

TwentyTwenty® Plus™ Facepiece Radio Communication System (RCS) Voice Projection System (VPS) Combination System (RCS and VPS) and Facepiece Modification Kit

P/Ns 242135, 242136, 242137, & 242138

INSTALLATION AND OPERATION INSTRUCTIONS

I. INTRODUCTION

This document provides instructions for the installation and operation of the TwentyTwenty® Plus™ Facepiece CommCommand™ Radio Communication System (RCS) Kit, P/N 242135; the Voice Projection System (VPS) Kit, P/N 242136; the combination RCS/VPS Kit, P/N 242137; and the Facepiece Modification Kit, P/N 242138 into Sperian TwentyTwenty Plus Facepiece Assemblies, P/Ns 2420XX, 2520XX, and 2720XX. **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

- Changes not expressly approved by Sperian could void the user's authority to operate the equipment.
- This product complies with FCC OET Bulletin 65 radiation exposure limits set forth for an uncontrolled environment.
- Operation is subject to the following two conditions: (1) This device may not cause harmful interference; and (2) this device must accept any interference received, including interference that may cause undesired operation.
- All Sperian-certified technicians are required to remain current on new procedures and parts through Sperian'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 Sperian CommCommand Radio Communication System Kit may be installed on TwentyTwenty Plus facepieces to enable users to communicate by two-way radio. Lapel microphones are not part of the kit and must be purchased separately from Sperian. The Sperian CommCommand 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.



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IV. PARTS LIST

RCS Kit - 242135

P/N	QTY	DESCRIPTION
941887	1	Microphone Assembly
964228	1	Nozzle Assembly, Communications System Kit
968883	1	Cover, Communications, VPS
962775	1	RCS Module
975033	1	Installation and Operation Instructions
995531	1	Warranty Card
995537	1	Warranty Card Envelope
846014	2	Split Washer, Spring , # 4, Stainless Steel
939528	2	Screw, # 4-40 x 1/2", Pan Head, Stainless Steel

VPS Kit - 242136

P/N	QTY	DESCRIPTION
941887	1	Microphone Assembly
964228	1	Nozzle Assembly, Communications System Kit
968883	1	Cover, Communications, VPS
963113	1	VPS Module
975033	1	Installation and Operation Instructions
995531	1	Warranty Card
995537	1	Warranty Card Envelope
846014	2	Split Washer, Spring , # 4, Stainless Steel
939528	2	Screw, # 4-40 x 1/2", Pan Head, Stainless Steel

RCS/VPS Kit - 242137

P/N	QTY	DESCRIPTION
941887	1	Microphone Assembly
964228	1	Nozzle Assembly, Communications System Kit
968883	1	Cover, Communications, VPS
962775	1	RCS Module
963113	1	VPS Module
975033	1	Installation and Operation Instructions
995531	1	Warranty Card
995537	1	Warranty Card Envelope
846014	2	Split Washer, Spring , # 4, Stainless Steel
939528	2	Screw, # 4-40 x 1/2", Pan Head, Stainless Steel

Facepiece Modification Kit - 242138

P/N	QTY	DESCRIPTION
941887	1	Microphone Assembly
964228	1	Nozzle Assembly, Communications System Kit
968883	1	Cover, Communications, VPS
964227	1	Nozzle Assembly, Communications Configurator
975033	1	Installation and Operation Instructions
995531	1	Warranty Card
995537	1	Warranty Card Envelope
846014	2	Split Washer, # 4, Stainless Steel
839528	2	Screw, # 4-40 x 1/2", Pan Head, Stainless Steel

V. TOOL LIST

- #1 Phillips head screwdriver
- 3/16" flat-blade screwdriver

VI. INSTALLATION

NOTE

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

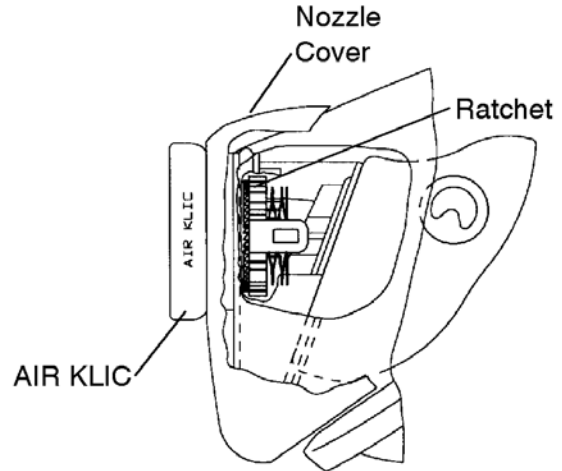


Figure 1. AIR KLIC Removal

1. Insert your finger into the AIR KLIC to press the ratchet down while unscrewing the AIR KLIC. See Figure 1.
2. Remove and discard the nozzle cover from the facepiece.
3. Remove the nozzle assembly from the facepiece lens.

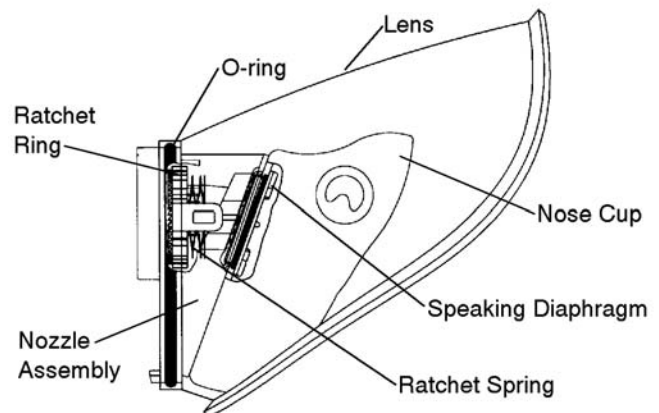


Figure 2. Nozzle Assembly

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

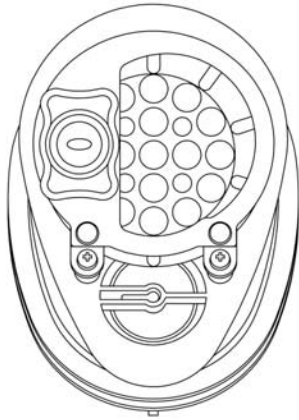


Figure 3. Attach Microphone

⚠ 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.

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.
8. Place a split washer, P/N 846014, onto each screw, P/N 839528. Using a #1 Phillips screwdriver, install the screws into the inserts.

NOTE

Do not overtighten the screws.

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 properly by attempting to unscrew the AIR KLIC adapter. The AIR KLIC should not unscrew.

VII. INSTALLATION INSTRUCTIONS

NOTE

Instructions 14 through 17 are for the RCS Kit, P/N 242135, and the RCS/VPS Kit, P/N 242137, only. If you are installing the VPS Kit, P/N 242136, skip to step 18 of this section.

14. Locate the mounting slot on the bottom of the RCS and the user's left mounting tab on the Nozzle Cover Assembly (NCA).

15. Position the RCS's mounting slot on the mounting tab of the NCA.

16. Pivot the RCS upward on the NCA's mounting tab until the RCS's thumbscrew (on the RCS's mounting bracket) is positioned directly over the threaded screw hole of the NCA .

17. Holding the RCS firmly over the NCA's threaded hole, tighten the thumbscrew until the RCS is securely mounted.

NOTE

Instructions 18 through 21 are for the VPS Kit, P/N 242136, and the RCS/VPS Kit, P/N 242137, only. If you are installing the RCS Kit, P/N 242135, skip to the next section.

18. Locate the mounting slot on the bottom of the VPS and the user's right mounting tab on the Nozzle Cover Assembly (NCA).

19. Position the VPS's mounting slot on the mounting tab of the NCA.

20. Pivot the VPS upward on the NCA's mounting tab until the VPS's thumbscrew (on the VPS's mounting bracket) is positioned directly over the threaded screw hole of the NCA.

21. Holding the VPS firmly over the NCA's threaded hole, tighten the thumbscrew until it is tight and the VPS is securely mounted.

⚠ WARNING

Use only AAA 1.5 volt batteries meeting National Electronics Distributor Association (NEDA) Standard 24A (Energizer No. E92 and Duracell 2400), to maintain the intrinsic safety certification of this product. Failure to comply with this warning may lead to personal injury, illness, or death.

VIII. TESTING

⚠ WARNING

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 Sperian factory. Failure to comply with this warning may lead to personal injury, illness, or death.

NOTE

Call Sperian 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 Warrior SCBA Operation Manual.

NOTE

- Instruction 2 is for the VPS Kit, P/N 242136, and the Facepiece Modification Kit, P/N 242138, only.
- A surrogate amplifier and battery are required in order to test the Facepiece Modification Kit, P/N 242138.

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

IX. OPERATION

A. RCS Operation (P/Ns 242135 and 242137 only)

Prior to the first time using an RCS and Lapel Microphone (LM) together, they must be mated.

1. The LM must be plugged into a radio and the radio must be turned on.
2. Hold the RCS within 2 inches of the LM and push the power button on the RCS. The status light on the RCS will begin to blink green.
3. Push the link (black) button on the LM. The status light will blink three times then turn solid green, meaning the RCS and LM are mated.
4. To use the RCS and LM together at any time after mating, they must be linked. To determine if an RCS and LM are linked, the LM must be plugged into a radio, the radio must be turned on, and the RCS must be turned on. If they are linked, the green status lights on each unit will be on and solid. If not, the status lights will blink every few seconds. To remain linked, the RCS and LM must not be more than 30 inches apart.

1. To transmit, fully press and hold the Push-To-Talk (PTT) button on the LM and speak into the facepiece microphone.
2. To receive transmissions, release the PTT button.
3. To send out an emergency distress call, push the emergency (red) button on the LM. The LM will transmit the distress call to the radio, where the radio's programmed distress signal will be sent out.

NOTE

- If the status LED on the RCS does not light, verify the batteries are installed as shown on the battery door. Clean the battery contacts if

they show evidence of corrosion. If the battery contacts are clean and the batteries are installed correctly but the LED still does not light, replace the batteries.

- If the LED on the RCS flashes amber, the batteries are low. Replace the batteries as soon as possible,
- If the status LED on the LM does not light, verify the batteries are 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 batteries are installed correctly but the LED still does not light, replace the batteries.
- If the battery status LED flashes amber, the batteries are low. Replace the batteries as soon as possible.

B. Stand Alone Lapel Microphone

The lapel microphone can be used without the RCS module if plugged into a radio. The stand alone lapel microphone will work with or without batteries because it is powered by the radio.

1. Turn on the radio and adjust the volume and squelch in accordance with the radio manufacturer's instructions. No other adjustment is required to receive radio messages.
2. To transmit, fully press and hold the PTT button on the lapel microphone and speak into the local microphone on the LM.
3. To receive transmissions, release the PTT button. The LM speaker volume is controlled by adjusting the radio volume.
4. To send out an emergency distress call, push the emergency (red) button on the LM. The LM will transmit the distress call to the radio where the radio's programmed distress signal will be sent out.

To use the LM in stand alone mode after using it while linked to an RCS module, you must first unlink the RCS and LM. To unlink the RCS and LM, you must power off the RCS by pushing the power button, then either:

- wait four seconds for the LM to automatically unlink from the RCS.
- turn the radio off, then on.

NOTE

- If the status LED on the LM does not light, verify the batteries are installed as shown on the battery orientation decal next to the battery door. Clean the contacts if they show evidence of corrosion. If the battery contacts are clean and the batteries are installed correctly but the LED still does not light, replace the batteries.

- If the battery status LED flashes amber, the batteries are low. Replace the batteries as soon as possible.

There are two ways to operate the VPS:

- Constant On mode
- Push-to-talk mode

1. Constant On mode

- Hold the facepiece closely in front of your face.
- 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 batteries are 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 batteries are installed correctly, but the LED still does not light, replace the batteries.
- If the LED flashes, the VPS batteries are low. Replace the batteries as soon as possible.
 - Speak into the facepiece. Your amplified voice should be projected from the speaker.
 - 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.

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

2. Push-to-talk mode

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

NOTE

- If the LED does not light, verify that the batteries are 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 batteries are installed correctly, but the LED still does not light, replace the batteries.
- If the LED flashes, the VPS batteries are low. Replace the batteries as soon as possible.

- Hold the button down and speak into the facepiece. Your amplified voice should be projected from the amplifier speaker.
- 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.

IX. MAINTENANCE

A. Cleaning

Remove the VPS and/or RCS 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 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 VPS can withstand brief immersions in cleaning and rinsing solutions if necessary. Dry immediately and thoroughly.

B. VPS/RCS Battery Replacement

 WARNING
<p>Use only AAA 1.5 volt batteries meeting National Electronics Distributor Association (NEDA) Standard 24A, (Energizer No. E92 and Duracell 2400), to maintain the intrinsic safety certification of this product. Failure to comply with this warning may lead to personal injury, illness, or death.</p>

NOTE

- Sperian recommends that you install new batteries after each incident. The batteries can be replaced when the VPS is removed or installed on the mask.
 - Make sure that the VPS or RCS is turned OFF before replacing the batteries. When OFF, no LED will be illuminated.
- Hold down the battery compartment door and unscrew the thumbscrew counterclockwise.
 - Remove and discard existing batteries
 - Noting the polarity of the batteries, install three (3) new Energizer E92 or Duracell 2400 AAA batteries. Two of the batteries are stacked on top of each other, with the positive (+) terminal up. The remaining battery is installed with the negative (-) terminal up.
 - Close the battery door and apply pressure to it while tightening the thumbscrew completely.

C. Lapel Microphone Battery Replacement

It is recommended that new batteries be installed after each incident.

Before servicing the batteries, make sure that the LM is turned OFF. When OFF, no LED will be illuminated.

1. While holding down the battery door, unscrew the battery door screw counterclockwise until it is disengaged from the LM.
2. Open the battery door and discard the existing batteries.
3. Note the battery polarities on the battery label on the back of the LM and install three (3) new Energizer-brand AAA batteries.
4. Close the battery door. While applying pressure to the battery door, tighten the screw completely.

D. Storage

Inspect and clean the components before storing.

1. Verify that the LED is not lighted. If the unit was left on by accident, the VPS or RCS 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.

X. ADDITIONAL INFORMATION

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

Sperian Respiratory Protection USA, LLC
3001 South Susan Street
Santa Ana, CA 92704
(714) 545-0410 OR (800) 821-7236
FAX (800) 201-4407

 **WARNING**

To Prevent ignition of a hazardous atmosphere, batteries must only be changed in an area known to be nonhazardous.

 **AVERTISSEMENT**

A fin de prevenir l'inflammation d'atmospheres dangereuses, ne changer les batteries que dans des emplacements designes non dangereux.

XI. WARRANTY AND LIMITATION OF LIABILITY

LIMITED WARRANTY: Sperian warrants this product to be free from defects in materials and workmanship for one year from the date of purchase. During this period, Sperian will repair or replace defective parts, at Sperian's option. Freight charges to and from the Sperian 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 Sperian 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 Sperian, its distributors, or the agents of either of them, that in any way alter the terms of this warranty. **EXCEPT AS HEREIN PROVIDED, Sperian 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**

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.