

3M Hoods R-Series

*User Instructions for 3M™ Hoods 522-01-11 and 522-02-17
and 3M™ Hood 522-02-23, Butyl Rubber*

(Keep these User Instructions for reference)



WARNING

This product helps protect against certain airborne contaminants. **Misuse may result in sickness or death.** For proper use, see supervisor, *User Instructions* or call 3M

GENERAL SAFETY INFORMATION

Intended Use

The 3M™ R-Series Hoods are loose fitting, positive pressure respirator headpieces. These headpieces, when combined with an appropriate powered air purifying respirator (PAPR) or supplied air system, are designed to provide respiratory protection against certain particulates, organic vapors, acid gases and other inorganic gases. (Fig. 1)

The hoods feature a wide-view faceshield and a shoulder length inner and outer shroud. The hoods are held in place by a sewn-in, elastic headband. Breathing air is supplied from a breathing tube connected to a snap-in hose connector, which is sewn into the back of the hood. Breathing air travels through the open space at the top of the hood, down over the user's face and down through the inner shroud.

The hoods are available in polycoated Tychem® QC material or in butyl rubber. Tychem® QC offers splash protection against many inorganic acids, bases and other liquid chemicals such as pesticides. This fabric is made from Tychem® that has been coated with 1.25 mil polyethylene. The butyl rubber hood offers resistance to certain chemical warfare agents and a range of other chemicals and meets Military Standard MIL-C-51251A (for butyl).

These hoods will accommodate limited facial hair without compromising performance, providing the facial hair does not protrude past the neck area or contact the inner shroud.

Note: Inspect emergency use respirators on a monthly basis.



Fig. 1 3M™ R-Series Hood with Breathe Easy™ PAPR System

WARNING

These respirators help protect against certain airborne contaminants. **Misuse may result in sickness or death.** For proper use, see supervisor, User Instructions, or call 3M Technical Service

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 reach your hand into the facepiece in areas where the air is contaminated. Leave the contaminated area and clean contaminants from your hands before reaching inside the hood.

CAUTION

This product contains natural rubber latex, which may cause allergic reactions in some individuals.

Important

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

Use For

Respiratory protection against certain airborne contaminants including particulates (dusts, fumes, mists, radionuclides and asbestos); organic vapors; acid gases; and other inorganic gases.

Do Not Use For

Atmospheres where oxygen concentration is below 19.5%. Concentrations of contaminants that are unknown; immediately dangerous to life or health (IDLH); exceeds applicable maximum use limitations under local standards or OSHA standards, whichever is lower. Refer to additional limitations and cautions under NIOSH Cautions and Limitations.

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 ANSI standard Z88.2-1992, in Canada CSA 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 found in 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 according to the instructions contained in these *User Instructions* and other applicable *User Instructions*.

WARNING

Each person using this respirator 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 this *User Instruction*, may adversely affect respirator performance and **result in sickness or death.**

Eye and Face Protection



These hoods do not provide eye or face protection. When exposed to eye or face hazards, the respirator wearer must wear eye and/or face protectors appropriate to the hazard. Failure to do so **may result in injury or death.**

Assigned Protection Factors

3M recommends an assigned protection factor (APF) of 1000 for hood type respirators. Where APFs in local, state, or federal standards are lower than 1000, they must be used instead. In Canada, follow CSA standard Z94.4 or the requirements of the authority having jurisdiction in your region.

NIOSH Approval

For a listing of the components of NIOSH approved 3M™ Respirator Systems using 3M R-Series hoods, refer to the NIOSH approval label included with your supplied air or PAPR system.

NIOSH Cautions and Limitations

Powered Air Purifying Respirator Systems

- 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 which have not been evaluated as an ignition source in flammable or explosive atmospheres by MSHA/NIOSH.
- 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.

Airline Respirator Systems

- B- Not for use in atmospheres immediately dangerous to life or health.
- C- Do not exceed maximum use concentrations established by regulatory standards.
- D- Air-line respirators can be used only when the respirators are supplied with respirable air meeting the requirements of CGA G-7.1 Grade D or higher quality.
- E- Use only the pressure ranges and hose lengths specified in the User's Instructions.
- J- Failure to properly use and maintain this product could result in injury or death.
- 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.
- S- Special or critical User's Instructions and/or specific use limitations apply. Refer to User's Instructions before donning.

SPECIFICATIONS

Airflow range –	6 to 15 scfm (170 to 425 lpm)
Weight –	Tychem® QC hood: Approx. 0.4 lb (181 g) Butyl rubber hood: Approx. 1.6 lb (726 g) Breathing tube assembly: Approx. 0.5 lb (227 g) Vorstream: Approx. 1.5 lb (680 g) Coldstream: Approx. 1.5 lb (680 g)
Temperature Range –	0 to 120 degrees F (-18 to 48 degrees C)
Breathing tubes –	Length: 26 in or 36 in (66 cm or 91 cm)
Faceshield dimensions –	Area 80 in ² (516 cm ²)
Faceshield material –	Tychem® QC Hoods: clear acetate Butyl Rubber Hood: PVC
Head protection –	None
Noise level –	Less than 80 dBA (Excluding external noise)
Hood fabric –	Tychem® QC: fabric with 1.25 mil polyethylene coating Butyl rubber: meets Military Standard MIL-C-51251A
Heat and flame resistance –	Both the Tychem® QC and butyl rubber hoods are not flame resistant and must not be used around heat, flames, sparks or in potentially explosive atmospheres.

Airflow with airline control valves

Vorstream –	Airflow will not exceed 12 cfm when using 25 feet of air supply hose and supplying 100 psig of breathing air to the vorstream tube. Airflow will not drop below 6 cfm when using 100 feet of air supply hose and supplying 80 psig of breathing air to the vorstream tube.
Coldstream –	Airflow will not exceed 12 cfm when using 25 feet of air supply hose and supplying 100 psig of breathing air to the coldstream tube. Airflow will not drop below 6 cfm when using 100 feet of air supply hose and supplying 70 psig of breathing air to the coldstream tube.

SYSTEM COMPONENTS AND REPLACEMENT PARTS

3M™ Hood R-Series System

Breathe Easy™ and Air-Mate™ Respirator Components

Part Number	Description
522-01-11R03	Hood, White, Regular, Tychem® QC (3/pack)
522-01-11R20	Hood, White, Regular, Tychem® QC (20/pack)
522-02-17R03	Hood, White, Large, Tychem® QC (3/pack)
522-02-23R01	Hood, Butyl Rubber
520-02-94R01	Breathing Tube Assembly (26 inch Length) for 3M™ Breathe Easy™ Turbo
520-01-00R01	Breathing Tube Assembly (36 inch Length) for 3M™ Breathe Easy™ Turbo
008-00-14R01	Breathing Tube Assembly for 3M™ Air-Mate™ PAPR

Supplied Air Components

Part Number	Description
524-01-12R01	Belt, 50 in x 2 in
520-02-90R01	Belt (w/plastic buckle)
520-01-60R01	Breathing Tube Assembly
529-01-13R10	Gasket for Breathing Tube (10/pack)
529-01-27R01	Pad (Coldstream/Vorstream)
529-01-22R01	Coldstream Cooling Assembly
529-01-24R01	Vorstream Cooling and Heating Assembly
526-01-21	Supplied Air Hose, 25 ft, Hansen Fittings
526-01-11	Supplied Air Hose, 50 ft, Hansen Fittings
526-01-06	Supplied Air Hose, 100 ft, Hansen Fittings
526-01-00	Supplied Air Hose, 25 ft, Hansen Fittings, Coiled
526-01-09	Supplied Air Hose, 50 ft, Hansen Fittings, Coiled
526-01-07	Supplied Air Hose, 100 ft Hansen Fittings, Coiled

ASSEMBLY

Connecting the Breathing Tube to the Hood

Push the end of the breathing tube with the slotted hose connector into the rear of the hood until it snaps into place.

Donning the System

The Tychem[®] QC hoods are supplied ready for use and are available in regular (for head sizes 6 1/2 to 7 3/8) and large (for head sizes 7 to 8). Since the sizing guidelines are general, the best fitting size hood for you may depend on your facial size and shape. Select the size that fits most comfortably and matches your head size. The butyl rubber hood is supplied in one size and fits most users.

Remove the protective covering from the visor. To achieve the best fit, the hood should be worn with the headband around your forehead and the straps in the top of the hood in contact with the top of your head. The elasticized edge of the faceseal should pull the hood material up in contact with your face under the chin and along the cheeks.

This hood is to be used with other protective clothing to allow the inner shroud to be tucked inside the protective clothing. Tuck the inner shroud under your protective clothing and allow the outer shroud to hang outside your clothing. It is important to ensure the breathing tube is not twisted after the complete system has been donned. (Fig. 2) Turn the battery pack on to draw ambient air through the filter/cartridge.



Fig. 2 Breathing Tube Connection

WARNING

The 3M R-Series hood in butyl rubber offers resistance to certain chemical warfare agents and a range of other chemicals and meets Military Standard MIL-C-51251A (for butyl).

The exterior surface of the 3M R-Series hood is polycoated Tychem[®] QC and is liquid repellent. However, the material is not flame resistant and must not be used around heat, flames or sparks, or in explosive atmospheres. Consult a qualified industrial hygienist and the Permeation Guide for DuPont Fabrics to ensure that contaminant and/or liquid permeation through the uncoated seams does not occur, and for advice on the use of Tychem[®] QC in your work environment. **Failure to do so may lead to serious bodily injury or death.**

Connecting the Hood to the Powered Air Purification Blower Unit or Supplied Air System

The 3M R-Series hood must be combined with one of the following powered air purification belt-mounted filtration/blower units or supplied air systems to form a complete positive pressure respirator system.

WARNING

The user must read and follow all *User Instructions* supplied with the PAPR motor blower or supplied air equipment. Incorrect operation of the PAPR motor blower or supplied air system could result in reduced airflow, interruption of airflow to the headpiece or contamination of breathing air and **may cause sickness or death.**

Breathe Easy™ Turbo Motor Blower (Breathe Easy™ PAPR System)

WARNING

Read and follow the *User Instructions* supplied with the Breathe Easy™ Turbo PAPR blower unit. Complete the pre-use inspection and user performance test specified by the PAPR *User Instructions* before attaching the 3M Breathe Easy™ Turbo PAPR motor blower to the headpiece. Failure to do so may adversely affect respirator performance and **result in sickness or death.**

Place the hose clamp onto the free end of the breathing tube. Slide that end of the breathing tube over the Breathe Easy turbo blower unit outlet and tighten the clamp. Ensure that the breathing tube is secured to the blower unit outlet and that the end of the breathing tube is visible between the turbo PAPR blower unit and the hose clamp.

Air-Mate™ Motor Blower (Air-Mate™ PAPR System)

WARNING

Read and follow the *User Instructions* supplied with the Air-Mate™ PAPR blower unit. Complete the pre-use inspection and user performance test specified by the PAPR *User Instructions* before attaching the Air-Mate™ PAPR blower to the headpiece. Failure to do so **may result in sickness or death.**

Insert the breathing tube (male end with pin) into the Air-Mate blower outlet port and twist clockwise until it snaps in place.

Supplied Air Systems (Vorstream and Coldstream)

Before connecting the breathing tube to the valve/tube assembly, make sure a gasket is fitted into the ribbed ring of the breathing tube. Place the ribbed ring of the breathing tube assembly onto the threaded coupling of the valve/tube assembly. Hand-tighten the ribbed ring clockwise to secure the breathing tube to the valve/tube assembly.

OPERATING INSTRUCTIONS



Always don the respirator in a non-contaminated area. Failure to properly don this respirator before entering a hazardous atmosphere **may result in sickness or death.**

Before you enter a hazardous atmosphere wearing this respirator, you must inspect the respirator, complete a user performance check, and don the respirator according to the instructions in the Assembly Section. Failure to do so may affect respirator performance and **result in sickness or death.** Do not wear this respirator headpiece to enter areas where atmospheric concentrations of contaminants are, unknown, immediately dangerous to life or health, exceed the Maximum Use Concentration (MUC*) for the respirator system, or where atmospheres contain less than 19.5% oxygen.

*MUC is equal to the respirator's Assigned Protection Factor (1000) times the Permissible Exposure Limit for the contaminant.

Your employer must provide compressed breathing air that meets at least the requirements of the specification for Grade D breathing air, as described in the Compressed Gas Association Commodity Specification G-7.1-1997 in the United States. In Canada, refer to CSA standard Z180.1, table for quality of compressed breathing air. **Failure to do so may result in sickness or death.**

You must comply with OSHA standard 29 CFR 1910.134, which states that, "Airline couplings shall be incompatible with outlets for other gas systems to prevent inadvertent servicing of airline respirators with nonrespirable gases or oxygen." In Canada, refer to the requirements of CSA standard CSA Z180.1. **Failure to do so may result in sickness or death.**

If you have any doubts about the applicability of the equipment to your job situation, consult an industrial hygienist or call the technical service department of 3M OH&ESD at 1-800-243-4630. In Canada, call Technical Service at 1-800-267-4414.

If this respirator fails any of the requirements of the user inspection and performance check, do not use the respirator until all necessary repairs have been made and the respirator passes the performance check. Failure to do so may adversely affect respirator performance and **result in sickness or death.**

General

1. Observe the condition of the breathing tube in the air inlet at the back of the hood. Verify that the air inlet is not twisted or obstructed in any way.
2. There are no holes, breaks, cracks, tears, or other damage in the breathing tube or air supply hoses.
3. Place your hand inside the facepiece, in the area above the faceshield. You should feel the air entering the hood.
4. Verify that the hood is connected to the air supply and that air is flowing before donning the hood.
5. With the respirator in operation and donned according to the instructions in the Assembly Section, enter the contaminated area, breathing normally. Keep all respirator system components away from equipment, vehicles and other physical and chemical hazards.

Supplied Air Systems Only

Verify the valve/tube assembly is not damaged or clogged; and all quick-disconnect locations are secure.

Read the pressure gauge located where you are attaching the supplied air hose to the source of breathing air to verify that the pressure is within the approved range. Adjust the pressure, as needed, within that range.

Vorstream 80-100 psig (5.6-7.0 kg/cm²)

Coldstream 70-100 psig (4.9-7.0 kg/cm²)

WARNING

Do not remove the respirator while you are in a hazardous atmosphere. 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.**

- 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

Remove the respirator in a clean area. Clean your hands of any contaminants before reaching inside the facepiece for any reason. Refer to the Cleaning and Inspection Section for cleaning, inspection and storage information.

Connect the valve/tube assembly to the air supply hose by pulling back the spring-loaded collar of the female coupling on the air supply hose, inserting and retaining the male quick-disconnect plug, and releasing the collar. Connect the other end of the air supply hose to your source of Grade D (or better) breathing air.

Adjust airflow for your Supplied Air System as follows

Vorstream Cooling and Heating Assembly

Adjust temperature by $\pm 45^{\circ}$ F ($\pm 25^{\circ}$ C) from ambient by moving the temperature control lever on the vorstream tube to the right or left.

Handle the vorstream tube carefully when air is flowing through the system. The tube may be hot or cold to the touch. The vorstream tube comes attached to a pad. Be sure to wear this pad next to your body.

Coldstream Cooling Assembly

Cool airflow a maximum of 45° F (25° C) from ambient by rotating the collar on the coldstream tube counterclockwise.

Handle the coldstream tube carefully when air is flowing through the system. The body and end of the tube may be hot to the touch. The coldstream tube comes attached to a pad. Be sure to wear this pad next to your body.

Adjusting the Belt Length

The valve/tube assembly is shipped already attached to the belt so that it will lie perpendicular to the belt when it is worn. Slide the metal adjustment buckle along the belt for a secure, comfortable fit. Fasten the belt at the front.

Compressor Requirements for the Supplied Air Systems

Valve	CFM (LPM) Required	CFM (LPM) Delivered	Supply Pressure Range	Maximum Number Hoses	Maximum Hose Length
Vorstream	25 cfm (708 lpm)	6 to 12 scfm (170 to 340 lpm)	80-100 psig (5.6-7.0 kg/cm ²)	4	100 ft (30.5 m)
Coldstream	15 cfm (425 lpm)	6 to 12 scfm (170 to 340 lpm)	70-100 psig (4.9-7.0 kg/cm ²)	4	100 ft (30.5 m)

INSPECTION, CLEANING, AND STORAGE

After each use, inspect the hood assembly to identify signs of damage or wear that may affect performance of the respirator and reduce the degree of protection provided. For a list of replacement parts, refer to the System Components and Replacement Parts Section. The Troubleshooting Section contains a troubleshooting guide to help you identify the proper action to take for specific problems that may be detected.

WARNING

If excessive wear and/or damage to the respirator or its components is observed at any time, do not use the respirator until all necessary repairs have been made and the wearer has successfully completed the User Performance Check described in the Operating Instructions Section of these *User Instructions*. Failure to do so **may result in sickness or death**.

Cleaning

Follow the hygiene practices established by your employer for the specific contaminants to which you have been exposed. To remove paint or other coatings from the faceshield, you may wipe the faceshield with mineral spirits.

WARNING

Do not clean hoods with detergents that contain lanolin or other oils since they may soften or distort the faceshield.

Do not wipe the faceshield with strong solvents such as MEK, acetone, toluene, as those may damage or distort the faceshield.

Do not soak hoods or components in cleaning solutions or solvents.

Misuse may adversely affect respirator performance and **result in sickness or death**.

Inspection

Visually examine the condition of the hood shell, head suspension, faceshield, breathing tube and air supply equipment after each use.

WARNING

If you discover any of the wear and damage described below, discard the component and replace it with a new one. Failure to do so may adversely affect respirator performance and **result in sickness or death**.

Hood

Check that there are no dents or cracks in the hood assembly. Look closely at the stitching. There should be no tears that could permit contaminated air to enter the hood.

Faceshield

Look for scratches or other visual distortions that make it difficult to see through the faceshield.

Valve

On the butyl rubber hood, inspect the valve assembly to insure all parts are present. There should be a valve cover and valve flap present in the valve holder. Verify the valve holder is tight in the visor by turning the retaining ring on the back of the valve assembly. There are no user replaceable parts in this assembly.

Breathing Tube

Carefully examine the entire breathing tube. Look for tears, holes or cracks. Bend the tube to verify that it is flexible.

Storage

Store your hood 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
Poor visibility through faceshield	<p>Faceshield cover is scratched or coated with debris</p> <p>Faceshield is scratched or coated with debris</p>	<p>Remove cover and replace</p> <p>Wipe debris off</p> <p>Dispose of hood and replace it with a new hood</p> <p>Consider using faceshield covers</p> <p>Wipe debris off</p>
Breathing tube pulls hood out of comfortable position	<p>Breathing tube too long</p> <p>Breathing tube too short</p>	Select appropriate length breathing tube (26 inch and 36 inch lengths are available)
Hood noisy	Twisted breathing tube inlet	Assure that the breathing tube is securely fastened to the hood and is not twisting the inlet opening.
Low airflow	<p>Breathing tube disconnected at hood or at control device</p> <p>Battery needs charging</p> <p>PAPR filter is loaded</p> <p>Compressed air hose disconnected at control device or at air source</p> <p>Supplied air pressure too low</p>	<p>Reattach tube</p> <p>See <i>User Instructions</i> for 3M belt-mounted PAPR for guidance.</p> <p>Reconnect each end of the hose</p> <p>Check pressure where hose is attached to source. Increase pressure within approved range.</p>

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