

TwentyTwenty® Plus™ Facepiece Push-To-Talk (PTT) Radio Communication System (RCS), Voice Projection System (VPS), Combination System (RCS and VPS), and Facepiece Modification Kit

P/Ns 964331, 964332, 964333, 964334, and 242131

INSTALLATION AND OPERATION INSTRUCTIONS

I. INTRODUCTION

This document provides instructions for the installation and operation of the TwentyTwenty® Plus™ Facepiece Push-to-Talk (PTT) Radio Communication System (RCS) Kit, P/Ns 964331 and 242161; the SmallTalk® Plus™ Voice Projection System (VPS) Kit, P/Ns 964332 and 242162; the combination RCS/VPS Kit, P/Ns 964333 and 242163; and the Facepiece Modification Kit, P/Ns 964334 and 242164; into SURVIVAIR TwentyTwenty Plus Facepiece Assemblies, P/Ns 2420XX and 2520XX. Kits may be installed only by SURVIVAIR-certified repair technicians. *You must read and understand this instruction sheet completely before attempting installation. You must read and understand these operation instructions and be trained in the proper use of the equipment before using it in a contaminated or hazardous atmosphere.*



WARNING

The Operation Instructions supplied with this kit must be provided to the user of the modified SCBA. Failure to provide these operation instructions to the user of the modified SCBA may lead to personal injury, illness, or death.

NOTE

All SURVIVAIR-certified technicians are required to remain current on new procedures and parts through SURVIVAIR's published Technical Bulletins, technical manual revisions, and certification seminars.

II. SAFETY PRECAUTIONS

The Warnings, Cautions, and Notes contained in this manual have the following significance:



WARNING

Maintenance or operating procedures and techniques that may result in personal injury, illness, or death if not carefully followed.

CAUTION

Maintenance or operating procedures and techniques that may result in damage to equipment if not carefully followed.

NOTE

Maintenance or operating procedures and techniques or information considered important enough to emphasize.

III. DESCRIPTION

The SURVIVAIR TwentyTwenty Plus Facepiece PTT Radio Communication System Kit may be installed on TwentyTwenty Plus facepieces to enable users to communicate by two-way radio. Interface cables for connecting the facepiece microphone and ear speaker to the user's particular brand and model of radio are not part of the kit and must be purchased separately from SURVIVAIR. The interface cable permits the user to transmit from the mask-mounted microphone and hear incoming radio transmissions through the ear speaker. Part numbers of radio cables available from SURVIVAIR are listed in the Accessory List section.



WARNING

• The SURVIVAIR TwentyTwenty Plus RCS is certified as intrinsically safe. The RCS must be connected to a radio that is intrinsically safe in order for the entire system to be considered intrinsically safe. If the RCS is connected to a radio that is not intrinsically safe, then the entire system is not intrinsically safe.

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⚠ WARNING—Continued

- Use of non-SURVIVAIR interface cables voids intrinsic safety certification.
- Failure to comply with this warning may lead to personal injury, illness, or death.

The SURVIVAIR SmallTalk Plus Voice Projection System Kit may be installed on TwentyTwenty Plus facepieces to facilitate clear, high-volume voice communications between users within normal voice communication range. The VPS connects the facepiece-mounted microphone to a facepiece-mounted amplifier and speaker to extend speech clarity and range beyond the output available using speaking diaphragms. Since the VPS speaker output is proportional to the speaker's voice volume, the intensity and urgency of any communication is projected through the VPS.

IV. PARTS LIST

RCS Kit

964331	242161		
		QTY.	QTY.
1	1	941862	Microphone Assembly
1	1	964228	Communications Nozzle Assembly
1	—	968881	Communications Cover w/RCS Module
—	1	242151	Communications Cover w/RCS Module
1	1	962330	Ear Speaker Screw
1	—	964199	Ear Speaker Assembly
—	1	964133	Ear Speaker Assembly
2	2	846014	Lock Washer, Split, No. 4, Stainless Steel
2	2	839528	Screw, Phillips, 4-40 x 0.50", Stainless Steel, Pan Head
1	1	962024	Retainer, Cable Assy., Ear Speaker
1	1	962240	Installation and Operation Instructions

VPS Kit

964332	242162		
		QTY.	QTY.
1	1	941862	Microphone Assembly
1	1	964228	Communications Nozzle Assembly
1	—	968882	Communications Cover
—	1	242152	Communications Cover
1	—	963111	VPS Module
—	1	963112	VPS Module
1	1	961616	9-volt NEDA 10644 Alkaline Battery
2	2	846014	Lock Washer, Split, No. 4, Stainless Steel
2	2	839528	Screw, Phillips, 4-40 x 0.50", Stainless Steel, Pan Head
1	1	962240	Installation and Operation Instructions

Facepiece Modification Kit

964334	242164		
		QTY.	QTY.
1	1	941862	Microphone Assembly
1	1	964228	Communications Nozzle Assembly
1	—	968882	Communications Cover
—	1	242152	Communications Cover
2	2	846014	Lock Washer, Split, No. 4, Stainless Steel
2	2	839528	Screw, Phillips, 4-40 x 0.50", Stainless Steel, Pan Head
1	1	962240	Installation and Operation Instructions

Combination RCS/VPS Kit

964333	242163		
		QTY.	QTY.
1	1	941862	Microphone Assembly
1	1	964228	Communications Nozzle Assembly
1	—	968881	Communications Cover w/RCS Module
—	1	242151	Communications Cover w/RCS Module
1	—	963111	VPS Module
—	1	963112	VPS Module
1	1	961616	9-volt NEDA 10644 Alkaline Battery
1	1	962330	Ear Speaker Screw
1	—	964199	Ear Speaker Assembly
—	1	964133	Ear Speaker Assembly
2	2	846014	Lock Washer, Split, No. 4, Stainless Steel
2	2	839528	Screw, Phillips, 4-40 x 0.50", Stainless Steel, Pan Head
1	1	962024	Retainer, Cable Assembly, Ear Speaker
1	1	962240	Installation and Operation Instructions

V. TOOL LIST

1. 9/64" Allen hex key wrench
2. #1 Phillips head screwdriver
3. 3/16" flat-blade screwdriver
4. 5/16" open-end wrench

VI. RADIO COMPATIBILITY AND CABLE PART NUMBERS

Refer to the current year's *Self-Contained Breathing Apparatus (SCBA) and Supplied Air Respirators (SAR) Suggested List Price* book for compatibility and associated cable part numbers.

NOTE

The TwentyTwenty Plus RCS may not be compatible with every radio model on the market; custom modifications to the RCS and/or the RCS cable may be required for some models.

Cables for other radios are available by special order. Contact SURVIVAIR for information regarding intrinsic safety certification of radio cables.

VII. INSTALLATION

NOTE

Retain all disassembled parts for reinstallation unless specifically instructed to discard the part.

1. Insert your finger into the AIR KLIC to press the ratchet down while unscrewing the AIR KLIC. See Figure 1.

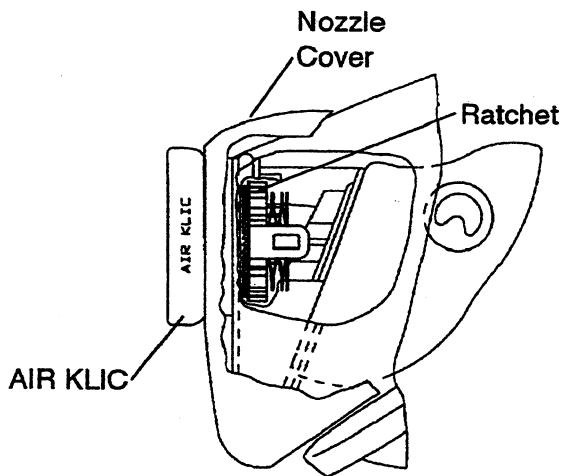


Figure 1. AIR KLIC Removal

2. Remove and discard the nozzle cover from the facepiece.
3. Remove the nozzle assembly from the facepiece lens.

4. From the nozzle assembly, remove the nose cup, speaking diaphragm, o-ring, ratchet ring, and ratchet spring. See Figure 2.

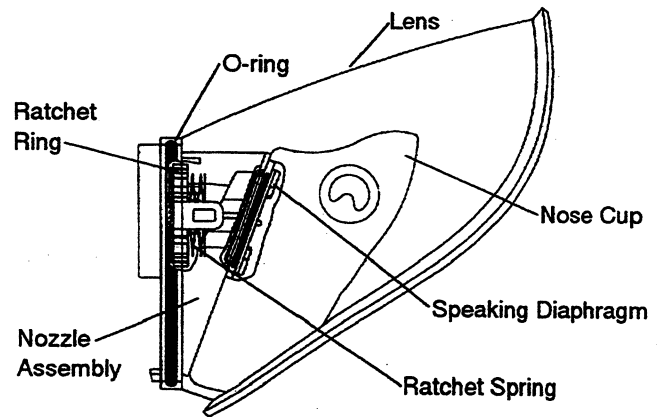


Figure 2. Nozzle Assembly

5. Install the o-ring, ratchet spring, and ratchet ring onto the new nozzle.
6. Reinstall the speaking diaphragm and tighten it using the AIR KLIC removal tool.
7. Position the holes in the microphone "legs" over the nozzle inserts. See Figure 3.

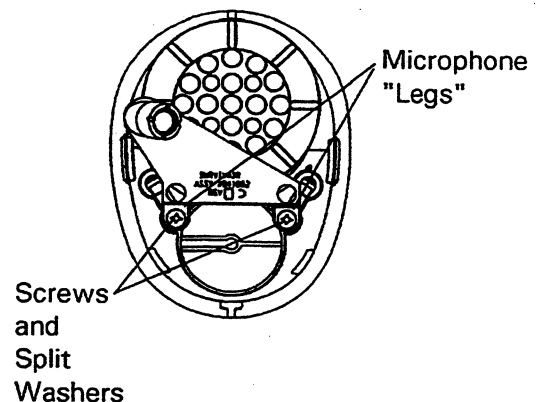


Figure 3. Attach Microphone

8. Place a split washer, P/N 846014, onto each screw, P/N 839528, and install screws into the inserts.

NOTE

Do not overtighten the screws.



WARNING

Verify that the speaking diaphragm o-ring is seated properly after tightening. Failure to comply with this warning may lead to personal injury, illness, or death.

9. Reinstall the nose cup onto the nozzle.
10. Insert and position the nozzle into the facepiece lens.
11. Place the communications cover on the lens, ensuring that the contact pins on the cover are properly positioned and inserted into the microphone contacts in the nozzle.
12. Reinstall the AIR KLIC adapter.
13. Verify that the ratchet mechanism is functioning by attempting to unscrew the AIR KLIC adapter.

NOTE

Instructions 14 through 18 are for the RCS Kit, P/Ns 964331 and 242161, and the Combination RCS/VPS Kit, P/Ns 964333 and 242163, only. If you are installing the VPS Kit, P/Ns 964332 or 242162, or the Facepiece Modification Kit, P/Ns 964334 or 242164, skip to step 19 of this section.

14. Using the 9/64" Allen wrench, remove the hex head screw from the facepiece rim on the left side of the facepiece (looking out through the facepiece from the wearer's perspective) and discard the screw.
15. Install the 1-1/8 inch ear speaker screw in place of the discarded screw and tighten.
16. Install the wireform attached to the ear speaker as shown in Figure 4.
17. Slide the ear speaker forward onto the wireform until it snaps into place in a locked position.
18. Insert the ear speaker cable through the Nomex retainer. See Figure 5.
19. Connect the ear speaker cable to the RCS. Insert the end of the ear speaker retainer into the lower slot on the rim. Removal of the lower silicone strap may be necessary to facilitate installation. See Figures 6 and 7.

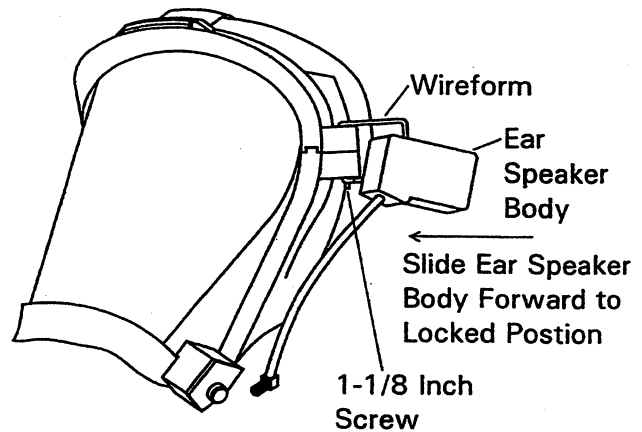


Figure 4. Position Ear Speaker Bracket

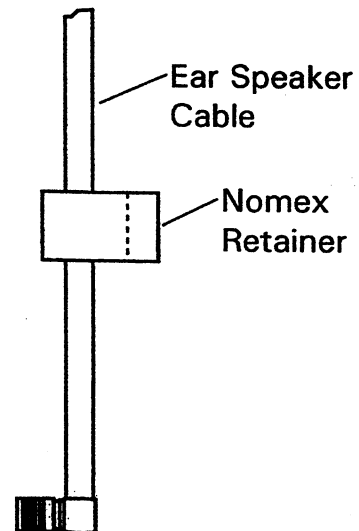


Figure 5. Insert Ear Speaker Cable through Nomex Retainer

NOTE

Instructions 20 through 22 are for the VPS Kit, P/Ns 964332 and 242162, and the Combination RCS/VPS Kit, P/Ns 964333 and 242163, only. If you are installing the RCS Kit, P/Ns 964331 or 242161, skip to the next section.

20. Align the slots on the inside of the amplifier with the top of the adapter mounting plate. Slide the amplifier onto the plate until the amplifier locks into place.

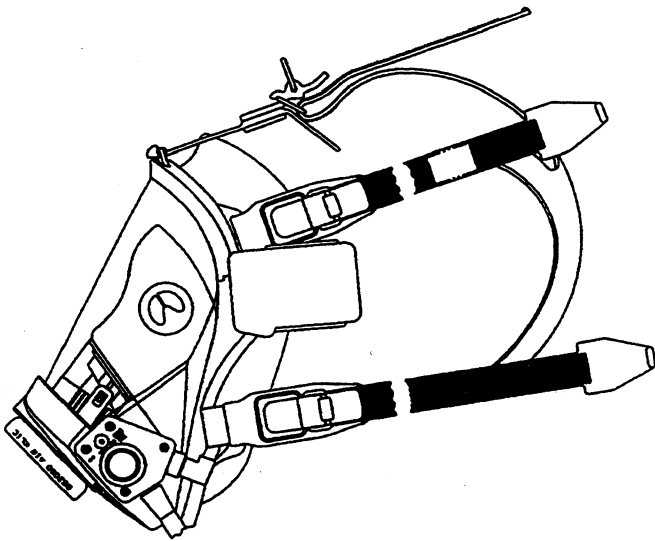


Figure 6. Ear Speaker Cable Configuration

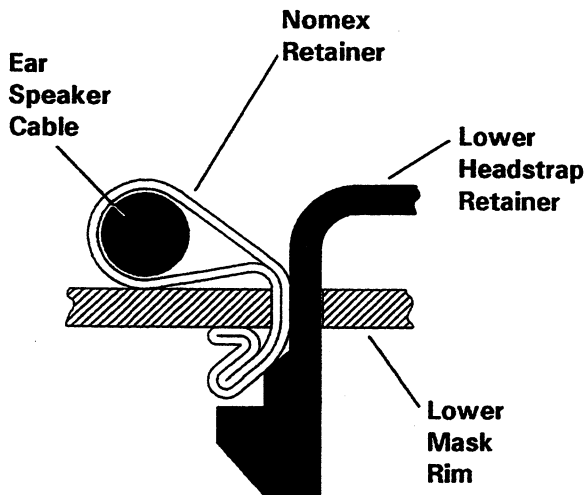




Figure 7. Ear Speaker Cable Configuration—
Sectioned Side View

 WARNING
<p>A 9-volt battery meeting National Electronics Distributor Association (NEDA) Standard 1604 (a Duracell MN1604/MX1604, Energizer No. 522, Panasonic 6AM-6/6LR61[GA], Sanyo GES-AM4-9V, or Rayovac A1604) must be used in order to maintain the intrinsic safety certification of this product. Failure to comply with this warning may lead to personal injury, illness, or death.</p>

21. Snap open the battery case door. (If necessary, insert the blade of the screwdriver between the door locking tab and the battery case and twist.) Install the 9-volt battery as shown on the battery orientation decal located adjacent to the battery door inside the battery compartment.

22. To remove the amplifier from the adapter, push the locking lever away from the facepiece centerline to disengage the locking tab, and push upward on the bottom of the battery case to slide the amplifier off of the adapter mounting plate.

VIII. TESTING

 WARNING
<p>If any of the tests indicate that the radio communication system or the voice projection system is not operating properly, remove it from service and send it to the SURVIVAIR factory. Failure to comply with this warning may lead to personal injury, illness, or death.</p>

NOTE

Call SURVIVAIR Customer Service at (800) 821-7236 for a return merchandise authorization (RMA). When returning defective apparatus, refer to the test step below in which the failure was observed.

1. Don the facepiece and perform positive and negative pressure leak checks using the procedure described in the appropriate Panther SCBA Operation Manual.

NOTE

Instruction 2 is for the RCS Kit, P/Ns 964331 and 242161, and the Combination RCS/VPS Kit, P/Ns 964333 and 242163, only. If you are installing the VPS Kit, P/Ns 964332 or 242162, or the Facepiece Modification Kit, P/Ns 964334 or 242164, skip to instruction 3.

2. Operate the radio and RCS in accordance with the instructions in Section IX. A. below. If the system does not operate properly, return it to SURVIVAIR.

NOTE

- Instruction 3 is for the VPS Kit, P/Ns 964332 and 242162, the Combination RCS/VPS Kit, P/Ns 964333 and 242163, and the Facepiece Modification Kit, P/Ns 964334 and 242164, only. If you are installing the RCS Kit, P/Ns 964331 or 242161, skip to the next section.

- A surrogate amplifier and battery are required in order to test the Facepiece Modification Kit, P/Ns 964334 and 242164.

3. Operate the VPS in accordance with the instructions in Section IX. B. below. If the system does not operate properly, return it to SURVIVAIR.

IX. OPERATION

A. RCS Operation (P/Ns 964331, 242161, 964333, and 242163 only)

1. Attach the RCS to an appropriate radio interface cable, and attach the other end of the cable to the radio.
2. Adjust the radio volume and squelch in accordance with the radio manufacturer's instructions. No other adjustment is required to receive radio messages.
3. To transmit, fully press and hold the PTT button on the RCS module and speak into the facepiece microphone.

NOTE

For the Combination RCS/VPS System, P/Ns 964333 and 242163, set the amplifier to Constant-on Mode. Verify that the PTT button on the RCS module cuts off the amplifier when it is depressed, and that the amplifier resumes function when the PTT is released.

4. To receive transmissions, release the PTT button.

B. VPS Operation (P/Ns 964334, 242164, 964332, 242162, 964333, and 242163 only)

There are two ways to operate the VPS:

- Constant On mode
- Push-to-talk mode

1. Constant On mode

- a. Hold the facepiece closely in front of your face.
- b. Push the button on the top of the amplifier twice within two (2) seconds. (The second push must be made within 2 seconds of the first push; otherwise it will automatically shut off.) The LED will light.

NOTE

- If the LED does not light, verify that the battery is installed as shown on the battery orientation decal next to the battery door. Clean the battery contacts if they show evidence of corrosion. If the battery contacts are clean and the battery is installed correctly, but the LED still does not light, replace the battery.
 - If the LED flashes, the VPS battery is low. Replace the battery as soon as possible.
- c. Speak into the facepiece. Your amplified voice should be projected from the speaker.
 - d. Push the button twice within 2 seconds to turn off the VPS.

NOTE

If the speaker is inactive, check all electrical connections. Verify that the amplifier wire contacts and contact plates are clean, the adapter mounting screws are fastened securely, and the microphone leads are installed correctly and securely.

- e. If no voice input is detected in 20 minutes (± 30 seconds), the VPS automatically shuts off.

2. Push-to-talk mode

- a. Hold the facepiece closely in front of your face.
- b. Push down the button on the top of the amplifier until the LED lights.

NOTE

- If the LED does not light, verify that the battery is installed as shown on the battery orientation decal next to the battery door. Clean the battery contacts if they show evidence of corrosion. If the battery contacts are clean and the battery is installed correctly but the LED still does not light, replace the battery.
 - If the LED flashes, the VPS battery is low. Replace the battery as soon as possible.
- c. Hold the button down and speak into the facepiece. Your amplified voice should be projected from the amplifier speaker.
 - d. Release the button to turn off the amplifier.

NOTE

If the speaker is inactive, check all electrical connections. Verify that the amplifier wire contacts and contact plates are clean, the adapter mounting screws are fastened securely, and the microphone leads are installed correctly and securely.

X. MAINTENANCE

A. RCS Cleaning (P/Ns 964331, 242161, 964333, and 242163 only)


Clean the facepiece as described in the appropriate SCBA or SAR Operation Manual. The RCS, microphone, ear speaker, and cable assemblies can be washed in warm soapy water solutions and can be rinsed without being covered.

B. VPS Cleaning (P/Ns 964334, 242164, 964332, 242162, 964333, and 242163 only)

Remove the VPS amplifier from the facepiece, and clean the facepiece as described in the appropriate Panther SCBA or SAR Operation Manual. The RCS, microphone, ear speaker, and cable assemblies can be washed in warm soapy water solutions and can be rinsed without being covered. Clean the VPS amplifier with a mild solution of nonionic soap (such as dishwasher soap) or detergent in warm water. A

soft brush may be used to gently clean slots and other grime-gathering receptacles. Rinse all parts before drying. The amplifier can withstand brief immersions in cleaning and rinsing solutions if necessary. Dry immediately and thoroughly.

C. VPS Battery Replacement (P/Ns 964332, 242162, 964333, and 242163 only)

 WARNING
<p>A 9-volt battery meeting National Electronics Distributor Association (NEDA) Standard 1604, (a Duracell MN1604/MX1604, Energizer No. 522, Panasonic 6AM-6/6LR61[GA], Sanyo GES-AM4-9V, or Rayovac A1604), must be used in order to maintain the intrinsic safety certification of this product. Failure to comply with this warning may lead to personal injury, illness, or death.</p>

1. Remove the VPS amplifier from the facepiece and snap open the battery case door. (If necessary, insert the blade of the screwdriver between the door locking tab and the battery case and twist.)
2. Install the 9-volt battery as shown on the battery orientation decal located adjacent to the battery door inside the battery compartment.

D. RCS Storage (P/Ns 964331, 242161, 964333, and 242163 only)

Inspect and clean the RCS as required before storing.

1. Disconnect the radio cable from the RCS module and place the facepiece in a plastic mask bag.
2. Store away from dust, sunlight, extremes of heat and cold, excessive moisture, and damaging chemicals.

E. VPS Storage (P/Ns 964332, 242162, 964333, and 242163 only)

Inspect and clean the VPS components before storing.

1. Verify that the LED is not lighted. If the unit was left on by accident, the VPS will shut off automatically in 20 minutes if it detects no voice input.
2. Verify that the unit is dry and undamaged.
3. For longer term storage, remove the amplifier from the facepiece assembly and remove the battery from the amplifier. Place all parts in bags and store in a dry, chemical-free area not subject to extremes of heat and cold.

XI. ADDITIONAL INFORMATION

If you need additional information on any SURVIVAIR product, consult your local distributor or contact:

SURVIVAIR

A Bacou-Dalloz Company

3001 South Susan Street

Santa Ana, CA 92704

(714) 545-0410 OR (800) 821-7236

FAX (800) 201-4407


XII. WARRANTY AND LIMITATION OF LIABILITY

LIMITED WARRANTY: SURVIVAIR® warrants this product to be free from defects in materials and workmanship for one year from the date of purchase. During this period, SURVIVAIR will repair or replace defective parts, at SURVIVAIR's option. Freight charges to and from the SURVIVAIR factory shall be paid by the purchaser.

EXCLUSIONS: NOTWITHSTANDING ANY CONTRARY TERM IN THE PURCHASER'S PURCHASE ORDER OR OTHERWISE, THE ONLY WARRANTY EXTENDED BY SURVIVAIR IS THE EXPRESSED LIMITED WARRANTY DEFINED ABOVE. THIS WARRANTY IS EXCLUSIVE AND IN LIEU OF ANY IMPLIED WARRANTY OF MERCHANTABILITY, OR FITNESS FOR A PARTICULAR PURPOSE.

CONDITIONS: To maintain this warranty this product must be used, maintained, and inspected as prescribed in the owner's instruction manual, including prompt replacement or repair of defective parts and such other necessary maintenance and repair as may be required. Normal wear and tear, and parts damaged by abuse, misuse, negligence or accidents are specifically excluded from this warranty.

LIMITATION OF LIABILITY: No other oral warranties, representations, or guarantees of any kind have been made by SURVIVAIR, its distributors, or the agents of either of them, that in any way alter the terms of this warranty. **EXCEPT AS HEREIN PROVIDED, SURVIVAIR SHALL HAVE NO LIABILITY FOR ANY LOSS OR DAMAGE, WHETHER DIRECT, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL, TO ANY PURCHASER OR USER OF THIS PRODUCT ARISING FROM THE SALE, USE, OR OPERATION OF THIS PRODUCT.**

 WARNING
<p>The failure to use and maintain this equipment in strict conformance with the applicable instruction manual may result in personal injury, illness, or death. The equipment's use in any manner that is not expressly authorized pursuant to the applicable instruction manual may result in severe adverse impacts to human health.</p>