide primer in accordance with MIL-P-24441 and MIL-P-24441/1, or primer in accordance with class 1 of MIL-P-23236.

Steel Thoroughly cleaned, preferably by abrasive blasting and coated with epoxy polyamide primer in accordance with MIL-P-24441/1 or primer in accordance with class 1 of MIL-P-23236.

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3.2.1.1 Faying surfaces Where practicable, faying surfaces of dissimilar metals shall be separated by a physical barrier such as adhesive-backed insulating tape in accordance with MIL-I-24391.

3.2.1.2 Material information The contractor shall retain material ordering and receipt information for examination to ensure the materials used conform to the requirements specified herein.

3.2.2 Hose When hose is required (see 6.2), the hose and packaging thereof shall be in accordance with MIL-H-24580.

3.2.3 Recovered materials Unless otherwise specified herein, all equipment, material, and articles incorporated in the products covered by this specification shall be new and may be fabricated using materials produced from recovered materials to the maximum extent practicable 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. None of the above shall be interpreted to mean that the use of used or rebuilt products is allowed under this specification unless otherwise specifically specified.

3.2.4 Dimensions. The general outline and base mounting dimensions for hose reels shall be as shown on figures 1, 2 and 3 . Hose guide dimensions shall be as shown on figures 4 and 5.

3.3 Construction. Reels and guides shall be constructed as specified in 3.3.1 through 3.3.4 (see 6.3).

3.3.1 Hose reels. Hose reels shall be lightweight and compact. They shall be durable and of a rigid construction. The drum shall not collapse when hose on the reel is water-pressurized to 240 pounds per square inch (psi). It shall be held for 5 minutes without the hose being pulled off the reel. With the hose water-pressurized to 175 psi, the reel shall operate smoothly with no binding while the hose is reeled on and off the reel. Reels shall be top wind and right-hand operational. The reels, prior to installation of hose, shall withstand a hydrostatic proof-test pressure of 400 psi,

3.3.1.1 Drum assembly. The construction of the completed drum assembly shall be so that disassembly may be accomplished without the use of special tools . When bolted to a true flat surface, the shaft and rotating seal center-lines shall be in true alignment. The drum assembly, less hose, shall turn in either direction without binding. With the reels unpressurized, the rim pull shall be not greater than 15 pounds.

3.3.1.2 Mounting Reels shall be mounted either on the deck or bulkhead. Mounting dimensions are shown on Figures 1, 2, and 3. Hose guides, if required, shall be mounted as appropriate using the mounting dimensions shown in Figures 5 and 6. Both ends of the drum shaft shall be supported on sleeve, ball, or roller bearings. Sleeve bearings shall have provision for easy lubrication. Ball, or roller bearings shall be of the sealed type. The use of lockwashers is prohibited. Self-locking J-nuts in accordance with MIL-N-25017 shall be used. Sleeve bearings shall contain a pressure relief device to prevent overpressurization from zealous use of grease guns.

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3.3.1.3 Hose outlets. Hose outlets shall be angled so that the hose shall meet the drum at a tangent without kinking at the outlet. The hose outlets shall be reversible. Internal fittings shall be of one piece construction between the swivel joint and hose outlet connection. Except in the hose connection, taper pipe threads shall not be permitted. Unless otherwise specified the hose outlet shall be for a Right Hand," Top Wind Reel.

3.3.1.4 Holding Reels shall be provided with a holding brake to lock the reel in any position.

3.3.1.5 Fluid handling section The complete fluid handling section of the reels (that is, from inlet flange to hose connection) shall be removable as a unit without disassembly of the drum or reel sides.

3.3.2 Hose guides. Unless otherwise specified (see 6.2), the reels shall have hose guides installed. Hose guides shall fit directly upon the reel frame. While the hose is being removed from the reel at a sharp angle, approaching 90 degrees, and while bearing heavily on the roller, the guide rollers shall spin freely without binding. The height of the horizontal rollers shall be adjustable by a series of holes drilled in the vertical support. Bearings for rollers shall be the self-lubricated, sealed type. Rollers shall be corrosion-resistant steel (CRES) 304.

3.3.3 Weight The weight of the reels shall be as follows:

Type 11	- 120 pounds maximum, without hose and hose guide
Type III	- 100 pounds maximum, without hose and hose guide
Type IV	- 145 pounds maximum, without hose and hose guide

3.3.4 Rewind. Reels shall be of the manual hand crank rewind type. Gears may be cast or machined. The rewind bracket shall be of the universal type allowing positioning of the rewind crank at any point of a 180 degree arc. The rewind bracket shall add no more than 15 ponds to the reel weights of paragraph 3.3.3.

3.4 Flow rate.

3.4.1 Types II, IV and V reels. Types II, IV and V reels shall pass 125 gallons per minute (gal/min) of aqueous film forming foam (AFFF) at a pressure of 175 psi measured at the hose inlet. Restrictions and turbulence through the reel shall be kept to a minimum. The internal fluid path shall be of the 2-inch size (including rotating swivel joint) and shall utilize long sweep elbows.

3.4.2 Type III reels. Type 111 reels shall pass 25 gal/rein of fresh water at a pressure of 150 psi. The internal fluid path shall be at least 3/4-inch size (including rotating swivel joint) and shall utilize long sweep elbows.

3.5 Spray tightness Types II and IV reels shall be spraytight in accordance with MIL-STD-108. Care shall be taken that all bearings or other corrodible parts are protected from the weather. Provisions shall be made for field lubrication of working parts, such as bearings or other mating surfaces and all such parts shall be lubricated prior to delivery. The reels and the lubricants

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used shall operate within the range of temperatures from minus 20 to plus 120 F. Bearing seals shall be so that the pressure due to forced lubrication will not bind the shaft.

3.6 Support The reel drum assembly shall be supported at two points, one on each side of the drum assembly.

3.7 Reel discs. The reel discs may have smoothly formed flat sides or spoke ribs, so formed as not to damage the hose. The rims of the drum discs shall be smooth surface or rolled.

3.8 Holding devices.

3.8.1 Nozzle Clamps. When specified in the contract or order (see 6.2), reels shall be provided with a device for clamping the hose nozzle or nozzles securely to the deck or bulkhead when not in use in order to prevent unwinding of the hoses or damaging the nozzles. The securing device shall be of a quick release non-corroding construction. The webbed portion of the clamping device shall be a bright red for visibility. Metal portion of quick release shall be non-corroding.

3.8.2 Hose strap. The hose shall be secured to the reel drum by means of a nylon strap.

3.9 Connections.

3.9.1 Inlet connections. The reel inlet connections shall be flanged and shall be a part of the rotating joints. Inlet to the 1-1/2 inch rotating joint shall be a 1-1/2 by 2-inch, 90-degree elbow that can maintain four positions in a horizontal or vertical plane. The flange thickness and bolt hole drilling shall be as specified on figures 1, 2, and 3. Inlet to the 1-inch rotating swing joint shall be straight. The flange thickness and bolt hole drilling shall be as specified on figure 1. All inlet connections shall be on the right hand side when facing the reel.

3.9.1.1 Flanged inlets. Flanged inlets shall be in accordance with ANSI B16.5.

3.9.2 Outlet connection. The 1-1/2 inch hose connection shall be 1-1/2 inch, 11-1/2 NPSH and 3/4-inch hose connection shall be 3/4-inch 11-1/2 NH. Outlet connection shall be so fabricated that it can be removed, rotated 180 degrees, and reinstalled on the reel.

3.10 Seals. The AFFF rotating joint connection shall be sealed to provide a liquid tight between flanged reel inlet connection and the rotating hub on the reel drum. The rotating joint shall not bind under loading (or shall be so supported to prevent a bending load being applied), shall have provisions for lubrication of moving parts, and shall be easily disassembled for maintenance purposes.

3.11 Shock. The reels shall withstand the grade A, class I, type A shock test in accordance with MIL-S-901. Hose guides when ordered shall be included in the shock test program.'

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3.12 Painting The reels shall be treated, primed, and painted in accordance with MIL-T-704. In addition, exterior surfaces shall be given two coats of enamel in accordance with TT-E-489. The finish enamel shall be red, color number 11105 of FED-STD-595.

3.13 Screw threads. Screw threads shall be in accordance with FED-STD-H28.

3.14 Identification Equipment assemblies and parts shall be marked in accordance with MIL-STD-130. The size of the hose to be used shall be stamped on each reel.

3.15 Government-loaned property Upon request from the contractor, hose for the test specified in 4.7.1 will be furnished by the Government (see 6.6).

3.16 Workmanship Parts shall be smoothly finished and free of imperfections which may impair serviceability.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility Unless otherwise specified in the contract or purchase order, the contractor 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 this 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 the 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.

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

- (a) First article inspection (see 4.3).
- (b) Quality conformance inspection (see 4.4).

4.3 First article inspection. One reel of each type being acquired shall be subjected to first article inspection and tests. First article inspection shall consist of the examination and tests specified in Table IV.

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TABLE IV. First article inspection.

Examination or test	Requirement	Test method
Visual and dimensional	3.2.4	4.6
Operating	3.3, 3.4	4.7.1
Collapse pressure	3.3.1	4.7.2.2
Enclosure	3.5	4.7.4
Shock	3.11	4.7.5

4.4 Quality conformance inspection. Quality conformance inspection shall be performed on reels selected as specified in 4.5 and shall consist of the tests and examinations specified in Table V. Sample size depends on classification of the characteristic as shown in Table VI. The major and minor characteristics are defined in Table VII. If one or more defects are found in any sample, the entire lot shall be rejected. The contractor has the option of screening 100 percent of the rejected lot for the defective characteristic(s), or providing a new lot which shall be inspected in accordance with the sampling plan contained herein.

TABLE V. Quality conformance inspection.

Examination or test	Requirement	Test method
Visual examination	3.2.4	4.6
Operating test pressurized reel	3.3.1	4.7.3
Hydrostatic test	3.3.1	4.7.2.1

4.5 Sampling.

4.5.1 lot For purposes of sampling, a lot shall consist of all reels of the same type, made at the same factory, of the same materials, of the same construction, and offered for inspection at the same time.

4.5.2 Sampling for quality conformance. As a minimum, the contractor shall select sample quantities from each lot of reels in accordance with Table VI and inspect them in accordance with the quality conformance tests and examinations designated in Table V,

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TABLE VI. Classification of defects.

Categories	Defects
Critical:	
1	None defined.
Major:	
101	Type not as specified.
102	Hose reel incomplete; parts missing or improperly assembled.
103	Materials defective or not as specified; evidence of cracks, deep pits, blowholes, shrinkage defects or foreign inclusions.
104	Bearings defective or type II not protected from the weather.
105	Reel not double supported.
106	Hose does not meet drum in smooth tangent as specified.
107	Device for clamping the nozzle to the reel missing or defective.
108	Reel inlet connection not the required size or flange not smoothly finished.
109	Hub discharge adapter missing, not securely mounted, or not as specified; threads stripped, tom, crossed shrunken (not concentric) not perfect full threads, or thread type and size not as specified.
110	Bolt hole diameter or spacing or inlet flange not as specified, or thickness of flange less than required.
111	Width of drum not within the specified tolerance.
112	Dissimilar metals that come in contact with each other not coated as required, or aluminum parts not coated as required.
113	Reel wobbles, sticks, binds, or evidences excessive looseness, amount of rim pull required to rotate reel exceeds the specified maximum (see 3.3).
114	Both ends of drum shafts not furnished with means of lubrication.
115	Rims of drum discs not rolled or not smooth surface.
116	Complete fluid handling section of reel not removable without disassembly of the drum or reel sides.
117	Hose guide rollers bind.
118	Hose guide rollers not self lubricated.

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TABLE VI. classification of defects. (Continued)

Categories	Defects
Minor:	
201	Mounting dimensions (bolt hole diameter or spacing) not as specified.
202	Diameter of reel exceeds the maximum permissible.
203	Overall height exceeds the maximum permissible.
204	Overall width exceeds the maximum permissible.
205	Horizontal or vertical location inlet flange not within the specified tolerance.
206	Weight of reel exceeds the maximum allowable.
207	Marking, manufacturer's name or trademark missing, illegible, incorrect or not as specified.
208	Means of lubrication not easily accessible.
209	Painted wrong color.

4.5.3 Sampling for quality conformance inspection. Reel samples shall be selected at random from each lot in accordance with inspection level II of MIL-STD-105.

TABLE VII. Sampling for quality conformance inspection

Lot Size	Sample Size	
	Major Characteristic	Minor Characteristic
2 to 8	All	5
9 to 50	8	5
51 to 90	8	7
91 to 150	12	11
151 to 280	19	13
281 to 500	21	16
501 to 1200	27	19

4.6 Examination. Sample reels selected as specified in 4.5.2 shall be examined to determine conformance to the requirements of this specification not involving tests. Examination shall be conducted as specified in Table VII.

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4.7 Tests.

4.7.1 Operating Assembled reels selected as specified in 4.5.2 shall be loaded with hose and operated by hand to test all functions, fits, clearances and adjustment (see 3.15). The holding brake operation shall applied successfully not less than three applications.

4.7.2 Pressure tests.

4.7.2.1 Hydrostatic tests. Prior to installation of hose, each reel shall be hydrostatically proof-tested to 400 psi. The pressure shall be held for 5 minutes during which time there shall be no leakage or other signs of weakness (see 3.3.1).

4.7.2.2 Collapse pressure tests. Each reel shall have hose or hoses, identical to the hose to be used in service (see 3.2.2), attached and wound on the reel. The reels and hose shall be pressurized with water to 240 psi. The pressure shall be held for 5 minutes. The pressure shall then be reduced to 0 psi and the hose shall be unwound from the reel. The drum shall show no evidence of collapse due to the growth or shrinkage of hose under pressure. Other reel parts shall show no evidence of damage or distortion due to this test.

4.7.3 Operating test reel pressurized. Upon completion of the collapse test (see 4.7.2.2), the reel and hose shall be repressurized as specified in 4.7.2.2 to 175 psi and the hose shall be reeled on and off the reel while under pressure. The reel shall operate smoothly with no bending, wobbling or binding during this test.

4.7.4 Spraytightness test. The type II reel shall be subjected to the spraytight enclosure test in accordance with MIL-STD-108.

4.7.5 Shock test. The high impact (H.I.) shock tests shall be grade A, class I, type A in accordance with MIL-S-901. The reel shall be completely assembled (including hose), and shall be mounted on the shock machine in a manner simulating a typical shipboard bulkhead installation. The number of blows shall be as specified in MIL-S-901. Hose used for the H.I. shock test of reels need only be the same size, weight and length as hose to be used in service. The reel and hose shall not be pressurized nor filled with water for this test.

4.7.5.1 Examination after shock tests. The equipment shall be carefully examined to determine the extent of any damage to the mechanical parts after completion of the shock test. Examination of the reels shall determine the following:

- (a) The hose shall be unreeled and then replaced on the reel not less than five times. Any undue noise or difficulty in operation shall be investigated and the cause determined.
- (b) The fluid handling sections of the reel (between the inlet and outlet connection) shall be hydrostatically tested to 400 psi. Pressure shall be held for 5 minutes. There shall be no leakage during the hydrostatic test. "

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- (c) The reels shall be disassembled following the examination after shock tests specified and examined thoroughly for damage. The effects of the shock tests and subsequent check tests on the structure shall be carefully observed and determined.

4.7.5.2 Failure to pass shock test. The hose reel shall have failed the shock tests in the event of the following:

- (a) Breakage of any parts including mounting bolts.
- (b) Appreciable distortion or dislocation of any parts, including mounting feet and bearings.
- (c) Excessive unbalance determined as specified in 4.7.5.1.
- (d) Failure to pass the hydrostatic test.

4.7.6 Possible test failures. Possible test failures of the reels shall be determined as follows:

- (a) Operating test - failure of reel to contain the specified length of hose, evidence of bending, wobbling, or binding when loaded reel is rotated.
- (b) Hydrostatic test - evidence of leakage or binding of the seals when the indicated hydrostatic pressure is applied to the fluid handling section of the reel.
- (c) Water evidence of leakage or binding of the seals when the specified fluid handling section is applied to the fluid-carrying portion of the reel.

4.8 Inspection of packaging. Sample packages and packs, and the inspection of the presentation, packing and marking for shipment stowage and storage shall be in accordance with the requirements of section 5 and the documents specified therein.

5. PACKAGING

(The packaging requirements specified herein apply only for direct Government acquisition. For the extent of applicability of the packaging requirements of referenced documents listed in section 2, see 6.5.)

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

5.1.1 Level A. Reels or hose guides shall be individually unit protected in accordance with MIL-P-116 method 111. All openings shall be sealed with blank flanges, threaded plugs or caps or pressure sensitive waterproof tape. Tape shall conform to PPP-T-60 type IV, color optional.

5.1.2 Commercial Reels or hose guides shall be individually unit protected in accordance with ASTM D 3951.

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

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5.2.1 Level A. Reels or hose guides preserved as specified in 5.1 shall be individually packed in overseas type containers conforming to PPP-B-585 class 3, PPP-B-601 overseas type, or PPP-B-621 class 2, with container selection at the option of the contractor. Containers exceeding a gross weight of 200 pounds (90.72 kilograms (kg)) shall be modified by the addition of 3 by 4 inch (7.62 by 10.16 centimeter (cm)) wood skids placed flat. The reels shall be shrouded within the containers with barrier material conforming to PPP-B-1055. Container closure and strapping shall be in accordance with the applicable specification or appendix thereto.

5.2.2 level B. Reels or hose guides preserved as specified in 5.1 shall be individually packed in containers conforming to PPP-B-585 class 2, PPP-B-591 class II, PPP-B-601 domestic type or PPP-B-621 class 1, with selection at the option of the contractor. The requirements for wood skids, shrouding, container closure and strapping shall be as specified in 5.2.1.

5.2.3 Level C. Reels or hose guides preserved as specified in 5.1 shall be packed in containers as specified in 5.2.2 except that containers shall be of the domestic type or class and shrouding is not required.

5.2.4 Lumber and plywood. Unless otherwise specified (see 6.2), all lumber and plywood including laminated veneer material used in shipping container construction members, blocking, bracing, and reinforcing shall be fire-retardant treated material conforming to MIL-L-19140 as follows:

Levels A and B -	Type II - weather resistant. Category I - general use.
Level C	Type I - non-weather resistant. Category I - general use.

5.2.5 Commercial Reels or hose guides preserved as specified in 5.1 shall be packed in accordance with ASTM D 3951.

5.3 Marking. In addition to any special marking required (see 6.2), level A, B and C containers shall be marked in accordance with MIL-STD-129, and commercial containers shall be marked in accordance with ASTM D 3951.

6. NOTES

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

6.1 Intended use This specification covers manually operated fire fighting hose reels and hose guides for shipboard use. Type II hose reels are intended for use in machinery spaces, aircraft handling and machinery space re-entry areas, type III reels in electronic spaces, and type IV reels in submarines.

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6.2 Acquisition requirements. Acquisition documents should specify the following:

- (a) Title, number, and date of this specification.
- (b) Type of reel required (see 1.2).
- (c) Type hose guide required (see 1.2).
- (d) 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).
- (e) First article sample, if required (see 3.1).
- (f) Materials, if other than specified (see 3.2).
- (g) When hose required, size and length (see 3.2.2).
- (h) When hose guide is not required (see 3.3.2).
- (i) Nozzle clamp (see 3.8.1).
- (j) Level of preservation required (see 5.1).
- (k) Level of packing required (see 5.2).
- (l) Special marking, when specified (see 5.3).
- (m) Hose outlet arranged for top wing or bottom wind.
- (n) Orientation or inlet flange.
- (o) When fire retardant is not required (see 5.2.4)

6.3 Consideration of data requirements. The following data requirements should be considered when this specification is applied on a contract. The applicable Data Item Descriptions (DID's) should be reviewed in conjunction with the specific acquisition to ensure that only essential data are requested/provided and that the DID's are tailored to reflect the requirements of the specific acquisition. To ensure correct contractual application of the data requirements, a Contract Data Requirements List (DD Form 1423) must be prepared to obtain the data, except where DoD FAR Supplement 27.475-1 exempts the requirement for a DD Form 1423.

<u>Reference Paragraph</u>	<u>DID Number</u>	<u>DID Title</u>	<u>Suggested Tailoring</u>
3.3	DI-DRPR-81000	Product drawings and associated lists	----

The above DID's were those cleared as of the date of this specification. The current issue of DoD 5010.12-L, Acquisition Management Systems and Data Requirements Control List (AMSDL), must be researched to ensure that only current, cleared DID's are cited on the DD Form 1423.

6.4 First article. When first article inspection is required, the contracting officer should provide specific guidance to offerors whether the item(s) should be a preproduction sample, a first article sample, a first production item, a sample selected from the first lot of production items, a standard production item from the contractor's current inventory (see 3.1), and the number of items to be tested as specified in 4.3. The contracting officer should also include specific instructions in acquisition documents regarding arrangements for examinations, approval of first article test results, and disposition of first articles. Invitations for bids should provide that the Government reserves the right to waive the requirement for samples for first article inspection to those bidders offering a product which has been previously

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acquired or tested by the Government, and that bidders offering such products, who wish to rely on such production or test, must furnish evidence with the bid that prior Government approval is presently appropriate for the pending contract. Bidders should not submit alternate bids unless specifically requested to do so in the solicitation.

6.5 sub-contracted material and parts. The packaging requirements of referenced documents listed in section 2 & not apply when material and parts are acquired by the contractor for incorporation into the equipment and lose their separate identity when the equipment is shipped.

6.6 Government-loaned property. The contracting officer should arrange to loan the property listed in 3.15.

6.7 Acceptance Table VII Provide' the classification of defects.

6.7.1 Visual and dimensional examination The acceptable quality level (AQL) for major defects is 1.5 and for minor defects 2.5.

6.7.2 Quality conformance inspection. The AQL is 1.5 percent.

6.8 Part Identify Number (PIN). The Part Identifying Number for the hose reels and hose guides covered by this specification shall consist of the letter "M", the basic number of this specification and the coded numbers or letters as shown in the following examples.

Hose Reel

M24414 - A - I

Basic number of specification

Equipment Group (see 1.2.1)

Equipment Type

Hose Guide

M24414 - B - I

Basic number of specification

Equipment Group (see 1.2.1)

Equipment Type

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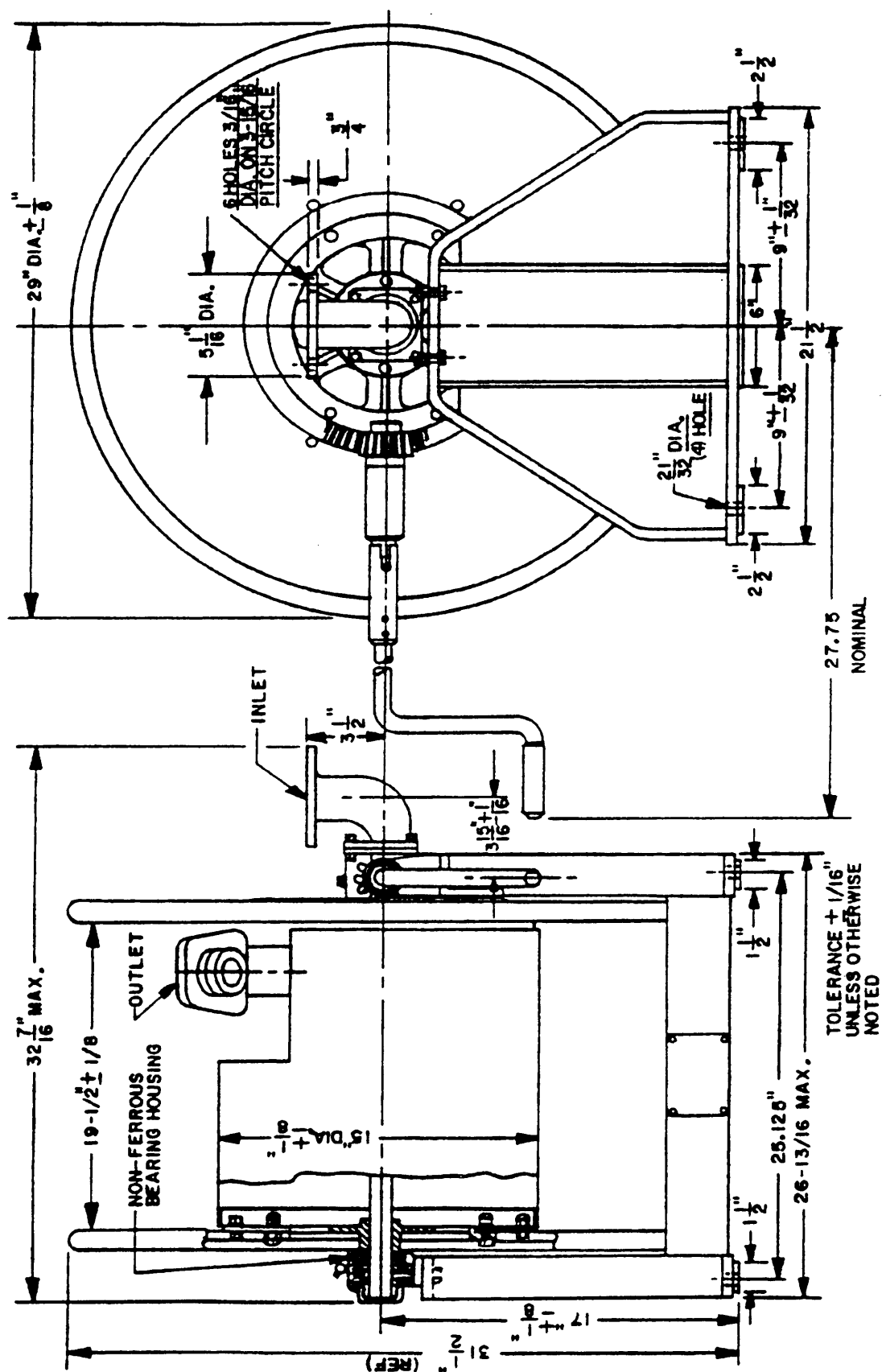
6.9 Subject term (key word) listing .

Aqueous film forming foam
Epoxy-polyamide
Galvanic corrosion
Roller guide

6.9 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.

Preparing activity:
Navy - SH
(Project 4210-N418)

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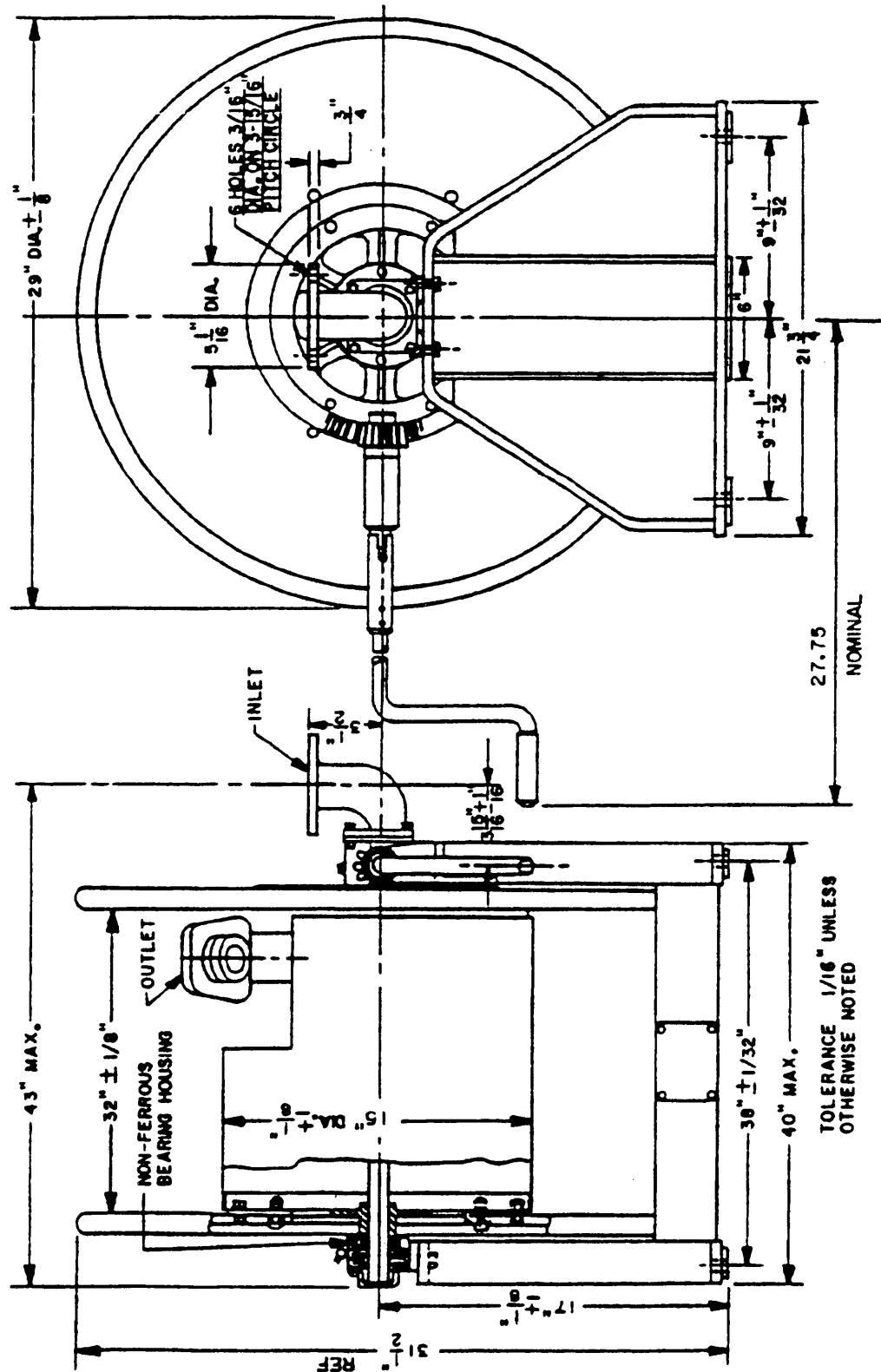


NOTE: Mounting dimensions are mandatory.

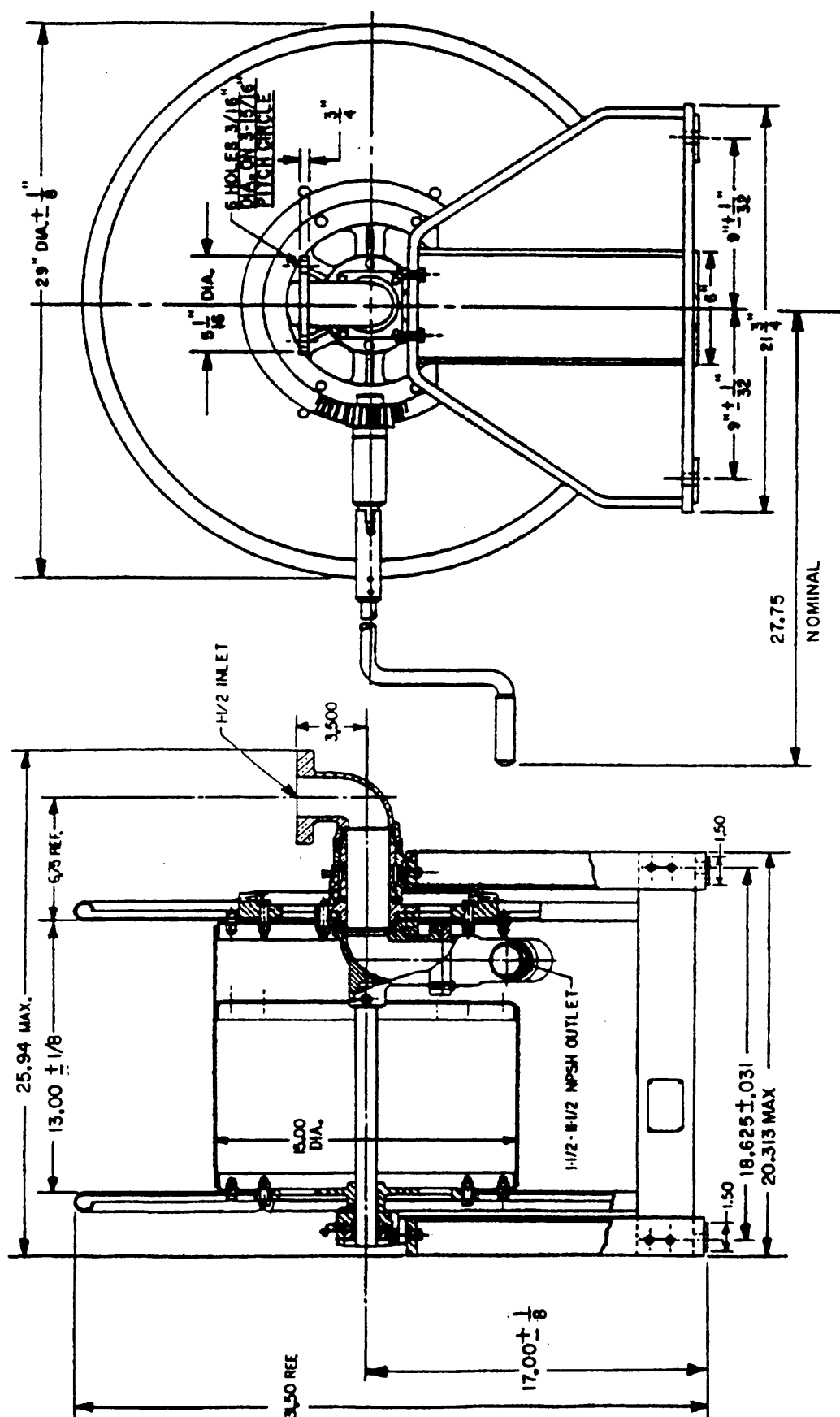


FIGURE 2. Type 111 reel.

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NOTE: Mounting dimensions are mandatory.



NOTE:
RIGHT HAND BOTTOM WIND SHOWN. FOR
RIGHT HAND TOP WIND ROTATE ITEM 26, 180°

* Cutout for crank handle may be relocated to opposite side of structural member and may appear on both sides of roller guide.

FIGURE 4. I roller guide for type III reel.

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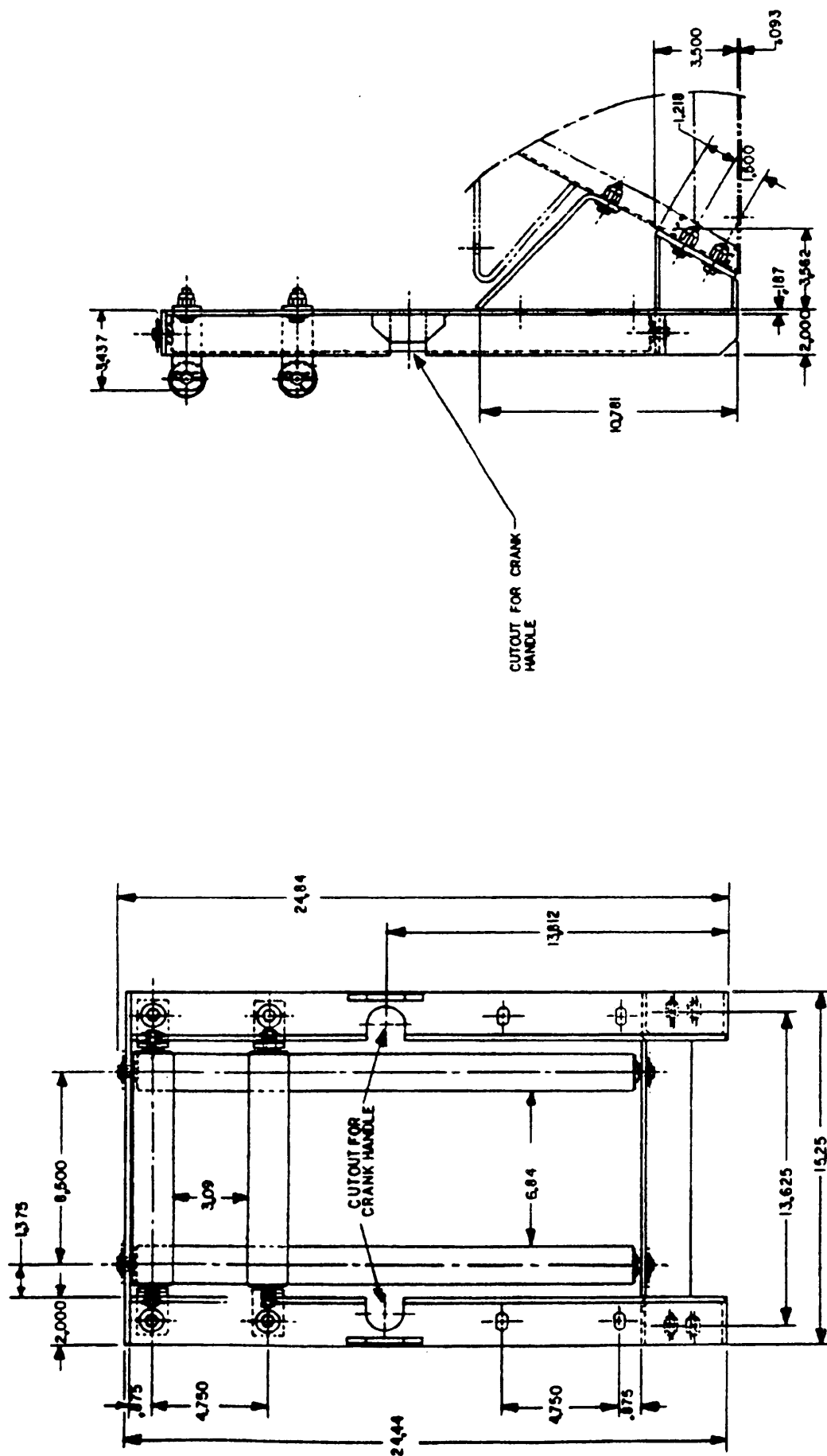


FIGURE 5. Type I roller guide for type III reel.

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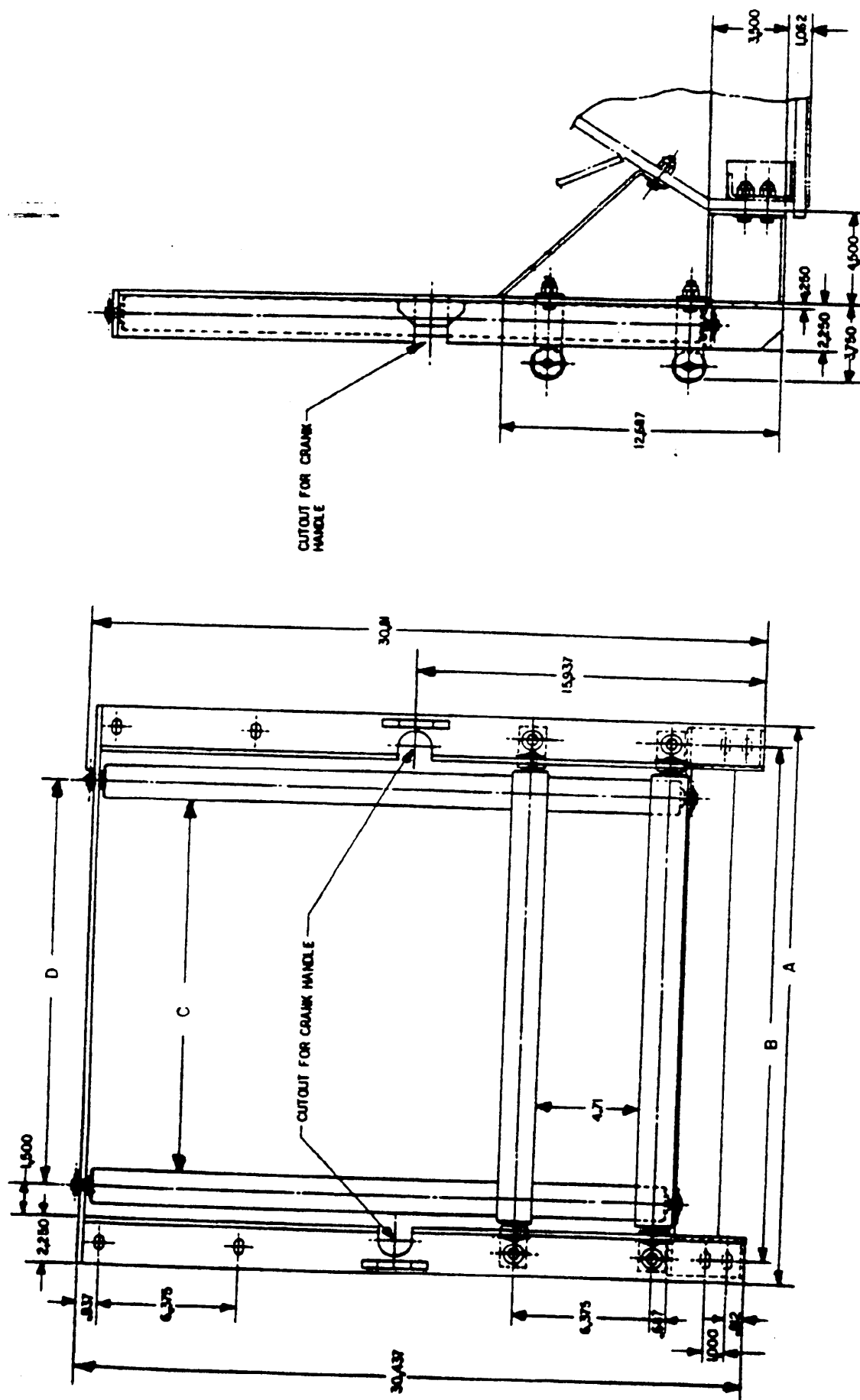


FIGURE 6. Type II roller guide for sing
roducts, for type II, IV or V reel.

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.

1. DOCUMENT NUMBER
MIL-R-24414D(SH)

2. DOCUMENT DATE (YYMMDD)
19 November 1991

3. DOCUMENT TITLE
Reels and Guides, Hose, Firefighting Manually Operated

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

5. REASON FOR RECOMMENDATION

6. ORGANIZATION

7. TELEPHONE (Include Area Code)

8. DATE SUBMITTED

9. COMMENTS

8. PREPARING ACTIVITY

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Naval Sea Systems Command (SEA 5523)

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