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MILITARY SPECIFICATION

DESALTER KITS, SEA WATER, MARK 2

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

1. SCOPE

1.1 Scope - This specification covers the requirements, for two types, of the Mark 2 sea water desalter kit.

1.2 Classification - The Mark 2 sea water desalter kits shall be of the following types, as specified (see 6.2):

Type I - Six packs of the desalting chemical.
Type II - Eight packs of the desalting chemical.

2. APPLICABLE DOCUMENTS

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

SPECIFICATIONS

Federal

L-C-110	Cellophane (Coated and Noncoated Regenerated Cellulose Film)
L-P-375	Plastic Film, Flexible, Vinyl Chloride
L-P-535	Plastic Sheeting (Sheeting) Vinyl Chloride Polymer and Vinyl Chloride-Vinyl Acetate Copolymer, Rigid
QQ-S-764	Steel Bar, Corrosion Resisting, Free Machining

FSC 4610

Federal (Continued)

TT-V-119	Varnish, Spar, Phenolic-Resin
PPP-B-636	Box, Fiberboard
PPP-F-320	Fiberboard, Corrugated and Solid, Sheet Stock (Container Grade) and Cut Shapes
PPP-T-45	Tape, Gummed, Paper, Reinforced and Plain, for Sealing and Securing
PPP-T-60	Tape, Pressure-Sensitive Adhesive, Waterproof, for Packaging
PPP-T-76	Tape, Pressure-Sensitive Adhesive Paper, Water Resistant (for Carton Sealing)

Military

MIL-B-131	Barrier Material, Water Vaporproof, Flexible, Heat Sealable
MIL-T-2283	Tape, Textile, Nylon, Woven, White or Dyed
MIL-C-5040	Cord, Nylon
MIL-F-10884	Fasteners, Snap
MIL-P-19602	Primer, Size Coating, Baking, for Roller Coat Application
MIL-E-19603	Enamel, Baking, for Roller Coat Application
MIL-V-21064	Varnish, Finishing, Baking, for Roller Coat Application

STANDARDS

Federal

FED-STD-191	Textile Test Methods
FED-STD-595	Colors

Military

MIL-STD-105	Sampling Procedures and Tables for Inspection by Attributes
MIL-STD-129	Marking for Shipment and Storage
MS27982	Fasteners, Snap, Style 3 (Pronged Ring Head Type)

(When requesting any of the applicable documents, refer to both title and number. Copies of the applicable documents required by contractors in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

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

American Public Health Association

Standard Methods for Examination of Water and Wastewater

(Copies of Standard Methods for Examination of Water and Wastewater may be obtained from the American Public Health Association, 1790 Broadway, New York, New York 10019.)

3. REQUIREMENTS

3.1 First article - Unless otherwise specified, the Mark 2 sea water desalter kits furnished under this specification shall be a product which has been inspected and has passed the first article inspection specified in 4.3 through 4.3.2.

3.2 Components - The desalter kit shall consist of the hinged, reclosable metal container with the retaining lanyard, six wrapped packs of the desalting chemical, for the Type I kit, and eight wrapped packs of the desalting chemical, for the Type II kit, the plastic bag, for processing the water to be desalted, and a length of the mending tape. The six or eight packs of the desalting chemical, as applicable, the processing bag, and the mending tape shall be attached together with the nylon tie tape. The free end of the tie tape shall then be attached to the lanyard that is attached to the metal container.

3.3 Materials and components - The materials and components shall conform to the applicable specifications and standards as listed or required herein.

3.3.1 Metal container - The metal container shall be fabricated from 100 pound 0.50 electrolytic tin plate. The vertical lock seam shall be sealed with the spar varnish conforming to TT-V-119. The double seam shall be sealed with Number 960 double seaming compound as manufactured by Dewey and Almy Chemical Company, Cambridge, Mass., or equivalent. The front of the container shall have two nibs which shall be capable of retaining the lid in the closed position, when the contents are packed, and yet, permit easy hand opening. Each side of the container shall have a small opening into which a brass eyelet and rivet shall be inserted for the attaching of each end of the lanyard. The rivets and eyelets shall fit snug in the hole and shall be securely attached to the container. The metal container shall be substantially watertight from the bottom up to a height of a maximum of 1/4 inch below the rivets and eyelets. The metal container shall conform to Figure 1, as applicable.

3.3.1.1 Finish - The outerside, of the metal container, shall be coated, first with the baked sizing primer conforming to MIL-P-19602, then with the baked enamel conforming to MIL-E-19603, Class 1 or 2, except that the color shall approximately match Orange, Color Number 12197, of FED-STD-595, when inspected as specified in 4.6.1, and finally with the baked varnish conforming to MIL-V-21064, Class 1 or 2.

3.3.1.2 Taping - The metal container, packed with the kit components, shall be wrapped with the tape conforming to PPP-T-60, Type IV, Class 1, 3/4 inch wide, black in color. The tape shall be applied as specified in Figure 1, using 13 and 21 $\pm$1/4 inch long strips. The longer strip shall be applied first. The free end, of the tapes, shall be folded under, for a minimum of 3/4 inch, to provide an access tab, for easy stripping.

3.3.1.3 Lanyard - The lanyard, 48 $\pm$2 inches in length, fabricated from the natural color nylon cord conforming to MIL-C-5040, Type I, shall be securely attached, to each side of the container, as specified in Figure 1. The lanyard shall be one continuous length without any knots or splices. When inspected as specified in 4.6.2, the lanyard, rivets, or eyelets shall not break or separate from the metal container at less than 40 pounds.

3.3.2 Container components -

3.3.2.1 Desalting chemical - Each desalting chemical pack may be one solid piece or may be in two sections. The desalting chemical shall not contain any material that shall impart toxicity to the effluent water. Each pack, of the desalting chemical, shall contain a nontoxic disruptive or another agent that shall cause it to disintegrate, when immersed in sea water.

3.3.2.1.1 Volatile loss - When inspected as specified in 4.6.4.1, the volatile loss, of each pack of the desalting chemical, shall be not greater than 2 percent.

3.3.2.1.2 Weight - Each unwrapped pack, of the desalting chemical, shall weigh not more than 73 grams, when inspected as specified in 4.6.4.2.

3.3.2.1.3 Disrupting time - When inspected as specified in 4.6.4.3, each pack, of the desalting chemical, shall disintegrate within 5 minutes.

3.3.2.1.4 Output - Each pack, of the desalting chemical, shall produce a minimum of 420 milliliters of potable water, when inspected as specified in 4.6.4.4.

3.3.2.1.5 Ionic concentration - The ionic concentration, of the effluent waters from the 45 minute and the 24 hour treatments, prepared as specified in 4.6.4.5, shall conform to the requirements of Table I, when inspected as specified in 4.6.4.6 through 4.6.4.10.

TABLE I

EFFLUENT WATER COMPOSITION (MILLIEQUIVALENTS PER LITER)

IONS	45 MINUTE TREATMENT MAXIMUM CONCENTRATION	24 HOUR TREATMENT MAXIMUM CONCENTRATION
ANIONS		
OH^- $CO_3^=$ HCO_3^-	7.0	10.0
$SO_4^=$	27.0	29.0
Cl^-	55.0	50.0
TOTAL ANIONS	89.0	89.0
CATIONS		
Ag^+	0.0047	0.0047
Ba^{++}	0.00	0.00
Ca^{++} plus Mg^{++}	6.2	6.2
Na^+ plus K^+	82.8	82.8
TOTAL CATIONS	89.0	89.0

3.3.2.1.6 pH - When inspected as specified in 4.6.4.11, the pH, of the effluent water, shall be not greater than 10.5 after the 45 minute treatment, nor greater than 11.0 after the 24 hour treatment.

3.3.2.1.7 Stability - After exposure to heat, as specified in 4.6.4.12, the desalting chemical shall remain firm, without any signs of exfoliation, and shall conform to the requirements for ionic concentration, 3.3.2.1.5, and pH, 3.3.2.1.6.

3.3.2.1.8 Bacteriological quality - When inspected as specified in 4.6.4.13, the effluent water shall be free of pathogenic and coliform organisms.

3.3.2.1.9 Wrapping - Each desalter chemical shall be individually heat sealed, within a bag, fabricated from the barrier material conforming to MIL-B-131, Class 2. The size, of the wrapped desalter chemical, shall be such so that each wrapped desalter chemical shall be capable of being easily inserted or removed from the metal container, when packed as specified in 3.3.2.4.

3.3.2.2 Processing bag - The processing bag shall be fabricated from translucent plastic materials and the bag shall be waterproof. The materials, used in the fabrication of the processing bag and the components, shall impart very little or no taste to the water treated therein and shall not contain any material that shall impart toxic properties to the effluent or untreated sea water stored therein. The plastic materials shall be resistant to blocking and breaking, when the bag is used for the treatment of the sea water at temperatures between 33 and 113 degrees Fahrenheit (1 to 45 degrees Centigrade). The top of the bag shall be closed by easily accessible and operable snap fastener tabs. The bottom of the bag shall contain the closable metal valve, inserted and attached to the sealed-in mildew-proofed filter. The assembled processing bag shall contain the lanyard and shall conform to Figures 2 and 3.

3.3.2.2.1 Bag - All the plasticized materials used in the fabrication of the bag shall be the plastic sheetings conforming to L-P-375, Type II, Class 1. The thicknesses of the various films shall conform to Figure 3. All the unplasticized materials shall be the plastic sheetings conforming to L-P-535, Composition B, Type I, Class 2. The thicknesses of the various sheetings shall conform to Figure 3. The bag shall be formed by heat sealing one of the sides and bottom together leaving the top open. All the unplasticized and plasticized components, used in the construction of the processing bag, shall be heat sealed to the material forming the bag. A cellophane separator, approximately 2-3/4 by 1-1/4 inches, conforming to L-C-110, Type I, nominal thickness 0.00016 inches, shall be inserted between the lips of the processing bag. Approximately one-half of the smaller dimension shall protrude beyond the lips. The processing bag shall conform to Figures 2 and 3.

3.3.2.2.2 Filter - The filter base shall be fabricated from the rigid plastic "1236-2821" as manufactured by the Gering Plastics Company, a department of Monsanto Chemical Company, Kenilworth, New Jersey, or equivalent. The filter base shall conform to Figure 4. A mildew-proofed cotton filter cloth, 0.040 ±0.005 inch thick (see 4.6.8), shall be securely attached to each side of the filter base. A closable metal valve, fabricated from the corrosion resistant steel conforming to

QQ-S-764, Type 303, Condition A, shall be inserted and securely attached to the filter base as specified in Figures 2 and 3. The valve shall be "Number 120-ACN" as manufactured by the Halkey-Roberts Corporation, Paramus, New Jersey, or equivalent. The valve shall be attached to the filter base in such a manner that the volume between the filter and valve shall be not greater than 12 milliliters. The assembled filter shall be positioned on the inside of the bag, at the bottom, except for the valve, which shall protrude. The filter base and valve shall be securely attached to the plastic bag material in such a manner that the filter base shall be held firmly in place. There shall be no evidence of leakage of water either at the filter base or at the valve attachment to the bag.

3.3.2.2.3 Lanyard - The lanyard, 50 ±2 inches in length, fabricated from the 1/2 inch natural color nylon tape conforming to MIL-T-2283, shall be attached to the strap applique as specified in Figures 2 and 3. The lanyard shall be one continuous length without any knots or splices.

3.3.2.2.4 Bag closure - The closure tabs and snap fasteners shall be installed as specified in Figures 2 and 3. The snap fasteners shall conform to MIL-F-10884, Style 3, Finish 3, and MS27982-1N, -2N, -4N, and -5N.

3.3.2.2.5 Effectiveness of the filter - When inspected as specified in 4.6.5.1, the filter shall operate so that the average turbidity, of the effluent water, shall not exceed 25 parts per million.

3.3.2.2.6 Waterflow - When inspected as specified in 4.6.5.2, the average effluent water flow shall be not less than 10 milliliters per minute.

3.3.2.2.7 Durability - When inspected as specified in 4.6.5.3, the processing bag shall be capable of satisfactorily desalting eight batches of sea water without bursting, rupturing, or developing any crack, leak, or tear.

3.3.2.2.8 Closure and bursting pressure - When inspected as specified in 4.6.5.4, the processing bag shall not burst, rupture, or leak.

3.3.2.3 Mending tape - The mending tape, 12 inches in one continuous length and 3/4 inch wide, conforming to PPP-T-60, Type IV, Class 1, black in color, shall be wrapped around a plastic card. The manner of wrapping shall be such that the tape shall not be jumbled and shall be capable of being readily unwound for use. The plastic card shall have a circular hole of sufficient size for the tie tape to be looped through (see 3.3.2.4).

3.3.2.4 Attaching and packing of the components in the metal container - The wrapped desalting chemical packs, the processing bag, and the mending tape shall be attached to the nylon tie tape as specified in Figure 9. The tie tape shall be attached to the lanyard of the metal container with a brass clip as specified in Figure 9. The desalting chemical packs shall be inserted into the container, then the processing bag, and then the mending tape. The metal valve of the processing bag shall be in the closed position. The nylon tie tape shall be 108 ±3 inches in length and when inspected as specified in 4.6.7, shall conform to Table II. The tie tape shall be one continuous length without any knots or splices.

TABLE II

NYLON TIE TAPE CHARACTERISTICS

WIDTH, INCHES	NOMINAL DENIER		TOTAL ENDS, MINIMUM	PICKS PER INCH, MINIMUM	COLOR
	WARP	FILLING			
3/16 ±1/32	200	200	24	52	Natural

3.4 Markings -

3.4.1 Metal container - The filling line and the other markings on the metal container shall be legible, durable, and black in color. The markings shall be flat plate lithographed and baked and shall be resistant to erasure, transfer, or fading under the condition of usage. The marking medium shall not contain any material that shall be deleterious to the finish or the container. The markings and the size and style, of the markings, for the front, back, and side (opposite the seam) of the container, shall conform to Figures 5 and 6, as applicable. The date of assembly and the contract number may be stamped on the container, instead of being lithographed, provided the stamped markings are legible and durable black letters and numerals and are resistant to erasure, transfer, or fading. The entire inside of the metal container shall be marked with a filling line at the height of 340 ±15 milliliters of water. The filling line shall be 1/8 inch wide and solid. The line shall be clear and distinct.

3.4.2 Desalting chemical wrapper and processing bag - The markings, on the outerside of the desalting chemical wrapper and the front of the processing bag, shall be legible and durable black letters, numerals, and lines which shall be thoroughly dry prior to packing in the metal container. The markings shall be accomplished by using such methods and materials that shall be resistant to erasure or fading under the condition of usage. The marking medium shall not contain any material that shall be deleterious to the substance being marked. The lines on the processing bag shall be clear and distinct.

3.4.2.1 Desalting chemical wrapper - The markings and the size and style of the markings, for the desalting chemical pack wrapper, shall be as specified in Figure 7.

3.4.2.2 Processing bag - The markings, size and style of the markings, and the width of the lines, for the processing bag, shall be as specified in Figures 2 and 8. The lines shall be clear and distinct.

3.5 Performance inspection -

3.5.1 Expansion due to altitude and waterproofness - When inspected as specified in 4.6.6.1, the hinged lid of the assembled kit shall not spring open. The metal container shall not increase in volume, burst, or distort, nor shall the lid, or any seam open. The hinged lid shall be easily opened by hand and the contents readily removed from the container. Each desalting chemical wrapper shall remain intact and shall not contain any break, tear, or opening. The desalting chemical shall not be affected in any manner. There shall be no trace of moisture on the inside of the desalting chemical wrapper or on the chemical, nor any evidence that the desalter chemical has reacted with moisture. If the aforementioned is detected, each desalter chemical, thus found, shall be inspected and conform to the requirements for ionic concentration after the 45 minute treatment, 3.3.2.1.5. No desalting chemical shall be disrupted. The processing bag shall not become tacky nor contain any crack, tear, or hole. The mending tape shall not be jumbled, twisted, nor be in a form that is not usable.

3.5.2 Weight - The weight of the assembled desalter kit, when determined as specified in 4.6.6.2, shall not exceed the following:

Type I - 1.42 pounds
Type II - 1.75 pounds

3.6 Assembling of the components - The processing plant, grounds, equipment, personal practices, and sanitary practices used in the production of the components and the desalter kits shall be such as to minimize the possibility of contamination of the containers and the components through microbial growth, dust, pests, rodents, condensate, or other unsanitary sources. The product shall be prepared, processed, and handled in such a manner as to minimize deterioration or damage.

3.7 Workmanship - The desalter kits shall not contain any spot, stain, or foreign matter. The snap fasteners shall be clinched without distortion, damage, splitting, or cutting of the plastic film. The metal components shall not be malformed, misaligned, fractured, broken, or distorted nor contain any corrosion, scale, pit, dent, crack, nick, burr, sliver, or sharp edge. The desalter chemical wrappers or the processing bags shall not contain any tear, cut, mend, burn, or hole. Because of the emergency and life support use of these assemblies, the importance of providing a product of uniformly

excellent quality cannot be over-emphasized. The desalter kits shall be uniform in quality and shall be free from irregularities or defects which could adversely affect performance, reliability, or durability. The desalter kits shall conform to the quality and grade of product established by this specification. The occurrence of defects shall not exceed the acceptance criteria established herein.

4. QUALITY ASSURANCE PROVISIONS

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

4.2 Classification of inspection - The examination and testing of the Mark 2 sea water desalter kits shall be classified as follows:

(a) First article inspection - First article inspection consists of examinations and tests performed on samples which are representative of the production item after award of a contract to determine that the production item conforms to the requirements of this specification. (See 3.1 and 4.3 through 4.3.2.)

(b) Quality conformance inspection - Quality conformance inspection consists of examinations and tests performed on individual products or lots to determine conformance of the products or lots with the requirements set forth in this specification (see 4.4 through 4.4.1.2).

4.3 First article inspection - The first article inspection of the Mark 2 sea water desalter kits shall consist of examinations and tests for all of the requirements of this specification.

4.3.1 First article samples - Unless otherwise specified, as soon as practicable after the award of the contract or order, the manufacturer shall submit six assembled desalter kits of each type specified in the contract or order. The samples shall be representative of the construction, workmanship, components, and materials to be used during production. When a contractor is in continuous production of these kits from contract to contract, submission of further first article inspection samples, on the new contract, may be waived at the discretion of the procuring activity (see 6.2(c)). Approval of the first article inspection samples or the

waiving of the first article inspection does not preclude the requirements for performing the quality conformance inspection. The first article inspection samples shall be furnished to the Government as directed by the contracting officer (see 6.2(d)).

4.3.2 Upon completion of the first article inspection, all the applicable inspection reports and when applicable, recommendations and comments pertinent for use in monitoring production will be forwarded to the cognizant Government activity. The kits will be destroyed in the first article inspection and shall not be considered as part of the quantity to be delivered under the contract or order.

4.4 Quality conformance inspection - The sampling and inspection levels shall conform to MIL-STD-105. The quality conformance inspection shall consist of the following:

Strength of the lanyard, rivet, and eyelet attachment to the metal container
Weight of the desalting chemical
Disrupting time of the desalting chemical
Output of the desalting chemical
Ionic concentration
pH
Effectiveness of the processing bag filter
Water flow of the processing bag filter
Closure and bursting pressure of the processing bag
Visual examination of the desalter kits
Dimensional check of the desalter kits
Weight of the desalter kits
Expansion due to altitude and waterproofness of the desalter kits
Preparation for delivery

4.4.1 Sampling -

4.4.1.1 Inspection lot -

4.4.1.1.1 Metal containers - An inspection lot size shall be expressed in units of one metal container, for one type kit, made essentially under the same conditions and from the same materials and components or shall consist of all the metal containers, for one type kit, received by the assembled desalter kit manufacturer at one time. The sample unit shall be one metal container, for one type kit.

4.4.1.1.2 Desalting chemicals - An inspection lot size shall be expressed in units of one desalting chemical made essentially under the same conditions and from the same materials and components or shall consist of all the desalting chemicals received by the assembled desalter kit manufacturer at one time. The sample unit shall be one desalting chemical.

4.4.1.1.3 Processing bags - An inspection lot size shall be expressed in units of one processing bag made essentially under the same conditions and from the same materials and components or shall consist of all the processing bags received by the assembled desalter kit manufacturer at one time. The sample unit shall be one processing bag.

4.4.1.1.4 Desalter kits - An inspection lot size shall be expressed in units of one assembled desalter kit of one type assembled essentially from the same materials and components. The sample unit shall be one assembled desalter kit of one type.

4.4.1.1.5 Preparation for delivery - An inspection lot size shall be expressed in units of one fully prepared shipping container, containing assembled desalter kits of one type, fully prepared for delivery from essentially the same materials and components. The sample unit shall be one shipping container, containing assembled desalter kits of one type, fully prepared for delivery with the exception that it need not be sealed.

4.4.1.2 Sampling for tests and examinations of the metal containers, desalting chemicals, processing bags, assembled desalter kits, and preparation for delivery - The sample size, acceptance criteria, tests, and examinations required for the metal containers, desalting chemicals, processing bags, assembled desalter kits, or preparation for delivery, as applicable, shall be as specified in Table III.

TABLE III

SAMPLE SIZE, ACCEPTANCE CRITERIA, TESTS, AND EXAMINATIONS OF THE METAL CONTAINERS, DESALTING CHEMICALS, PROCESSING BAGS, DESALTER KITS, AND PREPARATION FOR DELIVERY

ITEM	INSPECTION	PARAGRAPH		SAMPLE SIZE	ACCEPTANCE CRITERIA 1/
		REQUIREMENT	METHOD		
Metal container 2/	Strength of the lanyard, rivet, and eyelet attachment to the metal container 3/	3.3.1.3	4.6.2	Inspection Level S-2	An acceptable quality level of 1.5 defects per 100 units

TABLE III (Continued)

ITEM	INSPECTION	PARAGRAPH		SAMPLE SIZE	ACCEPTANCE CRITERIA 1/
		REQUIREMENT	METHOD		
Desalting chemical 2/	Weight	3.3.2.1.2	4.6.4.2	Inspection Level S-2	An acceptable quality level of 1.5 defects per 100 units
	Disrupting time	3.3.2.1.3	4.6.4.3	Inspection Level S-2	An acceptable quality level of 1.5 defects per 100 units
	Output	3.3.2.1.4	4.6.4.4	Inspection Level S-2	An acceptable quality level of 1.5 defects per 100 units
	Ionic concentration 4/ 5/	3.3.2.1.5	4.6.4.5 through 4.6.4.10	Inspection Level S-2	An acceptable quality level of 1.5 defects per 100 units
	pH	3.3.2.1.6	4.6.4.11	5/	An acceptable quality level of 1.5 defects per 100 units
Processing bag 2/	Effectiveness of the filter	3.3.2.2.5	4.6.5.1	Inspection Level S-2	An acceptable quality level of 1.5 defects per 100 units
	Waterflow	3.3.2.2.6	4.6.5.2	Inspection Level S-2	An acceptable quality level of 1.5 defects per 100 units
	Closure and bursting pressure	3.3.2.2.8	4.6.5.4	Inspection Level S-2	An acceptable quality level of 1.5 defects per 100 units
Assembled desalter kits	Visual examination	3.2, 3.3.1 through 3.3.1.3, 3.3.2.1, 3.3.2.2 through 3.3.2.2.4, 3.3.2.4, 3.4 through 3.4.2.2, 3.6, 3.7, and Figures 1 through 9, as applicable	4.6.3.1 and Table V	Every assembled desalter kit for major defects. Inspection Level II for minor defects.	Reject all units with any major defect and an acceptable quality level of 4.0 defects per 100 units for minor defects

TABLE III (Continued)

ITEM	INSPECTION	PARAGRAPH		SAMPLE SIZE	ACCEPTANCE CRITERIA 1/
		REQUIREMENT	METHOD		
Assembled desalter kits (Continued)	Dimensional check	3.3.1, 3.3.1.2, 3.3.1.3, 3.3.2.2.1 through 3.3.2.2.3, 3.3.2.3, 3.3.2.4, and Figures 1 through 8, as applicable	4.6.3.1 and Table VI	Inspection Level S-3	An acceptable quality level of 4.0 defects per 100 units
	Expansion due to altitude and waterproof-ness	3.5.1	4.6.6.1	Inspection Level S-2	An acceptable quality level of 1.5 defects per 100 units
	Weight	3.5.2	4.6.6.2	Inspection Level S-2	An acceptable quality level of 1.5 defects per 100 units
	Preparation for delivery	Section 5	4.6.3.2	Inspection Level S-2	An acceptable quality level of 2.5 defects per 100 units

1/ The sampling plan acceptance numbers shall apply collectively to all the characteristics within a stated acceptable quality level.

2/ The inspection of the metal container, desalting chemical, and the processing bag shall be conducted either at the contractor's or sub-contractor's plant.

3/ Upon completion of this inspection, the inspected metal containers shall be discarded and shall not be considered as part of the quantity to be delivered under the contract or order.

4/ Half the number of the packs of the desalting chemical, selected as samples from the lot, shall be inspected for the 45 minute treatment and the remaining half of the desalting chemical packs shall be inspected for the 24 hour treatment.

5/ The pH shall be determined on the desalting chemical packs used in the ionic concentration inspection.

4.5 Inspection conditions -

4.5.1 Atmospheric conditions - Unless otherwise specified, all the inspections required by this specification shall be conducted at an atmospheric pressure of 28 to 32 inches of mercury and at a temperature of 77 ±18 degrees Fahrenheit (25 ±10 degrees Centigrade). When the inspections are conducted at an atmospheric pressure or temperature different from the above values, proper correction shall be made for the change in instrument reading.

4.5.2 Synthetic sea water - When sea water is specified in an inspection, synthetic sea water, of the composition specified in Table IV, shall be used. The synthetic sea water shall be prepared by dissolving the sodium sulfate in distilled water and then adding this to the solution containing the other dissolved salts. If necessary, an adjustment of the pH to 8.0 shall be made by the addition of 1N sodium hydroxide. The final volume shall be brought up to one liter.

TABLE IV

COMPOSITION OF THE SYNTHETIC SEA WATER

IONS	MILLIEQUIVALENTS PER LITER	PERMISSIBLE DEVIATION	INGREDIENTS	GRAMS PER LITER
ANIONS				
Cl^-	495	7	$CaCl_2$ anhydrous	0.944
$SO_4^=$	47	3	$MgCl_2.6H_2O$	9.759
HCO_3^-	2	1	$NaHCO_3$ anhydrous	0.168
			Na_2SO_4 anhydrous	3.337
TOTAL	544	11	NaCl anhydrous	22.347
CATIONS				
Ca^{++}	17	1		
Mg^{++}	96	4		
Na^+	431	6		
TOTAL	544	11		

4.6 Inspection methods -

4.6.1 Color matching - The color of the metal container shall be compared to the approved standard shade under natural (north sky) daylight or artificial daylight having a color temperature of 7500 degrees Kelvin.

4.6.2 Strength of the lanyard, rivet, and eyelet attachment to the metal container - The strength of the lanyard, rivet, and eyelet attachment to the metal container shall be determined by placing the lanyard in the upper jaw of a suitable inspection apparatus and the container attached to a suitable jig in the movable jaw of the inspection apparatus. The lanyard, rivet, and eyelet shall be in line. The distance between the jaws, at the start of the inspection, shall be 6 inches. The speed of the movable jaw, under no load, shall be 12 ±1/2 inches per minute.

4.6.3 Visual examination -

4.6.3.1 Desalter kits - The outer and innerside of the metal container, and the contents, of each assembled desalter kit of one type, shall be examined visually for major defects to determine conformance to this specification. The outer and innerside of the metal container, and the contents, of each assembled desalter kit of one type, selected as a sample unit from the lot, shall be examined visually for minor defects and thoroughly checked dimensionally to determine conformance to this specification. The classification and list of defects, Tables V and VI, as applicable, shall be used to classify and enumerate the defects found.

TABLE V

CLASSIFICATION OF DEFECTS FOR THE VISUAL EXAMINATION OF THE ASSEMBLED DESALTER KITS

DEFECT	MAJOR	MINOR
GENERAL		
a. Any non-specified hole, scissors or knife cut, tear, mend, or burn	X	
b. Color of any component not as specified or not uniform in shade		X
c. Any spot or stain on the outer surface of the metal container, processing bag, or desalting chemical wrapper	1/	
d. Any spot, stain, or foreign matter on the inside of the metal container or processing bag	X	
e. Any lanyard or tie tape not one continuous length or contains any splice or knot	2/	
f. Any component not readily removable from the metal container	X	

TABLE V (Continued)

DEFECT	MAJOR	MINOR
GENERAL (Continued)		
g. Any component loose, detached, not attached as specified, or otherwise not securely retained	X	
h. Processing bag cannot be unfolded or the outer or inner surfaces adhere together so that they have to be peeled to separate	X	
i. Processing bag material not translucent		X
j. Any portion of any processing bag or desalter wrapper seam open or not continuous	X	
k. Mending tape jumbled or cannot be readily unwound	X	
l. Any instruction markings missing, incomplete, incorrect, or illegible	X	
m. Any identification markings missing, incomplete, incorrect, or illegible		X
n. Any line on the inside of the metal container or on the processing bag not clear or distinct	X	
METALLIC COMPONENTS		
a. Any surface rough or contains any crack, nick, burr, sharp edge, dent, or sliver	X	
b. Any surface unclean or contains embedded foreign matter		X
c. Any component malformed, misaligned, corroded, fractured, broken, chipped, bent, distorted, or protrudes so that it could tear, cut, or damage any fibrous, plastic, or paper item it may come in contact with	X	
d. Any snap fastener loose, improperly finished, or improperly clinched resulting in cutting of the plastic material	X	

TABLE V (Continued)

DEFECT	MAJOR	MINOR
METALLIC COMPONENTS (Continued)		
e. Any snap fastener mismated or misplaced 3/	X	
f. Movement of the processing bag valve interfered with or not in the closed position 4/	X	
COMPONENTS AND ASSEMBLY		
a. Any component not as specified or any defect of a component or defect of assembly not herein classified	2/	
b. Any component, component part, or required operation omitted, or any operation improperly performed not herein classified	2/	

1/ Any spot, stain, or foreign matter, obscuring any of the instruction markings on the outer surface of the metal container, processing bag, or desalting chemical wrapper, shall be classified as a major defect, otherwise it shall be classified as a minor defect.

2/ The defect shall be classified as a major defect, when it seriously affects the serviceability, otherwise it shall be classified as a minor defect.

3/ The snap fasteners shall be checked for proper function and attachment by snapping closed and unsnapping each of the snap fasteners at least three times.

4/ The valve shall be turned, opening the valve fully and then reversed completely, closing the valve. The aforementioned shall be repeated a minimum of three times to assure that movement of the valve is not interfered with. The valve shall be left in the closed position (see 3.3.2.4).

4.6.3.2 Preparation for delivery - Each of the fully prepared shipping containers, containing assembled desalter kits of one type, selected as a sample unit from the lot, shall be visually examined to determine that the packaging, packing, and marking conform to this specification. The list of defects, Table VII, shall be used to enumerate the defects found.

TABLE VI

LIST OF DEFECTS FOR THE DIMENSIONS OF THE ASSEMBLED DESALTER KITS

EXAMINE	DEFECT
Measure the metal container and its components, the processing bag and its components, the desalting chemical packs, the mending tape, the tie tape, and the size, type, style, and location of the markings and lines, as applicable.	Any measurement deviating from the dimensions and tolerances as specified in 3.3.1.2, 3.3.1.3, 3.3.2.1.9, 3.3.2.2.1, 3.3.2.2.2, 3.3.2.2.3, 3.3.2.2.4, 3.3.2.4, 3.4.1, 3.4.2, 3.4.2.1, 3.4.2.2, and Figures 1 through 8, shall be enumerated as a dimensional defect.

TABLE VII

LIST OF DEFECTS FOR PREPARATION FOR DELIVERY

ITEM	DEFECT
Exterior and interior markings	Missing, incorrect, incomplete, illegible; of improper size, location, sequence, or method of application; markings not the same on the interior and the exterior containers.
Materials	Any non-conforming component; any component or component part missing, damaged, or otherwise defective.
Workmanship	Inadequate application of the components, such as incomplete closure of the unit package, container flaps, or loose strapping; bulging or distortion of any container.
Exterior and interior weight or content	Number per container is more or less than required; gross or net weight exceeds the requirement; more than one type kit in the same container.

4.6.4 Desalting chemical - When feasible, the inspection of the desalting chemicals shall be conducted in conjunction with the inspection of the processing bags.

4.6.4.1 Volatile loss - One unwrapped desalting chemical shall be placed in a tared glass weighing bottle fitted with a ground glass cover and weighed to the nearest milligram. The bottle with the stopper removed and containing the desalting

chemical shall be placed in an oven and maintained at a temperature of 220 ±2 degrees Fahrenheit (105 ±1 degrees Centigrade) for 16 ±1/4 hours. At the end of the drying period, the bottle shall be stoppered and quickly transferred to a desiccator. After cooling to room temperature, the container and specimen shall be reweighed to obtain the final weight. The volatile loss of the desalting chemical shall be determined as follows:

$$\text{Percent volatile loss} = \frac{\text{Initial chemical weight - final chemical weight}}{\text{Initial chemical weight}} \times 100$$

4.6.4.2 Weight - The weight, of each unwrapped desalting chemical, shall be determined on any scale or balance capable of weighing to the nearest 0.1 of a gram.

4.6.4.3 Disrupting time - One pack of the desalting chemical, when added to 470 ±5 milliliters of the synthetic sea water (see 4.5.2), in the processing bag, at 65 ±5 degrees Fahrenheit (18 ±3 degrees Centigrade), shall disintegrate within 5 minutes without the necessity for manual manipulation, except for an occasional shaking of the bag. There shall be no hard pieces larger than 1/2 inch present.

4.6.4.4 Output - One pack of the desalting chemical, after treatment of 470 ±5 milliliters of the synthetic sea water (see 4.5.2), in the processing bag, for 45 ±5 minutes, at 65 ±5 degrees Fahrenheit (18 ±3 degrees Centigrade), shall produce a minimum of 420 milliliters of potable water.

4.6.4.5 Ionic concentration - Eight individual batches, of 470 ±5 milliliters of synthetic sea water (see 4.5.2), at 65 ±5 degrees Fahrenheit (18 ±3 degrees Centigrade), shall be treated as follows:

(a) Four packs of the desalting chemical shall be used to treat four separate batches, of the synthetic sea water, for 45 ±5 minutes, in a processing bag, with gentle agitation. The same processing bag shall be used for the four batches. The water shall be filtered through the processing bag filter and individual chemical analysis, in accordance with 4.6.4.6 through 4.6.4.10, shall be made on each of the four batches, of the effluent water, to determine conformance to the requirements, for ionic concentration, 3.3.2.1.5, 45 minute treatment.

(b) Four desalting chemical packs shall be used to treat four separate batches, of the synthetic sea water, for 45 ±5 minutes, in a processing bag, with gentle agitation. The same processing bag that was used in 4.6.4.5(a) shall be used for these four batches. The entire contents shall be transferred

into four separate mason jars. The lids shall be placed on the jars to effect an air tight closure. The closed mason jars, with the contents, shall be stored for 24 ±1/2 hours at 65 ±5 degrees Fahrenheit (18 ±3 degrees Centigrade) and shall be stirred occasionally. At the end of the storage period, the effluent water shall be filtered, separately, through the processing bag filter. Individual chemical analyses, in accordance with 4.6.4.6 through 4.6.4.10, shall be made on each of the four batches, of the effluent water, to determine conformance to the requirements, for ionic concentration, 3.3.2.1.5, 24 hour treatment.

(c) In the determination of all the ionic concentrations, commercially available ACS grade reagents shall be used. Where ACS grade reagents are not available, the highest commercially available purity grade shall be used. The distilled water utilized (fully demineralized water may be used) shall be chloride free.

4.6.4.6 Silver concentration - The silver concentration shall be determined in accordance with the para-dimethylaminobenzalrhodanine method.

4.6.4.6.1 Reagents -

(a) Para-dimethylaminobenzalrhodanine solution. Dissolve 0.025 gram of para-dimethylaminobenzalrhodanine in 250 milliliters of acetone. (A fresh solution shall be prepared every three weeks.)

(b) Silver nitrate solution. Dilute 4.63 milliliters of 0.020N silver nitrate solution with distilled water and make up to the mark in a one liter volumetric flask. (One milliliter of the solution is equivalent to 10 parts per million as Ag^+ silver.)

(c) Acetic acid (one percent).

(d) Sodium sulfate solution. Dissolve 0.710 gram anhydrous sodium sulfate in distilled water and make up to the mark in a one liter volumetric flask.

4.6.4.6.2 Silver standards - Ag^+ silver standards, 0 to 0.5 parts per million, shall be prepared as follows:

(a) Dilute with the sodium sulfate solution, 0, 0.5, 1.0, 1.5, 2.0, and 2.5 milliliter aliquots of the silver nitrate solution

to 50 milliliters in individual Nessler tubes. This will give standards of 0, 0.1, 0.2, 0.3, 0.4, and 0.5 parts per million Ag^+ silver contents respectively, or 0.0, 0.000926, 0.001852, 0.002778, 0.003704, and 0.004630 respectively, milliequivalents Ag^+ silver per liter.

4.6.4.6.3 Procedure - To 50 milliliters, of the effluent water, in a Nessler tube, add 5 milliliters of the acetic acid solution. Mix thoroughly and add 0.1 milliliter of the para-dimethylaminobenzalrhodanine reagent. Mix thoroughly and allow to stand for 20 minutes. At the same time, each standard solution shall be treated in the same manner as the effluent water sample. Compare the color of the effluent water sample with the standards and estimate the silver ionic concentration in the effluent water sample. In viewing the sample and standards, look through them at a white surface so placed in front of the light source that the light is reflected upward. The determination of the silver ionic concentration is unnecessary if the chloride ionic concentration is more than 3 milliequivalents per liter and the effluent water conforms to all the other chemical requirements of this specification.

4.6.4.7 Barium concentration - The barium concentration shall be determined on a "go no go" basis.

4.6.4.7.1 Reagents -

(a) Barium chloride solution. Dissolve 0.343 grams of barium chloride ($BaCl_2.2H_2O$) in distilled water and make up to the mark in a one liter volumetric flask.

(b) Sodium chloride.

(c) Sodium bicarbonate.

(d) Approximately 1N hydrochloric acid. Add one volume of concentrated hydrochloric acid to nine volumes of distilled water and mix thoroughly.

(e) Approximately 3.5N sulfuric acid. Add slowly and with precaution one volume of concentrated sulfuric acid to nine volumes of distilled water. Mix well and cool to room temperature.

4.6.4.7.2 Standard barium solution - The standard barium solution shall be prepared by dissolving 3.22 grams of the sodium chloride and 0.588 grams of the sodium bicarbonate in distilled water. Add precisely 1.0 milliliter of the barium chloride solution and make up to the mark in a one liter volumetric flask. The standard solution contains the following:

0.005 milliequivalents Ba^{++} barium per liter
55 milliequivalents Cl^{-} chloride per liter
7 milliequivalents HCO_3^{-} bicarbonate per liter

4.6.4.7.3 Procedure - Add one milliliter, of the 1N hydrochloric acid, to 100 milliliter aliquots, of the effluent water, and the standard barium solution. Evaporate, in 150 milliliter beakers, to less than 10 milliliters each, but not to dryness. Rinse the sides of the beakers with distilled water and make up the volumes to approximately 10 milliliters. Quickly heat the solutions almost to boiling and add immediately, with thorough agitation, one milliliter of the 3.5N sulfuric acid. Pour into 10 milliliter Nessler tubes and compare the turbidities, after a minimum of 10 minutes. The results shall be expressed as follows:

Less than 0.005 milliequivalents Ba^{++} barium per liter
Approximately 0.005 milliequivalents Ba^{++} barium per liter
More than 0.005 milliequivalents Ba^{++} barium per liter

The determination of the barium ionic concentration is unnecessary if the sulfate ionic concentration is greater than 5 milliequivalents per liter and the effluent water conforms to all the other chemical requirements of this specification.

4.6.4.8 Sulfate concentration - The sulfate concentration shall be determined by the tetrahydroxyquinone method.

4.6.4.8.1 Reagents -

(a) Barium chloride solution. Dissolve 3.05 grams of barium chloride ($BaCl_2.2H_2O$) in distilled water and make up to the mark in a one liter volumetric flask. Mix thoroughly. One milliliter of this solution is equivalent to 0.025 milliequivalent $SO_4^{=}$ sulfate per liter; thus when using a 10 milliliter aliquot, one milliliter of the solution represents 2.5 milliequivalent $SO_4^{=}$ sulfate per liter.

(b) N/20 sodium hydroxide.

(c) Brom cresol indicator solution. Dissolve 0.4 grams brom cresol green indicator with the addition of 11.6 milliliters of N/20 sodium hydroxide in distilled water and make up to the mark in a one liter volumetric flask. Mix thoroughly.

(d) N/20 hydrochloric acid.

(e) Absolute ethyl alcohol (Number 30 or 3A).

(f) Tetrahydroxyquinone (THQ) indicator.

(g) Silver nitrate solution (2 percent). Dissolve 20 grams of silver nitrate in one liter of distilled water and mix thoroughly.

4.6.4.8.2 Procedure - Pipette 10 milliliters, of the effluent water, into a 250 milliliter Erlenmeyer flask. Add 15 milliliters, of distilled water, and then add 2 or 3 drops, of the brom cresol green indicator, and titrate with the N/20 hydrochloric acid until a yellow color just appears. Add 25 milliliters, of the alcohol, and then add 0.2 to 0.3 grams, of the THQ indicator (see precautions). Titrate with the barium chloride solution. Add the solution slowly and stir well after each addition. The endpoint is reached, when the color changes from yellow to a rose-red color, which is stable for at least one minute. If more than 10 milliliters, of the barium chloride solution, is consumed, use an aliquot and dilute with distilled water to 25 milliliters.

4.6.4.8.3 Precautions - If more than 2 milliliters, of the barium chloride solution, is used up during the titration, stop the titration, add 0.2 to 0.3 gram of the THQ indicator, stir well, add 2 drops, of the silver nitrate solution, and proceed with the titration. The addition, of the silver nitrate, makes the endpoint sharper, but an excess causes a cherry-red color which interferes with the titration. If the cherry-red color is obtained, upon the addition of the silver nitrate, start over again, using less silver nitrate. The temperature, of the test sample, shall be between 68 to 86 degrees Fahrenheit (20 to 30 degrees Centigrade).

4.6.4.8.4 Calculation - For a 10 milliliter aliquot, one milliliter of the barium chloride solution equals 2.5 milliequivalents $SO_4^=$ sulfate per liter.

4.6.4.9 Chloride concentration - The chloride concentration shall be determined by the mercurimetric method.

4.6.4.9.1 Reagents -

(a) Approximately 1N nitric acid. Add one volume of concentrated nitric acid to 14 volumes of distilled water. Mix well and cool to room temperature.

(b) Sodium chloride.

(c) 0.10N mercuric nitrate solution. Dissolve 25 to 30 grams of recrystallized mercuric nitrate in one liter of the 1N nitric acid. Mix well and standardize this solution against oven-dried sodium chloride, adjusting to exactly 0.10N with the 1N nitric acid and restandardizing.

(d) Isopropyl alcohol.

(e) Diphenylcarbazone indicator. Dissolve 0.1 gram diphenylcarbazone in 100 milliliters of the isopropyl alcohol. (This solution is stable up to 8 weeks, provided it is kept in a dark bottle and away from heat.) A change in the color to cherry-red indicates a breakdown of the indicator and it shall be discarded. When freshly made up, the diphenylcarbazone indicator solution should be orange in color. If it is red in color, the solid diphenylcarbazone shall be replaced or recrystallized.

4.6.4.9.2 Procedure - Pipette 50 milliliters, of the effluent water, into a 250 milliliter Erlenmeyer flask. Add 2 milliliters, of the diphenylcarbazone indicator solution, and titrate with the mercuric nitrate solution to the first permanent purple color.

4.6.4.9.3 Calculation - For a 50 milliliter sample, one milliliter of the 0.10N mercuric nitrate equals 2 milliequivalents Cl^- chloride per liter.

4.6.4.10 Total alkalinity (OH^-, $CO_3^=$, and HCO_3^-), calcium plus magnesium, and sodium plus potassium - The total alkalinity (OH^-, $CO_3^=$, and HCO_3^-), Ca^{++} plus Mg^{++}, and Na^+ plus K^+ shall be determined by any standard method.

4.6.4.11 pH - The pH, of the effluent water, after the 45 minute and 24 hour treatment shall be determined by means of a potentiometric apparatus. The temperature, of the sample, shall be regulated to 77 ±2 degrees Fahrenheit (25 ±1 degrees Centigrade).

4.6.4.12 Stability - Two packs of the desalting chemical shall be visually examined to insure that they are completely wrapped and sealed. The wrapped packs shall be placed in a circulating oven maintained at a temperature of 220 ±2 degrees Fahrenheit (105 ±1 degrees Centigrade) for 72 ±1/2 hours. The desalting chemicals shall be exposed, in such a manner, that the conditioned air circulates completely around each pack. After removal from the oven, the packs shall be cooled to room temperature, unwrapped, and visually examined for firmness and exfoliation (see 3.3.2.1.7). The desalter chemicals shall then be inspected for ionic concentration and pH as specified in 4.6.4.5 through 4.6.4.11. One pack shall be used for each treatment.

4.6.4.13 Bacteriological quality - One pack, of the desalting chemical, shall be used to treat the synthetic sea water, for 45 minutes, as specified in 4.6.4.5(a). The effluent water shall be inspected, for the presence of pathogenic or coliform organisms, in accordance with the Standard Methods for Examination of Water and Wastewater.

4.6.5 Processing bag - When feasible, the inspection of the processing bags shall be conducted in conjunction with the inspection of the desalting chemicals.

4.6.5.1 Effectiveness of the filter - One pack, of the desalting chemical, shall be used to treat the synthetic sea water, for 45 minutes, as specified in 4.6.4.5(a). The effectiveness, of the filter, shall be determined, by estimating visually, the turbidity, of the filtered water, by comparison, with standard suspension in bottles. The turbidity standards shall be made up in accordance with the Standard Methods for Examination of Water and Wastewater. The results, of the individual batches, of the effluent water, resulting from the number of processing bags, selected as a sample unit, shall be averaged (see 3.3.2.2.5).

4.6.5.2 Waterflow - The processing bag shall be filled with the synthetic sea water (see 4.5.2) to the filling line. One unwrapped pack, of the desalter chemical, shall be added. The top, of the bag, shall be closed, by folding the top of the bag down tightly, rolling toward the snap fastener, and then snapping together securely to form a watertight seal. A pressure differential of 7 centimeters of mercury (see 4.5.1) shall be applied. The valve shall be opened and the amount, of effluent water, flowing through per minute shall be determined (see 3.3.2.2.6). During this inspection, the upper portion, of the precipitate, may be broken as often as desired.

4.6.5.3 Durability - One processing bag shall be used to process the batches of water specified for the ionic concentration, 4.6.4.5. After the eight batches of the synthetic sea water have been treated, the processing bag shall be examined for conformity to 3.3.2.2.7.

4.6.5.4 Closing and bursting pressure - The processing bag shall be filled with the synthetic sea water (see 4.5.2) to the filling line. The top, of the bag, shall be closed, by folding the top of the bag down tightly, rolling toward the snap fastener, and then snapping together securely to form a watertight seal. An external force of 75 pounds shall be applied, over an area of 25 square inches, of the surface of the bag, for one hour $\pm$5 minutes. During the application of the force and after the force has been removed, the processing bag shall be examined for conformity to 3.3.2.2.8. Slight leakage, of the water, from between the lips, of the top closure, shall be disregarded.

4.6.6 Assembled kit -

4.6.6.1 Expansion due to altitude and waterproofness - The assembled kit shall be placed in a suitable airtight container. The pressure, within the container, shall be reduced to an absolute pressure, of 75 $\pm$10 milliliters of mercury, in a maximum time, of 15 minutes. The pressure shall be maintained, for 2 hours $\pm$15 minutes, and the metal container observed, for increase in volume, distortion, bursting, or opening of the seams or lid (see 3.5.1). The taping shall also be observed, for breaks, tears, and separation (see 3.5.1). Upon completion of the observation, the pressure in the airtight container shall be returned to normal, within one minute.

and the metal container and taping again observed as aforementioned (see 3.5.1). Upon completion of the observation and without making any adjustment to the metal container or taping, the assembled kit shall then be submerged in the synthetic sea water (see 4.5.2), at a temperature of 77 ±2 degrees Fahrenheit (25 ±1 degrees Centigrade), under a static head of 12 inches, for 24 ±1/2 hours. Upon the expiration of this period, the assembled desalter kit shall be removed, from the water, and the outer surface wiped dry. The metal container and taping shall be observed again as aforementioned (see 3.5.1). The taping shall be removed, and at the same time, observed for breaking, tearing, and whether there is any difficulty in removing the taping (see 3.5.1). The metal container shall then be examined, for ease of opening, by raising the hinged lid (see 3.5.1). Each component shall be removed, one at a time, and examined. The mending tape shall be wiped dry and examined, for conformity to 3.5.1. The processing bag shall be slowly unfolded, and at the same time, carefully examined for evidence of adhering. Slight adhering, of the surfaces is satisfactory. If the surfaces have to be peeled, to separate, the processing bag shall have failed this inspection. The processing bag and filter shall also be examined, for cracks, tears, and holes (see 3.5.1). If the treatment, of the synthetic sea water, is necessary, because of the failure, of any desalting chemical pack wrapper, the processing bag in the container shall be used and shall satisfactorily desalt the six or eight batches of the synthetic sea water, as applicable, without becoming defective (see 3.5.1). The surface, of each wrapped desalting chemical pack, shall be wiped dry and the wrapper examined, for breaks, tears, holes, or opening in any seam (see 3.5.1). The wrapper shall then be removed and if any trace, of moisture, is present on the inside of the wrapper or if the desalter chemical appears to have reacted with the moisture, each pack, of the desalting chemical, shall be inspected, for ionic concentration after the 45 minute treatment as specified in 4.6.4.5(a) using the processing bag enclosed in the container (see 3.5.1). If any desalting chemical pack is found disrupted, the desalting chemical pack shall have failed this inspection.

4.6.6.2 Weight - The weight, of the assembled desalter kit, shall be determined on any scale or balance capable of weighing to the nearest 0.01 pound.

4.6.7 Nylon tie tape characteristics - The nylon tie tape characteristics shall be determined, by the following methods, as applicable, of FED-STD-191:

CHARACTERISTIC	METHOD
Width	5020
Total ends	5050
Picks per inch	5050
Identification of nylon	1530

4.6.8 Thickness of the filter cloth - The thickness of the filter cloth shall be determined in accordance with FED-STD-191, Method 5030.

5. PREPARATION FOR DELIVERY

5.1 Packaging - Packaging shall be Level A or C, as specified (see 6.2).

5.1.1 Level A - Ten desalter kits of one type shall be packaged on their bottoms, two in width, five in length, and one in depth, within a fiberboard container conforming to PPP-B-636, Style RSC, Type CF, Weather-Resistant Class, Variety SW, Grade V3c. Each desalter kit shall be kept apart from each other by use of a separator fabricated from the corrugated fiberboard conforming to PPP-F-320, Type CF, Weather-Resistant Class, Variety SW, Grade V3c. The approximate inside width, length, and depth dimensions shall be 10-1/4, 8-3/4, and 5-1/2 inches respectively. When Type I kits are packaged, the void (space) shall be filled with any type of non-corrosive cellulosic cushioning material to prevent movement. All the seams and joints shall be sealed with the tape conforming to PPP-T-76, 3 inches wide minimum. Each box shall be constructed and closed in accordance with PPP-B-636.

5.1.2 Level C - The desalter kits of one type shall be packaged to afford the minimum degree of protection necessary to prevent deterioration or damage during shipment under normal environmental conditions and commercial modes of transportation.

5.2 Packing - Packing shall be Level A, B, or C, as specified (see 6.2). Each shipping container shall contain desalter kits of only one type.

5.2.1 Level A - The Type I or Type II desalter kits, as applicable, packaged as specified in 5.1.1, shall be packed as specified in 5.2.2, except that fiberboard container shall be Weather-Resistant Class, Variety SW, Grade V3c. In addition, each container shall be reinforced with flat steel strapping or tape banding in accordance with the appendix to PPP-B-636.

5.2.2 Level B - Five containers (50 desalter kits), packaged as specified in 5.1.1, shall be packed within a snug fitting fiberboard container conforming to PPP-B-636, Type CF, Domestic Class, Variety SW, Grade 275. All the seams, corners, and manufacturer's joints of the box shall be sealed with a minimum of 3 inch wide tape conforming to PPP-T-45, Type III, Class 2, Grade A, B, or C, or PPP-T-76. Each container shall be constructed and closed in accordance with the appendix to PPP-B-636.

5.2.3 Level C - The packaged desalter kits, that require packing for acceptance by the carrier, shall be packed within exterior type shipping containers in a manner that shall insure safe transportation at the lowest rate to the point of delivery. The shipment shall conform to the minimum requirements of the rules and regulations applicable to the mode of transportation selected.

5.3 Marking - In addition to any special marking required by the contract or order, the interior and exterior containers shall be marked in accordance with MIL-STD-129 and shall include the type and date of assembly (quarter of year and year).

6. NOTES

6.1 Intended use - The desalter kits are intended for emergency use by personnel in life rafts and life boats wherein suitable storage facilities are not available for fresh water. Type I is for use with one man life rafts and Type II for multiplace life rafts and life boats.

6.2 Ordering data - Procurement documents shall specify the following:

(a) Title, number, and date of this specification.

(b) Type and quantity desired (see 1.2).

(c) Whether first article inspection is waived (see 4.3.1).

(d) Name and address of the first article inspection laboratory (see 4.3.1).

(e) Selection of applicable levels of packaging and packing (see 5.1 and 5.2).

(f) Whether any special markings are required (see 5.3).

6.3 Data - For the information of contractors and contracting officers, any of the data, specified in the applicable documents, listed in Section 2 of this specification, or referenced lower-tier documents, need not be prepared for the Government and shall not be furnished to the Government, unless specified in the contract or order. The data, to be furnished, shall be listed on DD Form 1423 (Contractor Data Requirements List), which shall be attached to and made a part of the contract or order. NavWeps Form 4200/25 (Drawings, Lists, and Specifications Required) shall be attached where applicable.

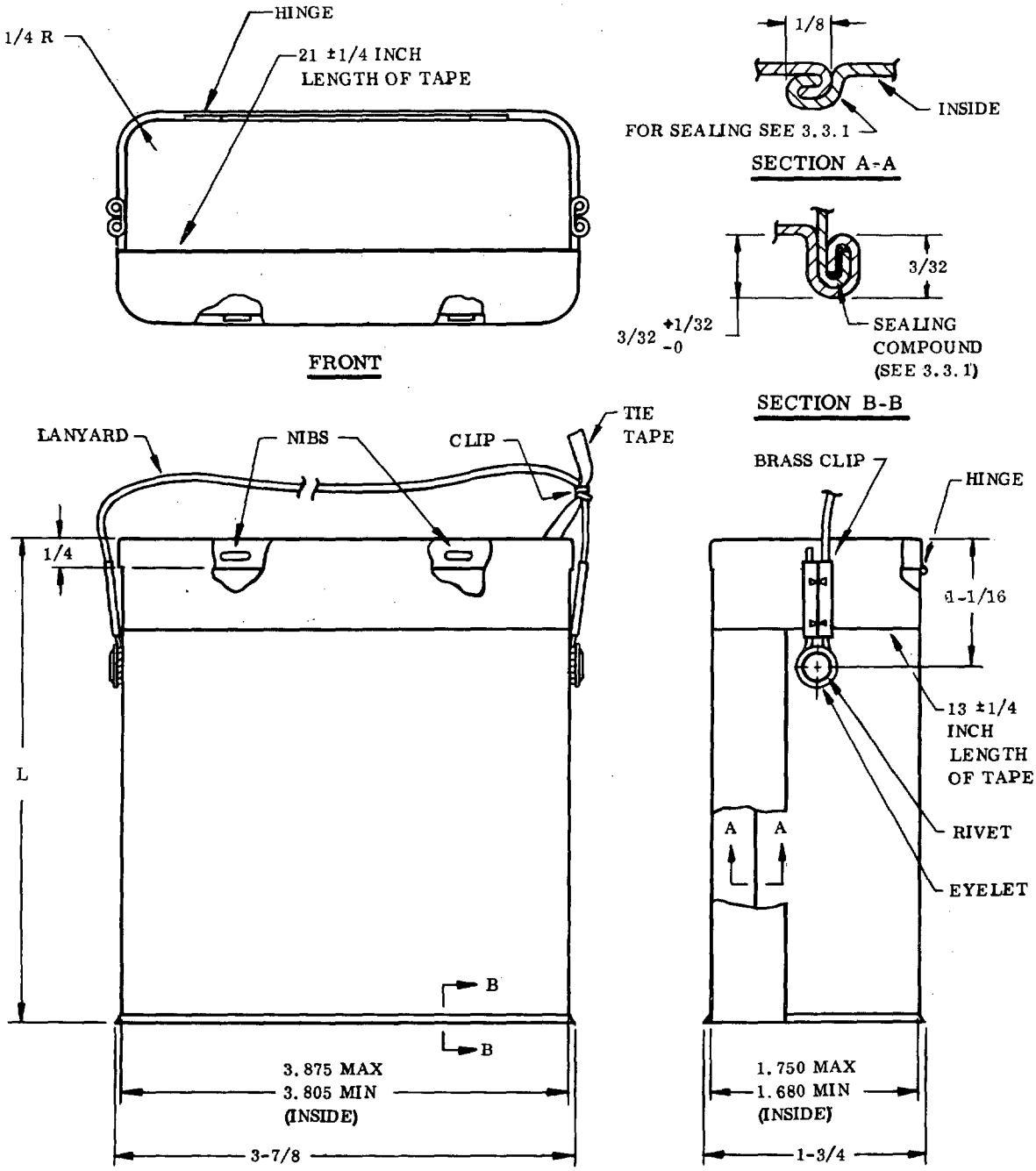
Custodians:
Army - ME
Navy - AS
Air Force - 84

Preparing Activity:
Navy - AS
(Project No. 4610-0052)

Review activities:
Army - AV, GL, and MD
Navy - AS and MS
Air Force - 11 and 84

User activities:
Navy - MC and SH

NOTICE - Review/user information is current as of date of this document. For future coordination of changes to this document, draft circulation should be based on the information in the current Federal Supply Classification Listing of DOD Standardization Documents.

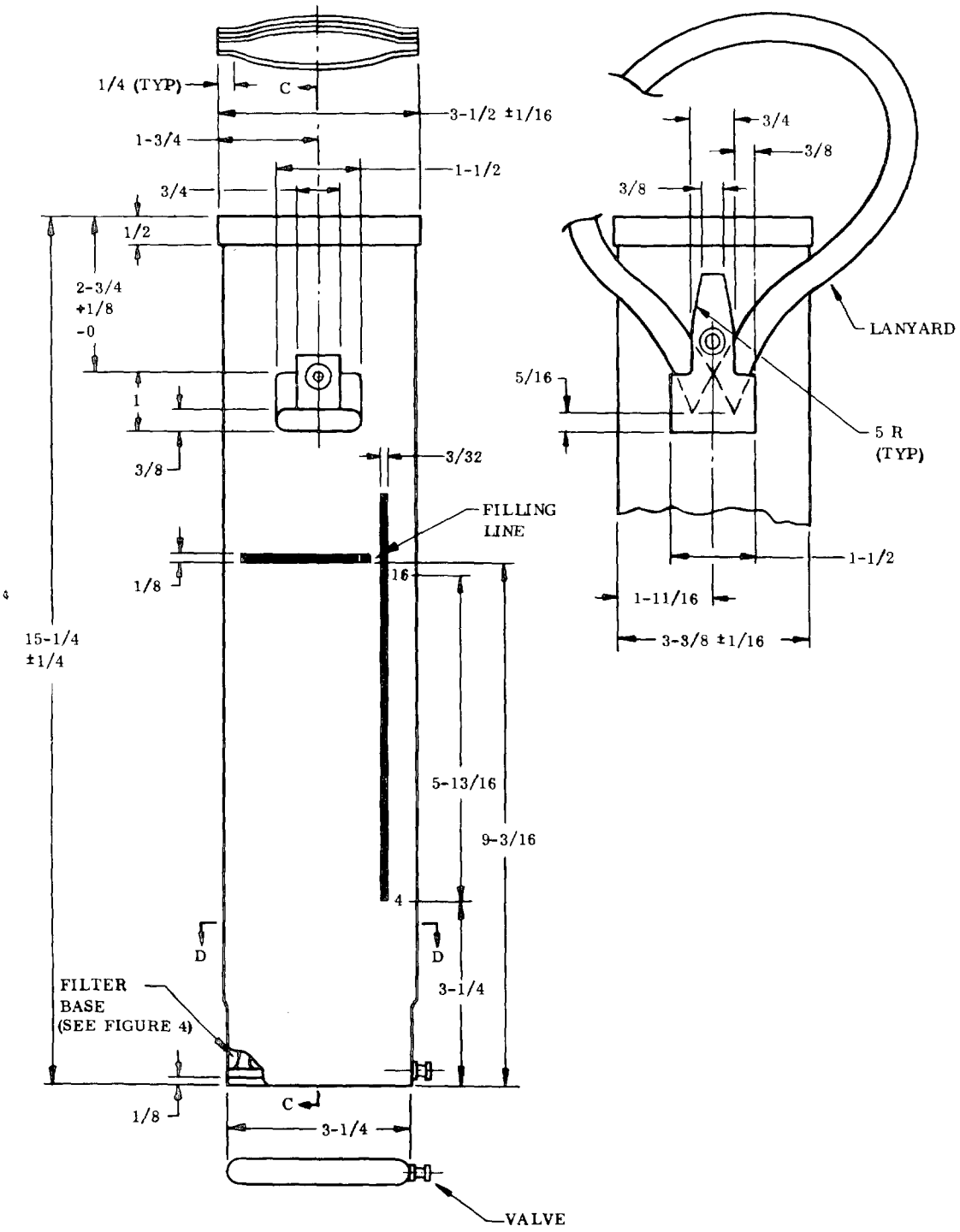


KIT TYPE	L
I	4
II	4-29/32

DIMENSIONS IN INCHES.
UNLESS OTHERWISE
SPECIFIED, TOLERANCES:
FRACTIONS ±1/32

FOR MARKINGS, SEE FIGURES 5 AND 6.

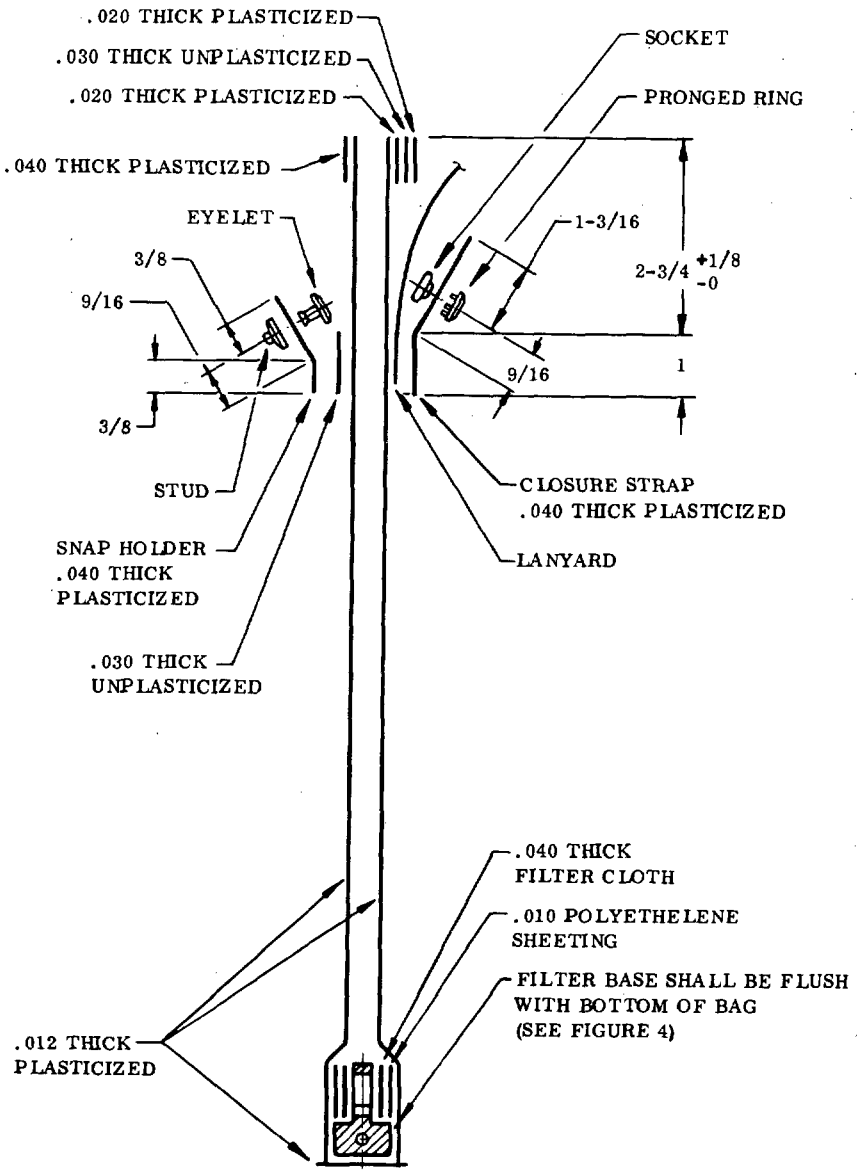
FIGURE 1. METAL CONTAINER



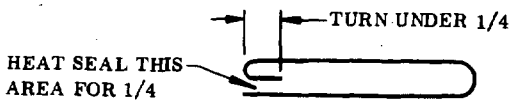
DIMENSIONS IN INCHES.
UNLESS OTHERWISE
SPECIFIED, TOLERANCES:
FRACTIONS ±1/32

FOR SECTIONS C-C AND D-D, SEE FIGURE 3.
FOR DETAILS OF MARKINGS, SEE FIGURE 8.

FIGURE 2. PROCESSING BAG



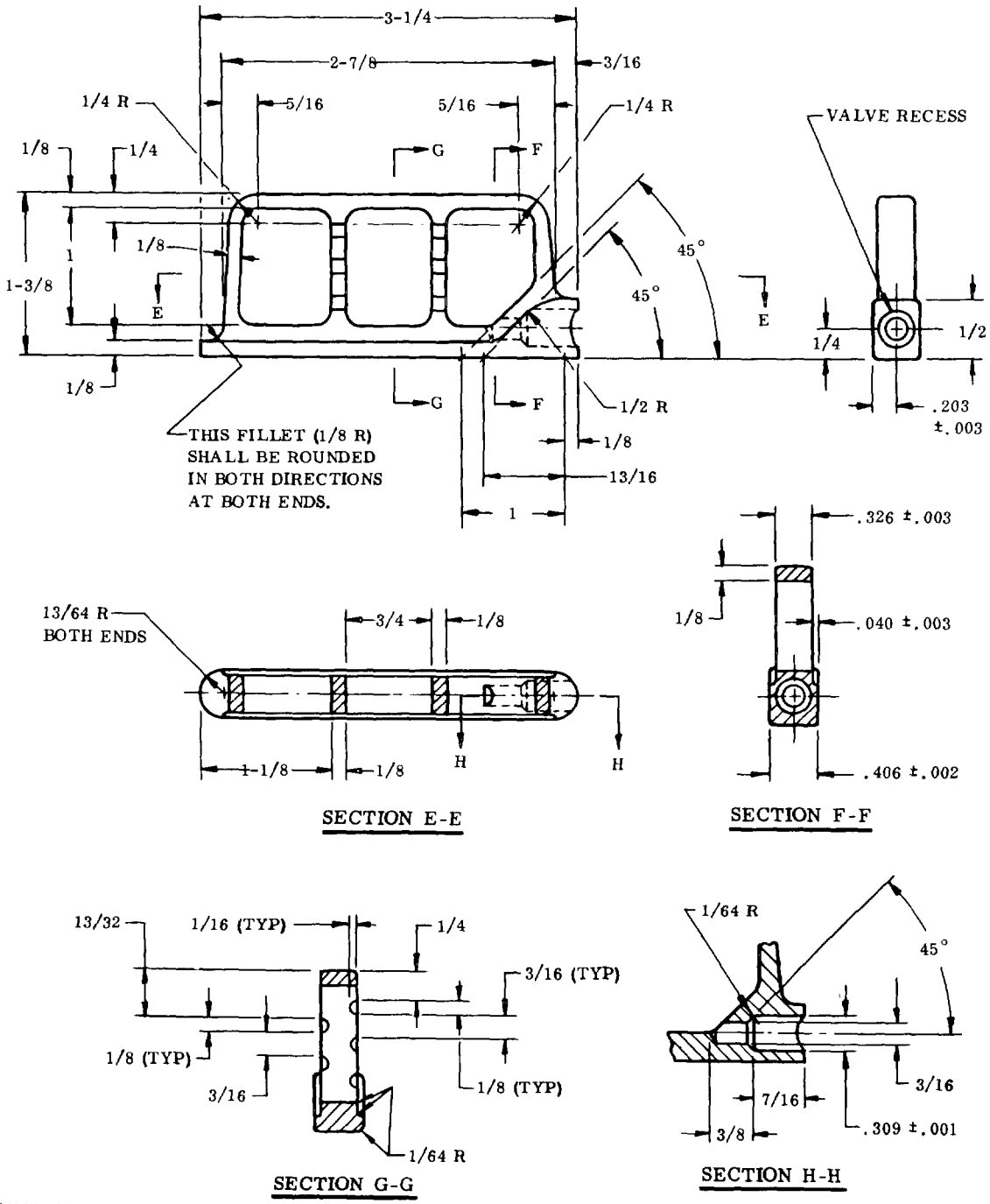
SECTION C-C



SECTION D-D

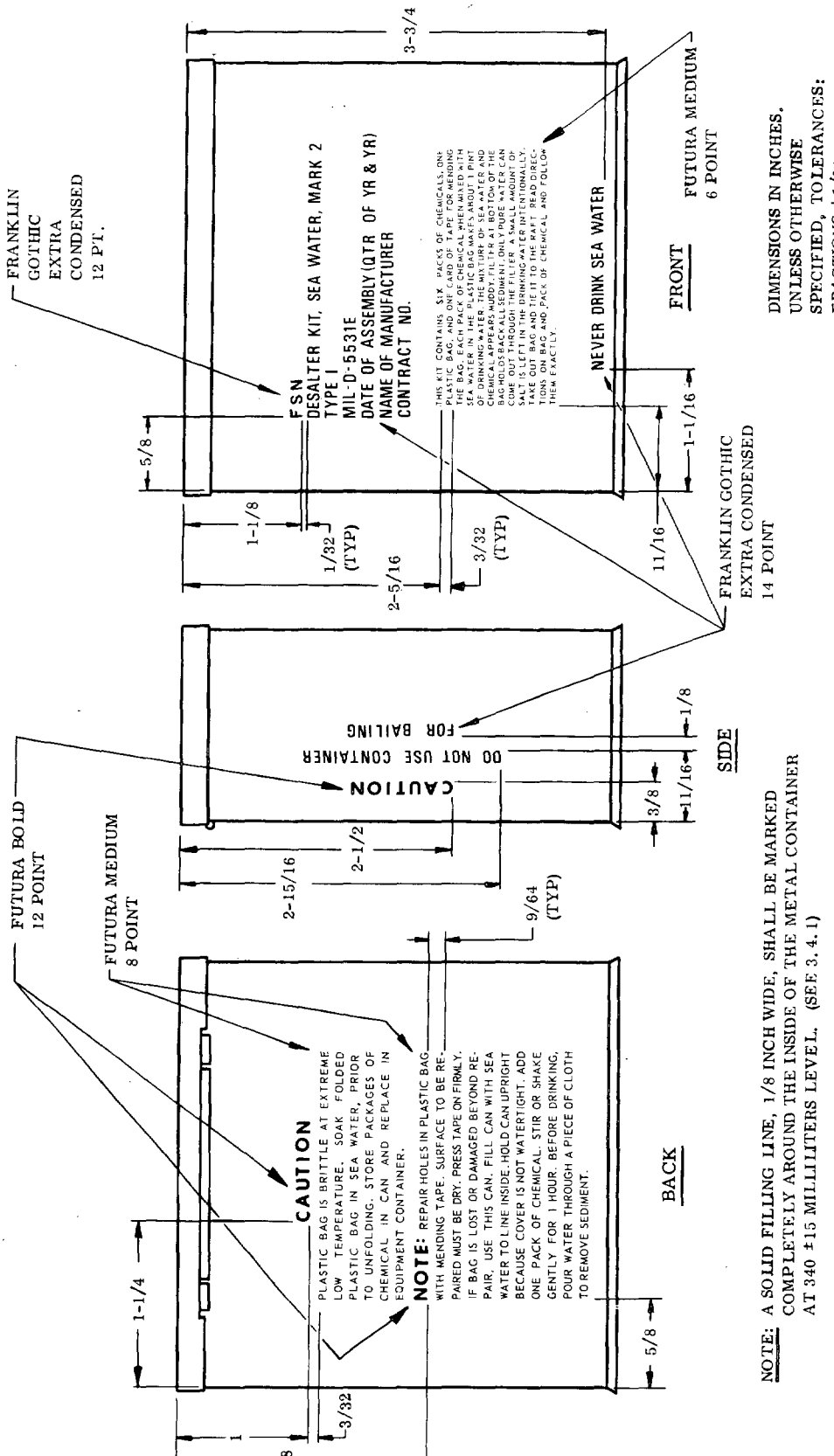
DIMENSIONS IN INCHES.
UNLESS OTHERWISE SPECIFIED, TOLERANCES:
FRACTIONS ±1/32
DECIMALS ±.005

FIGURE 3. PROCESSING BAG



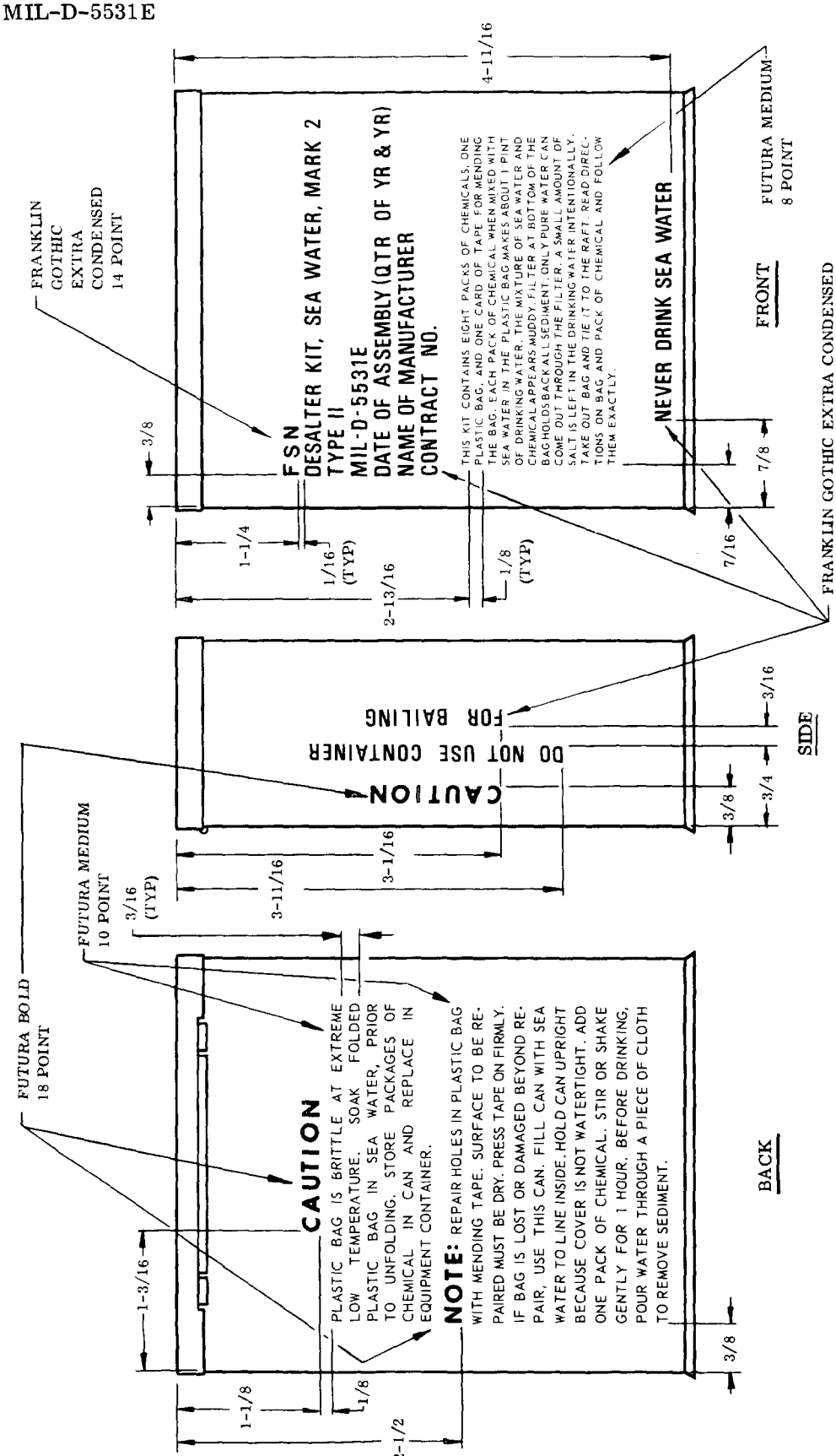
DIMENSIONS IN INCHES.
UNLESS OTHERWISE
SPECIFIED, TOLERANCES:
FRACTIONS ±1/32
ANGLES ±1°

FIGURE 4. FILTER BASE



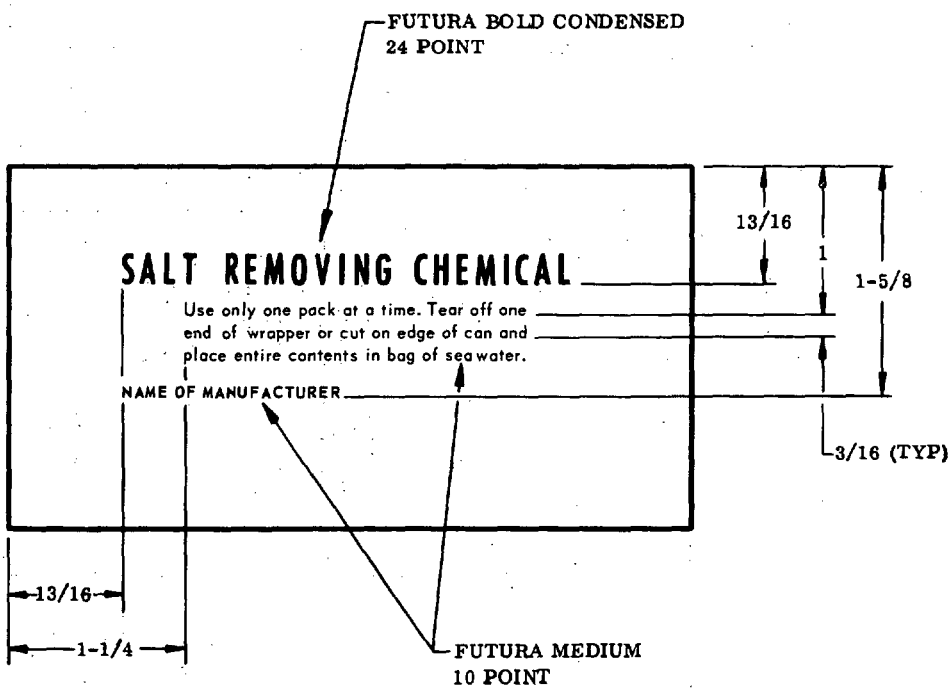
NOTE: A SOLID FILLING LINE, 1/8 INCH WIDE, SHALL BE MARKED COMPLETELY AROUND THE INSIDE OF THE METAL CONTAINER AT 340 ±15 MILLILITERS LEVEL. (SEE 3.4.1)

FIGURE 5. MARKINGS FOR THE TYPE I KIT METAL CONTAINER



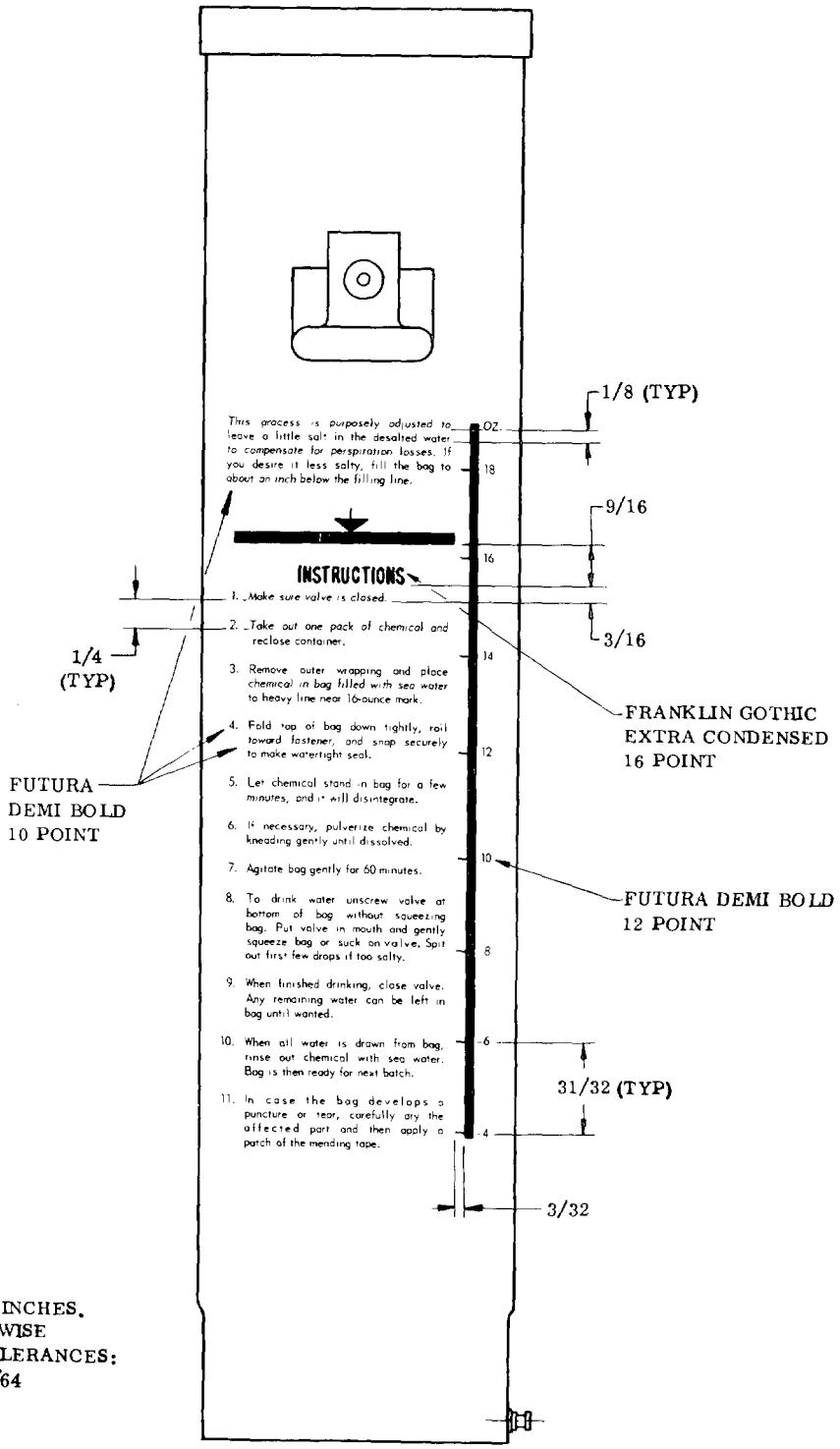
NOTE: A SOLID FILLING LINE, 1/8 INCH WIDE, SHALL BE MARKED COMPLETELY AROUND THE INSIDE OF THE METAL CONTAINER AT 340 ±15 MILLILITERS LEVEL. (SEE 3.4.1)

FIGURE 6. MARKINGS FOR THE TYPE II KIT METAL CONTAINER



DIMENSIONS IN INCHES.
UNLESS OTHERWISE
SPECIFIED, TOLERANCES:
FRACTIONS ± 1/64

FIGURE 7. MARKINGS FOR THE DESALTING CHEMICAL WRAPPER



DIMENSIONS IN INCHES.
UNLESS OTHERWISE SPECIFIED, TOLERANCES:
FRACTIONS ± 1/64

FOR DETAILS OF LINE MARKINGS, SEE FIGURE 2.

FIGURE 8. MARKINGS FOR THE PROCESSING BAG

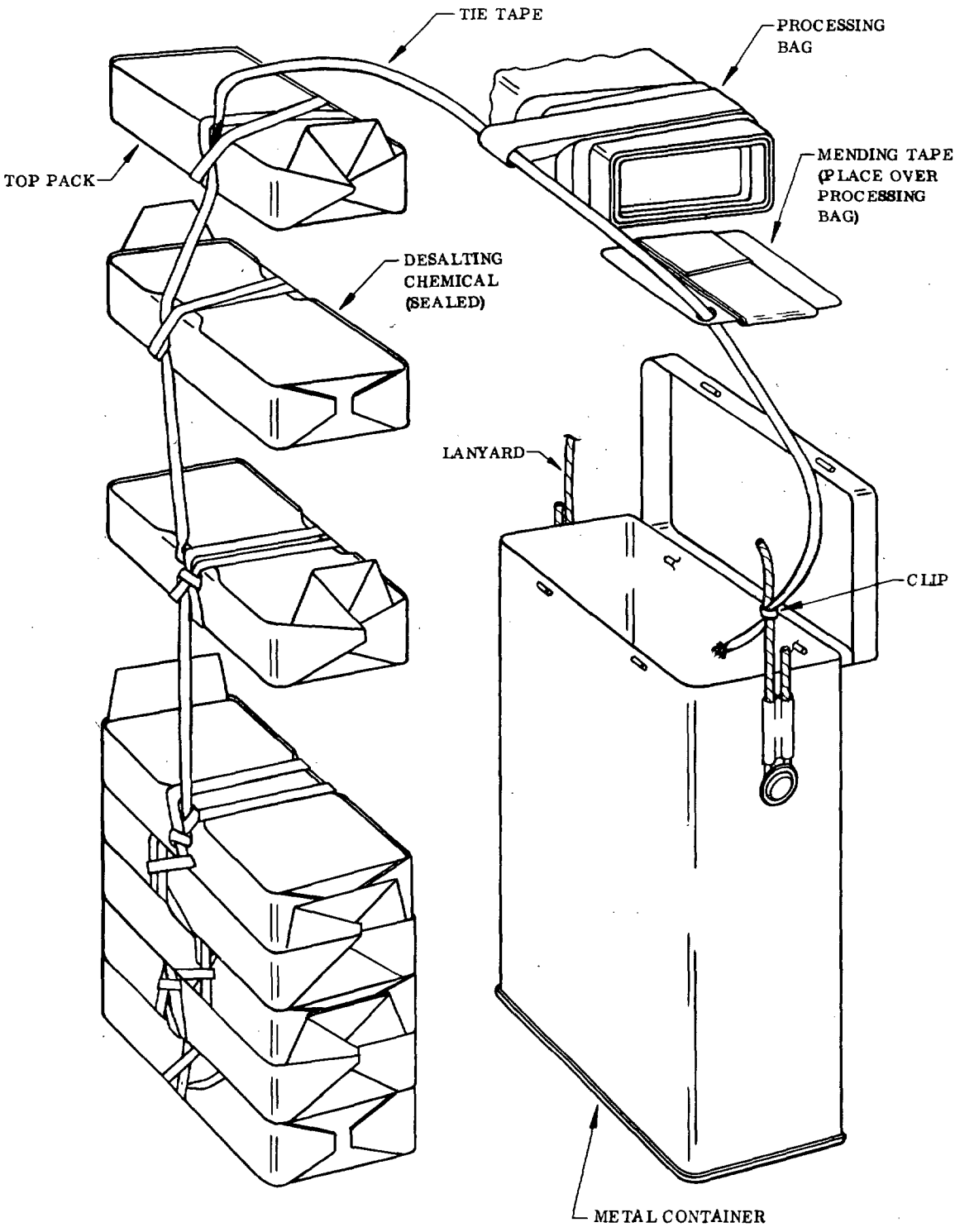


FIGURE 9. TYPICAL METHOD FOR ATTACHING THE COMPONENTS TOGETHER

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INDEX (Continued)

INDEX (Continued)

INDEX (Continued)

SPECIFICATION ANALYSIS SHEET

Form Approved
Budget Bureau No. 22-R255

INSTRUCTIONS: This sheet is to be filled out by personnel, either Government or contractor, involved in the use of the specification in procurement of products for ultimate use by the Department of Defense. This sheet is provided for obtaining information on the use of this specification which will insure that suitable products can be procured with a minimum amount of delay and at the least cost. Comments and the return of this form will be appreciated. Fold on lines on reverse side, staple in corner, and send to preparing activity. Comments and suggestions submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or serve to amend contractual requirements.

SPECIFICATION
MIL-D-5531E DESALTER KITS, SEA WATER, MARK 2

ORGANIZATION

CITY AND STATE | CONTRACT NUMBER

MATERIAL PROCURED UNDER A
☐ DIRECT GOVERNMENT CONTRACT ☐ SUBCONTRACT

1. HAS ANY PART OF THE SPECIFICATION CREATED PROBLEMS OR REQUIRED INTERPRETATION IN PROCUREMENT USE?
   A. GIVE PARAGRAPH NUMBER AND WORDING.

   B. RECOMMENDATIONS FOR CORRECTING THE DEFICIENCIES

2. COMMENTS ON ANY SPECIFICATION REQUIREMENT CONSIDERED TOO RIGID

3. IS THE SPECIFICATION RESTRICTIVE?
   ☐ YES ☐ NO *(If "yes", in what way?)*

4. REMARKS *(Attach any pertinent data which may be of use in improving this specification. If there are additional papers, attach to form and place both in an envelope addressed to preparing activity)*

SUBMITTED BY *(Printed or typed name and activity - Optional)* | DATE

DD FORM 1 JAN 66 1426 REPLACES EDITION OF 1 OCT 64 WHICH MAY BE USED.