

## Section 5-11. Viking Quick Donning Anti-Exposure Suit (QDAES) Assembly

### 5-480. GENERAL.

[See SUPP D](#)

5-481. The Viking QDAES (Figure 5-64) is an emergency use assembly designed to keep the wearer warm and dry. The complete assembly provides protection from the thermal effects of coldwater immersion in the event of emergency over water aircraft egress. Viking suits that are packaged in yellow vice red bags are part of an age exploration study to explore extending the five year packed shelf life to ten years. All of these suits must be returned to a Viking facility for inspection and repack. Contact the manager of this manual to act as a liaison between Viking and your squadron for the repack. Viking will pay for the repack of age exploration assets, but not the shipping.

### 5-482. PROCUREMENT.

#### NOTE

[See SUPP D](#)

Initial suits that were used for the testing fleet evaluation of the Viking have the part number SB04741054000. The suits with this part number are authorized.

5-483. The Viking QDAES Assembly (P/N PS4049, NIIN 01-593-7934) is available from Viking Life-Saving Equipment (America), Inc. via open purchase, and through GSA under #GS-07F-0105V. Manufacture contact information:

VIKING LIFE-SAVING EQUIPMENT (America) Inc.

1141 Ingleside Rd.

Norfolk, VA. 23502

E-mail: SMI@viking-life.com

Tel: +1 (800) 727-2628 / +1 (757) 855-2233

Fax: +1 (757) 855-7533

[See SUPP D](#)

5-484. The Viking QDAES Assembly Work Unit Code (WUC) is WUC 96AF7 - Viking Quick Don Anti-Exposure Suit, P/N PS4049, CAGE 1KSQ5.

5-485. The Viking QDAES Assembly comes with a five year warranty from the manufacturer. Warranty information is discussed further in Paragraph 5-495.

[See SUPP D](#)

5-486. The options for repair and/or repack are available from the manufacturer. Repair and repack information is discussed further in Paragraphs 5-516 and 5-522.

5-487. Replacement parts are available from VIKING LIFE-SAVING EQUIPMENT (America), Inc. See Figure 5-64 for list of components.

### 5-488. CONFIGURATION.

5-489. The Viking QDAES is an insulated immersion suit, orange in color and comes in size 54 (universal). It will fit persons ranging from approximate height of 4'6" to 6'6" and approximate weight of 110 to 220 pounds. The outer fabric is made of NOMEX/GORE-TEX 180 g/m2 (2 layers). The lining consists of blue polyester, quilted, with 80 g/m2 insulation. Stitching is aramid. There is "Retro-reflective" tape on the hood, back and sleeves. The Viking QDAES Assembly also has integrated suspenders for adjustment of height, 3-fingered neoprene gloves in glove pockets, reinforced seat and knee areas, and adjustable boots with durable non-slip soles. Supplied vacuum packed in a storage container, 16.5" x 8" (vacuumed packed). It weighs approximately 8.5 pounds.

[See SUPP D](#)

### 5-490. APPLICATION.

[See SUPP D](#)

5-491. The Viking QDAES is currently authorized for use by all aircrewmembers, in the event of emergency over water egress, in multi-engine fixed wing non-TACAIR aircraft (P-3, EP-3, C-130, P-8 and E-6).

### 5-492. OPENING AND DONNING.

[See SUPP D](#)

5-493. The Viking QDAES Assembly bag is opened by pulling the handles away from each other. If the Viking suit is vacuum packed, the handles are attached to both the outer bag and the inner vacuum bag, pulling on the handles will open both the outer bag and inner bag exposing the suit.

[See SUPP D](#)

5-494. To don the Viking QDAES Suit remove headwear, survival vest and floatation equipment if wearing any. Don the suit legs first, put on the hood, tighten the straps around ankles, adjust the length of the boot, tighten the suspenders inside the suit to fit comfortably, zip the front zipper. If needed, put survival vest and floatation equipment on over Viking QDAES Suit, then don the gloves stored in the sleeve pockets.



F5-69

Figure and Index Number	Part Number	Description	Units Per Assembly	Usable On Code
		1 2 3 4 5 6 7		
5-64	PS4049	VIKING QUICK DONNING ANTI-EXPOSURE SUIT (QDAES) ASSEMBLY	1	
-1	1001268	. NOMEX/GORE-TEX 2L, Orange	1	
	1007492	. SEAMTAPE, 3L, Gore-Tex Grey	1	
	1001302	. SEAMTAPE, 2L, Gore-Tex White	1	
	1001313	. NEOPRENE TAPE, 25 mm	1	
	1014600	. GORE-TEX, Patch, black Ø 40mm	1	
-2	1015805	. ZIPPER, Front (Slider) 95 cm	1	
-3	1015191	. TAPE, Reflective 5 x 20 cm, grey	1	
-4	1014992	. TAPE, Reflective 5 x 10 cm, grey	1	
-5	S-475010254	. GLOVES, Neoprene, black	1	
-6	S-45001565050L	. CUFF, Neoprene, left side	1	
	S-45001565050R	. CUFF, Neoprene, right side	1	
	1001550	. THREAD, Nomex, orange	1	
	1001626	. REGULATION-BUCKLE, 30 mm, black	1	
	N/A	. BAG	1	
	1003396	. "Discarded for Life-Saving"	1	
	1003591	. "Discarded"	1	
	1001576	. Moisture Bag 125 gr. Montmorillonite	1	

Figure 5-64. Viking Quick Donning Anti-Exposure Suit (QDAES) Assembly

## 5-495. WARRANTY INFORMATION.

[See SUPP D](#)

5-496. Upon initial delivery, Viking Life-Saving Equipment (America), Inc., warrants all garments to be free of defects in material and workmanship for a period of five years. Defective garments will be either repaired or replaced, at manufacturer's option. Freight charges for repaired or replacement product shall be paid by the Fleet activity. Returns shall be shipped to: VIKING LIFE-SAVING EQUIPMENT (America) Inc. 1141 Ingleside Rd. Norfolk, VA. 23502  
E-mail: SMI@viking-life.com  
Tel: +1 (800) 727-2628 / +1 (757) 855-2233  
Fax: +1 (757) 855-7533  
Please include: name, return shipping address, telephone number and information detailing exactly the nature of the problem.

## 5-497. MODIFICATIONS.

5-498. There are no authorized modifications for the Viking QDAES Assembly.

## 5-499. MAINTENANCE.

### NOTE

[See SUPP D](#)

Inspections shall be performed during the aircraft's inspection cycle designated in Planned Maintenance Systems publications for the aircraft to which assigned.

5-500. Maintenance of the Viking QDAES shall consist of inspection, leakage testing, storage, repair, cleaning and packing and replacement. All maintenance and repair operations shall be performed by Aircrew Survival Equipmentmen. All maintenance actions shall be documented in accordance with COMNAVAIRFORINST 4790.2. [See SUPP D](#)

5-501. Repacking of the Viking QDAES Assembly can be accomplished by the Intermediate Level (I-Level) or above or by returning it to Viking Life-Saving Equipment (America), Inc. If repacked at the I-Level or above, it will not be vacuum-sealed and it will have an inspection cycle of one year. For I-Level inspection, cleaning, repair and packing see Paragraph 5-511. If repacked by Viking Life-Saving Equipment (America), Inc., it will be returned vacuum sealed and have an inspection cycle of five years. If being repacked by Viking Life-Saving Equipment (America), Inc., send to either one of the following locations via normal supply channels: [See SUPP D](#)

## NOTE

Viking is opening facilities in several places in the US including Denver, Seattle and Norfolk. Check with Viking to see where the closest inspection/repack facility is.

Viking Life-Saving Equipment Inc.  
1450 Canal Avenue  
Long Beach, CA 90813  
email: longbeachservice@viking-life.com

VIKING LIFE-SAVING EQUIPMENT (America) Inc.  
1141 Ingleside Rd.  
Norfolk, VA. 23502  
E-mail: SMI@viking-life.com  
Tel: +1 (800) 727-2628 / +1 (757) 855-2233  
Fax: +1 (757) 855-7533

[See SUPP D](#)

## 5-502. MAINTENANCE DOCUMENTS.

[See SUPP D](#)

5-503. Documents used to record history and maintenance information consists of those documents described in Chapter 2 of this manual and the damage chart (Figure 5-65). The damage chart is also intended to aid the O-Level custodians of the coverall in describing other needed repairs to the I-Level technicians. All maintenance actions and inspections shall be documented in accordance with COMNAVAIRFORINST 4790.2.

## 5-504. SERVICE LIFE.

5-505. The Viking QDAES Assembly will remain in service 25 years from date of manufacture or until beyond economical authorized repair, whichever comes first.

5-506. The service life is the time period during which the Viking QDAES Assembly can be maintained in service without replacement. The service life for the Viking QDAES Assembly is 25 years, computed from the date of manufacture. When the Viking QDAES Assembly lacks a legible date of manufacture (DOM) and a service life check cannot be verified, the applicable Viking QDAES Assembly shall be considered Non-RFI and removed from service. If the DOM can be established via records maintained on the coverall, the DOM shall be stenciled in permanent marker on the coverall and shall be considered the DOM for the purpose of service life check. Unless otherwise noted the Viking QDAES Assembly service life shall start on the first date of the month of the date of manufacture and expire on the last day of that month.

(ORGANIZATIONAL USE) \_\_\_\_\_ DATE \_\_\_\_\_  
 ACTIVITY/SQN. \_\_\_\_\_ COVERALL SERIAL NO. \_\_\_\_\_ C.D.I. \_\_\_\_\_  
 REMARKS: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

(INTERMEDIATE USE)

INSPECTION/TEST REMARKS: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

REPAIR REMARKS: \_\_\_\_\_  
 \_\_\_\_\_

REPAIRED BY \_\_\_\_\_ INSPECTOR \_\_\_\_\_ DATE \_\_\_\_\_

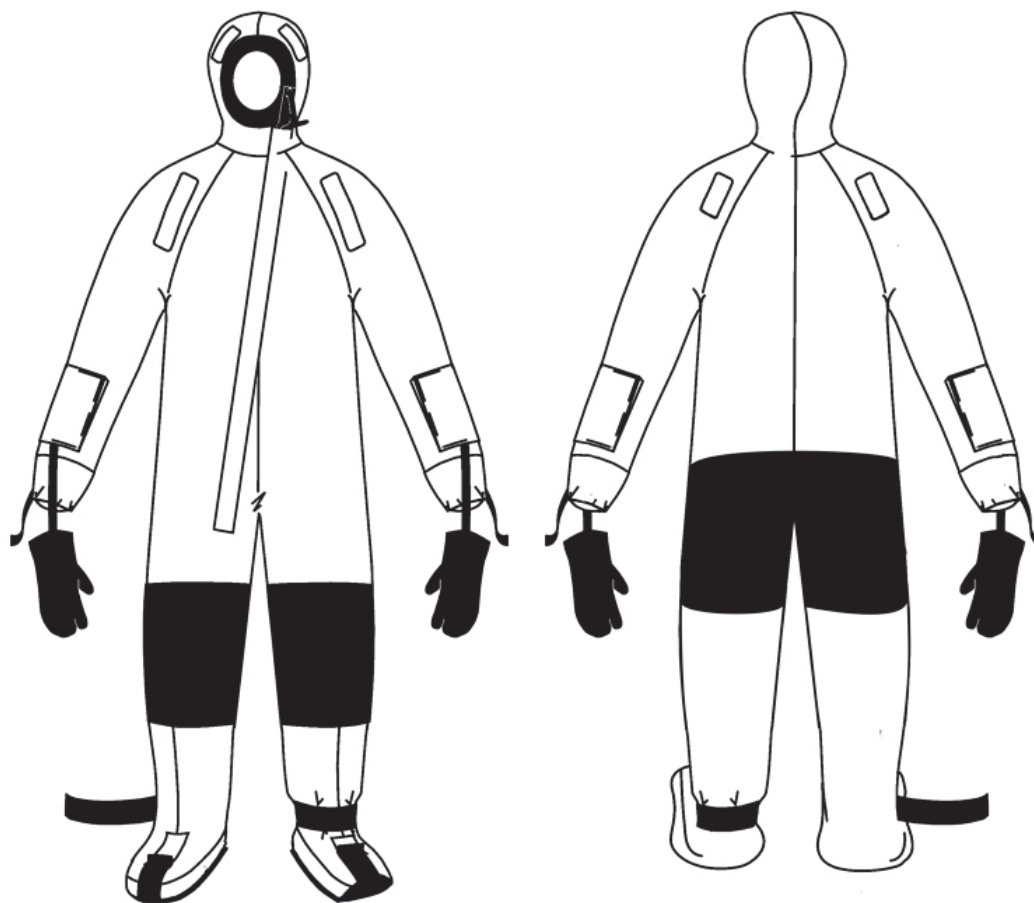


Figure 5-65. Viking QDAES Assembly Damage Chart

**NOTE**

**See SUPP D**

If the contract number is legible on a coverall without a legible DOM, the contract number can be used to establish a DOM. For example, a QDAES Assembly with a contract number of SPO100-98-D-4018 was built sometime after the year 1998 as the contract was awarded in 1998. Thus the DOM for this particular coverall with no legible DOM, but a legible contract number SPO100-98-D-4018 could safely be established as JAN 1999.

5-507. Check markings for completeness, legibility and agreement with assembly records. If manufacturers tag becomes worn, loose or torn, stencil DOM on the inside of the Viking QDAES Assembly, near the upper right chest area (if wearing the suit), where the manufacturers label would/should normally be located.

**See SUPP D**

5-508. Check the date of manufacture to ensure that the Viking QDAES Assembly is not beyond its established 25-year service life. The date of manufacture tag is located on the inside of the suit upper right chest area (if wearing suit). The Viking QDAES Assembly shall be replaced if service life expires prior to the next inspection cycle, unless the next inspection cycle is shortened to comply with the service life expiration date. When the coverall reaches the service life limit, it shall be returned to supply for disposition.

## 5-509. INSPECTION.

5-510. Vikings QDAEC's shall be subject to the following inspections: Place-In-Service and Special Inspection

**5-511. PLACE-IN-SERVICE INSPECTION OF THE VIKING QDAES.** The inspection shall be performed at the organizational level of maintenance. To perform an inspection examine for the following:

1. Visually inspect for damage such as rips, tears and punctures.
2. Stencil the Serial Number of the Viking QDAES on the outer bag in permanent marker.
3. Ensure that the Date Sealed and Date of Next Service are legible.

4. Inspect Donning patch for legibility and secure attachment to the bag.

5. Ensure that the vacuum seal is good and that the warranty paperwork is logged with the history card.

6. Verify inspection and/or repair. (QA)

7. Document maintenance actions in accordance with COMNAVAIRFORINST 4790.2. (QA) **See SUPP D**

**5-512. SPECIAL INSPECTION.** Special Inspections performed on aircraft installed Viking QDAES's shall coincide with the Periodic Maintenance Requirements of the aircraft on which they are installed, not to exceed 365 Days. All Viking QDAES assemblies are subject to a Repack/Leakage Test on either a 365 Day or a 5-year schedule. Special Inspections shall be performed by the Organizational and/or the Intermediate Level of maintenance as outlined in the steps below. To perform the Special Inspection proceed as follows:

1. The Viking remains on the original 5-year Repack/Leakage Test cycle under the following two conditions:

a. Vacuum seal Intact; remains on 365 day special inspection and 5-year repack/leakage cycle. Once confirmed, proceed with the special inspection by completing steps 3a. through e. and p. through q. below. **See SUPP D**

b. Loss of Vacuum seal; no visible damage. Vikings in the original plastic protective coverings that show a loss of vacuum seal but no visible damage/destruction to the clear plastic covering and Viking QDAES shall remain on a 365 day special inspection and 5-year repack/leakage test cycle. The vacuum seal of the clear plastic protective bag is secondary to the protection the bag provides to the Viking; pin pricks and small tears should not be considered damage when assessing the condition of the Viking and plastic protective cover. Once the condition is confirmed, proceed with special inspection by completing steps 3a. through e. and p. through q. below.

**NOTE**

Vikings that have damaged or missing original plastic protective covers shall be subjected to a 365 Day Special Inspection as outlined below, including the Leakage Test in step 3.o.



**NOTE****See SUPP D**

QDAES in yellow bags are part of the age exploration study on the Vikings. If you have a Viking in a yellow bag it must be returned to Viking at the 5 year Next Service Date for inspection and repack as per Paragraph 5-501.

2. If the Viking is being returned to a Viking facility for repack and the start of a new 365 Day Special Inspection and 5-year Leak Test cycle, send the Viking to the Viking facility for inspection/repack and perform a Place-In-Service Inspection upon return of the suit from Viking.

**See SUPP D**

3. If your activity chooses to forgo the expense of re-establishing a 5-year repack cycle by returning the Viking to the Viking facility, then forward the Viking to I-Level for Inspection/Leakage Test To continue with the Special Inspection proceed with 3 b through q below:

a. Ensure that the Sealed Date and the Date of Next Service is visible in the clear plastic window of the outer bag.

**See SUPP D**

b. Remove the Viking suit from the red (or yellow) outer bag. The bag is manufactured with a double zipper that will expand the bag if the suit being returned to the outer bag is larger due to loss of the vacuum sealed. The outer bag also has a special design where the yellow teeth at the top of the zipper are separating teeth. This is an easy opening feature of the zipper to help facilitate opening of the bag in case of emergency.

c. Visually inspect both the bag and the QDAES for damage such as rips, tears and punctures.

d. Ensure that the serial number has been stenciled on, and is still legible, on the outer bag and that the Sealed Date and Date of Service is visible in the window of the outer bag.

e. Inspect outer bag for presence, legibility and secure attachment of the Donning patch .

f. Check the joining/seam at the hood between facial ring and the fabric for rips, tears, punctures or separation.

g. Check the neoprene wrist seals for cracks and scratches; check seams on the entire assembly for separation.

h. Ensure the soles are intact and that the glue between the sole and the suit is intact and holding.

i. Check gloves for cracks and scratches.

j. Check reflective tape for mounting and condition.

k. Check front slide fastener to ensure it slides properly.

l. Check the liner and suspenders for security and condition.

m. Check label for serial number. If the serial number is missing or not legible, write the serial number on the inside of the suit using a permanent marker.

**See SUPP D**

n. Clean the Viking if needed in accordance with Paragraph 5-523.

o. Perform an air pressure test to check for leaks in accordance with Paragraph 5-515.

p. Verify inspection and/or repair. (QA)

**See SUPP D**

q. Document in accordance with COMNAVAIR-FORINST 4790.2. (QA)

**5-513. LEAKAGE TEST.****NOTE****See SUPP D**

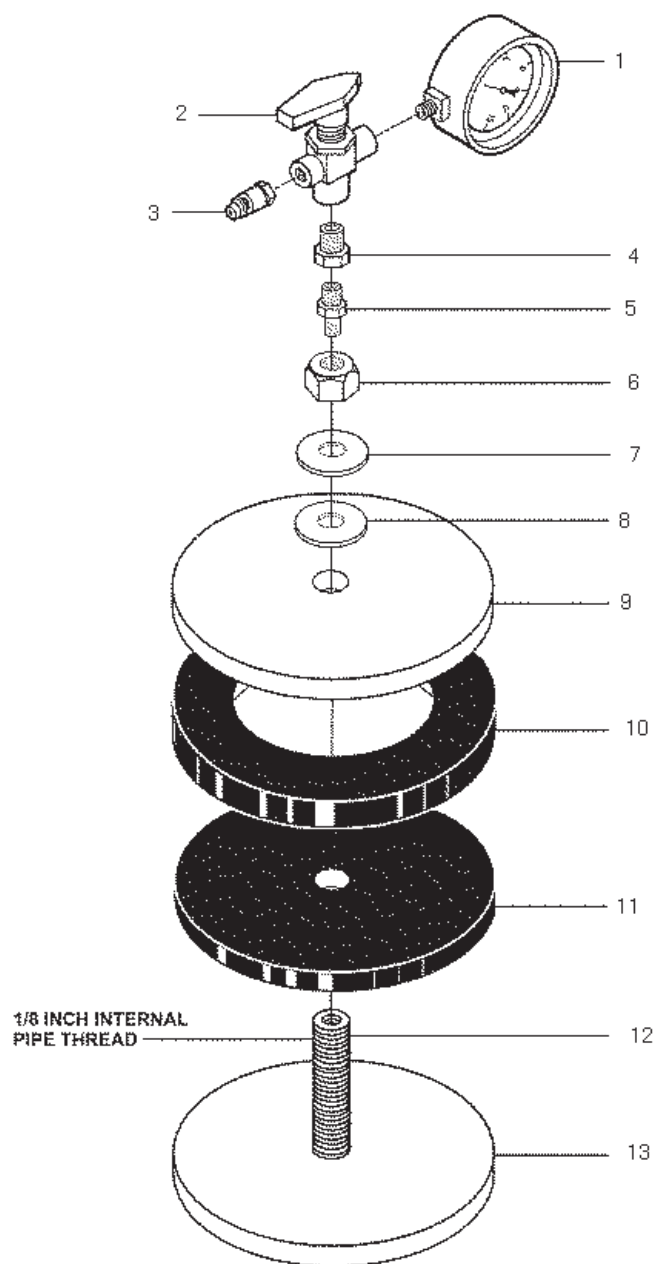
The leak test will be performed by an Aircrew Survival Equipmentman at the Intermediate level.

**See SUPP D**

**5-514. TEST FIXTURE.** Test fixture Figure 5-66 and Figure 5-67, P/N 1936AS100-1, shall be procured through the TYCOM.

**NOTE**

Commercially available petroleum jelly may be used on the threaded pipe to prevent leakage around the nut, gasket, and washer. Neoprene rubber gasket can be locally manufactured in accordance with Figure 5-68.



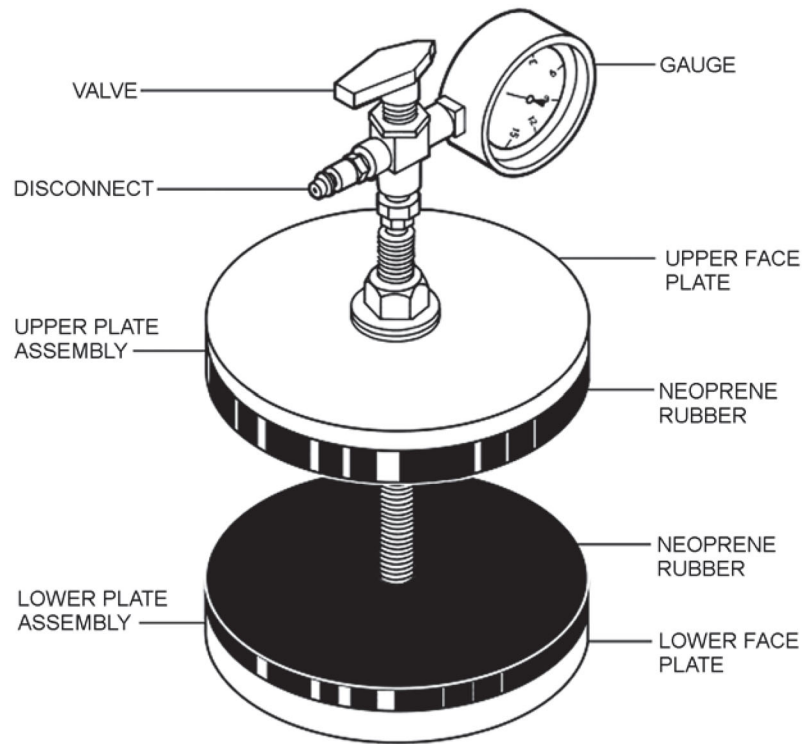
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Figure 5-66. Leak Test Fixture (Sheet 1 of 2)

Figure and Index Number	Part Number	Description 1 2 3 4 5 6 7	Units Per Assembly	Usable On Code
5-66	1936AS100-1	LEAK TEST FIXTURE . . . . .	1	
-1	00-919-3784	GAUGE, Water Press., 0-15 Inches, 2 1/2 Inch Dial . . . . .	1	
-2	B43XVF4	VALVE, 3-Way With Vent (12623) . . . . .	1	
-3	MIL-C-4109	COUPLING, Air Hose (Male) . . . . .	1	
-4	00-186-3024	BUSHING, Pipe Reducer . . . . .	1	
-5	AN911-1J	NIPPLE, Pipe . . . . .	1	
-6	MS51967-20	NUT, Hex, 5/8 Inch 11-UNC-2B . . . . .	1	
-7	MS51412-12	WASHER . . . . .	1	
-8	—	GASKET, Rubber, 1 5/8 Inch Outer Diameter, . . . . . 1/2 Inch Inner Diameter (Note 1)	1	
-9	QQ-A-250/11	PLATE, 1/2 Inch x 7 Inch, Aluminum . . . . .	1	
-10	7X.750-20-1	CIRCLE, Rubber, 3/4 Inch x 7 Inch, . . . . . 4-Inch Center (76385)	1	
-11	7X.750-20-2	CIRCLE, Rubber, 3/4 Inch x 7 Inch, . . . . . 5/8 Inch Center (76385)	1	
-12	98790A035	ROD, Steel, Threaded, 5/8 Inch, Hollow . . . . .	1	
-13	QQ-A-250/11	PLATE, 1/2 Inch x 7 Inch, Aluminum . . . . .	1	
	Notes: 1. Replacement for rubber gasket is locally manufactured of solid rubber (NIIN 00-241-9746). To manufacture replacement gasket, use a 1/2 inch punch, cutting, double bow (NIIN 00-180-0932) for the inner diameter and 1 5/8 inch punch, cutting, double bow (NIIN 00-540-5786) for the outside diameter.			

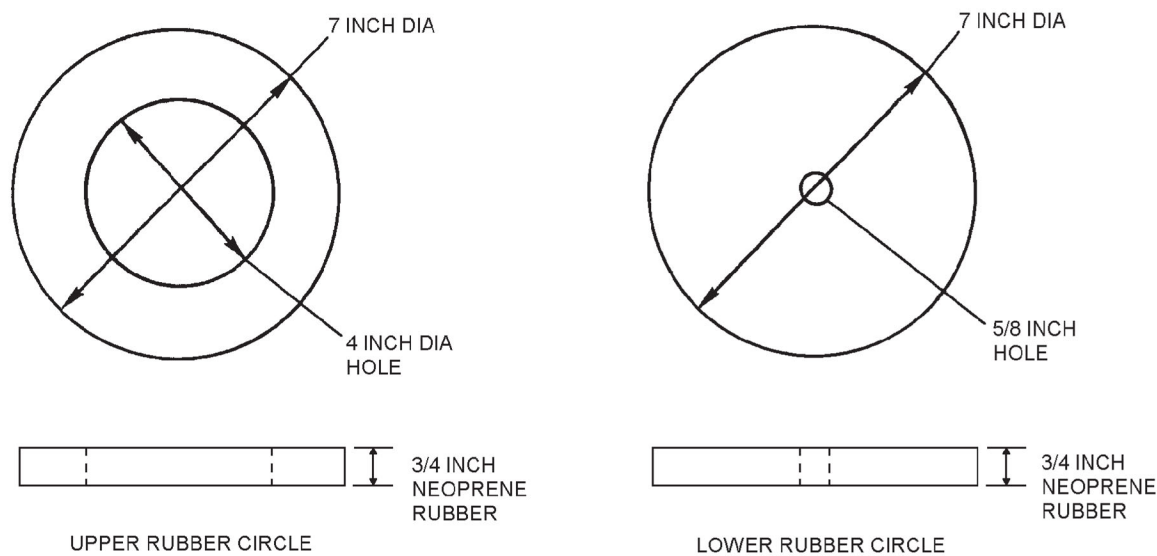
Figure 5-66. Leak Test Fixture (Sheet 2 of 2)





005026

Figure 5-67. Leak Test Fixture (Assembled)



005025

Figure 5-68. Rubber Circle Dimensions

See SUPP D

**5-515. AIR TEST PROCEDURE.** To test the Viking QDAES for leakage, proceed as follows:

## Materials Required

Quantity	Description	Reference Number
1	Test Fixture	See Paragraph 5-514
2	Clamp, Wrist Seal	Supplied with Water Test Device (Note 1)
As Required	Leak Tec Solution	MIL-PRF-25567 NIIN 00-621-1820

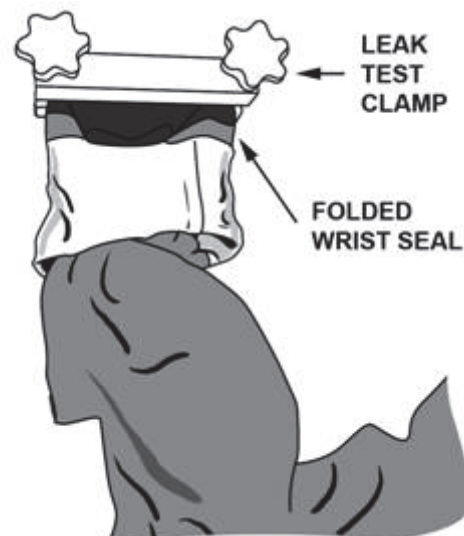
Note: 1. Use either the wrist seal clamps supplied with the water test stand or fabricate some clamps locally in accordance with Paragraph 5-478.

1. Loosen the liner by separating the hook and pile strips from the waist area and up to the hood area. Move loosened liner out of the way of the sides and hood.



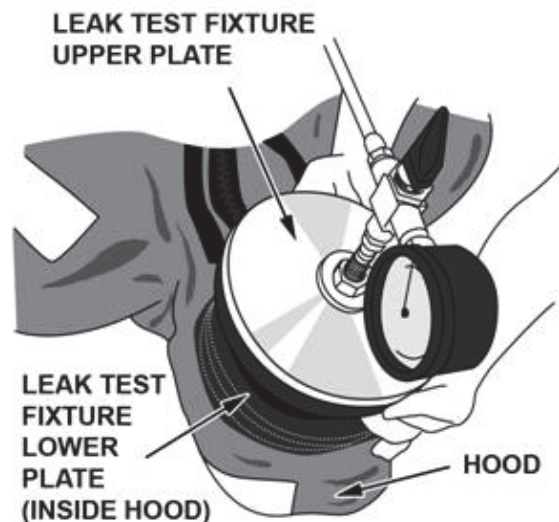
Step 1 - Para 5-515

2. Place the leak test clamps on each wrist seal. To ensure a good seal, fold the wrist seal back one fold.



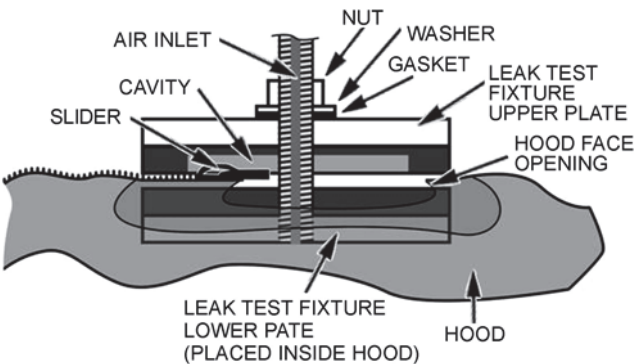
Step 2 - Para 5-515

3. Place test fixture inside the suit at center of hood opening, with lower plate resting on inside of back of hood. Ensure the liner is tucked down into the suit so as not to interfere with attaching the test fixture.



Step 3 - Para 5-515

4. Loosen locking nut to allow upper portion of test fixture to be raised above the lower plate assembly. Remove the toggle from the slide fastener; pull closed with the slider tight against the top stops. Lay the facial area opening of the suit flat against the lower plate assembly with the slider and pull tab as close to the center threaded rod as possible, so the slider rests within the rubber cavity of the upper plate allowing for a good seal.



Step 4 - Para 5-515



Assure pointer on 3-way valve is pointing toward gauge when connecting air source.

See SUPP D

5. Connect a dry, filtered, clean low pressure air source to the test fixture at the male quick disconnect fitting. Rotate the black pointer on the 3-way valve toward the air inlet and inflate the coverall for no more than 20 seconds. Rotate the black pointer in the direction of the gauge to check the pressure in the coverall. If the pressure is below six inches of water, turn pointer back toward air inlet letting in a small amount of air. If pressure is above six inches of water, turn the pointer to the bleed hole in the 3-way valve to bleed excessive pressure down to six inches of water. Check gauge reading after 15 seconds. Leave pointer facing gauge and observe gauge for pressure drop. If gauge pressure has dropped, tighten down nut on top plate.

6. If pressure continues to drop, apply Leak Tec solution around the outer edge of upper plate assembly and slide fastener. If a leak is present, deflate suit following steps 7 and 8 below and repeat steps 1 through 4. When confident that a good seal between test fixture and suit is made and pressure has been stabilized at 6 inches water pressure, leave suit at pressure for 5 minutes. See SUPP D

See SUPP D

7. If pressure reading drops below 5 inches of water pressure during the 5 minute test period, check for leaks and structural damage over the entire outer surface area of the coverall with leak detection solution or soapy water. Mark any leak area. (QA)

8. Disconnect air source. Rotate pointer toward air inlet to release pressure in suit, loosen nut to dump pressure.

9. Remove faceplate assembly. Rotate pointer arrow toward gauge to return gauge reading to zero.

10. Remove wrist seal clamps.

11. Re-attach liner.

12. Verify inspection and/or repair and/or fit. (QA)

13. Document in accordance with COMNAVAIR-FORINST 4790.2. (QA) See SUPP D

5-516. REPAIRS.

NOTE

Repairs to the front slider assembly of the Viking QDAES must be done by Viking Life-Saving Equipment Inc.

5-517. REPLACEMENT OF ORIGINAL CONSTRUCTION SEAM TAPE AND REFLECTIVE TAPE.

NOTE

The traditional white colored seam tape is being replaced via attrition with a grey colored seam tape. The tapes will have the same NIIN. Both the traditional white seam tape and the grey seam tape are authorized for repairs.

Materials Required

Quantity	Description	Reference Number
1	Roller, Hand 2 inch wide	A-A-3034 NIIN 00-243-9401
1	Sealer, heat, seam and patch or equivalent such as the DK8 as outlined in NAVAIR 17-10DC-1	MIL-S-85634 NIIN 01-186-7869
1	Tape, Seam, 1 1/2-inch, Tape, Reflective	1370AS502-3 SCOTCHLITE31

**WARNING**

See SUPP D

Prior to application of seam tape, Aircrew Survival Equipmentmen must be familiar with heat-sealing machine operating procedures in NAVAIR 17-10DC-1.

**NOTE**

Tape or patch must extend 1 inch beyond damaged area. Tape or patches may be overlapped to meet the 1 inch requirement. Do not confuse "overlapping" with what is called "overpatching", which is attempting to repair damage by placing a new patch over an existing patch (basically patching a patch). Overpatching is not authorized, overlapping patches is authorized.

1. Using the heat sealer or heat gun, heat the area and gently peel off the loose tape. Remove excess glue by scraping with a spatula or similar flat tool, without damaging the coverall fabric. Continue the process for the length of the loose tape.

2. Apply 1 inch seam tape in accordance with Paragraph 5-170, to inside, keeping stitch lines as nearly centered under tape as possible. Tape shall extend at least 1/4 inch beyond stitching. Overlap ends of seam tape 1 inch.

3. Verify all repairs with either the air leak or water leak test. If no leaks are found coverall shall be returned RFI. (QA)

See SUPP D

4. Document in accordance with COMNAVAIR-FORINST 4790.2. (QA)

**5-518. REPAIRING/REINFORCING SMALL TEARS, SMALL RIPS, SMALL POROUS AREAS AND PINHOLES BY APPLYING HEAT CIRCLES OR SEAM TAPE.**

Materials Required

Quantity	Description	Reference Number
1	Pencil, China Marking Or, Chalk, Marking Cloth, Special Patch, Cloth 2-inch Diameter	SS-P-196 90309 MIL-C-85637 1370AS502-2
1	Roller, Hand 2 inch wide	A-A-3034 NIIN 00-243-9401
1	Sealer, heat, seam and patch or equivalent such as the DK8 as outlined in NAVAIR 17-10DC-1	MIL-S-85634 NIIN 01-186-7869
1	Tape, Seam, 1 1/2-inch	1370AS502-3
	Torque Wrench 0 - 100 in-lbs.	—

**WARNING**

See SUPP D

Prior to application of seam tape, Aircrew Survival Equipmentmen must be familiar with heat-sealing machine operating procedures in NAVAIR 17-10DC-1.

**CAUTION**

Temperature is critical, do not overheat.

**NOTE**

All tape or circles shall extend a minimum of 1/2 inch beyond damaged areas. Tape may be overlapped to achieve 1/2-inch margin.

**NOTE**

Normal use requires periodic torque adjustment of pressure bolt on heat-sealing machine to 75 +/- 2 in-lb.

1. Turn heat-sealing machine (see Figure 5-34) ON and wait approximately 10 minutes for visual thermometer to stabilize at 350 degrees F. If temperature is incorrect, adjust temperature control knob.

2. Center area to be repaired on anvil pad, ensuring only one layer of fabric is on anvil and there are no wrinkles in fabric.

3. Center patch, film-side down, on fabric of the coveralls.

4. Bring heat platen down, locking it in place.

5. Set timer for 20 seconds. When timer bell sounds, raise heat platen.

6. Smooth out wrinkles and air pockets with hand roller to prevent water leakage.

7. Verify all repairs with either the air leak or water leak test. If no leaks are found coverall shall be returned RFI. (QA)

See SUPP D

8. Document in accordance with COMNAVAIR-FORINST 4790.2. (QA)

See SUPP D

5-519. PROCEDURES FOR REPAIRING/ PATCHING LARGE RIPS OR TEARS.

Materials Required

Quantity	Description	Reference Number
1	Pencil, China Marking or, Chalk, Marking	SS-P-196 90309
As Req'd	Cloth, Special -or-	MIL-C-85637
As Req'd	Tape, Seam 14-inch (patches)	TBD (Note 1)
As Req'd	Thread, Nylon, Green	A-A-55217

Note: 1. Instructions for using the 14-inch seam tape patches will be added to this paragraph when the patches become available in the supply system.



High temperature resistant thread shall be used unless not available in supply. High temperature resistant thread does not propagate flame; nylon thread does.

NOTE

Straight stitching shall be Type 301 lock-stitch, 5 to 7 stitches per inch with minimum backstitch or overstretch of 1 inch. Stitching shall be 1/8-inch from raw edges.

Ensure area of coveralls to be patched has been thoroughly dried prior to patching. Round off corners of seam tape prior to application.

1. Lay coverall on flat surface, with the inside of the damaged area facing up. Butt damaged fabric edges together. With a china marker, mark a rectangular border around damaged area, at least 3/4-inch from raw edges.

2. Measure the dimensions of the damage border and, with a china marker, draw a duplicate shape on a new piece of Special Cloth. Cut out the repair piece.

3. Place repair piece (green side down) on top of the damaged area. Sew repair rectangle to damaged rectangle with 1 row of stitches 1/4-inch from rectangle edges.

4. Turn coverall right side out. Sew along raw damaged edges to the repair rectangle using 2 rows of stitches 1/16-inch apart, and keeping 1/8-inch from raw damaged edges.

NOTE

Tape or patch must extend 1 inch beyond damaged area. Tape or patches may be overlapped to meet the 1 inch requirement. Do not confuse "overlapping" with what is called "over-patching", which is attempting to repair damage by placing a new patch over an existing patch (basically patching a patch). Over-patching is not authorized; however, overlapping patches is authorized.

5. Turn suit inside out and apply 1 or 1 1/2-inch wide heat seal tape over all stitching per Paragraph 5-169.

6. Verify all repairs with either the air leak or water leak test. If no leaks are found coverall shall be returned RFI. (QA)

7. Document in accordance with COMNAVAIR-FORINST 4790.2. (QA)



# **5-520. PROCEDURES FOR REPAIRING/PATCHING LARGE HOLES.**

Materials Required		
Quantity	Description	Reference Number
1	Pencil, China Marking	SS-P-196
	-or-	
1	Chalk, Marking	90309
As Req'd	Cloth, Special	MIL-C-85637
As Req'd	Thread, Nylon, GREEN	A-A-55217

## **NOTE**

If hole is larger than 3-inch diameter, coverall has been exposed to atypical wear and should be submitted for possible condemning.

1. Turn coverall inside out and lay it on a flat surface, with the inside of the damaged area facing up. With a china marker, mark a circular border around the hole, at least 3/4-inch from raw edges. Do not butt edges together.

2. Draw up to a 4-inch identical circle on a new piece of Special Cloth. Cut out the repair circle.

## **NOTE**

To make hemming easier, stitch 3/8-inch from unhemmed edge of circle, overlapping stitching and not backstitching. Remove from sewing machine, leaving 6 inch tail of thread. Pull gently on the bobbin thread. This will force the outer edge of the circle to fold in on itself along the stitch line. Tie off the bobbin thread when the desired fold edge has been achieved.

3. Hem the repair circle by turning under 3/8-inch and stitching 1/8-inch from folded edge.

4. Turn the coverall right side out. Center the repair circle over the damaged area, and make alignment marks at even quarters on both the repair circle and the coverall.

5. Sew the repair circle to the coverall using one row of stitches 1/16-inch from the hemmed edge, maintaining alignment.

6. Turn coverall inside out. Apply seam tape in accordance with Paragraph 5-171, to inside, keeping stitch lines as nearly centered under tape as possible. Tape shall extend at least 1/4-inch beyond stitching and edge of slide fastener tape. Overlap ends of seam tape 1 inch.

7. Verify all repairs with either the air leak or water leak test. If no leaks are found coverall shall be returned RFI. (QA)

8. Document in accordance with COMNAVAIR-FORINST 4790.2. (QA)

# **5-521. I-LEVEL PROCEDURES FOR REPAIRING/PATCHING LARGE POROUS AREAS.**

Materials Required		
Quantity	Description	Reference Number
1	Pencil, China Marking	SS-P-196
	-or-	
1	Chalk, Marking	90309
As Req'd	Cloth Special	MIL-C-85637
As Req'd	Tape, Seam, 1 1/2-inch	1370AS502-3
As Req'd	Thread, Nylon, GREEN	A-A-55217

1. Turn coverall inside out and lay it on a flat surface, with the inside of the porous area facing up. With a china marker, mark a rectangular border around porous area.

2. Measure the dimensions of the porous border and, with a china marker, draw a duplicate shape on a new piece of Special Cloth. Cut out the repair piece.

3. Place repair rectangle (green side down) on top of the porous area. Sew repair rectangle over porous rectangle with 1 row of stitches 1/4-inch from repair rectangle edges.

## **NOTE**

Patches may not cover more than 25% area of a coverall panel. Patching an existing



patch over a large porous area is not authorized. Coveralls requiring over-patching shall be considered Beyond Economical Repair (BER) and Non-RFI.

- 4. Apply 1 inch seam tape to overlap both stitching and cut edges of repair rectangle on the inside of the coverall per Paragraph 5-168.
- 5. Verify all repairs with either the air leak or water leak test. If no leaks are found coverall shall be returned RFI. (QA)

6. Document in accordance with COMNAVAIR-FORINST 4790.2. (QA)

5-522. CLEANING.

5-523. For cleaning and treatment of Viking QDAES coveralls proceed as follows:

Materials Required

Quantity	Description	Reference Number
As Reqd	Detergent, General Purpose or Equivalent or Commercial*	MIL-D-16791

Simple Green Commercially obtained \*Cold Power, low suds powdered detergent, or equivalent, recommended for cold water.



Ensure that slide fasteners are closed prior to laundering/cleaning. Do not dry-clean. Do not use bleaches or similar additives for cleaning. Do not use commercial laundry facilities. Simple Green shall be used for spot cleaning only. Do not use hot air tumble dryers - they will damage the Viking.

- 1. Spots and areas suspected of having been in contact with acid compounds, grease, oil, etc., shall be swabbed with Simple Green.

- 2. Remove lining and gloves. Close slide fastener and hand launder the Viking QDAES (and the liner if necessary) or use an automatic washer that has a delicate cycle. Ensure water used is cold. Follow detergent manufacturer's recommendations for amount of detergent to use. Wash cycle shall not exceed 3 minutes.
- 3. Rinse garment three times. Use clean, fresh water for each rinse. Each rinse cycle shall be a minimum of 1 minute.
- 4. Remove the Viking QDAES from the machine and allow to air dry.

5-524. PACKING. [See SUPP D](#)

5-525. Repacking of the Viking QDAES Assembly can be accomplished by the Intermediate Level (I-Level) or Depot by returning it to Viking Life-Saving Equipment (America), Inc., in accordance with Paragraph 5-499. [See SUPP D](#)

5-526. If repacked at the I-Level or above, it will not be vacuum-sealed and it will have an inspection cycle of one year. [See SUPP D](#)

5-527. Before repacking, ensure the Viking QDAES has been inspected in accordance with Paragraph 5-511.

5-528. To repack the Viking QDAES Assembly perform the following:

- 1. Ensure slider is fully opened.
- 2. Stow the gloves in the glove pockets and secure with Velcro.
- 3. Fold each outside seam towards the zipper.
- 4. Fold the sleeves in toward the center.
- 5. Fold the hood down on to the body of the QDAES.
- 6. Fold the boots one on top of the other.
- 7. Roll the suit beginning at the boots.
- 8. Stow suit in storage container and secure. (QA)
- 9. Document in accordance with COMNAVAIR-FORINST 4790.2. (QA) [See SUPP D](#)