

3M™ GVP Series Belt-Mounted Powered Air Purifying Respirator Assembly

User Instructions for 3M™ Belt-Mounted PAPR Assembly GVP-1NiMH, GVP-1UNiMH, GVP-CBNiMH, GVP-1, GVP-1U, GVP-PSK, GVP-CB and 3M™ PAPR Unit GVP-100

(Important: Before use, the wearer must read and understand there *User Instructions*. Keep these *User Instructions* for reference)



⚠ WARNING

This respiratory protection product helps protect against certain airborne contaminants. **Misuse may result in sickness or death.** For proper use, see supervisor, *User Instructions* or call 3M in U.S.A., 1-800-243-4630. In Canada, call Technical Service at 1-800-267-4414.

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GENERAL SAFETY INFORMATION

Intended Use

The 3M™ GVP Powered Air Purifying Respirator (PAPR) Assembly is designed to be used with certain 3M respiratory headgear, filter/cartridges, batteries and breathing tubes to form a complete NIOSH approved respiratory system. When used in accordance with its NIOSH approval, these systems can provide respiratory protection against certain airborne contaminants.

3M™ headgear (respiratory inlet covering) may include a tight fitting facepiece, loose fitting facepiece, hood, helmet or some combination of these that serves as a respiratory protective covering for the nose and mouth area. Refer to the enclosed 3M™ GVP NIOSH approval label for approved system configurations.

Listing of Warnings and Cautions within these User Instructions

WARNING

This respiratory protection product helps protect against certain airborne contaminants. **Misuse may result in sickness or death.** For proper use, see supervisor, *User Instructions* or call 3M in U.S.A., 1-800-243-4630. In Canada, call Technical Service at 1-800-267-4414.

Each person using this respirator assembly must read and understand the information in these *User Instructions* before use. Use of these respirators by untrained or unqualified persons, or use that is not in accordance with these *User Instructions*, **may adversely affect respirator performance and result in sickness or death.**

Do not use with parts or accessories other than those manufactured by 3M as described in these *User Instructions* or on the NIOSH approval label for this respirator. Do not attempt to repair or modify any component of the system except as described in these *User Instructions*. Failure to do so **may adversely affect respirator performance and result in sickness or death.**

Be certain that the filter and/or cartridge that you are placing on the unit is appropriate for the contaminants to which you will be exposed. **Failure to do so may result in sickness or death.**

Do not over-tighten filter/cartridge. Over-tightening may result in distortion or displacement of the seal and may allow contaminated air to enter the respirator headpiece and **may result in sickness or death.**

Failure to pass a user performance check and complete all necessary repairs before use **may adversely affect respirator performance and result in sickness or death.**

Before using a 3M™ GVP PAPR Assembly, each person must read and understand the information in these *User Instructions* and the *User Instructions* provided with the respirator headpiece to be used. Use of these respirator systems by untrained or unqualified persons, or use that is not in accordance with these instructions, may adversely affect respirator performance and **may result in sickness or death.**

Use of this respirator in atmospheres for which it was not NIOSH certified and designed **may result in sickness or death.** Do not wear this respirator where:

- Atmospheres are oxygen deficient
- Contaminant concentrations are unknown
- Contaminant concentrations are immediately dangerous to life or health (IDLH)

- Contaminant concentrations exceed the maximum use concentration determined using the assigned protection factor (APF) recommended for the applicable headpiece or the APF mandated by specific government standards, whichever is lower. Refer to the *User Instructions* provided with the applicable headpiece.

Do not enter a contaminated area until properly donning the respirator system. Do not remove the respirator before leaving the contaminated area. **Doing so may result in sickness or death.**

Contaminants that are dangerous to your health include those that you may not be able to see or smell. Leave the contaminated area immediately if any of the following conditions occur. **Failure to do so may result in sickness or death.**

- Airflow decreases or stops
- Any part of the system becomes damaged
- Airflow into the respirator decreases or stops
- Breathing becomes difficult
- You feel dizzy or your vision is impaired
- You taste or smell contaminants
- Your face, eyes, nose or mouth become(s) irritated
- You suspect that the concentration of contaminants may have reached levels at which this respirator may no longer provide adequate protection.

Do not expose blower/filter assembly directly to sparks or molten metal spatter. Direct contact with sparks or molten metal spatter may damage the filter, allowing unfiltered air into the breathing zone and may cause the filter or blower assembly to ignite, **resulting in serious injury, sickness or death.**

Never alter or modify this respirator. Repair or replace parts only with the 3M™ components approved for this assembly. Failure to do so **may adversely affect product performance and result in sickness or death.**

Do not clean respirator with solvents. Cleaning with solvents may degrade some respirator components and reduce respirator effectiveness. Inspect all respirator components before each use to ensure proper operating conditions. **Failure to do so may result in sickness or death.**

Never attempt to clean filters by knocking or blowing out accumulated material. This may result in damage to the filter membrane allowing hazardous particles to enter the breathing zone, **resulting in sickness or death.**

CAUTION:

- The 3M™ BP-15 Battery **IS NOT** Intrinsically Safe.
 - 3M™ GVP-100 Motor Blower, 3M™ GVP-110 Power Cord and 3M™ GVP-111 Battery Pack combination has been tested and classified by UL for intrinsic safety. If the GVP-111 battery case is compromised or cracked, or if the rubber switch boot is damaged or missing the battery should no longer be considered intrinsically safe.
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USE INSTRUCTIONS AND LIMITATIONS

Important

Before use, the wearer must read and understand these *User Instructions*. Keep these *User Instructions* for reference.

Use For

The 3M™ GVP Belt-Mounted Powered Air Purifier is to be used with certain 3M headgear and appropriate filters/cartridges to provide a NIOSH approved system for respiratory protection against certain acid gases, organic vapors and airborne particulate contaminants including dusts, fumes, mists, radionuclides and asbestos. Refer to the NIOSH approval label for specific system configurations.

Do Not Use For

- Oxygen deficient atmospheres
- Contaminant concentrations that are unknown or immediately dangerous to life or health (IDLH)
- Contaminated concentrations that exceed the maximum use concentration determined using the assigned protection factor (APF) recommended for the applicable headpiece or the APF mandated by specific government standards, whichever is lower.

Refer to additional limitations and cautions under NIOSH Cautions and Limitations.

Use Instructions

A complete NIOSH approved 3M™ GVP PAPR system is comprised of a belt-mounted rechargeable battery pack, power cord, motor blower unit, appropriate cartridge/filter combinations, breathing tube and the choice of an appropriate headgear. Refer to the GVP PAPR NIOSH approval label for specific headgear, breathing tube and cartridge/filter combinations and model numbers.

These NIOSH approved systems can offer respiratory protection against certain acid gases, organic vapors, and particulates, and allow freedom of movement for approximately eight hours of continuous use. Please refer to the NIOSH Cautions and Limitations in these *User Instructions* for restrictions on the use of this PAPR system

Use the 3M™ Spark Arrest Cover GVP-146 to help reduce exposure of the 3M™ Motor Blower GVP-100 and 3M™ GVP Cartridges or Filters to sparks and other hot materials, typically resulting from grinding/or welding operations. **Note:** Not for use with the 3M™ Vinyl Belt GVP-117.

Respirator Selection and Training

Use of these respirators must be in accordance with applicable health and safety standards, respirator selection tables contained in such publications as American National Standards Institute (ANSI) Z88.2-1992, Canadian Standards Association (CSA) Standard Z94.4 or pursuant to the recommendations of an industrial hygienist. The employer must have a written respirator program in place that complies with the OSHA respiratory protection standard 29 CFR 1910.134 prior to using any respirator. In Canada, follow CSA standard Z94.4 or the requirements of the authority having jurisdiction in your region.

Before use, the employer must assure that each respirator user has been trained by a qualified person in the proper use and maintenance of the respirator and air supply components according to the instructions contained in these *User Instructions* and other applicable *User Instructions* accompanying component parts.

WARNING

Each person using this respirator assembly must read and understand the information in these *User Instructions* before use. Use of these respirators by untrained or unqualified persons, or use that is not in accordance with these *User Instructions*, **may adversely affect respirator performance and result in sickness or death.**

Assigned Protection Factors (APF)

Refer to the *User Instructions* for the specific headgear to be used to determine the assigned protection factor for the GVP PAPR system. Consult 3M Technical Data Bulletin #175 (www.3M.com/OccSafety) for further information on APFs and supporting test data.

NIOSH Approvals

For a listing of the components of NIOSH approved 3M™ GVP PAPR respirator systems, refer to the GVP NIOSH respirator approval label or contact 3M Technical Service at 1-800-243-4630.

NIOSH Cautions and Limitations

- A– Not for use in atmospheres containing less than 19.5 percent oxygen.
- B– Not for use in atmospheres immediately dangerous to life or health.
- C– Do not exceed maximum use concentrations established by regulatory standards.
- F– Do not use powered air-purifying respirators if airflow is less than four cfm (115 lpm) for tight fitting facepieces or six cfm (170 lpm) for hoods and/or helmets.
- H– Follow established cartridge and canister change schedules or observe ESLI to ensure that cartridge and canisters are replaced before breakthrough occurs.
- I– Contains electrical parts that may cause an ignition in flammable or explosive atmospheres.
- J– Failure to properly use and maintain this product could result in injury or death.
- L– Follow the manufacturer's User's Instructions for changing cartridges, canister and/or filters.
- M– All approved respirators shall be selected, fitted, used, and maintained in accordance with MSHA, OSHA, and other applicable regulations.
- N– Never substitute, modify, add, or omit parts. Use only exact replacement parts in the configuration as specified by the manufacturer.
- O– Refer to User's Instructions, and/or maintenance manuals for information on use and maintenance of these respirators.
- P– NIOSH does not evaluate respirators for use as surgical masks.

SPECIFICATIONS

Powered Air Purifier

Noise Level (excluding external noise)	Less than 80 dBA
Operating Temperature Range	10°F to 120°F (-12°C to 49°C)
Decontamination of PAPR Unit (Motor Blower)	With the inlet and outlet plugs in place the unit may be rinsed with water/mild detergent or placed into equipment dishwasher. Limit water temperature to a maximum 120°F (49°C)
Voltage	4.8 Volts DC
Estimated Motor Life	2000 hours (Dependent on use conditions)

Battery Packs

BP-15 (NOT INTRINSICALLY SAFE) Rechargeable NiMH (Nickel Metal Hydride)

Service Time	Approximately 8 hours of continuous use
Charging Time	2 hours for 90% charge and 4 hours for complete charge on a fully discharged battery
Maximum Time on Continuous Charge	Recommend storing battery on BC-210 charger when not in use.
Battery Recharge Indicator	Indicates recharging is required. Battery will shut down in 10 to 15 minutes after indicator illuminates.
Storage Time	Battery will lose approx. 20% capacity per month
Maximum Operating Temperature Range	10°F to 120°F (-12°C to 49°C)
Battery Charging Temperature Range	50°F to 90°F (10°C to 32°C)
Voltage	6.25 Volts DC
Battery Life	Approximately 400 discharge cycles. Number of cycles is dependent on temperature conditions during use and recharging.

GVP-111 Rechargeable NiCd, Intrinsically Safe

Service Time	Approximately 8 hours of continuous use
Charging Time	20 hours initial charge, 14-16 hours after 8 hours of use
Maximum Time on Continuous Charge	Up to 1 week

Battery Recharge Indicator	Indicates recharging is required or bad cell in the battery. (This indicator does not measure airflow.)
Storage Time	Battery will lose approx. 20% capacity per month
Maximum Operating Temperature Range	10°F to 120°F (-12°C to 49°C)
Battery Charging Temperature Range	41°F to 77°F (5°C to 25°C)
Voltage	4.8 Volts DC
Circuit Breaker (resetting) will open if the battery is exposed to high temperatures. Will reset when the inside battery temperature is less than 122°F (50°C).	
Battery Life	Approximately 500 to 1000 discharge cycles. Number of cycles is dependent on temperature conditions during use and recharging.

Battery Charger

BC-210 charger for BP-15 NiMH Battery

Input	100-220 Volts AC
Output	12 Volts DC, 4.0 Amps

GVP-112 charger for GVP-111 NiCd Battery

Input	110-120 Volts AC
Output	6.8 Volts DC, 0.75 Amps

Weights

GVP-111 Battery	2.5 lb (1.1 kg)
BP-15 Battery	1.8 lb (0.83 kg)
Belt-Mounted Powered Air Purifier	1.1 lb (0.5 kg)
– with HE Filter	1.6 lb (0.72 kg)
– with OV Filter	2.6 lb (1.2 kg)
– with AG Filter	2.9 lb (1.3 kg)
– with OV/HE	3.1 lb (1.4 kg)
– with AG/HE	3.4 lb (1.5 kg)
– with OV/AG	2.6 lb (1.2 kg)
– with OV/AG/HE	3.1 lb (1.4 kg)

Intrinsic Safety

- The 3M™ BP-15 Battery **IS NOT** Intrinsically Safe.
- 3M™ GVP-100 Motor Blower, 3M™ GVP-110 Power Cord and 3M™ GVP-111 Battery Pack combination has been tested and classified by Underwriters Laboratory (UL) for intrinsic safety. It can be used in the following Division 1 locations: Class I; Group D, Class II, Groups E, F, G and Class III. If the GVP-111 battery case is compromised or cracked, or if the rubber switch boot is damaged or missing, the battery should no longer be considered intrinsically safe.

SYSTEM COMPONENTS AND REPLACEMENT PARTS



Do not use with parts or accessories other than those manufactured by 3M as described in these *User Instructions* or on the NIOSH approval label for this respirator. Do not attempt to repair or modify any component of the system except as described in these *User Instructions*. Failure to do so **may adversely affect respirator performance and result in sickness or death.**

3M™ PAPR Assembly GVP-1 NiMH

A complete PAPR system is comprised of a 3M™ Belt-Mounted Powered Air Purifier, NiMH rechargeable battery pack, appropriate cartridges/filter combination, breathing tube and appropriate headgear. This system offers respiratory protection against certain acid gases, organic vapors and particulates, and allows freedom of movement for approximately eight hours of continuous use. This system **IS NOT** intrinsically safe.

GVP-1NiMH contains the following:

- a) PAPR Unit (Motor/Blower) GVP-100
- b) Power Cord GVP-210
- c) Battery Pack BP-15
- d) Charger BC-210
- e) Flow Meter GVP-113
- f) Blower Plugs GVP-115 (inlet and outlet)
- g) Web Belt GVP-127
- h) Flow Meter Adapter L-181

GVP Series Assemblies* Not Shown:

*GVP-1U NiMH: GVP-1NiMH with GVP-117 Urethane Belt.

*GVP-CB NiMH: GVP-1NiMH with CB-1000 Comfort Belt

*same as GVP-1NiMH, except for belt

GVP optional parts not shown:

- Urethane Waist Belt GVP-117

- Urethane Shoulder Strap GVP-118

- Web Shoulder Strap GVP-128

- Comfort Belt CB-1000

- Spark Arrest Cover GVP-146

- Adapter V-199 for approved BT series breathing tubes

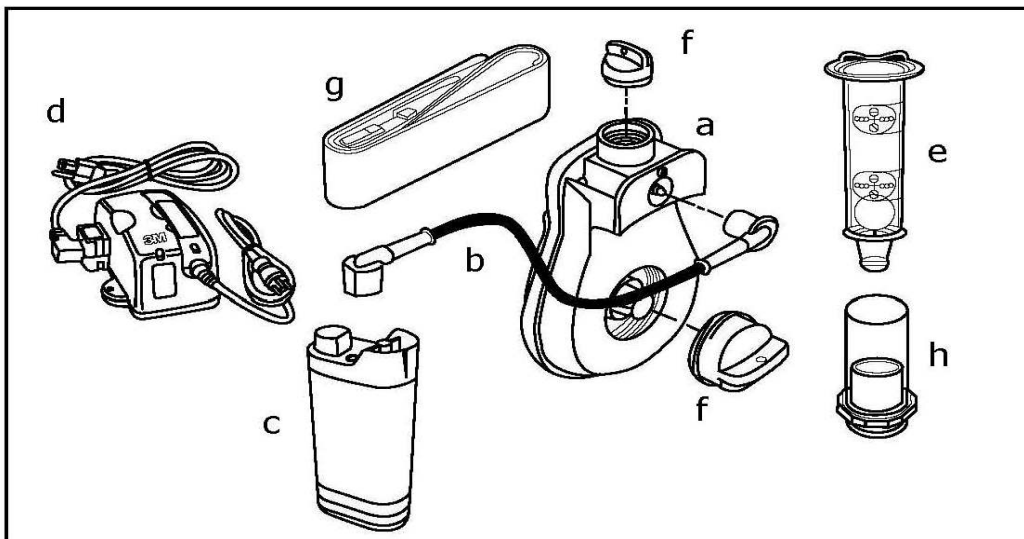


Fig. 1

3M™ PAPR Assembly GVP-1 (Intrinsically Safe System)

A complete PAPR system is comprised of a 3M™ Belt-Mounted Powered Air Purifier, NiCd rechargeable battery pack, appropriate cartridges/filter combination, breathing tube and either a loose-fitting or tight-fitting respiratory headgear. This system offers respiratory protection against certain acid gases, organic vapors and particulates, and allows freedom of movement for approximately eight hours of continuous use. This system **IS** intrinsically safe.

GVP-1 contains the following:

- a) PAPR Unit (Motor/Blower) GVP-100
- b) Power Cord GVP-110
- c) Battery Pack GVP-111
- d) Charger GVP-112
- e) Flow Meter GVP-113
- f) Blower Plugs GVP-115 (inlet and outlet)
- g) Web Belt GVP-127
- h) Flow Meter Adapter L-181

GVP Series Assemblies* Not Shown:

*GVP-1U: GVP-1 with GVP-117 Urethane Belt.

*GVP-CB: GVP-1 with CB-1000 Comfort Belt

*same as GVP-1, except for belt

GVP optional parts not shown:

- Urethane Waist Belt GVP-117- Urethane Shoulder Strap GVP-118

- Web Shoulder Strap GVP-128

- Comfort Belt CB-1000

- Spark Arrest Cover GVP-146

- Adapter V-199 for approved BT series breathing tubes

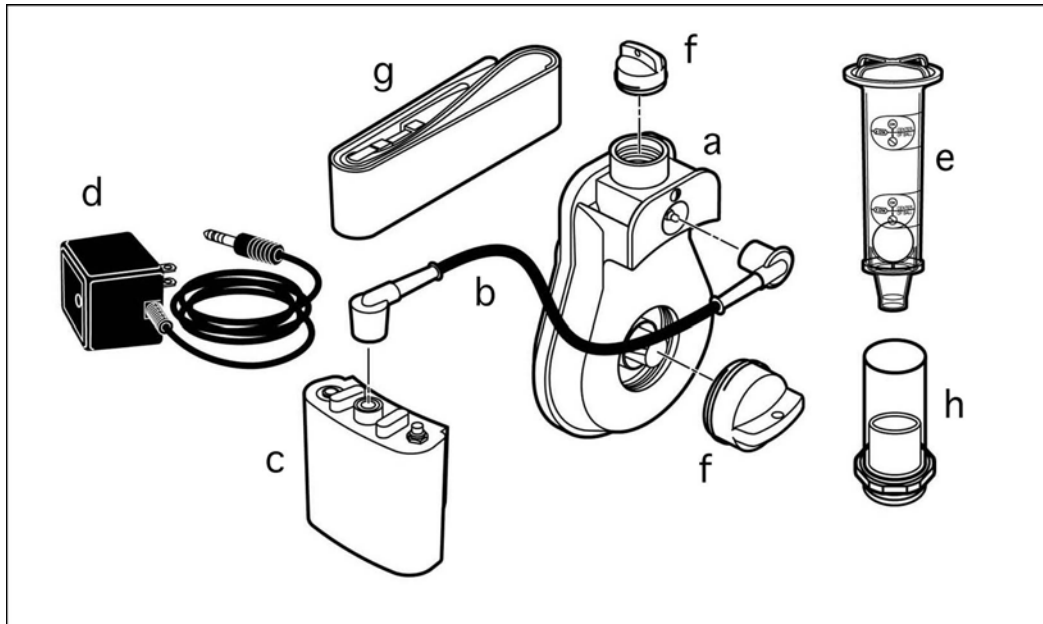


Fig. 2:

Filters/Cartridges

GVP-401	Organic Vapor (OV)	GVP-441	Organic Vapor/HE (OV/HE)
GVP-402	Acid Gas (HC/CL/SD/CD/HF)	GVP-442	Acid Gas/HE (HC/CL/CD/SD/HF/HE)
GVP-403	Organic Vapor/Acid Gas (OV/HC/CL/CD/SD/HF/HS)	GVP-443	Organic Vapor/Acid Gas/HE (OV/HC/CL/CD/SD/HF/HS/HE)
GVP-404	Ammonia/Methylamine (AM/MA)	GVP-444	Ammonia/Methylamine/HE (AM/MA/HE)
GVP-405	Formaldehyde (FM)	GVP-445	Formaldehyde/HE (FM/HE)
GVP-440	High Efficiency (HE)		

ASSEMBLY PROCEDURES AND PERFORMANCE CHECK

To set up a correct and complete assembly follow the instructions for each component and check the performance. The 3M™ Belt-Mounted PAPR must be used with the appropriate 3M™ components listed below:

Components

Description

Belt-Mounted PAPR Assembly

3M™ Product

GVP-1: Includes GVP-100 Motor Blower, GVP-111 battery, GVP-112 charger, GVP-127 web belt, GVP-113 flow meter, GVP-181 L-Series flow adapter, GVP-110 power cord and GVP-115 plugs

GVP-1U: GVP-1 with GVP-117 Urethane Belt.

GVP-CB: GVP-1 with CB-1000 Comfort Belt

GVP-1NiMH: Includes GVP-100 Motor Blower, BP-15 battery, BC-210 charger, GVP-127 web belt, GVP-113 flow meter, GVP-181 L-Series flow adapter, GVP-210 power cord and GVP-115 plugs

GVP-1U NiMH: GVP-1NiMH Belt-Mounted PAPR Assembly with GVP-117 Urethane Belt.

GVP-CB NiMH: GVP-1NiMH Belt-Mounted PAPR Assembly with CB-1000 Comfort Belt

Filter and/or Cartridge

See filter/cartridge list above.

Breathing Tube

See *User Instructions* for the specific headgear to be used to determine the correct breathing tube

Assembly with Vinyl and Web Belt

1. Place the belt through the plastic belt holder on the PAPR motor blower.
2. If using the CB-1000 Comfort Belt refer to separate *User Instructions* for information on assembly.

3. Thread the belt into the belt slot on the back of the GVP-111 battery. (Placing the GVP-111 battery onto the belt last will allow for easier removal for charging.)
4. The BP-15 battery is equipped with a clip that slides on and off the belt. Ensure that the bottom of the BP-15 battery clip is underneath the belt.
5. Connect the power cord to the battery and the PAPR unit as demonstrated in Figs 1 and 2.
6. Secure the belt to your waist and adjust for a snug fit. Feed any excess belt length through the belt loop or cut to the desired length.

Note:

The PAPR and GVP-111 battery are designed so they may be positioned on the left, right or center of the back.

BP-15 Battery Charging

Refer to BC-210/BP-15 *User's Instructions*.

The BP-15 battery should be charged immediately upon receipt and stored on the BC-210 charger between uses. If the BP-15 will be stored off the charger, it should be fully charged initially and then fully recharged once every three months if not used sooner.

GVP-111 Battery Charging

Refer to GVP-111 *User's Instructions*.

NOTE: The GVP-111 should be charged for a minimum of 20 hours before initial use.

Users should also refer to 3M Technical Data Bulletin #178 – Maintenance and Care of 3M Powered Air Purifying Respirator (PAPR) Batteries (www.3M.com/OccSafety).

Filter/Cartridge Assembly

WARNING

Be certain that the filter and/or cartridge that you are placing on the unit is appropriate for the contaminants to which you will be exposed. **Failure to do so may result in sickness or death.**

Do not over-tighten filter/cartridge. Over-tightening may result in distortion or displacement of the seal and may allow contaminated air to enter the respirator headpiece and **may result in sickness or death.**

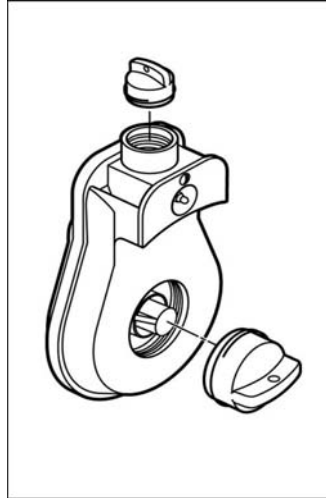


Fig: 3

1. Remove the plastic caps from the cartridge/filter.
2. Inspect the cartridge/filter for damage to the threads, plastic body or filter media. Discard if damaged.
3. Remove inlet and outlet motor/blower plugs as shown and check that the gaskets are in place. Do not discard the plugs; they should be re-inserted during cleaning (Fig. 3).
4. Inspect the gaskets in the inlet and outlet ports for cracks or excessive wear. If needed, replace with inlet gasket or outlet gasket (GVP-101 contains both gaskets).
5. Secure the cartridge/filter into the inlet of the motor/blower unit by hand tightening.
6. Connect the power cord between the battery and motor/blower unit (Fig. 1 and 2).

Connecting Breathing Tube to GVP-100 Motor Blower

1. If using the H-115, GVP-122, L-122 or GVP-123 breathing tube, screw the threaded end into the outlet port of the GVP-100 as shown in Figure 4.

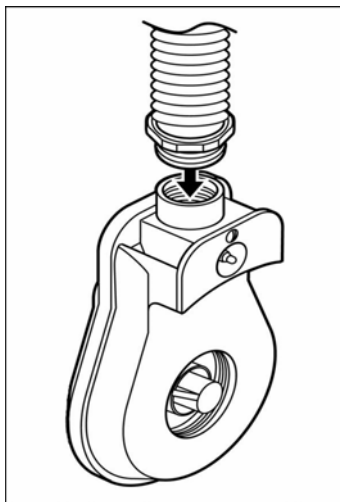


Fig: 4

2. If using a BT series breathing tube, first screw the 3M™ V-199 adapter into the outlet port of the GVP-100. Then attach the BT breathing tube to the adapter by inserting the tube end with two prongs into the top of the adapter. Twist the end of the tube to lock it in place (Fig.5).

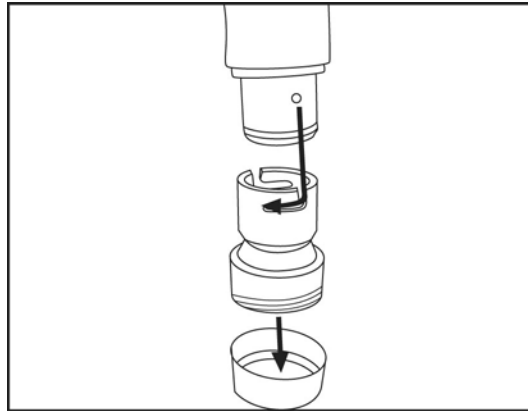


Fig: 5

Connecting the Breathing Tube to the Headgear (Respiratory Inlet Cover)

Follow the instructions below for the headgear to be used and refer to the specific headgear *User Instructions* for additional information.

3M™ Full Facepiece Respirators 7000 Series

1. Remove the 3M™ 7890 Center Port Plug from the full face respirator. Ensure 7890 plugs are in place on each side port of the respirator. (Fig.6)

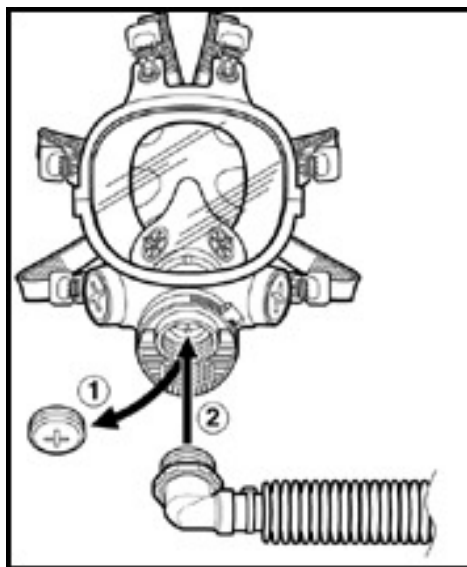


Fig: 6

2. Screw GVP-123 breathing tube elbow adapter into the center port of the 7800S facepiece inlet of the respirator. (Figure6)

4. Follow user donning and seal check procedures described in the *User Instruction* provided with the 7800S facepiece.
5. Screw the breathing tube inlet into the 3M™ PAPR outlet. Activate the unit with the power switch on the battery pack.

3M™ Full Facepiece Respirators 6000DIN Series

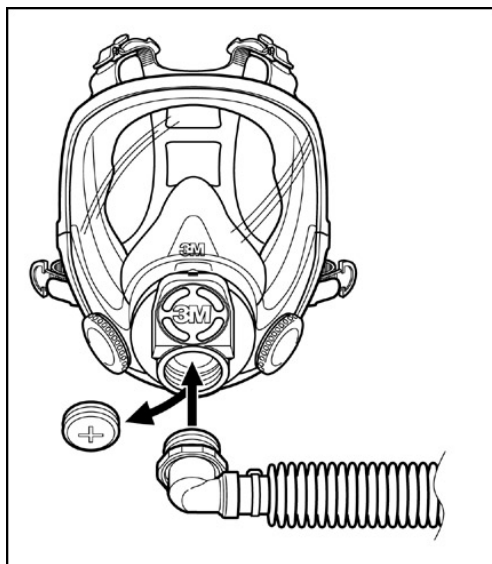


Fig: 7

1. The 6000DIN Series Full Face Respirator must be equipped with the 6884 DIN Port Adapter.
2. Remove the 7890 plug from the center port of the 6884 adapter.
3. Be sure a 6876 breathing tube gasket is in the port. If not present, install a new 6876 gasket.
4. Ensure a 6895 inhalation port gasket and 6880 bayonet cap are attached and secure on each of the side bayonet ports.
5. Screw GVP-123 breathing tube elbow adapter into the center port of the 6884 adapter (Fig. 7).
6. Screw the breathing tube inlet into the PAPR outlet.
7. Follow donning and user seal check procedures described in the *User Instructions* provided with the 6000DIN facepiece.
8. Activate the unit with power switch on the battery pack.

3M™ H-Series Hoods

1. Follow the set-up steps outlined in the H-Series Hoods *User Instructions*. These instructions describe the set-up of the selected suspension, chin strap, shroud and faceshield covers. After the hood has been assembled follow the instructions below:
2. Insert the collar end (non-threaded end) of the H-115 or GVP-122 breathing tube into the air inlet at the back of the hood. The breathing tube should be inserted a minimum of 3 inches.
3. Place the plastic squeeze clamp approximately 1 1/2 inches above the end of the air inlet and squeeze in place to secure the breathing tube to the hood.
4. Place the hood on your head and let the breathing tube unwind in the back.

5. Screw the breathing tube inlet into the belt-mounted PAPR outlet. Activate the unit with the power switch on the battery pack.

3M™ L-Series Headgear

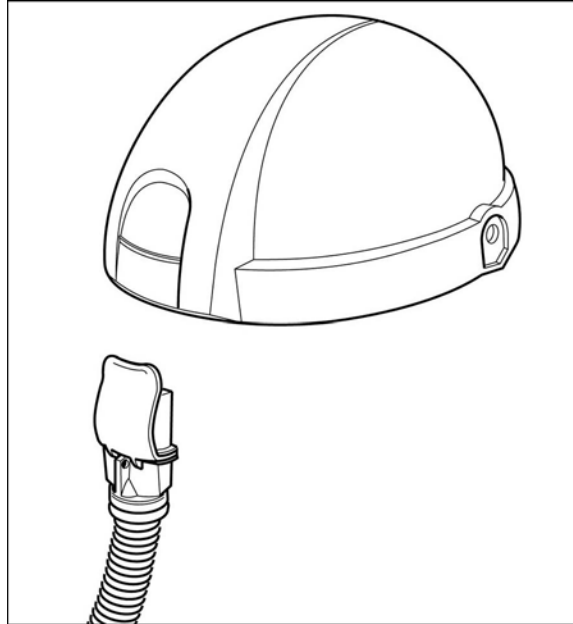


Fig: 8

1. Follow the assembly and set-up procedures outlined in the L-Series Headgear *User Instructions*. These instructions describe the methods used to properly configure the headgear for operation. After the headgear has been properly assembled follow the instructions below:
2. Insert the rectangular end of the 3M™ L-122 Breathing Tube into the air inlet of the L-Series Headgear. Push until the clamp snaps into place (Fig.8).
3. Place headgear on your head and let the L-122 breathing tube unwind.
4. Screw the threaded end of the L-122 breathing tube into the PAPR outlet.
5. Activate the unit by pushing the power switch on the battery pack.

Other Approved Headgear

For headgear not listed here, refer to the *User Instructions* for the specific headgear to be used for information on connecting the breathing tube.

Performance Check with 3M™ Flow Meter

Prior to using this PAPR, complete the test described below to check the status of the battery, filter/cartridge, breathing tube and airflow.

⚠ WARNING

Failure to pass a user performance check and complete all necessary repairs before use **may adversely affect respirator performance and result in sickness or death.**

Flow Meter

The flow meter is designed to check airflow being supplied by the GVP PAPR unit. This process should be followed prior to each use. Check the label on the meter to determine which test circle will be used for the airflow test.

1. Ensure that the filter selected for the workplace is secured to the PAPR before testing airflow.
2. Attach the appropriate breathing tube to the PAPR outlet (see above). Exceptions:
 - a. If the L-122 Breathing Tube is used, the 3M™ L-181 Adapter must be used instead of the breathing tube to check the airflow. The GVP-113 Flow Meter will not fit into the end of the L-122 Breathing Tube.
 - b. If a BT series breathing tube is used, the V-199 adapter must be used instead of the breathing tube to check the air flow. The GVP-113 Flow Meter will not fit into the end of the BT series breathing tube.
3. Turn the power on by pressing the toggle on the GVP-111 battery or turning the switch to the “ON” position for the BP-15 battery.
4. Insert the tapered end of the airflow meter:
 - a. L-181 adapter – insert into the vinyl connector (Fig. 9) and hold vertically
 - b. GVP-122, GVP-123 or H-115 – insert into the end of the breathing tube (Fig. 10) and hold vertically.
 - c. V-199 – insert into the end of the adapter (Fig 11) and hold vertically using the thumb and forefinger to cover the two breathing tube locking slots in the connector (Fig 12).
5. Locate the position of the ball in the airflow meter.

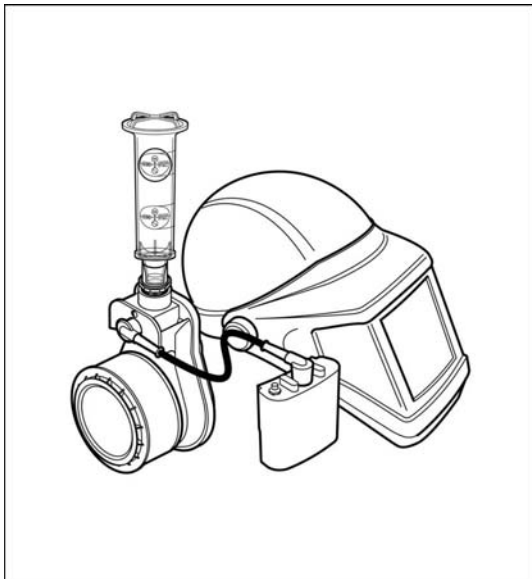


Fig: 9

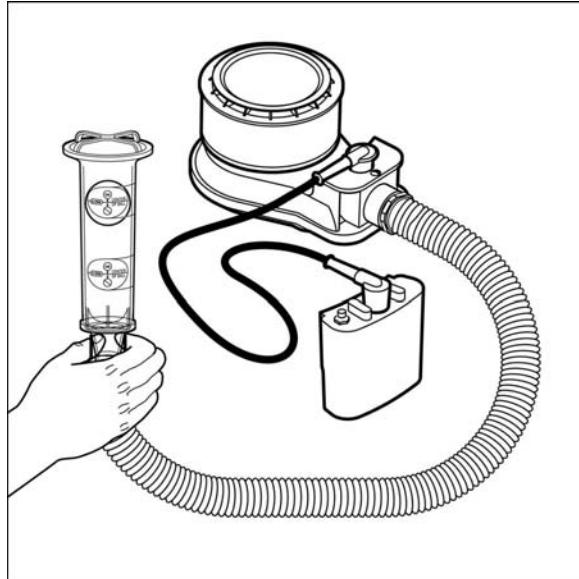


Fig: 10

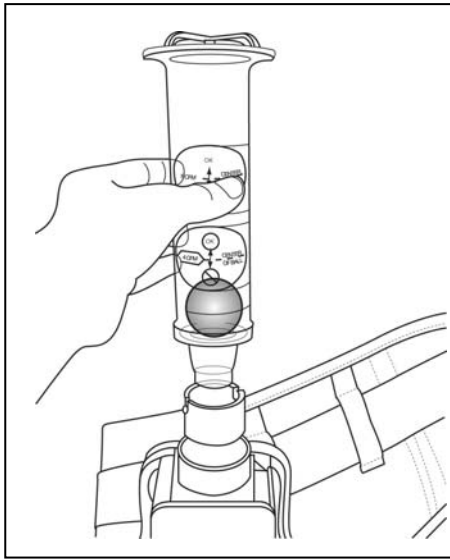


Fig: 11

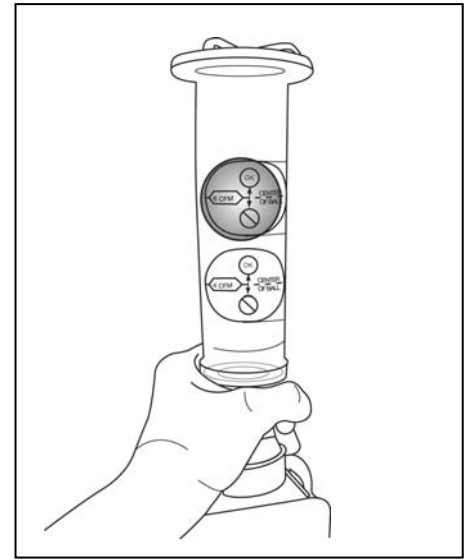


Fig: 12

6. For tight fitting facepieces the ball should be located in or above the lower (4 cfm) tight fitting flow test circle.
7. For loose fitting headgear, the ball should be located in or above the higher (6 cfm) helmet and hood flow test circle (Fig. 12).
8. If the ball fails to move fully inside or above the flow test circle, insufficient airflow is being provided. This may be the result of a battery with a low charge or an overloaded filter. Refer to Section on Troubleshooting.

General Respirator Fitting Instructions

Follow the performance check outlined in previous section and understand the operating instructions in the next section prior to using the PAPR.

⚠ WARNING

Before using a 3M™ GVP Respirator System, each person must read and understand the information in these *User Instructions* and the *User Instructions* provided with the respirator headpiece to be used. Use of these respirator systems by untrained or unqualified persons, or use that is not in accordance with these instructions, **may adversely affect respirator performance and may result in sickness or death.**

OPERATING INSTRUCTIONS

The following instructions are intended to serve as a guideline for the use of the 3M™ Belt-Mounted PAPR. It is not to be considered all-inclusive, nor is it intended to replace the policy and procedures for each facility.

WARNING

Use of this respirator in atmospheres for which it was not NIOSH certified and designed **may result in sickness or death**. Do not wear this respirator where:

- Atmospheres are oxygen deficient
- Contaminant concentrations are unknown
- Contaminant concentrations are immediately dangerous to life or health (IDLH)
- Contaminant concentrations exceed the maximum use concentration determined using the assigned protection factor (APF) recommended for the applicable headpiece or the APF mandated by specific government standards, whichever is lower. Refer to the *User Instructions* provided with the applicable headpiece.

Do not enter a contaminated area until properly donning the respirator system. Do not remove the respirator before leaving the contaminated area. **Doing so may result in sickness or death.**

Contaminants that are dangerous to your health include those that you may not be able to see or smell. Leave the contaminated area immediately if any of the following conditions occur. **Failure to do so may result in sickness or death.**

- Airflow decreases or stops
- Any part of the system becomes damaged
- Airflow into the respirator decreases or stops
- Breathing becomes difficult
- You feel dizzy or your vision is impaired
- You taste or smell contaminants
- Your face, eyes, nose or mouth become(s) irritated
- You suspect that the concentration of contaminants may have reached levels at which this respirator may no longer provide adequate protection.

Do not expose blower/filter assembly directly to sparks or molten metal spatter. Direct contact with sparks or molten metal spatter may damage the filter, allowing unfiltered air into the breathing zone and may cause the filter or blower assembly to ignite, **resulting in serious injury, sickness or death.**

If you have any doubts about the applicability of the equipment to your job situation, consult your supervisor, an industrial hygienist or call 3M's Occupational Health and Environmental Safety Division Technical Service Department 1-800-243-4630. In Canada, call Technical Service at 1-800-267-4414.

General Use Instructions

1. Select the appropriate filter and or cartridge combination for your specific workplace contaminants. The useful service life of filter/cartridge will depend upon the following: the types of contaminant and their concentration, plus environmental conditions such as humidity and temperature.
2. Use the 3M™ Spark Arrest Cover GVP-146 to help reduce exposure of the 3M™ Motor Blower GVP-100 and 3M™ GVP Cartridges or Filters (PAPR Unit) to sparks and other hot materials, typically resulting from grinding/or welding operations. **Note:** Not for use with the 3M™ Vinyl Belt GVP-117.

3. Refer to the previous sections in this *User Instruction* for complete set-up procedure.
4. Complete the airflow performance check before each use as described in Section, "Assembly Procedures and Performance Check".
5. Perform necessary adjustments to the respiratory headgear. Follow the *User Instructions* for your 3M headgear to properly assemble and adjust your specific headgear.
6. Attach the breathing tube to the GVP PAPR. Attach the headgear to the breathing tube. Activate the PAPR with the ON/OFF switch on the battery pack. Don the respiratory headgear as described in the *User Instructions* for the specific headgear used..
7. Observe all WARNINGS contained in these *User Instructions* when wearing this product. **Failure to do so may result in sickness or death.** Do not use for respiratory protection when atmospheric concentrations of contaminants are unknown or immediately dangerous to life or health, or in atmospheres containing less than 19.5% oxygen.

INSPECTION, CLEANING AND STORAGE

WARNING

Never alter or modify this respirator. Repair or replace parts only with the 3M™ components approved for this assembly. Failure to do so **may adversely affect product performance and result in sickness or death.**

Inspection

If the 3M™ Belt-Mounted Powered Air Purifying Respirator has been dropped, or shows signs of damage due to impact or rough treatment, the unit should be removed from service and inspected. A general inspection should also be done before cleaning and prior to each use. The visual inspection should include the following:

1. Examine the outside of the PAPR case for cracks. Replace GVP-100 if needed.
2. Inspect the inlet and outlet port gaskets for cracks or excessive wear. If needed replace with inlet gasket or outlet gasket (GVP-101 contains both gaskets).
3. Examine the outside of the battery pack for cracks. Replace with GVP-111 or BP-15 if needed.
4. Inspect the breathing tube for punctures, cracks or general wear. Replace with the appropriate breathing tube to match the respiratory covering.
5. Examine the headgear per the recommendations in the headgear specific *User Instructions*.
6. Prior to each use the flow rate of the unit should be checked as outlined in Section, "Performance Check with the 3M™ Flow Meter" of these *User Instructions*.

Cleaning



Do not clean respirator with solvents. Cleaning with solvents may degrade some respirator components and reduce respirator effectiveness. Inspect all respirator components before each use to ensure proper operating conditions. **Failure to do so may result in sickness or death.**

Never attempt to clean filters by knocking or blowing out accumulated material. This may result in damage to the filter membrane allowing hazardous particles to enter the breathing zone, **resulting in sickness or death.**

You should not use solvents to clean the motor blower unit or battery case. Liquid solvents may chemically weaken the plastics. The following procedure is suggested for cleaning:

1. Properly dispose of the used filter/cartridge. Do not attempt to clean the filter. Dispose of the filter/cartridge according to applicable regulations.
2. Wipe the battery pack with mild cleaning solution. Do not immerse the battery pack.
3. Screw the blower plug and filter plug (GVP-115 consists of both plugs) into the motor blower unit. With the plugs in place the unit can be rinsed with a mild cleaning solution or it can be placed in an equipment washer. Do not expose to cleaning or drying temperatures greater than 120°F (49°C).

Storage

Store your respirator at room temperature in a dry area that is protected from exposure to hazardous contaminants.

TROUBLESHOOTING

Use the table below to help identify possible causes and corrective action for problems you may experience.

Problem	Possible Cause	Corrective Action
You smell or taste contaminants or an irritation occurs.	Misuse, improper assembly or malfunction of equipment.	Leave work area immediately and contact your supervisor. Do not use the PAPR until the cause is identified and corrected.
Dizziness occurs.	Gases or vapors broke through the chemical cartridge. The gas and vapor cartridge being used is incorrect for your workplace contaminants. Airflow too low. Inlet and outlet gaskets are in poor condition.	Leave work area immediately. Change gas and vapor cartridge. Refer to respirator decision logic such as ANSI Z88.2-1992 or 3M™ respirator selection guide or consult an industrial hygienist. Refer to Section "Set-Up Procedures and Performance Check". Replace gaskets.

GVP-111 battery recharge light remains "on".	The charger has malfunctioned. The battery has a dead cell(s).	Replace charger and charge battery. Replace battery pack.
Blower does not run when switch is depressed.	Battery is discharged. Power cord disconnected. Faulty power switch. Faulty power cord. Faulty motor.	Leave work area immediately. Recharge battery. Secure the power cord to the motor blower and battery. Replace battery pack. Replace power cord. Replace motor blower.
PAPR fails airflow test.	Clogged filter. Battery needs charging. Inlet and/or outlet gaskets are worn/damaged or missing. Motor blower malfunction. Breathing tube restricted.	Replace filter. Charge battery. Inspect and replace if necessary. (GVP-101) Replace motor blower unit. (GVP-100) Remove restriction.
BP-15 battery does not work after charging.	Low voltage detection circuit has not reset.	Recharge for short period of time.
BC-200 or BC-210 does not work, charge adapter indicator is steady yellow.	BP-15 battery is too hot or too cold for charging. Incorrect battery is connected to the charger.	Allow battery and charger temperatures to moderate to between 50° F (10° C) and 90° F (32° C). Select the correct charger for the battery.
BC-200 or BC-210 does not work, power base indicator is steady yellow.	Too many chargers are chained together. The maximum number allowed is ten (10).	Remove excess chargers.
BC-200 or BC-210 does not work, no lights illuminated on power base or charge adapter.	Fuse on power base has blown.	Determine cause of the blown fuse and replace with like fuse.
BC-200 or BC-210 does not work, the charge adapter indicator is red or is not illuminated.	Incorrect battery is connected to the charger. The BC-210 is only to be used with the BP-15 battery.	Select the correct charger for the battery.

IMPORTANT NOTICE

WARRANTY: In the event any 3M™ OH&ESD product is found to be defective in material, workmanship, or not in conformation with any express warranty for a specific purpose, 3M™'s only obligation and your exclusive remedy shall be, at 3M™'s option, to repair, replace or refund the purchase price of such parts or products upon timely notification thereof and substantiation that the product has been stored, maintained and used in accordance with 3M™'s written instructions.

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FOR MORE INFORMATION

In United States, contact:

Website: www.3M.com/OccSafety

Technical Assistance: 1-800-243-4630

For other 3M™ products:

1-800-3M-HELPS or 1-651-737-6501

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Printed in U. S. A.

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98-0060-0007-3/4