

MIL-F-1183J
 5 May 1987
 SUPERSEDING
 MIL-F-1183H
 17 June 1983
 (See 6.8)

MILITARY SPECIFICATION

FITTINGS, PIPE, CAST BRONZE, SILVER-BRAZING, GENERAL SPECIFICATION FOR

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

1. SCOPE

1.1 Scope. This specification covers pipe fittings of cast bronze with at least one end for silver-brazing into steam, air, oil or water piping systems.

1.2 Classification. Fittings shall be of the following types as required (see 3.3) and shall be designated by the applicable specification sheet part number (see 6.2, 6.3 and applicable specification sheet):

- Type A - Interior streamlined (with and without groove for brazing ring)
- Type B - Interior not streamlined (with and without groove for brazing ring)

2. APPLICABLE DOCUMENTS

2.1 Government documents.

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

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.

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SPECIFICATIONS

FEDERAL

- QQ-B-654 - Brazing Alloys, Silver.
- QQ-C-390 - Copper Alloy Castings (Including Cast Bar).

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- MIL-V-3 - Valves, Fittings, and Flanges (Except for Systems Indicated Herein); Packaging of.
- MIL-P-4861 - Packing, Preformed, Rubber, Packing; Packaging of.
- MIL-B-16541 - Bronze, Valve: Castings.
- MIL-R-83248 - Rubber, Fluorocarbon Elastomer, High Temperature, Fluid, and Compression Set Resistant.
- MIL-R-83248/1 - Rubber, Fluorocarbon Elastomer, High Temperature, Fluid, and Compression Set Resistant, O-rings, Class 1, 75 Hardness.

(See Supplement 1 for list of associated specification sheets.)

STANDARDS

FEDERAL

- FED-STD-H28 - Screw-Thread Standards For Federal Services.
- FED-STD-H28/7 - Screw Thread Standards For Federal Services Section 7, Pipe Threads General Purpose.

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- MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes.

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

2.2 Other publications. The following documents form a part of this specification to the extent specified herein. Unless otherwise specified, the issues of the documents which are DoD adopted shall be those listed in the issue of the DoDISS specified in the solicitation. Unless otherwise specified, the issues of documents not listed in the DoDISS shall be the issue of the non-government documents which is current on the date of the solicitation.

AEROSPACE STANDARD (AS)

- AS 568 - Aerospace Size Standard for O-Rings.

(Application for copies should be addressed to the Society of Automotive Engineers, Inc., 400 Commonwealth Drive, Warrendale, PA 15096.)

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

- Y14.36 - Surface Texture Symbols. (DoD adopted)

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

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AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

B 61 - Standard Specification for Steam or Valve Bronze Castings. (DoD adopted)

D 2000 - Standard Classification System for Rubber Products in Automotive Applications. (DoD adopted)

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

(Nongovernment standards and other publications are normally available from the organizations which prepare or which 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 specification and the references cited herein (except for associated detail specifications, specification sheets or MS standards), the text of this specification shall take precedence. Nothing in this specification, however, shall supersede applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

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

3.2 Material. Fittings shall be made of material conforming to QQ-C-390, alloy C90300 or C92200 or to ASTM B 61 (UNS no. C92200) bronze at the manufacturer's option. Fittings made of material conforming to MIL-B-16541 is an acceptable substitute for QQ-C-390 alloy C90300, C92200 or ASTM B 61 (UNS no. C92200).

3.2.1 Recovered materials. Unless otherwise specified herein, all material 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.

3.3 Configuration and dimensions. Fitting configuration and dimensions shall be in accordance with figures 1 or 2 and table I of this specification and applicable figures and tables of the specified specification sheet (see 6.2). Small ribs or lugs on the body portion of the fitting for use in holding and locating the fitting during the manufacturing process are permitted. Sharp corners shall be rounded or broken.

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TABLE I. Socket and wall thickness dimensions.

Nominal pipe size	Outside diameter of pipe	Shoulder thickness, type B	D	R	E	H		F		G	P	W
						Inside diameter of fittings type A	Plus or minus	Inside diameter of fittings type B	Max			
	Max	Min $\frac{1}{16}$	Min $\frac{1}{16}$	Min $\frac{1}{16}$	Min $\frac{1}{16}$			Min $\frac{1}{16}$	Min $\frac{1}{16}$	Min $\frac{1}{16}$	Min $\frac{1}{16}$	Min $\frac{1}{16}$
Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches
1/4	0.540	1/32	17/64	9/32	0.14	0.398	0.015	0.54	0.58	0.07	5/64	0.07
3/8	.675	1/32	5/16	21/64	.15	.532	.015	.68	.72	.08	3/32	.08
1/2	.840	1/32	3/8	25/64	.17	.697	.020	.84	.90	.08	3/32	.08
3/4	1.050	3/64	13/32	27/64	.21	.907	.025	1.05	1.11	.09	7/64	.09
1	1.315	3/64	7/16	15/32	.24	1.171	.025	1.32	1.39	.10	7/64	.10
1-1/4	1.660	3/64	1/2	17/32	.28	1.502	.030	1.66	1.73	.11	1/8	.11
1-1/2	1.900	3/64	5/8	21/32	.31	1.742	.030	1.90	1.97	.12	1/8	.12
2	2.375	3/64	21/32	11/16	.38	2.186	.030	2.38	2.45	.14	5/32	.14
2-1/2	2.875	1/16	25/32	13/16	.44	2.686	.030	2.88	2.98	.15	5/32	.15
3	3.500	1/16	53/64	55/64	.51	3.286	.035	3.50	3.60	.17	3/16	.17
3-1/2	4.000	1/16	7/8	29/32	.56	3.786	.035	4.00	4.10	.18	3/16	.18
4	4.500	3/32	29/32	15/16	.62	4.252	.040	4.50	4.60	.20	7/32	.20
5	5.563	3/32	1	1-1/32	.72	5.278	.040	5.56	5.66	.28	5/16	.28
6	6.625	3/32	1-7/64	1-9/64	.85	6.321	.040	6.63	6.73	.32	11/32	.32
8	8.625	3/32	1-5/16	1-23/64	1.08	8.286	.040	8.63	8.73	.38	13/32	.38
10	10.750	-----	1-1/2	1-9/16	-----	10.325	.040	-----	-----	.455	1/2	.455
12	12.750	-----	1-5/8	1-11/16	-----	12.322	.040	-----	-----	.540	9/16	.540

See footnote at end of table.

TABLE I. Socket and wall thickness dimensions. - Continued

Nominal pipe size	Outside diameter of pipe	S		H		J		K		L		N	T		
		Band diameter, type A		Band diameter, type B		Diameter of socket		Diameter of shoulder, type B		Diameter of groove			Face of fitting to groove	Width of groove	
		Min	1/	Min	1/	Min	1/	Max	Min	1/	Max			Min	1/
Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	
1/4	0.540	0.700	0.81	0.540	0.543	0.413	0.443	0.619	0.639	0.099	0.068	0.078			
3/8	.675	.855	1.00	.675	.678	.548	.578	.764	.784	.115	.083	.093			
1/2	.840	1.020	1.17	.840	.843	.714	.744	.929	.949	.146	.083	.093			
3/4	1.050	1.250	1.42	1.050	1.053	.923	.953	1.159	1.179	.154	.099	.109			
1	1.315	1.535	1.72	1.315	1.318	1.191	1.221	1.424	1.444	.154	.130	.140			
1-1/4	1.660	1.900	2.10	1.660	1.663	1.534	1.564	1.769	1.789	.188	.130	.140			
1-1/2	1.900	2.160	2.38	1.900	1.905	1.778	1.808	2.011	2.031	.217	.192	.202			
2	2.375	2.675	2.92	2.375	2.380	2.247	2.277	2.486	2.506	.232	.192	.202			
2-1/2	2.875	3.215	3.49	2.875	2.882	2.745	2.775	2.988	3.008	.295	.192	.202			
3	3.500	3.880	4.20	3.500	3.507	3.341	3.371	3.613	3.633	.287	.255	.265			
3-1/2	4.000	4.400	4.75	4.000	4.007	3.821	3.851	4.113	4.133	.310	.255	.265			
4	4.500	4.940	5.31	4.500	4.507	4.298	4.328	4.673	4.693	.326	.255	.265			
5	5.563	6.163	6.29	5.563	5.570	5.325	5.355	5.736	5.756	.373	.255	.265			
6	6.625	7.305	7.42	6.625	6.632	5.387	6.417	6.798	6.818	.437	.255	.265			
8	8.625	9.425	9.56	8.625	8.632	3.387	8.417	8.798	8.818	.458	.398	.408			
10	10.750	11.70	-----	10.750	10.757	-----	-----	10.923	10.943	.551	.398	.408			
12	12.750	13.84	-----	12.750	12.757	-----	-----	12.963	12.983	.613	.398	.408			

1/ Minimum dimensions as specified are acceptable only when they are sufficient to permit the material to meet the requirements specified herein.

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3.4 Wall thickness. The wall thickness shall be as required by figures 1 or 2 and table I for the applicable nominal pipe size. On reducing fittings, the minimum wall thickness of each connection end shall be that wall thickness specified for each nominal pipe size as given in table I. The wall thickness of the body (waterway) on reducing fittings in the area where the body meets the connection end shall be not less than the minimum required for the pipe size of the respective ends. The body wall thickness between the different pipe size ends shall make a gradual transition from larger wall thickness to the smaller wall thickness and shall be not less than the minimum wall thickness required of the smaller pipe size.

3.5 End connections. The band at the socket ends of the fittings except female reducers, union tailpieces and union threadpieces shall be rectangular in cross-section with or without rounded corners. Unions and union fitting tailpieces and union threadpieces shall have rounded ends knurled, ribbed or lugged for wrenching or have octagonal ends.

3.5.1 Socket ends. Silver-brazed socket ends shall be either grooved for brazing ring or internally smooth for face fed brazing as specified (see 6.2).

3.5.1.1 Grooved ends. Fitting ends requiring groove for brazing ring shall be as shown on figures 1 and 2 with dimensions in table I, and when specified (see 6.2), shall be provided with QQ-B-654, BCuP-5 silver-brazing rings. The brazing ring dimensions shall be as shown on figure 3 and in table II.

TABLE II. Dimensions of silver-brazing ring.

Nominal pipe size (Inches)	Q	K	H	F	
	Inch (+ 0.003)	Inch (+ 0.003)	Inches	Minimum (Inch)	Maximum (Inch)
1/4	0.035	0.063	0.639	0.073	0.130
3/8	.040	.078	.784	.073	.130
1/2	.040	.078	.949	.073	.130
3/4	.050	.094	1.179	.073	.130
1	.050	.125	1.444	.073	.135
1-1/4	.050	.125	1.789	.073	.135
1-1/2	.050	.188	2.031	.073	.135
2	.050	.188	2.506	.073	.135
2-1/2	.050	.188	3.008	.073	.135
3	.050	.250	3.633	.073	.167
3-1/2	.050	.250	4.133	.073	.167
4	.080	.250	4.693	.073	.229
5	.080	.250	5.756	.073	.229
6	.080	.250	6.818	.073	.261
8	.080	.391	8.818	.073	.261
10	.080	.391	10.943	.073	.261
12	.096	.391	12.983	.073	.261

3.5.1.2 Face fed ends. Face fed ends shall be as shown on figures 1 and 2 with dimensions in table I and shall have a 45-degree by 1/32-inch (approximately) chamfer at the face of the fitting (see figures 1 and 2). The chamfer shall be included in the depth of socket dimension.

3.5.2 Threaded ends. Fittings with one or more threaded ends shall be type B (nonstreamlined). The threads shall be in accordance with FED-STD-H28 and FED-STD-H28/7, American National Taper pipe threads (NPT) for the nominal pipe size specified (see 6.2).

3.6 Working pressure and temperature. The maximum allowable working pressures and temperatures for fittings shall be as specified in table III.

TABLE III. Maximum working pressure and temperature.

Nominal pipe size (inches)	Steam service		Air, oil, water service	
	Maximum working pressure (lb/in ²)	Maximum temperature (°F)	Maximum working pressure (lb/in ²)	Maximum temperature (°F)
1/4 through 6	200	425	400	150
Above 6	150	425	250	150

3.7 Surface finish. Machined surfaces shall have a finish of 125 R_a or better. The surface finish of union seats and retainer rings shall be 63 R_a or better. O-ring contacting surfaces of unions, union tees and union elbows shall have a surface finish of 32 R_a. The finish symbols used in this specification are in accordance with ANSI Y14.36.

3.8 Dimensional tolerances. Dimensional tolerances shall be as shown in tables IV and V. Tolerances are not imposed on dimensions given as minimum or maximum.

TABLE IV. Tolerance on center-to-end or center-to-center dimension.

Nominal pipe size of fitting	Tolerance plus or minus	Nominal pipe size of fitting	Tolerances plus or minus
Inches	Inch	Inches	Inch
1/4	0.04	2-1/2	0.10
3/8	.05	3	.10
1/2	.06	3-1/2	.10
3/4	.06	4	.12
1	.07	5	.12
1-1/4	.07	6	.12
1-1/2	.08	8	.15
2	.08	10 and over	.18

TABLE V. Dimensional tolerances (other than center-to-end and center-to-center).

Machined				Casting	
Dimension ^{1/}	Decimals		Fractions	Dimensions	Tolerance
	2 Place	3 Place			
6 and under	+ 0.01	+ 0.005	+ 1/64	2 and under	+1/16, -1/16
Over 6 through 24	+ .02	+ .010	+ 1/32	Over 2 through 5	+3/32, -1/16
Over 24	+ .03	+ .015	+ 1/16	Over 5 through 8	+1/8, -3/32
Angular - + 0 degrees 30 minutes				Over 8 through 12	+3/16, -1/8
				Over 12 through 15	+7/32, -5/32
				Over 15	+1/4, -3/16

^{1/} All dimensions in inches except angular.

3.9 Identification. Rough castings of fittings shall be identified with the name or trademark of the manufacturer (NOTE: On unions and union sub-assemblies usually only the nut has the manufacturer's identification.). Type A (streamlined) castings shall also be marked with the letter "A" or "S" and the maximum pressure for air, oil, and water. The marking shall be cast or stamped (low stress stamps) in raised or depressed letters upon the outside of the body of all rough castings. Depressed markings shall be applied so as not to reduce the fitting wall thickness below the minimum requirement.

3.10 Workmanship. Fittings shall be sound, smoothly cored, true to form, uniform in texture and free from cold shuts. Castings shall not be repaired except as authorized by the contracting officer. The fittings shall be thoroughly cleaned inside and outside. Fins and rough areas that are not well rounded shall be blended. Machining chips and burrs shall be removed.

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 as specified herein. Except as otherwise specified in the contract or purchase order, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

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4.1.1 Responsibility for compliance. All items must 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 assuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling in quality conformance does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to acceptance of defective material.

4.1.2 Inspection records. Inspection records of the examinations and tests shall be kept complete and available to the Government as specified in the contract or purchase order (see 6.2).

4.2 Quality conformance. Quality conformance inspection and tests shall consist of the following:

- (a) Individual test (see 4.2.1).
- (b) Sampling for examination and test (see 4.3.2 and 4.3.3).

4.2.1 Individual test. Each production fitting shall be air pressure leakage tested as specified in 4.4.1.

4.3 Sampling for quality conformance. Sampling for quality conformance shall be in accordance with 4.3.1 through 4.3.3.

4.3.1 Lot. Fittings of the same name, type and size presented at one time shall be considered a lot for purposes of sampling and inspection.

4.3.2 Sampling for visual and dimensional examination. Sample fittings shall be selected at random from each lot in accordance with MIL-STD-105 at inspection level II for the examination specified in 4.4.2. The acceptable quality level (AQL) shall be 1.5 percent defective for major defects and 4.0 percent defective for minor defects.

4.3.3 Sampling for hydrostatic pressure leakage test. Sample fittings shall be selected from each lot in accordance with MIL-STD-105 at inspection level II for the hydrostatic pressure leakage test specified in 4.4.3. The AQL shall be 1.5 percent defective.

4.4 Quality conformance inspection. Quality conformance inspection shall consist of the examination and tests as specified in 4.4.1 through 4.4.3.

4.4.1 Air pressure leakage test. Each fitting shall be tested under water or with soapsuds at 100 pounds per square inch (lb/in²) (nominal) air pressure for 5 to 10 seconds. No leakage is allowed.

4.4.2 Examination. Each of the sample fittings selected in accordance with 4.3.2 shall be examined to verify conformance to all the requirements of this specification not involving tests. Examination shall be conducted as specified in table VI. Any fitting in the sample containing one or more defects shall be rejected, and if the number of defective fittings in any sample exceeds the acceptable number for that sample, the lot represented by the sample shall be rejected.

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TABLE VI. Classification of defects.

Categories	Defects
Critical:	None defined.
Major:	
101	Type, name and size not as specified.
102	Material not as specified.
103	Fitting not sound, smoothly cored, true to form, uniform in texture, not free from cold shuts.
104	Fitting surface (internal and external) not thoroughly cleaned; fins, machining chips, burrs and roughness not removed or blended.
105	Fitting welded where strength, serviceability, or machining will be affected, unauthorized repairs, plugged, welded or impregnated.
106	Brazing ring (if specified) missing or not as specified.
107	Thread (if required) missing, torn, stripped, broken, not concentric or not within gauging limits.
108	Thread (if required) size not as specified.
109	Socket not smooth.
110	Socket dimensions not as specified.
111	Bottom of socket not streamlined (type A fittings only).
112	Bottom of socket not square with axis of fittings.
113	Fitting dimensions not within tolerances specified.
114	Bands damaged or not as specified.
115	Tail pieces or threaded pieces of unions not octagonal, knurled, ribbed, or lugged.
116	Reducing fitting wall thickness not as specified.
117	O-ring and back-up ring missing or not as specified (if specified).
Minor:	
201	Ends (other than brazing ring type) not chamfered as specified.
202	Marking, manufacturer's name or trademark type-designating letter missing, not cast, or stamped incorrect, or illegible.

4.4.3 Hydrostatic pressure leakage test. Each sample fitting (except union assemblies) selected in accordance with 4.3.3 shall be subjected to a hydrostatic pressure 1-1/2 times the working pressure for 1 minute. Under the hydrostatic pressure, the fitting shall not leak water, or sweat at any part of the surface.

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

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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 6.6.)

5.1 Preservation-packaging and packing. Fittings shall be preserved-packaged level A or C and packed level A, B or C as specified (see 6.2) in accordance with MIL-V-3. Unless otherwise specified (see 6.2), fittings shall be unit protected (one fitting per unit package). When furnished, brazing rings, back-up rings, and O-rings shall be individually unit protected and packaged with the fitting. Brazing rings and back-up rings shall be packaged method III as specified in MIL-V-3. O-rings shall be packaged level A in accordance with MIL-P-4861.

5.1.1 Talc/talcum and soapstone. Talc/talcum and soapstone used in the packaging process of items shall be free of asbestos.

5.1.2 Cushioning, filler, dunnage, and wrapping materials. Cushioning, filler, dunnage and wrapping materials shall be in accordance with 5.1.2.1 through 5.1.2.3.

5.1.2.1 Level A preservation-packaging and levels A and B packing. Use of all types of loose-fill materials for packaging and packing applications such as cushioning, filler or dunnage is prohibited for materials destined for shipboard installation or stowage.

5.1.2.2 Level C preservation-packaging and packing. When loose-fill type materials are used for packaging and packing applications such as cushioning, filler and dunnage, all containers (unit, intermediate and shipping) shall be marked or labelled with the following information:

"CAUTION

Contents cushioned etc., with loose-fill material.
Not to be taken on board ship. Remove and discard
loose-fill material. If required, recushion with
cellulosic material, bound fiber, fiberboard or
transparent flexible cellular material."

5.1.2.3 Cushioning. Cushioning, filler, dunnage and wrapping materials selected, whenever available, shall exhibit improved performance for resistance to fire.

5.2 Marking. In addition to any special marking required (see 6.2), interior packages and exterior shipping containers shall be marked in accordance with MIL-V-3. Interior packages containing O-rings shall be marked in accordance with MIL-P-4861.

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6. NOTES

6.1 Intended use. Type A fittings are intended for general service and specifically for sea water service. Fittings which are provided as type B only (caps, reducing crosses, 45-degree reducing laterals, plugs, threaded reducers, long turn single sweep reducing tees, fittings with integral flanges and certain reducing tee sizes, bend sizes, and one lateral and one socket-to-socket reducer size) should be used for the same general services as type A fittings but should not be used for sea water service. Caps and plugs which are provided as type B only should be used for "no flow" sea water service. Type A or type B fittings are used with MIL-T-16420 copper-nickel pipe, MIL-T-20168 brass pipe, MIL-T-24107 copper pipe or their equivalent commercial pipe standards. Type A or type B fittings are attached to the pipe by the silver-brazing process without exceeding a temperature of 1500 degrees Fahrenheit (°F).

6.2 Ordering data. Acquisition documents should specify the following:

- (a) Title, number and date of this specification.
- (b) Specification sheet part number required (see 1.2, 3.3, 3.5.1, 3.5.1.1, 3.5.2, 6.3 and applicable specification sheet).
- (c) Inspection record requirements (see 4.1.2).
- (d) Levels of preservation-packaging and packing required (see 5.1).
- (e) Quantity per package if other than specified (see 5.1).
- (f) Special marking required (see 5.2).

6.3 Specification sheet part number. The specification sheet part number is a definitive part number which corresponds to the fittings covered by this specification and defines the requirements of the options presented in this specification. The exact format of the military specification sheet part number for a particular fitting is presented on its specification sheet.

6.4 Union O-ring seal (Navy applications). Unions, union elbows and union tees should have an O-ring and a retainer ring outboard of the ground joint installed before being placed in service in a pipeline. The installation of the O-ring and retainer ring forms an effective seal with back-up to provide a leakproof joint.

6.5 Supersession data. Fitting names which have been changed or deleted are:

<u>Through MIL-F-1183G was called</u>	<u>In MIL-F-1183J called</u>
Adapter	Reducer (male pipe thread to socket)
Bushing	Reducer (male pipe to socket)
Coupling (reducing)	Reducer (socket to socket)
Male threadpiece (union)	Deleted
Male union	Deleted
Y-branch	Lateral

6.6 Sub-contracted material and parts. The packaging requirements of referenced documents listed in section 2 do 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.

6.7 Subject term (key word) listing.

Bronze, cast
Fitting
Silver brazing

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

Custodians:

Army - ME
Navy - SH
Air Force - 99

Preparing activity:

Navy - SH
(Project 4730-0645)

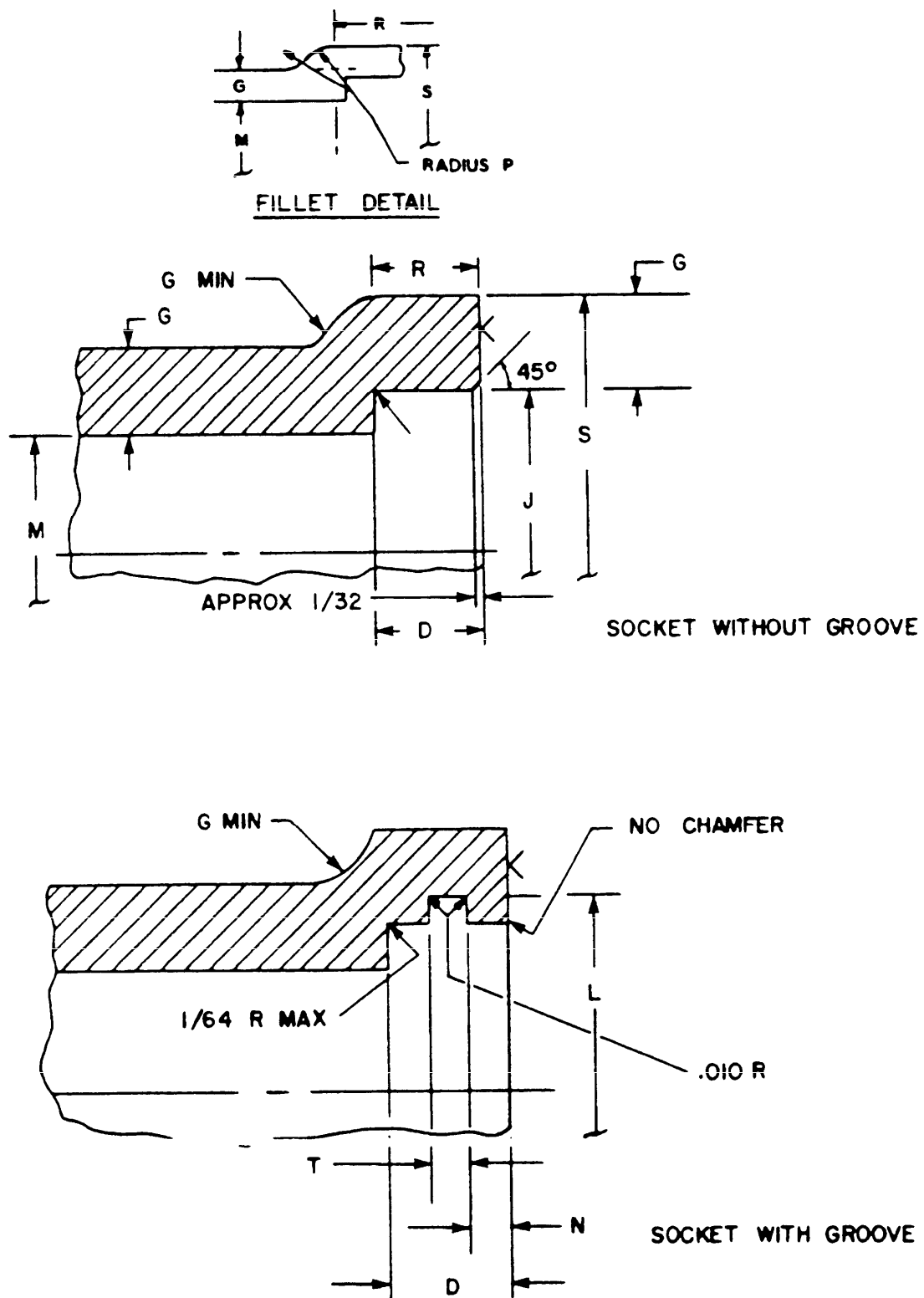
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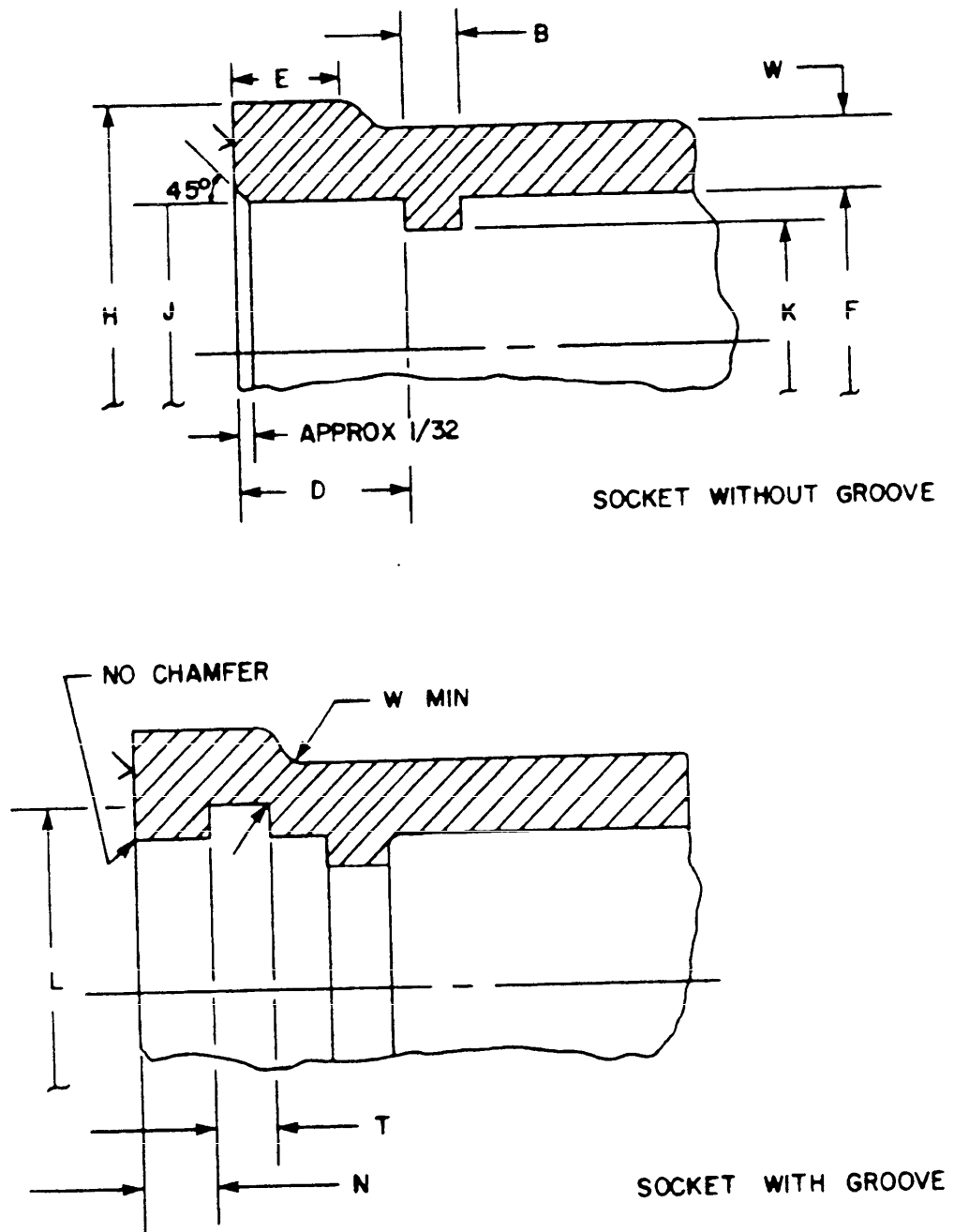
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See table I for dimensions.

SH 12204

FIGURE 1. Type A, streamlined interior (see 1.2).

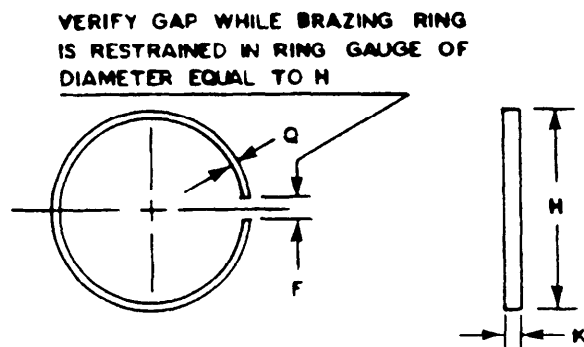


See table I for dimensions.

SH 12205

FIGURE 2. Type B, nonstreamlined interior (see 1.2).

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See table II for dimensions.

SH 12206

FIGURE 3. Silver-brazing ring.

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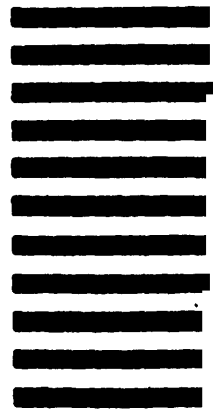
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