INCH-POUND

MIL-F-24787(SH)
3 September 1993
SUPERSEDING
MIL-H-24135A(SH)(IN PART)
18 July 1986
MIL-H-24136A(SH)(IN PART)
18 June 1986
(See 6.4)

MILITARY SPECIFICATION

FITTINGS, END, REUSABLE FOR FLEXIBLE HOSE ASSEMBLIES GENERAL SPECIFICATION FOR

This specification is approved for use within 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 the requirements for reusable end fittings, elbow (90°) fittings and 180° return fittings for use with flexible rubber hose in low, medium and high pressure shipboard piping systems.

1.2 Classification.

1.2.1 Fitting types. The following fitting types are covered by this specification:

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, SEA 03Q42, Naval Sea Systems Command, 2531 Jefferson Davis Hwy, Arlington, VA 22242-5160 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 4730

Fitting Type	Description
A	- 37° Swivel to hose, straight.
AL	- 37° Swivel to hose, 90° elbow.
B	- Gasket seal union, male half to hose, straight. 1/
BL	- Gasket seal union, male half to hose, 90° elbow. 1/
C	- O-ring seal union, male half to hose, straight.
CL	- O-ring seal union, male half to hose, 90° elbow.
D	- 90° Elbow, hose to hose.
E	- Split clamp to hose, straight.
EL	- Split clamp to hose, 90° elbow.
F	- Flange to hose, straight.
FL	- Flange to hose, 90° elbow.
FFL	- Flange to hose, 45° elbow.
U	- 180° return, hose to hose.
SC	- Split clamp assembly
TF	- Tailpiece, female, split clamp, silver braze.
TM	- Tailpiece, male, split clamp, silver braze.

1/ Type B and BL, gasket seal, end fittings are included for replacement purposes only. They are not to be used in new construction.

1.2.2 Fitting group. Fitting group identifies the particular hose (MIL-H-24135 and MIL-H-24136) for which a specific fitting design has been produced. See 6.5 for group supersession data.

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

MILITARY

MIL-H-775 - Hose, Hose Assemblies; Rubber, Plastic, Fabric, or Metal (Including Tubing) and Associated Hardware: Packaging of.

MIL-L-2104 - Lubricating Oil, Internal Combustion Engine, Tactical Service.

MIL-H-5606 - Hydraulic Fluid, Petroleum Base; Aircraft, Missile, and Ordnance.

MIL-L-17331 - Lubricating Oil and Gear, Moderate Service.

MIL-H-24135 - Hose, Synthetic Rubber, Wire Reinforced for Flexible Hose Assemblies, General Specification For.

MIL-H-24135/1 - Hose, Synthetic Rubber, Wire Reinforced, for Flexible Hose Assemblies (Double Wire Braid or Two-Spiral and One-Wire Braid High Pressure sizes -4 Through -32).

MIL-H-24135/2 - Hose, Synthetic Rubber, Wire Reinforced, for Flexible Hose Assemblies (Four Plies Spiral Wrapped or Two Spiral and One-Wire Braid High Pressure Sizes -6 Through -16).

MIL-H-24135/3 - Hose, Synthetic Rubber, Wire Reinforced, for Flexible Hose Assemblies (Four Plies Spiral Wrapped High Pressure Sizes -16 Through -32).

MIL-H-24135/4 - Hose, Synthetic Rubber, Wire Reinforced, for Flexible Hose Assemblies (Double Wire Braid Medium Pressure Sizes -40, -48 and -64).

MIL-H-24135/5 - Hose, Synthetic Rubber, Wire Reinforced, for Flexible Hose Assemblies (Double Wire Braid, Perforated Cover, for High Pressure Air Sizes -4 Through -32).

MIL-H-24135/6 - Hose, Synthetic Rubber, Wire Reinforced, for Flexible Hose Assemblies (Double Wire Braid or Two-Spiral and One-Wire Braid High Pressure Sizes -4 Through -32 for Phosphate Ester Base Hydraulic Fluids).

MIL-H-24135/7 - Hose, Synthetic Rubber, Wire Reinforced, for Flexible Hose Assemblies (Four Heavy Spiral for High Pressure Phosphate Ester Service in Sizes -20, -24 and -32).

MIL-H-24135/8 - Hose, Synthetic Rubber, Wire Reinforced, for Flexible Hose Assemblies (Four Plies, Spiral Wrapped Wire, for High Pressure Phosphate Ester Base Fluids Sizes -6 Through -16).

MIL-H-24135/9 - Hose, Synthetic Rubber, Wire Reinforced, for Flexible Hose Assemblies (Four Plies, Heavy Spiral Wrapped Wire High Pressure Sizes -8 Through -32).

MIL-H-24135/10 - Hose, Synthetic Rubber, Wire Reinforced, for Flexible Hose Assemblies (Single or Double Wire Braid Medium Pressure Sizes -4 Through -48).

MIL-H-24135/11 - Hose, Synthetic Rubber,Wire Reinforced for Flexible Hose Assemblies (Four spiral Wire, low Pressure, Sizes -80 and -96).

MILITARY (Continued)

MIL-H-24135/12 - Hose, Synthetic Rubber, Wire Reinforced, for Flexible Hose Assemblies (Single Wire Braid Over Single Synthetic Fiber Braid Medium Pressure High Temperature Multi-Fluid Sizes -4 Through -40).

MIL-H-24135/13 - Hose, Synthetic Rubber, Wire Reinforced, for Flexible Hose Assemblies (Double Wire Braid, High Pressure, High Temperature, Sizes -4 Through -32).

MIL-H-24136 - Hose, Synthetic Rubber, Synthetic Fiber Reinforced for Flexible Hose Assemblies, General Specification for.

MIL-H-24136/1 - Hose, Synthetic Rubber, Synthetic Fiber Reinforced, for Flexible Hose Assemblies (Low Pressure Sizes -80 through -192).

MIL-H-24136/2 - Hose, Synthetic Rubber, Synthetic Fiber Reinforced, for Flexible Hose Assemblies (High Pressure Sizes -4 Through -32).

MIL-H-24136/3 - Hose, Synthetic Rubber, Synthetic Fiber Reinforced for Flexible Hose Assemblies (Low Pressure Sizes -4 Through -32).

MIL-H-24136/4 - Hose, Synthetic Rubber, Synthetic Fiber Reinforced, for Flexible Hose Assemblies (Low Pressure Sizes -40, -48 and -64).

MIL-F-24787/1 - Fittings, End, Type F, FL, and FFL, Flange, Reusable For Flexible Hose Assemblies.

MIL-F-24787/2 - Fittings, End, Type A, 37° Flare, Reusable For Flexible Hose Assemblies.

MIL-F-24787/3 - Fittings, End, Types C and CL, O-Ring Seal Union, Reusable For Flexible Hose Assemblies.

MIL-F-24787/4 - Fittings, End, Types E and EL, Split Clamp, Reusable With Types SC (Split Clamp), TF Tailpiece Female and TM Tailpiece Male For Flexible Hose Assemblies.

MIL-F-24787/5 - Fittings, End, Type D, Hose to Hose, 90° Elbow Reusable For Flexible Hose Assemblies.

MIL-F-24787/6 - Fittings, End, Type U, 180° Return, Hose to Hose, Reusable For Flexible Hose Assemblies.

MIL-F-24787/7 - Fittings, End, Types B and BL, Gasket Seal Union, Reusable For Flexible Hose Assemblies.

STANDARDS

FEDERAL

FED-STD-H28 - Screw-Thread Standards for Federal Service.

MILITARY

MIL-STD-278 - Fabrication Welding and Inspection; and Casting Inspection and Repair for Machinery, Piping and Pressure Vessels in Ships of the United States Navy.

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

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)
D 380 - Standard Methods of Testing Rubber Hose. (DoD adopted)

3. REQUIREMENTS

3.1 Qualification. End fittings furnished under this specification shall be products which are authorized by the qualifying activity for listing on the applicable qualified products list at the time set for opening of bids (see 4.3 and 6.3).

3.2 Specification sheets. The individual item requirements shall be as specified herein and in accordance with the applicable associated detail specifications. In the event of any conflict between the requirements of this specification and the associated detail specification, the latter shall govern.

3.3 Material.

3.3.1 Fittings. Fittings to this specification shall be of a material as specified on the applicable associated detail specification.

3.3.2 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.

3.4 Design and construction.

3.4.1 End fittings. End fittings shall be of the types and sizes specified on the figures and tables to the applicable associated detail specifications and shall be of a reusable design. Hose end of the fitting may be of a solid socket, ring retained segmented socket, or bolt retained segmented socket or any other design capable of meeting all the requirements of this specification and the applicable associated detail specification. Hose end of the fitting shall be readily removable and reattachable to a new section of hose by the use of commonly available tools which are normally carried aboard ship. The need for special tools shall be subject to the review and approval of the Naval Sea Systems Command (NAVSEA).

3.4.2 Weights and dimensions. Weights of the end fittings shall be kept to a minimum and the dimensions of the fittings shall not exceed the envelope limits shown on the figures to the applicable associated detail specifications.

3.4.3 Finish. Fittings shall be finished smooth and free from nicks, scratches, burrs and sharp edges.

3.4.4 Tool and die marks (nickel copper alloy barstock only). The presence of tool marks on machined parts is acceptable provided such marks do not exceed 3 percent of the wall thickness or reduce the wall thickness to an unacceptable level. Draw marks upon the external hexagonal surfaces, such as the outside diameter (od) of solid sockets, which are normally unmachined surfaces, are acceptable if they do not exceed 3 percent of the wall thickness.

3.4.5 Welding. Welding, if used, shall be in accordance with MIL-STD-278. Brazing of fitting parts shall not be permitted. If welding is used in the fabrication of any of the types of fittings covered by this specification, welding procedures and classifications per MIL-STD-278 used by the contractor for the materials specified herein shall be approved by NAVSEA prior to the start of qualification testing.

3.4.5.1 Weld repair. Weld repair shall be in accordance with MIL-STD-278.

3.4.6 Mating of parts. Where two parts of the same material are mated together, provision shall be made to prevent galling and seizing of the mated surfaces. A solid film lubricant, such as molybdenum disulfide, or two classes of treatments of the same material, or a combination of any of these methods, shall be used to prevent galling and seizing.

3.5 Physical requirements.

3.5.1 Proof pressure. End fittings shall not separate from the hose nor show evidence of leakage or deformation when subjected to the proof pressure test specified in 4.6.1.

3.5.1.1 Aging of samples. After proof testing all samples shall be aged in accordance with the appropriate associated detailed specification for the hose being used for qualification of the fittings.

3.5.2 Hydraulic fluid circulation. The end fittings shall show no signs of leakage or separation from the hose when subjected to the hydraulic fluid circulation test specified in 4.6.2.

3.5.3 Hydraulic impulse. The end fittings shall show no signs of leakage or separation from the hose when subjected to the hydraulic impulse test specified in 4.6.3.

3.5.4 Burst test. End fittings shall show no signs of leakage or separation from the hose at pressures less than the specified burst pressure of the hose to which the fitting is attached when tested as specified in 4.6.4.

3.6 Marking and instructions.

3.6.1 Each end fitting shall have permanent and visible stamped identification. The numerals and lettering shall be as large as practical, but not less than 1/16 inch high and may be placed on more than one flat. The identification marking shall contain the following:

(a) Specification sheet number (24787/4).
(b) Manufacturer's part number.
(c) Pipe or tube size X hose size (2 1/2 X -40).

(d) Manufacturer's cage code.
(e) Manufacturer's trade mark or logo (optional).
(f) Fitting type and group numbers.
(g) Flanges shall have the flange class on the od surface.

3.6.2 Installation instructions. Instructions for installing the fitting on to the hose shall be packed with each fitting and shall contain, but not be limited to the following;

(a) List of tools necessary for installation of the fitting.
(b) Sequence of steps for proper attachment of fitting to hose.
(c) Assembly precautions required.

The assembly instructions shall be printed on reasonably heavy stock so as to prevent damage during packing and shipping. The manufacturer shall furnish a copy of the instructions to NAVSEA for review as part of his qualification test report.

3.7 Threads. Where screw threads are required, including bolting for bolt together segmented fittings, they shall be in accordance with FED-STD-H28.

3.8 Workmanship. Fittings shall be uniform in quality and in material. Castings shall be free from patching, misalinement resulting from shifted coring, warping, porosity or other defects. Sprues shall be removed, and the castings shall be free from sand, dirt, scale, and other extraneous materials. Machined parts shall be manufactured to tolerances and dimensions specified herein and on the applicable associated detail specification. Fittings shall be free from workmanship deficiencies that could impair the function or serviceability of the hose and fitting in its intended use.

4. QUALITY ASSURANCE PROVISIONS.

4.1 Responsibility for inspection. 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 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 specifications 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.

4.1.2 Inspection system. The contractor shall provide and maintain an inspection system acceptable to the government for supplies and services covered by this specification. The inspection system shall be in accordance with the contract or order (see 6.2).

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

(a) Qualification inspection (see 4.3).
(b) Quality conformance inspection (see 4.4).

4.3 Qualification inspection. Qualification inspection shall be conducted at a laboratory satisfactory to NAVSEA. Qualification inspection shall consist of the examination of 4.5 and the tests of 4.6. The required hose assemblies and sequence of tests shall be as specified on the applicable associated detail specification. Hoses shall be hoses qualified to MIL-H-24135 or MIL-H-24136 as applicable.

4.3.1 Sampling for qualification. Sampling of end fittings for assembly of test hose assemblies and the sequence of tests shall be as specified in the applicable associated detail specification.

4.3.1.1 End fitting types. If the hose end of the fitting is identical for more than one type of fitting, only a representative type of fitting will be required for qualification testing. Qualification may be granted to all those types which the sample represents, subject to results of the tests.

4.4 Quality conformance inspection. Quality conformance inspection shall consist of the examination of 4.5. Quality conformance testing shall consist of the proof test of 4.6.1 only if hose assemblies are purchased. Proof and burst tests are not required for lot acceptance of bulk fitting purchases.

4.4.1 Lots.

4.4.1.1 Fittings. For the purpose of quality conformance inspection, a lot is defined as all of the end fittings of the same size and type, produced in one facility, using the same production processes and materials, and being offered for delivery at one time.

4.4.2 Sampling for visual and dimensional examination.

4.4.2.1 Fittings. As a minimum, the contractor shall randomly select a sample quantity from each lot of completed end fittings in accordance with table I and inspect them in accordance with 4.5 for the defects listed in table II. 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 for the defective characteristic(s) or providing a new lot which shall be inspected in accordance with the sampling plan contained herein. The contractor shall maintain for a period of 3 years after contract completion all records of inspections, tests, and any resulting rejections.

TABLE I. Sampling for visual and dimensional examination.

Lot size	Sample size
2 to 25	3
26 to 50	5
51 to 90	6
91 to 150	7
151 to 280	10
281 to 500	11
501 to 1,200	15
1,201 to 3,200	18
3,201 to 10,000	22

TABLE II. Classification of defects.

Category	Defect
Critical	
1	Fitting not of the type or group specified
2	Fitting of the wrong material
3	Fitting casting has porosity
Major	
101	Fitting not marked as specified
102	Fitting has rough or sharp edges
Minor	
201	Fitting not cleaned of debris and oil
202	Instruction sheet not packed with fitting

4.4.3 Sampling for tests.

4.4.3.1 Fittings. There are no tests required of fittings for lot acceptance testing unless hose assemblies are ordered, in which case there shall be a 100 percent proof test of all hose assemblies in the order regardless of type or size.

4.4.4 Lot rejection. Any sample having one or more visual or dimensional defect shall be rejected, and shall be cause for rejection of the entire lot represented by the sample. Rejection of a lot shall require that corrective action be implemented by the contractor.

4.5 Examination.

4.5.1 End fitting. Each sample fitting selected in accordance with 4.4.2.1 shall be visually and dimensionally examined to determine conformance with the requirement paragraphs listed in table III.

TABLE III. Visual and dimensional examination of sample fitting.

Examination	Requirement
Design and construction	3.4
Marking and instructions	3.6
Threads	3.7
Workmanship	3.8

4.6 Tests.

4.6.1 Proof pressure. The proof pressure test of the hose assemblies containing the sample fittings shall be conducted in accordance with ASTM D 380 except that the samples shall be in accordance with 4.3.1. The proof pressure shall be 200 percent of the maximum working pressure specified in the applicable specification sheet, and shall be held for not less than 1 minute nor greater than 5 minutes. The rate of pressure rise shall be at the following rates:

(a) For sizes -32 and smaller, the rate of pressure increase shall be not less than 15,000 psi nor greater than 25,000 psi per minute.
(b) For sizes greater than -32 the pressure increase shall not exceed 1000 psi per minute.

The pressure rise shall be at a uniform rate. The proof pressure shall be 200 percent of the maximum working pressure specified in the applicable associated detail specification and shall be held for not less than 1 minute nor greater than 5 minutes. Fittings which pass this test are acceptable for use. Evidence of leakage past the fitting or separation of the fitting from the hose shall constitute failure of this test.

4.6.1.1 After the proof test age all samples per 3.5.1.1.

4.6.2 Hydraulic fluid circulation. Sample hose assemblies shall be filled with hydraulic fluid in accordance with MIL-L-2104, MIL-H-5606 or MIL-L-17331 and pressurized to between 75 and 100 psi. Unless otherwise specified in the individual associated detail specification, the temperature shall be raised from ambient to 180 +/- 10°F and the fluid circulated through the hose assembly at a flow rate of not less than 3 gallons per minute. The ambient temperature shall be maintained at 75 +/- 15°F. Every 24 hours the pressure shall be increased to maximum working pressure listed in the applicable associated detail specification and maintained for not less than 5 minutes. The flow shall be continued for not

less than 200 hours. At the completion of this test, the hose assembly shall be pressurized to the maximum working pressure specified in the applicable associated detail specification, with the pressure held for not less than 5 minutes. Nonconformance to 3.5.2 shall constitute failure of this test.

4.6.3 Impulse. Hose assemblies fitted with end fittings being qualified shall be subjected to impulse testing to the peak pressure specified on the applicable associated detail specification. Hose assemblies shall be subjected to an impulse rate of from 30 to 80 cycles per minute, with the hydraulic fluid temperature of not less than 120°F nor greater than 130°F (unless otherwise specified on the applicable associated detail specification) for a minimum of 150,000 cycles. At the beginning of each pressure cycle, the peak pressure specified on the applicable associated detail specification shall be attained. The applicable working pressure shall be attained before leveling off (see figures 1, 2 or 3 of MIL-H-24135 or MIL-H-24136 as applicable).

4.6.3.1 Retest and impulse averaging. In the event of a hose failure during impulse testing, an additional hose assembly shall be tested and the results of both hose assemblies shall be averaged. The conditions for testing an additional hose assembly are as follows:

(a) If the averaging is for a hose qualification as well as a fitting qualification the conditions of MIL-H-24135 or MIL-H-24136 shall apply as applicable.
(b) If the test is for fitting qualification only, the fitting shall be removed from the failed hose and reset on a new length of hose and the test continued until the required number of cycles have been reached.

NOTE: If the failure involved fitting separation from the hose, averaging shall not be permitted. The components of the failed hose assembly shall be analyzed to determine the cause of the fitting separation from the hose. After corrective action has been taken, a new test, using new fittings and new hose shall be conducted. Nonconformance to 3.5.3 shall constitute failure of this test.

4.6.4 Burst pressure. The burst pressure test of the hose assembly shall be conducted in accordance with ASTM D 380 except that the samples shall be in accordance with 4.4.3. The pressure shall be raised at a uniform rate as follows:

(a) For sizes -32 and smaller the rate of pressure rise shall be not less than 15,000 psi and not greater than 25,000 psi per minute.
(b) For sizes greater than -32 the rate of pressure rise shall not exceed 1000 psi per minute.

The burst pressure shall be 400 percent of the maximum working pressure specified in the applicable associated detail specification. Evidence of leakage, deformation of the fitting or fitting separation at or below the specified test pressure shall constitute failure of this test. Fittings used for the burst test shall not be acceptable for further use. Noncompliance with 3.5.4 shall constitute failure of this test.

4.7 Inspection of packaging. Sample packages and the inspection of the packaging, preservation, (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 preparation for delivery requirements specified herein apply only for direct Government acquisitions.)

5.1 Packaging requirements. The packaging (preservation, packing and marking) requirements shall be in accordance with MIL-H-775 for the level of preservation (A, C, or Commercial), the level of packing (A, B, C, or Commercial), and marking including other packaging acquisitioning options therein, as specified (see 6.2).

6. NOTES

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

6.1 Intended use. Fittings are intended for use with hoses conforming to MIL-H-24135 and MIL-H-24136 in piping systems as flexible connections to resiliently mounted (sound mounted) equipment but may be used for other application which do not exceed the pressure or temperature limits of the hose selected.

6.2 Acquisition requirements.

6.2.1.1 Fittings. For fittings, acquisition documents shall specify the following:

(a) Title, number and date of this specification and applicable specification sheet.
(b) End fitting type.
(c) End fitting group (see applicable associated detail specification).
(d) End fitting size (pipe end and hose end).
(e) Issue of DODISS to be cited on the solicitation, and if required, the specific issue of individual documents referenced (see 2.1 and 2.1.1).
(f) Inspection system required.
(g) Level of preservation, level of packing and other options required (see 5.1).

6.3 Qualification. With respect to products requiring qualification, awards will be made only for products which are, at the time set for opening of bids, qualified for inclusion in Qualified Products List QPL 24787 whether or not such products have actually been so listed by that date. The attention of the contractors is called to these requirements, and manufacturers are urged to arrange to hose the products that they propose to offer to the Federal Government test for qualification in order that they may be eligible to be awarded contracts or purchase orders for the products covered by this specification. The activity

responsible for the Qualified Products List is the Naval Sea Systems Command SEA 03Q42 (QPL), 2531 Jefferson Davis Hwy., Arlington, VA 22242-5160 and information pertaining to qualification of products may be obtained from that activity. Application for qualification tests shall be made in accordance with "Provisions Governing Qualification SD-6 (see 6.3.1).

6.3.1 Copies of "Provisions Governing Qualification SD-6" may be obtained upon application to Standardization Document Order Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.

6.4 Supersession data. This specification covers fittings formerly covered by specifications MIL-H-24135 and MIL-H-24136. Table IV provides detailed supersession data.

TABLE IV. Supersession detail.

Old		New		
Specification	Fitting type	Specification	Fitting	
			Group	Type
MIL-H-24135/1	A	MIL-F-24787/2	I	A
	B	MIL-F-24787/7	I	B
	BL	MIL-F-24787/7	I	BL
	C	MIL-F-24787/3	I	C
	CL	MIL-F-24787/3	I	CL
	D	MIL-F-24787/5	I	D
	E	MIL-F-24787/1	I	F
	EL	MIL-F-24787/1	I	FL
MIL-H-24135/2	A	MIL-F-24787/2	II	A
	B	MIL-F-24787/7	II	B
	BL	MIL-F-24787/7	II	BL
	C	MIL-F-24787/3	II	C
	CL	MIL-F-24787/3	II	CL
	D	MIL-F-24787/5	II	D
MIL-H-24135/3	AS	MIL-F-24787/2	III	A
	BS	MIL-F-24787/7	III	B
	BLS	MIL-F-24787/7	III	BL
	CS	MIL-F-24787/3	III	C
	CLS	MIL-F-24787/3	III	CL
	DS	MIL-F-24787/5	III	D
	BO	MIL-F-24787/7	III	B
	BLO	MIL-F-24787/7	III	BL
	CO	MIL-F-24787/3	III	C
	CLO	MIL-F-24787/3	III	CL
	DO	MIL-F-24787/5	III	D
	UO	MIL-F-24787/6	III	U

TABLE IV. Supersession detail - Continued.

Old		New		
Specification	Fitting type	Specification	Fitting	
			Group	Type
MIL-H-24135/4	AI	MIL-F-24787/1	IV	F
	AII	MIL-F-24787/1	IV	F
	AIII	MIL-F-24787/1	IV	F
	AIV	MIL-F-24787/1	IV	F
	BI	MIL-F-24787/1	IV	FL
	BII	MIL-F-24787/1	IV	FL
	BIII	MIL-F-24787/1	IV	FL
	BIV	MIL-F-24787/1	IV	FL
	C	MIL-F-24787/4	IV	E
	CA	MIL-F-24787/4	IV	E
	D	MIL-F-24787/4	IV	EL
	DA	MIL-F-24787/4	IV	EL
	E	MIL-F-24787/5	IV	D
	F	MIL-F-24787/6	IV	U
	SPLIT CLAMP	MIL-F-24787/4	IV	SC
	FEM	MIL-F-24787/4	IV	TF
	MALE	MIL-F-24787/4	IV	TM
MIL-H-24135/5	A	MIL-F-24787/2	I	A
	B	MIL-F-24787/7	I	B
	BL	MIL-F-24787/7	I	BL
	C	MIL-F-24787/3	I	C
	CL	MIL-F-24787/3	I	CL
	D	MIL-F-24787/5	I	D
	E	MIL-F-24787/1	I	F
	EL	MIL-F-24787/1	I	FL
MIL-H-24135/6	A	MIL-F-24787/2	I	A
	B	MIL-F-24787/7	I	B
	BL	MIL-F-24787/7	I	BL
	C	MIL-F-24787/3	I	C
	CL	MIL-F-24787/3	I	CL
	D	MIL-F-24787/5	I	D
	E	MIL-F-24787/1	I	F
	EL	MIL-F-24787/1	I	FL
MIL-H-24135/7	AS	MIL-F-24787/2	V	A
	FS	MIL-F-24787/4	V	E
	FLS	MIL-F-24787/4	V	EL

TABLE IV. Supersession detail - Continued.

Old		New		
Specification	Fitting type	Specification	Fitting	
			Group	Type
MIL-H-24135/8	A	MIL-F-24787/2	II	A
	B	MIL-F-24787/7	II	B
	BL	MIL-F-24787/7	II	BL
	C	MIL-F-24787/3	II	C
	CL	MIL-F-24787/3	II	CL
	D	MIL-F-24787/5	II	D
MIL-H-24135/9	AO	MIL-F-24787/2	VI	A
	BO	MIL-F-24787/7	VI	B
	BLO	MIL-F-24787/7	VI	BL
	CO	MIL-F-24787/3	VI	C
	CLO	MIL-F-24787/3	VI	CL
	DO	MIL-F-24787/5	VI	D
	GO	MIL-F-24787/6	VI	U
	J518c(A)	MIL-F-24787/1	VI	F
	J518c(B)	MIL-F-24787/1	VI	FL
MIL-H-24135/10	AM	MIL-F-24787/2	VIII	A
	BM	MIL-F-24787/3	VIII	C
	BLM	MIL-F-24787/3	VIII	CL
	DM	MIL-F-24787/5	VIII	D
	FMI	MIL-F-24787/1	VIII	F
	FMII	MIL-F-24787/1	VIII	F
	FLMI	MIL-F-24787/1	VIII	FL
	FLMII	MIL-F-24787/1	VIII	FL
	GM	MIL-F-24787/4	VIII	E
	GMA	MIL-F-24787/4	VIII	E
	GML	MIL-F-24787/4	VIII	EL
	GMLA	MIL-F-24787/4	VIII	EL
	AIII	MIL-F-24787/1	IV	F
	AIV	MIL-F-24787/1	IV	F
	BIII	MIL-F-24787/1	IV	FL
	BIV	MIL-F-24787/1	IV	FL
	C	MIL-F-24787/4	IV	E
	CA	MIL-F-24787/4	IV	E
	D	MIL-F-24787/4	IV	EL
	DA	MIL-F-24787/4	IV	EL
	E	MIL-F-24787/5	IV	D
	F	MIL-F-24787/6	IV	U
	SPLIT CLAMP	MIL-F-24787/4	IV	SC
	FEM	MIL-F-24787/4	IV	TF
	MALE	MIL-F-24787/4	IV	TM

TABLE IV. Supersession detail - Continued.

Old		New		
Specification	Fitting type	Specification	Fitting	
			Group	Type
MIL-H-24135/11	NONE	MIL-F-24787/1	VII	F
	NONE	MIL-F-24787/1	VII	FL
	NONE	MIL-F-24787/5	VII	D
	NONE	MIL-F-24787/4	VII	E
	NONE	MIL-F-24787/4	VII	EL
	NONE	MIL-F-24787/4	VII	SC
	NONE	MIL-F-24787/4	VII	TF
	NONE	MIL-F-24787/4	VII	TM
MIL-H-24135/12	NONE	MIL-F-24787/2	VIII	A
	NONE	MIL-F-24787/3	VIII	C
	NONE	MIL-F-24787/3	VIII	CL
	NONE	MIL-F-24787/1	VIII	F
	NONE	MIL-F-24787/1	VIII	FL
	NONE	MIL-F-24787/5	VIII	D
	NONE	MIL-F-24787/4	VIII	E
	NONE	MIL-F-24787/4	VIII	EL
	NONE	MIL-F-24787/4	VIII	SC
	NONE	MIL-F-24787/4	VIII	TF
	NONE	MIL-F-24787/4	VIII	TM
MIL-H-24135/13	NONE	MIL-F-24787/2	I	A
	NONE	MIL-F-24787/3	I	C
	NONE	MIL-F-24787/3	I	CL
	NONE	MIL-F-24787/5	I	D
	NONE	MIL-F-24787/1	I	F
	NONE	MIL-F-24787/1	I	FL
MIL-H-24136/1	AI-AV	MIL-F-24787/1	IX	F
	BI-AV	MIL-F-24787/1	IX	FL
	C	MIL-F-24787/4	IX	E
	D	MIL-F-24787/4	IX	EL
	E	MIL-F-24787/5	IX	D
	F	MIL-F-24787/6	IX	U
	FEM	MIL-F-24787/4	IX	TF
	MALE	MIL-F-24787/4	IX	TM
	SPLIT CLAMP	MIL-F-24787/4	IX	SC

TABLE IV. Supersession detail - Continued.

Old		New		
Specification	Fitting type	Specification	Fitting	
			Group	Type
MIL-H-24136/2	G	MIL-F-24787/2	XI	A
	H	MIL-F-24787/7	XI	B
	HL	MIL-F-24787/7	XI	BL
	I	MIL-F-24787/3	XI	C
	IL	MIL-F-24787/3	XI	CL
	E	MIL-F-24787/5	XI	D
MIL-H-24136/3	G	MIL-F-24787/2	VIII	A
	I	MIL-F-24787/3	VIII	C
	IL	MIL-F-24787/3	VIII	CL
	E	MIL-F-24787/5	VIII	D
	AI-AV	MIL-F-24787/1	VIII	F
	BI-AV	MIL-F-24787/1	VIII	FL
MIL-H-24136/4	AI-AV	MIL-F-24787/1	X	F
	BI-AV	MIL-F-24787/1	X	FL
	C	MIL-F-24787/4	X	E
	D	MIL-F-24787/4	X	EL
	E	MIL-F-24787/5	X	D
	FEM	MIL-F-24787/4	X	TF
	MALE	MIL-F-24787/4	X	TM
	SPLIT CLAMP	MIL-F-24787/4	X	SC

6.5 Fitting group commonality data. Fitting groups are intended for specific MIL-H-24135 and MIL-H-24136 hoses as shown in table IV above. Fitting group commonality is shown in table V.

TABLE V. Fitting group commonality.

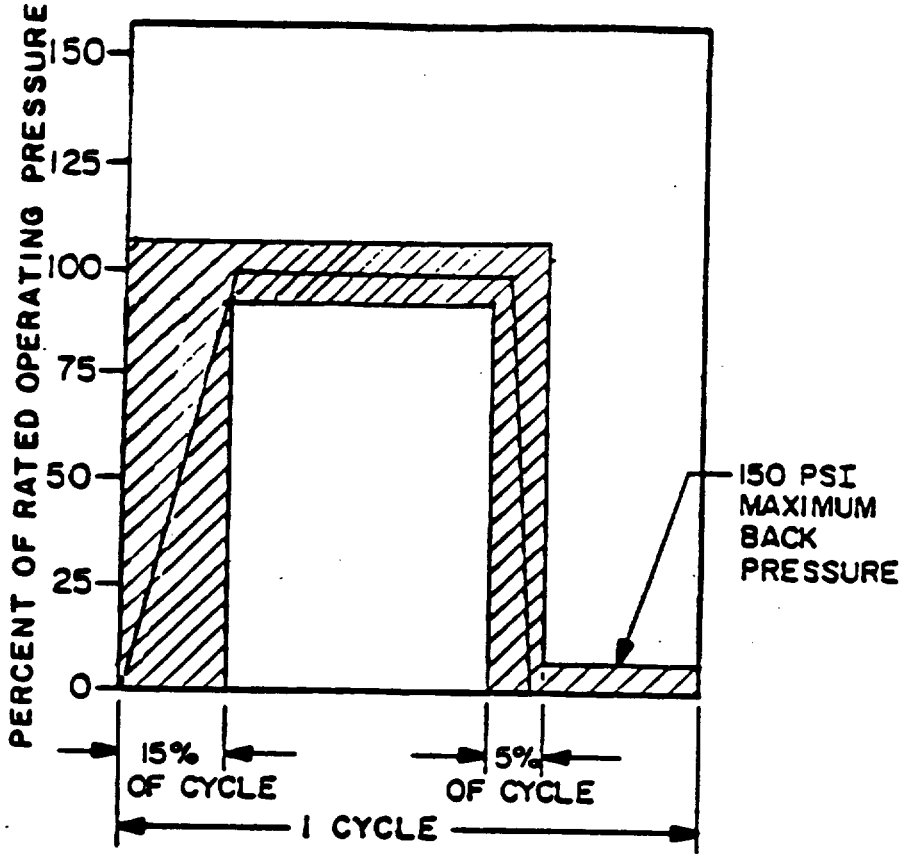
Fitting group MIL-F-24787	Intended hose(s) MIL-H-24135 OR MIL-H-24136
I	MIL-H-24135/1, /5, /6 AND /13
II	MIL-H-24135/2 and /8
III	MIL-H-24135/3
IV	MIL-H-24135/4 and /10 (-40 AND -48 only)
V	MIL-H-24135/7
VI	MIL-H-24135/9
VII	MIL-H-24135/11
VIII	MIL-H-24135/10 (-4 through -32), /12 and MIL-H-24136/3
IX	MIL-H-24136/1
X	MIL-H-24136/4
XI	MIL-H-24136/2

6.6 Hose applicability. Where hose is required for purpose of qualification of fittings under this specification or for contract or purchase order for hose assemblies they shall be hoses qualified to MIL-H-24135 or MIL-H-24136.

6.7 Subject term (key word) listing.

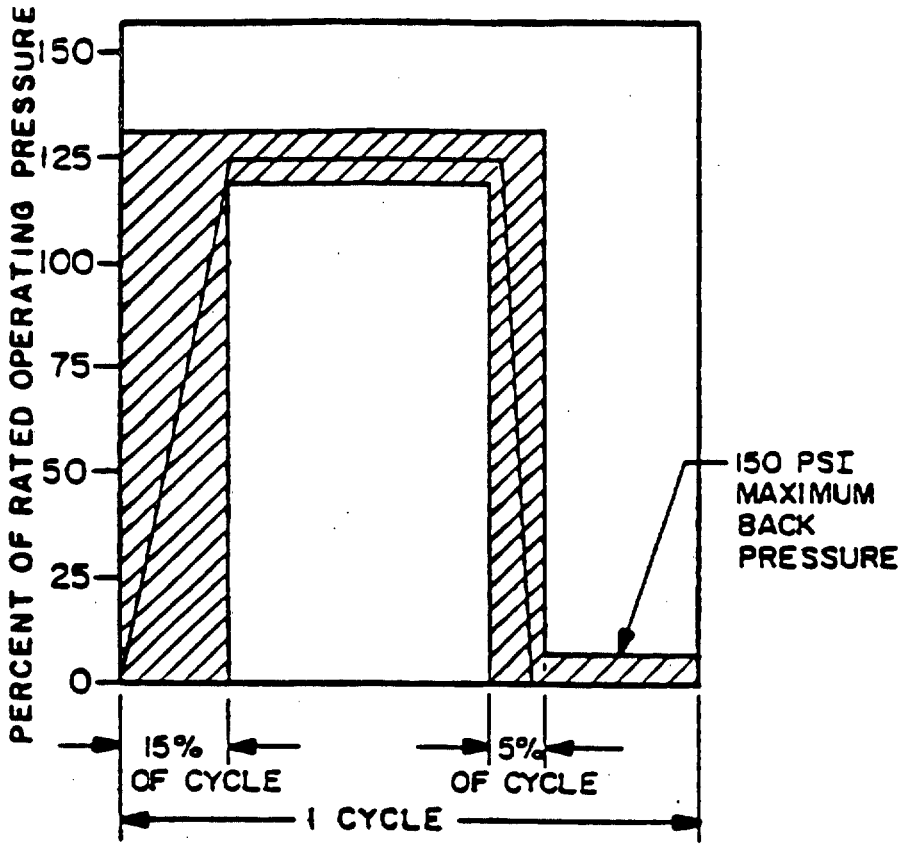
37° swivel
90° elbow
120° return
Flange
Gasket seal
O-ring union
Split clamp

Preparing activity
Navy - SH
(Project 4730-N086)



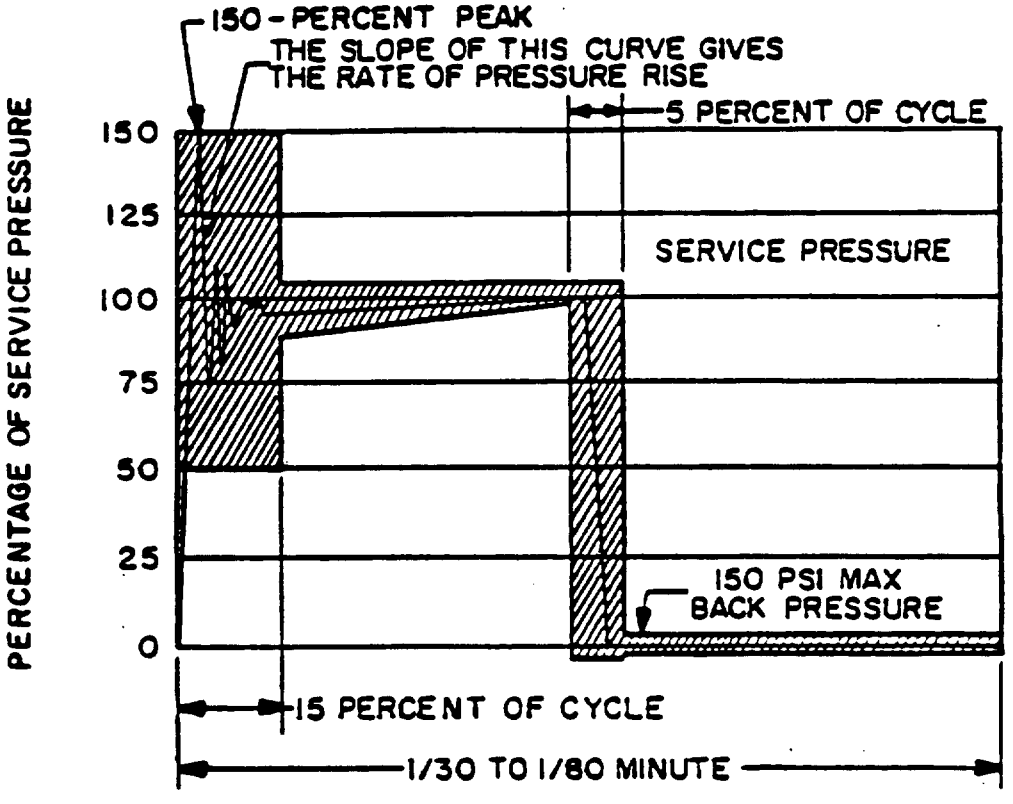
NOTE: This curve is the approximate pressure time cycle for the pressure impulse to be used in performing the impulse test specified in 4.6.5. The actual pressure time cycle obtained when performing this test should fall within the shaded area.

FIGURE 1. Pressure time curve for impulse test (100 percent square wave).



NOTE: This curve is the approximate pressure time cycle for the pressure impulse to be used in performing the impulse test specified in 4.6.5. The actual pressure time cycle obtained when performing this test should fall within the shaded area.

FIGURE 2. Pressure time curve for impulse test (125 percent square wave).



NOTE: This curve is the approximate pressure time cycle for the pressure impulse to be used in performing the impulse test specified in 4.6.5. The actual pressure time cycle obtained when performing this test should fall within the shaded area.

FIGURE 3. Pressure time curve for impulse test (150 percent peak wave).

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

INSTRUCTIONS

1. The preparing activity must complete blocks 1, 2, 3, and 8. In block 1, both the comment 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 this 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 MIL-F-24787(SH)	2. DOCUMENT DATE (YYMMDD) 930903

3. DOCUMENT TITLE
FITTINGS, END, REUSABLE FOR FLEXIBLE HOSE ASSEMBLIES GENERAL SPECIFICATION FOR

4. NATURE OF CHANGE (identity 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) DSN (if applicable)	7. DATE SUBMITTED (YYMMDD)

8. PREPARING ACTIVITY

a. NAME Technical Point of Contact (TPOC) MR. CARL BANKS, SEA 03Y23 ADDRESS ALL CORRESPONDENCE AS FOLLOWS:	b. TELEPHONE (Include Area Code) (1) Commercial: TPOC: 703-602-0367 DSN: 8-332-0367
c. ADDRESS (Include Zip Code) COMMANDER, NAVAL SEA SYSTEMS COMMAND ATTN: SEA 03Q42 2531 JEFFERSON DAVIS HIGHWAY ARLINGTON, VA 22242-5160	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 DSN 289-2340