Information contained in this manual is technically accurate at the time of this printing. Updates are made periodically to the information herein.

If you have comments please forward them to Avon.

THANK YOU

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Congratulations on receiving the innovative next generation protective mask. The FM50 Protective Mask is designed to provide the operator with the maximum level of protection, when fitted with the appropriate filters, to the face, eyes, and respiratory tract from Chemical, Biological, Radiological and Nuclear (CBRN), riot control agents and certain Toxic Industrial Chemicals (TICs).

The FM50 Protective Mask is available in three sizes marked with letters as listed: Small (S), Medium (M), or Large (L).

The major features of the mask is the butyl & silicon rubber blended facepiece that increases protection and comfort; twin conformal filters for reduced inhalation resistance; reduced exhalation resistance; improved field of view through a flexible, single polyurethane eyelens; and compatibility with a wide range of equipment.

This manual covers level 1 operator and level 2 maintenance tasks.
2. Warnings and Cautions

**WARNING**

FAILURE TO OBSERVE THESE WARNINGS MAY RESULT IN INJURY OR DEATH!

- Primary filters are for use with the FM50 Protective Mask only. These filters will not seal on other masks leading to serious injury or death.

- Primary filters must be installed prior to fitting or donning of the FM50. The operator will be unable to breathe if both filters are removed from the mask.

- The operator must read and fully understand these operator instructions prior to use.

- The operator must have received training in the use of the mask including, but not limited to: pre-use check, donning, doffing (removal), operational use and maintenance.

- Sizing and fitting procedures must be performed by a trained (level 2) technician. Operator safety depends on a properly fitted mask. The mask must be sized and fitted for the individual operator following the procedures given in these instructions. Injury or death can occur if the mask does not properly fit.

- It is important to conduct proper care, maintenance and keep the mask clean. An improperly maintained mask may compromise its ability to provide you maximum protection.

- The mask is not intended for use in enclosed or confined space or oxygen deficient environment.
FAILURE TO OBSERVE THESE WARNINGS MAY RESULT IN INJURY OR DEATH!

• Always select the correct size of mask for each individual operator. Operators are advised to conduct a quantitative fit test to confirm the correct mask size has been selected.

• Always don and doff the mask in an area known to be free of contaminants.

• Always perform a satisfactory negative pressure check before entering a contaminated area.

• Keep a cleanly shaven face to enhance a good seal. Operators shall remove all hairpins, combs, hair knots, buns, or braids that will interfere with the seal of the mask.

• Do not use abrasive or solvent cleaners of any sort to clean the mask.

• Do not wear contact lenses when wearing the mask.

• Specialist maintenance, other than the normal operator checks (Level 1) specified in this manual, must be performed by an Avon certified service center or by Avon certified (Level 2) technician.
3. Sizing and Fitting Procedures

**WARNING**

PRIMARY FILTERS MUST BE INSTALLED PRIOR TO FITTING OR DONNING! SEE SECTION 6 FOR FILTER INSTALLATION PROCEDURES!

The FM50 Protective Mask is available in three sizes. A sizing tool is available to assist in initial selection of the correct mask size. It does no more than assist initial selection. Only a successful completion of a quantitative fit test can determine correct fit.

It is a requirement that the initial sizing and fitting be performed by trained personnel.

When sizing is correct the eyes of the operator appear on or slightly above the lens horizontal centre line. A correctly sized mask should make firm contact with the face around the entire length of the face seal. The distance between the edge of the mask and the ear should be typically in the range 0.5 to 1.5 inches (12mm to 37.5mm).

If the mask is too small, the operator may lose seal performance and protection. The mask will be uncomfortable to wear and could affect field of view.

If the mask is too large the operator may lose seal performance and protection. The operator will also experience a very loose fit with subsequent mask slippage.

**WARNING**

SIZING AND FITTING PROCEDURES MUST BE PERFORMED BY A TRAINED (LEVEL 2) TECHNICIAN!
Sizing Tool (pn: 71601/31)

Avon offers a sizing tool to aid in the selection of the correct mask size.

The sizing tool is used as follows:

- Place the tool to the face diagonally along a line from the point of the chin to the widest point of the cheekbone.

- Read off the appropriate size. If on or near the boundary between two sizes, select the larger size.

- Check eye location.
4. Quantitative Fit Test

Avon recommends that the operator undertake a quantitative fit test to confirm that the correct mask size has been selected and that a good fit can be obtained.

- Avon recommends a Fit Factor (FF) of 2500 minimum.
- Fit test exercises should be performed in accordance with established protocol.

Follow this sequence:

- Performance of fit testing should be performed without the hood assembly attached.
- Remove internal drink tube.
- Don the selected mask size (section 7).
- Connect the drink coupler to the sample adapter.
- Rotate drink lever upward to the open position.

- Adjust the harness straps so that they are tight but comfortable. If necessary alter the length of the brow straps in the brow strap pockets to ensure the temple and cheek straps do not touch the ears.

- Conduct the quantitative fit test in accordance with tester operating instructions. It may be necessary to re-adjust the harness straps and re-test in order to obtain the best fit.

- Reinstall internal drink tube.

**WARNING**

DO NOT READJUST THE BROW AND TEMPLE STRAPS. ONLY THE CHEEK STRAPS ARE TIGHTENED AND LOOSENED FOR DONNING AND DOFFING FOLLOWING INITIAL SIZING AND FITTING!
Always perform the following pre-use check procedure before using the FM50 Protective Mask:

- Always check that the mask is fitted with the appropriate filters and ensure that the filters have been correctly attached. Refer to section 6 for proper filter installation.

- Ensure the mask is complete and is the correct size for the particular operator as determined during sizing and fitting.

- Check that there are no cuts or tears in the rubber components, no chips or cracks in the plastic components and the eyelens is optically clear.

- Check that the brow straps are stowed in the brow strap pockets (brow and temple straps should be equal length).

- Check that the lower two cheek straps are fully slackened prior to donning.
Primary Filter (pn: 71601/1)
The primary filters provide protection from Chemical-Biological agents, radiological particulates and certain TICs. The primary filters contain an activated carbon media and a high efficiency particulate filter.

WARNING
PRIMARY FILTERS ARE FOR USE WITH THE FM50 PROTECTIVE MASK ONLY. THESE FILTERS WILL NOT SEAL ON OTHER MASKS LEADING TO SERIOUS INJURY OR DEATH!

CHECK TIME PATCH ASSEMBLY ON BACK OF FILTERS. DO NOT INSTALL IF TIME PATCH ASSEMBLY COLOR IS BLUE!

BOTH PRIMARY FILTERS MUST BE INSTALLED PRIOR TO DONNING! FAILURE TO INSTALL BOTH FILTERS PROPERLY WILL REDUCE FILTER LIFE OR MASK PERFORMANCE WHICH COULD LEAD TO SERIOUS INJURY OR DEATH!

Installation:
• Support the mask with the mask facing you.

• Align the single filter alignment mark on the filter with the double alignment marking on the mask ensuring the filter is directly over the self-sealing disk valve on the filter mount and gently press until the filter is snug against the mask and you feel the mounting lugs align with the filter mount indents.
Filter Installation (continued)

While pressing the filter to the filter mount, rotate the filter clockwise until the single filter alignment mark on the filter is aligned with the single alignment mark on the mask and the mounting lugs click, locking the filter in place. Tug or pull on the primary filters to ensure it is locked in place.

• Repeat procedure for other filter.

Filter Removal:

WARNING

WHILE REMOVING FILTERS, ENSURE THAT THE SELF-SEALING DISK VALVES CLOSE PROPERLY. REFER TO SECTION 16.

• Support the mask with the mask facing you.
• Grasp both filter side tabs on the primary filter using your thumb and middle finger and squeeze inward.
• While squeezing both filter side tabs, rotate the filter counter-clockwise, unlocking it from the filter mount, and separate the filter from the filter mount.
• Repeat this procedure for the other filter.
7. Donning, Doffing and Negative Pressure Check

Donning (without hood):

**WARNING**


NOTE: Mask must be properly stowed prior to donning. Head harness should be pulled over the front of the eyeflens for proper donning. See section 9 for proper procedures.

- The voice projection unit must be removed prior to donning the mask.
- Remove head gear and glasses if worn.
- Push hair back and insert the chin into the mask.
- Grasp the head harness tab and pull the head harness over and to the back of your head.
- Pull the harness tightly down at the rear.
- Support the mask by locating and placing your hand over the front module cover assembly.
- Pull the cheek straps one at a time, ensuring straps lay flat against your head. Brow and temple straps are adjusted during fitting. Do not over-tighten.
Perform a **Negative Pressure Test** using the following steps:

- With a hand over the front cover module assembly, blow out hard to force out any contaminated air around the edges of the mask.

- With the palm of your hands, cover both primary filter inlet ports and breathe in.

- The mask should collapse against your face and remain so while you hold your breath. If it does the mask is airtight.

- If the mask does not collapse, check for leaks. If the mask still does not collapse, notify maintenance personnel.

**WARNING**

DO NOT ENTER A CONTAMINATED AREA UNTIL A SUCCESSFUL NEGATIVE PRESSURE TEST HAS BEEN PERFORMED!
Donning, Doffing and Negative Pressure Check (continued)

Donning with Protective hood

**WARNING**

BEFORE DONNING THE MASK FOR THE FIRST TIME THE OPERATOR MUST BE PROPERLY SIZED AND FITTED! SEE SECTION 3

NOTE: Mask must be properly stowed prior to donning. See section 9 for proper stowing procedure.

- The Voice Projection Unit must be removed prior to donning the mask.
- Remove head gear and glasses if worn.
- Push hair back and insert the chin into the mask.
- Grasp the head harness tab and pull the head harness over and to the back of your head.
- Pull the harness tightly down at the rear.
- Support the mask by locating and placing your hand over the front module cover assembly.
- Pull the cheek straps one at a time, ensuring straps lay flat against your head. Brow and temple straps are adjusted during fitting. Do not over-tighten.
Donning, Doffing and Negative Pressure Check (continued)

Donning with Protective Hood (continued)

Perform a **Negative Pressure Test** using the following steps:

- Insert one hand through the opening in the bottom of the protective hood.
- With a hand over the front module cover assembly, blow out hard to force out any contaminated air around the edges of the mask.
- Insert both hands through the opening in the protective hood.
- With the palm of your hands, cover both primary filter inlet ports and breathe in.
- The mask should collapse against your face and remain so while you hold your breath. If it does the mask is airtight.
- If the mask does not collapse, check for leaks. If the mask still does not collapse, notify maintenance personnel.

**WARNING**

DO NOT ENTER A CONTAMINATED AREA UNTIL A SUCCESSFUL NEGATIVE PRESSURE TEST HAS BEEN PERFORMED!
• With your hands through the opening in the bottom of the hood.

• Trace the outline of the mask with both hands pushing the protective hood over the head, covering the head, neck and shoulders.

• Insert your arms, one at a time, through the holes formed by the underarm straps.

• Adjust by pulling on the free running end at the same time.
Doffing the Mask (removing)

- When the protective hood is attached, slacken underarm strap fasteners, remove your arms from strap loops, grasp the bottom of the protective hood and pull the hood up and over the head.

- Slacken the cheek straps to their fullest extent.

- Grasp the front of the mask and pull the mask well forward and lift upwards then backwards off the head.
Head Harness (pn: 71601/23)

**WARNING**

THE OPERATOR MUST BE REFITTED EACH TIME THE HEAD HARNESS IS REMOVED. FAILURE TO DO SO COULD RESULT IN FACE SEAL LEAKS!

**Removal:**
- Open the two brow strap covers at the top of the head harness skullcap and pull the brow straps through the brow strap slots.
- Lift the clamp plates of the pivoting buckles to allow free travel of the temple harness straps. Pull the temple straps through and out of the buckles.
- Pull the cheekstraps through and out of the ladder lock buckles.

**Installation:**
- With the brow straps facing up, slide the brow straps through the brow straps slots at the top of the mask.
- Fold straps back over slots and fasten to the brow strap covers at the top of the head harness skullcap. Ensure that the brow strap is aligned with the edge of the brow strap cover.
- Lift the clamp plates of the pivoting buckles. Thread the temple straps through the pivoting buckles. Push the folded end of the temple strap through the buckle, from the underside, between the clamp bar and clamp plate. Loop the strap over and push the folded end down through the slot between the clamp bar and clamp plate. Repeat procedure for other temple strap.
- Thread the cheek straps through the ladder lock buckles. Push the folded end of the harness cheek strap through the wider, rear slot from the underside of the buckle. Loop the strap over the crossbar and push the end through the narrow, front slot. Grasp the exposed strap and pull the rest of the folded end through the slot. Repeat procedure for other cheek strap.
- As an option, excess brow strap material may be cut off for user comfort. Repeat procedure for other brow strap.
9. Stowing the Mask

Note: It is recommended that the mask be stowed with an outsert attached to prevent scratching of the eyelens.

- Pull the headharness over the front of the mask.
- Grasp the carrier flap tab and pull to open carrier.
- Hold the mask by the front module and place into the carrier, eyelens first away from the body.
- Push the mask to the back of the carrier.
- Close the carrier flap.

Stowage Configuration with Protective Hood

- Grasp the mask by the front module and place other hand inside the hood, grasping onto the harness.
- Pull the hood over the mask.
- Carefully pull all excess hood material over the front of the mask.
- Hold onto the bottom of the hood and hang the mask upside down with the inside of the mask facing toward the body.
- Ensure the shoulder straps are fastened and placed inside the hood.
- Fold each of the hood flaps into the center.
- Fold the flap towards the outside of the mask and secure under the head harness.
- Grasp the head harness and fold over the front of the mask. Ensure the straps of the head harness do not interfere with the mask seal.
10. Protective Hood Installation and Removal

**WARNING**
THE OPERATOR MUST BE REFITTED EACH TIME THE HEAD HARNESS IS REMOVED. FAILURE TO DO SO COULD RESULT IN FACE SEAL LEAKS!

**Protective hood installation**

- Remove the Primary Filters.
- Turn the protective hood inside out and place on a flat surface with the mask opening of the hood facing up.
- Undo the two brow strap hook and pile (Velcro®) covers at the top of the mask assembly facing down.
- Open the pivot buckle clamp plates and remove temple straps from pivot buckles.
- Insert pivot buckles into hood elasticizied pivot buckle loops.
- Reattach temple straps to pivot buckles and close clamp plates.
- Place brow straps through hood brow straps loops.
- Reattach to hook and pile (Velcro®) covers at the top of the head harness.
- Pull hood over mask assembly.
- Move the hood so that the hood edge is around the bottom side of the filter mounts on both sides of the mask.
- Route the elastic loops around the filter mounts and make sure the straps are pushed underneath the mounts as far as possible so they will not interfere with the installation of the filters.
- Check the following to verify the hood assembly is correct. The bottom filter mount straps and the hood edges are around and underneath the filter mounts. The mask forehead is not in a puckered state, and the hood edges are behind the outsert mounting brackets.
- Attach the primary filters onto the filter mounts. (See section 6).
- Verify that the fabric straps do not interfere with the filter connections. If they do, push the straps underneath the filter mounts as far as possible.
### 11. Using the Hydration System

**WARNING**

USE ONLY APPROVED HYDRATION ATTACHMENTS OR ADAPTERS WITH THE FM50 HYDRATION SYSTEM. FAILURE TO OBSERVE THIS WARNING MAY RESULT IN INJURY OR DEATH!

### Connecting the Hydration System

**Water Canteen Cap** (pn: 72601/62)

- While steadying the mask assembly with one hand, pull the drink coupler from its storage location.
- Flip open the protective cover on the canteen cap or an approved hydration system.
- Insert the drink coupler into the canteen cap by pushing quickly so the seal snaps into the groove.
- Turn the drinking tube lever upward and grasp the internal drink tube between your lips. Check for leaks by blowing into the internal drink tube. You should feel some resistance; if not, then your hydration system is leaking, DO NOT drink. Replace the hydration system. If resistance is still not felt, notify maintenance personnel to replace the mask.

**WARNING**

DECONTAMINATE WATER CANTEEN SURFACE IN CONTAMINATED ENVIRONMENTS. FAILURE TO OBSERVE THIS WARNING MAY RESULT IN INJURY OR DEATH!

- Raising the canteen and invert to drink. DO NOT tilt head back while drinking.
- When finished drinking: Lower canteen back down below the mask and blow into the internal drink tube. Rotate the drink tube lever down to the closed position (if only the canteen is used, see Disconnecting the Hydration System). When using an approved hydration system, ensure the on/off valve is also closed.
Using the Hydration System (continued)

**WARNING**

TO PREVENT POSSIBLE LEAKAGE AROUND THE MASK, DO NOT PULL ON EXTERNAL DRINK TUBE WHEN REMOVING DRINK COUPLER.

WHEN NOT IN USE, KEEP THE DRINK COUPLER COVERED WITH THE PROVIDED PROTECTIVE COVER!

Disconnecting the Hydration System

- If using the canteen turn it upright.
- Rotate the drink tube lever upward to the open position.
- Clear water from the external drink tube by blowing into the internal drink tube.
- While holding the drink system with one hand, firmly grasp the drink coupler and pull to disconnect from the hydration system.
- Blow into internal drink tube to create positive pressure. You should feel some resistance.
- Release the internal drink tube from your mouth.
- Rotate the drink lever downward to the closed position. If using an approved drink system, also close it’s on/off valve.
- Replace protective cover on the hydration system.
- Replace the drink coupler into the drink coupler receptacle.

FOR A UPDATED LIST OF APPROVED HYDRATION SYSTEMS CHECK OUR WEB SITE: WWW.AVON-PROTECTION.COM
12. Vision Correction Assembly Installation, Removal and Adjustment

Vision Correction Assembly (pn: 70501/155)

Complete vision correction assembly with prescription lens is available from Avon; See Page 46 for the order form or for more information, go to www.avon-protection.com.

Note: A valid prescription (within 1 year) is required.

When the vision correction system has been received, fit it to the mask as follows:

- Fit the frame tabs into the sockets either side of the lens and fit the central stud in the center of the top edge of the mask lens.

- Ensure the frame is positioned around the border of the lens.

- Adjust the height of the mounting frame using the adjuster.
Outsert
A variety of outserts are available to meet operational requirements.

- **Clear outsert**: for general use. (pn: 70501/156)
- **Sunlight outsert** provides protection against sunlight and other bright light conditions. (pn: 70501/157)
- **Blueblocker outsert** for shooting glare. (pn: 70501/158)
- **Laser outsert** for protection from laser energy. (pn: 72601/29)

**Installation and removal:**

- Grasp the top and bottom of the outsert with both hands.
- Tilt the outsert with the bottom up and align outsert over the eyelens.
- Align the locking tabs on the ends of the outsert with outsert receptacles on the mask and gently rotate the outsert down pushing the locking tabs into the receptacles.
- Ensure the locking tabs are secured to the mask assembly.

To remove: grasp the top and bottom of the outsert and gently rotate the bottom of the outsert up and away from the mask.

**WARNING**

ENSURE THAT IF REMOVING OUTSERTS IN AN CONTAMINATED ENVIRONMENT THAT YOU HOLD THE MASK AGAINST YOUR FACE WITH YOUR FREE HAND TO ENSURE THE SEAL OF THE MASK IS NOT BROKEN!
The FM50 Protective Mask has a Electronic Communication Port (ECP) to attach a voice projection unit and other communications devices which use an internal microphone.

**Voice Projection Unit (VPU) (pn: 70501/229)**

VPU installation:

- Open the ECP cover on front module cover assembly and visually inspect to see if it is free of dirt or obstructions.

- Grasp the VPU by the upper and lower locking clamps; visually inspect the communication port connector pins to see if they are bent or damaged; place upper locking clamps into slots on top of the front module main body; squeeze lower hinged locking clamp while lowering the VPU down ensuring the VPU communication 2-pin connector fits into the communication port receptacle. Press the VPU onto the mask until it snaps into place.
VPU removal:

- Ensure the VPU is turned off.
- Grasp the VPU by the upper and lower locking clamps; squeeze lower hinged locking clamp and lift VPU up and away from the mask.
- Close the communications port on the front module assembly.

Microphone Assembly Installation (pn: 71601/13)

- Connect the dynamic microphone to the amplifier adapter by aligning the connecting pins on the adapter with the connector receptacle on the microphone.
- Gently press the amplifier adapter into the dynamic microphone. (Ensure the dynamic microphone is oriented as illustrated to the left).
- Using an appropriate screwdriver, tighten the two retaining screws on the dynamic microphone securing it to the amplifier adapter.
- Install the microphone assembly into the mask internal ECP.
15. Cleaning Procedures

Cleaning the mask correctly is vital for maintaining its effectiveness in providing the best possible protection. The mask should be cleaned regularly as part of the normal maintenance and inspected routinely after each use.

Follow this procedure:

- Remove the following mask components prior to cleaning: head harness, primary filters, self-sealing disk valves, air deflectors, front module cover assembly and inlet and outlet valves.
- Remove the following if used with the mask: vision correction assembly, communications lead, microphone assembly, voice projection unit and protective hood.
- Remove the drink coupler from its housing and from around the front module assembly.
- Immerse the mask in warm water containing a dilute Hibitane solution (1/2000 dilution of a 5% solution is normal), a mild baby-type non-allergic soap solution or other Avon approved product.

**WARNING**

DO NOT USE DETERGENT, SPIRIT OR SOLVENT CLEANER!

- Agitate the mask in this solution, wiping with a soft, lint-free cloth (face cloth) particularly under the main seal and inner mask.
- Remove the mask and shake off the excess solution.
- Immerse the mask in clean warm water ensuring that all trace of solution is removed.
- Lift out the mask and shake off excess water, then dry with a clean, lint-free dry cloth, or air dry.
- To clean the hydration system, fill a canteen with a sterilizing solution and attach to the drink coupler. Open drink valve and allow solution to run through and out of the internal drink tube. Repeat with clean water.
- Replace the removed mask components and store ready for use.

FOR MORE INFORMATION ON APPROVED CLEANING SOLUTIONS AND MATERIAL GO TO: WWW.AVON-PROTECTION.COM

**WARNING**

IF THE MASK IS EXPOSED TO CHEMICAL WARFARE AGENTS, SPECIAL DECONTAMINATION AND DISPOSAL PROCEDURES DICTATED BY LOCAL ESTABLISHED GUIDELINES MUST BE FOLLOWED. IF THE MASK IS CONTAMINATED WITH LIQUID CHEMICAL WARFARE AGENTS, DISPOSE OF THE MASK AFTER DECONTAMINATION!
To maintain maximum performance and protection for the user, the FM50 Protective Mask must be properly maintained.

There are two levels of maintenance for the FM50 Protective Mask:

**Level 1:** Operator level maintenance where no tools or speciality training are required to perform maintenance operation.

**Level 2:** Special tools and training required.

**The following Level 1 mask maintenance should be performed by the operator:**

- General inspection and cleaning.
- Removal and installation of the primary filters.
- Removal and installation of the self-sealing disk valves.
- Removal and installation of the front module cover assembly.
- Removal and installation of the outlet disk valve.
- Removal and installation of the drink coupler.
- Removal and installation of the internal drink tube.
- Removal and installation of the air deflectors.
- Removal and installation of the inlet disk valves.
- Removal and installation of the head harness.
- Removal and installation of the outserts.
- Removal and installation of the microphone assembly.
- Removal and installation of the voice projection unit.
- Removal and installation of the protective hood assembly.

**The following Level 2 maintenance requires speciality training and tools as described in further detail in the FM50 Protective Mask Maintenance Manual.**

- Setup procedures for quantitative fit testing.
- Sizing and fitting procedures.
17. Operator Maintenance

Carry out the following care and maintenance checklist after each use and at least monthly.

Inspect the following features:

**Mask Assembly**
- Dirty enough to affect mask seal or proper function
- Rubber is sticky or has holes, tears, or soft sticky spots which allow air to enter
- Buckles damaged or missing
- Bonding around eyelens not secure

**Eyelens**
- Unable to see well through the eyelens
- Eyelens is cracked or cut

**Front Module Cover Assembly**
- Missing
- Cracked or chipped
- Dirty

**Primary Filters**
- Filters do not attach properly
- Cracked or damaged
- Air intake clogged with dirt
- Filter mounts and/or filters damaged
Operator Maintenance (continued)

Head Harness
- Will not hold mask firmly against face
- Cut, torn or frayed
- Missing tabs
- Deteriorated

Outsert
- Unable to see well through the outsert
- Outsert is cracked or cut

Voice Projection Unit
- Will not fit correctly
- Latch broken
- Dirty or damaged
- 2-pin connector will not plug into ECP
- On/off lever will not toggle up and down.
- Battery expended

Self-Sealing Disk Valve Removal:
- Pinch the center of the self-sealing disk valve between the thumb and middle finger and gently pull the disk valve away from the valve mounting post. Repeat procedure for second self-sealing disk valve.

Self-Sealing Disk Valve Installation:
- Position self-sealing disk valve over valve mounting post. Align valve socket over valve mounting post and gently press center of the disk valve until it is seated on the post. Repeat procedure for second self-sealing disk valve.
While removing the filters from the filter mounts, visually observe that the self-sealing disk valves close. If a self-sealing disk valve does not close immediately, report to the next higher level of maintenance.

**Air Deflector**
- Missing
- Improper orientation
- Dirty or Damaged

**Air Deflector Removal:**
- Fold the nosecup back to expose the air deflector.
- Grasp the air deflector and pull outward until it separates from the filter mount.

**Air Deflector Installation:**
- Fold the nosecup back to expose the filter mount.
- Orient the air deflector tab with the bottom filter mount notch and gently push until the air deflector fully seats into the filter mount.
- Ensure nosecup wings are properly stowed within the mask.

**Inlet Disk Valve**
- Missing
- Sticky
- Torn
- Dirty
- Will not seat properly

**Inlet Disk Valve Removal:**
NOTE: Inlet and Outlet valves are interchangeable.
- Fold back the nosecup to expose the air deflector.
- Remove the air deflector exposing the inlet disk valve.
- Pinch the center of the inlet disk valve between the thumb and index finger and gently pull the disk valve away from the valve mounting post.
Operator Maintenance (continued)

Inlet Disk valve Installation:

• Fold back the nosecup to expose the filter mount assembly.
• Align the inlet disk valve over the valve mounting post.
• Gently push until the disk valve seats into the valve mounting post.
• Replace the air deflectors.

Carry out the following care and maintenance checklist after each use and at least monthly:

Front Module Cover Assembly

• Missing
• Loose
• Dirty
• Will not seat properly

Front Module Cover Assembly Removal:

• Remove the drink coupler from its receptacle below the front module cover assembly. Unwrap the external drink tube from around the front module main body.
• Turn the drink tube lever on the front module main body upward approximately mid-position. Place thumb at bottom of cover below the ECP cover and between the cover and front module main body.
• Gently lift the front module cover assembly away from the front module main body. Turn the drink tube lever on the front module main body downward to close the drink tube shut-off.

Front Module Cover Assembly Installation:

• Turn the drink tube lever on the front module main body upward to approximately mid-position. Align the front module cover assembly over the bottom of the ECP on the front module main body.
• Gently install the front module cover assembly over the module main body ensuring it clears the drink tube lever and firmly press the front module cover assembly onto the module main body.
• Ensure the front module cover assembly is fully seated around the entire circumference of the module main body. Return external drink tube and drink coupler to stowed position. Turn the drink tube lever downward to the closed position.
• Ensure ECP cover is closed
Operator Maintenance (continued)

Carry out the following care and maintenance checklist after each use and at least monthly:

**Outlet Disk Valve**
- Missing
- Sticky
- Torn
- Dirty
- Will not seat properly

**Outlet Valve Disk Removal:**

Note: Inlet Outlet valves are interchangeable

- Remove the drinking coupler from its housing and unwrap the external drink tube from the front module cover assembly. Remove the front module cover assembly.
- Pinch the center of the outlet disk valve between the thumb and middle finger, gently pull disk valve away from valve mounting post.

**Outlet Valve Disk Installation:**

- Align the outlet disk valve socket over the valve mounting post and gently press the center of the disk valve until fully seated on mounting post.
- Replace the front module cover assembly and wrap the external drink tube around the cover. Reposition the drink coupler into housing.

**Drink Coupler**
- Dirty or damaged
- Leaks
- Unable to drink while wearing mask

**WARNING**

TO PREVENT POSSIBLE LEAKAGE AROUND THE MASK, CARE MUST BE TAKEN NOT TO SEPARATE THE EXTERNAL DRINK TUBE FROM THE FRONT MODULE COVER ASSEMBLY WHILE REMOVING THE DRINK COUPLER.

**Drink Coupler Removal:**

- Lay mask on flat surface with eyelines facing up. Unstow the drink coupler from receptacle and unwrap the drink coupler and external drink tube from around the front module.
With one hand grasp the external drink tube and with the other firmly grasp the drink coupler and gently pull it off the external drink tube.

**Drink Coupler Installation:**

- With one hand grasp the external drink tube and with the other firmly grasp the drink coupler and push it onto the external drink tube firmly seating the tube to the base of the drink coupler.
- Wrap the external drink tube and drink coupler around the front module and place the drink coupler into the receptacle below the front module.
- Ensure that the drink coupler is fully seated into the external drink tube stowage pocket.

**Internal Drink Tube Removal:**

- Turn the drink tube lever upward until it stops and is fully open to position the internal drink tube for drinking.
- Grasp internal drink tube at drink tube connector and gently pull internal drink tube from connector.

The internal drink tube can be cut to size above the ribs for better fit to the individual operator.

**Internal Drink Tube Installation:**

- Turn the drink tube lever upward to position the internal drink tube for drinking.
- Install the internal drink tube onto the internal drink tube connector and press internal drink tube in place. Ensure the internal drink tube connector is cleaned and free of grease prior to installing internal drink tube. Make sure the internal drink tube bottoms fully against the drink tube connector.
- Verify alignment of the internal drink tube and make adjustments as required.
18. Storage and Transportation

**WARNING**

FAILURE TO PROPERLY STORE YOUR MASK COULD RESULT IN THE MASK NOT PROVIDING ADEQUATE PROTECTION WHEN USED NEXT!

Safe storage and transportation of the mask is vitally important in maintaining its effectiveness:

**Faceform (pn: 72601/53)**

The faceform is used to prevent damage to the mask in storage. It is used for storage periods in excess of 30 days.

- Store and transport in a clean and dry environment within the guidelines of local established procedures.
- Do not store or transport the mask under heavy or sharp objects.
- Do not store or transport the mask where it could be exposed to extremes of temperatures or direct sunlight.
- Always clean and thoroughly dry the mask before storage.
## 19. Operator Troubleshooting Procedures

<table>
<thead>
<tr>
<th>Symptom/Fault</th>
<th>Probably Cause</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Breathing Resistance</td>
<td>Disk valve sticking</td>
<td>Clean inlet/outlet and self-sealing disk valves and seats</td>
</tr>
<tr>
<td></td>
<td>Blockage in airflow</td>
<td>Check inlet and outlet air passages for obstructions</td>
</tr>
<tr>
<td></td>
<td>Filter is saturated/clogged</td>
<td>Report to level 2 maintenance personnel</td>
</tr>
<tr>
<td>Low Drinking Rate</td>
<td>Water level low in canteen</td>
<td>Refill canteen</td>
</tr>
<tr>
<td></td>
<td>Drinking Coupler not fully engaged</td>
<td>Press drink coupler into cap with thumb</td>
</tr>
<tr>
<td></td>
<td>Shutoff valve spindle not fully open</td>
<td>Turn drink lever on fully</td>
</tr>
<tr>
<td></td>
<td>Blockage in system</td>
<td>Clean drinking system</td>
</tr>
<tr>
<td>Suspected Leak (mask fails to seal)</td>
<td>Damage to mask assembly</td>
<td>Examine mask for damage; report to level 2 maintenance personnel</td>
</tr>
<tr>
<td></td>
<td>Filter not completely installed</td>
<td>Check and reinstall filter</td>
</tr>
<tr>
<td></td>
<td>Mask incorrectly sized or fitted</td>
<td>Report to level 2 maintenance personnel</td>
</tr>
<tr>
<td></td>
<td>Incorrect harness adjustment</td>
<td>Check harness adjustment and readjust if necessary</td>
</tr>
<tr>
<td>Poor light Transmission Through Eyelens</td>
<td>Dirty eyelens and/or outsert</td>
<td>Clean eyelens and/or outsert</td>
</tr>
<tr>
<td></td>
<td>Damaged eyelens and/or outsert</td>
<td>Report to level 2 maintenance personnel</td>
</tr>
<tr>
<td>Voice Projection Unit Inoperative</td>
<td>Voice Projection Unit adapter missing or damaged</td>
<td>Report to level 2 maintenance personnel</td>
</tr>
<tr>
<td></td>
<td>Voice Projection Unit is missing or Damaged</td>
<td>Report to level 2 maintenance personnel</td>
</tr>
<tr>
<td></td>
<td>Battery missing or damaged</td>
<td>Replace batteries</td>
</tr>
<tr>
<td></td>
<td>On/off switch in the off position</td>
<td>Switch on/off switch to the on position</td>
</tr>
<tr>
<td></td>
<td>Batteries installed incorrectly or battery cover not tightened completely.</td>
<td>Install batteries correctly/tighten battery cover</td>
</tr>
</tbody>
</table>
20. Level 2 Maintenance Troubleshooting

1. Perform function test first. Next, use the symptom index for quick access to the troubleshooting procedures.

2. The following illustration describes the use of the troubleshooting procedures.

![Diagram showing a decision process for Level 2 Maintenance Troubleshooting]
EYELENS FOGS EXCESSIVELY

Eyelens fogs excessively

Are nosecup wings properly stowed?

NO

Seat nosecup wing behind reflex seal

YES

Is nosecup damaged?

NO

Are air deflectors properly seated over the filler mount clamp ring?

NO

Reseat and retest

YES

Remove air deflectors and check inlet valves

Are valves missing or damaged?

NO

Replace mask

YES

Replace valves and retest
INSUFFICIENT AIR TO USER

1. Insufficient air to user
   - Are filters installed correctly?
     - YES
       - Properly install filter and retest
     - NO
       - Are the filters clogged?
         - YES
           - Replace filters and retest
         - NO
           - Replace mask
   - NO
     - Are filters clogged?
       - YES
         - Replace filters and retest
       - NO
         - Remove filters; check filter mount assembly
           - Are filter mounts damaged?
             - YES
               - Replace mask
             - NO
               - Remove air deflectors and check inlet valves
                 - Are inlet valves sticking or improperly mounted?
                   - YES
                     - Replace valves and retest
                   - NO
                     - Check self-sealing valves
                       - Is it sticky or improperly installed?
                         - YES
                           - Replace valves and retest
                         - NO
                           - Replace mask

(continued)
MASK FAILS TO SEAL

Mask fails to seal

Conduct mask leakage test using a quantitative fit tester, if available. If not available or mask fails test, proceed to next step.

Is the mask properly sized and fitted?

YES

Check mask for holes or tears

NO

Refit mask and retest

YES

Does mask have holes?

NO

Are filter mounts loose or damaged?

YES

Replace mask

NO

Is front module loose or damaged?

YES

Replace mask

NO

Is outlet valve clean or serviceable?

YES

Replace mask

NO

Are filters loose or damaged?

YES

Properly install filters. Replace damaged filters

NO

Clean or replace outlet valve and retest

YES

Is outlet valve seat clean or serviceable?

NO

Replace mask

YES

Clean or replace mask, if damaged
Voice projection unit inoperative

Check communications port contacts on the mask for damage

Is the VPU battery door properly tightened?

Properly tighten battery door and retest

Are contacts damaged?

YES

Replace mask

NO

Are batteries improperly installed missing, damaged or expended?

YES

Replace amplifier adapter and retest

NO

Is amplifier adapter missing or damaged?

YES

Replace Voice Projection Unit and retest

NO

Replace voice projection unit and retest

Is voice Projection Unit Damaged?

NO

Replace Voice Projection Unit and retest

Is voice Projection Unit operational?

NO

Replace Mask
DRINK SYSTEM INOPERATIVE

- Drink system inoperative
  
  Conduct mask leakage test using a quantitative fit tester, if available. If not available or mask fails test, proceed to next step.

- Is internal drink tube missing or damaged?
  
  NO
  
  Is external drink tube assembly missing or damaged?

  NO
  
  Is drink tube lever damaged?

  YES
  
  Replace mask

  NO
  
  Is drink tube lever damaged?

  YES
  
  Replace mask

  NO
  
  Is drink coupler damaged?

  YES
  
  Replace the drink coupler and retest

  NO
  
  Is resistance felt when blowing through internal drink tube?

  YES
  
  Is coupler seated properly into canteen cap?

  NO
  
  Replace mask

  YES
  
  Replace mask

  NO
  
  Reseat and retest

  NO
  
  Is drink system operational?

  NO
  
  Replace mask
MICROPHONE ASSEMBLY AND COMMUNICATIONS LEAD INOPERATIVE

Microphone assembly and cable inoperative

- Is communication system operating?
  - YES: Check communications lead
  - NO: Repair communication system and retest

- Check communications port contacts for damage
  - YES: Replace mask
  - NO: Are contacts missing or damaged?
    - YES: Replace mask
    - NO: Check communications lead

- Is communications lead damaged?
  - YES: Replace communications lead and retest
  - NO: Is microphone assembly missing, damaged, or improperly installed?
    - YES: Replace microphone assembly and retest
    - NO: Replace mask

- Is microphone operational?
  - NO: Replace mask
21. Accessories and Spare Parts

- Head Harness
- Drink Coupler
- Inlet/Outlet Disk Valve
- Front Module Cover Assembly
- Self-Sealing Disk Valves (2)
- Primary Filters (2)
- Internal Drink Tube
- Inlet/Outlet Disk Valves (2)
- Air Deflectors (2)
The following accessories and spares packs are available upon request.

**Mask Only** Includes Faceform and Operator and Maintenance Manual

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>NOMENCLATURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>71400/1</td>
<td>Mask Assembly, LGE</td>
</tr>
<tr>
<td>71400/2</td>
<td>Mask Assembly, MED</td>
</tr>
<tr>
<td>71400/3</td>
<td>Mask Assembly, SML</td>
</tr>
</tbody>
</table>

**Mask Systems** includes Mask Assembly, Primary Filter (pair), Mask Carrier (black), Clear Outsert Assembly, Faceform, and Operator and Maintenance Manual

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>NOMENCLATURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>71450/1</td>
<td>Mask System, LGE</td>
</tr>
<tr>
<td>71450/2</td>
<td>Mask System, MED</td>
</tr>
<tr>
<td>71450/3</td>
<td>Mask System, SML</td>
</tr>
</tbody>
</table>

**Filters**

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>NOMENCLATURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>71601/1</td>
<td>Primary Filter (pr)</td>
</tr>
</tbody>
</table>

**Accessories**

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>NOMENCLATURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>70501/155</td>
<td>Vision Correction Assembly</td>
</tr>
<tr>
<td>70501/156</td>
<td>Clear Outsert Assembly</td>
</tr>
<tr>
<td>70501/157</td>
<td>Sunlight Outsert Assembly</td>
</tr>
<tr>
<td>70501/158</td>
<td>Blueblocker Outsert Assembly</td>
</tr>
<tr>
<td>72601/29</td>
<td>Outsert, Laser, Assembly</td>
</tr>
<tr>
<td>72601/28</td>
<td>Outsert Pouch (Optical cleaning cloth)</td>
</tr>
<tr>
<td>70501/229</td>
<td>Voice Projection Unit</td>
</tr>
</tbody>
</table>
## Accessories and Spare Parts (continued)

### Accessories (continued)

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>PRODUCT</th>
</tr>
</thead>
<tbody>
<tr>
<td>71601/14</td>
<td>Communications Lead</td>
</tr>
<tr>
<td>71601/35</td>
<td>Hose Assembly</td>
</tr>
<tr>
<td>71601/11</td>
<td>Voice Projection Unit with Microphone Assembly</td>
</tr>
<tr>
<td>71601/12</td>
<td>Amplifier Adapter</td>
</tr>
<tr>
<td>71601/13</td>
<td>Microphone Assembly (Amplifier Adapter and Dynamic Microphone assembled)</td>
</tr>
<tr>
<td>72601/20</td>
<td>Dynamic Microphone</td>
</tr>
<tr>
<td>71601/20</td>
<td>Protective Hood, SML-MED (green)</td>
</tr>
<tr>
<td>71601/21</td>
<td>Protective Hood, LGE (green)</td>
</tr>
<tr>
<td>72601/47</td>
<td>Mask Carrier (green)</td>
</tr>
<tr>
<td>72601/48</td>
<td>Mask Carrier (black)</td>
</tr>
<tr>
<td>72601/49</td>
<td>Extension Strap (green)</td>
</tr>
<tr>
<td>72601/50</td>
<td>Extension Strap (black)</td>
</tr>
<tr>
<td>72601/51</td>
<td>Individual Equipment Carrier (green)</td>
</tr>
<tr>
<td>72601/52</td>
<td>Individual Equipment Carrier (black)</td>
</tr>
<tr>
<td>72601/53</td>
<td>Faceform</td>
</tr>
<tr>
<td>71601/30</td>
<td>Operator and Maintenance Manual</td>
</tr>
<tr>
<td>72601/60</td>
<td>Drinking Bottle with Canteen Cap</td>
</tr>
<tr>
<td>72601/62</td>
<td>Canteen Cap</td>
</tr>
<tr>
<td>71601/31</td>
<td>Sizing Tool</td>
</tr>
</tbody>
</table>

### Spare Parts

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>PRODUCT</th>
</tr>
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<tbody>
<tr>
<td>71601/23</td>
<td>Head Harness</td>
</tr>
<tr>
<td>70501/163</td>
<td>Internal Drink Tube (5 Each)</td>
</tr>
<tr>
<td>70501/169</td>
<td>Inlet/Outlet Disk Valve (10 Each)</td>
</tr>
<tr>
<td>71601/32</td>
<td>Self-Seal Disk Valve (10 Each)</td>
</tr>
<tr>
<td>71601/33</td>
<td>Air Deflector (pr)</td>
</tr>
<tr>
<td>70501/162</td>
<td>Front Module Cover Assembly</td>
</tr>
</tbody>
</table>
Avon 50 & 53 Series Respirator - Vision Correction System
Prescription Lens Order Form

FAX or mail completed form to Avon

<table>
<thead>
<tr>
<th>Date</th>
<th>Daytime Telephone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer (Shipping Address)</td>
<td>Billing Address (if different)</td>
</tr>
<tr>
<td>Name</td>
<td>Name</td>
</tr>
<tr>
<td>Address</td>
<td>Address</td>
</tr>
<tr>
<td>City</td>
<td>City</td>
</tr>
<tr>
<td>State</td>
<td>Zip Code</td>
</tr>
<tr>
<td>Country</td>
<td>Country</td>
</tr>
<tr>
<td>Email Address</td>
<td></td>
</tr>
</tbody>
</table>

Prescription - Please enclose the original or photocopy of the prescription you received from your Optometrist or Ophthalmologist. MUST INCLUDE SPECIFIC PUPIL DISTANCES (PD) IN ADDITION TO PRESCRIPTIONS

The ophthalmic laboratory will ship directly to you the corrective lenses mounted in the lens frame system to the billing or shipping address listed above. Please provide the following contact information about your Optometrist or Ophthalmologist if the laboratory has any questions about the prescription:

<table>
<thead>
<tr>
<th>Name</th>
<th>Email</th>
<th>Telephone Number</th>
<th>FAX number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polycarbonate Lens Type (check one)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single Vision</td>
<td>St 28 Bifocal (segment heights are 5mm below center unless otherwise noted)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OD Add _________</td>
<td>OS Add _________</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Prescription limits are -10.00 diopters to +8.00 diopters; astigmatic power up to 2.50 diopters

Pricing Information (Quantity pricing available)

<table>
<thead>
<tr>
<th>Lens Frame System</th>
<th>$35/system</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lens Type - Single Vision</td>
<td>$99/set</td>
</tr>
<tr>
<td>St 28 Bifocal</td>
<td>$139/set</td>
</tr>
<tr>
<td>Shipping within the USA already included</td>
<td>International shipping add $20</td>
</tr>
</tbody>
</table>

Total Order Amount:

Send Check or Money order or fill in your credit card information below:

Credit Card Information

<table>
<thead>
<tr>
<th>Lens Type - Single Vision</th>
<th>Credit Card Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Vision</td>
<td>Name as it appears on card:</td>
</tr>
<tr>
<td>St 28 Bifocal</td>
<td>Credit Card Number:</td>
</tr>
<tr>
<td>Shipping within the USA already included</td>
<td>Expiration Date:</td>
</tr>
</tbody>
</table>

Avon Protection Systems, INC.
922 Hurricane Shoals Road
Lawrenceville, GA 30043 USA

Office 888-286-6440
FAX 770-963-2797
Email customer_service@avon-rubber.com
www.avon-protection.com

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