Advantage® 4000 Duo-Twin™ Model 4200

INSTRUCTIONS

parts lists
constant flow respirator

⚠ WARNING

This booklet, including the warnings and cautions inside, must be carefully read and followed by all persons who use or maintain this product, including those who have any responsibility involving its selection, application, service or repair. This respirator will perform as designed only if used and maintained according to the instructions. Otherwise, it could fail to perform as designed and persons who rely on this product could sustain serious personal injury or death.

The warranties made by MSA with respect to the product are voided if the product is not installed, used, and serviced in accordance with the instructions in this manual. Please protect yourself and your employees by following the instructions. Please read and observe the WARNINGS and CAUTIONS inside. For any additional information relative to use or repair, write or call 1-800-MSA-2222 during regular working hours.

See separate insert for NIOSH approval information for the Duo-Twin Respirator P/N 10091607.

For More Information, call 1-800-MSA-2222 or Visit Our Website at www.MSAnet.com

MSA The Safety Company
MINE SAFETY APPLIANCES COMPANY
PITTSBURGH, PENNSYLVANIA, U.S.A. 15230

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NIOSH APPROVAL INFORMATION 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.
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 instructions.
G- If airflow is cut off, switch to filter and/or cartridge and immediately exit to clean air.
H- Do not wear for protection against organic vapors with poor warning properties or those which generate high heats of reaction with sorbent.
J- Failure to use and maintain this product properly could result in injury or death.
L- Follow the manufacturerís User Instructions for changing cartridges and/or filters.
M- All approved respirators shall be selected, fitted, used, and maintained in accordance with 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 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.
S- Special or critical user instructions and/or specific use limitations apply. Refer to User Instructions before donning.

SPECIAL USER INSTRUCTIONS

1. Mersorb and Mersorb-P100 cartridges can be used against a mixture of chlorine and mercury that are both present simultaneously, but cannot be used if alternating between mercury-contaminated atmospheres and chlorine-contaminated atmospheres.
2. Mersorb and Mersorb-100 respirators utilize an end-of-service-life indicator for use against metallic mercury vapor. The band around the side of each Mersorb and Mersorb-P100 cartridge consists of chemically-treated paper. In use, as the paper is exposed to metallic mercury vapor it changes from orange to brown. When the indicator color changes to brown, the cartridge is beginning to lose its effectiveness against metallic mercury vapor and must be replaced. Thus, the wearer has a constant, positive check on the condition of his cartridge.
3. This approval applies only when the device is supplied with respirable air through 8 to 300 feet of air supply hose within the pressure range of 35 to 40 pounds per square inch gage.
4. A maximum of 12 sections of air supply hose may be used in making up the maximum working length of hose. Each section of coiled hose, regardless of length, is considered 50 feet in length (max.: 6 sections).

⚠ WARNING

1. **This respirator must be used in conjunction with the proper filters or cartridges for protection against specific contaminants.**
2. **Leave area immediately if:**
   a. **breathing becomes difficult**
   b. **dizziness or other distress occurs**
   c. **you taste or smell contaminant**
   d. **you experience eye, nose or throat irritation**
3. **This respirator may not provide a satisfactory seal with certain facial characteristics, such as beards or large sideburns, that prevent direct contact between the skin and the sealing surface of the facepiece. Do not use this respirator if such conditions exist.**
4. **Do not use for fire fighting.**
5. **Do not use as an underwater device.**
6. **Thoroughly check out the apparatus on receipt prior to use.**
7. **Do not use compressed oxygen with this device.**
8. **Use strictly according to the instructions, labels, and limitations pertaining to this device. Follow an established canister/cartridge(s) change-out schedule.**
9. **This respirator is for use by trained, qualified personnel only.**

Failure to follow the above warnings can result in serious personal injury or death.

RESPIRATOR USE LIMITATIONS

The wearer must comply with the following MSA respirator use limitations:

A. Maximum Use Concentration
Do not exceed ANY of the applicable maximum use concentrations listed below:

RESPIRATOR TYPE / RESPIRATOR USE	RESPIRATORS WITH PARTICULATE FILTERS OR FILTER CARTRIDGES	RESPIRATORS WITH CHEMICAL OR COMBINATION CARTRIDGES
Routine Use in Air-Supplied Mode Only - Including Entry, Continuous Use and Non-Emergency Egress	• 1,000 times Exposure Limit • IDLH	• 100 Times Exposure Limit • IDLH • 1,000 ppm organic vapors for organic vapor respirators only
Routine Use in Air-Purifying Mode - Including Entry, Continuous Use, Non-Emergency Egress and/or Moving from Station-to-Station	• 100 Times Exposure Limit • IDLH	• 100 Times Exposure Limit • IDLH • 1,000 ppm organic vapors for organic vapor respirators only
Emergency Escape in Air-Purifying Mode	• Unlimited	• 100 Times Exposure Limit • IDLH • 1,000 ppm organic vapors for organic vapor respirators only

B. The limitations outlined in the applicable NIOSH approval.

C. Any applicable limitation contained in a standard established by a regulatory agency (such as OSHA) with jurisdiction over the wearer.

D. Do not use for protection against substances with poor warning properties or those which generate high heats of reaction with sorbent material in the cartridge.

E. Do not wear for protection against the following contaminants regardless of concentration or time of exposure. This far-from-complete list is offered only as a guide to proper evaluation of the many contaminants found in industry. Contact MSA for further information on other specific materials.

- Acrolein
- Aniline
- Arsine
- Bromine
- Carbon monoxide
- Diisocyanates
- Dimethylaniline
- Dimethyl sulfate
- Hydrogen cyanide
- Hydrogen selenide
- Methanol
- Methyl bromide
- Methyl chloride
- Methylene chloride
- Nickel carbonyl
- Nitric Acid
- Nitro compounds:
  - Nitrogen oxide
  - Nitroglycerin
  - Nitromethane
- Ozone
- Phosgene
- Phosphine
- Phosphorous trichloride
- Stibine
- Sulfur chloride
- Urethane or other diisocyanate-containing paints
- Vinyl chloride

F. Mixtures of Contaminants — NIOSH allows this respirator to be used for protection against a mixture of contaminants that are present simultaneously or alternately against one contaminant then another (using the same cartridges or filters) if the mixture meets the following conditions:

a. The cartridge/filter must be approved for all contaminants present.
b. NIOSH permits mixing of the following contaminants: organic vapors, sulfur dioxide, chlorine, ammonia, methylamine, chlorine dioxide, hydrogen sulfide, and hydrogen chloride.
c. Particulates can be mixed with any other particulate or any gas or vapor for which the cartridge is approved.
d. Mersorb and Mersorb-P100 cartridges can be used against a mixture of chlorine and mercury that are both present simultaneously, but cannot be used if alternating between mercury-contaminated atmospheres and chlorine-contaminated atmospheres.
e. Contaminants present simultaneously must be below IDLH levels for the specific contaminants. If any one contaminant in the mixture exceeds the IDLH concentration then the entire mixture must be treated as IDLH and the respirator cannot be used (except for escape from particulates with appropriate filter).

Time Use Limitation
N- and R- filters shall be limited to 8 hours of use (continuous or intermittent) against particulates. [Service time can be extended by performing an evaluation in the specific workplace setting that demonstrates (a) that the extended use will not degrade the filter efficiency below 95% or (b) that the total mass loading of the filter is less than 100mg.]

EXPOSURE LIMITS

A listing of acceptable exposure limits from the following sources are provided on MSA's website found at www.MSAnet.com:
- American Conference of Governmental Industrial Hygienists (ACGIH)
- Occupational Safety and Health Administration (OSHA)
- National Institute for Occupational Safety and Health (NIOSH)
- American Industrial Hygiene Association (AIHA)

Contact MSA at 1-800-MSA-2222 for information.

Exposure Limits for Mixtures
The American Conference of Governmental Industrial Hygienists (ACGIH) publishes the following information to determine the TLV of a mixture.

First determine the total concentration of the chemical mixture ($C_{Mixture}$) from the individual contaminant concentrations (C_1, C_2, C_3, . . .) using the following formula:

$$C_{Mixture} = C_1 + C_2 + C_3 + \ldots$$

The TLV of the mixture is found by using the following formula where T_1, T_2, T_3, . . . are the individual contaminant TLVs and C_1, C_2, C_3, . . . are the individual contaminant concentrations:

$$T_{Mixture} = \frac{C_{Mixture}}{\frac{C_1}{T_1} + \frac{C_2}{T_2} + \frac{C_3}{T_3} + \ldots}$$

Only use these equations if the contaminants present are actually mixed. Some substances do not mix and may be present separately, for example, in pockets or at different levels. In that case, the lowest TLV of the substances present must be used to determine the appropriate respirator category for protection against all contaminants present.

See MSA's website at www.MSAnet.com for additional information.

RESPIRATOR FIT TEST

A qualitative or quantitative respirator fit test must be carried out for each wearer of this respirator to determine the amount of protection it will provide. Respirator fit tests are explained fully in the American National Standard for Respiratory Protection, ANSI Z88.2, which is published by the American National Standards Institute, 11 West 42nd Street, New York, New York 10036.

Quantitative Test
If a quantitative fit test is used, a fit factor that is at least 1,000 shall be obtained before that respirator is assigned to an individual.

Qualitative Test
If a qualitative fit test is used, only validated protocols are acceptable. The individual must pass a test designed to assess a fit factor of at least 1,000.

Duo-Twin Respirators must be qualitatively or quantitatively fit tested in a negative-pressure mode. This will cover use of the respirator in both air-purifying and air-supplied modes of operation.

⚠ WARNING

The user must perform a respirator fit test and follow all warnings and limitations specified. Failure to do so can result in serious personal injury or death.

APPLICATION AND OPERATING PRINCIPLE

The Advantage 4000 Duo-Twin Respirator is a combination air supplied respirator and air purifying respirator. It is NIOSH approved for use with either particulate filters and/or chemical cartridges for respiratory protection against specified contaminants.

The air supplied mode of operation enables the user to work for long periods of time in contaminated atmospheres without depleting the filters or cartridges. The air purifying mode of operation can be used for entry, egress, and moving from station to station in a contaminated atmosphere. It can also be used for continuous use when an air supply is not available. The Duo-Twin Respirator is not for use in atmospheres containing less than 19.5 percent oxygen or in immediately dangerous to life or health (IDLH) atmospheres.

Constant Flow Type - During use, the air-supplied mode of operation prevails as long as the user is connected to an air source. The air purifying mode of operation is entered automatically if the air-line is disconnected or if the air source is lost for any reason.

Inhaled air enters the facepiece either through the filters or cartridges or from the airline, valve, and breathing tube. The inhaled air passes over the lens, keeping it free from fog, before it is taken into the lungs. Exhaled air leaves the facepiece through the exhalation valve and consequently is not rebreathed. A check valve prevents the exhaled air from passing out through the filters or cartridges.

BEFORE USE

1. Make sure certain conditions of exposure are (a) within the limits for which the device is approved (see appropriate NIOSH approval plate) and, (b) within the limits established by MSA (see “Respirator Use Limitations” section). Do not use in areas which are not ventilated. Do not use in atmospheres containing less than 19.5 percent oxygen or in atmospheres immediately dangerous to life or health. If oxygen concentration sufficient to support life is questionable, use self-contained breathing apparatus only.
2. Do not wear for protection against substances with poor warning properties or those which generate high heats of reaction with sorbent materials in the cartridge.
3. Wear impermeable protective clothing for exposure to gases and vapors which can poison by skin absorption.
4. Ensure that a source of air is available which conforms to the requirements as specified in the “Air-Supply” section.
5. The following inspection points must be checked before donning the respirator. A respirator that fails the inspection must not be used. The respirator must be repaired or replaced.
   a. Headbands: Check to see that the headbands still have their elasticity.

Inspect for breaks or tears and make sure all buckles are in place and working properly.

b. Facepiece: Check facepiece for dirt, cracks, tears or holes. Inspect the shape of the facepiece for possible distortions that may occur from improper storage and make sure the rubber is flexible, not stiff.

c. Inhalation and exhalation valves: Check for cracks, tears, distortion, dirt or build-up of material between valve and valve seat.

d. Cartridge receptacles: Check to make sure gaskets are in place and check for cracks and damage to bayonet lugs.

e. Cartridges and/or filters: Make sure cartridges and filters are clean. Never try to clean a filter or cartridge by washing it or using compressed air. Inspect cartridges for dents, scratches or other damage.

6. Assemble respirator as follows:
   ATTACHING FILTER CARTRIDGE
   Model 4200, Twin-Port Respirator
   a. Align the cutouts on the cartridges with the lugs on the bayonets.
   b. Align the small lug on the connector with the match-mark located on the cartridge body. (see Replacing Cartridges).
   c. Attach the filter cartridges to facepiece connectors (bayonets).
   d. Turn the cartridge clockwise by hand until tight.
   e. Rotate the canister/cartridge(s) filter clockwise until fully engaged.
   Attaching the Snap-On Filters
   a. Place a filter in each filter cover. Never load filters into the receptacles.
   b. Snap filter cover onto both cartridges taking care not to damage the filter.
7. Securely attach breathing tube between airline valve and facepiece.
8. Slide belt clip onto belt.

9. Installing/Replacing the Canister/Cartridges/Filter

⚠ WARNING

Know the contaminant(s) in the environment before entering. Always check that the canister/cartridge(s)/filter(s) is appropriate for use in the environment. A canister/cartridge(s)/filter(s) which is not designed for the contaminant present may not provide protection.

Failure to follow this warning can result in serious personal injury or death.

a. After verifying that the canister/cartridge(s)/filter(s) type is appropriate for use in the environment:
   - Verify shelf life expiration date on carton, bag, and canister/cartridge(s)/filter(s) label has not been exceeded.

⚠ WARNING

- **DO NOT use an expired canister/cartridge(s)/filter(s).**
- **DO NOT use the canister/cartridge(s)/filter(s) if the bag is opened, damaged, or missing. The canister/ cartridge(s) must be in its original packaging prior to use in a contaminated environment. Do not reuse the canister/cartridge(s)/filter(s).**

Failure to follow this warning can result in serious personal injury or death.

- Remove canister/cartridge(s)/filter(s) from its packaging.
- Inspect the canister/cartridge(s)/filter(s) to be sure that it is not damaged.

Note: If applicable, place a new filter in each filter cover. Never load filters into the receptacles.

- Align the 3 bayonet lugs so the smaller lug is aligned with the smaller hole on the canister/cartridge(s)/filter.
- Rotate clockwise until fully engaged.

Use the canister/cartridge(s)/filter(s) immediately upon opening the bag. For gas mask canister, refer to the shelf life section for storing the canister outside the packaging. Discard canister/cartridge(s)/filter(s) after each use.

Replace the canister/cartridge(s)/filter(s) after each use. Follow the established canister/cartridge(s)/filter(s) change-out schedules to ensure that canister/cartridge(s)/filter(s) are replaced before breakthrough occurs. When used at defined occupational exposure limits, the rated service time cannot be exceeded.

Replacement of the Mersorb and Mersorb-P100 cartridge must occur at or before the end-of-service-life indicator turns brown in color.

After using the respirator in a gas mask application for escape, the canister must be replaced before reusing the respirator.

⚠ WARNING

DO NOT replace canister/cartridge(s)/filter(s) in a contaminated area. Be sure to follow applicable decontamination procedures. Failure to follow this warning can cause inhalation of contaminated air, resulting in serious respiratory injury or death.

When the mask is adjusted properly, the wearer should not taste or smell the contaminant, or experience eye, nose, or throat irritation. The wearer's inhalation resistance should be as experienced during training.

⚠ WARNING

- **If the respirator does not perform as specified, it must not be used until it has been checked by authorized personnel.**
- **Return to a non-contaminated area immediately if you experience unusual sensations (nausea, dizziness, eye irritation, unusual odor or taste, excessive fatigue, or difficulty breathing).**
- **When using filters in an application that produces sparks, ensure that they are protected by a shield. Contact with sparks can damage filters and reduce protection.**

7. Don and adjust in fresh air only per “Fitting the Mask” section. Check facepiece tightness per “Test for Tightness” section.
8. If filter is being reused, see “Replacing Cartridges/Filters” section.

DURING USE

When using the Advantage 4000 Duo-Twin Respirator with airline disconnected, the dust cover must be placed onto the airline quick disconnect fitting (Schrader/Foster steel or SnapTite fittings only).

Leave area immediately if:
1. Leakage is detected by smell, taste, or eye, nose or throat irritation.
2. High breathing resistance is encountered.
3. Any feeling of nausea, dizziness or ill-being develops.

AFTER USE

1. Check condition of respirator. Clean and replace any parts necessary.
2. Store apparatus in clean, dry location.

FITTING THE MASK - FULL FACEPIECE

Pull out headband straps, so that their ends are at the buckles, then grip the facepiece between thumb and fingers, insert chin well into the lower part of facepiece and pull headbands back over head. To obtain a firm and comfortable fit against the face at all points, adjust headbands as follows:
1. Make sure that straps lie flat against head.
2. Tighten the lower or “NECK” straps.
3. Tighten the “SIDE” straps.
4. Place both hands on headband pad and push it down towards the neck.
5. Repeat operations 2 and 3.

TEST FOR TIGHTNESS

THE FACEPIECE MUST BE SUBJECTED TO THE FOLLOWING TIGHTNESS TEST BEFORE EACH USE. With Air-Line disconnected, test the apparatus facepiece for tightness by holding the hands tightly over the inlet(s) of the filters or cartridges. Inhale gently so that the facepiece collapses slightly and hold breath for ten seconds. The facepiece will remain collapsed while breath is held providing the assembly is gas tight. If any leakage is detected around the facial seal, readjust head harness straps and repeat test until there is no leakage. If other than facial seal leakage is detected, the condition must be investigated and corrected before another test is made. The facepiece must pass the tightness test before the user attempts to enter any toxic atmosphere.

SERVICE LIFE INDICATOR

The Mersorb and Mersorb-P100 Cartridges utilize a service life indicator for use against metallic mercury vapor. The small area at the center of the inlet surface of each cartridge and the band around the side of each Mersorb and Mersorb-P100 cartridge consist of chemically treated paper. In use, as the paper is exposed to metallic mercury vapor, it changes from orange to brown. When the indicator color changes to brown, the cartridge is beginning to lose its effectiveness against metallic mercury vapor and must be replaced. Thus, the wearer has a constant, positive check on the condition of his cartridges.

REPLACING CARTRIDGES/FILTERS

The length of time the cartridge will give protection depends on the concentration of the contaminant and the rate of breathing while in the air purifying mode of operation. When the facepiece is properly adjusted, the following conditions are indications that the chemical cartridges or filters have served their useful life and must be replaced.

CARTRIDGES:
- — Odor or taste of gases or vapors; eye, nose, or throat irritation.
- — Mersorb and Mersorb-P100 Cartridges only: Brown color on end-of-service llfe indicator.

FILTERS: Excessive breathing resistance upon inhalation. Time use limitation has been reached.

Replace the canister/cartridge(s)/filter(s) after each use. Follow the established canister/cartridge(s)/filter(s) change-out schedules to ensure that canister/cartridge(s)/filter(s) are replaced before breakthrough occurs. When used at defined occupational exposure limits, the rated service time cannot be exceeded.

To replace filters proceed as follows:

A. Remove the filter covers and discard filters.
B. Place a new filter in each filter cover. Never load filters into the receptacles.
C. Replace filter covers taking care not to damage the filters.

⚠ WARNING

- **Protection voided if sealing gaskets are not in their proper places.**
- **Do not use a filter or chemical cartridge if there are any visible signs of damage.**
- **If respirator is worn through a shower (as in asbestos abatement), filters/cartridges must be replaced after each use.**

Failure to follow the above warnings can result in serious personal injury or death.

AIR SUPPLY

1. Air Hose - Any combination of the following Air Supply Hoses which does not exceed 300 feet may be used:

   Part No. 455020 - Hose, Neoprene, 15 ft., Brass, Model No. 7-665-1
   Part No. 455021 - Hose, Neoprene, 25 ft., Brass, Model No. 7-665-1
   Part No. 455022 - Hose, Neoprene, 50 ft., Brass, Model No. 7-665-1
   Part No. 471511 - Hose, PVC, 15 ft., Brass, Model No. 7-664-1
   Part No. 471512 - Hose, PVC, 25 ft., Brass, Model No. 7-664-1
   Part No. 471513 - Hose, PVC, 50 ft., Brass, Model No. 7-664-1
   Part No. 474043 - Hose, Coiled Nylon, 50 ft., Model No. 5-511-1
   Part No. 481051 - Hose PVC, 8 ft., Brass
   Part No. 481071 - Hose, Neoprene, 8 ft.

See air hose connection instruction sheet Part No. 995602 for possible assemblies which may be used to connect air hoses and valves.

2. Pressure -
   a. Constant Flow - Air must be supplied to the inlet end of the air hose under a pressure between 35-40 psig.
3. Air Source - The purity of the air supply is the responsibility of the user. The respirator is approved only when the air supplied meets the requirements of Compressed Gas Association Specification G-7.1 for type I, Class D Gaseous Air. This requires that the air contain no more than 20 parts per million (ppm) carbon monoxide, not more than 1000 parts per million (ppm) carbon dioxide, and not more than 5 milligrams per cubic meter of oil vapor or oil particulates.

CLEANING AND DISINFECTING

The facepiece (with the filters or cartridges removed) should be cleaned and disinfected after every use with MSA's Confidence Plus Cleaning Solution (P/N 10009971).

1. Make a solution, following the instructions on the cleaner disinfectant label.
2. Immerse soiled equipment in the solution and scrub gently with a soft brush until clean. Take care to clean the exhalation valve in the facepiece and all other parts that exhaled air contacts.
3. Rinse in clear warm water (at or below 120˚F) and then air dry.

None of the metal, plastic, rubber, leather, cloth, or glass parts will be adversely affected by the cleaning solution.

⚠ CAUTION

Cleaning and disinfecting at or below 120˚F will avoid possible overheating and distortion of parts of the respirator assembly, which would necessitate replacement.

⚠ CAUTION

DO NOT use alcohol as a germicide because it may deteriorate rubber parts.

Depending on the cleaning policy adopted, either a designated person or the user should clean the respirator after each use. Non-sudsing Confidence Plus® Cleaning Solution (P/N 10009971) from MSA is recommended. It is a germicidal cleaner that cleans and disinfects in one operation. It retains its germicidal efficiency in hard water to inhibit the growth of bacteria. It will not deteriorate rubber, plastic, glass, or metal parts. Refer to the label for use instructions. A solution as effective as Confidence Plus Cleaning Solution and compatible with MSA respirator components may be substituted. ANSI suggests that users be trained in the cleaning procedure.

⚠ WARNING

Be careful not to breathe or touch the contaminant in handling the respirator or its parts. If necessary, use equipment disposal to protect you from the specific contaminant. Failure to follow this warning can result in serious personal injury or death.

1. Preparing Solution
   a. Follow the instructions with the Confidence Plus Cleaning Solution.
   b. If the Confidence Plus Cleaning Solution is not used, wash in a mild cleaning solution, rinse thoroughly, and submerge in a germicide solu-

tion for the manufacturer's recommended time.

2. Clean and Disinfect the Facepiece
   a. Remove the canister/cartridge(s)/filter(s) from the facepiece.
   b. Thoroughly wash the facepiece (and nose cup) in the cleaning solution. A soft brush or sponge can be used to clean the soiled facepiece. Be sure to include cleaning the exhalation valve and seat.
   c. Rinse the facepiece and components in clean, warm (110°F), water (preferably running and drained).

⚠ CAUTION

If not rinsed thoroughly, cleaning agent residue may irritate the wearer's skin.

   d. Allow the facepiece to air dry. Do not dry the parts by placing them near a heater or in direct sunlight. The rubber will deteriorate.
   e. Operate the exhalation valve by hand to be sure it works properly.
   f. Harness (straps and buckles)
   g. The facepiece and components should be air-dried or hand-dried with a clean lint-free cloth.

⚠ CAUTION

DO NOT force-dry the parts by placing them in a heater or in direct sunlight. The rubber will deteriorate.

MAINTENANCE

This apparatus must be kept in good condition to function properly. When any part shows evidence of excessive wear or damage, it must be replaced immediately with the proper part. Extra parts should be readily available. Refer to the “Before Use” section for proper inspection of the apparatus. This apparatus, when not in use, should be stored in a clean, dry location.

⚠ WARNING

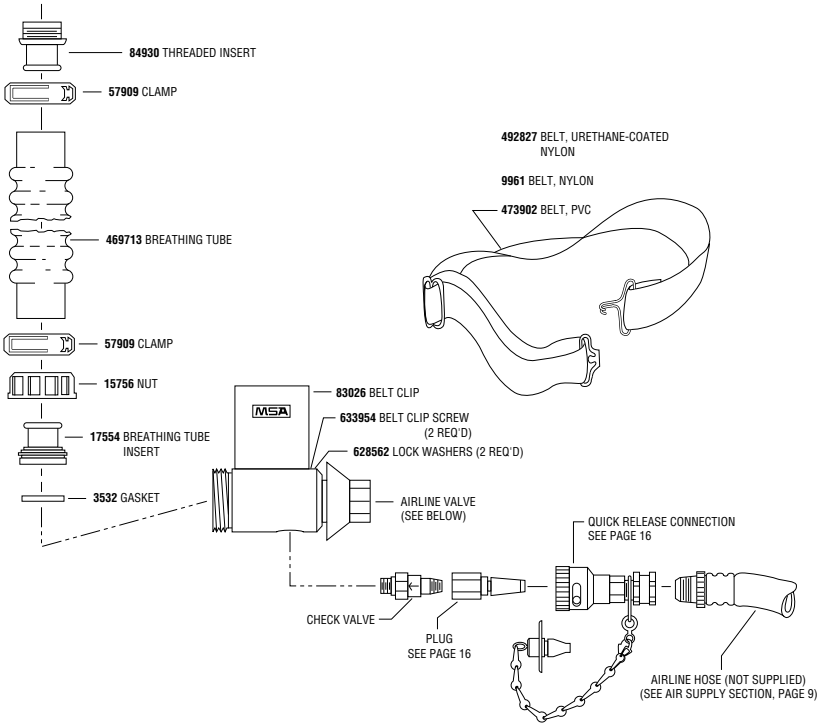
DO NOT enter any atmosphere with this respirator unless you know that:

- **You have read, understood and followed all instructions and warnings pertaining to the respirator.**
- **The respirator and conditions meet the requirements outlined.**
- **The cartridges are the proper type for the contaminants present.**
- **The amount of oxygen is sufficient to support life (that is, at least 19.5 percent oxygen by volume at sea level). Do not use if oxygen concentration sufficient to support life is questionable.**
- **Respirator does not leak. (See “Test for Tightness”.)**
- **Cartridges do not need to be replaced. Discard exhausted cartridges.**

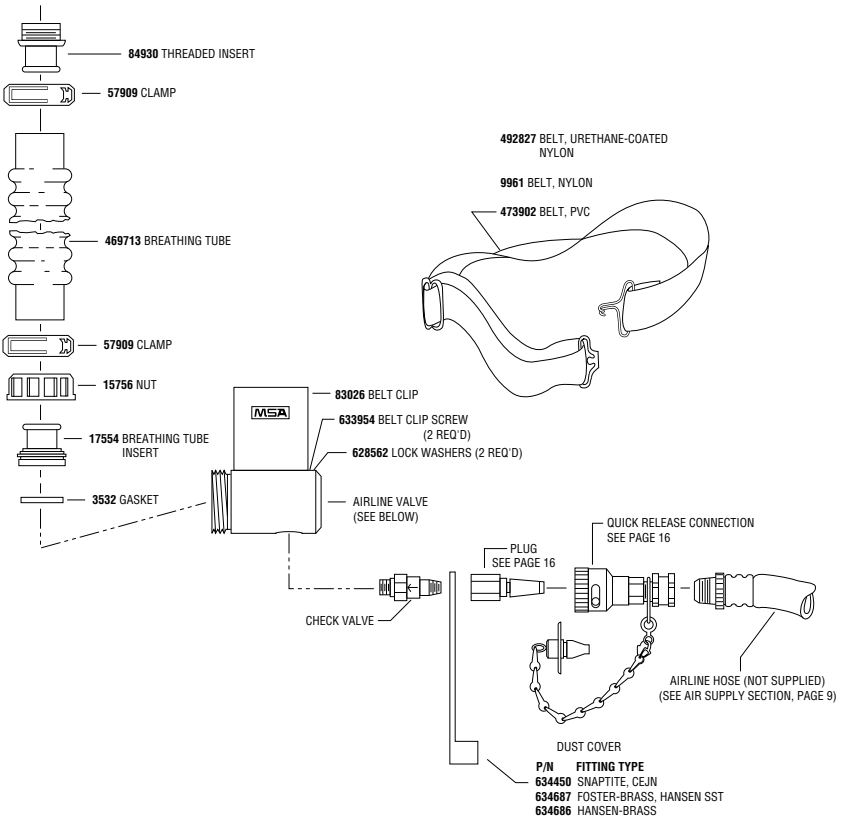
- **You are not color-blind and can distinguish between the beginning and ending colors of the service life indicator (when using Mersorb-P100 respirators only).**

Failure to follow this warning can result in serious personal injury or death.

Duo-Twin Constant Flow Respirator Components
(See page 17 for Facepiece)

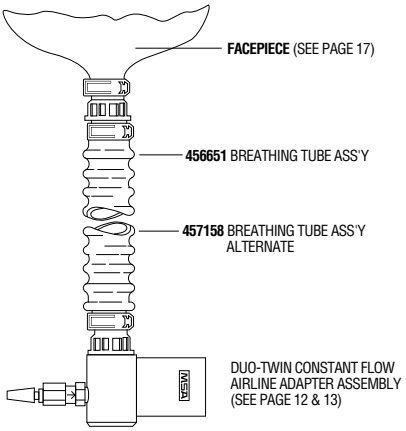


Duo-Twin Constant Flow Respirator Components
(See page 17 for Facepiece)



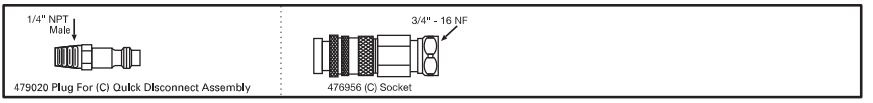
Duo-Twin Constant Flow Airline Valve Assemblies Complete Model 5-622-1 Part No.	Duo-Twin Constant Flow Airline Valve Assemblies Less Quick Disconnect Socket Part No.	Type
483526	484054	Snap-Tite (Al)
483530	484057	Snap-Tite (Brass)
483531	484058	Snap-Tite (SST)
483528	484055	Foster (Steel)
483532	484059	Foster (Brass)
483529	484056	Hansen (Brass)
483533	484060	Hansen (SST)
483535	484062	Cejn, Locking
483536	484063	Snap-Tite (Ai), Locking

Duo-Twin Constant Flow Respirator Assembly

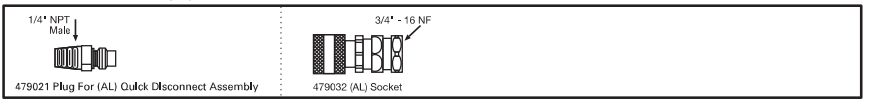


Duo-Twin Pressure Demand Respirator

CEJN — Chrome (C)

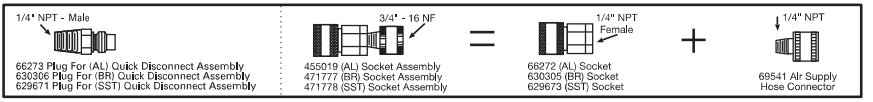


SNAP-TITE — Aluminum (AL)

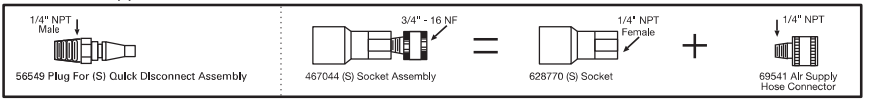


NON-LOCKING TYPES

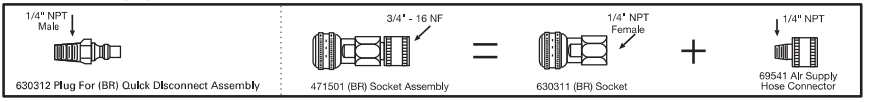
SNAP-TITE — Aluminum (AL) Brass (BR) Stainless Steel (SST)



FOSTER — Steel (S)

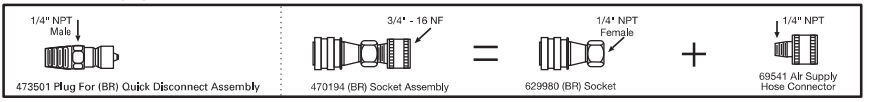


HANSEN — Brass (BR)

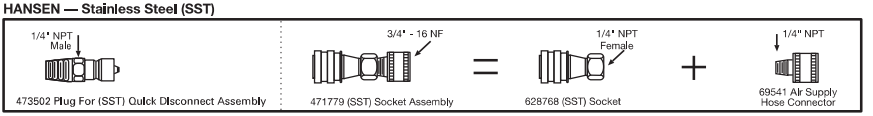


NON-LOCKING TYPES — WITH CHECK VALVE IN PLUG

FOSTER — Brass (BR)

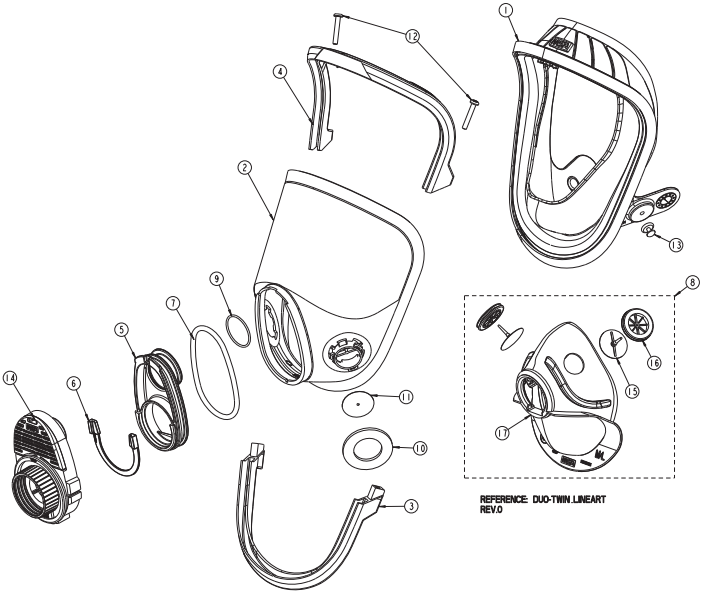


HANSEN — Stainless Steel (SST)



ADVANTAGE® 4000

ADVANTAGE 4000 ASSEMBLY	
PART NUMBER	DESCRIPTION
10091900	FACEPIECE ASSEMBLY,TWIN,SILICONE,MEDIUM
10091901	FACEPIECE ASSEMBLY,TWIN,HYCAR,MEDIUM
10091904	FACEPIECE ASSEMBLY,TWIN,SILICONE,SMALL
10091905	FACEPIECE ASSEMBLY,TWIN,HYCAR,SMALL
10091908	FACEPIECE ASSEMBLY,TWIN,SILICONE,LARGE
10091909	FACEPIECE ASSEMBLY,TWIN,HYCAR,LARGE



ADVANTAGE 4000 TWIN FACEPIECE COMPONENTS			
ITEM NO.	PART NUMBER	QTY REQD	DESCRIPTION
1	10073455	1	FACEBLANK,HYCAR,SMALL
	10073457		FACEBLANK,HYCAR,LARGE
	10073459		FACEBLANK,HYCAR,MEDIUM
	10083926		FACEBLANK,SILICONE,SMALL
	10083927		FACEBLANK,SILICONE,LARGE
	10083925		FACEBLANK,SILICONE,MEDIUM
2	10115696	1	LENS,TWIN PORT 4200-H W/BAYONET CONNECTORS
	10115697		LENS,TWIN PORT 4200-S W/BAYONET CONNECTORS
3	10073461	1	LENS RING,LOWER,BLACK
4	10073460	1	LENS RING,UPPER,BLACK
5	10061973	1	HOUSING, INLET
6	10061996	1	UCLIP
7	10025297	1	O-RING,HOUSING,SILICONE
8	10065803	1	NOSECUP ASSEMBLY,MED/LG
	10065804		NOSECUP ASSEMBLY,SMALL
9	10084819	1	O-RING, SIZE, 2-024
10	10018496	2	GASKET,BAYONET

ADVANTAGE 4000 TWIN FACEPIECE COMPONENTS (CONT.)			
ITEM NO.	PART NUMBER	QTY REQD	DESCRIPTION
11	10030061	2	VALVE, FACEPIECE
12	10026562	2	SCREW,SST,4M X 25MM LG,PHIL PAN HD
13	10025288	2	BUTTON,HEAD HARNESS
14	10065330	1	INLET ASSEMBLY,RD40
NOT SHOWN	465008	1	BAG,DRAWSTRING
	10029294	1	COVER,LENS
	10075903	1	CLOTH HEAD HARNESS
	10075901	1	RUBBER HEAD HARNESS

NOSECUP ASSEMBLY COMPONENTS (ITEM 8)			
ITEM NO.	PART NUMBER	QTY REQ	DESCRIPTION
15	304787	2	DISC, VALVE
16	491124	2	SEAT, VALVE
17	10065305	1	NOSE CUP,MEDIUM/LARGE,TPE
	10065306		NOSE CUP,SMALL,TPE

NOTES

NOTES

For More Information, call 1-800-MSA-2222 or Visit Our Website at www.MSAnet.com

MSA The Safety Company

MINE SAFETY APPLIANCES COMPANY
PITTSBURGH, PENNSYLVANIA, U.S.A. 15230